UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

or

☐TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission file number 001-36326

Endo International plc

(Exact name of registrant as specified in its charter)

Ireland	**68-0683755**
State or other jurisdiction of incorporation or organization	(I.R.S. Employer Identification No.)
First Floor, Minerva House, Simmonscourt Road	
Ballsbridge, Dublin 4, Ireland	**Not Applicable**
(Address of principal executive offices)	(Zip Code)

011-353-1-268-2000

Registrant's telephone number, including area code

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Ordinary shares, nominal value $0.0001 per share	ENDP	The Nasdaq Global Select Market

Securities registered pursuant to section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.	Yes ☒	No ☐	
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.	Yes ☐	No ☒	
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.	Yes ☒	No ☐	
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).	Yes ☒	No ☐	

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐		
Non-accelerated filer	☐	Smaller reporting company	☐	Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the voting common equity (ordinary shares) held by non-affiliates as of June 28, 2019 (the last business day of the registrant's most recently completed second fiscal quarter) was $670,135,609 based on a closing sale price of $4.12 per share as reported on the Nasdaq Global Select Market on that date. Ordinary shares held by each officer and director and each beneficial owner of 10% or more (as calculated on June 28, 2019) of the outstanding ordinary shares of the registrant have been excluded since such persons and beneficial owners may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes. The registrant has no non-voting ordinary shares authorized or outstanding.

The number of Ordinary shares, nominal value $0.0001 per share outstanding as of February 18, 2020 was 226,833,617.

Documents Incorporated by Reference

Portions of the registrant's proxy statement pursuant to Regulation 14A relating to its 2020 Annual General Meeting, to be filed with the Securities and Exchange Commission subsequent to the date hereof, are incorporated by reference into Part III of this Form 10-K. Such proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the conclusion of the registrant's fiscal year ended December 31, 2019.

ENDO INTERNATIONAL PLC
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FORWARD-LOOKING STATEMENTS

Statements contained or incorporated by reference in this document contain information that includes or is based on “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended (Securities Act) and Section 21E of the Securities Exchange Act of 1934, as amended (Exchange Act). These statements, including estimates of future revenues, future expenses, future net income and future net income per share contained in the “Management’s Discussion and Analysis of Financial Condition and Results of Operations” section of this document, as well as statements regarding future financing activities, are subject to risks and uncertainties. Forward-looking statements include the information concerning our possible or assumed results of operations. We have tried, whenever possible, to identify such statements by words such as “believe,” “expect,” “anticipate,” “intend,” “estimate,” “plan,” “project,” “forecast,” “will,” “may” or similar expressions. We have based these forward-looking statements on our current expectations and projections about the growth of our business, our financial performance and the development of our industry. Because these statements reflect our current views concerning future events, these forward-looking statements involve risks and uncertainties. Investors should note that many factors, as more fully described in Part I, Item 1A of this report under the caption “Risk Factors,” and as otherwise enumerated herein, could affect our future financial results and could cause our actual results to differ materially from those expressed in forward-looking statements contained or incorporated by reference in this document.

We do not undertake any obligation to update our forward-looking statements after the date of this document for any reason, even if new information becomes available or other events occur in the future, except as may be required under applicable securities laws. You are advised to consult any further disclosures we make on related subjects in our reports filed with the Securities and Exchange Commission (SEC) and with securities regulators in Canada on the System for Electronic Document Analysis and Retrieval (SEDAR). Also note that in Part I, Item 1A, we provide a cautionary discussion of the risks, uncertainties and possibly inaccurate assumptions relevant to our business. These are factors that, individually or in the aggregate, we think could cause our actual results to differ materially from expected and historical results. We note these factors for investors as permitted by Section 27A of the Securities Act and Section 21E of the Exchange Act. You should understand that it is not possible to predict or identify all such factors. Consequently, you should not consider this to be a complete discussion of all potential risks or uncertainties.

PART I

Item 1. *Business*

Overview

Unless otherwise indicated or required by the context, references throughout to "Endo," the "Company," "we," "our" or "us" refer to financial information and transactions of Endo International plc and its subsidiaries.

Endo International plc is an Ireland-domiciled specialty branded and generics pharmaceutical company. Endo International plc was incorporated in Ireland in 2013 as a private limited company and re-registered effective February 18, 2014 as a public limited company. Endo International plc is a holding company that conducts its operations through its subsidiaries.

Our ordinary shares are traded on the Nasdaq Global Select Market (NASDAQ) under the ticker symbol "ENDP." References throughout to "ordinary shares" refer to Endo International plc's ordinary shares (1,000,000,000 authorized, par value of $0.0001 per share). In addition, we have 4,000,000 euro deferred shares outstanding (par value of $0.01 per share).

The address of Endo International plc's headquarters is Minerva House, Simmonscourt Road, Ballsbridge, Dublin 4, Ireland (telephone number: 011-353-1-268-2000).

Our focus is on pharmaceutical products and we target areas where we believe we can build leading positions. We use a differentiated operating model based on a lean and nimble structure, the rational allocation of capital and an emphasis on high-value research and development (R&D) targets. While our primary focus is on organic growth, we evaluate and, where appropriate, execute on opportunities to expand through the acquisition of products and companies in areas that we believe serve patients and customers while offering attractive growth characteristics and margins. We believe our operating model and the execution of our corporate strategy will enable us to create shareholder value over the long-term.

For branded products, we seek to invest in products or product candidates that have inherent scientific, regulatory, legal and technical complexities and market such products under recognizable brand names that are trademarked. For products we develop for the United States (U.S.) market, after the completion of required clinical trials and testing, we seek approvals from regulatory bodies such as through the submission of New Drug Applications (NDAs) or Biologics License Applications (BLAs) to the U.S. Food and Drug Administration (FDA). Upon U.S. approval, patents included in such NDAs are listed in a publication referred to as the Orange Book. We believe that our patents, the protection of discoveries in connection with our development activities, our proprietary products, technologies, processes, trade secrets, know-how, innovations and all of our intellectual property are important to our business and achieving a competitive position. However, there can be no assurance that any of our patents, licenses or other intellectual property rights will afford us any protection from competition. Additional information is included throughout this Part I, Item 1.

For generic products, which are the pharmaceutical and therapeutic equivalents of branded products and are generally marketed under their generic (chemical) names rather than their brand names, our focus is on high-barrier-to-entry products, including first-to-file or first-to-market opportunities that are difficult to formulate or manufacture or face complex legal and regulatory challenges. In the U.S., a first-to-file product refers to a generic product for which the Abbreviated New Drug Application (ANDA) containing a patent challenge (or Paragraph IV certification) to the corresponding branded product's FDA Orange Book-listed patents was the first to be filed with the FDA. In the U.S., manufacturers that launch first-to-file products, after success in litigating or otherwise resolving related patent challenges, and receive final FDA approval have the opportunity for 180 days of generic marketing exclusivity from competing generic products other than authorized generics. A first-to-market product refers to a product that is the first marketed generic equivalent of a branded product for reasons apart from statutory marketing exclusivity. This can occur, for example, when a generic product is difficult to formulate or manufacture. First-to-market products allow manufacturers to mitigate risks from competitive pressures commonly associated with commoditized generic products. Additional information is included throughout this Part I, Item 1.

The four reportable business segments in which we operate are: (1) Branded Pharmaceuticals, (2) Sterile Injectables, (3) Generic Pharmaceuticals and (4) International Pharmaceuticals. Additional information about our reportable business segments is included throughout this Part I. The results of operations of our reportable business segments are discussed in Part II, Item 7 of this report "Management's Discussion and Analysis of Financial Condition and Results of Operations" under the heading "RESULTS OF OPERATIONS." Across all of our reportable business segments, we generated total revenues of $2.91 billion, $2.95 billion and $3.47 billion in 2019, 2018 and 2017, respectively.

Our Strategy

Endo International plc is a highly focused specialty branded and generics pharmaceutical company that, through its operating subsidiaries, seeks to deliver quality medicines to patients in need through excellence in development, manufacturing and commercialization. Our strategic priorities include reshaping our organization for success, building our portfolio and capabilities for the future and driving margin expansion and, over the longer term, de-levering. Specific areas of management's focus include:

- Branded Pharmaceuticals: Accelerating performance of organic growth drivers in our Specialty Products portfolio and expanding margin in our Established Products portfolio. As further described below under the heading "Select Development Projects," management is also focused on investing in key pipeline life cycle management and other development opportunities, including in the areas of medical therapeutics and medical aesthetics.
- Sterile Injectables: Focusing on developing branded injectable products with inherent scientific, regulatory, legal and technical complexities, expanding the product portfolio to include other dosages and technologies and developing or acquiring high-barrier-to-entry, generic injectable products that are difficult to manufacture.
- Generic Pharmaceuticals: Focusing on developing or acquiring high-barrier-to-entry products, including first-to-file or first-to-market opportunities that are difficult to formulate or manufacture or face complex legal and regulatory challenges.
- International Pharmaceuticals: Operating in regulated markets where physicians play a significant role in choosing the course of therapy and seeking to expand distribution of certain of our products outside of the U.S.

Going forward, our primary focus will be on organic growth. However, we will evaluate and, where appropriate, execute on opportunities to expand through acquisitions of products and companies. There can be no assurance that we will be successful in executing on our strategy.

Our Competitive Strengths

To successfully execute our strategy, we must continue to capitalize on our following core strengths:

Experienced and dedicated management team. We have a highly skilled and customer-focused management team in critical leadership positions across Endo. Our senior management team has extensive experience in the pharmaceutical industry and a proven track record of developing businesses and creating value. This experience includes improving business performance through organic revenue growth, operational excellence and through the identification, consummation and integration of licensing and acquisition opportunities.

Operational excellence. We have efficient, effective and high-quality manufacturing capabilities across a diversified array of dosage forms in the U.S. and India. We believe our comprehensive suite of technology, manufacturing and development competencies increases the likelihood of success in commercializing high-barrier-to-entry products and obtaining first-to-file and first-to-market status on future products, yielding more sustainable market share and profitability. For example, our capabilities in the rapidly growing U.S. market for sterile products afford us with a broader and more diversified product portfolio and a greater selection of targets for potential development.

We believe that our competitive advantages include our integrated team-based approach to product development that combines our formulation, regulatory, legal, manufacturing and commercial capabilities; our ability to introduce new generic equivalents for brand-name products; our quality and cost-effective production; our ability to meet customer and/or patient expectations and the breadth of our existing sterile injectables and generic product portfolio offerings.

Growth of our branded Specialty Products portfolio while leveraging the strength of our Established Products portfolio. We have assembled a portfolio of branded prescription products offered by our Branded Pharmaceuticals segment to treat and manage conditions in urology, urologic oncology, endocrinology, pain, bariatrics and orthopedics. Additional information on these product portfolios is included below under the heading "Products Overview."

Focus on the differentiated products of our sterile injectables and generics portfolios. By leveraging operational efficiency, our Sterile Injectables and Generic Pharmaceuticals segments aim to be low-cost producers of high-barrier-to-entry products, including first-to-file and first-to-market opportunities that are difficult to formulate or manufacture or face complex legal and regulatory challenges. We believe products with these characteristics will provide longer product life cycles and higher profitability than products without these characteristics. These segments also aim to manufacture products that meet the evolving needs of hospitals and health systems, including ready-to-use sterile injectable products, in a cost efficient manner.

Continuing proactive diversification of our business. Our primary focus is on organic growth. However, we will evaluate and, where appropriate, execute on opportunities to expand through acquisitions of products and companies in areas that will serve patients and customers and that we believe will offer attractive growth characteristics and margins. In particular, we will look to continue to enhance our product lines by acquiring or licensing rights to additional products and regularly evaluating selective acquisition opportunities.

R&D expertise. Our R&D efforts are focused on the development of a balanced, diversified portfolio of innovative and clinically differentiated product candidates. Through our Sterile Injectables and Generic Pharmaceuticals businesses, we seek out and develop high-barrier-to-entry products, including first-to-file or first-to-market opportunities. We periodically review our R&D pipeline in order to better direct investment toward those opportunities that we expect will deliver the greatest returns. We will continue to evaluate strategic R&D opportunities, with an aim to develop assets with inherently lower risk profiles and clearly defined regulatory pathways. Our current R&D pipeline consists of products in various stages of development. For additional detail, see "Select Development Projects." Our R&D and regulatory affairs staff is based primarily in India and Pennsylvania.

Targeted sales and marketing infrastructure. Our sales and marketing activities are based in the U.S. and Canada and primarily focus on the promotion of our Specialty Products portfolio and Sterile Injectables segment. We market our Specialty Products directly to specialty physicians, including those specializing in urology, orthopedics, pediatric endocrinology and bariatric surgery. Our sales force also directs its marketing efforts on retail pharmacies and other healthcare professionals. We distribute our Specialty Products through independent wholesale distributors, but we also sell directly to retailers, clinics, government agencies, doctors, independent retail and specialty pharmacies and independent specialty distributors. Our marketing policy is designed to provide physicians, pharmacies, hospitals, public and private payers and appropriate healthcare professionals with products and appropriate medical information. We work to gain access to various formularies (lists of recommended or approved medicines and other products) and reimbursement lists by demonstrating the qualities and treatment benefits of our products within their approved indications.

Our dedicated Sterile Injectables sales and marketing team is focused on health systems and national group purchasing organizations (GPOs). Our customers' growing complexity requires us to engage directly with key stakeholders and decision makers. Our experienced sales and marketing team is key to growing our existing portfolio and executing on new product launches.

Products Overview

Branded Pharmaceuticals

The following table displays the revenues from external customers of our Branded Pharmaceuticals segment for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Specialty Products:			
XIAFLEX®	$ 327,638	$ 264,638	$ 213,378
SUPPRELIN® LA	86,797	81,707	86,211
Other Specialty (1)	105,241	98,230	84,161
Total Specialty Products	$ 519,676	$ 444,575	$ 383,750
Established Products:			
PERCOCET®	$ 116,012	$ 122,901	$ 125,231
TESTOPEL®	55,244	58,377	69,223
Other Established (2)	164,470	236,979	379,321
Total Established Products	$ 335,726	$ 418,257	$ 573,775
Total Branded Pharmaceuticals (3)	$ 855,402	$ 862,832	$ 957,525

(1) Products included within Other Specialty are NASCOBAL® Nasal Spray and AVEED®. Beginning with our first-quarter 2019 reporting, TESTOPEL®, which was previously included in Other Specialty, has been reclassified and is now included in the Established Products portfolio for all periods presented.
(2) Products included within Other Established include, but are not limited to, LIDODERM®, EDEX® and VOLTAREN® Gel.
(3) Individual products presented above represent the top two performing products in each product category for the year ended December 31, 2019 and/or any product having revenues in excess of $100 million during any of the years ended December 31, 2019, 2018 or 2017 or $25 million during any quarterly period in 2019 or 2018.

Specialty Products Portfolio

Endo commercializes a number of products within the market served by specialty distributors and specialty pharmacies and in which healthcare practitioners can purchase and bill payers directly (the buy and bill market). Our current offerings primarily relate to two distinct areas: (i) urology treatments, which focus mainly on Peyronie's disease (PD) and testosterone replacement therapies (TRT) for hypogonadism and (ii) orthopedics/pediatric endocrinology treatments, which focus on Dupuytren's contracture (DC) and central precocious puberty (CPP). Key product offerings in this portfolio include the following:

- XIAFLEX®, which is the first and currently the only FDA-approved non-surgical treatment for DC (for adult patients with an abnormal buildup of collagen in the fingers that limits or disables hand function). It is also the first and currently the only FDA-approved non-surgical treatment for PD (for adult men with a collagen plaque and a penile curvature deformity of thirty degrees or greater at the start of therapy).

- SUPPRELIN® LA, which is a soft, flexible 12-month hydrogel implant based on our hydrogel polymer technology that delivers histrelin acetate, a gonadotropin-releasing hormone agonist, and is indicated for the treatment of CPP in children.
- NASCOBAL® Nasal Spray, which is a prescription medicine used as a supplement to treat vitamin B12 deficiency and is the only FDA-approved B12 nasal spray.
- AVEED®, which is a novel, long-acting testosterone undecanoate for injection for the treatment of hypogonadism that is dosed only five times per year after the first month of therapy.

Established Products Portfolio

This portfolio's current treatment offerings primarily relate to two distinct areas: (i) pain management, including products in the opioid analgesics and osteoarthritis pain segments and for the treatment of pain associated with post-herpetic neuralgia and (ii) urology, which focuses mainly on the treatment of hypogonadism. Key product offerings in this portfolio include, among others, the following:

- PERCOCET®, which is an opioid analgesic approved for the treatment of moderate-to-moderately-severe pain.
- TESTOPEL®, which is a unique, long-acting implantable pellet indicated for TRT in conditions associated with a deficiency or absence of endogenous testosterone.
- LIDODERM®, which is a topical patch product containing lidocaine that is approved for the relief of pain associated with post-herpetic neuralgia, a condition thought to result after nerve fibers are damaged during a case of herpes zoster (commonly known as shingles).
- EDEX®, which is a penile injection used to treat erectile dysfunction caused by conditions affecting nerves, blood vessels, emotions and/or a combination of factors.
- VOLTAREN® Gel, which is a topical prescription treatment for the relief of joint pain associated with osteoarthritis in the knees, ankles, feet, elbows, wrists and hands.

The Company's pain products, including opioid products, are managed as mature brands and are not and have not been actively promoted for years. In December 2016, the Company announced the elimination of its entire U.S. pain product field sales force.

Sterile Injectables

The following table displays the revenues from external customers of our Sterile Injectables segment for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
VASOSTRICT®	$ 531,737	$ 453,767	$ 399,909
ADRENALIN®	179,295	143,489	76,523
Ertapenem for injection	104,679	57,668	—
APLISOL®	61,826	64,913	66,286
Other Sterile Injectables (1)	185,594	209,729	207,753
Total Sterile Injectables (2)	$ 1,063,131	$ 929,566	$ 750,471

(1) Products included within Other Sterile Injectables include ephedrine sulfate injection, treprostinil for injection and others.
(2) Individual products presented above represent the top two performing products within the Sterile Injectables segment for the year ended December 31, 2019 and/or any product having revenues in excess of $100 million during any of the years ended December 31, 2019, 2018 or 2017 or $25 million during any quarterly period in 2019 or 2018.

The Sterile Injectables segment includes a product portfolio of approximately 30 product families, including branded sterile injectable products that are protected by certain patent rights and have inherent scientific, regulatory, legal and technical complexities and generic injectable products that are difficult to formulate or manufacture or face complex legal and regulatory challenges. Our sterile injectables products are manufactured in sterile facilities in vial dosages and are administered at hospitals, clinics and long-term care facilities. The product offerings in this segment include, among others, the following:

- VASOSTRICT®, which is indicated to increase blood pressure in adults with vasodilatory shock who remain hypotensive despite fluids and catecholamines. VASOSTRICT® is the first and currently the only vasopressin injection with an NDA approved by the FDA.
- ADRENALIN®, which is a non-selective alpha and beta adrenergic agonist indicated for emergency treatment of certain allergic reactions, including anaphylaxis.
- Ertapenem for injection, the authorized generic of Merck Sharp & Dohme Corp.'s (Merck) Invanz®, which is indicated for the treatment of certain moderate-to-severe infections.
- APLISOL®, which is a sterile aqueous solution of a purified protein derivative for intradermal administration as an aid in the diagnosis of tuberculosis.

- Ephedrine sulfate injection, which is an alpha and beta adrenergic agonist and a norepinephrine-releasing agent indicated for the treatment of clinically important hypotension occurring in the setting of anesthesia.
- Treprostinil for injection, which is used for the treatment of pulmonary arterial hypertension.

Generic Pharmaceuticals

The Generic Pharmaceuticals segment includes a product portfolio of approximately 150 generic prescription product families including solid oral extended-release, solid oral immediate-release, liquids, semi-solids, patches (which are medicated adhesive patches designed to deliver the pharmaceutical through the skin), powders, ophthalmics (which are sterile pharmaceutical preparations administered for ocular conditions) and sprays and includes products in the pain management, urology, central nervous system disorders, immunosuppression, oncology, women's health and cardiovascular disease markets, among others.

Generic products are the pharmaceutical and therapeutic equivalents of branded products and are generally marketed under their generic (chemical) names rather than their brand names. Generic products are substantially the same as branded products in dosage form, safety, efficacy, route of administration, quality, performance characteristics and intended use, but are generally sold at prices below those of the corresponding branded products and thus represent cost-effective alternatives for consumers.

Typically, a generic product may not be marketed until the expiration of applicable patent(s) on the corresponding branded product unless a resolution of patent litigation results in an earlier opportunity to enter the market. For additional detail, see "Governmental Regulation." However, our generics portfolio also contains certain authorized generics, which are generic versions of branded products licensed by brand drug companies under an NDA and marketed as generics. Authorized generics do not face the same regulatory barriers to introduction and are not prohibited from sale during the 180-day marketing exclusivity period granted to the first-to-file ANDA applicant. Our authorized generics include generic versions of our branded products including, for example, lidocaine patch 5% (LIDODERM®). We also aim to be a partner of choice to large companies seeking authorized generic distributors for their branded products. For example, in April 2019, we launched albuterol sulfate HFA inhalation aerosol (the authorized generic of Merck's Proventil®) and, in July 2018, we launched colchicine tablets (the authorized generic of Takeda Pharmaceuticals U.S.A., Inc.'s (Takeda) Colcrys®).

International Pharmaceuticals

Our International Pharmaceuticals segment includes a variety of specialty pharmaceutical products sold outside the U.S., primarily in Canada through our operating company Paladin Labs Inc. (Paladin). The key products of this segment serve growing therapeutic areas, including attention deficit hyperactivity disorder, pain, women's health and oncology.

This segment also included: (i) our South African business, which was sold in July 2017 and consisted of Litha Healthcare Group Limited and certain assets acquired from Aspen Holdings in October 2015 (Litha) and (ii) our Latin American business, which was sold in October 2017 and consisted of Grupo Farmacéutico Somar, S.A.P.I. de C.V. (Somar).

Select Development Projects

XIAFLEX®

XIAFLEX®, which contains the enzyme collagenase clostridium histolyticum (CCH), is currently approved by the FDA and marketed in the U.S. for the treatment of both DC and PD (two separate medical therapeutic indications). As further described in Note 11. License and Collaboration Agreements in the Consolidated Financial Statements included in Part IV, Item 15 of this report, we in-licensed certain rights related to CCH pursuant to which we may, among other things, develop our XIAFLEX® product or other product candidates containing CCH for potential additional medical therapeutics indications.

In early 2020, we announced that we had initiated our XIAFLEX® development programs for the treatment of plantar fibromatosis and adhesive capsulitis.

Collagenase Clostridium Histolyticum - Medical Aesthetics

Our license rights relating to CCH also permit us to develop product candidates containing CCH for certain medical aesthetics indications. For example, we have rights to develop and globally market CCH for the treatment of cellulite. We are currently progressing our cellulite treatment development program. While based on the same enzyme, CCH for the treatment of cellulite is a different formulation and presentation with a different treatment regimen. In November 2019, we announced the FDA's acceptance for review of the original BLA for CCH for the treatment of cellulite in the buttocks. The BLA is supported by the results of the RELEASE-1 and RELEASE-2 Phase 3 studies, as well as a clinical program. Trial subjects receiving CCH for the treatment of cellulite showed highly statistically significant levels of improvement in the appearance of cellulite with treatment, as measured by the trials' primary endpoint. In addition, the RELEASE-1 trial passed 8 out of 8 key secondary endpoints and the RELEASE-2 trial passed 7 out of 8 key secondary endpoints. Finally, CCH for the treatment of cellulite was well-tolerated in the actively-treated subjects with most adverse events being mild to moderate in severity and primarily limited to the local injection area. The Prescription Drug User Fee Act (PDUFA) date, or target action date, for the BLA has been set for July 6, 2020.

Subject to certain limitations, we have the right to further develop this same and/or other product candidates containing CCH for additional medical aesthetics indications.

Other

Our remaining pipeline consists mainly of a variety of product candidates in our Sterile Injectables and Generic Pharmaceuticals segments. Our primary approach to developing generic products, including injectables, is to target high-barrier-to-entry generic product opportunities, including first-to-file or first-to-market opportunities that are difficult to formulate or manufacture or face complex legal and regulatory challenges as well as products that meet the evolving needs of hospitals and health systems. We expect such product opportunities to result in products that are either the exclusive generic or have two or fewer generic competitors when launched, which we believe tends to lead to more sustainable market share and profitability for our product portfolio. In our Sterile Injectables business, we also focus on developing branded injectable products with inherent scientific, regulatory, legal and technical complexities, as well as developing other dosage forms and technologies.

As of December 31, 2019, these two segments were actively pursuing approximately 120 product candidates, which included approximately 65 ANDAs pending with the FDA. Of the 65 ANDAs, approximately half represent first-to-file opportunities or first-to-market opportunities. These numbers do not include five sterile injectable product candidates relating to a second-quarter 2018 development, license and commercialization agreement with Nevakar, Inc.

We periodically review our development projects in order to better direct investment toward those opportunities that we expect will deliver the greatest returns. This process can lead to decisions to discontinue certain R&D projects that may reduce the number of products in our previously reported pipeline.

Major Customers

We primarily sell our branded and generic products to wholesalers, retail drug store chains, supermarket chains, mass merchandisers, distributors, mail order accounts, hospitals and government agencies. Our wholesalers and distributors purchase products from us and, in turn, supply products to retail drug store chains, independent pharmacies and managed care organizations (MCOs). Customers in the managed care market include health maintenance organizations, nursing homes, hospitals, clinics, pharmacy benefit management companies and mail order customers. Our current customer group reflects significant consolidation in recent years, marked by mergers and acquisitions and other alliances. Total revenues from direct customers that accounted for 10% or more of our total consolidated revenues during the years ended December 31, 2019, 2018 and 2017 are as follows:

	2019	2018	2017
AmerisourceBergen Corporation	34%	32%	25%
McKesson Corporation	26%	27%	25%
Cardinal Health, Inc.	25%	26%	25%

Revenues from these customers are included within each of our segments.

Some wholesale distributors have demanded that pharmaceutical manufacturers, including us, enter into distribution service agreements (DSAs) pursuant to which the wholesale distributors provide the pharmaceutical manufacturers with specific services, including the provision of periodic retail demand information and current inventory levels and other information. We have entered into certain of these agreements.

Competition

Branded Products

Our branded products compete with products manufactured by many other companies in highly competitive markets throughout the U.S. and internationally.

We compete principally through targeted product development and through our acquisition and in-licensing strategies, where we face intense competition as a result of the limited number of assets available and the number of competitors bidding on such assets. In addition to product development and acquisitions, other competitive factors with respect to branded products include product efficacy, safety, ease of use, price, demonstrated cost-effectiveness, marketing effectiveness, service, reputation and access to technical information.

Branded products often must compete with therapeutically similar branded or generic products or with generic equivalents. Such competition frequently increases over time. For example, if competitors introduce new products, delivery systems or processes with therapeutic or cost advantages, our products could be subject to progressive price reductions and/or decreased volume of sales. To successfully compete for business, we must often demonstrate that our products offer not only medical benefits, but also cost advantages as compared with other forms of care. Accordingly, we face pressure to continually seek out technological innovations and to market our products effectively.

Manufacturers of generic products typically invest far less in R&D than research-based companies and can therefore price their products significantly lower than branded products. Accordingly, when a branded product loses its market exclusivity, it normally faces intense price competition from generic forms of the product. Due to lower prices, generic versions, where available, may be substituted by pharmacies or required in preference to branded versions under third-party reimbursement programs.

Branded Pharmaceuticals

This segment's major competitors, including Mylan N.V. (Mylan), Allergan plc, Jazz Pharmaceuticals plc, Takeda Pharmaceutical Company Limited, Horizon Therapeutics plc and Mallinckrodt plc, among others, vary depending on therapeutic and product category, dosage strength and drug-delivery systems, among other factors.

Several of this segment's products, such as PERCOCET®, TESTOPEL® and LIDODERM®, face generic and/or other forms of competition. The degree of generic and/or other competition facing this segment could increase in the future.

Sterile Injectables

This segment's major competitors, including Hospira, Inc. (a subsidiary of Pfizer Inc.), Fresenius Kabi USA, LLC (Fresenius), Mylan and Hikma Pharmaceuticals PLC, vary by product. A significant portion of our sales, including sales to hospitals, clinics and long-term care facilities in the U.S., are controlled by a relatively small number of GPOs, including HealthTrust Purchasing Group, L.P., Premier Inc. and Vizient, Inc. Accordingly, it is important for us to have strong relationships with these GPOs and achieve on-time product launches in order to secure new bid opportunities.

Generic Products

Generic products generally face intense competition from branded equivalents, other generic equivalents (including authorized generics) and therapeutically similar branded or generic products. Our major competitors, including Teva Pharmaceutical Industries Limited, Mylan, Sandoz (a division of Novartis) and Amneal Pharmaceuticals, Inc. (Amneal), among others, vary by product.

Consolidations of our customer base described above under the heading "Major Customers" have resulted in increased pricing and other competitive pressures on pharmaceutical companies, including us. Additionally, the emergence of large buying groups representing independent retail pharmacies and other distributors and the prevalence and influence of MCOs and similar institutions have increased the negotiating power of these groups, enabling them to attempt to extract various demands, including without limitation price discounts, rebates and other restrictive pricing terms. These competitive trends could continue in the future and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Newly introduced generic products with limited or no other generic competition typically garner higher prices relative to commoditized generic products. As such, our primary strategy is to compete with a focus on high-value, first-to-file or first-to-market opportunities, regardless of therapeutic category, and products that present significant barriers to entry for reasons such as complex formulation or regulatory or legal challenges. For additional detail, see "Our Competitive Strengths - Focus on the differentiated products of our sterile injectables and generics portfolios."

Even if we are successful in launching generic products with statutory generic exclusivity, competitors may enter the market when such exclusivity periods expire, resulting in significant price declines. Consequently, maintaining profitable operations depends, in part, on our continuing ability to select, develop, procure regulatory approvals of, overcome legal challenges to, launch and commercialize new generic products in a timely and cost efficient manner and to maintain efficient, high quality manufacturing capabilities. For additional detail, see "Our Competitive Strengths - Operational excellence."

Seasonality

Although our business is affected by the purchasing patterns and concentration of our customers, our business is not materially impacted by seasonality.

Patents, Trademarks, Licenses and Proprietary Property

We regard the protection of patents and other enforceable intellectual property rights that we own or license as critical to our business and competitive position. Accordingly, we rely on patent, trade secret and copyright law, as well as nondisclosure and other contractual arrangements, to protect our intellectual property. We have a portfolio of patents and patent applications owned or licensed by us that cover aspects of our products. These patents and applications generally include claims directed to the compounds and/or methods of using the compounds, formulations of the compounds, pharmaceutical salt forms of the compounds or methods of manufacturing the compounds. Our policy is to pursue patent applications on inventions that we believe are commercially important to the development and growth of our business. Certain patents relating to products that are the subject of approved NDAs are listed in the U.S. FDA publication, "Approved Drug Products with Therapeutic Equivalence Evaluations" (Orange Book). The table below contains a list from the Orange Book of patent expiration dates for certain products we market.

The Orange Book does not include a listing of patents related to biological products. Included in the table are certain products for which we own or license a BLA along with the date of expiration of certain relevant patents or regulatory exclusivity. In addition, we may have other relevant regulatory protection or patents that may extend beyond the expiration date listed in the table below. We may also obtain further patents or additional regulatory or patent exclusivity for one or more indications for a product in the future.

As of February 18, 2020, we held approximately: 234 U.S. issued patents, 36 U.S. patent applications pending, 454 foreign issued patents and 71 foreign patent applications pending. In addition, as of February 18, 2020, we had licenses for approximately 46 U.S. issued patents, 11 U.S. patent applications pending, 171 foreign issued patents and 64 foreign patent applications pending. The following table sets forth, as of February 18, 2020, the year of expiration relating to certain of our products:

Relevant Product	Patent Expiration (1) (2)
VASOSTRICT®	2035
XIAFLEX®	2028
ADRENALIN®	2035
NASCOBAL® Nasal Spray	2024
AVEED®	2027

(1) Our license agreements for the patents in the table above extend to or beyond the patent expiration dates. See Note 11. License and Collaboration Agreements in the Consolidated Financial Statements included in Part IV, Item 15 of this report for additional discussion about certain license agreements.

(2) The expiration of a basic product patent or loss of patent protection resulting from a legal challenge normally results in significant competition from generic products or biosimilars against the originally patented product and can result in a significant reduction in revenues for that product in a very short period of time. In some cases, however, we can continue to obtain commercial benefits from product manufacturing trade secrets, patents on uses for products, patents on processes and intermediates for the economical manufacture of the active ingredients or patents for special formulations of the product or delivery mechanisms.

The effect of these issued patents is that they provide us with protection by virtue of our ability to exclude others from making, using, selling, offering for sale and importing that which is covered by their claims. To achieve a competitive position, we also rely on trade secrets, non-patented proprietary know-how and continuing technological innovation, where patent protection is not believed to be appropriate or attainable. Many of our products are sold under trademarks. We also rely on confidentiality agreements with our employees, consultants and other parties to protect, among other things, trade secrets and other proprietary information.

There can be no assurance that any of our patents, licenses or other intellectual property rights will afford us any protection from competition or that our confidentiality agreements will not be breached, that we will have adequate remedies for any breach, that others will not independently develop equivalent proprietary information or that other third parties will not otherwise gain access to our trade secrets and other intellectual property.

Additionally, any pending or future patent applications made by us or our subsidiaries, our license partners or entities we may acquire in the future are subject to risks and uncertainties. The coverage claimed in any such patent applications could be significantly reduced before the patent is issued and there can be no assurance that any such applications will result in the issuance of patents or, if any patents are issued, whether they will provide significant proprietary protection or will be challenged, circumvented or invalidated. Because unissued U.S. patent applications are maintained in secrecy for a period of eighteen months and U.S. patent applications filed prior to November 29, 2000 are not disclosed until such patents are issued, and since publication of discoveries in the scientific or patent literature often lags behind actual discoveries, we cannot be certain of the priority of inventions covered by pending patent applications. Moreover, we may have to participate in interference and other inter-parties proceedings declared by the U.S. Patent and Trademark Office (PTO) to determine priority of invention, or in opposition proceedings in a foreign patent office, either of which could result in substantial cost to us, even if the eventual outcome is favorable to us. There can be no assurance that any patents, if issued, will be held valid by a court of competent jurisdiction. An adverse outcome could subject us to significant liabilities to third parties, require disputed rights to be licensed from third parties or require us to cease using such technology. See Item 1A. Risk Factors - “Our ability to protect and maintain our proprietary and licensed third party technology, which is vital to our business, is uncertain.”

We may find it necessary to initiate litigation to enforce our patent rights, to protect our intellectual property or trade secrets or to determine the scope and validity of the proprietary rights of others. Litigation is costly and time-consuming and there can be no assurance that our litigation expenses will not be significant in the future or that we will prevail in any such litigation. See Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Governmental Regulation

U.S. FDA and Drug Enforcement Administration (DEA)

The pharmaceutical industry in the U.S. is subject to extensive and rigorous government regulation. The Federal Food, Drug, and Cosmetic Act (FFDCA), the Controlled Substances Act (CSA) and other federal and state statutes and regulations govern or influence the testing, manufacturing, packaging, labeling, storage, recordkeeping, approval, advertising, promotion, sale and distribution of pharmaceutical products. Noncompliance with applicable requirements can result in criminal prosecution, fines, civil penalties, recall or seizure of products, total or partial suspension of production and/or distribution, injunctions and refusal of the government to enter into supply contracts or to approve NDAs, ANDAs, BLAs and/or other similar applications.

FDA approval is typically required before any new pharmaceutical or biologic product can be marketed. An NDA or BLA is a filing submitted to the FDA to obtain approval of new chemical entities and other innovations for which thorough applied research is required to demonstrate safety and effectiveness in use. The process generally involves, among other things:

- completion of preclinical laboratory and animal testing and formulation studies in compliance with the FDA's Good Laboratory Practice regulations;
- submission to the FDA of an Investigational New Drug application for human clinical testing, which must become effective before human clinical trials may begin in the U.S.;
- approval by an independent institutional review board before each trial may be initiated and continuing review during the trial;
- performance of human clinical trials, including adequate and well-controlled clinical trials in accordance with good clinical practices to establish the safety and efficacy of the proposed product for each intended use;
- submission to the FDA of an NDA or BLA for marketing approval, which must include data from preclinical testing and clinical trials;
- satisfactory completion of an FDA pre-approval inspection of the product's manufacturing processes and facility or facilities to assess compliance with the FDA's current Good Manufacturing Practice (cGMP) regulations and/or review of the Chemistry, Manufacturing and Controls section of the NDA or BLA to assess whether the facilities, methods and controls are adequate to preserve the proposed product's identity, strength, quality, purity and potency;
- satisfactory completion of an FDA advisory committee review, if applicable; and
- approval by the FDA of the NDA or BLA.

Clinical trials are typically conducted in three sequential phases, although the phases may overlap. Those phases include:

- Phase 1 trials generally involve testing the product for safety, adverse effects, dosage, tolerance, absorption, distribution, metabolism, excretion and other elements of clinical pharmacology.
- Phase 2 trials typically involve a small sample of the intended patient population to assess the efficacy of the compound for a specific indication, to determine dose tolerance and the optimal dose range and to gather additional information relating to safety and potential adverse effects.
- Phase 3 trials are undertaken in an expanded patient population, typically at dispersed study sites, in order to determine the overall risk-benefit ratio of the compound and to provide an adequate basis for product labeling.

Each trial is conducted in accordance with certain standards under protocols that detail the objectives of the study, the parameters to be used to monitor safety and the efficacy criteria to be evaluated. Each protocol must be submitted to the FDA as part of the Investigational New Drug application. Clinical trials are also subject to regulatory inspections by the FDA and other regulatory authorities to confirm compliance with applicable regulatory standards. The process of completing clinical trials for a new product may take many years and require the expenditures of substantial resources. See Item 1A. Risk Factors - "The pharmaceutical industry is heavily regulated, which creates uncertainty about our ability to bring new products to market and imposes substantial compliance costs on our business, including withdrawal or suspension of existing products."

As a condition of approval of an NDA or BLA, the FDA may require further studies, including Phase 4 post-marketing studies or post-marketing data reporting, such as evaluating known or signaled safety risks. Results of post-marketing programs may limit or expand the future marketing of the products and result in the FDA requiring labeling changes, including the addition of risk information.

For some products, the FDA may require a Risk Evaluation and Mitigation Strategy (REMS) to confirm that a drug's benefits outweigh its risks. REMS could include medication guides, physician communication plans or other elements. See Item 1A. Risk Factors - "The pharmaceutical industry is heavily regulated, which creates uncertainty about our ability to bring new products to market and imposes substantial compliance costs on our business, including withdrawal or suspension of existing products."

In most instances, FDA approval of an ANDA is required before a generic equivalent of an existing or reference-listed drug can be marketed. The ANDA process is abbreviated in that the FDA waives the requirement of conducting complete preclinical and clinical studies and generally instead relies principally on bioequivalence studies. Bioequivalence generally involves a comparison of the rate of absorption and levels of concentration of a generic product in the body with those of the previously approved product. When the rate and extent of absorption of systemically acting test and reference drugs are considered the same under the bioequivalence requirement, the two products are considered bioequivalent and are generally regarded as therapeutically equivalent, meaning that a pharmacist can substitute the generic product for the reference-listed drug. Under certain circumstances, an ANDA may also be submitted for a product authorized by approval of an ANDA suitability petition. Such petitions may be submitted to secure authorization to file an ANDA for a product that differs from a previously approved product in active ingredient, route of administration, dosage form or strength. In September 2007 and July 2012, Congress re-authorized pediatric testing legislation, which now requires ANDAs approved via the suitability petition route to conduct pediatric testing. The timing of final FDA approval of an ANDA application depends on a variety of factors, including whether the applicant challenges any listed patents for the reference-listed drug and whether the manufacturer of the reference-listed drug is entitled to one or more statutory exclusivity periods during which the FDA is prohibited from approving generic products. In certain circumstances, a regulatory exclusivity period can extend beyond the life of a patent, thus blocking ANDAs from being approved even after the patent expiration date.

Certain of our products are or could become regulated and marketed as biologic products pursuant to BLAs. Our BLA-licensed products were licensed based on a determination by the FDA of safety, purity and potency as required under the Public Health Service Act (PHSA). Although the ANDA framework referenced above does not apply to generics of BLA-licensed biologics, there is an abbreviated licensure pathway for products deemed to be biosimilar to, or interchangeable with, FDA-licensed reference biological products pursuant to the Biologics Price Competition and Innovation Act of 2009 (BPCIA). The BPCIA framework was enacted as part of the Patient Protection and Affordable Care Act (PPACA) and could be impacted by ongoing litigation regarding the legality of the PPACA. Under the BPCIA, following the expiration of a 12-year reference exclusivity period, the FDA may license, under section 351(k) of the PHSA, a biological product that it determines is biosimilar to, or interchangeable with, a reference product licensed under section 351(a) of the PHSA. Although licensure of biosimilar or interchangeable products is generally expected to require less than the full complement of product-specific preclinical and clinical data required for innovator products, the FDA has considerable discretion over the kind and amount of scientific evidence required to demonstrate biosimilarity and interchangeability.

Some pharmaceutical products are available in the U.S. that are not the subject of an FDA-approved NDA. In 2011, the FDA’s Center for Drug Evaluation and Research (CDER) Office of Compliance modified its enforcement policy with regard to the marketing of such “unapproved” marketed products. Under CDER’s revised guidance, the FDA encourages manufacturers to obtain NDA approvals for such products by requiring unapproved versions to be removed from the market after an approved version has been introduced, subject to a grace period at the FDA’s discretion. This grace period is intended to allow an orderly transition of supply to the market and to mitigate any potential related product shortage. Depending on the length of the grace period and the time it takes for subsequent applications to be approved, this may result in a period of de facto market exclusivity to the first manufacturer that has obtained an approved NDA for the previously unapproved marketed product.

Over-the-counter (OTC) products may, depending on ingredients and proposed label claims, be marketed pursuant to the OTC monograph process or could require NDA or ANDA approval. The OTC monograph process allows for OTC products to be marketed without pre-market approval and generally does not require clinical studies.

Laws and regulations impacting the pharmaceutical industry are constantly evolving. For example, the 21st Century Cures Act (Cures Act), which was signed into law on December 13, 2016, includes various provisions to accelerate the development and delivery of new treatments, such as those intended to expand the types of evidence manufacturers may submit to support FDA approval, to encourage patient-centered product development, to liberalize the communication of healthcare economic information to payers and to create greater transparency with regard to manufacturer expanded access programs. Central to the Cures Act are provisions that enhance and accelerate the FDA’s processes for reviewing and approving new products and supplements to approved NDAs. The Cures Act also included $1 billion in new funding to states to supplement opioid abuse prevention and treatment activities.

More recently, in December 2019, the Further Consolidated Appropriations Act, 2020 (FCAA 2020) became law. Section 610, titled “*Actions for Delays of Generic Drugs and Biological Products*,” provides generic (ANDA and 505(b)(2)) and biosimilar developers with a private right of action to obtain sufficient quantities of reference product from the brand manufacturer, or a generic or biosimilar manufacturer, necessary for approval of the developers’ generic or biosimilar product. If a generic or biosimilar developer is successful in its suit, the defendant manufacturer would be required to provide sufficient quantities of product on commercially-reasonable, market-based terms and may be required to pay the developer’s reasonable attorney’s fees and costs as well as financial compensation under certain circumstances. The purpose of section 610 is to promote competition by facilitating the timely entry of lower-cost generic and biosimilar products.

A sponsor of an NDA is required to identify, in its application, any patent that claims the drug or a use of the drug subject to the application. Upon NDA approval, the FDA lists these patents in a publication referred to as the Orange Book. Any person that files an ANDA or NDA under Section 505(b)(2) of the FFDCA must make a certification in respect to any listed patents for the reference drug. The FDA may not approve such an ANDA or 505(b)(2) application until expiration of the reference drug's listed patents unless (i) the applicant certifies that the listed patents are invalid, unenforceable and/or not infringed by the proposed generic drug and gives notice to the holder of the NDA for the listed drug of the basis upon which the patents are challenged and (ii) the holder of the listed drug does not sue the later applicant for patent infringement within 45 days of receipt of notice. Under the current law, if an infringement suit is filed, the FDA may not approve the later application until the earliest of: (i) 30 months after submission, (ii) entry of an appellate court judgment holding the patent invalid, unenforceable or not infringed, (iii) such time as a court may order or (iv) expiration of the patent.

One of the key motivators for challenging patents is the 180-day marketing exclusivity period granted to the developer of a generic version of a product that is the first to have its ANDA accepted for filing by the FDA and whose filing includes a certification that the applicable patent(s) are invalid, unenforceable and/or not infringed (a Paragraph IV certification) and that otherwise does not forfeit eligibility for the exclusivity. Under the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, with accompanying amendments to the Drug Price Competition and Patent Term Restoration Act (the Hatch-Waxman Act), this marketing exclusivity would begin to run upon the earlier of the commercial launch of the generic product or upon an appellate court decision in the generic company's favor or in favor of another ANDA applicant who had filed with a Paragraph IV certification and has tentative approval. In addition, the holder of the NDA for the listed drug may be entitled to certain non-patent exclusivity during which, depending on the type of exclusivity, the FDA either cannot accept or approve an application for a competing ANDA generic product or 505(b)(2) NDA product with the same active moiety for a protected condition of use.

The FDA also regulates pharmacies and outsourcing facilities that prepare "compounded" drugs pursuant to section 503A and 503B of the FFDCA, respectively. For instance, under section 503A of the FFDCA, pharmacies may compound drugs for an identified individual based on the receipt of a valid prescription order, or notation approved by the prescribing practitioner, that a compounded product is necessary for the identified patient. Similarly, under section 503B of the FFDCA, outsourcing facilities may compound drugs and sell them to healthcare providers, but not wholesalers or distributors. Although section 503A pharmacies and section 503B outsourcing facilities are subject to many regulatory requirements, compounded drugs are not subject to premarket review by the FDA and, therefore, may not have the same level of safety and efficacy as products subject to premarket review and approval by the FDA. Because they are not subject to premarket review, compounded drugs are frequently lower cost than either branded or generic products.

The FDA enforces regulations to require that the methods used in, and the facilities and controls used for, the manufacture, processing, packing and holding of drugs conform to cGMPs. The cGMP regulations the FDA enforces are comprehensive and cover all aspects of manufacturing operations. Compliance with the regulations requires a continuous commitment of time, money and effort in all operational areas.

The FDA conducts pre-approval inspections of facilities engaged in the development, manufacture, processing, packing, testing and holding of the products subject to NDAs and ANDAs and pre-license inspections of facilities engaged in similar activities for biologic products subject to BLAs. In addition, manufacturers of both pharmaceutical products and active pharmaceutical ingredients (APIs) used to formulate such products also ordinarily undergo pre-approval inspections. Failure of any facility to pass a pre-approval inspection will result in delayed approval.

Facilities that manufacture pharmaceutical or biological products must be registered with the FDA and all such products made in such facilities must be manufactured in accordance with the latest cGMP regulations. The FDA conducts periodic inspections of facilities to assess the cGMP status of marketed products. Following such inspections, the FDA could issue a Form 483 Notice of Inspectional Observations, which could require modification to certain activities identified during the inspection. If the FDA were to find serious cGMP non-compliance during such an inspection, it could take regulatory actions. The FDA also may issue an untitled letter as an initial correspondence that cites violations that do not meet the threshold of regulatory significance for a Warning Letter. FDA guidelines also provide for the issuance of Warning Letters for violations of "regulatory significance" for which the failure to adequately and promptly achieve correction may be expected to result in an enforcement action.

Imported API and other components needed to manufacture our products could be rejected by U.S. Customs. In respect to domestic establishments, the FDA could initiate product seizures or request, or in some instances require, product recalls and seek to enjoin or otherwise limit a product's manufacture and distribution. In certain circumstances, violations could support civil penalties and criminal prosecutions. In addition, if the FDA concludes that a company is not in compliance with cGMP requirements, sanctions may be imposed that include preventing that company from receiving the necessary licenses to export its products and classifying that company as an unacceptable supplier, thereby disqualifying that company from selling products to federal agencies.

Certain of our subsidiaries sell products that are “controlled substances” as defined in the CSA and implementing regulations, which establish certain security and recordkeeping requirements administered by the DEA. The DEA regulates chemical compounds as Schedule I, II, III, IV or V substances, with Schedule I substances considered to present the highest risk of substance abuse and Schedule V substances the lowest risk. The active ingredients in some of our products are listed by the DEA as Schedule II or III substances under the CSA. Consequently, their manufacture, shipment, storage, sale and use are subject to a high degree of regulation.

The DEA limits the availability of the active ingredients that are subject to the CSA used in several of our products as well as the production of these products. We or our contract manufacturing organizations must annually apply to the DEA for procurement and production quotas in order to obtain and produce these substances. As a result, our quotas may not be sufficient to meet commercial demand or complete clinical trials. Moreover, the DEA may adjust these quotas from time to time during the year, although the DEA has substantial discretion in whether or not to make such adjustments. See Item 1A. Risk Factors - “The DEA limits the availability of the active ingredients used in many of our products as well as the production of these products, and, as a result, our procurement and production quotas may not be sufficient to meet commercial demand or complete clinical trials.”

To meet its responsibilities, the DEA conducts periodic inspections of registered establishments that handle controlled substances. Annual registration is required for any facility that manufactures, tests, distributes, dispenses, imports or exports any controlled substance. The facilities must have the security, control, accounting mechanisms and monitoring systems required by the DEA to prevent loss and diversion of controlled substances and to comply with reporting obligations. Failure to maintain compliance can result in enforcement action. The DEA may seek civil penalties, refuse to renew necessary registrations or initiate proceedings to revoke or restrict those registrations or, with the U.S. Department of Justice (DOJ), seek to impose civil penalties. In certain circumstances, violations could result in criminal proceedings.

In October 2018, the U.S. Congress enacted the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act (H.R. 6). Intended to achieve sweeping reform to combat opioid abuse, H.R. 6, among other provisions, amends related laws administered by the FDA, DEA and the Centers for Medicare and Medicaid Services (CMS). Among other things, the law: (i) amends requirements related to the FDA’s authority to include packaging requirements in REMS requirements; (ii) increases civil and criminal penalties for manufacturers and distributors for failing to maintain effective controls against diversion of opioids or for failing to report suspicious opioid orders; (iii) requires the DEA to estimate the amount of opioid diversion when establishing manufacturing and procurement quotas; (iv) implements expanded anti-kickback and financial disclosure provisions; and (v) authorizes the Department of Health and Human Services to implement a demonstration program which would award grants to hospitals and emergency departments to develop, implement, enhance or study alternative pain management protocols and treatments that limit the use and prescription of opioids in emergency departments.

Individual states also regulate controlled substances and we, as well as our third-party API suppliers and manufacturers, are subject to such regulation by several states with respect to the manufacture and distribution of these products.

Government Benefit Programs

As described further in Item 1A. Risk Factors, statutory and regulatory requirements for government healthcare programs such as Medicaid, Medicare and TRICARE govern access and provider reimbursement levels, and provide for other cost-containment measures such as requiring pharmaceutical companies to pay rebates or refunds for certain sales of products reimbursed by such programs, or subjecting products to certain price ceilings. In addition to the cost-containment measures described in Item 1A. Risk Factors, sales to retail pharmacies under the TRICARE Retail Pharmacy Program are subject to certain price ceilings which require manufacturers to, among other things, pay refunds for prescriptions filled based on the applicable ceiling price limits. Beginning in the first quarter of 2017, pursuant to the Bipartisan Budget Act of 2015, manufacturers are required to pay additional rebates to state Medicaid programs if the prices of their non-innovator products rise at a rate faster than inflation (as continues to be the case for innovator products); this requirement previously existed only as to branded or innovator products and the change in law may impact our business.

The federal government may continue to pursue legislation aimed at containing or reducing payment levels for prescription pharmaceuticals paid for in whole or in part with government funds. State governments also may continue to enact similar cost containment or transparency legislation. These efforts could have material consequences for the pharmaceutical industry and the Company.

From time to time, legislative changes are made to government healthcare programs that impact our business. Congress continues to examine various Medicare and Medicaid policy proposals that may result in a downward pressure on the prices of prescription products in these programs. See Item 1A. Risk Factors - “The availability of third party reimbursement for our products is uncertain, and we may find it difficult to maintain current price levels. Additionally, the market may not accept those products for which third party reimbursement is not adequately provided.”

Under the PPACA, pharmaceutical manufacturers of branded prescription products must pay an annual fee to the federal government. Each individual pharmaceutical manufacturer must pay a prorated share of the total industry fee based on the dollar value of its branded prescription product sales to specified federal programs. The total industry fee was $4 billion for 2017, $4.1 billion for 2018 and $2.8 billion for 2019. The 2019 rate is expected to continue for future years.

Uncertainty continues to exist about the future of federal subsidies and of insurance coverage expansion as the current administration and congressional leaders continue to express interest in repealing these PPACA provisions and replacing them with alternatives that may be less costly and provide state Medicaid programs and private health plans more flexibility. The Tax Cuts and Jobs Act of 2017 (TCJA) repealed the requirement that individuals maintain health insurance coverage or face a penalty (known as the individual mandate). The removal of this provision, coupled with the threat of the repeal of other PPACA provisions, as well as the outcome of court challenges to the PPACA (including petitions for certiorari before the U.S. Supreme Court to review a December 2019 ruling in the U.S. Court of Appeals for the Fifth Circuit finding the individual mandate of the PPACA to be unconstitutional), threaten the stability of the insurance marketplace and may have consequences for the coverage and accessibility of prescription drugs.

Healthcare Fraud and Abuse Laws

We are subject to various federal, state and local laws targeting fraud and abuse in the healthcare industry, violations of which can lead to civil and criminal penalties, including fines, imprisonment and exclusion from participation in federal healthcare programs. These laws are potentially applicable to us as both a manufacturer and a supplier of products reimbursed by federal healthcare programs, and they also apply to hospitals, physicians and other potential purchasers of our products.

The federal Anti-Kickback Statute (42 U.S.C. § 1320a-7b) prohibits persons from knowingly and willfully soliciting, receiving, offering or providing remuneration, directly or indirectly, to induce either the referral of an individual, or the furnishing, recommending or arranging for a good or service, for which payment may be made under a federal healthcare program such as the Medicare and Medicaid programs. Remuneration is not defined in the federal Anti-Kickback Statute and has been broadly interpreted to include anything of value, including for example, gifts, discounts, coupons, the furnishing of supplies or equipment, credit arrangements, payments of cash, waivers of payments, ownership interests and providing anything at less than its fair market value. Under the federal Anti-Kickback Statute and the applicable criminal healthcare fraud statutes contained within 42 U.S.C. § 1320a-7b, a person or entity need not have actual knowledge of this statute or specific intent to violate it in order to have committed a violation. In addition, the government may assert that a claim, including items or services resulting from a violation of 42 U.S.C. § 1320a-7b, constitutes a false or fraudulent claim for purposes of the civil False Claims Act (discussed below) or the civil monetary penalties statute, which imposes fines against any person who is determined to have presented or caused to be presented claims to a federal healthcare program that the person knows or should know is for an item or service that was not provided as claimed or is false or fraudulent. The federal Anti-Kickback Statute and implementing regulations provide for certain exceptions for “safe harbors” for certain discounting, rebating or personal services arrangements, among other things. However, the lack of uniform court interpretation of the Anti-Kickback Statute, coupled with novel enforcement theories by government authorities, make compliance with the law difficult. Violations of the federal Anti-Kickback Statute can result in significant criminal fines, exclusion from participation in Medicare and Medicaid and follow-on civil litigation, among other things, for both entities and individuals.

In October 2019, the Office of the Inspector General of the Department of Health and Human Services issued a Proposed Rule: *Revisions to Safe Harbors under the Anti-Kickback Statute and Civil Monetary Penalty Rules Regarding Beneficiary Inducements* (October Proposed Rule) to, among other things, add new safe harbors for certain value-based arrangements. Although the value-based proposals would not include pharmaceutical manufacturers among the entities that could permissibly enter into such contracting arrangements, the general trend toward outcomes and value-based contracts in the healthcare industry may continue. It is possible that payers, among other customers, could push manufacturers for novel contracting approaches, including those that would incorporate value-based principles, and these efforts could affect our business.

The civil False Claims Act and similar state laws impose liability on any person or entity who, among other things, knowingly presents, or causes to be presented, a false or fraudulent claim for payment by a federal healthcare program. The *qui tam* provisions of the False Claims Act and similar state laws allow a private individual to bring civil actions on behalf of the federal or state government and to share in any monetary recovery. The Federal Physician Payments Sunshine Act and similar state laws impose reporting requirements for various types of payments to physicians and teaching hospitals. Failure to comply with reporting requirements under these laws could subject manufacturers and others to substantial civil money penalties. In addition, government entities and private litigants have asserted claims under state consumer protection statutes against pharmaceutical and medical device companies for alleged false or misleading statements in connection with the marketing, promotion and/or sale of pharmaceutical and medical device products, including state investigations of the Company regarding vaginal mesh devices previously sold by certain of our operating subsidiaries and investigations and litigation by certain government entities regarding the prior promotional practices of certain of our operating subsidiaries with respect to opioid products.

International Regulations

Through our international operations, the Company is subject to laws and regulations that differ from those under which the Company operates in the U.S. In most cases, non-U.S. regulatory agencies evaluate and monitor the safety, efficacy and quality of pharmaceutical products, govern the approval of clinical trials and product registrations and regulate pricing and reimbursement. Certain international markets have differing product preferences and requirements and operate in an environment of government-mandated, cost-containment programs, including price controls, such as the Patented Medicine Prices Review Board (PMPRB) in Canada.

In Canada, amendments to the *Patented Medicines Regulations (Regulations Amending the Patented Medicines Regulations (Additional Factors and Information Reporting Requirements))* (the Amendments) will come into force on July 1, 2020 and will introduce a number of changes to the regulation of Canadian drug prices by the PMPRB. The PMPRB is an administrative board established by the *Patent Act, RSC 1985, c P-4*, with a mandate to protect Canadians from excessive pricing. Pharmaceutical manufacturers that are "patentees" are required to report applicable patents and file sales information so the PMPRB can monitor for excessive pricing as long as the product is considered to be a patented medicine. If it is determined the average price for a patented medicine is too high based on pricing tests developed by the PMPRB, a payment must be made to the PMPRB to offset the excessive revenues that were generated, and/or the price of the medicine must be reduced. The PMPRB's authority to regulate the price of a product is linked to patent protection, specifically when there is a patent to an invention that is "intended or capable of being used for medicine or for the preparation or production of medicine" (*Patent Act, Section 79(2)*).

For patented medicines approved by Health Canada after August 21, 2019 (the date of publication of the Amendments), the Amendments will allow PMPRB to consider additional factors when assessing whether a price is excessive: pharmacoeconomic value of the medicine in Canada, the size of the market for the medicine in Canada and the gross domestic product (GDP) and GDP per capita of Canada. For all patented medicines (regardless of the date of marketing authorization), the Amendments change the set of countries that the PMPRB uses for international price comparisons when assessing whether the Canadian price is excessive. Under the current regulations, the price of a Canadian medicine is compared to the price of that medicine in seven other counties, including the U.S. and Switzerland. The Amendments define a new set of eleven comparator countries, and the U.S. and Switzerland are no longer part of this basket. The implementation of the new set of comparator counties is expected to cause a decrease to permissible ceiling prices in Canada. Based on draft guidelines published by the PMPRB in November 2019 (currently under consultation), the ceiling price for a medicine is expected to be established as the median international list price of the eleven comparator countries for most patented medicines. According to the Regulatory Impact Analysis Statement that accompanied the publication of the Amendments in the Canada Gazette Part II, the Canadian government anticipates that Amendments will result in lower prices for patented medicines and an estimated benefit to Canadians of 8.8 billion Canadian dollars (present value) over 10 years.

Certain governments have placed restrictions on physician prescription levels and patient reimbursements, emphasized greater use of generic products and enacted across-the-board price cuts as methods of cost control.

Whether or not FDA approval has been obtained for a product, approval of the product by comparable regulatory authorities of other governments must be obtained prior to marketing the product in those jurisdictions. The approval process may be more or less rigorous than the U.S. process and the time required for approval may be longer or shorter than in the U.S.

Service Agreements

We contract with various third parties to provide certain critical services including manufacturing, supply, warehousing, distribution, customer service, certain financial functions, certain R&D activities and medical affairs, among others.

Refer to Note 11. License and Collaboration Agreements and Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report for additional information.

We primarily purchase our raw materials for the production and development of our products in the open market from third party suppliers. We attempt, when possible, to mitigate our raw material supply risks through inventory management and alternative sourcing strategies. However, some raw materials are only available from one source. We are required to identify the suppliers of all raw materials for our products in the drug applications that we file with the FDA. If the raw materials from an approved supplier for a particular product become unavailable, we would be required to qualify a substitute supplier with the FDA, which would likely interrupt manufacturing of the affected product. See Item 1A. Risk Factors for further discussion on the risks associated with the sourcing of our raw materials.

License & Collaboration Agreements and Acquisitions

We continue to seek to enhance our product line and develop a balanced portfolio of differentiated products through product acquisitions and in-licensing or acquiring licenses to products, compounds and technologies from third parties. The Company enters into strategic alliances and collaborative arrangements with third parties, which give the Company rights to develop, manufacture, market and/or sell pharmaceutical products, the rights to which are primarily owned by these third parties. These alliances and arrangements can take many forms, including licensing arrangements, co-development and co-marketing agreements, co-promotion arrangements, research collaborations and joint ventures. Such alliances and arrangements enable us to share the risk of incurring all R&D expenses that do not lead to revenue-generating products; however, because profits from alliance products are shared with the counter-parties to the collaborative arrangement, the gross margins on alliance products are generally lower, sometimes substantially so, than the gross margins that could be achieved had the Company not opted for a development partner. Refer to Note 11. License and Collaboration Agreements in the Consolidated Financial Statements included in Part IV, Item 15 of this report for additional information.

Environmental Matters

Our operations are subject to substantial federal, state and local environmental laws and regulations concerning, among other matters, the generation, handling, storage, transportation, treatment and disposal of, and exposure to, hazardous substances. Violation of these laws and regulations, which may change, can lead to substantial fines and penalties. Many of our operations require environmental permits and controls to prevent and limit pollution of the environment. We believe that our facilities and the facilities of our third party service providers are in substantial compliance with applicable environmental laws and regulations and we do not believe that future compliance will have a material adverse effect on our business, financial condition, results of operations or cash flows.

Employees

As of February 18, 2020, we have 3,172 employees, of which 365 are engaged in R&D and regulatory work, 400 in sales and marketing, 1,243 in manufacturing, 636 in quality assurance and 528 in general and administrative capacities. With the exception of certain production personnel in our Rochester, Michigan manufacturing facility, our employees are generally not represented by unions. We believe that our relations with our employees are good.

Information about our Executive Officers

The following table sets forth, as of February 26, 2020, information about our executive officers:

Name	Age	Position and Offices
Paul V. Campanelli (1)	57	President, Chief Executive Officer and Chairman of the Board
Patrick Barry	52	Executive Vice President and Chief Commercial Officer, U.S. Branded Business
Domenico Ciarico	47	Executive Vice President and Chief Commercial Officer, Sterile and Generics
Blaise Coleman (1)	46	Executive Vice President and Chief Financial Officer
Terrance J. Coughlin	54	Executive Vice President and Chief Operating Officer
Rahul Garella	50	Executive Vice President, International Pharmaceuticals
Matthew J. Maletta	48	Executive Vice President and Chief Legal Officer

(1) On November 4, 2019, Mr. Paul V. Campanelli notified the board of directors (the Board) of his intention to retire as the Company's President and Chief Executive Officer. The Board appointed Mr. Campanelli as the Chairman of the Board on November 4, 2019. On February 19, 2020, the Board appointed Mr. Blaise Coleman as the Company's President and Chief Executive Officer and Mr. Mark Bradley, Senior Vice President, Corporate Development & Treasurer, as the Company's Executive Vice President and Chief Financial Officer. Both appointments are effective March 6, 2020 and Mr. Campanelli and Mr. Coleman will continue to serve in their current roles until such date.

Paul V. Campanelli was appointed Chairman of the Board of Endo in November 2019 and has served as Director, Chief Executive Officer and President since September 2016. Mr. Campanelli joined Endo in 2015 as the President of Par Pharmaceutical, leading Endo's fully integrated U.S. Generics business, following Endo's acquisition of Par Pharmaceutical. Prior to joining Endo, he served as Chief Executive Officer of Par Pharmaceutical Companies, Inc. following the company's September 2012 acquisition by TPG. Prior to the TPG acquisition, Mr. Campanelli served as Chief Operating Officer and President of Par Pharmaceutical, Inc. from 2010 to 2012. At Par Pharmaceutical, Inc., Mr. Campanelli had also served as Senior Vice President, Business Development & Licensing; Executive Vice President and President; and was named a Corporate Officer by its board of directors. He also served on the board of directors of Sky Growth Holdings Corporation from 2012 until 2015. Prior to joining Par Pharmaceutical Companies, Inc., Mr. Campanelli served as Vice President, Business Development at Dr. Reddy's Laboratories Ltd., where he was employed from 1992 to 2001. Mr. Campanelli earned his Bachelor of Science degree from Springfield College.

Patrick Barry was appointed Executive Vice President and Chief Commercial Officer, U.S. Branded Business, effective February 2018. In this role, he has responsibility for all commercial activities for U.S. Branded Pharmaceuticals, including strategy, new product planning, marketing, sales as well as managed care and patient access responsibilities. Mr. Barry joined Endo in December 2016 as Senior Vice President, U.S. Branded Pharmaceuticals. Prior to joining Endo, Mr. Barry worked at Sanofi S.A. from 1992 until December 2016, holding roles of increasing responsibility in areas such as Sales Leadership, Commercial Operations, Marketing, Launch Planning and Training and Leadership Development. Most recently, he served at Sanofi S.A. as its General Manager and Head of North America General Medicines starting in September 2015 and as Vice President and Head of U.S. Specialty from April 2014 until August 2015. During this time, Mr. Barry oversaw three complex and diverse businesses with responsibility for leading sales and marketing activities for branded and generic products across the U.S. and Canada. He has a diverse therapeutic experience including aesthetics and dermatology, oncology, urology, orthopedics and medical device and surgical experience. He has an M.B.A. from Cornell University, Johnson School of Management and a B.A. in Public Relations and Marketing from McKendree University.

Domenico Ciarico was appointed Executive Vice President and Chief Commercial Officer, Sterile and Generics, effective August 2019. In this role, Mr. Ciarico leads Endo's U.S. Generics business including responsibility and oversight of Par Generic and Par Sterile sales teams, commercial operations, marketing and business analytics group. Mr. Ciarico joined Par in July 2018 as SVP and General Manager of Par Sterile Products, responsible for all sales, marketing, pricing and portfolio management for Par Sterile Products. Prior to joining Endo in 2018, Mr. Ciarico was with AmerisourceBergen Corporation (ABC) for over 20 years from May 1996 to July 2017 where he held several roles of increasing responsibility, including SVP of Health Systems, leading health systems sales and commercial strategy. Prior to that, Mr. Ciarico was Group Vice President, managing three of ABC's service businesses: American Health Packaging, Pharmacy Healthcare Solutions and AmerisourceBergen Technology Group, as well as other key leadership positions in operations and sales. Mr. Ciarico holds an M.B.A. and a B.S. degree from The Ohio State University.

Blaise Coleman was appointed Executive Vice President and Chief Financial Officer, effective December 2016. Mr. Coleman had been serving as Endo's Interim Chief Financial Officer since November 2016. He joined Endo in January 2015 as Vice President of Corporate Financial Planning & Analysis, and was then promoted to Senior Vice President, Global Finance Operations in November 2015. Prior to joining Endo, Mr. Coleman held numerous finance leadership roles with AstraZeneca, most recently having served as the Chief Financial Officer of the AstraZeneca/Bristol-Myers Squibb US Diabetes Alliance from January 2013 until January 2015. Prior to that, he was the Head of Finance for the AstraZeneca Global Medicines Development organization based in Mölndal, Sweden. Mr. Coleman joined AstraZeneca in 2007 as Senior Director Commercial Finance for the US Cardiovascular Business. He joined AstraZeneca from Centocor, a wholly-owned subsidiary of Johnson & Johnson, where he held positions in both the Licenses & Acquisitions and Commercial Finance organizations. Mr. Coleman's move to Centocor in early 2003 followed 7 years' experience with the global public accounting firm, PricewaterhouseCoopers LLP. Mr. Coleman is a Certified Public Accountant; he holds a Bachelor of Science degree in accounting from Widener University and an M.B.A. from the Fuqua School of Business at Duke University.

Terrance J. Coughlin was appointed Executive Vice President and Chief Operating Officer, effective November 2016. In this role, Mr. Coughlin has responsibility for Manufacturing and Technical Operations and R&D across the enterprise. Most recently, Mr. Coughlin served as Vice President, Operations of Par Pharmaceutical Companies, Inc., a subsidiary of Endo. Prior to Endo's acquisition of Par in September 2015, Mr. Coughlin was the Chief Operating Officer of Par Pharmaceutical Companies, Inc. Prior to joining Par, Mr. Coughlin held numerous leadership roles with Glenmark Generics, Inc. USA/Glenmark Generics Limited, most recently having served as the President and Chief Executive Officer of Glenmark Generics, Inc. USA/Glenmark Generics Limited. Prior to this, Mr. Coughlin had the overall responsibility for Glenmark's North American, Western European and Eastern European generics businesses, as well as its global active pharmaceutical ingredient business and generics operations in India. Prior to joining Glenmark, Mr. Coughlin served as Senior Vice President at Dr. Reddy's Laboratories, Inc. Mr. Coughlin began his career in 1988 with Wyckoff Chemical Company, Inc. Mr. Coughlin earned a B.S. in chemistry from Central Michigan University.

Rahul Garella was appointed Executive Vice President, International Pharmaceuticals, effective August 2019. In this role, he has responsibility for the overall strategic management, operations and commercial leadership of the International Pharmaceuticals business, which includes Paladin Labs, Canada and Global partnerships in the international markets. Mr. Garella joined Endo in 2014 as Senior Vice President. Mr. Garella has over 23 years' experience in the pharmaceutical industry across branded and generic pharmaceuticals and APIs with international experience across the European, Asian and Latin America markets. Prior to joining Endo, Mr. Garella served as the Senior Vice President for Glenmark Pharmaceuticals Europe Limited responsible for building and managing their Western European business from 2008 until 2014 and their European and Latin American API business from 2005 until 2008. Previously, he worked with Ranbaxy in their Asia-Pacific division and Orchid Chemicals & Pharmaceuticals. He holds a Master of Business Administration (PGDBM) from the Institute of Management Technology, India as well as a Bachelor degree in Electrical Engineering from the Faculty of Engineering, Jamia Millia, New Delhi, India.

Matthew J. Maletta was appointed Executive Vice President and Chief Legal Officer, effective May 2015, and has global responsibility for all legal matters affecting the Company. Prior to joining Endo in 2015, Mr. Maletta served as Vice President, Associate General Counsel and Corporate Secretary of Allergan. In this position, he served as an advisor to the Chief Executive Officer and Board of Directors and supervised several large transactions, including the $70 billion acquisition of Allergan by Actavis in 2015. Mr. Maletta also played a key role defending Allergan from an unsolicited takeover bid by Valeant Pharmaceuticals and Pershing Square Capital Management in 2014. Mr. Maletta joined Allergan in 2002 and during his tenure, held roles of increased responsibility, including serving as the lead commercial attorney for Allergan's aesthetics businesses for several years and as Head of Human Resources in 2010. Prior to joining Allergan, Mr. Maletta was in private practice, focusing on general corporate matters, finance, governance, securities and transactions. He holds a B.A. degree in political science from the University of Minnesota, summa cum laude and Phi Beta Kappa, and a J.D. degree, cum laude, from the University of Minnesota Law School.

We have employment agreements with each of our executive officers.

Available Information

Our internet address is www.endo.com. The contents of our website are not part of this Annual Report on Form 10-K and our internet address is included in this document as an inactive textual reference only. We make our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy reports and all amendments to those reports available free of charge on our website as soon as reasonably practicable after we file such reports with, or furnish such reports to, the SEC.

You can access our filings through the SEC's internet site: www.sec.gov *(intended to be an inactive textual reference only).*

You may also access copies of the Company's filings with the Canadian Securities Administrators on SEDAR through their internet site: www.sedar.com *(intended to be an inactive textual reference only).*

Item 1A. ***Risk Factors***

We operate in a highly competitive industry.

The pharmaceutical industry is intensely competitive and we face competition in both our U.S. and international branded and generic pharmaceutical business. Competitive factors include, without limitation, product development, technological innovation, safety, efficacy, commercialization, marketing, promotion, product quality, price, cost-effectiveness, reputation, service, patient convenience and access to scientific and technical information. Many of our competitors have, and future competitors may have, greater resources than we do and we cannot predict with certainty the timing or impact of competitors' products and commercialization strategies. Furthermore, recent trends in this industry include market consolidation, which may further concentrate financial, technical and market strength and increase competitive pressure in the industry. It is possible that our competitors may make greater R&D investments and have more efficient or superior processes and systems and more experience in the development of new products that permit them to respond more quickly to new or emerging technologies and changes in customer demand which may make our products or technologies uncompetitive or obsolete. Furthermore, academic institutions, government agencies and other public and private organizations conducting research may seek patent protection and may establish collaborative arrangements for competitive products or programs. If we fail to compete successfully, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Many of our branded products do not currently compete with on-market generic products but are likely to face generic competition in the future. While the entrance of generic competitors could occur at any time and cannot be predicted with certainty, generic competition often follows shortly after the loss of patent protection. See "Patents, Trademarks, Licenses and Proprietary Property" in Part 1, Item 1 of this report "Business" for additional information. Similarly, generic products we currently sell with generic exclusivity could in the future be subject to competition from other generic competitors. Some of our other products, including both branded and generic products, already face generic competition. For these products, we face the risk of additional generic competitors entering the market. Manufacturers of generic products typically invest far less in R&D than research-based companies. Additionally, generic competitors, including Asian or other overseas generic competitors, may be able to produce products at costs lower than us. For these reasons, competitors may be able to price their products lower than we can, and such differences could be material. Due to lower prices, generic versions, where available, may be substituted by pharmacies or required in preference to branded versions under third-party reimbursement programs. As a result, generic competition could have a material adverse effect on our business, financial condition, results of operations and cash flows. Legislation encouraging early and rapid approval of generic drugs could also increase the degree of generic competition we face. See the risk factor "If other pharmaceutical companies use litigation and regulatory means to obtain approval for generic, over-the-counter or other competing versions of our drugs, our sales may suffer" for more information.

In addition, our generics business faces competition from brand-name pharmaceutical companies, which have taken and may continue to take aggressive steps to thwart or delay competition from generic equivalents of their brand-name products, including bringing litigation alleging patent infringement or other violations of intellectual property rights. The actions taken by competing brand-name pharmaceutical companies may increase the costs and risks associated with our efforts to introduce generic products and may delay or prevent such introduction altogether. For example, if a brand-name pharmaceutical company's patent was held to be valid and infringed by our generic products in a particular jurisdiction, we would be required to either obtain a license from the patent holder or delay or cease the manufacture and sale of such generic product. Any of these factors could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our sales may also suffer as a result of changes in consumer demand for our products, including as a result of fluctuations in consumer buying patterns, changes in market conditions or actions taken by our competitors, including the introduction of new products or price reductions for existing products. Any of these factors could have a material adverse effect on our business, financial condition, results of operations and cash flows.

If other pharmaceutical companies use litigation and regulatory means to obtain approval for generic, over-the-counter or other competing versions of our drugs, our sales may suffer.

Various manufacturers have filed ANDAs seeking FDA approval for generic versions of certain of our key pharmaceutical products including, but not limited to, LIDODERM®, VASOSTRICT®, ADRENALIN® and AVEED®. In connection with such filings, these manufacturers have challenged the validity and/or enforceability of one or more of the underlying patents protecting our products. In the case of LIDODERM®, we no longer have patent protection in the markets where we sell these products. Our revenues from LIDODERM® have been negatively affected by multiple competing generic versions of LIDODERM®. We anticipate that these revenues could decrease further should one or more additional generic versions of LIDODERM® launch.

Additionally, in early 2019, we received notice from a competing pharmaceutical company that manufactures one of our products of its intent to seek approval to launch a competing OTC version of such product. We cannot predict whether this, or any other manufacturer, will take similar actions with respect to other products. Any launch of competing OTC versions of any of our products could decrease the revenue of such products, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our practice is to vigorously defend and pursue all available legal and regulatory avenues in defense of the intellectual property rights protecting our products. Despite our efforts, litigation is inherently uncertain, and we cannot predict the timing or outcome of our efforts. If we are not successful in defending our intellectual property rights or opt to settle, or if a product's marketing or data exclusivity rights expire or become otherwise unenforceable, our competitors could ultimately launch generic, biosimilar, OTC or other competing versions of our products. Upon the loss or expiration of patent protection for one of our products, or upon the "at-risk" launch (despite pending patent infringement litigation against the generic product) by a generic manufacturer of a generic version of one of our patented products, our sales and revenues of the affected products would likely decline rapidly and materially, which could require us to write off a portion or all of the intangible assets associated with the affected product and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In the case of VASOSTRICT®, beginning in April 2018, Par Sterile Products, LLC (PSP LLC) and Par Pharmaceutical, Inc. (PPI) received notice letters from Eagle Pharmaceuticals, Inc. (Eagle), Sandoz, Inc., Amphastar Pharmaceuticals, Inc., Amneal Pharmaceuticals, LLC, American Regent and Fresenius advising of the filing by such companies of ANDAs for generic versions of VASOSTRICT® (vasopressin IV solution (infusion)). The Paragraph IV notices refer to patents that we have listed in the Orange Book covering either vasopressin-containing pharmaceutical compositions or methods of using a vasopressin-containing dosage form to increase blood pressure in humans. Beginning in May 2018, PPI, PSP LLC and Endo Par Innovation Company, LLC (EPIC) filed lawsuits against the companies in the U.S. District Court for the District of Delaware and New Jersey within the 45-day deadline to invoke a 30-month stay of FDA approval pursuant to the Hatch-Waxman legislative framework. We intend to pursue all available legal, business and regulatory avenues in defense of VASOSTRICT®, including enforcement of our intellectual property rights. However, there can be no assurance that we will be successful. If a generic version of VASOSTRICT® were introduced to the market, our revenues from VASOSTRICT® would decrease significantly and, depending on the timing of such introduction and its effect on VASOSTRICT® pricing, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

There are currently ongoing legal proceedings brought by us and/or our subsidiaries and, in certain cases, our third party partners, against manufacturers seeking FDA approval for generic versions of our products. For a description of the material related legal proceedings, see Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

We also believe it is likely that manufacturers may seek FDA approvals for generic, OTC or other competing versions of other of our key pharmaceutical products, either through the filing of ANDAs, through the OTC monograph process or through the use of other means. We cannot determine what effect section 610 of the FCAA 2020 may have on manufacturers developing generic, OTC or other competing versions of our products.

If pharmacies or outsourcing facilities produce compounded versions of our products, our sales may suffer.

Compounded drugs do not typically require the same R&D investments as either branded or generic drugs and, therefore, can compete favorably on price with both branded and generic versions of a drug. See "Governmental Regulation" in Part I, Item 1. While we have successfully challenged an FDA interim policy that would have permitted the compounding of vasopressin, the active ingredient in VASOSTRICT®, the introduction of compounded versions of our products by pharmacies or outsourcing facilities could have a material adverse effect on our business, financial condition, results of operations and cash flows.

If we fail to successfully identify and develop additional branded and generic pharmaceutical products, obtain and maintain exclusive marketing rights for our branded and generic products or fail to introduce branded and generic products on a timely basis, our revenues, gross margin and operating results may decline.

Our financial results depend, to a significant extent, upon our ability, and the ability of our partners, to identify, develop, obtain regulatory approval for, launch and commercialize a pipeline of commercially successful branded and generic products, including first-to-file or first-to-market opportunities. Due to the significant competition we face and the importance of being the first (or one of the first) to market, no assurances can be given that we will be able to develop, introduce and maintain commercially successful products in the future. For example, in the case of colchicine tablets, the authorized generic of Takeda's Colcrys®, we could face competition from Mylan and other manufacturers. In November 2019, Mylan launched its generic version of Colcrys® but agreed to temporarily suspend its sales pending the outcome of preliminary injunction proceedings in the litigation by Takeda against Mylan. If Mylan or other manufacturers enter the market, our revenues from colchicine tablets could decrease significantly, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Identifying and developing additional product candidates are prone to risks of failure inherent in product development. We conduct R&D to enable us to manufacture and market pharmaceutical products in accordance with specific government regulations. Much of our product development effort is focused on technically difficult-to-formulate products and/or products that require advanced manufacturing technology. Typically, expenses related to research, development and regulatory approval of compounds for our branded products are significantly greater than those expenses associated with generic products. Should we expand our R&D efforts, our research expenses are likely to increase. Because of the inherent risk associated with R&D efforts in the healthcare industry, particularly with respect to new products, our R&D expenditures may not result in the successful regulatory approval and introduction of new products and failure in the development of any new product can occur at any point in the process, including late in the process after substantial investment. Also, after we submit a regulatory application, the relevant governmental health authority may require that we conduct additional studies, including, for example, studies to assess the product's interaction with alcohol. As a result, we may be unable to reasonably predict the total R&D costs to develop a particular product and there is a significant risk that the funds we invest in R&D will not generate financial returns. In addition, our operating results and financial condition may fluctuate as the amount we spend to research and develop, commercialize, acquire or license new products, technologies and businesses changes.

The process of developing and obtaining regulatory approvals for new products is time-consuming, costly and inherently unpredictable. Even if we are able to identify and develop additional product candidates, we may fail to obtain exclusive marketing rights, such as the 180-day ANDA first-filer marketing exclusivity period provided for in the Hatch-Waxman amendments to the FFDCA or the 180-day exclusivity for competitive generic therapies (CGTs) established by the FDA Reauthorization Act of 2017, for such product candidates. Even if we were to secure such exclusivities, risks associated with securing timely approval, as well as risks of unfavorable litigation dispositions, put such exclusivities at risk of being forfeited. The approval of our ANDAs may also be stayed by the FDA for up to 30 months if such ANDAs become the subject of patent litigation. Even where we are awarded marketing exclusivity, we may be required to share our exclusivity period with other ANDA applicants or with authorized generics that are not prohibited from sale during the 180-day marketing exclusivity period. Our revenues have historically included sales of generic products with limited competition resulting from marketing exclusivity or other factors, and the failure to timely and effectively file any NDA, ANDA, BLA or Supplemental Biologics License Application (sBLA) with the FDA or similar filings with other regulatory agencies, or to partner with parties that have obtained marketing exclusivity, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Furthermore, the successful commercialization of a product is subject to a number of factors, including:

- the effectiveness, ease of use and safety of our products as compared to existing products;
- customer demand and the willingness of physicians and customers to adopt our products over products with which they may have more loyalty or familiarity and overcoming any biases towards competitors' products or against our products;
- the cost of our products compared to alternative products and the pricing and commercialization strategies of our competitors;
- the success of our launch and marketing efforts;
- adverse publicity about us, our products, our competitors and their products or the industry as a whole or favorable publicity about competitors or their products;
- the advent of new and innovative alternative products;

- any unforeseen issues or adverse developments in connection with our products and any resulting litigation, regulatory scrutiny and/or harm to our reputation; and
- other risks that may be out of our control, including the decision by a collaboration partner to make substantial changes to a product's formulation or design, or a collaboration partner refusing to perform its obligations under our collaboration agreement, which may cause delays and additional costs in developing and marketing a product.

We have been, continue to be and may be the subject of lawsuits, product liability claims, other significant legal proceedings, government investigations or product recalls.

Our business exposes us to significant potential risks from lawsuits, product liability claims, other significant legal proceedings, government investigations or product recalls, including, but not limited to, such matters associated with the testing, manufacturing, marketing and sale of our products. Some plaintiffs have received substantial damage awards or settlements against healthcare companies based upon various legal theories, including without limitation claims for injuries allegedly caused by the use of their products. We have been, continue to be and may be subject to various product liability cases, as well as other significant legal proceedings and government investigations.

For example, we, along with other manufacturers of prescription opioid medications, as well as distributors and other sellers of such medications, are the subject of lawsuits and have received subpoenas and other requests for information from various federal, state and local government agencies regarding the sale, marketing and/or distribution of prescription opioid medications. Numerous claims against opioid manufacturers, including us, have been and may continue to be filed by or on behalf of states, counties, cities, Native American tribes, other government-related persons or entities, hospitals, health systems, unions, health and welfare funds, other third-party payers and/or individuals. See Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report for more information. In these cases, plaintiffs seek various remedies, including without limitation declaratory and/or injunctive relief; compensatory, punitive and/or treble damages; restitution, disgorgement, civil penalties, abatement, attorneys' fees, costs and/or other relief. Settlement demands may seek significant monetary and other remedies, or otherwise be on terms that we do not consider reasonable under the circumstances. Awards against and settlements by our competitors could also incentivize parties to bring additional claims against us. In addition to the risks of direct expenditures for defense costs, settlements and/or judgments in connection with these claims, proceedings and investigations, there is a possibility of loss of revenues, injunctions and disruption of business. Furthermore, we and other manufacturers of prescription opioid medications have been, and will likely continue to be, subject to negative publicity and press, which could harm our brand and the demand for our products. In addition, current or future regulatory and legislative proposals could impact us and other manufacturers of prescription opioid medications. See the risk factor "Our business and financial condition may be adversely affected by legislation" for more information.

Our current and former products may cause or appear to cause serious adverse side effects or potentially dangerous drug interactions if misused or improperly prescribed or as a result of faulty surgical technique. For example, we and certain other manufacturers have been named as defendants in multiple lawsuits in various federal and state courts alleging personal injury resulting from use of transvaginal surgical mesh products designed to treat pelvic organ prolapse (POP) and stress urinary incontinence (SUI). The FDA held a public advisory committee meeting in February 2019 during which the members of the Obstetrics and Gynecology Devices Panel of the Medical Devices Advisory Committee discussed and made recommendations regarding the safety and effectiveness of surgical mesh to treat POP. In April 2019, following the meeting, the FDA ordered that the manufacturers of all remaining surgical mesh products indicated for the transvaginal repair of POP cease selling and distributing their products in the U.S. effective immediately. Although we have not sold transvaginal surgical mesh products since March 2016, it is possible that the FDA's order and any additional FDA actions based on the outcome of the advisory committee meeting could result in additional litigation against the Company. See Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report for more information.

Any failure to effectively identify, analyze, report and protect adverse event data and/or to fully comply with relevant laws, rules and regulations around adverse event reporting could expose the Company to legal proceedings, penalties, fines and/or reputational damage.

In addition, in the age of social media, plaintiffs' attorneys have a wide variety of tools to advertise their services and solicit new clients for litigation, including using judgments and settlements obtained in litigation against us or other pharmaceutical companies as an advertising tool. For these or other reasons, any significant product liability or mass tort litigation in which we are a defendant could have a larger number of plaintiffs than such actions have seen historically and we could also see an increase in the number of cases filed against us because of the increasing use of widespread and media-varied advertising. Furthermore, a ruling against other pharmaceutical companies in product liability or mass tort litigation in which we are not a defendant could have a negative impact on pending litigation where we are a defendant.

In addition, in certain circumstances, such as in the case of products that do not meet approved specifications or for which subsequent data demonstrate such products may be unsafe, ineffective or misused, it may be necessary for us to initiate voluntary or mandatory recalls or withdraw such products from the market. Any such recall or withdrawal could result in adverse publicity, costs connected to the recall and loss of revenue. Adverse publicity could also result in an increased number of additional product liability claims, whether or not these claims have a basis in scientific fact. See the risk factor "Public concern around the abuse of opioids or other products, including without limitation law enforcement concerns over diversion or marketing practices, regulatory efforts to combat abuse, and litigation could result in costs to our business" for more information.

If we are found liable in any lawsuits, including product liability claims or actions related to our sales, marketing or pricing practices or the sale, marketing and/or distribution of prescription opioid medications, or if we are subject to government investigations or product recalls, it could result in the imposition of damages, including punitive damages, fines, reputational harm, civil lawsuits, criminal penalties, interruptions of business, modification of business practices, equitable remedies and other sanctions against us or our personnel as well as significant legal and other costs. We may also voluntarily settle cases even if we believe that we have meritorious defenses because of the significant legal and other costs that may be required to defend such actions. Any judgments, claims, settlements and related costs could be well in excess of any applicable insurance. As a result, we may experience significant negative impacts on our operations. To satisfy judgments or settlements, we also may need to seek financing, which may not be available on terms acceptable to us, or at all, when required. Judgments also could cause defaults under our debt agreements and/or restrictions on our product use and we could incur losses as a result. Any of the risks above could have a material adverse effect on our business, financial condition, results of operations and cash flows.

The occurrence or possibility of any such result may cause us to pursue one or more significant corporate transactions as well as other remedial measures, including internal reorganizations, restructuring activities, strategic corporate alignments, cost-saving initiatives or asset sales. See the risk factor "Our ability to fund our operations, maintain liquidity and meet our financing obligations is reliant on our operations, which are subject to significant risks and uncertainties" for more information. Likewise, any internal reorganizations, restructuring activities, strategic corporate alignments, cost-saving initiatives or asset sales may be complex, could entail significant costs and charges or could otherwise negatively impact shareholder value and there can be no assurance that we will be able to accomplish any of these alternatives on terms acceptable to us, or at all, or that they will result in their intended benefits.

See Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report for further discussion of the foregoing and other material legal proceedings.

We may not have and may be unable to obtain or maintain insurance adequate to cover potential liabilities.

We may not have and may be unable to obtain or maintain in the future insurance on acceptable terms or with adequate coverage against potential liabilities or other losses, such as the cost of a recall, if any claim is brought against us, regardless of the success or failure of the claim. For example, we generally no longer have product liability insurance to cover the claims in connection with the mesh-related litigation described above. Additionally, we may be limited by the surviving insurance policies of our acquired subsidiaries, which may not be adequate to cover against potential liabilities or other losses. Even where claims are submitted to insurance carriers for defense and indemnity, there can be no assurance that the claims will be fully covered by insurance or that the indemnitors or insurers will remain financially viable. The failure to generate sufficient cash flow or to obtain other financing could affect our ability to pay the amounts due under those liabilities not covered by insurance.

Our ability to fund our operations, maintain liquidity and meet our financing obligations is reliant on our operations, which are subject to significant risks and uncertainties.

We rely on cash from operations as well as access to the financial markets to fund our operations, maintain liquidity and meet our financial obligations. Our operations are subject to many significant risks and uncertainties described in this "Risk Factors" section, including those related to generic competition and legal challenges that could impact our key products, including VASOSTRICT®, outstanding and future legal proceedings and governmental investigations, including those related to our sale, marketing and/or distribution of prescription opioid medications, and others. Any negative development or outcome in connection with any or all of these risks and uncertainties could result in significant consequences, including one or more of the following:

- causing a substantial portion of our cash flows from operations to be dedicated to the payment of legal or related expenses and therefore unavailable for other purposes, including the payment of principal and interest on our indebtedness, our operations, capital expenditures and future business opportunities;
- limiting our ability to adjust to changing market conditions, causing us to be more vulnerable to periods of negative or slow growth in the general economy or in our business, causing us to be unable to carry out capital spending that is important to our growth and placing us at a competitive disadvantage;
- limiting our ability to attract and retain key personnel;

- causing us to be unable to maintain compliance with or making it more difficult for us to satisfy our financial obligations under certain of our outstanding debt obligations, causing a downgrade of our debt and long-term corporate ratings (which could increase our cost of capital) and exposing us to potential events of default (if not cured or waived) under financial and operating covenants contained in our or our subsidiaries' outstanding indebtedness;
- limiting our ability to incur additional borrowings under the covenants in our then-existing facilities or to obtain additional debt or equity financing for working capital, capital expenditures, business development, debt service requirements, acquisitions or general corporate or other purposes, or to refinance our indebtedness; and/or
- otherwise causing us to be unable to fund our operations and liquidity needs, such as future capital expenditures and payment of our indebtedness.

The occurrence or possibility of one or more of these or similar events may cause us to pursue one or more significant corporate transactions as well as other remedial measures, including refinancing all or part of our then-existing indebtedness, selling assets, reducing or delaying capital expenditures, seeking to raise additional capital or pursuing one or more internal reorganizations, restructuring activities, strategic corporate alignments, cost-saving initiatives or asset sales. Any refinancing of our substantial indebtedness could be at significantly higher interest rates, which will depend on the conditions of the markets and our financial condition at such time, and may require us to comply with more onerous covenants, which could further restrict our business operations. Any refinancing may also increase the amount of our secured indebtedness. In addition, the terms of existing or future debt agreements may restrict us from adopting any of these alternatives. Likewise, any internal reorganizations, restructuring activities, strategic corporate alignments, cost-saving initiatives or asset sales may be complex, could entail significant costs and charges or could otherwise negatively impact shareholder value and there can be no assurance that we will be able to accomplish any of these alternatives on terms acceptable to us, or at all, or that they will result in their intended benefits.

Our ability to protect and maintain our proprietary and licensed third party technology, which is vital to our business, is uncertain.

Our success, competitive position and future income will depend in part on our ability, and the ability of our partners and suppliers, to obtain and protect patent and other intellectual property rights relating to our current and future technologies, processes and products. The degree of protection any patents will afford is uncertain, including whether the protection obtained will be of sufficient breadth and degree to protect our commercial interests in all the jurisdictions where we conduct business. That is, the issuance of a patent is not conclusive as to its claimed scope, validity or enforceability. Patent rights may be challenged, revoked, invalidated, infringed or circumvented by third parties. For example, if an invention qualifies as a joint invention, the joint inventor may have intellectual property rights in the invention, which it might not protect. A third party may also infringe upon, design around or develop uses not covered by any patent issued or licensed to us and our patents may not otherwise be commercially viable. In this regard, the patent position of pharmaceutical compounds and compositions is particularly uncertain and involves complex legal and factual questions. Even issued patents may later be modified or revoked by the PTO, by comparable foreign patent offices or by a court following legal proceedings. Laws relating to such rights may in the future also be changed or withdrawn.

There is no assurance that any of our patent claims in our pending non-provisional and provisional patent applications relating to our technologies, processes or products will be issued or, if issued, that any of our existing and future patent claims will be held valid and enforceable against third-party infringement. It is possible that we could incur significant costs and management distraction if we are required to initiate litigation against others to protect or enforce our intellectual property rights. Such patent disputes may be lengthy and a potential violator of our patents may bring a potentially infringing product to market during the dispute, subjecting us to competition and damages due to infringement of the competitor product. Upon the expiration or loss of intellectual property protection for a product, others may manufacture and distribute such patented product, which may result in the loss of a significant portion of our sales of that product.

We also rely on trade secrets and other unpatented proprietary information, which we generally seek to protect by confidentiality and nondisclosure agreements with our employees, consultants, advisors and partners. These agreements may not effectively prevent disclosure of confidential information and may not provide us with an adequate remedy in the event of unauthorized disclosure. For example, in August 2017, we filed a complaint against QuVa Pharma, Inc. (QuVa) and certain individual defendants in the U.S. District Court for the District of New Jersey alleging misappropriation in violation of the federal Defend Trade Secrets Act, New Jersey Trade Secrets Act and New Jersey common law, as well as unfair competition, breach of contract, breach of fiduciary duty, breach of the duty of loyalty, tortious interference with contractual relations and breach of the duty of confidence in connection with VASOSTRICT®. For more information regarding this litigation, see Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report. Even if third parties misappropriate or infringe upon our proprietary rights, we may not be able to discover or determine the extent of any such unauthorized use and we may not be able to prevent third parties from misappropriating or infringing upon our proprietary rights. In addition, if our employees, scientific consultants or partners develop inventions or processes that may be applicable to our existing products or products under development, such inventions and processes will not necessarily become our property and may remain the property of those persons or their employers.

Any failure by us to adequately protect our technology, trade secrets or proprietary know-how or to enforce our intellectual property rights could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our competitors or other third parties may allege that we are infringing their intellectual property, forcing us to expend substantial resources in litigation, the outcome of which is uncertain. Any unfavorable outcome of such litigation, including losses related to "at-risk" product launches, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Companies that produce branded pharmaceutical products routinely bring litigation against ANDA or similar applicants that seek regulatory approval to manufacture and market generic forms of branded products, alleging patent infringement or other violations of intellectual property rights. Patent holders may also bring patent infringement suits against companies that are currently marketing and selling approved generic products. Litigation often involves significant expense. Additionally, if the patents of others are held valid, enforceable and infringed by our current products or future product candidates, we would, unless we could obtain a license from the patent holder, need to delay selling our corresponding generic product and, if we are already selling our product, cease selling and potentially destroy existing product stock. Additionally, we could be required to pay monetary damages or royalties to license proprietary rights from third parties and we may not be able to obtain such licenses on commercially reasonable terms or at all.

There may be situations in which we may make business and legal judgments to market and sell products that are subject to claims of alleged patent infringement prior to final resolution of those claims by the courts based upon our belief that such patents are invalid, unenforceable or are not infringed by our marketing and sale of such products. This is commonly referred to in the pharmaceutical industry as an "at-risk" launch. The risk involved in an at-risk launch can be substantial because, if a patent holder ultimately prevails against us, the remedies available to such holder may include, among other things, damages calculated based on the profits lost by the patent holder, which can be significantly higher than the profits we make from selling the generic version of the product. Moreover, if a court determines that such infringement is willful, the damages could be subject to trebling. We could face substantial damages from adverse court decisions in such matters. We could also be at risk for the value of such inventory that we are unable to market or sell.

Agreements between branded pharmaceutical companies and generic pharmaceutical companies are facing increased government scrutiny and private litigation in the U.S. and abroad.

We are and may in the future be involved in patent litigations in which generic companies challenge the validity or enforceability of our products' listed patents and/or the applicability of these patents to the generic applicant's products. Likewise, we are and may in the future be involved in patent litigations in which we challenge the validity or enforceability of innovator companies' listed patents and/or their applicability to our generic products. Therefore, settling patent litigations has been and is likely to continue to be part of our business. Parties to such settlement agreements in the U.S., including us, are required by law to file them with the U.S. Federal Trade Commission (FTC) and the Antitrust Division of the DOJ for review. In some instances, the FTC has brought actions against brand and generic companies that have entered into such agreements, alleging that they violate antitrust laws. Even in the absence of an FTC challenge, other governmental or private litigants may assert antitrust or other claims relating to such agreements. Accordingly, we may receive formal or informal requests from the FTC or other governmental entities for information about any such settlement agreement we enter into, and there is a risk that the FTC or other governmental or private litigants may commence an action against us alleging violation of antitrust laws or other claims.

The U.S. Supreme Court, in *FTC v. Actavis*, determined that patent settlement agreements between generic and brand companies should be evaluated under the rule of reason, but provided limited guidance beyond the selection of this standard. Because the Supreme Court did not articulate the full range of criteria upon which a determination of the legality of such settlements would be based, or provide guidance on the precise circumstances under which such settlements would qualify as legal, there may be extensive litigation over what constitutes a reasonable and lawful patent settlement between a brand and generic company. For example, certain of our subsidiaries are subject to multiple lawsuits, including proposed class actions, brought by direct and indirect purchasers alleging that a patent settlement agreement with Impax Laboratories, LLC (now Amneal) regarding OPANA® ER was unlawful in violation of federal antitrust laws and various state laws.

There have been federal and state legislative efforts to overturn the *FTC v. Actavis* decision and make certain terms in patent settlement agreements *per se* unlawful. For example, some members of the U.S. Congress have proposed legislation that would limit the types of settlement agreements generic manufacturers and brand companies can enter into. The state of California recently enacted legislation, effective January 1, 2020, that deems a settlement of a patent infringement claim to be presumptively anticompetitive and allows the California Attorney General to seek monetary penalties if a generic company receives anything of value from the branded company and the generic company agrees to delay research and development, manufacturing, marketing or sales of the generic product for any period of time. The California law carves out from the definition of "anything of value" certain types of settlement terms and it allows the settling parties to rebut the presumption of anticompetitive harm.

We have significant goodwill and other intangible assets. Consequently, potential impairments of goodwill and other intangibles may significantly impact our profitability.

Goodwill and other intangibles represent a significant portion of our assets. As of December 31, 2019 and 2018, goodwill and other intangibles comprised approximately 66% and 71%, respectively, of our total assets. Goodwill and other indefinite-lived intangible assets are subject to impairment tests at least annually. Additionally, impairment tests must be performed for certain assets whenever events or changes in circumstances indicate such assets' carrying amounts may not be recoverable.

For the years ended December 31, 2019, 2018 and 2017, we recorded asset impairment charges of $0.5 billion, $0.9 billion and $1.2 billion, respectively, which related primarily to goodwill and other intangible assets. Refer to Note 10. Goodwill and Other Intangibles in the Consolidated Financial Statements included in Part IV, Item 15 of this report for examples and a discussion of material impairment tests and impairment charges during the years ended years ended December 31, 2019, 2018 and 2017. The procedures and assumptions used in our goodwill and other intangible assets impairment testing are discussed in Part II, Item 7 of this report "Management's Discussion and Analysis of Financial Condition and Results of Operations" under the caption "CRITICAL ACCOUNTING ESTIMATES" and in Note 10. Goodwill and Other Intangibles in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Events giving rise to asset impairments are an inherent risk in the pharmaceutical industry and often cannot be predicted. As a result of the significance of goodwill and other intangible assets, our results of operations and financial position in future periods could be negatively impacted should additional impairments of our goodwill or other intangible assets occur.

We are subject to various laws and regulations pertaining to the marketing of our products and services.

The marketing and pricing of our products and services, including product promotion, educational activities, support of continuing medical education programs and other interactions with healthcare professionals, are governed by various laws and regulations, including FDA regulations and the Anti-Kickback Statute. Additionally, many states have adopted laws similar to the Anti-Kickback Statute, without identical exceptions or exemptions. Some of these state prohibitions apply to referral of patients for healthcare items or services reimbursed by any third-party payer, not only the Medicare and Medicaid programs. Any such regulations or requirements could be difficult and expensive for us to comply with, could delay our introduction of new products and could have a material adverse effect on our business, financial condition, results of operations and cash flows. In addition, it is unclear at this time whether the October Proposed Rule revising safe harbors to the federal Anti-Kickback Statute to, among other things, add new safe harbors for certain value-based arrangements, will be adopted or, if adopted, what effect, if any, it would have on the cost of complying with and our ability to comply with the federal Anti-Kickback Statute or on our business. See "Governmental Regulation" in Part I, Item 1.

Sanctions for violating these laws include criminal penalties and civil sanctions and possible exclusion from federally funded healthcare programs such as Medicare and Medicaid as well as potential liability under the False Claims Act and applicable state false claims acts. There can be no assurance that our practices will not be challenged under these laws in the future, that changes in these laws or interpretation of these laws would not give rise to new challenges of our practices or that any such challenge would not have a material adverse effect on our business, financial condition, results of operations and cash flows. Law enforcement agencies sometimes initiate investigations into sales, marketing and/or pricing practices based on preliminary information or evidence, and such investigations can be and often are closed without any enforcement action. Nevertheless, these types of investigations and any related litigation can result in: (i) large expenditures of cash for legal fees, payment of penalties and compliance activities; (ii) limitations on operations; (iii) diversion of management resources; (iv) injury to our reputation; and (v) decreased demand for our products.

The FFDCA and FDA regulations and guidance restrict the ability of healthcare companies, such as our company, to communicate with patients, physicians and other third-parties about uses of prescription pharmaceuticals or devices that are not cleared or approved by the FDA, which are commonly referred to as "off-label" uses. Prohibitions on the promotion of off-label uses and against promotional practices deemed false or misleading are actively enforced by various parties at both the federal and state level. A company that is found to have improperly promoted its products under these laws may be subject to significant liability, including significant administrative, civil and criminal sanctions including, but not limited to, significant civil damages, criminal fines and exclusion from participation in Medicare, Medicaid and other federal healthcare programs. Applicable laws governing product promotion also provide for administrative, civil and criminal liability for individuals, including, in some circumstances, potential strict vicarious liability. Conduct giving rise to such liability could also form the basis for private civil litigation by third-party payers or other persons allegedly harmed by such conduct.

We have established and implemented a corporate compliance program designed to prevent, detect and correct violations of state and federal healthcare laws, including laws related to advertising and promotion of our products. Nonetheless, enforcement agencies or private plaintiffs may take the position that we are not in compliance with such requirements and, if such non-compliance is proven, the Company and, in some cases, individual employees, may be subject to significant liability, including the aforementioned administrative, civil and criminal sanctions.

In February 2014, Endo Pharmaceuticals Inc. (EPI) entered into a Deferred Prosecution Agreement and a Corporate Integrity Agreement (CIA) with the U.S. Department of Health and Human Services to resolve allegations regarding the promotion of LIDODERM®. In March 2013, our subsidiary Par Pharmaceutical Companies, Inc. (PPCI) entered into a CIA and plea agreement with the DOJ to resolve allegations regarding the promotion of MEGACE® ES, which was subsequently subsumed by EPI's CIA. Those agreements placed certain obligations on us related to the marketing of our pharmaceutical products and our healthcare regulatory compliance program, including reporting requirements to the U.S. government, detailed requirements for our compliance program, code of conduct and policies and procedures and the requirement to engage an Independent Review Organization. We have implemented procedures and practices to comply with the CIAs, including the engagement of an Independent Review Organization. In February 2020, Endo was notified that it had satisfied its CIA requirements and the 5-year term of Endo's CIA has now concluded.

The pharmaceutical industry is heavily regulated, which creates uncertainty about our ability to bring new products to market and imposes substantial compliance costs on our business, including withdrawal or suspension of existing products.

Governmental authorities including without limitation the FDA impose substantial requirements on the development, manufacture, holding, labeling, marketing, advertising, promotion, distribution and sale of therapeutic pharmaceutical products. See "Governmental Regulation" in Part I, Item 1.

Regulatory approvals for the sale of any new product candidate may require preclinical studies and clinical trials that such product candidate is safe and effective for its intended use. Preclinical and clinical studies may fail to demonstrate the safety and effectiveness of a product candidate. Likewise, we may not be able to demonstrate through clinical trials that a product candidate's therapeutic benefits outweigh its risks. Even promising results from preclinical and early clinical studies do not always accurately predict results in later, large-scale trials. A failure to demonstrate safety and efficacy would result in our failure to obtain regulatory approvals. Clinical trials can be delayed for reasons outside of our control, which can lead to increased development costs and delays in regulatory approval. For example, there is substantial competition to enroll patients in clinical trials, and such competition has delayed clinical development of our products in the past. For example, patients could enroll in clinical trials more slowly than expected or could drop out before or during clinical trials. In addition, we may rely on collaboration partners that may control or make changes in trial protocol and design enhancements, or encounter clinical trial compliance-related issues, which may also delay clinical trials. Product supplies may be delayed or be insufficient to treat the patients participating in the clinical trials and manufacturers or suppliers may not meet the requirements of the FDA or foreign regulatory authorities, such as those relating to cGMP. We also may experience delays in obtaining, or we may not obtain, required initial and continuing approval of our clinical trials from institutional review boards. We may experience delays or undesired results in any of our clinical trials.

Compliance with clinical trial requirements and cGMP regulations requires significant expenditures and the dedication of substantial resources. The FDA may place a hold on a clinical trial and may cause a suspension or withdrawal of product approvals if regulatory standards are not maintained. In the event an approved manufacturing facility for a particular drug is required by the FDA to curtail or cease operations, or otherwise becomes inoperable, or a third party contract manufacturing facility faces manufacturing problems, obtaining the required FDA authorization to manufacture at the same or a different manufacturing site could result in production delays, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Additional delays may result if an FDA advisory committee or other regulatory authority recommends non-approval or restrictions on approval. Although the FDA is not required to follow the recommendations of its advisory committees, it usually does. A negative advisory committee meeting could signal a lower likelihood of approval, although the FDA may still end up approving our application. Regardless of an advisory committee meeting outcome or the FDA's final approval decision, public presentation of our data may shed positive or negative light on our application.

We may seek FDA approval for certain unapproved marketed products through the 505(b)(2) regulatory pathway. See "Governmental Regulation" in Part I, Item 1. Even if we receive approval for an NDA under section 505(b)(2) of the FFDCA, the FDA may not take timely enforcement action against companies marketing unapproved versions of the product; therefore, we cannot be sure that that we will receive the benefit of any de facto exclusive marketing period or that we will fully recoup the expenses incurred to obtain an approval. In addition, certain competitors and others have objected to the FDA's interpretation of Section 505(b)(2). If the FDA's interpretation of Section 505(b)(2) is successfully challenged, this could delay or even prevent the FDA from approving any NDA that we submit under Section 505(b)(2).

The ANDA approval process for a new product varies in time, generally requiring a minimum of 10 months following submission of the ANDA to FDA, but could also take several years from the date of application. The timing for the ANDA approval process for generic products is difficult to estimate and can vary significantly. ANDA approvals, if granted, may not include all uses (known as indications) for which a company may seek to market a product.

The submission of an NDA, Supplemental New Drug Application (sNDA), ANDA, BLA or sBLA to the FDA with supporting clinical safety and efficacy data does not guarantee that the FDA will grant approval to market the product. Meeting the FDA's regulatory requirements to obtain approval to market a drug product, which vary substantially based on the type, complexity and novelty of the product candidate, typically takes years, if approved at all, and is subject to uncertainty. The FDA or foreign regulatory authorities may not agree with our assessment of the clinical data or they may interpret it differently. Such regulatory authorities may require additional or expanded clinical trials. Any approval by regulatory agencies may subject the marketing of our products to certain limits on indicated use. For example, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we may request, may grant approval contingent on conditions such as the performance and results of costly post-marketing clinical trials or REMS or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Additionally, reimbursement by government payers or other payers may not be approved at the price we intend to charge for our products. Any limitation on use imposed by the FDA or delay in or failure to obtain FDA approvals or clearances of products developed by us would adversely affect the marketing of these products and our ability to generate product revenue. We could also be at risk for the value of any capitalized pre-launch inventories related to products under development. The factors could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Once a product is approved or cleared for marketing, failure to comply with applicable regulatory requirements can result in, among other things, suspensions or withdrawals of approvals or clearances; seizures or recalls of products; injunctions against the manufacture, holding, distribution, marketing and sale of a product; and civil and criminal sanctions. For example, any failure to effectively identify, analyze, report and protect adverse event data and/or to fully comply with relevant laws, rules and regulations around adverse event reporting could expose the Company to legal proceedings, penalties, fines and reputational damage. Furthermore, changes in existing regulations or the adoption of new regulations could prevent us from obtaining, or affect the timing of, future regulatory approvals or clearances. Meeting regulatory requirements and evolving government standards may delay marketing of our new products for a considerable period of time, impose costly procedures upon our activities and result in a competitive advantage to other companies that compete against us.

In addition, after a product is approved or cleared for marketing, new data and information, including information about product misuse or abuse at the user level, may lead government agencies, professional societies, practice management groups or patient or trade organizations to recommend or publish guidance or guidelines related to the use of our products, which may lead to reduced sales of our products. For example, in May 2016, an FDA advisory panel recommended mandatory training of all physicians who prescribe opioids on the risks of prescription opioids. In 2016, the Centers for Disease Control and Prevention also issued a guideline for prescribing opioids for chronic pain that provides recommendations for primary care clinicians prescribing opioids for chronic pain outside of active cancer treatment, palliative care and end-of-life care. In addition, state health departments and boards of pharmacy have authority to regulate distribution and may modify their regulations with respect to prescription opioid medications in an attempt to curb abuse. These or any new regulations or requirements could be difficult and expensive for us to comply with and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

The FDA scheduled a Joint Meeting of the Drug Safety and Risk Management Advisory Committee and the Anesthetic and Analgesic Drug Products Advisory Committee in March 2017 to discuss pre- and post-marketing data about the abuse of OPANA® ER and the overall risk-benefit of this product. The advisory committees were also scheduled to discuss abuse of generic oxymorphone ER and oxymorphone immediate-release products. In March 2017, the advisory committees voted 18 to eight, with one abstention, that the benefits of reformulated OPANA® ER no longer outweigh its risks. While several of the advisory committee members acknowledged the role of OPANA® ER in clinical practice, others believed its benefits were overshadowed by the continuing public health concerns around the product's misuse, abuse and diversion. In June 2017, the FDA requested that we voluntarily withdraw OPANA® ER from the market and, in July 2017, after careful consideration and consultation with the FDA, we decided to voluntarily remove OPANA® ER from the market to the Company's financial detriment. During the second quarter of 2017, we began to work with the FDA to coordinate an orderly withdrawal of the product from the market. By September 1, 2017, we ceased shipments of OPANA® ER to customers and we expect the NDA will be withdrawn. These actions had an adverse effect on our revenues and, as a result of these actions, we incurred certain charges. Actions similar to these, such as recalls or withdrawals, could divert management time and attention, reduce market acceptance of all of our products, harm our reputation, reduce our revenues, lead to additional charges or expenses or result in product liability claims, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Based on scientific developments, post-market experience, legislative or regulatory changes or other factors, the current FDA standards of review for approving new pharmaceutical products, or new indications or uses for approved or cleared products, are sometimes more stringent than those that were applied in the past.

Some new or evolving FDA review standards or conditions for approval or clearance were not applied to many established products currently on the market, including certain opioid products. As a result, the FDA does not have safety databases on these products that are as extensive as some products developed more recently. Accordingly, we believe the FDA has expressed an intention to develop such databases for certain of these products, including many opioids. In particular, the FDA has expressed interest in specific chemical structures that may be present as impurities in a number of opioid narcotic APIs, such as oxycodone, which, based on certain structural characteristics and laboratory tests, may indicate the potential for having mutagenic effects. The FDA has required, and may continue to require, more stringent controls of the levels of these or other impurities in products.

Also, the FDA may require labeling revisions, formulation or manufacturing changes and/or product modifications for new or existing products containing impurities. More stringent requirements, together with any additional testing or remedial measures that may be necessary, could result in increased costs for, or delays in, obtaining approvals. Although we do not believe that the FDA would seek to remove a currently marketed product from the market unless the effects of alleged impurities are believed to indicate a significant risk to patient health, we cannot make any such assurance.

The FDA's exercise of its authority under the FFDCA could result in delays or increased costs during product development, clinical trials and regulatory review, increased costs to comply with additional post-approval regulatory requirements and potential restrictions on sales of approved products. For example, in 2015, the FDA sent letters to a number of manufacturers, including Endo, requiring that a randomized, double-blind, placebo-controlled clinical trial be conducted to evaluate the effect of TRT on the incidence of major adverse cardiovascular events in men. The letter received by Endo required that we include new safety information in the labeling and Medication Guide for certain prescription medications containing testosterone, such as TESTIM®.

Post-marketing studies and other emerging data about marketed products, such as adverse event reports, may adversely affect sales of our products. Furthermore, the discovery of significant safety or efficacy concerns or problems with a product in the same therapeutic class as one of our products that implicate or appear to implicate the entire class of products could have an adverse effect on sales of our product or, in some cases, result in product withdrawals. The FDA has continuing authority over the approval of an NDA, ANDA or BLA and may withdraw approval if, among other reasons, post-marketing clinical or other experience, tests or data show that a product is unsafe for use under the conditions upon which it was approved or licensed, or if FDA determines that there is a lack of substantial evidence of the product's efficacy under the conditions described in its labeling.

In addition to the FDA and other U.S. regulatory agencies, non-U.S. regulatory agencies may have authority over various aspects of our business and may impose additional requirements and costs. Similar to other healthcare companies, our facilities in multiple countries across the full range of our business units are subject to routine and new-product related inspections by regulatory authorities including the FDA, the Medicines and Healthcare products Regulatory Agency, the Health Products Regulatory Authority and Health Canada. In the past, some of these inspections have resulted in inspection observations (including FDA Form 483 observations). We have responded to all inspection observations within the required timeframe and have implemented, or are continuing to implement, the corrective action plans as agreed with the relevant regulatory agencies. Future inspections may result in additional inspection observations or other corrective actions, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Several of our core products contain controlled substances. Stringent DEA and other governmental regulations on our use of controlled substances include restrictions on their use in research, manufacture, distribution and storage. A breach of these regulations could result in imposition of civil penalties, refusal to renew or action to revoke necessary registrations, or other restrictions on operations involving controlled substances. In addition, failure to comply with applicable legal requirements could subject the manufacturing facilities of our subsidiaries and manufacturing partners to possible legal or regulatory action, including shutdown. Any such shutdown may adversely affect their ability to manufacture or supply product and thus, our ability to market affected products. This could have a material adverse effect on our business, financial condition, results of operations and cash flows. See also the risk described under the caption "The DEA limits the availability of the active ingredients used in many of our products as well as the production of these products, and, as a result, our procurement and production quotas may not be sufficient to meet commercial demand or complete clinical trials."

In addition, we are subject to the Federal Drug Supply Chain Security Act (DSCSA) enacted by the U.S. government, which requires development of an electronic pedigree to track and trace each prescription product at the salable unit level through the distribution system. The DSCSA will be effective incrementally over a 10-year period from its enactment on November 27, 2013. Compliance with DSCSA and future U.S. federal or state electronic pedigree requirements could require significant capital expenditures, increase our operating costs and impose significant administrative burdens.

We cannot determine what effect changes in laws, regulations or legal interpretations or requirements by the FDA, the courts or others, when and if promulgated or issued, or advisory committee meetings may have on our business in the future. Changes could, among other things, require expanded or different labeling, additional testing, monitoring of patients, interaction with physicians, education programs for patients or physicians, curtailment of necessary supplies, limitations on product distribution, the recall or discontinuance of certain products and additional recordkeeping. Any such changes could result in additional litigation and may have a material adverse effect on our business, financial condition, results of operations and cash flows. The evolving and complex nature of regulatory science and regulatory requirements, the broad authority and discretion of the FDA and the generally high level of regulatory oversight results in a continuing possibility that, from time to time, we will be adversely affected by regulatory actions despite our ongoing efforts and commitment to achieve and maintain full compliance with all regulatory requirements.

The success of our acquisition and licensing strategy is subject to uncertainty and acquisitions or licenses may reduce our earnings, be difficult to integrate, not perform as expected or require us to obtain additional financing.

We regularly evaluate selective acquisitions and look to continue to enhance our product line by acquiring rights to additional products and compounds. Such acquisitions may be carried out through corporate acquisitions, asset acquisitions, licensing or joint venture arrangements. However, we may not be able to complete acquisitions, obtain licenses or enter into arrangements that meet our target criteria on satisfactory terms, if at all. For example, we may not be able to identify suitable acquisition candidates. In addition, any acquisition of assets and rights to products and compounds may fail to accomplish our strategic objective and may not perform as expected. Further, if we are unable to maintain, on commercially reasonable terms, product, compound or other licenses that we have acquired, our ability to develop or commercialize our products may be inhibited. In order to continue to develop and broaden our product range, we must compete to acquire assets. Our competitors may have greater resources than us and therefore be better able to complete acquisitions or licenses, which could cause us to be unable to consummate acquisitions, licensing agreements or cause the ultimate price we pay to increase. If we fail to achieve our acquisition or licensing goals, our growth may be limited.

Acquisitions of companies may expose us to additional risks, which may be beyond our control and may have a material adverse effect on our business, financial condition, results of operations and cash flows. The combination of two independent businesses is a complex, costly and time-consuming process. As a result, we may be required to devote significant management attention and resources to the integration of an acquired business into our practices and operations. Any integration process may be disruptive and may not achieve realization of expected benefits. The difficulties of combining operations of companies include, among others:

- diversion of management’s attention to integration matters;
- difficulties in achieving anticipated cost or tax savings, synergies, business opportunities and growth prospects from the combination of the businesses;
- difficulties in the integration of operations and systems;
- the impact of pre-existing legal and/or regulatory issues;
- difficulties in conforming standards, controls, procedures and accounting and other policies, business cultures and compensation structures between the companies;
- difficulties in the assimilation of employees and retention of key personnel;
- difficulties in managing the expanded operations of a larger and more complex company;
- challenges in retaining existing customers and obtaining new customers;
- potential unknown liabilities or larger liabilities than projected;
- unforeseen increases to expenses or other adverse consequences associated with the transaction; and
- difficulties in coordinating a geographically dispersed organization.

In addition, any acquisitions may result in material unanticipated problems, expenses, liabilities, competitive responses and loss or disruption of relationships with customers, suppliers, partners, regulators and others with whom we have business or other dealings.

The benefits of mergers and acquisitions are also subject to a variety of other factors, many of which are beyond our ability to control, such as changes in the rate of economic growth in jurisdictions in which the combined company will do business, the financial performance of the combined business in various jurisdictions, currency exchange rate fluctuations and significant changes in trade, monetary or fiscal policies, including changes in interest rates and tax law of the jurisdictions in which the combined company will do business. The impact of these factors, individually and in the aggregate, is difficult to predict, in part because the occurrence of the events or circumstances relating to such factors may be interrelated, and the impact to the combined company of the occurrence of any one of these events or circumstances could be compounded or, alternatively, reduced, offset or more than offset by the occurrence of one or more of the other events or circumstances relating to such factors.

In addition, based on current acquisition prices in the pharmaceutical industry, acquisitions could decrease our net income per share and add significant intangible assets and related amortization or impairment charges. Our acquisition strategy may require us to obtain additional debt or equity financing, resulting in additional debt obligations, increased interest expense or dilution of equity ownership. We may not be able to finance acquisitions on terms satisfactory to us, or at all.

We may decide to sell assets, which could adversely affect our prospects and opportunities for growth.

We may from time to time consider selling certain assets if we determine that such assets are not critical to our strategy or we believe the opportunity to monetize the asset is attractive or for various other reasons, including for the reduction of indebtedness. For example, we divested both Litha and Somar in 2017 and various ANDAs throughout 2018 and 2019. We will continue to explore the sale of certain non-core assets. Although our expectation is to engage in asset sales only if they advance or otherwise support our overall strategy, we may be forced to sell assets in response to liquidation or other claims described herein, and any such sale could reduce the size or scope of our business, our market share in particular markets or our opportunities with respect to certain markets, products or therapeutic categories. As a result, any such sale could have a material adverse effect on our business, financial condition, results of operations and cash flows.

The availability of third party reimbursement for our products is uncertain, and we may find it difficult to maintain current price levels. Additionally, the market may not accept those products for which third party reimbursement is not adequately provided.

Our ability to commercialize our products depends, in part, on the extent to which reimbursement for the costs of these products is available from government healthcare programs, such as Medicaid and Medicare, private health insurers and others. We cannot be certain that, over time, third party reimbursements for our products will be adequate for us to maintain price levels sufficient for realization of an appropriate return on our investment. Government payers, private insurers and other third party payers are increasingly attempting to contain healthcare costs by: (i) limiting both coverage and the level of reimbursement (including adjusting co-pays) for products, (ii) refusing, in some cases, to provide any coverage for off-label uses for products and (iii) requiring or encouraging, through more favorable reimbursement levels or otherwise, the substitution of generic alternatives to branded products.

The Trump Administration also has been targeting pharmaceutical prices in ways that could affect reimbursement for our products. For example, beginning in January 2020, Medicare Advantage Plans are permitted to apply “step therapy” to products covered under Part B, which could impact our ability to negotiate for favorable product access in this sector. Additionally, in October 2018, President Trump announced a new initiative to contain costs by establishing an “international pricing index” that would be used as a benchmark in deciding how much to pay for Medicare Part B products. CMS issued an Advance Notice of Proposed Rulemaking for the Medicare Program that would reduce Part B spending and reimbursement in part based on the prices that manufacturers charge to customers in foreign countries (also referred to as reference pricing). This proposal targets physician-administered products. It is possible that any final rule could adversely affect reimbursement for certain products that we sell, and we cannot anticipate the adverse impact of this or similar developments on our business. Additionally, the Congress is considering multiple proposals impacting healthcare. There can be no assurance as to which proposals, if any, will be adopted, the final terms of any such proposals and the ultimate impact that such proposals would have on our business, results of operations, financial condition and cash flows. The U.S. presidential election is also leading to significant policy proposals regarding healthcare and we cannot predict which policies will ultimately be adopted and how they would impact us.

New tariffs and evolving trade policy between the U.S. and other countries, including China, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We conduct business globally and our operations, including third party suppliers, span numerous countries outside the U.S. There is currently significant uncertainty about the future relationship between the U.S. and various other countries, including China, with respect to trade policies, treaties, government regulations and tariffs.

The Trump Administration has called for substantial changes to U.S. foreign trade policy, including the possibility of imposing greater restrictions on international trade and significant increases in tariffs on goods imported into the U.S. Such tariffs could potentially disrupt our existing supply chains and impose additional costs on our business, including costs with respect to raw materials upon which our business depends. Furthermore, if tariffs, trade restrictions or trade barriers are placed on products such as ours by foreign governments, it could cause us to raise prices for our products, which may result in the loss of customers. If we are unable to pass along increased costs to our customers, our margins could be adversely affected. Additionally, it is possible further tariffs may be imposed that could affect imports of APIs and other materials used in our products, or our business may be adversely impacted by retaliatory trade measures taken by other countries, including restricted access to APIs or other materials used in our products, causing us to raise prices or make changes to our products. Further, the continued threats of tariffs, trade restrictions and trade barriers could have a generally disruptive impact on the global economy and, therefore, negatively impact our sales. For example, the Trump Administration has placed tariffs on certain goods imported from China. In January 2020, the U.S. and China agreed to roll back certain tariffs, expand trade purchases and renew commitments on intellectual property, technology transfer and currency practices. Nevertheless, given the volatility and uncertainty regarding the scope and duration of these tariffs and other aspects of U.S. foreign trade policy, the impact on our operations and results is uncertain and could be significant. Further governmental action related to tariffs, additional taxes, regulatory changes or other retaliatory trade measures could occur in the future. Any of these factors could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may experience pricing pressure on our products due to social or political pressure, which would reduce our revenue and future profitability.

We may experience downward pricing pressure on our products due to social or political pressure, which would reduce our revenue and future profitability. Price increases have resulted in increased public and governmental scrutiny of the cost of pharmaceutical products. For example, U.S. federal prosecutors have issued subpoenas to pharmaceutical companies in connection with an investigation into pricing practices conducted by the DOJ. Several state attorneys general also have commenced drug pricing investigations and filed lawsuits against pharmaceutical companies, including PPI, and the U.S. Senate has investigated a number of pharmaceutical companies relating to price increases and pricing practices. Our revenue and future profitability could be negatively affected if these or other inquiries were to result in legislative or regulatory proposals limiting our ability to increase or maintain the prices of our products.

In addition, the Trump Administration and a number of federal legislators continue to scrutinize pharmaceutical prices and are seeking ways to lower prices. For example, the Trump Administration's "Blueprint" on pharmaceutical prices describes a number of mechanisms for lowering manufacturer list prices and reducing patient out-of-pocket costs. Although the Blueprint contains a number of policy objectives, we cannot know the form that any new requirements will take or the effect that they may have on our business. In December 2019, the Trump Administration, through the FDA, released a proposed rule and draft guidance that set forth two pathways for the legal importation of certain pharmaceutical products in an effort to control costs. Since these pathways are not yet effective and are subject to revision pending receipt of public comments, we cannot determine what effect these pathways may have on our business, financial condition, results of operations and cash flows. In addition, Congress has held a number of hearings related to pharmaceutical prices and a bipartisan group of U.S. Senators introduced legislation that would require pharmaceutical manufacturers to justify certain price increases. A large number of individual states also have introduced legislation aimed at pharmaceutical pricing regulation, transparency or both. For example, California, Oregon, Vermont and Nevada have enacted such laws. Our revenue and future profitability could be negatively affected by the passage of these laws or similar federal or state legislation. Pressure from social activist groups and future government regulations may also put downward pressure on the prices of pharmaceutical products in the future.

Our business is highly dependent upon market perceptions of us, our brands, and the safety and quality of our products and similar products, and may be adversely impacted by negative publicity or findings.

We are dependent on market perceptions, and negative publicity or findings associated with product quality, patient illness or other adverse effects resulting from, or perceived to be resulting from, our products, or similar products, or our partners' and suppliers' manufacturing facilities, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Market perceptions are very important to our business, especially market perceptions of our company and brands and the safety and quality of our products. If we, our partners and suppliers or our brands suffer negative publicity, or if any of our products or similar products are subject to market withdrawal or recall or are proven to be, or are claimed to be, ineffective or harmful to consumers, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

For example, the pharmaceutical supply chain has been increasingly challenged by the vulnerability of distribution channels to illegal counterfeiting and the presence of counterfeit products in a growing number of markets and over the internet. Third parties may illegally distribute and sell counterfeit versions of our products that do not meet the rigorous manufacturing and testing standards that our products undergo. Counterfeit products are frequently unsafe or ineffective and can be potentially life-threatening. Counterfeit medicines may contain harmful substances, the wrong dose of API or no API at all. However, to distributors and users, counterfeit products may be visually indistinguishable from the authentic version.

In addition, negative posts or comments about us on any social networking website could seriously damage our reputation. The inappropriate use of certain social media vehicles could cause brand damage or information leakage or could lead to legal implications from the improper collection and/or dissemination of personally identifiable information or the improper dissemination of material non-public information.

Furthermore, unfavorable media coverage about opioid abuse could negatively affect our business, financial condition and results of operations. In recent years, opioid abuse has received a high degree of media coverage. Unfavorable publicity regarding, for example, the use or misuse of oxycodone or other prescription opioid medications, the limitations of abuse-deterrent forms, public inquiries and investigations into drug abuse, including the abuse of prescription products, litigation or regulatory activity could adversely affect our reputation. Additionally, increased scrutiny of opioids generally, whether focused on our products or otherwise, could negatively impact our relationship with healthcare providers and other members of the healthcare community. Such negative publicity could have an adverse effect on the potential size of the market for new or existing products and could decrease revenues and royalties, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our business and financial condition may be adversely affected by legislation.

We cannot predict with any certainty how existing laws may be applied or how laws or legal standards may change in the future. Current or future legislation, whether state or federal, or in any of the non-U.S. jurisdictions with authority over our operations, may have a material adverse effect on our business, financial condition, results of operations and cash flows. For example, the effect of H.R. 6, enacted in October 2018, is still uncertain.

In addition, in April 2018, New York enacted a statute called the Opioid Stewardship Act (the Stewardship Act), which, among other things, provided for certain manufacturers and distributors of certain opioids in the state of New York (the Contributing Parties) to make payments to a newly created Opioid Stewardship Fund (the Fund). By its terms, the Stewardship Act required Contributing Parties to pay a combined total of up to $100 million annually into the Fund, with each Contributing Party's share based on the total amount of morphine milligram equivalents (MME) of certain opioids sold or distributed by the Contributing Party in the state of New York during the preceding calendar year, subject to potential adjustments by the New York State Department of Health. Failure of a Contributing Party to make required reports or pay its ratable share, or a Contributing Party passing on the cost of its ratable share to a purchaser, could subject the Contributing Party to penalties. In December 2018, the U.S. District Court for the Southern District of New York held the Stewardship Act unconstitutional. This ruling is on appeal as of February 18, 2020. If the decision is reversed, we may be deemed to be a Contributing Party under the Stewardship Act and even if we are not considered to be a Contributing Party, or such a determination is never made, other entities may attempt to seek reimbursement from Endo for payments made related to products manufactured by Endo and distributed in New York. Furthermore, the application of the Stewardship Act may require additional regulatory guidance, which could be substantially delayed, increasing the uncertainty as to the ultimate effect of the Stewardship Act on us. If we are ultimately deemed to be a Contributing Party under the Stewardship Act, or similar legislation that could be enacted by New York or other jurisdictions, compliance with those laws could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In the meantime, in April 2019, New York enacted an excise tax on the first sale of every opioid unit in New York at the rate of one quarter of a cent per MME where wholesale acquisition cost (WAC) is less than $0.50 and one and one half cents per MME where WAC is equal to or greater than $0.50. For purposes of this statute, "opioid" does not include buprenorphine, methadone or morphine and "sale" does not include transfers of title from a manufacturer in New York to a purchaser outside New York when the opioid unit will be used or consumed outside New York.

In October 2018, the Canadian province of British Columbia enacted a statute called the Opioid Damages and Health Care Costs Recovery Act, which allows the British Columbia government to file a direct action against opioid manufacturers and wholesalers to recover the health care costs it has incurred, and will incur, resulting from an "opioid-related wrong." The statute defines "opioid-related wrong" to include any breach of a common law, equitable or statutory duty or obligation owed to persons in British Columbia who have been or might be exposed to an opioid product. The statute, among other effects, erases limitation periods for certain claims, reverses certain burdens of proof as to causation, allows the use of population-based evidence and restricts discovery of certain documents. The provinces of Alberta, Ontario and Newfoundland enacted similar legislation in 2019 and the province of Saskatchewan has announced that it expects to pass similar legislation in 2020. It is possible that these statutes, or similar statutes enacted by other jurisdictions, and resultant litigation, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In Canada, the prices of patented pharmaceutical products are subject to regulation by the PMPRB. Under the Canadian *Patent Act* and *Patented Medicines Regulations*, patentees of inventions that pertain to pharmaceutical products sold in Canada are required to file price and sales information about their patented pharmaceutical products with the PMPRB. The PMPRB reviews this information on an ongoing basis to ensure that the prices of patented pharmaceuticals sold in Canada are not excessive, based upon price tests established by the PMPRB. There is a risk that the price of our pharmaceutical products could be found to be excessive because the price as set at launch is non-compliant with the PMPRB's guidelines, or because our average sale prices over time are not compliant with the guidelines. Furthermore, amendments expected to come into force on July 1, 2020 will introduce a number of changes to the regulation of Canadian drug prices by the PMPRB. The PMPRB guidelines will be updated to introduce new price tests to account for changes introduced by the amendments. The application of the new price tests under the guidelines could result in the current prices of our pharmaceutical products being deemed to be excessive. Failure by us to comply with the current or future guidelines could ultimately result in us reducing the prices of the pharmaceutical products we sell in Canada and/or making a payment to the Canadian government to offset revenues deemed by the PMPRB to be excessive, which could ultimately reduce the revenues and cash flows of our International Pharmaceuticals segment and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

It is possible that these or other changes in law could have a material adverse effect on our business, financial condition, results of operations and cash flows. See "Governmental Regulation" in Part I, Item 1.

Public concern around the abuse of opioids or other products, including without limitation law enforcement concerns over diversion or marketing practices, regulatory efforts to combat abuse, and litigation could result in costs to our business.

Media stories regarding drug abuse and diversion, including the abuse and diversion of prescription opioid medications and other controlled substances, are commonplace. Aggressive enforcement and unfavorable publicity regarding, for example, the use or misuse of opioids, the limitations of abuse-deterrent formulations, the ability of abusers to discover previously unknown ways to abuse our products, public inquiries and investigations into drug abuse or litigation or regulatory or enforcement activity regarding sales, marketing, distribution or storage of opioids could have a material adverse effect on our reputation, on the results of litigation and on our ability to attract or maintain relationships with third-party partners, including suppliers, vendors, advisors, distributors, manufacturers, collaboration partners, administrators and agents.

Manufacturers of prescription opioid medications have been the subject of significant civil and criminal investigatory and enforcement actions even in cases where such medications have received approval from the FDA or similar regulatory authorities. Numerous governmental and private persons and entities are pursuing litigation against opioid manufacturers, including us, as well as distributors and others, asserting alleged violations of various laws and regulations relating to opioids and/or other prescription medicines, relying on common law theories, and seeking to hold the defendants accountable for, among other things, societal costs associated with the misuse and abuse of prescription opioid medications as well as non-prescription opioids. There is a risk we will be subject to similar investigations, enforcement actions or litigations in the future, that we will suffer adverse decisions or verdicts of substantial amounts or that we will enter into monetary settlements. Any unfavorable outcomes as a result of such proceedings could have a material adverse effect on our business, financial condition, results of operations and cash flows. In 2019, several manufacturers of prescription opioid medications commenced cases under Title 11 of the U.S. Code in order to address the large volume of claims asserted against them in such litigation. See Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report for more information.

Regulatory actions at the federal, state and local level may seek to limit or restrict the manufacturing, distribution or sale of opioids, both directly and indirectly, and/or to impose novel policy or regulatory mechanisms regarding the manufacturing, distribution or sales of opioids. For example, in April 2019, New York enacted an excise tax on opioids. See the risk factor "Our business and financial condition may be adversely affected by legislation" for more information. Many state legislatures are considering various bills intended to reduce opioid abuse such as by, for example, establishing prescription drug monitoring programs and mandating prescriber education.

Various government entities, including the U.S. Congress, state legislatures or other policy-making bodies in the U.S. or elsewhere may hold hearings, conduct investigations and/or issue reports calling attention to opioid misuse and abuse, and may mention or criticize the role of manufacturers, including us, in supplying or marketing opioid medications or failing to take adequate steps to detect or report suspicious orders or to prevent abuse and diversion. Press organizations have reported and likely will continue to report on these issues, and such reporting has and may further result in adverse publicity which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our reporting and payment obligations under the Medicaid Drug Rebate Program and other governmental drug pricing programs are complex and may involve subjective decisions. Any failure to comply with those obligations could subject us to penalties and sanctions.

We are subject to federal and state laws prohibiting the presentation (or the causing to be presented) of claims for payment (by Medicare, Medicaid or other third-party payers) that are determined to be false or fraudulent, including presenting a claim for an item or service that was not provided. These false claims statutes include the federal civil False Claims Act, which permits private persons to bring suit in the name of the government alleging false or fraudulent claims presented to or paid by the government (or other violations of the statutes) and to share in any amounts paid by the entity to the government in fines or settlement. Such suits, known as *qui tam* actions, have increased significantly in the healthcare industry in recent years. These actions against pharmaceutical companies, which do not require proof of a specific intent to defraud the government, may result in payment of fines to and/or administrative exclusion from the Medicare, Medicaid and/or other government healthcare programs.

We are subject to laws that require us to enter into a Medicaid Drug Rebate Agreement, a 340B Pharmaceutical Pricing Agreement and agreements with the Department of Veterans Affairs as a condition for having our products eligible for payment under Medicare Part B and Medicaid. We have entered into such agreements. In addition, we are required to report certain pricing information to CMS, the Health Resources and Services Administration and the Department of Veterans Affairs on a periodic basis to facilitate rebate payments to the State Medicaid Programs, to set Medicare Part B reimbursement levels and to establish the prices that can be charged to certain purchasers, including 340B-covered entities and certain government entities. Any failure to comply with these laws and agreements could have a material adverse effect on our business, financial condition, results of operations and cash flows.

With regard to the Medicaid Drug Rebate Program, on February 1, 2016, CMS issued a Final Rule implementing the Medicaid Drug Rebate provisions incorporated into the PPACA, effective April 1, 2016 in most instances. Implementation of the Final Rule required operational adjustments by us in order to maintain compliance with applicable law. Ongoing compliance with these program rules, including the requirement that we adopt reasonable assumptions where law, regulation and guidance do not address specific participation issues, may impact the level of rebates that we owe under the program. The Final Rule also expanded the scope of the Medicaid Drug Rebate program to apply to U.S. territories and, pursuant to further rulemaking, that requirement is now effective April 1, 2022, which will require operational adjustments and may result in additional rebate liability. Finally, despite an initial proposal, CMS has not defined the term “line extension” for the Medicaid Drug Rebate Program. CMS has indicated that manufacturers should rely on the statutory definition of that term and reasonable assumptions in determining which products should be subject to an alternative rebate calculation. In light of the lack of clear guidance on this issue, it is possible that CMS could in the future disagree with a manufacturer’s determination of which products should be subject to higher rebates under the “line extension” rebate calculation.

We and other pharmaceutical companies have been named as defendants in a number of lawsuits filed by various government entities, alleging generally that we and numerous other pharmaceutical companies reported false pricing information in connection with certain products that are reimbursable by state Medicaid programs, which are partially funded by the federal government. There is a risk we will be subject to similar investigations or litigations in the future, that we will suffer adverse decisions or verdicts of substantial amounts or that we will enter into monetary settlements. Any unfavorable outcomes as a result of such proceedings could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Decreases in the degree to which individuals are covered by healthcare insurance could result in decreased use of our products.

Employers may seek to reduce costs by reducing or eliminating employer group healthcare plans or transferring a greater portion of healthcare costs to their employees. Job losses or other economic hardships may also result in reduced levels of coverage for some individuals, potentially resulting in lower levels of healthcare coverage for themselves or their families. Further, in addition to the fact that the TCJA eliminated the PPACA's requirement that individuals maintain insurance or face a penalty, additional steps by the Trump Administration or other parties to limit or end cost-sharing subsidies to lower-income Americans may increase instability in the insurance marketplace and the number of uninsured Americans. These economic conditions may affect patients' ability to afford healthcare as a result of increased co-pay or deductible obligations, greater cost sensitivity to existing co-pay or deductible obligations and lost healthcare insurance coverage or for other reasons. We believe such conditions could lead to changes in patient behavior and spending patterns that negatively affect usage of certain of our products, including some patients delaying treatment, rationing prescription medications, leaving prescriptions unfilled, reducing the frequency of visits to healthcare facilities, utilizing alternative therapies or foregoing healthcare insurance coverage. Such changes may result in reduced demand for our products, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In December 2018, the U.S. District Court for the Northern District of Texas held in *Texas v. Azar* that, because the provisions of the PPACA requiring certain individuals to either obtain health insurance or pay a shared responsibility payment (known as the individual mandate) are no longer permissible under the U.S. Congress' taxing power, the entire PPACA is no longer constitutional. The decision was appealed to the U.S. Court of Appeals for the Fifth Circuit. In December 2019, the Fifth Circuit issued an opinion holding that, while the individual mandate was no longer constitutional, the case must be remanded to the district court to further evaluate whether the mandate can be severed from the PPACA or the entire PPACA must be stricken down. In January 2020, petitions for certiorari were filed requesting that the U.S. Supreme Court review the Fifth Circuit's decision and ultimately decide the constitutionality of the PPACA. The U.S. Supreme Court has not yet decided whether to grant the petitions. Changes in law resulting from this ongoing lawsuit or other court challenges to the PPACA could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our customer concentration may adversely affect our financial condition and results of operations.

We primarily sell our branded and generic products to wholesalers, retail drug store chains, supermarket chains, mass merchandisers, distributors, mail order accounts, hospitals and government agencies. Our wholesalers and distributors purchase products from us and, in turn, supply products to retail drug store chains, independent pharmacies and MCOs. Our current customer group reflects significant consolidation in recent years, marked by mergers and acquisitions and other alliances. For example, we understand that McKesson Corporation and Wal-Mart Stores, Inc. are party to an agreement to jointly source generic pharmaceuticals and Express Scripts, through a wholly-owned subsidiary, Innovative Product Alignment, LLC, participates in the Walgreens Boots Alliance Development GmbH GPO. Consolidations and joint purchasing arrangements such as these have resulted in increased pricing and other competitive pressures on pharmaceutical companies, including us. Additionally, the emergence of large buying groups representing independent retail pharmacies and other distributors and the prevalence and influence of MCOs and similar institutions have increased the negotiating power of these groups, enabling them to attempt to extract various demands, including without limitation price discounts, rebates and other restrictive pricing terms. These competitive trends could continue in the future and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Total revenues from direct customers that accounted for 10% or more of our total consolidated revenues during the years ended December 31, 2019, 2018 and 2017 are as follows:

	2019	2018	2017
AmerisourceBergen Corporation	34%	32%	25%
McKesson Corporation	26%	27%	25%
Cardinal Health, Inc.	25%	26%	25%

Revenues from these customers are included within each of our segments. Accordingly, our revenues, financial condition or results of operations may also be unduly affected by fluctuations in the buying or distribution patterns of these customers. These fluctuations may result from seasonality, pricing, wholesaler inventory objectives or other factors. In addition, if we were to lose the business of any of these customers, or if any were to fail to pay us on a timely basis, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are currently dependent on outside manufacturers for the manufacture of a significant amount of our products; therefore, we have and will continue to have limited control of the manufacturing process and related costs. Certain of our manufacturers currently constitute the sole source of one or more of our products.

Third party manufacturers currently manufacture a significant amount of our products pursuant to contractual arrangements. Certain of our manufacturers currently constitute the sole source of our products. For example, Teikoku Seiyaku Co., Ltd. is our sole source of LIDODERM® and GlaxoSmithKline plc is our sole source of VOLTAREN® Gel. Because of contractual restraints and the lead-time necessary to obtain FDA approval and/or DEA registration of a new manufacturer, there are no readily accessible alternatives to these manufacturers and replacement of any of these manufacturers may be expensive and time consuming and may cause interruptions in our supply of products to customers. Our business and financial viability are dependent on these third party manufacturers for continued manufacture of our products, the continued regulatory compliance of these manufacturers and the strength, validity and terms of our various contracts with these manufacturers. Any interruption or failure by these manufacturers to meet their obligations pursuant to various agreements with us on schedule or in accordance with our expectations, or any termination by these manufacturers of our supply arrangements, which, in each case, could be the result of one or many factors outside of our control, could delay or prevent our ability to achieve sales expectations, cause interruptions in our supply of products to customers, cause us to incur failure-to-supply penalties, disrupt our operations or cause reputational harm to our company, any or all of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are dependent on third parties to supply raw materials used in our products and to provide services for certain core aspects of our business. Any interruption or failure by these suppliers, distributors and collaboration partners to meet their obligations pursuant to various agreements with us could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We rely on third parties to supply raw materials used in our products. In addition, we rely on third party suppliers, distributors and collaboration partners to provide services for certain core aspects of our business, including manufacturing, warehousing, distribution, customer service support, medical affairs services, clinical studies, sales and other technical and financial services. All third party suppliers and contractors are subject to FDA and very often DEA requirements. Our business and financial viability are dependent on the continued supply of goods and services by these third parties, the regulatory compliance of these third parties and on the strength, validity and terms of our various contracts with these third parties. Any interruption or failure by our suppliers, distributors and collaboration partners to meet their obligations pursuant to various agreements with us on schedule or in accordance with our expectations, or any termination by these third parties of their arrangements with us, which, in each case, could be the result of one or many factors outside of our control, could delay or prevent the development, approval, manufacture or commercialization of our products, result in non-compliance with applicable laws and regulations, cause us to incur failure-to-supply penalties, disrupt our operations or cause reputational harm to our company, any or all of which could have a material adverse effect on our business, financial condition, results of operations and cash flows. We may also be unsuccessful in resolving any underlying issues with such suppliers, distributors and partners or replacing them within a reasonable time and on commercially reasonable terms.

APIs imported into the European Union (EU) must be certified as complying with the good manufacturing practice standards established by the EU, as stipulated by the International Conference for Harmonization. These regulations place the certification requirement on the regulatory bodies of the exporting countries. Accordingly, the national regulatory authorities of each exporting country must: (i) ensure that all manufacturing plants within their borders that export API into the EU comply with EU manufacturing standards and (ii) for each API exported, present a written document confirming that the exporting plant conforms to EU manufacturing standards. The imposition of this responsibility on the governments of the nations exporting API may cause a shortage of API necessary to manufacture our products, as certain governments may not be willing or able to comply with the regulation in a timely fashion, or at all. A shortage in API may cause us to cease manufacturing of certain products or to incur costs and delays to qualify other suppliers to substitute for those API manufacturers unable to export. This could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are dependent on third parties to provide us with various estimates as a basis for our financial reporting. While we undertake certain procedures to review the reasonableness of this information, we cannot obtain absolute assurance over the accounting methods and controls over the information provided to us by third parties. As a result, we are at risk of them providing us with erroneous data which could impact our reporting. Refer to “CRITICAL ACCOUNTING ESTIMATES” in Part II, Item 7 of this report “Management’s Discussion and Analysis of Financial Condition and Results of Operations” for information about our most significant accounting estimates.

If our manufacturing facilities are unable to manufacture our products or the manufacturing process is interrupted due to failure to comply with regulations or for other reasons, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

If any of our or our third party manufacturing facilities fail to comply with regulatory requirements or encounter other manufacturing difficulties, it could adversely affect our ability to supply products. All facilities and manufacturing processes used for the manufacture of pharmaceutical products are subject to inspection by regulatory agencies at any time and must be operated in conformity with cGMP and, in the case of controlled substances, DEA regulations. Compliance with the FDA's cGMP and DEA requirements applies to both products for which regulatory approval is being sought and to approved products. In complying with cGMP requirements, pharmaceutical manufacturing facilities must continually expend significant time, money and effort in production, recordkeeping, quality assurance and quality control so that their products meet applicable specifications and other requirements for product safety, efficacy and quality. Failure to comply with applicable legal requirements subjects our or our third party manufacturing facilities to possible legal or regulatory action, including shutdown, which may adversely affect our ability to supply our products. Additionally, our or our third party manufacturing facilities may face other significant disruptions due to labor strikes, failure to reach acceptable agreement with labor unions, infringement of intellectual property rights, vandalism, natural disaster, outbreak and spread of viral or other diseases, storm or other environmental damage, civil or political unrest, export or import restrictions or other events. Were we not able to manufacture products at our or our third party manufacturing facilities because of regulatory, business or any other reasons, the manufacture and marketing of these products could be interrupted. This could have a material adverse effect on our business, financial condition, results of operations and cash flows.

For example, the manufacturing facilities qualified to manufacture the enzyme CCH, which is included in our current XIAFLEX® product and in certain product candidates under development, including for the treatment of cellulite, are subject to such regulatory requirements and oversight. If such facilities fail to comply with cGMP requirements, we may not be permitted to sell our products or may be limited in the jurisdictions in which we are permitted to sell them. Further, if an inspection by regulatory authorities indicates that there are deficiencies, including non-compliance with regulatory requirements, we could be required to take remedial actions, stop production or close our facilities, which could disrupt the manufacturing processes and could limit the supply of CCH and/or delay clinical trials and subsequent licensure and/or limit the sale of commercial supplies. In addition, future noncompliance with any applicable regulatory requirements may result in refusal by regulatory authorities to allow use of CCH in clinical trials, refusal by the government to allow distribution of CCH within the U.S. or other jurisdictions, criminal prosecution, fines, recall or seizure of products, total or partial suspension of production, prohibitions or limitations on the commercial sale of products, refusal to allow the entering into of federal and state supply contracts and civil litigation.

We purchase certain API and other materials used in our manufacturing operations from foreign and U.S. suppliers. The price and availability of API and other materials is subject to volatility for a number of reasons, many of which may be outside of our control. There is no guarantee that we will always have timely, sufficient or affordable access to critical raw materials or supplies from third parties. An increase in the price, or an interruption in the supply, of any API or raw material could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We have limited experience in manufacturing biologic products and may encounter difficulties in our manufacturing processes, which could materially adversely affect our results of operations or delay or disrupt manufacture of those products reliant upon our manufacturing operations.

The manufacture of biologic products requires significant expertise and capital investment. Although we manufacture CCH, which is included in our current XIAFLEX® product and in certain product candidates under development, including for the treatment of cellulite, in our Horsham, Pennsylvania facility, we have limited experience in manufacturing CCH or any other biologic products. Biologics such as CCH require processing steps that are highly complex and generally more difficult than those required for most chemical pharmaceuticals. In addition, TESTOPEL® is manufactured using a unique, proprietary process. If the manufacturing processes are disrupted at the facilities where our biologic products are manufactured, it may be difficult to find alternate manufacturing sites. We may encounter difficulties with the manufacture of CCH and the active ingredient of TESTOPEL®, which could delay, disrupt or halt our manufacture of such products and/or product candidates, result in product recalls or product liability claims, require write-offs or otherwise have a material adverse effect on our business, financial condition, results of operations and cash flows.

The DEA limits the availability of the active ingredients used in many of our products as well as the production of these products, and, as a result, our procurement and production quotas may not be sufficient to meet commercial demand or complete clinical trials.

The DEA limits the availability of the active ingredients used in many of our products and sets a quota on the production of these products. We, or our contract manufacturing organizations, must annually apply to the DEA for procurement and production quotas in order to obtain these substances and produce our products. In addition, H.R. 6 amends the CSA with respect to quotas by requiring the DEA to estimate the amount and impact of diversion (including overdose deaths and abuse and overall public health impact) of fentanyl, oxycodone, hydrocodone, oxymorphone or hydromorphone and to make appropriate quota reductions. As a result, our procurement and production quotas may not be sufficient to meet commercial demand or to complete clinical trials. Moreover, the DEA may adjust these quotas from time to time during the year. Any delay or refusal by the DEA in establishing our quotas, or modification of our quotas, for controlled substances could delay or result in the stoppage of clinical trials or product launches, or could cause trade inventory disruptions for those products that have already been launched, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

If we are unable to retain our key personnel and continue to attract additional professional staff, we may be unable to maintain or expand our business.

Because of the specialized scientific nature of our business, our ability to develop products and to compete with our current and future competitors will remain highly dependent, in large part, upon our ability to attract and retain qualified scientific, technical and commercial personnel. The loss of key scientific, technical and commercial personnel or the failure to recruit additional key scientific, technical and commercial personnel could have a material adverse effect on our business, financial condition, results of operations and cash flows. While we have consulting agreements with certain key individuals and institutions and have employment agreements with our key executives, we may be unsuccessful in retaining personnel or their services under existing agreements. There is intense competition for qualified personnel in the areas of our activities and we may be unable to continue to attract and retain the qualified personnel necessary for the development of our business.

The trading prices of our securities may be volatile, and investments in our securities could decline in value.

The market prices for securities of Endo, and of pharmaceutical companies in general, have been highly volatile and may continue to be highly volatile in the future. For example, in 2019, our ordinary shares traded between $1.97 and $12.49 per share on the NASDAQ. The following factors, in addition to other risk factors described in this section, may cause the market value of our securities to fluctuate:

- FDA approval or disapproval of any of the drug applications we have submitted;
- the success or failure of our clinical trials;
- new data or new analyses of older data that raise potential safety or effectiveness issues concerning our approved products;
- product recalls or withdrawals;
- competitors announcing technological innovations or new commercial products;
- introduction of generic or compounded substitutes for our products, including the filing of ANDAs with respect to generic versions of our branded products;
- developments concerning our or others' proprietary rights, including patents;
- competitors' publicity regarding actual or potential products under development or other activities affecting our competitors or the industry in general;
- regulatory developments in the U.S. and foreign countries, or announcements relating to these matters;
- period-to-period fluctuations in our financial results;
- new legislation, regulation, administrative guidance or executive orders, or changes in interpretation of existing legislation, regulation, administrative guidance or executive orders, including by virtue of new judicial decisions, that could affect the development, sale or pricing of pharmaceutical products, the number of individuals with access to affordable healthcare, the taxes we pay and/or other factors;
- a determination by a regulatory agency that we are engaging or have engaged in inappropriate sales or marketing activities, including promoting off-label uses of our products;
- social and political pressure to lower the cost of pharmaceutical products;
- social and political scrutiny over increases in prices of shares of pharmaceutical companies that are perceived to be caused by a strategy of growth through acquisitions;
- litigation against us or others;
- reports of security analysts and rating agencies;

- judgments or settlements or reports of settlement negotiations concerning opioid-related litigation or claims, and/or other companies commencing cases under Title 11 of the U.S. Code to address opioid-related litigation liabilities; and
- changes in the political and regulatory environment and international relations as a result of events such as the exit of the United Kingdom from the EU (Brexit) and full or partial shutdowns of the U.S. federal government that may occur from time to time, the current U.S. administration and other external factors, including market speculation or disasters and other crises.

We have no plans to pay regular dividends on our ordinary shares or to conduct ordinary share repurchases.

We currently do not intend to pay any cash dividends in the foreseeable future on our ordinary shares. Additionally, while the Board has approved a share buyback program (the 2015 Share Buyback Program), of which there is approximately $2.3 billion available as of December 31, 2019, we currently do not intend to conduct ordinary share repurchases in the foreseeable future. Any declaration and payment of future dividends to holders of ordinary shares as well as any repurchase of our ordinary shares under the 2015 Share Buyback Program will be at the sole discretion of the Board and will depend on many factors, including our financial condition, earnings, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of both cash and property dividends or share repurchases and other considerations that the Board deems relevant. In addition, our existing debt instruments restrict or prevent us from paying dividends on our ordinary shares and conducting ordinary share repurchases. Agreements governing any future indebtedness, in addition to those governing our current indebtedness, may not permit us to pay dividends on our ordinary shares or conduct ordinary share repurchases.

Our business and operations could be negatively affected by shareholder activism, which could cause us to incur significant expenses, hinder execution of our business strategy and impact our share price.

In recent years, shareholder activism involving corporate governance, strategic direction and operations has become increasingly prevalent. If we become the subject of such shareholder activism, their demands may disrupt our business and divert the attention of our management, employees and Board. Also, we may incur substantial costs, including legal fees and other expenses, related to such activist shareholder matters. Perceived uncertainties resulting from such activist shareholder matters may result in loss of potential business opportunities with our current and potential customers and business partners, be exploited by our competitors and make attracting and retaining qualified personnel more difficult. In addition, such shareholder activism may cause significant fluctuations in our share price based on temporary or speculative market perceptions, uncertainties or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business.

Our operations could be disrupted if our information systems fail, if we are unsuccessful in implementing necessary upgrades or if we are subject to cyber-attacks.

Our business depends on the efficient and uninterrupted operation of our computer and communications systems and networks, hardware and software systems and our other information technology. As such, we continuously invest financial and other resources to maintain, enhance, further develop, replace or add to our information technology infrastructure. Such efforts carry risks such as cost overruns, project delays and business interruptions, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. Additionally, these measures are not guaranteed to protect against all cybersecurity incidents.

In the ordinary course of our business, we collect and maintain information, which includes confidential, proprietary and personal information regarding our customers and employees, in digital form. Data maintained in digital form is subject to risk of cyber-attacks, which are increasing in frequency and sophistication and are made by groups and individuals with a wide range of motives and expertise, including criminal groups, “hackers” and others. Cyber-attacks could include the deployment of harmful malware, viruses, worms, denial-of-service attacks, ransomware, social engineering and other means to affect service reliability and threaten data confidentiality, integrity and availability. Despite our efforts to monitor and safeguard our systems to prevent data compromise, the possibility of a future data compromise cannot be eliminated entirely, and risks associated with intrusion, tampering and theft remain. In addition, we do not have insurance coverage with respect to system failures or cyber-attacks. If our systems were to fail or we are unable to successfully expand the capacity of these systems, or we are unable to integrate new technologies into our existing systems, our operations and financial results could suffer.

We also have outsourced certain elements and functions of our operations, including elements of our information technology infrastructure, to third parties, some of which are outside the U.S. As a result, we are managing many independent vendor relationships with third parties who may or could have access to our confidential information. The size and complexity of our and our vendors’ systems make such systems potentially vulnerable to service interruptions. The size and complexity of our and our vendors’ systems and the large amounts of confidential information that is present on them also makes them potentially vulnerable to security breaches from inadvertent or intentional actions by our employees, our partners, our vendors or other third parties, or from attacks by malicious third parties.

The Company and its vendors' information technology operations are spread across multiple, sometimes inconsistent platforms, which pose difficulties in maintaining data integrity across systems. The ever-increasing use and evolution of technology, including cloud-based computing, creates opportunities for the unintentional or improper dissemination or destruction of confidential information stored in the Company's systems.

Any breach of our security measures or the accidental loss, inadvertent disclosure, unapproved dissemination, misappropriation or misuse of trade secrets, proprietary information or other confidential information, whether as a result of theft, hacking, fraud, trickery or other forms of deception, or for any other cause, could enable others to produce competing products, use our proprietary technology or information and/or adversely affect our business position. Further, any such interruption, security breach, loss or disclosure of confidential information could result in financial, legal, business and reputational harm to our company and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Non-U.S. regulatory requirements vary, including with respect to the regulatory approval process, and failure to obtain regulatory approval or maintain compliance with requirements in non-U.S. jurisdictions would prevent or impact the marketing of our products in those jurisdictions.

We have worldwide intellectual property rights to market many of our products and product candidates and intend to seek approval to market certain of our existing or potential future products outside of the U.S. Approval of a product by the regulatory authorities of a particular country is generally required prior to manufacturing or marketing that product in that country. The approval procedure varies among countries and can involve additional testing and the time required to obtain such approval may differ from that required to obtain FDA approval. Non-U.S. regulatory approval processes generally include risks similar to those associated with obtaining FDA approval, as further described herein. Approval by the FDA does not guarantee approval by the regulatory authorities of any other country, nor does the approval by foreign regulatory authorities in one country guarantee approval by regulatory authorities in other foreign countries or by the FDA.

Outside of the U.S., regulatory agencies generally evaluate and monitor the safety, efficacy and quality of pharmaceutical products and devices and impose regulatory requirements applicable to manufacturing processes, stability testing, recordkeeping and quality standards, among others. These requirements vary by jurisdiction. In certain countries, including emerging and developing markets, the applicable healthcare and drug regulatory regimes are continuing to evolve and new requirements may be implemented. Ensuring and maintaining compliance with these varying and evolving requirements is and will continue to be difficult, time-consuming and costly. In seeking regulatory approvals in non-U.S. jurisdictions, we must also continue to comply with U.S. laws and regulations, including those imposed by the U.S. Foreign Corrupt Practices Act (FCPA). See the risk factor "The risks related to our global operations may adversely impact our revenues, results of operations and financial condition." If we fail to comply with these various regulatory requirements or fail to obtain and maintain required approvals, our target market will be reduced and our ability to generate non-U.S. revenue will be adversely affected.

We could be adversely affected by the risks associated with having operated a medical device manufacturing business.

We are subject to various risks associated with having operated a medical device manufacturing business, which risks could have adverse effects, including potential and actual product liability claims for any defective or allegedly defective goods that were distributed and increased government scrutiny and/or potential claims regarding the marketing of medical devices.

We are subject to health information privacy and data protection laws that include penalties for noncompliance. Our failure to comply with various laws protecting the confidentiality of certain patient health information could result in penalties and reputational damage.

We are subject to a number of privacy and data protection laws and regulations globally. The legislative and regulatory landscape for privacy and data security continues to evolve. Certain countries in which we operate have, or are developing, laws protecting the confidentiality of individually identifiable personal information, including patient health information. This includes federal and state laws and regulations in the U.S. as well as in Europe and other markets.

For example, California recently adopted the California Consumer Privacy Act of 2018 (CCPA), which provides new data privacy rights for consumers and new operational requirements for businesses. The CCPA went into effect on January 1, 2020 and establishes a new privacy framework for covered businesses by creating an expanded definition of personal information, establishing new data privacy rights for consumers in the state of California and creating a new and potentially severe statutory damages framework for violations of the CCPA and for businesses that fail to implement reasonable security procedures and practices to prevent data breaches. Because the CCPA only recently went into effect, many of its requirements have not yet been interpreted by courts and best practices are still being developed, all of which increase the risk of compliance failure and related adverse impacts.

In addition, the EU's General Data Protection Regulation (GDPR), which replaced the pre-existing EU Data Protection Directive and became enforceable as of May 25, 2018, imposes strict restrictions on our authority to collect, analyze and transfer personal data regarding persons in the EU, including health data from clinical trials and adverse event reporting. The GDPR, which has extra-territorial scope and substantial fines for breaches (up to 4% of global annual revenue or €20 million, whichever is greater) grants individuals whose personal data (which is very broadly defined) is collected or otherwise processed the right to access the data, request its deletion and control its use and disclosure. The GDPR also requires notification of a breach in the security of such data to be provided within 72 hours of discovering the breach. Although the GDPR itself is self-executing across all EU member states, data protection authorities from different EU member states may interpret and apply the regulation somewhat differently, which adds to the complexity of processing personal data in the EU. To date, there has been very little interpretation of the regulation by the EU member states' different data protection authorities and little time for enforcement, which makes predicting future enforcement very difficult. That uncertainty contributes to liability exposure risk.

As did the pre-existing Data Protection Directive, the GDPR prohibits the transfer of personal data to countries outside of the EU that are not considered by the European Commission to provide an adequate level of data protection, and transfers of personal data to such countries may be made only in certain circumstances, such as where the transfer is necessary for important reasons of public interest or the individual to whom the personal data relates has given his or her explicit consent to the transfer after being informed of the risks involved.

We have policies and practices that we believe make us compliant with applicable privacy regulations, including the GDPR. Nevertheless, there remains a risk of failure to comply with the rules arising from the GDPR or privacy laws in other countries in which we operate. Should a transgression be deemed to have occurred, it could lead to government enforcement actions and significant sanctions or penalties against us, adversely impact our results of operations and subject us to negative publicity. Such liabilities could materially affect our operations.

There has also been increased enforcement activity in the U.S. particularly related to data security breaches. A violation of these laws or regulations by us or our third party vendors could subject us to penalties, fines, liability and/or possible exclusion from Medicare or Medicaid. Such sanctions could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We face risks relating to the exit of the United Kingdom from the EU.

On June 23, 2016, the United Kingdom held a remain-or-leave referendum on the United Kingdom's membership within the EU, the result of which favored the Brexit. On March 29, 2017, the Prime Minister of the United Kingdom delivered a formal notice of withdrawal to the EU. On May 22, 2017, the Council of the EU (the Council), adopted a decision authorizing the opening of Brexit negotiations with the United Kingdom and formally nominated the European Commission as the EU negotiator. The Council also adopted negotiating directives for the talks. On January 9, 2020, a Withdrawal Agreement Bill was passed by the United Kingdom House of Commons and, subject to scrutiny by the United Kingdom House of Lords, the Withdrawal Agreement Bill approves an eleven-month transition period starting on January 31, 2020 in which the United Kingdom will cease to be a member of the EU, but will continue to follow the EU's rules and contribute to its budget. In the event a full trade deal is not reached between the United Kingdom and EU by the December 31, 2020 deadline and there is no further extension, trade relations between the United Kingdom and the EU will be governed by any terms agreed within this period or by the World Trade Organization Rules. The impact on our business as a result of Brexit will depend, in part, on the outcome of tariff, trade, regulatory and other negotiations and on the ultimate manner and timing of the United Kingdom's withdrawal from the EU. As a result, we face risks associated with the potential uncertainty and consequences that may follow Brexit, including with respect to volatility in financial markets, exchange rates and interest rates. These uncertainties could increase the volatility of, or reduce, our investment results in particular periods or over time. Brexit could adversely affect political, regulatory, economic or market conditions in the United Kingdom and in Europe and it could contribute to instability in global political institutions and regulatory agencies.

Similarly, if the United Kingdom were to significantly alter its regulations affecting the pharmaceutical industry, we could face significant new costs. It may also be time-consuming and expensive for us to alter our internal operations in order to comply with new regulations. In addition, since a significant proportion of the regulatory framework in the United Kingdom is derived from EU directives and regulations, the referendum could materially impact the regulatory regime with respect to the approval of our product candidates in the United Kingdom or the EU. Any delay in obtaining, or an inability to obtain, any regulatory approvals, as a result of Brexit or otherwise, would prevent us from commercializing our product candidates in the United Kingdom and/or the EU and restrict our ability to generate revenue and achieve and sustain profitability. If any of these outcomes occur, we may be forced to restrict or delay efforts to seek regulatory approval in the United Kingdom and/or EU for our product candidates, which could significantly and materially harm our business. Similarly, it is unclear at this time what Brexit's impact will have on our intellectual property rights and the process for obtaining and defending such rights. It is possible that certain intellectual property rights, such as trademarks, granted by the EU will cease being enforceable in the United Kingdom absent special arrangements to the contrary. Any of these factors could have a material adverse effect on our business, financial condition, results of operations and cash flows.

The risks related to our global operations may adversely impact our revenues, results of operations and financial condition.

In 2019, approximately 4% of our total revenues were from customers outside the U.S. Some of these sales were to governmental entities and other organizations with extended payment terms. Conducting business internationally, including the sourcing, manufacturing, development, sale and distribution of our products and services across international borders, subjects us to extensive U.S. and foreign governmental trade regulations, such as various anti-bribery laws, including the FCPA, export control laws, customs and import laws, and anti-boycott laws. The FCPA and similar anti-corruption laws in other jurisdictions generally prohibit companies and their intermediaries from making improper payments to government officials for the purpose of obtaining or retaining business. We cannot provide assurance that our internal controls and procedures will always protect us from criminal acts committed by our employees or third parties with whom we work. If we are found liable for violations of the FCPA or other applicable laws and regulations, either due to our own acts or out of inadvertence, or due to the acts or inadvertence of others, we could suffer significant criminal, civil and administrative penalties, including, but not limited to, imprisonment of individuals, fines, denial of export privileges, seizure of shipments, restrictions on certain business activities and exclusion or debarment from government contracting, as well as reputational harm. Also, the failure to comply with applicable legal and regulatory obligations could result in the disruption of our shipping and sales activities.

In addition, some countries where we source, develop, manufacture or sell products are subject to political, economic and/or social instability. Our non-U.S. R&D, manufacturing and sales operations expose us and our employees, representatives, agents and distributors to risks inherent in operating in non-U.S. jurisdictions. For example, we perform certain of our R&D functions in India. We also manufacture certain of our products in India and expect that our Indian manufacturing operations could expand in the future. A disruption in our Indian operations could have a material adverse effect on our business, financial condition, results of operations and cash flows. These risks include:

- the imposition of additional U.S. and non-U.S. governmental controls or regulations;
- the imposition of costly and lengthy new export licensing requirements;
- the imposition of U.S. and/or international sanctions against a country, company, person or entity with whom we do business that would restrict or prohibit continued business with the sanctioned country, company, person or entity;
- economic and political instability or disruptions, including local and regional instability, or disruptions due to natural disasters, such as severe weather and geological events, disruptions due to civil unrest and hostilities, rioting, military activity, terror attacks or armed hostilities;
- changes in duties and tariffs, license obligations and other non-tariff barriers to trade;
- the imposition of new trade restrictions including foreign exchange controls;
- supply disruptions and increases in energy and transportation costs;
- the imposition of restrictions on the activities of foreign agents, representatives and distributors;
- changes in global tax laws and/or the imposition by tax authorities of significant fines, penalties and additional taxes;
- pricing pressure that we may experience internationally;
- fluctuations in foreign currency exchange rates;
- competition from local, regional and international competitors;
- difficulties and costs of staffing and managing foreign operations, including cultural differences and additional employment regulations, union workforce negotiations and potential disputes in the jurisdictions in which we operate;
- laws and business practices favoring local companies;
- difficulties in enforcing or defending intellectual property rights; and
- exposure to different legal and political standards due to our conducting business in foreign countries.

We also face the risk that some of our competitors have more experience with operations in such countries or with international operations generally and may be able to manage unexpected crises more easily. Furthermore, whether due to language, cultural or other differences, public and other statements that we make may be misinterpreted, misconstrued or taken out of context in different jurisdictions. Moreover, the internal political stability of, or the relationship between, any country or countries where we conduct business operations may deteriorate, including relationships between the U.S. and other countries. Changes in other countries' economic conditions, product pricing, political stability or the state of relations between any such countries are difficult to predict and could adversely affect our operations, payment and credit terms and our ability to collect foreign receivables. Any such changes could lead to a decline in our profitability and/or adversely impact our ability to do business. Any meaningful deterioration of the political or social stability in and/or diplomatic relations between any countries in which we or our partners and suppliers do business could have a material adverse effect on our business, financial condition, results of operations and cash flows. A substantial slowdown of the global economy, or major national economies, could negatively affect growth in the markets in which we operate. Such a slowdown could result in national governments making significant cuts to their public spending, including national healthcare budgets, or reducing the level of reimbursement they are willing and able to provide to us for our products and, as a result, adversely affect our revenues, financial condition or results of operations. We have little influence over these factors and changes could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We cannot provide assurance that one or more of these factors will not harm our business. Any material decrease in our non-U.S. R&D, manufacturing or sales could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We have a substantial amount of indebtedness which could adversely affect our financial position and prevent us from fulfilling our obligations under such indebtedness, which may require us to refinance all or part of our then-outstanding indebtedness. Any refinancing of this substantial indebtedness could be at significantly higher interest rates. Additionally, we have a significant amount of floating rate indebtedness and an increase in interest rates would increase the cost of servicing our indebtedness. Despite our current level of indebtedness, we may still be able to incur substantially more indebtedness. This could increase the risks associated with our substantial indebtedness.

We currently have a substantial amount of indebtedness. As of December 31, 2019, we have total debt of approximately $8.47 billion in aggregate principal amount. Our substantial indebtedness may:

- make it difficult for us to satisfy our financial obligations, including making scheduled principal and interest payments on our indebtedness;
- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions or other general business purposes;
- limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general business purposes;
- expose us to the risk of rising interest rates with respect to the borrowings under our variable rate indebtedness;
- require us to use a substantial portion of our cash on hand and/or from future operations to make debt service payments;
- limit our flexibility to plan for, or react to, changes in our business and industry;
- place us at a competitive disadvantage compared to our less leveraged competitors; and
- increase our vulnerability to the impact of adverse economic and industry conditions.

If we are unable to pay amounts due under our outstanding indebtedness or to fund other liquidity needs, such as future capital expenditures or contingent liabilities as a result of adverse business developments, including expenses related to our ongoing and future legal proceedings and governmental investigations as well as increased pricing pressures or otherwise, we may be required to refinance all or part of our then-existing indebtedness, sell assets, reduce or delay capital expenditures or seek to raise additional capital, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows. There can be no assurance that we will be able to accomplish any of these alternatives on terms acceptable to us, or at all. Any refinancing of this substantial indebtedness could be at significantly higher interest rates, which will depend on the conditions of the markets and our financial condition at such time. In addition, we may be able to incur substantial additional indebtedness in the future, including secured indebtedness. If new indebtedness is added to our current debt levels, the related risks that we and our subsidiaries now face could intensify. At any time and from time to time, we may also be pursuing activities to extend our debt maturities, lower principal balances, reduce interest expense or obtain covenant flexibility. Activities could include, without limitation, one or more tender offers, exchange offers, debt-for-equity exchanges or consent solicitations. We cannot predict if or when we would conduct any such activity, whether any such activities will achieve their intended results or whether any such activity could impact our financial results or be dilutive.

While interest rates have been at record low levels in recent years, this low interest rate environment likely will not continue indefinitely. At December 31, 2019, approximately $3.3 billion and $0.3 billion of principal amounts outstanding under the Term Loan Facility and the Revolving Credit Facility (each as defined in Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report), respectively, bear interest at variable rates. Any future borrowings by the Company could also have variable interest rates. As a result, to the extent we have not hedged against rising interest rates, an increase in the applicable benchmark interest rates would increase our cost of servicing our indebtedness and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Changes in the method of determining the London Interbank Offered Rate (LIBOR), or the replacement of LIBOR with an alternative reference rate, may materially adversely affect our interest expense related to our outstanding debt.

A significant portion of our outstanding indebtedness, including, at December 31, 2019, $3.3 billion outstanding under the Term Loan Facility and $0.3 billion outstanding under the Revolving Credit Facility, bears interest rates in relation to LIBOR. Any future amounts borrowed under the Term Loan Facility or Revolving Credit Facility would also bear interest rates in relation to LIBOR, depending on our interest election. On July 27, 2017, the Financial Conduct Authority in the United Kingdom announced that it would phase out LIBOR as a benchmark by the end of 2021. The Alternative Reference Rates Committee (ARRC), a steering committee comprised of large U.S. financial institutions, has proposed replacing LIBOR with a new index calculated by short-term repurchase agreements (the Secured Overnight Financing Rate (SOFR)). At this time, no consensus exists as to what rate or rates may become accepted alternatives to LIBOR, and it is impossible to predict whether and to what extent banks will continue to provide LIBOR submissions to the administrator of LIBOR, whether LIBOR rates will cease to be published or supported before or after 2021 or whether any additional reforms to LIBOR may be enacted in the United Kingdom or elsewhere. Such developments and any other legal or regulatory changes in the method by which LIBOR is determined or the transition from LIBOR to a successor benchmark may result in, among other things, a sudden or prolonged increase or decrease in LIBOR, a delay in the publication of LIBOR and changes in the rules or methodologies in LIBOR, which may discourage market participants from continuing to administer or to participate in LIBOR's determination and, in certain situations, could result in LIBOR no longer being determined and published. If LIBOR ceases to exist, we may need to renegotiate the Credit Agreement (as defined in Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report) and we may not be able to do so on terms that are favorable to us. The overall financial market may be disrupted and there could be significant increases in benchmark rates or borrowing costs to borrowers as a result of the phase-out or replacement of LIBOR. Disruption in the financial market, significant increases in benchmark rates or borrowing costs or our inability to refinance the Credit Agreement with favorable terms could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Covenants in our debt agreements restrict our business in many ways, a default of which may result in acceleration of certain of our indebtedness.

We are subject to various covenants in the instruments governing our debt that limit our and/or our subsidiaries' ability to, among other things:

- incur or assume liens or additional debt or provide guarantees in respect of obligations of other persons;
- issue redeemable stock and preferred stock;
- pay dividends or distributions or redeem or repurchase capital stock;
- prepay, redeem or repurchase debt;
- make loans, investments and capital expenditures;
- enter into agreements that restrict distributions from our subsidiaries;
- sell assets and capital stock of our subsidiaries;
- enter into certain transactions with affiliates; and
- consolidate or merge with or into, or sell substantially all of our assets to, another person.

A breach of any of these covenants could result in a default under our indebtedness. If there were an event of default under any of the agreements relating to our outstanding indebtedness, the holders of the defaulted debt could cause all amounts outstanding with respect to that debt to be due and payable immediately, terminate all commitments to extend further credit, foreclose against all the assets comprising the collateral securing or otherwise supporting the debt and pursue other legal remedies. The instruments governing our debt may contain cross-default or cross-acceleration provisions that may cause all of the debt issued under such instruments to become immediately due and payable as a result of a default under an unrelated debt instrument. Our assets and cash flows may be insufficient to fully repay borrowings under our outstanding debt instruments if the obligations thereunder were accelerated upon an event of default. We may need to conduct asset sales or pursue other alternatives, including proceedings under applicable insolvency laws relating to some or all of our business. The covenants are also subject to a number of exceptions, including the ability to incur certain additional amounts of secured and unsecured indebtedness, which could exacerbate any of these risks. Any or all of the above could have a material adverse effect on our business, financial condition, results of operations and cash flows. For a description of our indebtedness, see Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

U.S. federal income tax reform could adversely affect us.

On December 22, 2017, U.S. federal tax legislation, commonly referred to as the TCJA, was signed into law, significantly altering the U.S. Internal Revenue Code (the Code) effective, in substantial part, January 1, 2018. The TCJA, among other things, includes:

- changes to U.S. federal tax rates;
- expanded limitations on the deductibility of interest;
- immediate expensing of capital expenditures;
- the migration from a "worldwide" system of taxation to a "territorial" system;

- the creation of an anti-base erosion minimum tax system; and
- the modification or repeal of many business deductions and credits.

Additionally, the TCJA eliminates the ability to carry back any future net operating losses and only allows for carryforwards, the utilization of which is limited to 80% of taxable income in a given carryforward year. This could affect the timing of our ability to utilize net operating losses in the future.

The aforementioned changes could, individually or in aggregate, increase our future effective tax rate and have a material adverse effect on our business, financial condition, results of operations and cash flows. In addition, prospective or retroactive regulatory and administrative guidance relating to the TCJA could adversely impact our businesses and our current and future projections of U.S. cash taxes.

Further future changes to tax laws could materially adversely affect us.

Under current law, we expect Endo International plc to be treated as a non-U.S. corporation for U.S. federal income tax purposes. However, changes to the rules in Section 7874 of the Code or regulations promulgated thereunder or other guidance issued by the Treasury or the U.S. Internal Revenue Service (IRS) could adversely affect our status as a non-U.S. corporation for U.S. federal income tax purposes, and any such changes could have prospective or retroactive application to us, Endo Health Solutions Inc. (EHSI) and/or their respective shareholders and affiliates. Consequently, there can be no assurance that there will not exist in the future a change in law that might cause us to be treated as a U.S. corporation for U.S. federal income tax purposes, including with retroactive effect.

In addition, Ireland's Department of Finance, Luxembourg's Ministry of Finance, the Organization for Economic Co-operation and Development, the European Commission and other government agencies in jurisdictions where we and our affiliates do business have had an extended focus on issues related to the taxation of multinational corporations and there are several current proposals that, if enacted, would substantially change the taxation of multinational corporations. As a result, the tax laws in the jurisdictions in which we operate could change on a prospective or retroactive basis, and any such changes could affect recorded deferred tax assets and liabilities and increase our effective tax rate, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. The potential impact of changes in tax laws in such jurisdictions could have a material impact on the Company.

The IRS may not agree with the conclusion that we should be treated as a non-U.S. corporation for U.S. federal income tax purposes.

Although Endo International plc is incorporated in Ireland, the IRS may assert that it should be treated as a U.S. corporation (and, therefore, a U.S. tax resident) for U.S. federal income tax purposes pursuant to Section 7874 of the Code. A corporation is generally considered a tax resident in the jurisdiction of its organization or incorporation for U.S. federal income tax purposes. Because we are an Irish incorporated entity, we would generally be classified as a non-U.S. corporation (and, therefore, a non-U.S. tax resident) under these rules. Section 7874 provides an exception pursuant to which a non-U.S. incorporated entity may, in certain circumstances, be treated as a U.S. corporation for U.S. federal income tax purposes.

Under Section 7874, we would be treated as a non-U.S. corporation for U.S. federal income tax purposes if the former shareholders of EHSI owned, immediately after the Paladin transactions (within the meaning of Section 7874), less than 80% (by both vote and value) of Endo shares by reason of holding shares in EHSI (the ownership test). The former EHSI shareholders owned less than 80% (by both vote and value) of the shares in Endo after the Paladin merger by reason of their ownership of shares in EHSI. As a result, under current law, we expect Endo International plc to be treated as a non-U.S. corporation for U.S. federal income tax purposes. There is limited guidance regarding the application of Section 7874, including with respect to the provisions regarding the application of the ownership test. Our obligation to complete the Paladin transactions was conditional upon its receipt of a Section 7874 opinion from our counsel, Skadden, Arps, Slate, Meagher & Flom LLP (Skadden), dated as of the closing date of the Paladin transactions and subject to certain qualifications and limitations set forth therein, to the effect that Section 7874 and the regulations promulgated thereunder should not apply in such a manner so as to cause Endo to be treated as a U.S. corporation for U.S. federal income tax purposes from and after the closing date. However, an opinion of tax counsel is not binding on the IRS or a court. Therefore, there can be no assurance that the IRS will not take a position contrary to Skadden's Section 7874 opinion or that a court will not agree with the IRS in the event of litigation.

The effective rate of taxation upon our results of operations is dependent on multi-national tax considerations.

We earn a portion of our income outside the U.S. That portion of our earnings is generally taxed at the rates applicable to the activities undertaken by our subsidiaries outside of the U.S. Our effective income tax rate in the future could be adversely affected by a number of factors, including changes in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws, the outcome of income tax audits and the repatriation of earnings from our subsidiaries for which we have not provided for taxes. Cash repatriations are subject to restrictions in certain jurisdictions and may be subject to withholding and other taxes. We periodically assess our tax positions to determine the adequacy of our tax provisions, which are subject to significant discretion. Although we believe our tax provisions are adequate, the final determination of tax audits and any related disputes could be materially different from our historical income tax provisions and accruals. The results of audits and disputes could have a material adverse effect on our business, financial condition, results of operations and cash flows for the period or periods for which the applicable final determinations are made.

We may not be able to successfully maintain our low tax rates or other tax positions, which could adversely affect our businesses and financial condition, results of operations and growth prospects.

We are incorporated in Ireland and also maintain subsidiaries in, among other jurisdictions, the U.S., Canada, India, the United Kingdom and Luxembourg. The IRS and other taxing authorities may continue to challenge our tax positions. The IRS presently is examining certain of our subsidiaries' U.S. income tax returns for fiscal years ended between December 31, 2011 and December 31, 2015 and, in connection with those examinations, is reviewing our tax positions related to, among other things, certain intercompany arrangements, including the level of profit earned by our U.S. subsidiaries pursuant to such arrangements, and a worthless stock deduction directly attributable to product liability losses. The IRS may examine our tax returns for other fiscal years and/or for other tax positions. Similarly, other tax authorities, including the Canada Revenue Agency, are currently examining our non-U.S. tax returns. Additionally, other jurisdictions where we are not currently under audit remain subject to potential future examinations. Such examinations may lead to proposed or actual adjustments to our taxes that may be material, individually or in the aggregate.

Responding to or defending any challenge or proposed adjustment to our tax positions is expensive, consumes time and other resources and diverts management's attention. We cannot predict whether taxing authorities will conduct an audit challenging any of our tax positions, the cost involved in responding to and defending any such audit and resulting litigation, or the outcome. If we are unsuccessful in any of these matters, we may be required to pay taxes for prior periods, interest, fines or penalties, and may be obligated to pay increased taxes in the future or repay certain tax refunds, any of which could require us to reduce our operating costs, decrease efforts in support of our products or seek to raise additional funds, all of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our ability to use U.S. tax attributes to offset U.S. taxable income may be limited.

Existing and future tax laws and regulations may limit our ability to use U.S. tax attributes including, but not limited to, net operating losses and excess interest expense, to offset U.S. taxable income. For a period of time following the 2014 Paladin transactions, Section 7874 of the Code precludes our U.S. affiliates from utilizing U.S. tax attributes to offset taxable income if we complete certain transactions with related non-U.S. subsidiaries. In addition, the U.S. Treasury Department has issued temporary and proposed regulations related to corporate inversions and earnings stripping. The limitations on the use of certain tax attributes and deductions in these regulations are in addition to existing rules that could impose more restrictive limitations in the event that cumulative changes in our stock ownership within a three-year period exceeded certain thresholds. Such changes or the adoption of additional limitations could impact our overall utilization of deferred tax assets, potentially resulting in a material adverse effect on our business, financial condition, results of operations and cash flows.

If pharmaceutical companies are successful in limiting the use of generics through their legislative, regulatory and other efforts, our sales of generic products may suffer.

Many pharmaceutical companies increasingly have used state and federal legislative and regulatory means to delay generic competition. These efforts have included:

- pursuing new patents for existing products which may be granted just before the expiration of earlier patents, which could extend patent protection for additional years;
- using the Citizen Petition process (for example, under 21 C.F.R. § 10.30) to request amendments to FDA standards;
- attempting to use the legislative and regulatory process to have products reclassified or rescheduled or to set definitions of abuse-deterrent formulations to protect patents and profits; and
- engaging in state-by-state initiatives to enact legislation that restricts the substitution of some generic products.

If pharmaceutical companies or other third parties are successful in limiting the use of generic products through these or other means, our sales of generic products and our growth prospects may decline, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. We cannot determine what effect Section 610 of the FCAA 2020 may have on limiting or preventing the success of pharmaceutical companies or other third parties in delaying generic competition.

We are incorporated in Ireland and Irish law differs from the laws in effect in the U.S. and may afford less protection to, or otherwise adversely affect, our shareholders.

Our shareholders may have more difficulty protecting their interests than would shareholders of a corporation incorporated in a jurisdiction of the U.S. As an Irish company, we are governed by Irish Companies Act 2014 (the Companies Act). The Companies Act and other relevant aspects of Irish law differ in some material respects from laws generally applicable to U.S. corporations and shareholders, including, among others, the provisions relating to interested director and officer transactions, acquisitions, takeovers, shareholder lawsuits and indemnification of directors. For example, under Irish law, the duties of directors and officers of a company are generally owed to the company only. As a result, shareholders of Irish companies generally do not have a personal right of action against the directors or officers of a company and may pursue a right of action on behalf of the company only in limited circumstances. In addition, depending on the circumstances, the acquisition, ownership and/or disposition of our ordinary shares may subject individuals to different or additional tax consequences under Irish law including, but not limited to, Irish stamp duty, dividend withholding tax and capital acquisitions tax.

Any attempts to take us over will be subject to Irish Takeover Rules and subject to review by the Irish Takeover Panel.

We are subject to Irish Takeover Rules, under which the Board will not be permitted to take any action which might frustrate an offer for our ordinary shares once it has received an approach which may lead to an offer or has reason to believe an offer is imminent.

We are an Irish company and it may be difficult to enforce judgments against us or certain of our officers and directors.

We are incorporated in Ireland and a substantial portion of our assets are located in jurisdictions outside the U.S. In addition, some of our officers and directors reside outside the U.S., and some or all of their respective assets are or may be located in jurisdictions outside of the U.S. It may be difficult for investors to effect service of process against us or such officers or directors or to enforce against us or them judgments of U.S. courts predicated upon civil liability provisions of the U.S. federal securities laws.

There is no treaty between Ireland and the U.S. providing for the reciprocal enforcement of foreign judgments. The following requirements must be met before a foreign judgment will be deemed to be enforceable in Ireland:

- the judgment must be for a definite sum;
- the judgment must be final and conclusive; and
- the judgment must be provided by a court of competent jurisdiction.

An Irish court will also exercise its right to refuse judgment if the foreign judgment was obtained by fraud, if the judgment violated Irish public policy, if the judgment is in breach of natural justice or if it is irreconcilable with an earlier judgment. Further, an Irish court may stay proceedings if concurrent proceedings are being brought elsewhere. Judgments of U.S. courts of liabilities predicated upon U.S. federal securities laws may not be enforced by Irish courts if deemed to be contrary to public policy in Ireland.

Item 1B. ***Unresolved Staff Comments***

None.

Item 2. ***Properties***

This section provides information about the location and general character of the Company's principal physical properties at December 31, 2019.

The Company's global headquarters is located in Dublin, Ireland. The Company also conducts certain corporate functions at its Malvern, Pennsylvania location. Both properties are leased. The Malvern lease is described in more detail in Note 8. Leases in the Consolidated Financial Statements included in Part IV, Item 15 of this report. These locations support each of our reportable segments. For example, our global quality and supply chain functions are run from our global headquarters. The Company's segments conduct certain additional business functions, including manufacturing, distribution, quality assurance, R&D and administration, at locations throughout the U.S. and select global markets. Additional information about the properties of the Company's reportable segments is set forth below:

- Branded Pharmaceuticals: This segment also conducts certain operations in the U.S. through leased and owned manufacturing properties in Pennsylvania, New York and New Jersey, as well as certain administrative and R&D functions through leased properties in Pennsylvania.
- Sterile Injectables: This segment also conducts certain manufacturing, quality assurance, R&D and administration functions in the U.S. through owned and leased properties in Michigan, as well as certain R&D and administration functions in New York and in India in the same facilities as our Generic Pharmaceuticals segment, as discussed below.
- Generic Pharmaceuticals: This segment also conducts certain manufacturing, distribution, quality assurance and administration functions, as well as certain R&D functions, through owned and leased properties throughout the U.S., including in New York and California. It also conducts significant R&D operations, as well as certain manufacturing and administrative functions, in India through owned and leased facilities in Chennai and Mumbai.
- International Pharmaceuticals: This segment's operations are currently conducted through Paladin's leased headquarters in Montreal, Canada.

As of December 31, 2019, our owned and leased properties consist of approximately 1.1 million and 1.2 million square feet, respectively. We believe our properties are suitable and adequate to support our current and projected operations in all material respects.

Item 3. ***Legal Proceedings***

The disclosures under Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report are incorporated into this Part I, Item 3 by reference.

Item 4. ***Mine Safety Disclosures***

Not applicable.

PART II

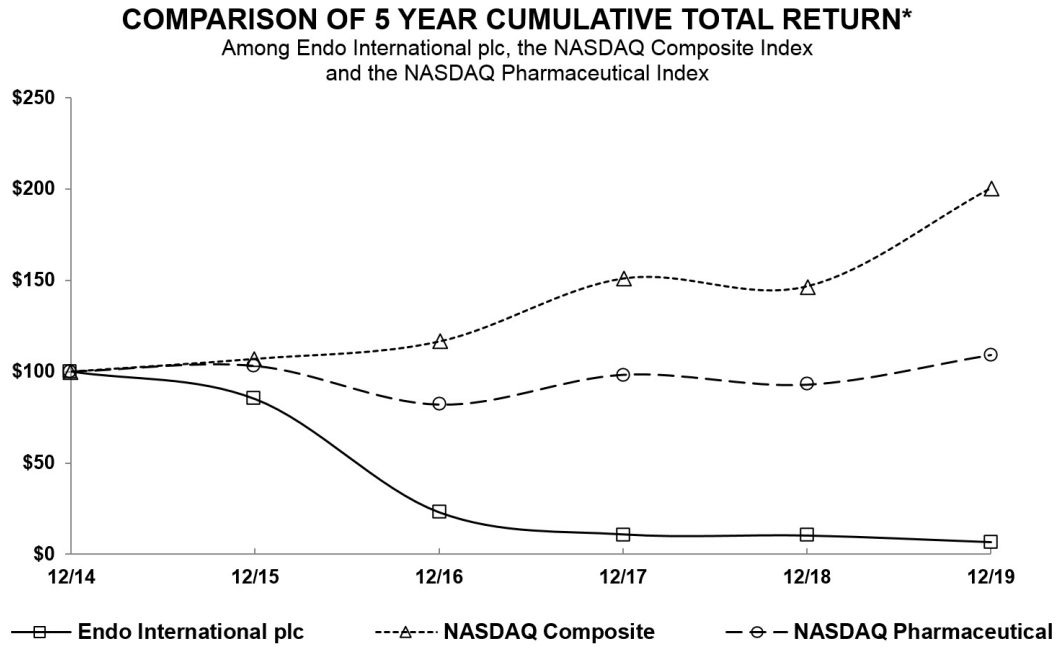
Item 5. ***Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities***

Market Information. Our ordinary shares are traded on the NASDAQ under the ticker symbol "ENDP."

Holders. As of February 18, 2020, we estimate that there were approximately 75 holders of record of our ordinary shares.

Dividends. We have never declared or paid any cash dividends on our ordinary shares and we currently have no plans to declare a dividend. We are permitted to pay dividends subject to limitations imposed by Irish law, the various agreements and indentures governing our indebtedness and the existence of sufficient distributable reserves. For example, the Companies Act requires Irish companies to have distributable reserves equal to or greater than the amount of any proposed dividend. Unless we are able to generate sufficient distributable reserves or create distributable reserves by reducing our share premium account, we will not be able to pay dividends.

Performance Graph. The following graph provides a comparison of the cumulative total shareholder return on the Company's ordinary shares with that of the cumulative total shareholder return on the (i) NASDAQ Composite Index and (ii) the NASDAQ Pharmaceutical Index, commencing on December 31, 2014 and ending December 31, 2019. The graph assumes $100 invested on December 31, 2014 in the Company's ordinary shares and in each of the comparative indices. Our historic share price performance is not necessarily indicative of future share price performance.



*$100 invested on 12/31/14 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

	December 31,					
	2014	2015	2016	2017	2018	2019
Endo International plc	$ 100.00	$ 84.89	$ 22.84	$ 10.75	$ 10.12	$ 6.50
NASDAQ Composite Index	$ 100.00	$ 106.96	$ 116.45	$ 150.96	$ 146.67	$ 200.49
NASDAQ Pharmaceutical Index	$ 100.00	$ 103.06	$ 81.93	$ 98.23	$ 92.83	$ 109.06

Recent sales of unregistered securities; Use of proceeds from registered securities. There were no unregistered sales of equity securities by the Company during the three years ended December 31, 2019.

Purchase of Equity Securities by the issuer and affiliated purchasers. The following table reflects purchases of Endo International plc ordinary shares by the Company during the three months ended December 31, 2019:

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plan	Approximate Dollar Value of Shares that May Yet be Purchased Under the Plan (1)
October 1, 2019 to October 31, 2019	—	—	—	$ 2,250,000,000
November 1, 2019 to November 30, 2019	—	—	—	$ 2,250,000,000
December 1, 2019 to December 31, 2019	—	—	—	$ 2,250,000,000
Three months ended December 31, 2019	—	—	—	

(1) Pursuant to Article 11 of the Company's Articles of Association, the Company has broad shareholder authority to conduct ordinary share repurchases by way of redemptions. As permitted by Irish Law and the Company's Articles of Association, any ordinary shares redeemed shall be cancelled upon redemption. The Board has approved the 2015 Share Buyback Program that authorizes the Company to redeem, in the aggregate, $2.5 billion of its outstanding ordinary shares. Redemptions under this program may be made from time to time in open market or negotiated transactions or otherwise, as determined by the Board. This program does not obligate the Company to redeem any particular amount of ordinary shares. To date, the Company has redeemed and cancelled approximately 4.4 million of its ordinary shares under the 2015 Share Buyback Program for $250.0 million, not including related fees. We currently do not intend to conduct ordinary share repurchases in the foreseeable future. Future redemptions, if any, will depend on factors such as levels of cash generation from operations, cash requirements for investment in the Company's business, repayment of future debt, if any, the then current share price, market conditions, legal limitations, sufficient distributable reserves and other factors. For example, the Companies Act requires Irish companies to have distributable reserves equal to or greater than the amount of any proposed ordinary share repurchase amount. Unless we are able to generate sufficient distributable reserves or create distributable reserves by reducing our share premium account, we will not be able to repurchase our ordinary shares. The 2015 Share Buyback Program may be suspended, modified or discontinued at any time.

Item 6. ***Selected Financial Data***

The following tables present selected consolidated financial data for the periods indicated below (in thousands, except per share data). This data has been derived from our financial statements and should be read in conjunction with Part II, Item 7 of this report "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Part II, Item 8 of this report "Financial Statements and Supplementary Data". The selected data in this section is not intended to replace the Consolidated Financial Statements and is not necessarily indicative of the results of our future operations.

	Year Ended December 31,				
	2019	2018	2017	2016	2015
Consolidated Statement of Operations Data:					
Total revenues	$ 2,914,364	$ 2,947,078	$ 3,468,858	$ 4,010,274	$ 3,268,718
Loss from continuing operations	$ (360,584)	$ (961,767)	$ (1,232,711)	$ (3,223,772)	$ (300,399)
Net loss per share—continuing operations:					
Basic	$ (1.60)	$ (4.29)	$ (5.52)	$ (14.48)	$ (1.52)
Diluted	$ (1.60)	$ (4.29)	$ (5.52)	$ (14.48)	$ (1.52)
Shares used for net loss per share—basic	226,050	223,960	223,198	222,651	197,100
Shares used for net loss per share—diluted	226,050	223,960	223,198	222,651	197,100
Cash dividends declared per share	$ —	$ —	$ —	$ —	$ —

	As of December 31,				
	2019	2018	2017	2016	2015
Consolidated Balance Sheet Data:					
Cash and cash equivalents	$ 1,454,531	$ 1,149,113	$ 986,605	$ 517,250	$ 272,348
Total assets	$ 9,389,527	$ 10,132,393	$ 11,635,580	$ 14,275,109	$ 19,350,336
Long-term debt, less current portion, net	$ 8,359,899	$ 8,224,269	$ 8,242,032	$ 8,141,378	$ 8,251,657
Other long-term obligations	$ 435,883	$ 456,311	$ 687,759	$ 797,397	$ 1,656,391

Based on the Company's adoption of certain accounting principles, including, for example, its modified retrospective adoptions of *Accounting Standards Codification Topic 606, Revenue from Contracts with Customers* (ASC 606) and *Accounting Standards Codification Topic 842, Leases* (ASC 842) on January 1, 2018 and January 1, 2019, respectively, the accounting principles in effect differ among the periods presented above.

The Company has recorded certain charges for asset impairments and litigation-related and other matters during each year presented, portions of which are reported as Discontinued operations, net of tax in the Consolidated Statements of Operations. The Company has completed certain business combinations during or after 2015, certain of which resulted in significant financing activities. These business combinations had a significant impact on the Company's financial statements in their respective years of acquisition and in subsequent years. These impacts result from the consideration transferred by the Company for the acquisitions, the initial and subsequent purchase accounting for the acquired entities' assets and liabilities and the post-acquisition results of operations. The Company has also ceased operations and/or divested of certain businesses during or after 2015.

Through the dates of: (i) the sale of the Men's Health and Prostate Health units of the American Medical Systems Holdings, Inc. (AMS) business in August 2015 and (ii) the wind down of the Women's Health unit of the AMS business (Astora) in March 2016, the assets and liabilities of all of these aforementioned businesses were classified as held for sale in the Consolidated Balance Sheets, except in the case of certain assets and liabilities that were to remain with the Company after sale including, among others, the mesh-related product liability accrual, related Qualified Settlement Funds (QSFs) and certain intangible and fixed assets. Additionally, the assets and liabilities of Litha, which was sold in July 2017, are classified as held for sale in the Consolidated Balance Sheet as of December 31, 2016. The operating results of the entire AMS business, which includes the Men's Health, Prostate Health and Astora businesses, are reported as Discontinued operations, net of tax in the Consolidated Statements of Operations for all periods presented. For additional information, see Note 3. Discontinued Operations and Divestitures in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

For further information regarding the comparability of the financial data presented in the tables above and factors that may impact comparability of future results, see Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations as well as the Consolidated Financial Statements and related notes included in this Annual Report and previously filed Annual Reports on Form 10-K.

Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

The following Management's Discussion and Analysis of Financial Condition and Results of Operations describes the principal factors affecting the results of operations, liquidity and capital resources and critical accounting estimates of Endo International plc. This section omits discussions about 2017 items and comparisons between 2018 and 2017. Such discussions can be found in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the year ended December 31, 2018. These discussions should be read in conjunction with our audited Consolidated Financial Statements and related notes thereto. Except for the historical information contained in this report, including the following discussion, this report contains forward-looking statements that involve risks and uncertainties. See "Forward-Looking Statements" beginning on page i of this report.

Unless otherwise indicated or required by the context, references throughout to "Endo," the "Company," "we," "our" or "us" refer to financial information and transactions of Endo International plc and its subsidiaries.

The operating results of Astora are reported as Discontinued operations, net of tax in the Consolidated Statements of Operations for all periods presented. For additional information, see Note 3. Discontinued Operations and Divestitures in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

EXECUTIVE SUMMARY

This executive summary provides 2019 highlights from the results of operations that follow:

- Total revenues in 2019 decreased 1% to $2,914.4 million compared to $2,947.1 million in 2018 as strong performance from our Sterile Injectables segment and our Branded Pharmaceuticals segment's Specialty Products portfolio was more than offset by declines in our Branded Pharmaceuticals segment's Established Products portfolio and both our Generic Pharmaceuticals and International Pharmaceuticals segments.
- Gross margin percentage in 2019 increased to 46.2% from 44.6% in 2018, reflecting the impact of changes in product mix to higher margin Sterile Injectables and Specialty Products from lower margin Generic Pharmaceuticals and Established Products, as well as reductions to amortization expense and expenses related to retention and separation benefits and other cost reduction initiatives, partially offset by the unfavorable impact of increased sales of certain lower margin authorized generic products launched in the third quarter of 2018.
- Asset impairment charges in 2019 decreased to $526.1 million from $916.9 million in 2018.
- Loss from continuing operations in 2019 was $360.6 million, compared to $961.8 million in 2018.

Additionally, the following summary highlights certain key events that occurred during 2019:

- In November 2019, we announced the FDA's acceptance for review of the original BLA for CCH for the treatment of cellulite in the buttocks. The BLA is supported by the results of the RELEASE-1 and RELEASE-2 Phase 3 studies, as well as a clinical program. The PDUFA date, or target action date, for the BLA has been set for July 6, 2020.
- In March 2019, we completed a series of refinancing transactions that were intended to extend our debt maturity profile and provide greater covenant flexibility, which resulted in a net gain on extinguishment of debt of $119.8 million. These transactions are collectively referred to herein as the March 2019 Refinancing Transactions and are further described in Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report.
- As a result of the Company's lawsuit against the FDA challenging its interim policy authorizing bulk compounding of pharmaceuticals, the FDA evaluated whether there is a clinical need to compound vasopressin under Section 503B of the FFDCA. In March 2019, the FDA determined that there is no such clinical need. As a result, the bulk compounding of vasopressin is impermissible under Section 503B of the FFDCA unless the FDA were to add vasopressin to its drug shortage list. The FDA's decision was upheld by the U.S. District Court for the District of Columbia in August 2019. VASOSTRICT® remains the only vasopressin injection product with an NDA approved by the FDA.

CRITICAL ACCOUNTING ESTIMATES

The preparation of our Consolidated Financial Statements in conformity with accounting principles generally accepted in the U.S. (U.S. GAAP) requires us to make estimates and assumptions that affect the amounts and disclosures in our Consolidated Financial Statements, including the notes thereto, and elsewhere in this report. For example, we are required to make significant estimates and assumptions related to revenue recognition, including sales deductions, long-lived assets, goodwill, other intangible assets, income taxes, contingencies, financial instruments and share-based compensation, among others. Some of these estimates can be subjective and complex. Although we believe that our estimates and assumptions are reasonable, there may be other reasonable estimates or assumptions that differ significantly from ours. Further, our estimates and assumptions are based upon information available at the time they were made. Actual results may differ significantly from our estimates.

Accordingly, in order to understand our Consolidated Financial Statements, it is important to understand our critical accounting estimates. We consider an accounting estimate to be critical if both: (i) the accounting estimate requires us to make assumptions about matters that were highly uncertain at the time the accounting estimate was made and (ii) changes in the estimate that are reasonably likely to occur from period to period, or use of different estimates that we reasonably could have used in the current period, would have a material impact on our financial condition, results of operations or cash flows. Our most critical accounting estimates are described below.

Revenue recognition

The Company adopted ASC 606 on January 1, 2018 using the modified retrospective method for all revenue-generating contracts, including modifications thereto, that were not completed contracts at the date of adoption. ASC 606 applies to contracts with commercial substance that establish the payment terms and each party's rights regarding the goods or services to be transferred, to the extent collection of substantially all of the related consideration is probable. Under ASC 606, we recognize revenue for contracts meeting these criteria when (or as) we satisfy our performance obligations for such contracts by transferring control of the underlying promised goods or services to our customers. The amount of revenue we recognize reflects our estimate of the consideration we expect to be entitled to receive, subject to certain constraints, in exchange for such goods or services. This amount is referred to as the transaction price.

Our revenue consists almost entirely of sales of our products to customers, whereby we ship products to a customer pursuant to a purchase order. For contracts such as these, revenue is recognized when our contractual performance obligations have been fulfilled and control has been transferred to the customer pursuant to the contract's terms, which is generally upon delivery to the customer. The amount of revenue we recognize is equal to the fixed amount of the transaction price, adjusted for our estimates of a number of significant variable components including, but not limited to, estimates for chargebacks, rebates, sales incentives and allowances, DSA and other fees for services, returns and allowances, which we collectively refer to as sales deductions.

The Company utilizes the expected value method when estimating the amount of variable consideration to include in the transaction price with respect to each of the foregoing variable components and the most likely amount method when estimating the amount of variable consideration to include in the transaction price with respect to future potential milestone payments that do not qualify for the sales- and usage-based royalty exception. Variable consideration is included in the transaction price only to the extent that it is probable that a significant revenue reversal will not occur when the uncertainty associated with the variable consideration is resolved. The variable component of the transaction price is estimated based on factors such as our direct and indirect customers' buying patterns and the estimated resulting contractual deduction rates, historical experience, specific known market events and estimated future trends, current contractual and statutory requirements, industry data, estimated customer inventory levels, current contract sales terms with our direct and indirect customers and other competitive factors. We subsequently review our estimates for sales deductions based on new or revised information that becomes available to us and make revisions to our estimates if and when appropriate. Refer to "Sales deductions" section below for additional information.

We believe that speculative buying of product, particularly in anticipation of possible price increases, has been the historical practice of certain of our customers. The timing of purchasing decisions made by wholesaler and large retail chain customers can materially affect the level of our sales in any particular period. Accordingly, our sales may not correlate to the number of prescriptions written for our products based on external third-party data.

We have entered into DSAs with certain of our significant wholesaler customers that obligate the wholesalers, in exchange for fees paid by us, to: (i) manage the variability of their purchases and inventory levels within specified limits based on product demand and (ii) provide us with specific services, including the provision of periodic retail demand information and current inventory levels for our pharmaceutical products held at their warehouse locations.

Sales deductions

As described above, the amount of revenue we recognize is equal to the fixed amount of the transaction price, adjusted for our estimates of variable consideration, including sales deductions. If the assumptions we use to calculate our estimates for sales deductions do not appropriately reflect future activity, our financial position, results of operations and cash flows could be materially impacted. The following table presents the activity and ending balances, excluding Discontinued operations, for our product sales provisions for the years ended December 31, 2019 and 2018 (in thousands):

	Returns and Allowances	Rebates	Chargebacks	Other Sales Deductions	Total
Balance, January 1, 2018	$ 291,034	$ 354,687	$ 256,708	$ 40,348	$ 942,777
Current year provision	78,767	912,885	2,268,212	161,788	3,421,652
Prior year provision	3,693	(1,053)	785	(664)	2,761
Payments or credits	(136,548)	(986,803)	(2,307,339)	(164,169)	(3,594,859)
Balance, December 31, 2018	$ 236,946	$ 279,716	$ 218,366	$ 37,303	$ 772,331
Current year provision	90,876	792,389	2,144,534	148,156	3,175,955
Prior year provision	(4,029)	(5,952)	1,233	(2,060)	(10,808)
Payments or credits	(117,545)	(850,363)	(2,158,965)	(150,268)	(3,277,141)
Balance, December 31, 2019	$ 206,248	$ 215,790	$ 205,168	$ 33,131	$ 660,337

Returns and Allowances

Consistent with industry practice, we maintain a return policy that allows our customers to return products within a specified period of time both subsequent to and, in certain cases, prior to the products' expiration dates. Our return policy generally allows customers to receive credit for expired products within six months prior to expiration and within one year after expiration. Our provision for returns and allowances consists of our estimates for future product returns, pricing adjustments and delivery errors. The primary factors we consider in estimating our potential product returns include:

- the shelf life or expiration date of each product;
- historical levels of expired product returns;
- external data with respect to inventory levels in the wholesale distribution channel;
- external data with respect to prescription demand for our products; and
- the estimated returns liability to be processed by year of sale based on analysis of lot information related to actual historical returns.

In determining our estimates for returns and allowances, we are required to make certain assumptions regarding the timing of the introduction of new products and the potential of these products to capture market share. In addition, we make certain assumptions with respect to the extent and pattern of decline associated with generic competition. To make these assessments, we utilize market data for similar products as analogs for our estimations. We use our best judgment to formulate these assumptions based on past experience and information available to us at the time. We continually reassess and make appropriate changes to our estimates and assumptions as new information becomes available to us.

Our estimate for returns and allowances may be impacted by a number of factors, but the principal factor relates to the level of inventory in the distribution channel. Where available, we utilize information received from our wholesaler customers about the quantities of inventory held, including the information received pursuant to DSAs, which we have not independently verified. For other customers, we have estimated inventory held based on buying patterns. In addition, we evaluate market conditions for products primarily through the analysis of wholesaler and other third party sell-through data, as well as internally-generated information, to assess factors that could impact expected product demand at the estimate date. As of December 31, 2019, we believe that our estimates of the level of inventory held by our customers is within a reasonable range as compared to both historical amounts and expected demand for each respective product.

When we are aware of an increase in the level of inventory of our products in the distribution channel, we consider the reasons for the increase to determine whether we believe the increase is temporary or other-than-temporary. Increases in inventory levels assessed as temporary will not result in an adjustment to our provision for returns and allowances. Some of the factors that may be an indication that an increase in inventory levels will be temporary include:

- recently implemented or announced price increases for our products; and
- new product launches or expanded indications for our existing products.

Conversely, other-than-temporary increases in inventory levels may be an indication that future product returns could be higher than originally anticipated and, accordingly, we may need to adjust our provision for returns and allowances. Some of the factors that may be an indication that an increase in inventory levels will be other-than-temporary include:

- declining sales trends based on prescription demand;
- recent regulatory approvals to shorten the shelf life of our products, which could result in a period of higher returns related to older product still in the distribution channel;
- introduction of new product or generic competition;
- increasing price competition from generic competitors; and
- changes to the National Drug Codes (NDCs) of our products, which could result in a period of higher returns related to product with the old NDC, as our customers generally permit only one NDC per product for identification and tracking within their inventory systems.

Rebates

Our provision for rebates, sales incentives and other allowances can generally be categorized into the following four types:

- direct rebates;
- indirect rebates;
- governmental rebates, including those for Medicaid, Medicare and TRICARE, among others; and
- managed-care rebates.

We establish contracts with wholesalers, chain stores and indirect customers that provide for rebates, sales incentives, DSA fees and other allowances. Some customers receive rebates upon attaining established sales volumes. Direct rebates are generally rebates paid to direct purchasing customers based on a percentage applied to a direct customer's purchases from us, including fees paid to wholesalers under our DSAs, as described above. Indirect rebates are rebates paid to indirect customers that have purchased our products from a wholesaler under a contract with us.

We are subject to rebates on sales made under governmental and managed-care pricing programs based on relevant statutes with respect to governmental pricing programs and contractual sales terms with respect to managed-care providers and GPOs. For example, we are required to provide a discount on our brand-name products to patients who fall within the Medicare Part D coverage gap, also referred to as the donut hole.

We participate in various federal and state government-managed programs whereby discounts and rebates are provided to participating government entities. For example, Medicaid rebates are amounts owed based upon contractual agreements or legal requirements with public sector (Medicaid) benefit providers after the final dispensing of the product by a pharmacy to a benefit plan participant. Medicaid reserves are based on expected payments, which are driven by patient usage, contract performance and field inventory that will be subject to a Medicaid rebate. Medicaid rebates are typically billed up to 180 days after the product is shipped, but can be as much as 270 days after the quarter in which the product is dispensed to the Medicaid participant. Periodically, we adjust the Medicaid rebate provision based on actual claims paid. Due to the delay in billing, adjustments to actual claims paid may incorporate revisions of this provision for several periods. Because Medicaid pricing programs involve particularly difficult interpretations of complex statutes and regulatory guidance, our estimates could differ from actual experience.

In determining our estimates for rebates, we consider the terms of our contracts and relevant statutes, together with information about sales mix (to determine which sales are subject to rebates and the amount of such rebates), historical relationships of rebates to revenues, past payment experience, estimated inventory levels of our customers and estimated future trends. Our provisions for rebates include estimates for both unbilled claims for end-customer sales that have already occurred and future claims that will be made when inventory in the distribution channel is sold through to end-customer plan participants. Changes in the level of utilization of our products through private or public benefit plans and GPOs will affect the amount of rebates that we owe.

Chargebacks

We market and sell products to both: (i) direct customers including wholesalers, distributors, warehousing pharmacy chains and other direct purchasing groups and (ii) indirect customers including independent pharmacies, non-warehousing chains, MCOs, GPOs and government entities. We enter into agreements with certain of our indirect customers to establish contract pricing for certain products. These indirect customers then independently select a wholesaler from which to purchase the products at these contracted prices. Alternatively, we may pre-authorize wholesalers to offer specified contract pricing to other indirect customers. Under either arrangement, we provide credit to the wholesaler for any difference between the contracted price with the indirect customer and the wholesaler's invoice price. Such credit is called a chargeback.

Our provision for chargebacks consists of our estimates for the credits described above. The primary factors we consider in developing and evaluating our provision for chargebacks include:

- the average historical chargeback credits;
- estimated future sales trends; and

- an estimate of the inventory held by our wholesalers, based on internal analysis of a wholesaler's historical purchases and contract sales.

Other sales deductions

We offer prompt-pay cash discounts to certain of our customers. Provisions for such discounts are estimated and recorded at the time of sale. We estimate provisions for cash discounts based on contractual sales terms with customers, an analysis of unpaid invoices and historical payment experience. Estimated cash discounts have historically been predictable and less subjective due to the limited number of assumptions involved, the consistency of historical experience and the fact that we generally settle these amounts within 30 to 60 days.

Shelf-stock adjustments are credits issued to our customers to reflect decreases in the selling prices of our products. These credits are customary in the industry and are intended to reduce a customer's inventory cost to better reflect current market prices. The determination to grant a shelf-stock credit to a customer following a price decrease is generally at our discretion, rather than contractually required. The primary factors we consider when deciding whether to record a reserve for a shelf-stock adjustment include:

- the estimated number of competing products being launched as well as the expected launch date, which we determine based on market intelligence;
- the estimated decline in the market price of our product, which we determine based on historical experience and customer input; and
- the estimated levels of inventory held by our customers at the time of the anticipated decrease in market price, which we determine based upon historical experience and customer input.

Valuation of long-lived assets

As of December 31, 2019, our combined long-lived assets balance, including property, plant and equipment and finite-lived intangible assets, is approximately $3.0 billion. Our finite-lived intangible assets consist of license rights and developed technology.

Long-lived assets are generally initially recorded at fair value if acquired in a business combination, or at cost if otherwise. To the extent any such asset is deemed to have a finite life, it is then amortized over its estimated useful life using either the straight-line method or, in the case of certain developed technology assets, an accelerated amortization model. The values of these various assets are subject to continuing scientific, medical and marketplace uncertainty. Factors giving rise to our initial estimate of useful lives are subject to change. Significant changes to any of these factors may result in a reduction in the useful life of the asset and an acceleration of related amortization expense, which could cause our net income and net income per share to decrease. Amortization expense is not recorded on assets held for sale.

Long-lived assets are assessed for impairment whenever events or changes in circumstances indicate the carrying amounts of the assets may not be recoverable. Recoverability of an asset that will continue to be used in our operations is measured by comparing the carrying amount of the asset to the forecasted undiscounted future cash flows related to the asset. In the event the carrying amount of the asset exceeds its undiscounted future cash flows and the carrying amount is not considered recoverable, impairment may exist. An impairment loss, if any, is measured as the excess of the asset's carrying amount over its fair value, generally based on a discounted future cash flow method, independent appraisals or offers from prospective buyers. An impairment loss would be recognized in the Consolidated Statements of Operations in the period that the impairment occurs. As a result of the significance of our long-lived assets, any recognized impairment loss could have a material adverse impact on our financial position and results of operations.

Our reviews of long-lived assets during the two years ended December 31, 2019 resulted in certain impairment charges. The majority of these charges related to finite-lived intangible assets, which are described in Note 10. Goodwill and Other Intangibles in the Consolidated Financial Statements included in Part IV, Item 15 of this report. Our impairment charges relating to long-lived assets were generally based on fair value estimates determined using either discounted cash flow models or offers from prospective buyers. When testing a long-lived asset using a discounted cash flow model, we utilize assumptions related to the future operating performance of the corresponding product based on management's annual and ongoing budgeting, forecasting and planning processes, which represent our best estimate of future cash flows. These estimates are subject to many assumptions, such as the economic environment in which our segments operate, demand for our products, competitor actions and factors which could affect our tax rate. Estimated future pre-tax cash flows are adjusted for taxes using a market participant tax rate and discounted to present value using a market participant, weighted average cost of capital. Financial and credit market volatility directly impacts certain inputs and assumptions used to develop the weighted average cost of capital such as the risk-free interest rate, industry beta, debt interest rate and our market capital structure. These assumptions are based on significant inputs not observable in the market and thus represent Level 3 measurements within the fair value hierarchy. The use of different inputs and assumptions would increase or decrease our estimated discounted future cash flows, the resulting estimated fair values and the amounts of our related impairments, if any. The discount rates applied to intangible long-lived assets impaired in 2019 ranged from 9.5% to 12.0%.

Events giving rise to impairment are an inherent risk in the pharmaceutical industry and cannot be predicted. Factors that we consider in deciding when to perform an impairment review include significant under-performance of a product line in relation to expectations, competitive events affecting the expected future performance of a product line, significant negative industry or economic trends and significant changes or planned changes in our use of the assets.

Each category of long-lived intangible assets is described further below.

Developed Technology. Our developed technology assets subject to amortization have useful lives ranging from 4 years to 20 years, with a weighted average useful life of approximately 11 years. We determine amortization periods and methods of amortization for developed technology assets based on our assessment of various factors impacting estimated useful lives and the timing and extent of estimated cash flows of the acquired assets, including the strength of the intellectual property protection of the product (if applicable), contractual terms and various other competitive and regulatory issues.

License Rights. Our license rights subject to amortization have useful lives ranging from 12 years to 15 years, with a weighted average useful life of approximately 14 years. We determine amortization periods for licenses based on our assessment of various factors including the expected launch date of the product, the strength of the intellectual property protection of the product (if applicable), contractual terms and various other competitive, developmental and regulatory issues.

Goodwill and indefinite-lived intangible assets

As of December 31, 2019, our combined goodwill and indefinite-lived intangible assets balance is approximately $3.7 billion.

Goodwill and indefinite-lived intangible assets are tested for impairment annually and when events or changes in circumstances indicate that the asset might be impaired. Our annual assessment is performed as of October 1.

We perform the goodwill impairment test by comparing the fair value and carrying amount of each reporting unit. Any goodwill impairment charge we recognize for a reporting unit is equal to the lesser of (i) the total goodwill allocated to that reporting unit and (ii) the amount by which that reporting unit's carrying amount exceeds its fair value.

Similarly, we perform our indefinite-lived intangible asset impairment tests by comparing the fair value of each intangible asset with its carrying amount. If the carrying amount of an indefinite-lived intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess.

We estimate the fair values of our reporting units and of identified indefinite-lived intangible assets using an income approach that utilizes a discounted cash flow model or, where appropriate, a market approach. The discounted cash flow models are dependent upon our estimates of future cash flows and other factors including estimates of (i) future operating performance, including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows and (ii) future economic conditions, all of which may differ from actual future cash flows.

Assumptions related to future operating performance are based on management's annual and ongoing budgeting, forecasting and planning processes, which represent our best estimate of future cash flows. These estimates are subject to many assumptions, such as the economic environment in which our segments operate, demand for our products, competitor actions and factors which could affect our tax rate. Estimated future pre-tax cash flows are adjusted for taxes using a market participant tax rate and discounted to present value using a market participant, weighted average cost of capital. Financial and credit market volatility directly impacts certain inputs and assumptions used to develop the weighted average cost of capital such as the risk-free interest rate, industry beta, debt interest rate and our market capital structure. These assumptions are based on significant inputs not observable in the market and thus represent Level 3 measurements within the fair value hierarchy. The use of different inputs and assumptions would increase or decrease our estimated discounted future cash flows, the resulting estimated fair values and the amounts of our related impairments, if any.

In order to assess the reasonableness of the calculated fair values of our reporting units, we also compare the sum of the reporting units' fair values to Endo's market capitalization and calculate an implied control premium (the excess sum of the reporting units' fair values over the market capitalization) or an implied control discount (the excess sum of total invested capital over the sum of the reporting units' fair values). The Company evaluates the implied control premium or discount by comparing it to control premiums or discounts of recent comparable market transactions, as applicable. If the control premium or discount is not reasonable in light of comparable recent transactions, or recent movements in the Company's share price, we reevaluate the fair value estimates of the reporting units by adjusting discount rates and/or other assumptions. This re-evaluation could correlate to different implied fair values for certain or all of the Company's reporting units.

As further described in Note 10. Goodwill and Other Intangibles in the Consolidated Financial Statements included in Part IV, Item 15 of this report, we recorded pre-tax, non-cash goodwill impairment charges relating to our Generic Pharmaceuticals reporting unit of $86.0 million and $65.1 million during the first and second quarters of 2019, respectively. Following the second-quarter 2019 impairment, there was no remaining goodwill associated with this reporting unit.

Endo subsequently performed its annual goodwill and indefinite-lived intangible assets impairment tests as of October 1, 2019. For the purpose of the 2019 annual tests, the Company had three reporting units with goodwill: Branded Pharmaceuticals, Sterile Injectables and Paladin. The fair values of each of our reporting units and of our indefinite-lived intangible assets were determined using an income approach with discount rates ranging from 9.5% to 13.5%, depending on the overall risk associated with the particular assets and other market factors. We believe the discount rates and other inputs and assumptions are consistent with those that a market participant would use. As a result of the 2019 annual test, the Company recorded a pre-tax non-cash goodwill impairment charge of $20.8 million during the fourth quarter of 2019 related to its Paladin reporting unit. No other goodwill or indefinite-lived intangible asset impairment charges were recorded as a result of the 2019 annual test. A 50 basis point increase in the assumed discount rate utilized in each test would have increased our Paladin reporting unit goodwill impairment charge by approximately $5 million and would not have changed the outcomes of our Branded Pharmaceuticals and Sterile Injectables goodwill impairment tests or our indefinite-lived intangible asset impairment tests.

Additional information about the impairment tests is provided in Note 10. Goodwill and Other Intangibles in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Income taxes

Our income tax expense, deferred tax assets and liabilities, income tax payable and reserves for unrecognized tax benefits reflect our best assessment of estimated current and future taxes to be paid. We are subject to income taxes in the U.S. and numerous other jurisdictions in which we operate. Significant judgments and estimates are required in determining the consolidated income tax expense or benefit for financial statement purposes. Deferred income taxes arise from temporary differences, which result in future taxable or deductible amounts, between the tax basis of assets and liabilities and the corresponding amounts reported in our Consolidated Financial Statements. In assessing the ability to realize deferred tax assets, we consider, when appropriate, future taxable income by tax jurisdiction and tax planning strategies. Where appropriate, we record a valuation allowance to reduce our net deferred tax assets to equal an amount that is more likely than not to be realized. In projecting future taxable income, we consider historical results, adjusted in certain cases for the results of discontinued operations, changes in tax laws or nonrecurring transactions. We incorporate assumptions about the amount of future earnings within a specific jurisdiction’s pretax income, adjusted for material changes included in business operations. The assumptions about future taxable income require significant judgment and, while these assumptions rely heavily on estimates, such estimates are consistent with the plans we are using to manage the underlying businesses. Future changes in tax laws and rates, including further administrative or regulatory guidance related to the TCJA, could affect recorded deferred tax assets and liabilities. Any adjustments to these estimates will generally be recorded as an income tax expense or benefit in the period the adjustment is determined.

The calculation of our tax liabilities often involves dealing with uncertainties in the application of complex tax laws and regulations in a multitude of jurisdictions across our global operations. A benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained on the basis of the technical merits upon examination, including resolutions of any related appeals or litigation processes. We first record unrecognized tax benefits as liabilities and then adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available at the time of establishing the liability. Because of the complexity of some of these uncertainties, the ultimate resolution may result in a payment, potentially including interest and penalties, that is materially different from our current estimate of the unrecognized tax benefit liabilities. These differences, along with any related interest and penalties, will generally be reflected as increases or decreases to income tax expense in the period in which new information becomes available.

We make an evaluation at the end of each reporting period as to whether or not some or all of the undistributed earnings of our subsidiaries are indefinitely reinvested. While we may have concluded in the past that some of such undistributed earnings are indefinitely reinvested, facts and circumstances may change in the future. Changes in facts and circumstances may include changes in the estimated capital needs of our subsidiaries or in our corporate liquidity requirements. Such changes could result in our management determining that some or all of such undistributed earnings are no longer indefinitely reinvested. In that event, we would be required to adjust our income tax provision in the period we determined that the earnings will no longer be indefinitely reinvested outside the relevant tax jurisdiction.

Contingencies

The Company is subject to various patent challenges, product liability claims, government investigations and other legal proceedings in the ordinary course of business. Material legal proceedings are discussed in Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report. Contingent accruals and legal settlements are recorded in the Consolidated Statements of Operations as Litigation-related and other contingencies, net (or as Discontinued operations, net of tax in the case of vaginal mesh matters) when the Company determines that a loss is both probable and reasonably estimable. Legal fees and other expenses related to litigation are expensed as incurred and included in Selling, general and administrative expenses in the Consolidated Statements of Operations (or as Discontinued operations, net of tax in the case of vaginal mesh matters).

Due to the fact that legal proceedings and other contingencies are inherently unpredictable, our estimates of the probability and amount of any such liabilities involve significant judgment regarding future events. The factors we consider in developing our liabilities for legal proceedings include the merits and jurisdiction of the proceeding, the nature and the number of other similar current and past proceedings, the nature of the product and the current assessment of the science subject to the proceeding, if applicable, and the likelihood of the conditions of settlement being met.

In order to evaluate whether a claim is probable of loss, we may rely on certain information about the claim. Without access to and review of such information, we may not be in a position to determine whether a loss is probable. Further, the timing and extent to which we obtain any such information, and our evaluation thereof, is often impacted by items outside of our control including, without limitation, the normal cadence of the litigation process and the provision of claim information to us by plaintiff's counsel. The amount of our liabilities for legal proceedings may change as we receive additional information and/or become aware of additional asserted or unasserted claims. Additionally, there is a possibility that we will suffer adverse decisions or verdicts of substantial amounts or that we will enter into additional monetary settlements, either of which could be in excess of amounts previously accrued for. Any changes to our liabilities for legal proceedings could have a material adverse effect on our business, financial condition, results of operations and cash flows.

As of December 31, 2019, our accrual for loss contingencies totaled $513.0 million, the most significant components of which relate to product liability and related matters associated with vaginal mesh. Although we believe there is a reasonable possibility that a loss in excess of the amount recognized exists, we are unable to estimate the possible loss or range of loss in excess of the amount recognized at this time.

RESULTS OF OPERATIONS

Consolidated Results Review

The following table displays our revenue, gross margin, gross margin percentage and other pre-tax expense or income for the years ended December 31, 2019 and 2018 (dollars in thousands):

	2019	2018	% Change 2019 vs. 2018
Total revenues, net	$ 2,914,364	$ 2,947,078	(1)%
Cost of revenues	1,569,338	1,631,682	(4)%
Gross margin	$ 1,345,026	$ 1,315,396	2 %
Gross margin percentage	*46.2%*	*44.6%*	
Selling, general and administrative	632,420	646,037	(2)%
Research and development	130,732	185,826	(30)%
Litigation-related and other contingencies, net	11,211	13,809	(19)%
Asset impairment charges	526,082	916,939	(43)%
Acquisition-related and integration items, net	(46,098)	21,914	NM
Interest expense, net	538,734	521,656	3 %
Gain on extinguishment of debt	(119,828)	—	NM
Other expense (income), net	16,677	(51,953)	NM
Loss from continuing operations before income tax	$ (344,904)	$ (938,832)	(63)%

NM indicates that the percentage change is not meaningful or is greater than 100%.

Total revenues, net. Revenues from our Sterile Injectables segment, including VASOSTRICT® and ADRENALIN®, our Branded Pharmaceuticals segment's Specialty Products portfolio, led by XIAFLEX®, and recent product launches, as further described below, increased during 2019. Revenues from our Branded Pharmaceuticals segment's Established Products portfolio and both our Generic Pharmaceuticals and International Pharmaceuticals segments decreased during 2019. Our revenues are further disaggregated and described below under the heading "Business Segment Results Review."

Cost of revenues and gross margin percentage. During the years ended December 31, 2019 and 2018, we incurred certain charges that impact the comparability of total Cost of revenues, including those related to amortization expense and retention and separation benefits and other cost reduction initiatives, including restructurings. The following table summarizes such amounts (in thousands):

	2019	2018
Amortization of intangible assets (1)	$ 543,862	$ 622,339
Retention and separation benefits and other cost reduction initiatives (2)	$ 5,693	$ 60,434

(1) Amortization expense fluctuates based on changes in the total amount of amortizable intangible assets and the rate of amortization in effect for each intangible asset, both of which can vary based on factors such as the amount and timing of acquisitions, dispositions, asset impairment charges, transfers between indefinite- and finite-lived intangibles assets, changes in foreign currency rates and changes in the composition of our intangible assets impacting the weighted average useful lives and amortization methodologies being utilized. The decrease in 2019 was primarily driven by asset impairment charges and decreases in the rate of amortization expense for certain assets, partially offset by the impact of certain in-process research and development assets put into service.

(2) Amounts primarily relate to certain accelerated depreciation charges, employee separation costs, charges to increase excess inventory reserves related to restructurings and other cost reduction and restructuring charges. See Note 4. Restructuring in the Consolidated Financial Statements included in Part IV, Item 15 of this report for discussion of our material restructuring initiatives.

Reductions to amortization expense and expenses related to retention and separation benefits and other cost reduction initiatives resulted in decreased Cost of revenues and increased gross margin percentage. The overall decrease in revenues described above also contributed to the decrease in Cost of revenues. Changes in product mix partially offset these items. These changes in mix included both the favorable impact of overall shifts to higher margin Sterile Injectables and Specialty Products from lower margin Generic Pharmaceuticals and Established Products, as well as the unfavorable impact of increased sales of certain lower margin authorized generic products launched since the third quarter of 2018.

Selling, general and administrative expenses. The decrease in 2019 was primarily driven by decreases in long-term incentive compensation costs related primarily to the timing of certain 2018 awards, the impact of certain separations, restructurings and other cost reduction initiatives and a lower branded prescription drug fee. These decreases were partially offset by increased costs related to our continued investment and promotional efforts behind XIAFLEX®, costs associated with our planned commercial launch of CCH for the treatment of cellulite in the buttocks, a third-quarter 2019 premium associated with an extended reporting period endorsement on an expiring insurance program, increased legal costs related to certain litigation matters and costs related to retention bonuses awarded to certain senior management of the Company in 2019. Our material restructuring initiatives and legal proceedings and other contingent matters are described more fully in Note 4. Restructuring and Note 15. Commitments and Contingencies, respectively, in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

We expect Selling, general and administrative expense in 2020 to increase compared to 2019, primarily due to costs associated with our planned commercial launch of CCH for the treatment of cellulite in the buttocks, if approved.

R&D expenses. The amount of R&D expense we record in any period varies depending on the nature and stage of development of our R&D programs and can also vary in periods in which we incur significant upfront or milestone charges related to agreements with third parties.

In recent years, our R&D efforts have focused primarily on developing a balanced, diversified portfolio of innovative and clinically differentiated product candidates. We have been progressing and expect to continue to progress our cellulite treatment development program. In early 2020, we announced that we had initiated our XIAFLEX® development programs for the treatment of plantar fibromatosis and adhesive capsulitis. We also expect to continue to focus investments in our Sterile Injectables segment, potentially including license and commercialization agreements such as our Nevakar, Inc. agreement, which is further described in Note 11. License and Collaboration Agreements in the Consolidated Financial Statements included in Part IV, Item 15 of this report. In addition, we are conducting an open-label Phase 1 pharmacokinetic (PK) study of VASOSTRICT® in healthy volunteers, studying plasma clearance with TT genotype versus AA/AT genotype.

In 2019, R&D expense decreased, primarily due to reduced costs associated with our clinical trials of CCH for the treatment of cellulite, the impact of a 2018 upfront payment of $35.0 million related to the Nevakar, Inc. agreement and the impact of certain separations, restructurings and other cost reduction initiatives. Partially offsetting these decreases was the impact of costs associated with certain post-marketing commitments. Our material restructuring initiatives are described more fully in Note 4. Restructuring in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Litigation-related and other contingencies, net. Included within Litigation-related and other contingencies, net are changes to our accruals for litigation-related settlement charges and certain settlement proceeds related to suits filed by our subsidiaries. Our material legal proceedings and other contingent matters are described in more detail in Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report. As further described therein, adjustments to the corresponding liability accruals may be required in the future. This could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Asset impairment charges. The following table presents the components of our total Asset impairment charges for the years ended December 31, 2019 and 2018 (in thousands):

	2019	2018
Goodwill impairment charges	$ 171,908	$ 680,000
Other intangible asset impairment charges	347,706	230,418
Property, plant and equipment impairment charges	6,468	6,521
Total asset impairment charges	$ 526,082	$ 916,939

The factors leading to our material goodwill and intangible asset impairment tests, as well as the results of these tests, are further described in Note 10. Goodwill and Other Intangibles in the Consolidated Financial Statements included in Part IV, Item 15 of this report. A discussion of critical accounting estimates made in connection with certain of our impairment tests is included above under the caption "CRITICAL ACCOUNTING ESTIMATES."

Acquisition-related and integration items, net. Acquisition-related and integration items, net in 2019 and 2018 primarily consist of the net (benefit) expense from changes in the fair value of acquisition-related contingent consideration liabilities resulting from changes to our estimates regarding the timing and amount of the future revenues of the underlying products and changes in other assumptions impacting the probability of incurring, and extent to which we could incur, related contingent obligations. See Note 6. Fair Value Measurements in the Consolidated Financial Statements included in Part IV, Item 15 of this report for further discussion of our acquisition-related contingent consideration.

Interest expense, net. The components of Interest expense, net for the years ended December 31, 2019 and 2018 are as follows (in thousands):

	2019	2018
Interest expense	$ 558,680	$ 534,850
Interest income	(19,946)	(13,194)
Interest expense, net	$ 538,734	$ 521,656

The increase in interest expense in 2019 was primarily attributable to changes to LIBOR that impacted our variable-rate debt, increases to the weighted average interest rate applicable to our senior notes and senior secured notes following the March 2019 Refinancing Transactions and interest expense associated with our June 2019 Revolving Credit Facility draw of $300.0 million. These increases were partially offset by the reductions to the amount of our indebtedness associated with the March 2019 Refinancing Transactions. Refer to Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report for further discussion of these transactions. Changes in interest rates could increase our interest expense in the future, which could have material adverse effect on our business, financial condition, results of operations and cash flows.

Interest income varies primarily based on the amounts of our interest-bearing investments, such as money market funds, as well as changes in the corresponding interest rates.

(Gain) loss on extinguishment of debt. The gain on extinguishment of debt recognized in 2019 relates to the March 2019 Refinancing Transactions. Refer to Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report for further discussion.

Other expense (income), net. The components of Other expense (income), net for the years ended December 31, 2019 and 2018 are as follows (in thousands):

	2019	2018
Net gain on sale of business and other assets	$ (6,367)	$ (45,155)
Foreign currency loss (gain), net	5,247	(3,762)
Net loss from our investments in the equity of other companies	2,346	3,444
Other miscellaneous, net	15,451	(6,480)
Other expense (income), net	$ 16,677	$ (51,953)

For additional information on the components of Other expense (income), net, refer to Note 19. Other Expense (Income), Net in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Income tax expense (benefit). The following table displays our Loss from continuing operations before income tax, Income tax expense and Effective tax rate for the years ended December 31, 2019 and 2018 (dollars in thousands):

	2019	2018
Loss from continuing operations before income tax	$ (344,904)	$ (938,832)
Income tax expense	$ 15,680	$ 22,935
Effective tax rate	*(4.5)%*	*(2.4)%*

Our tax rate is affected by recurring items, such as tax rates in non-U.S. jurisdictions as compared to the notional U.S. federal statutory tax rate, and the relative amount of income or loss in those various jurisdictions. It is also impacted by certain items that may occur in any given period, but are not consistent from period to period.

The income tax expense in 2019 primarily related to accrued interest on uncertain tax positions. The income tax expense in 2018 primarily related to the establishment of a valuation allowance against certain U.S. deferred tax assets.

We have valuation allowances established against our deferred tax assets in most jurisdictions in which we operate, with the exception of Canada and India. Accordingly, it would be unlikely for future pre-tax losses to create a tax benefit that would be more likely than not to be realized. Although the Company has valuation allowances established against deferred tax assets in most major jurisdictions as of December 31, 2019, it is possible that there could be material reversals, particularly if certain proposed law changes were to be enacted.

The IRS presently is examining certain of our subsidiaries' U.S. income tax returns for fiscal years ended between December 31, 2011 and December 31, 2015 and, in connection with those examinations, is reviewing our tax positions related to, among other things, certain intercompany arrangements, including the level of profit earned by our U.S. subsidiaries pursuant to such arrangements, and a worthless stock deduction directly attributable to product liability losses. The IRS may examine our tax returns for other fiscal years and/or for other tax positions. Similarly, other tax authorities, including the Canada Revenue Agency, are currently examining our non-U.S. tax returns. Additionally, other jurisdictions where we are not currently under audit remain subject to potential future examinations. Such examinations may lead to proposed or actual adjustments to our taxes that may be material, individually or in the aggregate. An adverse outcome of these tax examinations could have a material adverse effect on our business, financial condition, results of operations and cash flows. See the risk factor "We may not be able to successfully maintain our low tax rates or other tax positions, which could adversely affect our businesses and financial condition, results of operations and growth prospects" in Part I, Item 1A of this document for more information.

For additional information on our income taxes, see Note 20. Income Taxes in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Discontinued operations, net of tax. The operating results of the Company's Astora business, which the Board resolved to wind-down in 2016, are reported as Discontinued operations, net of tax in the Consolidated Statements of Operations for all periods presented. The results of our discontinued operations, net of tax, were losses of $62.1 million and $69.7 million in 2019 and 2018, respectively. These amounts consist of Litigation-related and other contingencies, net of $30.4 million and $34.0 million, respectively, mesh-related legal defense costs and certain other items. For additional discussion of mesh-related matters, refer to Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Key Trends. We estimate that the following factors will impact our 2020 total revenues as compared to 2019:

- growth in the Specialty Products portfolio of our Branded Pharmaceuticals segment, primarily driven by increased revenues following continued investments in XIAFLEX®;
- growth in the Sterile Injectables segment, driven by continued performance of VASOSTRICT®, partially offset by declines in certain other Sterile Injectables due to assumed competitive pressures; and
- declines in the Generic Pharmaceuticals segment, the Established Products portfolio of the Branded Pharmaceuticals segment and the International Pharmaceuticals segment, primarily driven by competitive pressures impacting these product portfolios. The expected decline in the Generic Pharmaceuticals segment primarily relates to assumed competition for colchicine tablets, the authorized generic of Colcrys®. For more information, see the risk factor "If we fail to successfully identify and develop additional branded and generic pharmaceutical products, obtain and maintain exclusive marketing rights for our branded and generic products or fail to introduce branded and generic products on a timely basis, our revenues, gross margin and operating results may decline."

These estimated trends reflect the current expectations of the Company's management team based on information currently known to them. These estimates are subject to risks and uncertainties that could cause our actual results to differ materially from those indicated by such estimated trends.

Business Segment Results Review

During the first quarter of 2019, the Company changed the names of its reportable segments. This change, which was intended to simplify the segments' names, had no impact on the Company's Consolidated Financial Statements or segment results for any of the periods presented. Refer to Note 5. Segment Results in the Consolidated Financial Statements included in Part IV, Item 15 of this report for further details regarding this change, our reportable segments in general and segment adjusted income from continuing operations before income tax (the measure we use to evaluate segment performance), as well as reconciliations of Total consolidated loss from continuing operations before income tax, which is determined in accordance with U.S. GAAP, to our total segment adjusted income from continuing operations before income tax.

We refer to segment adjusted income from continuing operations before income tax, a financial measure not defined by U.S. GAAP, in making operating decisions because we believe it provides meaningful supplemental information regarding our operational performance. For instance, we believe that this measure facilitates internal comparisons to our historical operating results and comparisons to competitors' results. We believe this measure is useful to investors in allowing for greater transparency related to supplemental information used in our financial and operational decision-making. Further, we believe that segment adjusted income from continuing operations before income tax may be useful to investors as we are aware that certain of our significant shareholders utilize segment adjusted income from continuing operations before income tax to evaluate our financial performance. Finally, segment adjusted income from continuing operations before income tax is utilized in the calculation of other financial measures not determined in accordance with U.S. GAAP that are used by the Compensation Committee of the Company's Board in assessing the performance and compensation of substantially all of our employees, including our executive officers.

There are limitations to using financial measures such as segment adjusted income from continuing operations before income tax. Other companies in our industry may define segment adjusted income from continuing operations before income tax differently than we do. As a result, it may be difficult to use segment adjusted income from continuing operations before income tax or similarly named adjusted financial measures that other companies may use to compare the performance of those companies to our performance. Because of these limitations, segment adjusted income from continuing operations before income tax is not intended to represent cash flow from operations as defined by U.S. GAAP and should not be used as an indicator of operating performance, a measure of liquidity or as alternative to net income, cash flows or any other financial measure determined in accordance with U.S. GAAP. We compensate for these limitations by providing, in Note 5. Segment Results in the Consolidated Financial Statements included in Part IV, Item 15 of this report, reconciliations of Total consolidated loss from continuing operations before income tax, which is determined in accordance with U.S. GAAP, to our total segment adjusted income from continuing operations before income tax.

Revenues, net. The following table displays our revenue by reportable segment for the years ended December 31, 2019 and 2018 (dollars in thousands):

			% Change
	2019	2018	2019 vs. 2018
Branded Pharmaceuticals	$ 855,402	$ 862,832	(1)%
Sterile Injectables	1,063,131	929,566	14 %
Generic Pharmaceuticals	879,882	1,012,215	(13)%
International Pharmaceuticals (1)	115,949	142,465	(19)%
Total net revenues from external customers	$ 2,914,364	$ 2,947,078	(1)%

(1) Revenues generated by our International Pharmaceuticals segment are primarily attributable to external customers located in Canada.

Branded Pharmaceuticals. The following table displays the significant components of our Branded Pharmaceuticals revenues from external customers for the years ended December 31, 2019 and 2018 (dollars in thousands):

	2019	2018	% Change 2019 vs. 2018
Specialty Products:			
XIAFLEX®	$ 327,638	$ 264,638	24 %
SUPPRELIN® LA	86,797	81,707	6 %
Other Specialty (1)	105,241	98,230	7 %
Total Specialty Products	$ 519,676	$ 444,575	17 %
Established Products:			
PERCOCET®	$ 116,012	$ 122,901	(6)%
TESTOPEL®	55,244	58,377	(5)%
Other Established (2)	164,470	236,979	(31)%
Total Established Products	$ 335,726	$ 418,257	(20)%
Total Branded Pharmaceuticals (3)	$ 855,402	$ 862,832	(1)%

(1) Products included within Other Specialty are NASCOBAL® Nasal Spray and AVEED®. Beginning with our first-quarter 2019 reporting, TESTOPEL®, which was previously included in Other Specialty, has been reclassified and is now included in the Established Products portfolio for all periods presented.
(2) Products included within Other Established include, but are not limited to, LIDODERM®, EDEX® and VOLTAREN® Gel.
(3) Individual products presented above represent the top two performing products in each product category for the year ended December 31, 2019 and/or any product having revenues in excess of $100 million during any of the years ended December 31, 2019, 2018 or 2017 or $25 million during any quarterly period in 2019 or 2018.

Specialty Products

The increase in XIAFLEX® in 2019 was primarily attributable to demand growth driven by the continued investment and promotional efforts behind XIAFLEX®, as well as price.

The increase in SUPPRELIN® LA in 2019 was primarily attributable to increases in both volume and price.

The increase in Other Specialty Products in 2019 was primarily attributable to increased volume of both NASCOBAL® Nasal Spray and AVEED®.

Established Products

The decrease in PERCOCET® in 2019 was primarily attributable to decreased volume, partially offset by increased price.

The decrease in TESTOPEL® in 2019 was primarily attributable to both price and volume decreases.

The decrease in Other Established Products in 2019 was primarily attributable to volume decreases as a result of ongoing competitive pressures.

Sterile Injectables. The following table displays the significant components of our Sterile Injectables revenues from external customers for the years ended December 31, 2019 and 2018 (dollars in thousands):

	2019	2018	% Change 2019 vs. 2018
VASOSTRICT®	$ 531,737	$ 453,767	17 %
ADRENALIN®	179,295	143,489	25 %
Ertapenem for injection	104,679	57,668	82 %
APLISOL®	61,826	64,913	(5)%
Other Sterile Injectables (1)	185,594	209,729	(12)%
Total Sterile Injectables (2)	$ 1,063,131	$ 929,566	14 %

(1) Products included within Other Sterile Injectables include ephedrine sulfate injection, treprostinil for injection and others.
(2) Individual products presented above represent the top two performing products within the Sterile Injectables segment for the year ended December 31, 2019 and/or any product having revenues in excess of $100 million during any of the years ended December 31, 2019, 2018 or 2017 or $25 million during any quarterly period in 2019 or 2018.

The increase in VASOSTRICT® in 2019 was primarily attributable to changes in price, volume and mix of business. As of December 31, 2019, we have six patents for VASOSTRICT® listed in the Orange Book and additional patents pending with the PTO. The FDA requires any applicant seeking FDA approval for vasopressin prior to patent expiry and relying on VASOSTRICT® as the reference-listed drug to notify us of its filing before the FDA will issue an approval. As further discussed in Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report under the heading "VASOSTRICT® Related Matters," we are aware of certain competitive actions taken by other pharmaceutical companies related to VASOSTRICT®. We have taken and plan to continue to take actions in our best interest to protect our rights with respect to VASOSTRICT®. The introduction of any competing versions of VASOSTRICT® could result in reductions to our market share, revenues, profitability and cash flows.

The increase in ADRENALIN® in 2019 was primarily attributable to increased price and volume.

Ertapenem for injection, the authorized generic of Invanz®, launched during the third quarter of 2018. The increase in 2019 was driven by the timing of this product's launch.

The decrease in APLISOL® in 2019 was primarily attributable to decreased volume, partially offset by increased price.

The decrease in Other Sterile Injectables in 2019 was primarily driven by certain competitive pressures impacting multiple products in this portfolio.

Generic Pharmaceuticals. The decrease for the Generic Pharmaceuticals segment in 2019 was primarily attributable to continued competitive pressure on commoditized generic products. Partially offsetting the decrease were the impacts of certain recent product launches including, among others, the second-quarter 2019 launch of albuterol sulfate HFA inhalation aerosol, the authorized generic of Proventil®, and the third-quarter 2018 launch of colchicine tablets.

International Pharmaceuticals. The decrease for the International Pharmaceuticals segment in 2019 was primarily attributable to competitive pressures in certain international markets and the impact of certain product discontinuation activities.

Segment adjusted income from continuing operations before income tax. The following table displays our segment adjusted income from continuing operations before income tax by reportable segment for the years ended December 31, 2019 and 2018 (dollars in thousands):

			% Change
	2019	2018	2019 vs. 2018
Branded Pharmaceuticals	$ 362,711	$ 368,790	(2)%
Sterile Injectables	$ 780,799	$ 695,363	12 %
Generic Pharmaceuticals	$ 158,400	$ 317,892	(50)%
International Pharmaceuticals	$ 44,758	$ 59,094	(24)%

Branded Pharmaceuticals. The decrease in 2019 was primarily attributable to increased costs related to our continued investment and promotional efforts behind XIAFLEX® and costs associated with our planned commercial launch of CCH for the treatment of cellulite in the buttocks. This was offset by increased gross margins resulting from changes in product mix and lower R&D expense resulting from reduced costs associated with our clinical trials of CCH, partially offset by increased costs associated with certain post-marketing commitments.

Sterile Injectables. The increase in 2019 was primarily driven by increased revenues and gross margins resulting from strong performance across several products in this segment.

Generic Pharmaceuticals. The decrease in 2019 was primarily attributable to decreased revenues as described above and the resulting reduction to gross margin. Additionally, gross margin was negatively impacted by changes in product mix resulting from increased sales of certain lower margin authorized generic products. These decreases were partially offset by reduced expenses including the impact of certain restructuring and other cost saving initiatives and a lower branded prescription drug fee. Our material restructuring initiatives are described in Note 4. Restructuring in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

International Pharmaceuticals. The decrease in 2019 was primarily attributable to decreased revenues as described above and the resulting reduction to gross margin.

LIQUIDITY AND CAPITAL RESOURCES

Our principal source of liquidity is cash generated from operations. Our principal liquidity requirements are primarily for working capital for operations, licenses, milestone payments, capital expenditures, acquisitions, contingent liabilities, debt service payments and litigation-related matters, including vaginal mesh liability payments. The Company's working capital was $1,125.9 million at December 31, 2019 compared to working capital of $393.1 million at December 31, 2018. The amounts at December 31, 2019 and December 31, 2018 include restricted cash and cash equivalents of $242.8 million and $299.7 million, respectively, held in QSFs for mesh-related matters. Although these amounts in QSFs are included in working capital, they are required to be used for mesh product liability settlement agreements.

Cash and cash equivalents, which primarily consisted of bank deposits and money market accounts, totaled $1,454.5 million at December 31, 2019 compared to $1,149.1 million at December 31, 2018. We expect our operating cash flows, together with our cash, cash equivalents, restricted cash and restricted cash equivalents, to be sufficient to cover our principal liquidity requirements over the next year. However, on a longer term basis, we may not be able to accurately predict the effect of certain developments on our sales and gross margins, such as the degree of market acceptance, patent protection and exclusivity of our products, pricing pressures (including those due to the impact of competition), the effectiveness of our sales and marketing efforts and the outcome of our current efforts to develop, receive approval for and successfully launch our product candidates. We may also face unexpected expenses in connection with our business operations, including expenses related to our ongoing and future legal proceedings and governmental investigations and other contingent liabilities. Furthermore, we may not be successful in implementing, or may face unexpected changes or expenses in connection with our strategic direction, including the potential for opportunistic corporate development transactions. Any of the above could have a material adverse effect on our business, financial condition, results of operations and cash flows.

From time to time, we may seek to enter into certain transactions to reduce our leverage and/or interest expense and/or to extend the maturities of our outstanding indebtedness. Such transactions could include, for example, transactions to exchange existing indebtedness for our ordinary shares, to issue equity (including convertible securities) or to repurchase, redeem, exchange or refinance our existing indebtedness (including the Credit Agreement). In order to finance any such transactions, we may need to obtain additional funding and in certain circumstances we may issue additional secured indebtedness. Any of these transactions could impact our liquidity or results of operations.

We may also require additional financing to fund our future operational needs or for future corporate transactions, including acquisitions. We have historically had broad access to financial markets that provide liquidity; however, we cannot be certain that funding will be available to us in the future on terms acceptable to us, or at all. Any issuances of equity securities or convertible securities, in connection with an acquisition or otherwise, could have a dilutive effect on the ownership interest of our current shareholders and may adversely impact net income per share in future periods. An acquisition may be accretive or dilutive and, by its nature, involves numerous risks and uncertainties. As a result of acquisition efforts, if any, we are likely to experience significant charges to earnings for merger and related expenses (whether or not the acquisitions are consummated) that may include transaction costs, closure costs or costs of restructuring activities.

We consider the undistributed earnings from the majority of our subsidiaries as of December 31, 2019 to be indefinitely reinvested outside of Ireland and, accordingly, neither income tax nor withholding taxes have been provided thereon. As of December 31, 2019, indefinitely reinvested earnings were approximately $1,092.0 million. We do not anticipate incurring tax in deploying funds to satisfy liquidity needs arising in the ordinary course of business.

Indebtedness. The Company and/or certain of its subsidiaries are party to the Credit Agreement governing the Credit Facilities (as defined in Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report) and the indentures governing our various senior secured and senior unsecured notes. As of December 31, 2019, approximately $3.3 billion was outstanding under the Term Loan Facility, approximately $0.3 billion was outstanding under the Revolving Credit Facility and approximately $4.8 billion was outstanding under the senior secured and senior unsecured notes.

After giving effect to previous borrowings and issued and outstanding letters of credit, approximately $0.7 billion of remaining credit was available under the Revolving Credit Facility at December 31, 2019. The Company's outstanding debt agreements contain a number of restrictive covenants, including certain limitations on the Company's ability to incur additional indebtedness.

The Credit Agreement and the indentures governing our various notes contains certain covenants. As of December 31, 2019 and December 31, 2018, the Company was in compliance with all such covenants. In addition, after each fiscal year-end, the Company is required to perform a calculation of Excess Cash Flow (as defined in the Credit Agreement), which could result in certain pre-payments of the principal relating to the Term Loan Facility in accordance with the terms of the Credit Agreement. No such payment is required at December 31, 2019.

Refer to Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report for additional information about our indebtedness, including information about covenants, maturities, interest rates, security and priority.

Credit ratings. The Company's corporate credit ratings assigned by Moody's Investors Service and Standard & Poor's are B3 with a stable outlook and B with a negative outlook, respectively. No report of any rating agency is being incorporated by reference herein.

Working capital. The components of our working capital and our liquidity at December 31, 2019 and December 31, 2018 are below (dollars in thousands):

	December 31, 2019	December 31, 2018
Total current assets	$ 2,586,218	$ 2,343,150
Less: total current liabilities	1,460,289	1,950,096
Working capital	$ 1,125,929	$ 393,054
Current ratio (total current assets divided by total current liabilities)	1.8:1	1.2:1

Net working capital increased by $732.9 million from December 31, 2018 to December 31, 2019. This increase primarily reflects the increase to cash of $300.0 million as a result of the June 2019 borrowing under the Revolving Credit Facility and the favorable impact to net current assets resulting from operations during the year ended December 31, 2019. This activity was partially offset by certain items that occurred during the year ended December 31, 2019 including, but not limited to, the impact of adopting ASC 842, which resulted in a net decrease to working capital of approximately $10.7 million, purchases of property, plant and equipment, excluding capitalized interest, of $63.9 million and our incurrence of financing fees in connection with the March 2019 Refinancing Transactions.

The following table summarizes our Consolidated Statements of Cash Flows for the years ended December 31, 2019 and 2018 (in thousands):

	2019	2018
Net cash flow provided by (used in):		
Operating activities	$ 98,052	$ 267,270
Investing activities	(60,198)	(17,900)
Financing activities	204,601	(81,572)
Effect of foreign exchange rate	1,096	(1,975)
Net increase in cash, cash equivalents, restricted cash and restricted cash equivalents	$ 243,551	$ 165,823

Operating activities. Net cash provided by operating activities represents the cash receipts and cash disbursements from all of our activities other than investing activities and financing activities. Changes in cash from operating activities reflect, among other things, the timing of cash collections from customers, payments to suppliers, MCOs, government agencies, collaborative partners and employees, as well as tax payments and refunds in the ordinary course of business.

The $169.2 million decrease in Net cash provided by operating activities in 2019 compared to the prior year was primarily due to our results of operations as described above and the timing of cash collections and cash payments related to our operations. Cash paid for interest increased by $44.5 million as a result of the timing and amounts of interest payments related to our indebtedness. Additionally, we increased inventory levels during the year ended December 31, 2019 in advance of certain recent and planned future product launches, which utilized cash. We expect that payments for previously accrued legal matters, which are further discussed in Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report will continue to impact our Net cash provided by operating activities in future periods.

Investing activities. The $42.3 million increase in Net cash used in investing activities in 2019 compared to the prior year reflects a decrease in Proceeds from sale of business and other assets, net of $63.8 million, offset in part by a decrease in Purchases of property, plant and equipment, excluding capitalized interest of $19.5 million.

Financing activities. During 2019, Net cash provided by financing activities related primarily to the $300.0 million June 2019 borrowing under the Revolving Credit Facility. The proceeds from this transaction were offset by Repayments of term loans of $34.2 million, Payments for contingent consideration of $16.8 million, Payments of tax withholding for restricted shares of $10.2 million, Repayments of other indebtedness of $9.2 million and the net effect of the March 2019 Refinancing Transactions, which resulted in Proceeds from issuance of notes, net of $1,483.1 million, cash used for Repayments of notes totaling $1,500.0 million and Payments for debt issuance and extinguishment costs of $6.4 million.

During 2018, Net cash used in financing activities related primarily to Payments for contingent consideration of $37.8 million, Repayments of term loans of $34.2 million and Payments of tax withholding for restricted shares of $5.4 million.

R&D. Over the past few years, we have incurred significant expenditures related to conducting clinical studies to develop new products and expand the value of our existing products beyond their currently approved indications.

For example, as further described above under the heading “RESULTS OF OPERATIONS,” the Company has recently incurred R&D expense for certain indications of CCH in various stages of development.

We expect to incur R&D expenditures related to the development and advancement of our current product pipeline and any additional product candidates we may add via license, acquisition or organically. There can be no assurance that the results of any ongoing or future nonclinical or clinical trials related to these projects will be successful, that additional trials will not be required, that any compound, product or indication under development will receive regulatory approval in a timely manner or at all or that such compound, product or indication could be successfully manufactured in accordance with local current good manufacturing practices or marketed successfully, or that we will have sufficient funds to develop or commercialize any of our products.

Manufacturing, supply and other service agreements. We contract with various third party manufacturers, suppliers and service providers to supply our products, or materials used in the manufacturing of our products, and to provide additional services such as packaging, processing, labeling, warehousing, distribution and customer service support. Any interruption to the goods or services provided for by these and similar contracts could have a material adverse effect on our business, financial condition, results of operations and cash flows.

License and collaboration agreements. We could become obligated to make certain contingent payments pursuant to our license, collaboration and other agreements. Payments under these agreements generally become due and payable only upon the achievement of certain developmental, regulatory, commercial and/or other milestones. Due to the fact that it is uncertain whether and when certain of these milestones will be achieved, they have not been recorded in our Consolidated Balance Sheets. In addition, we may be required to make sales-based royalty or similar payments under certain arrangements.

Acquisitions. Going forward, our primary focus will be on organic growth. However, we may consider and, as appropriate, make acquisitions of other businesses, products, product rights or technologies. Our cash reserves and other liquid assets may be inadequate to consummate such acquisitions and it may be necessary for us to issue ordinary shares or raise substantial additional funds in the future to complete future transactions. In addition, as a result of any acquisition efforts, we are likely to experience significant charges to earnings for merger and related expenses (whether or not our efforts are successful) that may include transaction costs, closure costs, integration costs and/or costs of restructuring activities.

Legal proceedings. We are subject to various patent challenges, product liability claims, government investigations and other legal proceedings in the ordinary course of business. Contingent accruals are recorded when we determine that a loss is both probable and reasonably estimable. Due to the fact that legal proceedings and other contingencies are inherently unpredictable, our assessments involve significant judgments regarding future events. For additional discussion of legal proceedings, see Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

Contractual Obligations. The following table lists our enforceable and legally binding noncancelable obligations as of December 31, 2019.

	Payment Due by Period (in thousands)						
	Total	2020	2021	2022	2023	2024	Thereafter
Long-term debt obligations (1)	$ 8,470,678	$ 34,150	$ 34,150	$ 247,723	$ 1,684,430	$ 3,770,225	$ 2,700,000
Interest expense (2)	2,542,549	525,976	523,927	510,591	457,330	265,400	259,325
Finance lease obligations (3)	52,216	7,446	7,593	7,743	7,897	8,054	13,483
Operating lease obligations (3)	70,578	14,103	13,262	12,688	10,017	5,176	15,332
Purchase obligations (4)	37,471	20,319	11,927	818	941	632	2,834
Mesh-related product liability settlements (5)	54,769	54,769	—	—	—	—	—
Other obligations and commitments (6)	1,602	1,602	—	—	—	—	—
Total (7)	$ 11,229,863	$ 658,365	$ 590,859	$ 779,563	$ 2,160,615	$ 4,049,487	$ 2,990,974

(1) Includes minimum cash payments related to principal associated with our indebtedness as of December 31, 2019. A discussion of such indebtedness is included above under the caption “Indebtedness.” The amounts in this table do not reflect any potential early or accelerated principal payments such as the potential payments described in Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report.

(2) These amounts represent future cash interest payments related to our indebtedness as of December 31, 2019 based on interest rates specified in the associated debt agreements. Payments related to variable-rate debt are based on applicable market rates, estimated at December 31, 2019, plus the specified margin in the associated debt agreements for each period presented.

(3) Refer to Note 8. Leases in the Consolidated Financial Statements included in Part IV, Item 15 of this report for additional information about our leases. We have entered into agreements to sublease certain properties. Most significantly, we sublease 140,000 square feet of our Malvern, Pennsylvania facility and substantially all of our Chesterbrook, Pennsylvania facility. As of December 31, 2019, we expect to receive approximately $24.7 million in future minimum rental payments over the remaining terms of the Malvern and Chesterbrook subleases from 2020 to 2024. Amounts of expected sublease income are not reflected in the table above.

(4) Purchase obligations are enforceable and legally binding obligations for purchases of goods and services, including minimum inventory contracts.

(5) The amounts included above represent contractual payments for mesh-related product liability settlements and reflect the earliest date that a settlement payment could be due and the largest amount that could be due on that date. These matters are described in more detail in Note 15. Commitments and Contingencies in the Consolidated Financial Statements included in Part IV, Item 15 of this report.
(6) Other obligations and commitments relate to any agreements to purchase third-party assets, products and services and other minimum royalty obligations.
(7) Total generally does not include contractual obligations already included in current liabilities on our Consolidated Balance Sheets, except for amounts related to the current portion of long-term debt, accrued interest, current lease obligations, mesh-related product liabilities and certain purchase obligations, which are discussed below.

For purposes of the table above, obligations for the purchase of goods or services are included only for significant noncancelable purchase orders at least one year in length that are enforceable, legally binding and specify all significant terms, including fixed or minimum quantities to be purchased, fixed, minimum or variable price provisions and the timing of the obligation. In cases where our minimum obligations are variable based on future contingent events or circumstances, we estimate the minimum obligations based on information available to us at the time of disclosure. Our purchase orders are based on our current manufacturing needs and are typically fulfilled by our suppliers within a relatively short period. At December 31, 2019, we have open purchase orders that represent authorizations to purchase, rather than binding agreements, that are not included in the table above. In addition, we do not include collaboration agreements and potential payments under those agreements or potential payments related to contingent consideration.

Information about our liability for unrecognized tax benefits is included in Note 20. Income Taxes in the Consolidated Financial Statements included in Part IV, Item 15 of this report under the caption “Uncertain Tax Positions.” Due to the nature and timing of the ultimate outcome of these uncertain tax positions, we cannot make a reliable estimate of the amount and period of related future payments, if any. Therefore, our liability has been excluded from the above contractual obligations table.

Fluctuations. Our quarterly results have fluctuated in the past and may continue to fluctuate. These fluctuations may be due to the timing of new product launches, purchasing patterns of our customers, market acceptance of our products, the impact of competitive products and pricing, certain actions taken by us which may impact the availability of our products, asset impairment charges, litigation-related charges, restructuring costs including separation benefits, business combination transaction costs, the impact of financing transactions, upfront, milestone and certain other payments made or accrued pursuant to licensing agreements and changes in the fair value of financial instruments and contingent assets and liabilities recorded as part of business combinations. Further, a substantial portion of our total revenues are through three wholesale drug distributors who in turn supply our products to pharmacies, hospitals and physicians. Accordingly, we are potentially subject to a concentration of credit risk with respect to our trade receivables.

Growth opportunities. We continue to evaluate growth opportunities including investments, licensing arrangements, acquisitions of product rights or technologies, businesses and strategic alliances and promotional arrangements, any of which could require significant capital resources. We continue to focus our business development activities on further diversifying our revenue base through product licensing and company acquisitions, as well as other opportunities to enhance shareholder value. Through execution of our business strategy, we focus on developing new products both internally and with contract and collaborative partners; expanding our product lines by acquiring new products and technologies, increasing revenues and earnings through sales and marketing programs for our innovative product offerings and effectively using our resources; and providing additional resources to support our businesses.

Non-U.S. operations. Fluctuations in foreign currency rates resulted in a net loss of $5.2 million in 2019 and a net gain of $3.8 million in 2018.

Inflation. We do not believe that inflation had a material adverse effect on our financial statements for the periods presented.

Off-balance sheet arrangements. We have no off-balance sheet arrangements as defined in Item 303(a)(4) of Regulation S-K.

Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*

Market risk is the potential loss arising from adverse changes in the financial markets, including interest rates and foreign currency exchange rates.

Interest Rate Risk

Our exposure to interest rate risk relates primarily to our variable-rate indebtedness associated with our Credit Facilities. At December 31, 2019 and 2018, the aggregate principal amounts of such variable-rate indebtedness were $3,629.6 million and $3,363.8 million, respectively. Borrowings under the Credit Facilities may from time to time bear interest at variable rates, as further described in Note 14. Debt in the Consolidated Financial Statements included in Part IV, Item 15 of this report, in certain cases subject to a floor. At December 31, 2019 and 2018, a hypothetical 1% increase in the applicable rate over the floor would have resulted in $36.3 million and $33.6 million, respectively, of incremental interest expense (representing the annual rate of expense) related to our variable-rate debt borrowings.

To the extent that we utilize additional amounts under the Revolving Credit Facility or otherwise increase the amount of our variable-rate indebtedness, we will be exposed to additional interest rate risk.

As of December 31, 2019 and 2018, we had no other assets or liabilities with significant interest rate sensitivity.

Foreign Currency Exchange Rate Risk

We operate and transact business in various foreign countries and are therefore subject to risks associated with foreign currency exchange rate fluctuations. The Company manages this foreign currency risk, in part, through operational means including managing foreign currency revenues in relation to same-currency costs and foreign currency assets in relation to same-currency liabilities. The Company is also exposed to potential earnings effects from intercompany foreign currency assets and liabilities that arise from normal trade receivables and payables and other intercompany loans. Additionally, certain of the Company's subsidiaries maintain their books of record in currencies other than their respective functional currencies. These subsidiaries' financial statements are remeasured into their respective functional currencies. Such remeasurement adjustments could have a material adverse effect on the Company's financial position and results of operations.

All assets and liabilities of our international subsidiaries, which maintain their financial statements in local currency, are translated to U.S. dollars at period-end exchange rates. Translation adjustments arising from the use of differing exchange rates are included in Accumulated other comprehensive loss. Gains and losses on foreign currency transactions and short-term intercompany receivables from foreign subsidiaries are included in Other expense (income), net in the Consolidated Statements of Operations. Refer to Note 19. Other Expense (Income), Net in the Consolidated Financial Statements included in Part IV, Item 15 of this report for the amount of Foreign currency loss (gain), net.

Based on the Company's significant foreign currency denominated intercompany loans, we separately considered the hypothetical impact of a 10% change in the underlying currencies of our foreign currency denominated intercompany loans, relative to the U.S. dollar, at December 31, 2019 and 2018. A 10% change at December 31, 2019 would have resulted in approximately $11 million in incremental foreign currency losses on such date. A 10% change at December 31, 2018 would have resulted in approximately $9 million in incremental foreign currency losses on such date.

Item 8. ***Financial Statements and Supplementary Data***

The information required by this item is contained in the financial statements set forth in Item 15. under the caption "Consolidated Financial Statements" as part of this Annual Report on Form 10-K.

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure***

Not applicable.

Item 9A. ***Controls and Procedures***

(a) Evaluation of Disclosure Controls and Procedures

The Company's management, with the participation of the Company's Chief Executive Officer and Principal Financial Officer, has evaluated the effectiveness of the Company's disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act, as of December 31, 2019. Based on that evaluation, the Company's Chief Executive Officer and Principal Financial Officer concluded that the Company's disclosure controls and procedures were effective as of December 31, 2019.

(b) Management's Report on Internal Control over Financial Reporting

The report of management of the Company regarding internal control over financial reporting is set forth in Item 15. of this Annual Report on Form 10-K under the caption "MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING" and incorporated herein by reference.

(c) Attestation Report of Independent Registered Public Accounting Firm

The attestation report of the Company's independent registered public accounting firm regarding internal control over financial reporting is set forth in Item 15. of this Annual Report on Form 10-K under the caption "REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM" and incorporated herein by reference.

(d) Changes in Internal Control over Financial Reporting

There have been no changes in the Company's internal control over financial reporting during the fiscal quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. ***Other Information***

None.

PART III

Item 10. *Directors, Executive Officers and Corporate Governance*

Directors

The information concerning our directors required under this item is incorporated herein by reference from our proxy statement, which will be filed with the SEC, relating to our 2020 Annual General Meeting (2020 Proxy Statement).

Executive Officers

For information concerning Endo's executive officers, see Part 1, Item 1 of this report "Business" under the caption "Information about our Executive Officers" and our 2020 Proxy Statement.

Code of Ethics

The information concerning our Code of Conduct is incorporated herein by reference from our 2020 Proxy Statement and can be viewed on our website, the internet address for which is www.endo.com *(intended to be an inactive textual reference only).*

Audit Committee

The information concerning our Audit Committee is incorporated herein by reference from our 2020 Proxy Statement.

Audit Committee Financial Experts

The information concerning our Audit Committee Financial Experts is incorporated herein by reference from our 2020 Proxy Statement.

Item 11. *Executive Compensation*

The information required under this item is incorporated herein by reference from our 2020 Proxy Statement.

Item 12. *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters*

Equity Compensation Plan Information. The following table sets forth aggregate information for the fiscal year ended December 31, 2019 regarding the Company's compensation plans, under which equity securities of Endo may be issued to employees and directors.

	Column A	Column B	Column C
Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights (1)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in Column A)
Equity compensation plans approved by security holders	20,639,884	$ 18.93	7,675,680
Equity compensation plans not approved by security holders	—	—	—
Total	20,639,884	$ 18.93	7,675,680

(1) Excludes shares of restricted stock units, performance share units and long-term cash incentive awards which will be settled in the Company's ordinary shares.

The other information required under this item is incorporated herein by reference from our 2020 Proxy Statement.

Item 13. *Certain Relationships and Related Transactions, and Director Independence*

The information required under this item is incorporated herein by reference from our 2020 Proxy Statement.

Item 14. *Principal Accounting Fees and Services*

Information about the fees for 2019 and 2018 for professional services rendered by our independent registered public accounting firm is incorporated herein by reference from our 2020 Proxy Statement. Our Audit Committee's policy on pre-approval of audit and permissible non-audit services of our independent registered public accounting firm is incorporated by reference from our 2020 Proxy Statement.

The information required under this item is incorporated herein by reference from our 2020 Proxy Statement.

PART IV

Item 15. ***Exhibits, Financial Statement Schedules***

(a) The following documents are filed as part of this report:

1. *The Consolidated Financial Statements:*

Management's Report on Internal Control Over Financial Reporting
Report of Independent Registered Public Accounting Firm
Consolidated Balance Sheets as of December 31, 2019 and 2018
Consolidated Statements of Operations for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Comprehensive Loss for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Shareholders' Equity (Deficit) for the years ended December 31, 2019, 2018 and 2017
Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017
Notes to Consolidated Financial Statements

2. *Financial Statement Schedules*

SCHEDULE II—VALUATION AND QUALIFYING ACCOUNTS
(in thousands)

	Balance at Beginning of Period	Additions, Costs and Expenses	Deductions, Write-offs	Other (1)	Balance at End of Period
Valuation Allowance For Deferred Tax Assets:					
Year Ended December 31, 2017	$ 4,841,209	$ 3,811,982	$ —	$ (590,216)	$ 8,062,975
Year Ended December 31, 2018	$ 8,062,975	$ 2,569,175	$ (2,259)	$ (752,274)	$ 9,877,617
Year Ended December 31, 2019	$ 9,877,617	$ 299,372	$ (9,078)	$ (338,952)	$ 9,828,959

(1) Represents the remeasurement of net deferred tax assets due to changes in statutory tax rates.

All other financial statement schedules have been omitted because they are not applicable or the required information is included in the Consolidated Financial Statements or notes thereto.

3. *Exhibits:*

		Incorporated by Reference from:		
Number	**Description**	**File Number**	**Filing Type**	**Filing Date**
3.1	Certificate of Incorporation on re-registration as a public limited company of Endo International plc	001-36326	Current Report on Form 8-K12B	February 28, 2014
3.2	Memorandum and Articles of Association of Endo International plc, dated as of October 31, 2013 and as amended as of June 8, 2017	001-36326	Quarterly Report on Form 10-Q	August 8, 2017
4.1	Description of Registrant's Securities	Not applicable; filed herewith		
4.2	Specimen Share Certificate of Endo International plc	333-194253	Form S-8	February 28, 2014
4.3	Indenture, dated January 27, 2015, among Endo Designated Activity Company (formerly, Endo Limited), Endo Finance LLC, Endo Finco Inc., the guarantors named therein and Wells Fargo Bank, National Association, as trustee, relating to the 6.00% Senior Notes due 2025 (including Form of 6.00% Senior Notes due 2025 and Form of Supplemental Indenture relating to the 6.00% Senior Notes due 2025)	001-36326	Current Report on Form 8-K	January 27, 2015
4.4	Supplemental Indenture, dated March 27, 2015, among Endo Designated Activity Company (formerly, Endo Limited), Endo Finance LLC, Endo Finco Inc., the guarantors named therein and Wells Fargo Bank, National Association, as trustee, to the Indenture, dated January 27, 2015	001-36326	Annual Report on Form 10-K	February 29, 2016

Number	Description	Incorporated by Reference from: File Number	Filing Type	Filing Date
4.5	Registration Rights Agreement, dated January 27, 2015, by and among Endo Designated Activity Company (formerly, Endo Limited), Endo Finance LLC, Endo Finco Inc., the guarantors named therein and RBC Capital Markets, LLC and Citigroup Global Markets Inc., relating to the 6.00% Senior Notes due 2025 (including Form of Counterpart to the Registration Rights Agreement relating to the 6.00% Senior Notes due 2025)	001-36326	Current Report on Form 8-K	January 27, 2015
4.6	Indenture, dated July 9, 2015, among Endo Designated Activity Company (formerly, Endo Limited), Endo Finance LLC, Endo Finco Inc., the guarantors named therein and Wells Fargo Bank, National Association, as trustee, relating to the 6.000% Senior Notes due 2023 (including Form of 6.000% Notes due 2023 and Form of Supplemental Indenture relating to the 6.000% Notes due 2023)	001-36326	Current Report on Form 8-K	July 9, 2015
4.7	Indenture, dated as of March 28, 2019, among Par Pharmaceutical, Inc., the guarantors named therein and Wells Fargo Bank, National Association, as trustee, relating to the 7.500% Senior Secured Notes due 2027 (including Form of 7.500% Senior Secured Notes due 2027)	001-36326	Current Report on Form 8-K	March 28, 2019
10.1	Amended and Restated Executive Deferred Compensation Plan	001-36326	Quarterly Report on Form 10-Q	August 8, 2018
10.2	Amended and Restated 401(k) Restoration Plan	001-15989	Annual Report on Form 10-K	March 1, 2013
10.3	Directors Deferred Compensation Plan	001-15989	Annual Report on Form 10-K	March 1, 2013
10.4	Endo International plc Amended and Restated Employee Stock Purchase Plan	333-194253	Form S-8	February 28, 2014
10.5	Credit Agreement, dated as of April 27, 2017, among Endo International, plc, as parent, Endo Luxembourg Finance Company I S.à.r.l. and Endo LLC, as borrowers, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent, issuing bank and swingline lender	001-36326	Current Report on Form 8-K	April 28, 2017
10.5.1	First Amendment, dated as of March 28, 2019 (to the Credit Agreement, dated as of April 27, 2017), by and among Endo International plc, Endo Luxembourg Finance Company I Sarl and Endo LLC, as borrowers, the lenders and other parties party thereto and JPMorgan Chase Bank, N.A. as administrative agent, issuing bank and swingline lender	001-36326	Current Report on Form 8-K	March 28, 2019
10.6*	Second Amended and Restated Development and License Agreement, dated August 31, 2011, by and between BioSpecifics Technologies Corp. and Auxilium	000-50855	Current Report on Form 8-K	September 1, 2011
10.6.1*	First Amendment to Second Amended and Restated Development and License Agreement, dated February 1, 2016, by and between BioSpecifics Technologies Corp. and Endo Global Ventures	001-36326	Annual Report on Form 10-K	February 29, 2016
10.6.2	Second Amendment to Second Amended and Restated Development and License Agreement, dated February 26, 2019, by and between BioSpecifics Technologies Corp. and Endo Global Ventures	001-36326	Quarterly Report on Form 10-Q	May 9, 2019
10.7*	Supply Agreement, dated June 26, 2008, between Auxilium and Hollister-Stier Laboratories LLC	000-50855	Quarterly Report on Form 10-Q	August 8, 2008
10.8	Endo International plc Amended and Restated 2015 Stock Incentive Plan	001-36326	Current Report on Form 8-K	June 11, 2019
10.9	Form of Stock Option Agreement under the Endo International plc Amended and Restated 2015 Stock Incentive Plan	001-36326	Quarterly Report on Form 10-Q	November 8, 2018
10.10	Form of Stock Award Agreement under the Endo International plc Amended and Restated 2015 Stock Incentive Plan	001-36326	Quarterly Report on Form 10-Q	November 8, 2018

Number	Description	Incorporated by Reference from: File Number	Filing Type	Filing Date
10.11	Form of Performance Award Agreement under the Endo International plc Amended and Restated 2015 Stock Incentive Plan	001-36326	Quarterly Report on Form 10-Q	May 9, 2019
10.12	Form of Long-Term Cash Incentive Award Agreement under the Amended and Restated 2015 Stock Incentive Plan	001-36326	Quarterly Report on Form 10-Q	August 8, 2018
10.13	Form of Indemnification Agreement with Endo Health Solutions Inc.	001-36326	Annual Report on Form 10-K	February 29, 2016
10.14	Form of Indemnification Agreement with Endo International plc	001-36326	Quarterly Report on Form 10-Q	May 6, 2016
10.15*	Master Supply Agreement by and between Endo Ventures Limited and Jubilant HollisterStier LLC	001-36326	Quarterly Report on Form 10-Q	August 9, 2016
10.16	Executive Employment Agreement between Endo Health Solutions Inc. and Paul Campanelli, dated as of April 24, 2019	001-36326	Current Report on Form 8-K	April 26, 2019
10.17	Executive Employment Agreement between Endo Health Solutions Inc. and Terrance J. Coughlin, dated December 9, 2019	001-36326	Current Report on Form 8-K	December 12, 2019
10.18	Executive Employment Agreement between Endo Health Solutions Inc. and Blaise Coleman, as Executive Vice President and Chief Financial Officer, dated December 19, 2019	001-36326	Current Report on Form 8-K	December 19, 2019
10.18.1	Executive Employment Agreement between Endo Health Solutions Inc. and Blaise Coleman, as President and Chief Executive Officer, dated February 19, 2020 and effective March 6, 2020	Not applicable; filed herewith		
10.19	Executive Employment Agreement between Endo Health Solutions Inc. and Mark Bradley, dated February 19, 2020 and effective March 6, 2020	Not applicable; filed herewith		
10.20	Executive Employment Agreement between Endo Health Solutions Inc. and Matthew J. Maletta, dated as of February 13, 2018	001-36326	Current Report on Form 8-K	February 15, 2018
10.21	Cash Contribution Bonus Agreement between Endo and Blaise Coleman, dated August 1, 2019	001-36326	Quarterly Report on Form 10-Q	August 5, 2019
10.22	Cash Contribution Bonus Agreement between Endo and Terrance J. Coughlin, dated August 1, 2019	001-36326	Quarterly Report on Form 10-Q	August 5, 2019
10.23	Cash Contribution Bonus Agreement between Endo and Mark Bradley, dated August 1, 2019	Not applicable; filed herewith		
10.24	Letter Agreement between Endo and Mark Bradley, dated May 17, 2018	Not applicable; filed herewith		
10.25	Cash Contribution Bonus Agreement between Endo and Matthew J. Maletta, dated August 1, 2019	001-36326	Quarterly Report on Form 10-Q	August 5, 2019
10.26	Succession Planning and Transition Compensation Agreement between Endo and Paul V. Campanelli, dated December 12, 2019	001-36326	Current Report on Form 8-K	December 12, 2019
14.1	Our Code of Conduct	001-36326	Annual Report on Form 10-K	February 28, 2019
21.1	Subsidiaries of the Registrant	Not applicable; filed herewith		
23.1	Consent of PricewaterhouseCoopers LLP	Not applicable; filed herewith		
24.1	Power of Attorney	Not applicable; filed herewith		
31.1	Certification of the President and Chief Executive Officer of Endo pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Not applicable; filed herewith		
31.2	Certification of the Chief Financial Officer of Endo pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Not applicable; filed herewith		
32.1	Certification of the President and Chief Executive Officer of Endo pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	Not applicable; furnished herewith		

Number	Description	Incorporated by Reference from: File Number	Filing Type	Filing Date
32.2	Certification of the Chief Financial Officer of Endo pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	Not applicable; furnished herewith		
101.INS	iXBRL Instance Document - the instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document.	Not applicable; submitted herewith		
101.SCH	iXBRL Taxonomy Extension Schema Document	Not applicable; submitted herewith		
101.CAL	iXBRL Taxonomy Extension Calculation Linkbase Document	Not applicable; submitted herewith		
101.DEF	iXBRL Taxonomy Extension Definition Linkbase Document	Not applicable; submitted herewith		
101.LAB	iXBRL Taxonomy Extension Label Linkbase Document	Not applicable; submitted herewith		
101.PRE	iXBRL Taxonomy Extension Presentation Linkbase Document	Not applicable; submitted herewith		
104	Cover Page Interactive Data File, formatted in iXBRL and contained in Exhibit 101	Not applicable; submitted herewith		

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* Confidential portions of this exhibit (indicated by asterisks) have been redacted and filed separately with the Securities and Exchange Commission pursuant to a confidential treatment request in accordance with Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Item 16. ***Form 10-K Summary***

None.

SIGNATURE

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ENDO INTERNATIONAL PLC

(Registrant)

/S/ PAUL V. CAMPANELLI

Name: **Paul V. Campanelli**

Title: **President and Chief Executive Officer**

(Principal Executive Officer)

Date: February 26, 2020

Pursuant to the requirements of the Securities Exchange of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/S/ PAUL V. CAMPANELLI Paul V. Campanelli	Chairman, Director, President and Chief Executive Officer (Principal Executive Officer)	February 26, 2020
/S/ BLAISE COLEMAN Blaise Coleman	Executive Vice President, Chief Financial Officer (Principal Financial Officer)	February 26, 2020
/S/ JACK BOYLE Jack Boyle	Senior Vice President, Controller, Chief Accounting Officer (Principal Accounting Officer)	February 26, 2020
* Roger H. Kimmel	Senior Independent Director	February 26, 2020
* Shane M. Cooke	Director	February 26, 2020
* Nancy J. Hutson, Ph.D.	Director	February 26, 2020
* Michael Hyatt	Director	February 26, 2020
* William P. Montague	Director	February 26, 2020
*By: /S/ MATTHEW J. MALETTA Matthew J. Maletta	Attorney-in-fact pursuant to a Power of Attorney filed with this Report as Exhibit 24	February 26, 2020

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MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Endo International plc is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act, as amended. Endo International plc's internal control over financial reporting was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Endo International plc's management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework (2013)*. Based on management's assessment, as of December 31, 2019, the Company's internal control over financial reporting is effective based on those criteria.

Endo International plc's independent registered public accounting firm has issued its report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019. This report appears on page F-3.

/S/ PAUL V. CAMPANELLI

Paul V. Campanelli

Chairman, Director, President and Chief Executive Officer
(Principal Executive Officer)

/S/ BLAISE COLEMAN

Blaise Coleman

Executive Vice President, Chief Financial Officer
(Principal Financial Officer)

February 26, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Endo International plc

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Endo International plc and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, comprehensive loss, shareholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2019, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2019 appearing under Item 15(a)(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019 based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Reserves for Sales Deductions

As described in Note 2 to the consolidated financial statements, the amount of revenue recognized by the Company is equal to the fixed amount of the transaction price, adjusted for management's estimates of a number of significant variable components including, but not limited to, estimates for chargebacks, rebates, sales incentives and allowances, DSA and other fees for services, returns and allowances, which management collectively refer to as sales deductions. As of December 31, 2019, reserves for sales deductions totaled $660.3 million. These amounts relate primarily to management's estimates of unsettled obligations for returns and allowances, rebates and chargebacks. The most significant sales deductions relate to rebates paid under Medicaid and Medicare for the Branded Pharmaceuticals segment, wholesaler chargebacks and rebates for the Sterile Injectables and Generic Pharmaceuticals segments and sales returns for each of these three segments. Management estimates the reserves for sales deductions based on factors such as direct and indirect customers' buying patterns and the estimated resulting contractual deduction rates, historical experience, specific known market events and estimated future trends, current contractual and statutory requirements, industry data, estimated customer inventory levels, current contract sales terms with direct and indirect customers and other competitive factors.

The principal considerations for our determination that performing procedures relating to reserves for sales deductions is a critical audit matter are there was significant judgment by management due to the significant measurement uncertainty in developing these reserves which in turn led to significant audit effort and a high degree of auditor judgment and subjectivity in performing procedures related to those estimates, as the reserves are based on estimates of future claims, including assumptions related to customers' buying patterns and the estimated resulting contractual deduction rates, estimated customer inventory levels, and other competitive factors.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to sales deductions, including the Company's controls over the assumptions used to estimate the corresponding reserves for sales deductions. These procedures also included, among others, (i) developing an independent estimate of the reserves for sales deductions utilizing historical payment information, third party data as well as evaluating pricing changes, other competitive factors, and terms of the specific sales deduction programs, (ii) comparing the independent estimates to the sales deduction reserves recorded by management, (iii) evaluating management's estimates in previous years by comparing historical reserves to rebate payments and credits processed in subsequent periods, and (iv) testing actual payments made and amounts credited to both direct and indirect customers to evaluate whether the payments and credits were made in accordance with the contractual and mandated terms of the Company's rebate programs and returns policy.

Intangible Assets Impairment Assessments - Developed Technology and In-Process Research and Development

As described in Notes 2 and 10 to the consolidated financial statements, the Company's consolidated balance for developed technology finite-lived intangible assets was $2,430.3 million and for in-process research and development indefinite-lived intangible assets was $93.9 million as of December 31, 2019. Finite-lived intangible assets are assessed for impairment whenever events or changes in circumstances indicate the carrying amounts of the assets may not be recoverable. Indefinite-lived intangible assets are tested for impairment annually and when events or changes in circumstances indicate that the asset might be impaired. Recoverability of a finite-lived intangible asset that will continue to be used in the Company's operations is measured by comparing the carrying amount of the asset to the forecasted undiscounted future cash flows related to the asset. As part of intangible asset impairment assessments, management estimates the fair values of the Company's indefinite-lived intangible assets using an income approach that utilizes a discounted cash flow model or, where appropriate, a market approach. The discounted cash flow models are dependent upon management's estimates of future cash flows and other factors including estimates of (i) future operating performance, including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and (ii) future economic conditions. The Company recognized total impairment charges of $347.7 million during the year ended December 31, 2019.

The principal considerations for our determination that performing procedures relating to the impairment assessments for the developed technology and in-process research and development intangible assets is a critical audit matter are there was significant judgment and estimation by management when developing the fair value measurement of developed technology and in-process research and development intangible assets. This in turn led to significant audit effort and a high degree of auditor judgment and subjectivity in performing procedures to evaluate management's estimated cash flows, including significant assumptions related to future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and future economic conditions in determining the fair value of each intangible asset. In addition, the audit effort included the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the valuation of intangible assets, including controls over the identification of triggering events, and the development of assumptions used to estimate fair value. These procedures also included, among others, evaluating whether there were any events or circumstances indicating that intangible assets may be impaired and testing management's process for developing the estimate, which included evaluating the appropriateness of the cash flow projections and discounted cash flow model; testing the completeness, accuracy, and relevance of underlying data used in the model; and evaluating the reasonableness of significant assumptions, including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and future economic conditions. These procedures also included the involvement of professionals with specialized skill and knowledge to assist in evaluating the reasonableness of significant assumptions, including the discount rate used by management. Evaluating the assumptions related to future operating performance, including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and future economic conditions, involved evaluating whether the assumptions used were reasonable considering (i) historical performance, (ii) industry and economic forecasts and (iii) whether the assumptions were consistent with evidence obtained in other areas of the audit.

Goodwill Impairment Assessment - Generic Pharmaceuticals and International Pharmaceuticals Segments

As described in Notes 2 and 10 to the consolidated financial statements, the Company's consolidated goodwill balance for the Generic Pharmaceuticals and International Pharmaceuticals segments was $35.2 million as of December 31, 2019 and $171.9 million of impairment charges were recorded during the year ended December 31, 2019. An impairment assessment is conducted as of October 1, or more frequently whenever events or changes in circumstances indicate that the asset might be impaired. Management performs the goodwill impairment test by comparing the fair value and carrying amount of each reporting unit. Management estimated the fair values of its reporting units using an income approach that utilizes a discounted cash flow model. The discounted cash flow models are dependent upon management's estimates of future cash flows and other factors including estimates of (i) future operating performance, including future sales, long-term growth rates, operating margins, discount rates, and variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and (ii) future economic conditions.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment - Generic Pharmaceuticals and International Pharmaceuticals segments is a critical audit matter are there was significant judgment and estimation by management when determining the fair value of the reporting units. This in turn led to significant audit effort and a high degree of auditor judgment and subjectivity in performing procedures related to management's cash flows, including significant assumptions related to future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and future economic conditions. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to goodwill impairment assessment, including controls over the identification of triggering events, determination of reporting units and the estimation of each reporting units' fair value, and the development of assumptions used to estimate fair value. These procedures also included, among others, (i) evaluating whether there were any events or circumstances indicating that goodwill may not be recoverable and therefore required goodwill impairment tests in addition to the annual test, (ii) testing management's process for developing the fair value estimate, which included evaluating the appropriateness of the discounted cash flow model, (iii) testing the completeness, accuracy, and relevance of underlying data used in the model, and evaluating the reasonableness of assumptions including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and future economic conditions. The procedures also included evaluating management's determination of reporting units and testing the assignment of assets and liabilities to each of the respective reporting units. The procedures included the involvement of professionals with specialized skill and knowledge to assist in evaluating the reasonableness of significant assumptions, including the discount rate and long-term growth rate calculations used by management. Evaluating the assumptions used to estimate fair value, including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows, and future economic conditions, involved evaluating whether the assumptions used were reasonable considering (i) historical performance, (ii) industry and economic forecasts and (iii) whether the assumptions were consistent with evidence obtained in other areas of the audit.

/s/ PricewaterhouseCoopers LLP

Philadelphia, Pennsylvania
February 26, 2020

We have served as the Company's auditor since 2014.

ENDO INTERNATIONAL PLC
CONSOLIDATED BALANCE SHEETS
DECEMBER 31, 2019 AND 2018
(Dollars in thousands, except share and per share data)

	December 31, 2019	December 31, 2018
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 1,454,531	$ 1,149,113
Restricted cash and cash equivalents	247,457	305,368
Accounts receivable, net	467,953	470,570
Inventories, net	327,865	322,179
Prepaid expenses and other current assets	40,845	56,139
Income taxes receivable	47,567	39,781
Total current assets	$ 2,586,218	$ 2,343,150
PROPERTY, PLANT AND EQUIPMENT, NET	504,865	498,892
OPERATING LEASE ASSETS	51,700	—
GOODWILL	3,595,184	3,764,636
OTHER INTANGIBLES, NET	2,571,267	3,457,306
DEFERRED INCOME TAXES	2,192	678
OTHER ASSETS	78,101	67,731
TOTAL ASSETS	$ 9,389,527	$ 10,132,393
LIABILITIES AND SHAREHOLDERS' DEFICIT		
CURRENT LIABILITIES:		
Accounts payable and accrued expenses	$ 899,949	$ 1,009,200
Current portion of legal settlement accrual	513,005	905,085
Current portion of operating lease liabilities	10,763	—
Current portion of long-term debt	34,150	34,150
Income taxes payable	2,422	1,661
Total current liabilities	$ 1,460,289	$ 1,950,096
DEFERRED INCOME TAXES	31,703	34,487
LONG-TERM DEBT, LESS CURRENT PORTION, NET	8,359,899	8,224,269
OPERATING LEASE LIABILITIES, LESS CURRENT PORTION	48,299	—
OTHER LIABILITIES	355,881	421,824
COMMITMENTS AND CONTINGENCIES (NOTE 15)		
SHAREHOLDERS' DEFICIT:		
Euro deferred shares, $0.01 par value; 4,000,000 shares authorized and issued at both December 31, 2019 and December 31, 2018	45	46
Ordinary shares, $0.0001 par value; 1,000,000,000 shares authorized; 226,802,609 and 224,382,791 shares issued and outstanding at December 31, 2019 and December 31, 2018, respectively	23	22
Additional paid-in capital	8,904,692	8,855,810
Accumulated deficit	(9,552,214)	(9,124,932)
Accumulated other comprehensive loss	(219,090)	(229,229)
Total shareholders' deficit	$ (866,544)	$ (498,283)
TOTAL LIABILITIES AND SHAREHOLDERS' DEFICIT	$ 9,389,527	$ 10,132,393

See accompanying Notes to Consolidated Financial Statements.

ENDO INTERNATIONAL PLC
CONSOLIDATED STATEMENTS OF OPERATIONS
YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017
(Dollars and shares in thousands, except per share data)

	2019	2018	2017
TOTAL REVENUES, NET	$ 2,914,364	$ 2,947,078	$ 3,468,858
COSTS AND EXPENSES:			
Cost of revenues	1,569,338	1,631,682	2,228,530
Selling, general and administrative	632,420	646,037	629,874
Research and development	130,732	185,826	172,067
Litigation-related and other contingencies, net	11,211	13,809	185,990
Asset impairment charges	526,082	916,939	1,154,376
Acquisition-related and integration items, net	(46,098)	21,914	58,086
Interest expense, net	538,734	521,656	488,228
(Gain) loss on extinguishment of debt	(119,828)	—	51,734
Other expense (income), net	16,677	(51,953)	(17,023)
LOSS FROM CONTINUING OPERATIONS BEFORE INCOME TAX	$ (344,904)	$ (938,832)	$ (1,483,004)
INCOME TAX EXPENSE (BENEFIT)	15,680	22,935	(250,293)
LOSS FROM CONTINUING OPERATIONS	$ (360,584)	$ (961,767)	$ (1,232,711)
DISCONTINUED OPERATIONS, NET OF TAX (NOTE 3)	(62,052)	(69,702)	(802,722)
NET LOSS	$ (422,636)	$ (1,031,469)	$ (2,035,433)
NET LOSS PER SHARE—BASIC:			
Continuing operations	$ (1.60)	$ (4.29)	$ (5.52)
Discontinued operations	(0.27)	(0.32)	(3.60)
Basic	$ (1.87)	$ (4.61)	$ (9.12)
NET LOSS PER SHARE—DILUTED:			
Continuing operations	$ (1.60)	$ (4.29)	$ (5.52)
Discontinued operations	(0.27)	(0.32)	(3.60)
Diluted	$ (1.87)	$ (4.61)	$ (9.12)
WEIGHTED AVERAGE SHARES:			
Basic	226,050	223,960	223,198
Diluted	226,050	223,960	223,198

See accompanying Notes to Consolidated Financial Statements.

ENDO INTERNATIONAL PLC
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017
(Dollars in thousands)

	2019	2018	2017
NET LOSS	$ (422,636)	$ (1,031,469)	$ (2,035,433)
OTHER COMPREHENSIVE INCOME (LOSS):			
Net unrealized loss on securities:			
Unrealized loss arising during the period	$ —	$ —	$ (515)
Less: reclassification adjustments for gain realized in net loss	—	—	—
	—	—	(515)
Net unrealized gain (loss) on foreign currency:			
Foreign currency translation gain (loss) arising during the period	$ 10,139	$ (19,408)	$ 31,202
Less: reclassification adjustments for loss realized in net loss	—	—	112,926
	10,139	(19,408)	144,128
OTHER COMPREHENSIVE INCOME (LOSS)	$ 10,139	$ (19,408)	$ 143,613
COMPREHENSIVE LOSS	$ (412,497)	$ (1,050,877)	$ (1,891,820)

See accompanying Notes to Consolidated Financial Statements.

ENDO INTERNATIONAL PLC
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY (DEFICIT)
YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017
(In thousands, except share data)

	Ordinary Shares		Euro Deferred Shares					
	Number of Shares	Amount	Number of Shares	Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Shareholders' Equity (Deficit)
BALANCE, DECEMBER 31, 2016, prior to the adoption of ASU 2016-16	222,954,175	$ 22	4,000,000	$ 42	$ 8,743,240	$ (5,688,281)	$ (353,434)	$ 2,701,589
Effect of adopting ASU 2016-16 (NOTE 17)	—	—	—	—	—	(372,825)	—	(372,825)
BALANCE, JANUARY 1, 2017	222,954,175	$ 22	4,000,000	$ 42	$ 8,743,240	$ (6,061,106)	$ (353,434)	$ 2,328,764
Net loss	—	—	—	—	—	(2,035,433)	—	(2,035,433)
Other comprehensive income	—	—	—	—	—	—	143,613	143,613
Compensation related to share-based awards	—	—	—	—	50,149	—	—	50,149
Ordinary shares issued	377,531	—	—	—	—	—	—	—
Tax withholding for restricted shares	—	—	—	—	(2,078)	—	—	(2,078)
Other	—	—	—	6	(141)	—	—	(135)
BALANCE, DECEMBER 31, 2017, prior to the adoption of ASC 606	223,331,706	$ 22	4,000,000	$ 48	$ 8,791,170	$ (8,096,539)	$ (209,821)	$ 484,880
Effect of adopting ASC 606 (NOTE 17)	—	—	—	—	—	3,076	—	3,076
BALANCE, JANUARY 1, 2018	223,331,706	$ 22	4,000,000	$ 48	$ 8,791,170	$ (8,093,463)	$ (209,821)	$ 487,956
Net loss	—	—	—	—	—	(1,031,469)	—	(1,031,469)
Other comprehensive loss	—	—	—	—	—	—	(19,408)	(19,408)
Compensation related to share-based awards	—	—	—	—	54,071	—	—	54,071
Exercise of options	94,392	—	—	—	933	—	—	933
Ordinary shares issued	956,693	—	—	—	—	—	—	—
LTCI modification (NOTE 18)	—	—	—	—	14,936	—	—	14,936
Tax withholding for restricted shares	—	—	—	—	(5,375)	—	—	(5,375)
Other	—	—	—	(2)	75	—	—	73
BALANCE, DECEMBER 31, 2018, prior to the adoption of ASC 842	224,382,791	$ 22	4,000,000	$ 46	$ 8,855,810	$ (9,124,932)	$ (229,229)	$ (498,283)
Effect of adopting ASC 842 (NOTE 17)	—	—	—	—	—	(4,646)	—	(4,646)
BALANCE, JANUARY 1, 2019	224,382,791	$ 22	4,000,000	$ 46	$ 8,855,810	$ (9,129,578)	$ (229,229)	$ (502,929)
Net loss	—	—	—	—	—	(422,636)	—	(422,636)
Other comprehensive income	—	—	—	—	—	—	10,139	10,139
Compensation related to share-based awards	—	—	—	—	59,142	—	—	59,142
Exercise of options	557	—	—	—	4	—	—	4
Ordinary shares issued	2,419,261	—	—	—	—	—	—	—
Tax withholding for restricted shares	—	—	—	—	(10,156)	—	—	(10,156)
Other	—	1	—	(1)	(108)	—	—	(108)
BALANCE, DECEMBER 31, 2019	226,802,609	$ 23	4,000,000	$ 45	$ 8,904,692	$ (9,552,214)	$ (219,090)	$ (866,544)

See accompanying Notes to Consolidated Financial Statements.

ENDO INTERNATIONAL PLC
CONSOLIDATED STATEMENTS OF CASH FLOWS
YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017
(Dollars in thousands)

	2019	2018	2017
OPERATING ACTIVITIES:			
Net loss	$ (422,636)	$ (1,031,469)	$ (2,035,433)
Adjustments to reconcile Net loss to Net cash provided by operating activities:			
Depreciation and amortization	612,862	723,707	983,765
Inventory step-up	—	261	390
Share-based compensation	59,142	54,071	50,149
Amortization of debt issuance costs and discount	18,107	20,514	22,694
Deferred income taxes	(5,561)	5,557	(156,129)
Change in fair value of contingent consideration	(46,098)	19,910	49,949
(Gain) loss on extinguishment of debt	(119,828)	—	51,734
Asset impairment charges	526,082	916,939	1,154,376
Gain on sale of business and other assets	(6,367)	(45,155)	(13,809)
Changes in assets and liabilities which provided (used) cash:			
Accounts receivable	19,158	17,090	484,710
Inventories	(27,139)	67,269	147,189
Prepaid and other assets	11,370	(12,797)	5,345
Accounts payable, accrued expenses and other liabilities	(525,746)	(425,336)	(87,944)
Income taxes payable/receivable, net	4,706	(43,291)	(103,001)
Net cash provided by operating activities	$ 98,052	$ 267,270	$ 553,985
INVESTING ACTIVITIES:			
Purchases of property, plant and equipment, excluding capitalized interest	(63,854)	(83,398)	(125,654)
Capitalized interest payments	(3,833)	(3,549)	—
Decrease in notes receivable	—	—	7,000
Product acquisition costs and license fees	—	(3,000)	—
Proceeds from sale of business and other assets, net	6,577	70,369	223,237
Other investing activities	912	1,678	—
Net cash (used in) provided by investing activities	$ (60,198)	$ (17,900)	$ 104,583
FINANCING ACTIVITIES:			
Proceeds from issuance of notes, net	1,483,125	—	300,000
Proceeds from issuance of term loans	—	—	3,415,000
Repayments of notes	(1,501,788)	—	—
Repayments of term loans	(34,152)	(34,150)	(3,730,951)
Proceeds from draw of revolving debt	300,000	—	—
Repayments of other indebtedness	(9,196)	(5,222)	(6,154)
Payments for debt issuance and extinguishment costs	(6,414)	—	(57,773)
Payments for contingent consideration	(16,822)	(37,758)	(85,037)
Payments of tax withholding for restricted shares	(10,156)	(5,375)	(2,078)
Proceeds from exercise of options	4	933	—
Net cash provided by (used in) financing activities	$ 204,601	$ (81,572)	$ (166,993)
Effect of foreign exchange rate	1,096	(1,975)	2,515
Movement in cash held for sale	—	—	11,744
NET INCREASE IN CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS	$ 243,551	$ 165,823	$ 505,834
CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS, BEGINNING OF PERIOD	1,476,837	1,311,014	805,180
CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS, END OF PERIOD	$ 1,720,388	$ 1,476,837	$ 1,311,014
SUPPLEMENTAL INFORMATION:			
Cash paid for interest, excluding capitalized interest	$ 559,528	$ 515,042	$ 467,017
Cash paid for income taxes	$ 14,875	$ 17,639	$ 28,675
Cash paid into Qualified Settlement Funds for mesh legal settlements	$ 253,520	$ 336,648	$ 668,306
Cash paid out of Qualified Settlement Funds for mesh legal settlements	$ 314,266	$ 353,032	$ 632,176
Other cash distributions for mesh legal settlements	$ 15,330	$ 25,222	$ 19,243

See accompanying Notes to Consolidated Financial Statements.

ENDO INTERNATIONAL PLC
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017

NOTE 1. DESCRIPTION OF BUSINESS

Endo International plc is an Ireland-domiciled specialty branded and generics pharmaceutical company that conducts business through its operating subsidiaries. Unless otherwise indicated or required by the context, references throughout to "Endo," the "Company," "we," "our" or "us" refer to financial information and transactions of Endo International plc and its subsidiaries. The accompanying Consolidated Financial Statements of Endo International plc and its subsidiaries have been prepared in accordance with U.S. GAAP.

NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Significant Accounting Policies

Consolidation and Basis of Presentation. The Consolidated Financial Statements include the accounts of wholly-owned subsidiaries after the elimination of intercompany accounts and transactions.

Reclassifications. Certain prior period amounts have been reclassified to conform to the current period presentation.

Use of Estimates. The preparation of our Consolidated Financial Statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect the amounts and disclosures in our Consolidated Financial Statements, including the notes thereto, and elsewhere in this report. For example, we are required to make significant estimates and assumptions related to revenue recognition, including sales deductions, long-lived assets, goodwill, other intangible assets, income taxes, contingencies, financial instruments and share-based compensation, among others. Some of these estimates can be subjective and complex. Although we believe that our estimates and assumptions are reasonable, there may be other reasonable estimates or assumptions that differ significantly from ours. Further, our estimates and assumptions are based upon information available at the time they were made. Actual results may differ significantly from our estimates.

We regularly evaluate our estimates and assumptions using historical experience and other factors, including the economic environment. As future events and their effects cannot be determined with precision, our estimates and assumptions may prove to be incomplete or inaccurate, or unanticipated events and circumstances may occur that might cause us to change those estimates and assumptions. Market conditions, such as illiquid credit markets, volatile equity markets, dramatic fluctuations in foreign currency rates and economic downturn, can increase the uncertainty already inherent in our estimates and assumptions. We also are subject to other risks and uncertainties that may cause actual results to differ from estimated amounts, such as changes in the healthcare environment, competition, litigation, legislation and regulations. We adjust our estimates and assumptions when facts and circumstances indicate the need for change. Those changes generally will be reflected in our Consolidated Financial Statements on a prospective basis.

Customer, Product and Supplier Concentration. We primarily sell our branded and generic products to wholesalers, retail drug store chains, supermarket chains, mass merchandisers, distributors, mail order accounts, hospitals and government agencies. Our wholesalers and distributors purchase products from us and, in turn, supply products to retail drug store chains, independent pharmacies and MCOs. Customers in the managed care market include health maintenance organizations, nursing homes, hospitals, clinics, pharmacy benefit management companies and mail order customers. Total revenues from direct customers that accounted for 10% or more of our total consolidated revenues during the years ended December 31, 2019, 2018 and 2017 are as follows:

	2019	2018	2017
AmerisourceBergen Corporation	34%	32%	25%
McKesson Corporation	26%	27%	25%
Cardinal Health, Inc.	25%	26%	25%

Revenues from these customers are included within each of our segments.

VASOSTRICT® accounted for 18%, 15% and 12% of our 2019, 2018 and 2017 total revenues, respectively. XIAFLEX® accounted for 11% of our 2019 total revenues. No other products accounted for 10% or more of our total revenues during the years ended December 31, 2019, 2018 or 2017.

We have agreements with certain third parties for the manufacture, supply and processing of certain of our existing pharmaceutical products. See Note 15. Commitments and Contingencies for information on material manufacturing, supply and other service agreements.

We are subject to risks and uncertainties associated with these concentrations that could have a material adverse effect on our business, financial condition, results of operations and cash flows in future periods, including in the near term.

Revenue Recognition and Sales Deductions. The Company adopted ASC 606 on January 1, 2018 using the modified retrospective method for all revenue-generating contracts, including modifications thereto, that were not completed contracts at the date of adoption. ASC 606 applies to contracts with commercial substance that establish the payment terms and each party's rights regarding the goods or services to be transferred, to the extent collection of substantially all of the related consideration is probable. Under ASC 606, we recognize revenue for contracts meeting these criteria when (or as) we satisfy our performance obligations for such contracts by transferring control of the underlying promised goods or services to our customers. The amount of revenue we recognize reflects our estimate of the consideration we expect to be entitled to receive, subject to certain constraints, in exchange for such goods or services. This amount is referred to as the transaction price.

Our revenue consists almost entirely of sales of our products to customers, whereby we ship products to a customer pursuant to a purchase order. For contracts such as these, revenue is recognized when our contractual performance obligations have been fulfilled and control has been transferred to the customer pursuant to the contract's terms, which is generally upon delivery to the customer. The amount of revenue we recognize is equal to the fixed amount of the transaction price, adjusted for our estimates of a number of significant variable components including, but not limited to, estimates for chargebacks, rebates, sales incentives and allowances, DSA and other fees for services, returns and allowances, which we collectively refer to as sales deductions. The Company utilizes the expected value method when estimating the amount of variable consideration to include in the transaction price with respect to each of the foregoing variable components and the most likely amount method when estimating the amount of variable consideration to include in the transaction price with respect to future potential milestone payments that do not qualify for the sales- and usage-based royalty exception. Variable consideration is included in the transaction price only to the extent that it is probable that a significant revenue reversal will not occur when the uncertainty associated with the variable consideration is resolved. Payment terms for these types of contracts generally fall within 30 to 90 days of invoicing.

At December 31, 2019 and 2018, our reserves for sales deductions totaled $660.3 million and $772.3 million, respectively. These amounts relate primarily to our estimates of unsettled obligations for returns and allowances, rebates and chargebacks. The most significant sales deductions relate to rebates paid under Medicaid and Medicare for the Branded Pharmaceuticals segment, wholesaler chargebacks and rebates for the Sterile Injectables and Generic Pharmaceuticals segments and sales returns for each of these three segments. Our estimates are based on factors such as our direct and indirect customers' buying patterns and the estimated resulting contractual deduction rates, historical experience, specific known market events and estimated future trends, current contractual and statutory requirements, industry data, estimated customer inventory levels, current contract sales terms with our direct and indirect customers and other competitive factors. Significant judgment and estimation is required in developing the foregoing and other relevant assumptions. The most significant sales deductions are further described below.

Returns and Allowances—Consistent with industry practice, we maintain a return policy that allows our customers to return products within a specified period of time both subsequent to and, in certain cases, prior to the products' expiration dates. Our return policy generally allows customers to receive credit for expired products within six months prior to expiration and within one year after expiration. Our provision for returns and allowances consists of our estimates for future product returns, pricing adjustments and delivery errors.

Rebates—Our provision for rebates, sales incentives and other allowances can generally be categorized into the following four types:

- direct rebates;
- indirect rebates;
- governmental rebates, including those for Medicaid, Medicare and TRICARE, among others; and
- managed-care rebates.

We establish contracts with wholesalers, chain stores and indirect customers that provide for rebates, sales incentives, DSA fees and other allowances. Some customers receive rebates upon attaining established sales volumes. Direct rebates are generally rebates paid to direct purchasing customers based on a percentage applied to a direct customer's purchases from us, including fees paid to wholesalers under our DSAs, as described above. Indirect rebates are rebates paid to indirect customers that have purchased our products from a wholesaler under a contract with us.

We are subject to rebates on sales made under governmental and managed-care pricing programs based on relevant statutes with respect to governmental pricing programs and contractual sales terms with respect to managed-care providers and GPOs. For example, we are required to provide a discount on our brand-name products to patients who fall within the Medicare Part D coverage gap, also referred to as the donut hole.

We participate in various federal and state government-managed programs whereby discounts and rebates are provided to participating government entities. For example, Medicaid rebates are amounts owed based upon contractual agreements or legal requirements with public sector (Medicaid) benefit providers after the final dispensing of the product by a pharmacy to a benefit plan participant.

Chargebacks—We market and sell products to both: (i) direct customers including wholesalers, distributors, warehousing pharmacy chains and other direct purchasing groups and (ii) indirect customers including independent pharmacies, non-warehousing chains, MCOs, GPOs and government entities. We enter into agreements with certain of our indirect customers to establish contract pricing for certain products. These indirect customers then independently select a wholesaler from which to purchase the products at these contracted prices. Alternatively, we may pre-authorize wholesalers to offer specified contract pricing to other indirect customers. Under either arrangement, we provide credit to the wholesaler for any difference between the contracted price with the indirect customer and the wholesaler's invoice price. Such credit is called a chargeback.

Prior to the adoption of ASC 606, the Company accounted for revenue recognition and sales deductions under *Accounting Standards Codification Topic 605, Revenue Recognition* (ASC 605).

Contract Assets and Contract Liabilities. Contract assets represent the Company's right to consideration in exchange for goods or services that the Company has transferred when that right is conditioned on something other than the passage of time. The Company records revenue and a corresponding contract asset when it fulfills a contractual performance obligation, but must also fulfill one or more additional performance obligations before being entitled to payment. Once the Company's right to consideration becomes unconditional, the contract asset amount is reclassified as Accounts receivable.

Contract liabilities represent the Company's obligation to transfer goods or services to a customer. The Company records a contract liability generally upon receipt of consideration in advance of fulfilling one or more of its contractual performance obligations. Upon completing each performance obligation, the corresponding contract liability amount is reversed and revenue is recognized.

Contract assets and liabilities related to rights and obligations arising from a single contract, or a series of contracts combined and accounted for as a single contract, are generally presented on a net basis. Contract assets and liabilities are further described in Note 12. Contract Assets and Liabilities.

R&D. Expenditures for R&D are expensed as incurred. Total R&D expenses include, among other things, the costs of discovery research, preclinical development, early- and late-clinical development and drug formulation, clinical trials, materials, medical support of marketed products and certain upfront and milestone payments. R&D spending also includes enterprise-wide costs which support our overall R&D infrastructure. Property, plant and equipment that are acquired or constructed for R&D activities and that have alternate future uses are capitalized and depreciated over their estimated useful lives on a straight-line basis. Contractual upfront and milestone payments made to third parties are generally: (i) expensed as incurred up to the point of regulatory approval and (ii) capitalized and amortized over the related product's remaining useful life subsequent to regulatory approval. Amounts capitalized for such payments are included in Other intangibles, net in the Consolidated Balance Sheets.

Cash and Cash Equivalents. The Company considers all highly liquid money market instruments with an original maturity of three months or less when purchased to be cash equivalents. At December 31, 2019 and 2018, cash equivalents were deposited in financial institutions and consisted almost entirely of immediately available fund balances. The Company maintains its cash deposits and cash equivalents with financial institutions it believes to be well-known and stable.

Restricted Cash and Cash Equivalents. Cash and cash equivalents that are restricted as to withdrawal or use under the terms of certain contractual agreements are excluded from Cash and cash equivalents in the Consolidated Balance Sheets. For additional information see Note 6. Fair Value Measurements.

Accounts Receivable. Accounts receivable are stated at their net realizable value and the Company maintains an allowance for doubtful accounts against gross accounts receivable. The allowance is not material to the Company's Consolidated Financial Statements at December 31, 2019 or 2018. In addition, our accounts receivable balance is reduced by certain sales deduction reserves where we have the right of offset with the customer.

Concentrations of Credit Risk. Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash equivalents, restricted cash equivalents and accounts receivable. From time to time, we invest our excess cash in high-quality, liquid money market instruments maintained by major banks and financial institutions. We have not experienced any losses on our cash equivalents.

We perform ongoing credit evaluations of our customers and generally do not require collateral. We have no history of significant losses from uncollectible accounts. Approximately 88% and 87% of our gross trade accounts receivable balances represent amounts due from three customers (Cardinal Health, Inc., McKesson Corporation and AmerisourceBergen Corporation) at December 31, 2019 and 2018, respectively.

We do not expect our current or future exposures to credit risk to have a significant impact on our operations. However, there can be no assurance that any of these risks will not have an adverse effect on our business.

Inventories. Inventories consist of raw materials, work-in-process and finished goods. Inventory that is in excess of the amount expected to be sold within one year is classified as long-term inventory and is recorded in Other assets in the Consolidated Balance Sheets. The Company capitalizes inventory costs associated with certain products prior to regulatory approval and product launch when it is reasonably certain, based on management's judgment of future commercial use and net realizable value, that the pre-launch inventories will be saleable. The determination to capitalize is made on a product-by-product basis. The Company could be required to write down previously capitalized costs related to pre-launch inventories upon a change in such judgment, a denial or delay of approval by regulatory bodies, a delay in commercialization or other potential factors. Our inventories are stated at the lower of cost or net realizable value.

Cost is determined by the first-in, first-out method. It includes materials, direct labor and an allocation of overhead, but excludes certain period charges and unallocated overheads that are charged to expense in the period in which they are incurred. Unallocated overheads can occur as a consequence of abnormally low production or idle facilities.

Net realizable value is determined by the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. When necessary, we write-down inventories to net realizable value based on forecasted demand and market and regulatory conditions, which may differ from actual results.

Property, Plant and Equipment. Property, plant and equipment is generally stated at cost less accumulated depreciation. Major improvements are capitalized, while routine maintenance and repairs are expensed as incurred. Costs incurred during the construction or development of property, plant and equipment are capitalized as assets under construction. Once an asset has been placed into service, depreciation expense is taken on a straight-line basis over the estimated useful life of the related assets or, in the case of leasehold improvements and finance lease assets, over the shorter of the estimated useful life and the lease term. Depreciation is based on the following estimated useful lives, as of December 31, 2019:

	Range of Useful Lives, from:		
Buildings	10 years	to	30 years
Machinery and equipment	1 year	to	15 years
Computer equipment and software	1 year	to	10 years
Furniture and fixtures	1 year	to	10 years

Depreciation expense is not recorded on assets held for sale. Gains and losses on disposals are included in Other expense (income), net in the Consolidated Statements of Operations. As further described below under the heading "Long-Lived Asset Impairment Testing," our property plant and equipment assets are also subject to impairment reviews.

Computer Software. The Company capitalizes certain costs incurred in connection with obtaining or developing internal-use software, including external direct costs of material and services, and payroll costs for employees directly involved with the software development. Capitalized software costs are included in Property, plant and equipment, net in the Consolidated Balance Sheets and depreciated beginning when the software project is substantially complete and the asset is ready for its intended use. Costs incurred during the preliminary project stage and post-implementation stage, as well as maintenance and training costs, are expensed as incurred.

Lease Accounting. The Company adopted ASC 842 on January 1, 2019. For further discussion of the adoption, refer to the "Recent Accounting Pronouncements Adopted or Otherwise Effective as of December 31, 2019" section below. ASC 842 applies to a number of arrangements to which the Company is party.

Whenever the Company enters into a new arrangement, it must determine, at the inception date, whether the arrangement is or contains a lease. This determination generally depends on whether the arrangement conveys to the Company the right to control the use of an explicitly or implicitly identified asset for a period of time in exchange for consideration. Control of an underlying asset is conveyed to the Company if the Company obtains the rights to direct the use of and to obtain substantially all of the economic benefits from using the underlying asset.

If a lease exists, the Company must then determine the separate lease and nonlease components of the arrangement. Each right to use an underlying asset conveyed by a lease arrangement should generally be considered a separate lease component if it both: (i) can benefit the Company without depending on other resources not readily available to the Company and (ii) does not significantly affect and is not significantly affected by other rights of use conveyed by the lease. Aspects of a lease arrangement that transfer other goods or services to the Company but do not meet the definition of lease components are considered nonlease components. The consideration owed by the Company pursuant to a lease arrangement is generally allocated to each lease and nonlease component for accounting purposes. However, the Company has elected, for all of its leases, to not separate lease and nonlease components. Each lease component is accounted for separately from other lease components, but together with the associated nonlease components.

For each lease, the Company must then determine the lease term, the present value of lease payments and the classification of the lease as either an operating or finance lease.

The lease term is the period of the lease not cancellable by the Company, together with periods covered by: (i) renewal options the Company is reasonably certain to exercise, (ii) termination options the Company is reasonably certain not to exercise and (iii) renewal or termination options that are controlled by the lessor.

The present value of lease payments is calculated based on:

- Lease payments—Lease payments include fixed and certain variable payments, less lease incentives, together with amounts probable of being owed by the Company under residual value guarantees and, if reasonably certain of being paid, the cost of certain renewal options and early termination penalties set forth in the lease arrangement. Lease payments exclude consideration that is not related to the transfer of goods and services to the Company.
- Discount rate—The discount rate must be determined based on information available to the Company upon the commencement of a lease. Lessees are required to use the rate implicit in the lease whenever such rate is readily available; however, as the implicit rate in the Company's leases is generally not readily determinable, the Company generally uses the hypothetical incremental borrowing rate it would have to pay to borrow an amount equal to the lease payments, on a collateralized basis, over a timeframe similar to the lease term.

In making the determination of whether a lease is an operating lease or a finance lease, the Company considers the lease term in relation to the economic life of the leased asset, the present value of lease payments in relation to the fair value of the leased asset and certain other factors, including the lessee's and lessor's rights, obligations and economic incentives over the term of the lease.

Generally, upon the commencement of a lease, the Company will record a lease liability and a right-of-use (ROU) asset. However, the Company has elected, for all underlying assets with initial lease terms of twelve months or less (known as short-term leases), to not recognize a lease liability or ROU asset. Lease liabilities are initially recorded at lease commencement as the present value of future lease payments. ROU assets are initially recorded at lease commencement as the initial amount of the lease liability, together with the following, if applicable: (i) initial direct costs incurred by the lessee and (ii) lease payments made by the lessor, net of lease incentives received, prior to lease commencement.

Over the lease term, the Company generally increases its lease liabilities using the effective interest method and decreases its lease liabilities for lease payments made. For finance leases, amortization expense and interest expense are recognized separately in the Consolidated Statements of Operations, with amortization expense generally recorded on a straight-line basis over the lease term and interest expense recorded using the effective interest method. For operating leases, a single lease cost is generally recognized in the Consolidated Statements of Operations on a straight-line basis over the lease term unless an impairment has been recorded with respect to a leased asset. Lease costs for short-term leases not recognized in the Consolidated Balance Sheets are recognized in the Consolidated Statements of Operations on a straight-line basis over the lease term. Variable lease costs not initially included in the lease liability and ROU asset impairment charges are expensed as incurred. ROU assets are assessed for impairment, similar to other long-lived assets.

Prior to the adoption of ASC 842, the Company accounted for leases under *Accounting Standards Codification Topic 840, Leases* (ASC 840).

Cloud Computing Arrangements. The Company may from time to time incur costs in connection with hosting arrangements that are service contracts. Subsequent to the Company's January 1, 2019 adoption of Accounting Standards Update (ASU) No. 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract* (ASU 2018-15), which is further described below, the Company capitalizes any such implementation costs, expenses them over the terms of the respective hosting arrangements and subjects them to impairment testing consistent with other long-lived assets.

Finite-Lived Intangible Assets. Our finite-lived intangible assets consist of license rights and developed technology. Upon acquisition, intangible assets are generally initially recorded at fair value if acquired in a business combination, or at cost if otherwise. There are several methods that can be used to determine fair value. For intangible assets, we typically use an income approach. This approach starts with our forecast of all of the expected future net cash flows. Revenues are estimated based on relevant market size and growth factors, expected industry trends, individual project life cycles and, if applicable, the life of any estimated period of marketing exclusivity, such as that granted by a patent. The pricing, margins and expense levels of similar products are considered if available. For certain licensed assets, our estimates of future cash flows consider periods covered by renewal options to the extent we have the intent and ability, at the date of the estimate, to renew the underlying license agreements. These cash flows are then adjusted to present value by applying an appropriate discount rate that reflects the risk factors associated with the cash flow streams.

To the extent an intangible asset is deemed to have a finite life, it is then amortized over its estimated useful life using either the straight-line method or, in the case of certain developed technology assets, an accelerated amortization model. The values of these various assets are subject to continuing scientific, medical and marketplace uncertainty. Factors giving rise to our initial estimate of useful lives are subject to change. Significant changes to any of these factors may result in a reduction in the useful life of the asset and an acceleration of related amortization expense, which could cause our net income and net income per share to decrease. Amortization expense is not recorded on assets held for sale.

As further described below under the heading “Long-Lived Asset Impairment Testing,” our finite-lived intangible assets are also subject to impairment reviews.

Developed Technology. Our developed technology assets subject to amortization have useful lives ranging from 4 years to 20 years, with a weighted average useful life of approximately 11 years. We determine amortization periods and methods of amortization for developed technology assets based on our assessment of various factors impacting estimated useful lives and the timing and extent of estimated cash flows of the acquired assets, including the strength of the intellectual property protection of the product (if applicable), contractual terms and various other competitive and regulatory issues.

License Rights. Our license rights subject to amortization have useful lives ranging from 12 years to 15 years, with a weighted average useful life of approximately 14 years. We determine amortization periods for licenses based on our assessment of various factors including the expected launch date of the product, the strength of the intellectual property protection of the product (if applicable), contractual terms and various other competitive, developmental and regulatory issues.

Long-Lived Asset Impairment Testing. Long-lived assets, including property, plant and equipment and finite-lived intangible assets, are assessed for impairment whenever events or changes in circumstances indicate the carrying amounts of the assets may not be recoverable. Recoverability of an asset that will continue to be used in our operations is measured by comparing the carrying amount of the asset to the forecasted undiscounted future cash flows related to the asset. In the event the carrying amount of the asset exceeds its undiscounted future cash flows and the carrying amount is not considered recoverable, impairment may exist. An impairment loss, if any, is measured as the excess of the asset’s carrying amount over its fair value, generally based on a discounted future cash flow method, independent appraisals or offers from prospective buyers. An impairment loss would be recognized in the Consolidated Statements of Operations in the period that the impairment occurs.

In-Process Research and Development Assets. In-process research and development acquired in an asset acquisition is expensed in the period it is acquired, assuming the assets have no alternative future use to the Company. Otherwise, acquired in-process research and development is generally recognized as an indefinite-lived intangible asset. Such assets are generally initially recorded at fair value if acquired in a business combination, or at cost if otherwise. Indefinite-lived intangible assets are not subject to amortization. Instead, they are tested for impairment annually and when events or changes in circumstances indicate that the asset might be impaired. Our annual assessment is performed as of October 1. If the fair value of the intangible assets is less than its carrying amount, an impairment loss is recognized for the difference. For those assets that reach commercialization, the assets are reclassified and accounted for as finite-lived intangible assets.

Goodwill. Acquisitions meeting the definition of business combinations are accounted for using the acquisition method of accounting, which requires that the purchase price be allocated to the net assets acquired at their respective fair values. Any excess of the purchase price over the estimated fair values of the net assets acquired is recorded as goodwill. While amortization expense is not recorded on goodwill, goodwill is subject to impairment reviews. An impairment assessment is conducted as of October 1, or more frequently whenever events or changes in circumstances indicate that the asset might be impaired.

We perform the goodwill impairment test by comparing the fair value and carrying amount of each reporting unit. Any goodwill impairment charge we recognize for a reporting unit is equal to the lesser of (i) the total goodwill allocated to that reporting unit and (ii) the amount by which that reporting unit’s carrying amount exceeds its fair value.

Contingencies. The Company is subject to various patent challenges, product liability claims, government investigations and other legal proceedings in the ordinary course of business. Contingent accruals and legal settlements are recorded in the Consolidated Statements of Operations as Litigation-related and other contingencies, net (or as Discontinued operations, net of tax in the case of vaginal mesh matters) when the Company determines that a loss is both probable and reasonably estimable. Legal fees and other expenses related to litigation are expensed as incurred and included in Selling, general and administrative expenses in the Consolidated Statements of Operations (or as Discontinued operations, net of tax in the case of vaginal mesh matters).

Due to the fact that legal proceedings and other contingencies are inherently unpredictable, our estimates of the probability and amount of any such liabilities involve significant judgment regarding future events. The Company records receivables from its insurance carriers only when the realization of the potential claim for recovery is considered probable.

Contingent Consideration. Certain of the Company's acquisitions involve the potential for future payment of consideration that is contingent upon the occurrence of a future event, such as (i) the achievement of specified regulatory, operational and/or commercial milestones or (ii) royalty payments, such as those relating to future product sales. Contingent consideration liabilities related to an asset acquisition are initially recorded when considered probable and reasonably estimable, which may occur subsequent to the acquisition date. Subsequent changes in the recorded amounts are recorded as adjustments to the cost of the acquired assets. Contingent consideration liabilities related to a business combination are initially recorded at fair value on the acquisition date using unobservable inputs. These inputs include the estimated amount and timing of projected cash flows, the probability of success (achievement of the contingent event) and the risk-adjusted discount rate used to present value the probability-weighted cash flows. Subsequent to the acquisition date, at each reporting period, the Company remeasures its contingent consideration liabilities to their current estimated fair values, with changes recorded in earnings. Changes to any of the inputs used in determining fair value may result in fair value adjustments that differ significantly from the actual remeasurement adjustments recognized.

Share Repurchases. The Company accounts for the repurchase of ordinary shares, if any, at par value. Under applicable Irish law, ordinary shares repurchased are retired and not displayed separately as treasury stock. Upon retirement of the ordinary shares, the Company records the difference between the weighted average cost of such ordinary shares and the par value of the ordinary shares as an adjustment to Accumulated deficit in the Consolidated Balance Sheets.

Advertising Costs. Advertising costs are expensed as incurred and included in Selling, general and administrative expenses in the Consolidated Statements of Operations. Advertising costs amounted to $63.1 million, $49.6 million and $42.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Cost of Revenues. Cost of revenues includes all costs directly related to bringing both purchased and manufactured products to their final selling destination. Amounts include purchasing and receiving costs, direct and indirect costs to manufacture products including direct materials, direct labor and direct overhead expenses necessary to acquire and convert purchased materials and supplies into finished goods, royalties paid or owed by Endo on certain in-licensed products, inspection costs, depreciation of certain property, plant and equipment, amortization of intangible assets, lease costs, warehousing costs, freight charges, costs to operate our equipment and other shipping and handling costs, among others.

Share-Based Compensation. The Company grants share-based compensation awards to certain employees and non-employee directors. Generally, the grant-date fair value of each award is recognized as expense over the requisite service period. However, expense recognition differs in the case of certain performance share units where the ultimate payout is performance-based. For these awards, at each reporting period, the Company estimates the ultimate payout and adjusts the cumulative expense based on its estimate and the percent of the requisite service period that has elapsed. Share-based compensation expense is reduced for estimated future forfeitures. These estimates are revised in future periods if actual forfeitures differ from the estimates. Changes in forfeiture estimates impact compensation expense in the period in which the change in estimate occurs. New ordinary shares are generally issued upon the exercise of stock options or vesting of stock awards by employees and non-employee directors. Refer to Note 18. Share-based Compensation for additional discussion, including the accounting treatment for long-term cash incentive awards that will be settled in ordinary shares.

Foreign Currency. The Company operates in various jurisdictions both inside and outside of the U.S. While the Company's reporting currency is the U.S. dollar, the Company has concluded that certain of its distinct and separable operations have functional currencies other than the U.S. dollar. Further, certain of the Company's operations hold assets and liabilities and recognize income and expenses denominated in various local currencies, which may differ from their functional currencies.

Assets and liabilities are first remeasured from local currency to functional currency, generally using end-of-period exchange rates. Foreign currency income and expenses are generally remeasured using average exchange rates in effect during the year. In the case of nonmonetary assets and liabilities such as inventories, prepaid expenses, property, plant and equipment, goodwill and other intangible assets, and related income statement amounts, such as depreciation expense, historical exchange rates are used for remeasurement. The net effect of remeasurement is included in Other expense (income), net in the Consolidated Statements of Operations.

As part of the Company's consolidation process, assets and liabilities of entities with functional currencies other than the U.S. dollar are translated into U.S. dollars at end-of-period exchange rates. Income and expenses are translated using average exchange rates in effect during the year. The net effect of translation, as well as any foreign currency gains or losses on intercompany transactions considered to be of a long-term investment nature, are recognized as foreign currency translation, a component of Other comprehensive income (loss). Upon the sale or liquidation of an investment in a foreign operation, the Company records a reclassification adjustment out of Other comprehensive income (loss) for the corresponding accumulated amount of foreign currency translation gain or loss.

Income Taxes. The Company accounts for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date. The Company records net deferred tax assets to the extent it believes these assets will more likely than not be realized. In making such a determination, the Company considers all available positive and negative evidence, including projected future taxable income, tax-planning strategies and results of recent operations. In the event that the Company were to determine that it would be able to realize its deferred tax assets in the future in excess of their net recorded amount, the Company would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income tax.

The Company records uncertain tax positions on the basis of a two-step process whereby the Company first determines whether it is more likely than not that the tax positions will be sustained based on the technical merits of the position and then measures those tax positions that meet the more-likely-than-not recognition threshold. The Company recognizes the largest amount of tax benefit that is greater than 50% likely to be realized upon ultimate settlement with the tax authority. The Company recognizes interest and penalties related to unrecognized tax benefits within the Income tax expense (benefit) line in the Consolidated Statements of Operations. Accrued interest and penalties are included within the related tax liability line in the Consolidated Balance Sheets.

Comprehensive Income. Comprehensive income or loss includes all changes in equity during a period except those that resulted from investments by or distributions to a company's shareholders. Other comprehensive income or loss refers to revenues, expenses, gains and losses that are included in comprehensive income, but excluded from net income as these amounts are recorded directly as an adjustment to shareholders' equity.

Recent Accounting Pronouncements

Recently Issued Accounting Pronouncements Not Yet Adopted at December 31, 2019

In June 2016, the Financial Accounting Standards Board (FASB) issued ASU No. 2016-13, *Measurement of Credit Losses on Financial Instruments* (ASU 2016-13). ASU 2016-13, together with a series of subsequently-issued related ASUs, establishes new requirements for companies to estimate expected credit losses when measuring certain assets, including accounts receivables. This guidance is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. With certain exceptions, this guidance requires adoption using a modified retrospective approach. This guidance is not expected to have a material impact on the Company's consolidated results of operations, financial position or disclosures.

In November 2018, the FASB issued ASU No. 2018-18, *Clarifying the Interaction Between Topic 808 and Topic 606* (ASU 2018-18). The main provisions of ASU 2018-18 include: (i) clarifying that certain transactions between collaborative arrangement participants should be accounted for as revenue when the collaborative arrangement participant is a customer in the context of a unit of account and (ii) precluding the presentation of transactions with collaborative arrangement participants that are not directly related to sales to third parties together with revenue. ASU 2018-18 is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. ASU 2018-18 should be applied retrospectively to the date of initial application of ASC 606, which was January 1, 2018 for the Company. Early adoption is permitted. ASU 2018-18 is not expected to have a material impact on the Company's consolidated results of operations, financial position or disclosures.

Recent Accounting Pronouncements Adopted or Otherwise Effective as of December 31, 2019

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* (ASU 2016-02) to establish a comprehensive new accounting standard for leases. ASU 2016-02, together with a series of subsequently-issued related ASUs, has been codified in ASC 842. ASC 842 supersedes the lease accounting requirements in ASC 840 and requires lessees to, among other things, recognize on the balance sheet ROU assets and ROU lease liabilities, representing the present value of future minimum lease payments, for most leases.

The Company adopted ASC 842 using the modified retrospective approach with an effective date of January 1, 2019 for leases that existed on that date.

The Company has elected to apply certain practical expedients permitted under the transition guidance within ASC 842 to leases that commenced before January 1, 2019, including the package of practical expedients, as well as the practical expedient permitting the Company to not assess whether certain land easements contain leases. Due to the Company's election of these practical expedients, the Company has carried forward certain historical conclusions for existing contracts, including conclusions relating to initial direct costs and to the existence and classification of leases.

On January 1, 2019, as a result of adopting ASC 842, the Company recognized new ROU assets, current lease liabilities and noncurrent lease liabilities associated with operating leases of $59.4 million, $11.0 million and $57.3 million, respectively, which were recorded in the Consolidated Balance Sheets as Operating lease assets, Current portion of operating lease liabilities and Operating lease liabilities, less current portion, respectively. The Company also derecognized certain assets and liabilities related to existing build-to-suit lease arrangements for which construction was completed prior to the date of transition and recognized new finance lease ROU assets and lease liabilities related to those lease arrangements. The net effect of the Company's adoption of ASC 842 resulted in a net increase to Accumulated deficit of $4.6 million.

In August 2018, the FASB issued ASU 2018-15. ASU 2018-15 aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (including hosting arrangements where a software license is deemed to exist). ASU 2018-15 also requires the customer to expense any such capitalized implementation costs over the term of the hosting arrangement and to apply the existing impairment guidance for long-lived assets to such capitalized costs. Additionally, ASU 2018-15 sets forth required disclosures and guidance on financial statement classification for expenses, cash flows and balances related to implementation costs within the scope of ASU 2018-15. The Company early adopted this guidance during the first quarter of 2019 on a prospective basis.

NOTE 3. DISCONTINUED OPERATIONS AND DIVESTITURES

Astora

The operating results of the Company's Astora business, which the Board resolved to wind-down in 2016, are reported as Discontinued operations, net of tax in the Consolidated Statements of Operations for all periods presented.

The following table provides the operating results of Astora Discontinued operations, net of tax, for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Litigation-related and other contingencies, net	$ 30,400	$ 34,000	$ 775,474
Loss from discontinued operations before income taxes	$ (62,052)	$ (69,702)	$ (816,426)
Income tax benefit	$ —	$ —	$ (13,704)
Discontinued operations, net of tax	$ (62,052)	$ (69,702)	$ (802,722)

Loss from discontinued operations before income taxes includes Litigation-related and other contingencies, net, mesh-related legal defense costs and certain other items.

The cash flows from discontinued operating activities related to Astora included the impact of net losses of $62.1 million, $69.7 million and $802.7 million for the years ended December 31, 2019, 2018 and 2017, respectively, and the impact of cash activity related to vaginal mesh cases. There were no material net cash flows related to Astora discontinued investing activities during the years ended December 31, 2019, 2018 and 2017. There was no depreciation or amortization during the years ended December 31, 2019, 2018 and 2017 related to Astora.

Litha

During the fourth quarter of 2016, the Company initiated a process to sell Litha and, on February 27, 2017, the Company entered into a definitive agreement to sell Litha to Acino Pharma AG. The sale closed on July 3, 2017 and the Company received net cash proceeds of approximately $94.2 million, after giving effect to cash and net working capital purchase price adjustments, as well as a short-term receivable of $4.4 million, which was subsequently collected in October 2017. No additional gain or loss was recognized upon sale. However, in December 2017, Acino Pharma AG became obligated to pay $10.1 million of additional consideration to the Company related to the settlement of certain contingencies set forth in the purchase agreement, which was subsequently paid to the Company in January 2018. In December 2017, the Company recorded a short-term receivable and a gain on the sale of Litha for this amount. The gain was recorded in Other expense (income), net in the Consolidated Statements of Operations. Litha was part of the Company's International Pharmaceuticals segment. Litha did not meet the requirements for treatment as a discontinued operation.

Somar

On June 30, 2017, the Company entered into a definitive agreement to sell Somar and all of the securities thereof, to AI Global Investments (Netherlands) PCC Limited acting for and on behalf of the Soar Cell (the purchaser). The sale closed on October 25, 2017 and the Soar Cell paid an aggregate purchase price of approximately $124 million in cash, after giving effect to estimated cash, debt and net working capital purchase price adjustments. The Company recognized a $1.3 million loss upon sale. Somar was part of the Company's International Pharmaceuticals segment. Somar did not meet the requirements for treatment as a discontinued operation.

NOTE 4. RESTRUCTURING

Set forth below are disclosures relating to restructuring initiatives that resulted in material expenses or cash expenditures during any of the years ended December 31, 2019, 2018 or 2017 or had material restructuring liabilities at either December 31, 2019 or December 31, 2018. Employee separation benefits provided under an established severance plan are expensed when a liability is considered both probable and estimable. One-time employee separation benefits, retention and certain other employee benefit-related costs are expensed ratably over the requisite service period. Other restructuring costs are generally expensed as incurred.

2016 Generic Pharmaceuticals Restructuring Initiative

As part of the Generic Pharmaceuticals integration efforts initiated in connection with the acquisition of Par Pharmaceutical Companies, Inc. in September 2015, the Company announced a restructuring initiative in May 2016 to optimize its product portfolio and rationalize its manufacturing sites to expand product margins (the 2016 Generic Pharmaceuticals Restructuring Initiative). This initiative included certain cost savings measures, including a reduction in headcount and the disposal of our Charlotte, North Carolina manufacturing facility. On October 31, 2016, we entered into a definitive agreement to sell the Charlotte facility for cash proceeds of $14 million. The transaction closed in January 2017.

The Company did not incur any material pre-tax charges as a result of the 2016 Generic Pharmaceuticals Restructuring Initiative during any of the years ended December 31, 2019, 2018 or 2017 and does not expect to incur additional material pre-tax restructuring-related expenses related to this initiative. Substantially all related cash payments were made by the end of 2017. Payments made in 2017 included $10.7 million for previously-accrued employee separation and other benefit-related costs.

2016 Branded Pharmaceuticals Restructuring Initiative

In December 2016, the Company announced that it was terminating its worldwide license and development agreement with BioDelivery Sciences International, Inc. (BDSI) for BELBUCA™ and returning the product to BDSI. This termination was completed on January 6, 2017. As a result of this announcement and a comprehensive assessment of its product portfolio, the Company restructured its Branded Pharmaceuticals segment sales organization during the fourth quarter of 2016 (the 2016 Branded Pharmaceuticals Restructuring Initiative), which included the elimination of an approximate 375-member Branded Pharmaceuticals pain field sales force and the termination of certain contracts.

The Company did not incur any material pre-tax charges as a result of the 2016 Branded Pharmaceuticals Restructuring Initiative during any of the years ended December 31, 2019, 2018 or 2017 and does not expect to incur additional material pre-tax restructuring-related expenses related to this initiative. Substantially all related cash payments were made by the end of 2017. Payments made in 2017 included $16.5 million for previously-accrued employee separation and other benefit-related costs and $5.2 million for previously-accrued contract termination charges.

January 2017 Restructuring Initiative

On January 26, 2017, the Company announced a restructuring initiative implemented as part of an organizational review (the January 2017 Restructuring Initiative). This restructuring was intended to further integrate, streamline and optimize the Company's operations by aligning certain corporate and R&D functions with its recently restructured U.S. generics and U.S. branded business units in order to create efficiencies and cost savings. As part of this restructuring, the Company undertook certain cost reduction initiatives, including a reduction of approximately 90 positions of its workforce, primarily related to corporate and branded R&D functions in Malvern, Pennsylvania and Chestnut Ridge, New York, a streamlining of general and administrative expenses, an optimization of commercial spend and a refocusing of R&D efforts.

During the year ended December 31, 2017, the Company incurred total pre-tax charges of approximately $15.1 million related to employee separation and other benefit-related costs. Of the total charges incurred, $6.9 million was included in the Branded Pharmaceuticals segment, $4.9 million was included in Corporate unallocated costs and $3.3 million was included in the Generic Pharmaceuticals segment. These charges were included in Selling, general and administrative expenses in the Consolidated Statements of Operations. Of these amounts, $12.4 million was paid in 2017 and $2.7 million was paid in 2018.

The Company did not incur any other material pre-tax charges as a result of the January 2017 Restructuring Initiative and does not expect to incur additional material pre-tax restructuring-related expenses related to this initiative.

2017 Generic Pharmaceuticals Restructuring Initiative

On July 21, 2017, the Company announced that, after completing a comprehensive review of its manufacturing network, it would be ceasing operations and closing its manufacturing and distribution facilities in Huntsville, Alabama (the 2017 Generic Pharmaceuticals Restructuring Initiative). The closure of the facilities was completed in June 2018 and the facilities were sold in the fourth quarter of 2018 for net cash proceeds of $23.1 million, resulting in a net gain on disposal of $12.5 million, which is included in Other expense (income), net in the Consolidated Statements of Operations.

As a result of the 2017 Generic Pharmaceuticals Restructuring Initiative, the Company incurred pre-tax charges of $61.6 million and $286.7 million during the years ended December 31, 2018 and 2017, respectively. The 2018 amount does not include the $12.5 million gain on sale of the Huntsville facilities described above.

During the year ended December 31, 2018, the expenses consisted of charges relating to accelerated depreciation of $35.2 million, employee separation, retention and other benefit-related costs of $9.1 million, asset impairment charges of $2.6 million and certain other charges of $14.7 million.

During the year ended December 31, 2017, the expenses included accelerated depreciation charges of $123.3 million, employee separation, retention and other benefit-related costs of $29.6 million, certain intangible asset and property, plant and equipment impairment charges of $104.7 million, charges to increase excess inventory reserves of $12.1 million and certain other charges of $17.0 million.

These charges are included in the Generic Pharmaceuticals segment. Accelerated depreciation, employee separation, retention and other benefit-related costs and charges to increase excess inventory reserves are primarily included in Cost of revenues in the Consolidated Statements of Operations. Impairment charges are included in Asset impairment charges. Certain other charges are included in both Cost of revenues and Selling, general and administrative expenses.

The Company did not incur any other material pre-tax charges as a result of the 2017 Generic Pharmaceuticals Restructuring Initiative and does not expect to incur additional material pre-tax restructuring-related expenses related to this initiative.

The liability related to the 2017 Generic Pharmaceuticals Restructuring Initiative is primarily included in Accounts payable and accrued expenses in the Consolidated Balance Sheets. Changes to this liability during the years ended December 31, 2019 and 2018 were as follows (in thousands):

	Employee Separation and Other Benefit-Related Costs	Other Restructuring Costs	Total
Liability balance as of January 1, 2018	$ 22,975	$ 1,610	$ 24,585
Expenses	9,090	11,294	20,384
Cash distributions	(27,826)	(12,856)	(40,682)
Liability balance as of December 31, 2018	$ 4,239	$ 48	$ 4,287
Cash distributions	(4,239)	(48)	(4,287)
Liability balance as of December 31, 2019	$ —	$ —	$ —

January 2018 Restructuring Initiative

In January 2018, the Company initiated a restructuring initiative that included a reorganization of its Generic Pharmaceuticals segment's R&D network, a further simplification of the Company's manufacturing networks and a company-wide unification of certain corporate functions (the January 2018 Restructuring Initiative).

As a result of the January 2018 Restructuring Initiative, the Company incurred pre-tax charges of $23.5 million and $2.6 million during the years ended December 31, 2018 and 2017, respectively.

The expenses in 2018 consisted primarily of employee separation, retention and other benefit-related costs of $21.7 million and certain other charges of $1.8 million. Of the total charges incurred, $10.6 million are included in the Generic Pharmaceuticals segment, $5.2 million are included in Corporate unallocated costs, $3.9 million are included in the Sterile Injectables segment, $3.1 million are included in the International Pharmaceuticals segment and $0.7 million are included in the Branded Pharmaceuticals segment.

The expenses in 2017 consisted of certain property, plant and equipment impairment charges of $2.0 million and certain other charges of $0.6 million. These charges are primarily included in the Generic Pharmaceuticals segment.

Employee separation, retention and other benefit-related costs are included in Cost of revenues, Selling, general and administrative and R&D expenses in the Consolidated Statements of Operations. Certain other charges are primarily included in Selling, general and administrative expenses. Impairment charges are included in Asset impairment charges.

The Company did not incur any other material pre-tax charges as a result of the January 2018 Restructuring Initiative and does not expect to incur additional material pre-tax restructuring-related expenses related to this initiative.

The liability related to the January 2018 Restructuring Initiative is primarily included in Accounts payable and accrued expenses in the Consolidated Balance Sheets. Changes to this liability during the years ended December 31, 2019 and 2018 were as follows (in thousands):

	Employee Separation and Other Benefit-Related Costs	Other Restructuring Costs	Total
Liability balance as of January 1, 2018	$ —	$ 650	$ 650
Expenses	21,754	1,764	23,518
Cash distributions	(20,925)	(2,094)	(23,019)
Liability balance as of December 31, 2018	$ 829	$ 320	$ 1,149
Cash distributions	(829)	(320)	(1,149)
Liability balance as of December 31, 2019	$ —	$ —	$ —

NOTE 5. SEGMENT RESULTS

During the first quarter of 2019, the Company changed the names of its reportable segments. This change, which was intended to simplify the segments' names, had no impact on the Company's Consolidated Financial Statements or segment results for any of the periods presented. Following this change, the Company's four reportable business segments are Branded Pharmaceuticals, Sterile Injectables, Generic Pharmaceuticals and International Pharmaceuticals. These segments reflect the level at which the chief operating decision maker regularly reviews financial information to assess performance and to make decisions about resources to be allocated. Each segment derives revenue from the sales or licensing of its respective products and is discussed in more detail below.

We evaluate segment performance based on segment adjusted income from continuing operations before income tax, which we define as Loss from continuing operations before income tax and before certain upfront and milestone payments to partners; acquisition-related and integration items, including transaction costs and changes in the fair value of contingent consideration; cost reduction and integration-related initiatives such as separation benefits, retention payments, other exit costs and certain costs associated with integrating an acquired company's operations; asset impairment charges; amortization of intangible assets; inventory step-up recorded as part of our acquisitions; litigation-related and other contingent matters; certain legal costs; gains or losses from early termination of debt; gains or losses from the sales of businesses and other assets; foreign currency gains or losses on intercompany financing arrangements; and certain other items.

Certain of the corporate expenses incurred by the Company are not directly attributable to any specific segment. Accordingly, these costs are not allocated to any of the Company's segments and are included in the results below as "Corporate unallocated costs." Interest income and expense are also considered corporate items and not allocated to any of the Company's segments. The Company's total segment adjusted income from continuing operations before income tax is equal to the combined results of each of its segments.

Branded Pharmaceuticals

Our Branded Pharmaceuticals segment includes a variety of branded prescription products to treat and manage conditions in urology, urologic oncology, endocrinology, pain and orthopedics. The products in this segment include XIAFLEX®, SUPPRELIN® LA, NASCOBAL® Nasal Spray, AVEED®, PERCOCET®, TESTOPEL®, LIDODERM®, EDEX® and VOLTAREN® Gel, among others.

Sterile Injectables

Our Sterile Injectables segment consists primarily of branded sterile injectable products such as VASOSTRICT®, ADRENALIN® and APLISOL®, among others, and certain generic sterile injectable products, including ertapenem for injection, the authorized generic of Merck's Invanz®, ephedrine sulfate injection and treprostinil for injection, among others.

Generic Pharmaceuticals

Our Generic Pharmaceuticals segment consists of a differentiated product portfolio including solid oral extended-release, solid oral immediate-release, liquids, semi-solids, patches, powders, ophthalmics and sprays and includes products in the pain management, urology, central nervous system disorders, immunosuppression, oncology, women's health and cardiovascular disease markets, among others.

International Pharmaceuticals

Our International Pharmaceuticals segment includes a variety of specialty pharmaceutical products sold outside the U.S., primarily in Canada through our operating company Paladin. The key products of this segment serve growing therapeutic areas, including attention deficit hyperactivity disorder, pain, women's health and oncology. This segment also included Litha and Somar, which were sold in the second half of 2017.

The following represents selected information for the Company's reportable segments for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Net revenues from external customers:			
Branded Pharmaceuticals	$ 855,402	$ 862,832	$ 957,525
Sterile Injectables	1,063,131	929,566	750,471
Generic Pharmaceuticals	879,882	1,012,215	1,530,530
International Pharmaceuticals (1)	115,949	142,465	230,332
Total net revenues from external customers	$ 2,914,364	$ 2,947,078	$ 3,468,858
Segment adjusted income from continuing operations before income tax:			
Branded Pharmaceuticals	$ 362,711	$ 368,790	$ 485,515
Sterile Injectables	780,799	695,363	563,103
Generic Pharmaceuticals	158,400	317,892	501,249
International Pharmaceuticals	44,758	59,094	58,308
Total segment adjusted income from continuing operations before income tax	$ 1,346,668	$ 1,441,139	$ 1,608,175

(1) Revenues generated by our International Pharmaceuticals segment are primarily attributable to external customers located in Canada and, prior to the sale of Litha in July 2017 and Somar in October 2017, South Africa and Latin America.

There were no material revenues from external customers attributed to an individual country outside of the U.S. during any of the periods presented. There were no material tangible long-lived assets in an individual country other than the U.S. as of December 31, 2019 or December 31, 2018.

The table below provides reconciliations of our Total consolidated loss from continuing operations before income tax, which is determined in accordance with U.S. GAAP, to our total segment adjusted income from continuing operations before income tax for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Total consolidated loss from continuing operations before income tax	$ (344,904)	$ (938,832)	$ (1,483,004)
Interest expense, net	538,734	521,656	488,228
Corporate unallocated costs (1)	168,136	200,592	165,298
Amortization of intangible assets	543,862	622,339	773,766
Inventory step-up	—	261	390
Upfront and milestone payments to partners	6,623	45,108	9,483
Retention and separation benefits and other cost reduction initiatives (2)	34,598	86,295	212,448
Certain litigation-related and other contingencies, net (3)	11,211	13,809	185,990
Asset impairment charges (4)	526,082	916,939	1,154,376
Acquisition-related and integration items, net (5)	(46,098)	21,914	58,086
(Gain) loss on extinguishment of debt	(119,828)	—	51,734
Foreign currency impact related to the remeasurement of intercompany debt instruments	4,362	(5,486)	(1,403)
Other, net (6)	23,890	(43,456)	(7,217)
Total segment adjusted income from continuing operations before income tax	$ 1,346,668	$ 1,441,139	$ 1,608,175

(1) Amounts include certain corporate overhead costs, such as headcount, facility and corporate litigation expenses and certain other income and expenses.
(2) Amounts in 2019 include $14.7 million of costs associated with retention bonuses awarded to certain senior management of the Company. Other amounts in 2019 related primarily to our restructuring and other cost reduction initiatives. Such amounts included employee separation costs of $8.9 million and other charges of $11.0 million. Amounts in 2018 primarily relate to employee separation costs of $31.7 million, accelerated depreciation of $35.2 million, charges to increase excess inventory reserves of $2.9 million and other charges of $16.5 million, each of which related primarily to our restructuring initiatives. Amounts in 2017 primarily relate to employee separation costs of $53.0 million, accelerated depreciation of $123.7 million, charges to increase excess inventory reserves of $13.7 million and other charges of $22.0 million. These charges were related primarily to the 2017 Generic Pharmaceuticals Restructuring Initiative. See Note 4. Restructuring for discussion of our material restructuring initiatives.
(3) Amounts include adjustments to our accruals for litigation-related settlement charges and certain settlement proceeds related to suits filed by our subsidiaries. Our material legal proceedings and other contingent matters are described in more detail in Note 15. Commitments and Contingencies.
(4) Amounts primarily relate to charges to impair goodwill and intangible assets as further described in Note 10. Goodwill and Other Intangibles as well as charges to write down certain property, plant and equipment as further described in Note 4. Restructuring, Note 6. Fair Value Measurements and Note 9. Property, Plant and Equipment.

(5) Amounts primarily relate to changes in the fair value of contingent consideration.
(6) Amounts in 2019 include $17.5 million for contract termination costs incurred as a result of certain product discontinuation activities in our International Pharmaceuticals segment and $14.1 million for a premium associated with an extended reporting period endorsement on an expiring insurance program. The remaining amounts in 2019 and 2018 primarily relate to gains on sales of businesses and other assets, as further described in Note 19. Other Expense (Income), Net.

During the years ended December 31, 2019, 2018 and 2017, the Company disaggregated its revenue from contracts with customers into the categories included in the table below (in thousands). The Company believes these categories depict how the nature, timing and uncertainty of revenue and cash flows are affected by economic factors.

	2019	2018	2017
Branded Pharmaceuticals:			
Specialty Products:			
XIAFLEX®	$ 327,638	$ 264,638	$ 213,378
SUPPRELIN® LA	86,797	81,707	86,211
Other Specialty (1)	105,241	98,230	84,161
Total Specialty Products	$ 519,676	$ 444,575	$ 383,750
Established Products:			
PERCOCET®	$ 116,012	$ 122,901	$ 125,231
TESTOPEL®	55,244	58,377	69,223
Other Established (2)	164,470	236,979	379,321
Total Established Products	$ 335,726	$ 418,257	$ 573,775
Total Branded Pharmaceuticals (3)	$ 855,402	$ 862,832	$ 957,525
Sterile Injectables:			
VASOSTRICT®	$ 531,737	$ 453,767	$ 399,909
ADRENALIN®	179,295	143,489	76,523
Ertapenem for injection	104,679	57,668	—
APLISOL®	61,826	64,913	66,286
Other Sterile Injectables (4)	185,594	209,729	207,753
Total Sterile Injectables (3)	$ 1,063,131	$ 929,566	$ 750,471
Total Generic Pharmaceuticals (5)	$ 879,882	$ 1,012,215	$ 1,530,530
Total International Pharmaceuticals (6)	$ 115,949	$ 142,465	$ 230,332
Total revenues, net	$ 2,914,364	$ 2,947,078	$ 3,468,858

(1) Products included within Other Specialty are NASCOBAL® Nasal Spray and AVEED®. Beginning with our first-quarter 2019 reporting, TESTOPEL®, which was previously included in Other Specialty, has been reclassified and is now included in the Established Products portfolio for all periods presented.
(2) Products included within Other Established include, but are not limited to, LIDODERM®, EDEX® and VOLTAREN® Gel.
(3) Individual products presented above represent the top two performing products in each product category for the year ended December 31, 2019 and/or any product having revenues in excess of $100 million during any of the years ended December 31, 2019, 2018 or 2017 or $25 million during any quarterly period in 2019 or 2018.
(4) Products included within Other Sterile Injectables include ephedrine sulfate injection, treprostinil for injection and others.
(5) The Generic Pharmaceuticals segment is comprised of a portfolio of products that are generic versions of branded products, are distributed primarily through the same wholesalers, generally have no intellectual property protection and are sold within the U.S. During 2019, colchicine tablets, which launched in July 2018, made up 6% of consolidated total revenue. During 2017, combined sales of ezetimibe tablets and quetiapine ER tablets, for which we lost temporary marketing exclusivity during the second quarter of 2017, made up 7% of consolidated total revenue. No other individual product within this segment has exceeded 5% of consolidated total revenues for the periods presented.
(6) The International Pharmaceuticals segment, which accounted for 4%, 5% and 7% of consolidated total revenues in 2019, 2018 and 2017, respectively, includes a variety of specialty pharmaceutical products sold outside the U.S., primarily in Canada through our operating company Paladin. This segment also included Litha, which was sold in July 2017, and Somar, which was sold in October 2017.

The following represents depreciation expense for our reportable segments for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Branded Pharmaceuticals	$ 12,573	$ 14,542	$ 16,957
Sterile Injectables	14,287	10,500	8,411
Generic Pharmaceuticals	32,689	66,016	174,652
International Pharmaceuticals	4,234	4,925	3,332
Corporate unallocated	5,217	5,385	6,647
Total depreciation expense	$ 69,000	$ 101,368	$ 209,999

Asset information is not reviewed or included within our internal management reporting. Therefore, the Company has not disclosed asset information for each reportable segment.

NOTE 6. FAIR VALUE MEASUREMENTS

Financial Instruments

The financial instruments recorded in our Consolidated Balance Sheets include cash and cash equivalents (including money market funds), restricted cash and cash equivalents, accounts receivable, equity method investments, accounts payable and accrued expenses, acquisition-related contingent consideration and debt obligations. Included in cash and cash equivalents and restricted cash and cash equivalents are money market funds representing a type of mutual fund required by law to invest in low-risk securities (for example, U.S. government bonds, U.S. Treasury Bills and commercial paper). Money market funds pay dividends that generally reflect short-term interest rates. Due to their short-term maturity, the carrying amounts of non-restricted and restricted cash and cash equivalents (including money market funds), accounts receivable, accounts payable and accrued expenses approximate their fair values.

The following table presents current and noncurrent restricted cash and cash equivalent balances at December 31, 2019 and December 31, 2018 (in thousands):

	December 31, 2019	December 31, 2018
Restricted cash and cash equivalents—current portion (1)	$ 247,457	$ 305,368
Restricted cash and cash equivalents—noncurrent portion (2)	18,400	22,356
Restricted cash and cash equivalents—total (3)	$ 265,857	$ 327,724

(1) These amounts are reported in our Consolidated Balance Sheets as Restricted cash and cash equivalents.
(2) These amounts are reported in our Consolidated Balance Sheets as Other assets.
(3) Approximately $242.8 million and $299.7 million of our restricted cash and cash equivalents are held in QSFs for mesh-related matters at December 31, 2019 and December 31, 2018, respectively. The remaining restricted cash and cash equivalents primarily relates to other litigation-related matters. See Note 15. Commitments and Contingencies for further information.

Fair value guidance establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value. These tiers include:

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Acquisition-Related Contingent Consideration

The fair value of contingent consideration liabilities is determined using unobservable inputs; hence, these instruments represent Level 3 measurements within the above-defined fair value hierarchy. These inputs include the estimated amount and timing of projected cash flows, the probability of success (achievement of the contingent event) and the risk-adjusted discount rate used to present value the probability-weighted cash flows. Subsequent to the acquisition date, at each reporting period, the contingent consideration liability is remeasured at current fair value with changes recorded in earnings. Changes in any of these estimated inputs used as of the date of this report could have resulted in significant adjustments to fair value. See the “Recurring Fair Value Measurements” section below for additional information on acquisition-related contingent consideration.

Recurring Fair Value Measurements

The Company's financial assets and liabilities measured at fair value on a recurring basis at December 31, 2019 and 2018 were as follows (in thousands):

	Fair Value Measurements at December 31, 2019 using:			
	Level 1 Inputs	Level 2 Inputs	Level 3 Inputs	Total
Assets:				
Money market funds	$ 427,033	$ —	$ —	$ 427,033
Liabilities:				
Acquisition-related contingent consideration—current	$ —	$ —	$ 6,534	$ 6,534
Acquisition-related contingent consideration—noncurrent	$ —	$ —	$ 23,123	$ 23,123

	Fair Value Measurements at December 31, 2018 using:			
	Level 1 Inputs	Level 2 Inputs	Level 3 Inputs	Total
Assets:				
Money market funds	$ 137,215	$ —	$ —	$ 137,215
Liabilities:				
Acquisition-related contingent consideration—current	$ —	$ —	$ 36,514	$ 36,514
Acquisition-related contingent consideration—noncurrent	$ —	$ —	$ 80,189	$ 80,189

At December 31, 2019 and December 31, 2018, money market funds include $70.2 million and $86.9 million, respectively, in QSFs to be disbursed to mesh-related or other product liability claimants. Amounts in QSFs are considered restricted cash equivalents. See Note 15. Commitments and Contingencies for further discussion of our product liability cases. At December 31, 2019 and December 31, 2018, the differences between the amortized cost and the fair value of our money market funds were not material, individually or in the aggregate.

Fair Value Measurements Using Significant Unobservable Inputs

The following table presents changes to the Company's liability for acquisition-related contingent consideration, which is measured at fair value on a recurring basis using significant unobservable inputs (Level 3), for the years ended December 31, 2019 and 2018 (in thousands):

	2019	2018
Beginning of period	$ 116,703	$ 190,442
Amounts settled	(41,448)	(92,627)
Changes in fair value recorded in earnings	(46,098)	19,910
Effect of currency translation	500	(1,022)
End of period	$ 29,657	$ 116,703

At December 31, 2019, the fair value measurements of the contingent consideration obligations were determined using risk-adjusted discount rates ranging from approximately 9.5% to 15.0% (weighted average rate of approximately 10.9%). Changes in fair value recorded in earnings related to acquisition-related contingent consideration are included in our Consolidated Statements of Operations as Acquisition-related and integration items, net. Amounts recorded for the current and noncurrent portions of acquisition-related contingent consideration are included in Accounts payable and accrued expenses and Other liabilities, respectively, in our Consolidated Balance Sheets.

The following table presents changes to the Company's liability for acquisition-related contingent consideration during the year ended December 31, 2019 by acquisition (in thousands):

	Balance as of December 31, 2018	Changes in Fair Value Recorded in Earnings	Amounts Settled and Other	Balance as of December 31, 2019
Auxilium acquisition	$ 14,157	$ 777	$ (1,727)	$ 13,207
Lehigh Valley Technologies, Inc. acquisitions	34,700	(8,614)	(19,286)	6,800
VOLTAREN® Gel acquisition (1)	56,240	(37,184)	(18,870)	186
Other	11,606	(1,077)	(1,065)	9,464
Total	$ 116,703	$ (46,098)	$ (40,948)	$ 29,657

(1) The change in fair value recorded in earnings includes the impact of certain competitive events occurring during 2019.

The following table presents changes to the Company's liability for acquisition-related contingent consideration during the year ended December 31, 2018 by acquisition (in thousands):

	Balance as of December 31, 2017	Changes in Fair Value Recorded in Earnings	Amounts Settled and Other	Balance as of December 31, 2018
Auxilium acquisition	$ 13,061	$ 2,941	$ (1,845)	$ 14,157
Lehigh Valley Technologies, Inc. acquisitions	63,001	19,146	(47,447)	34,700
VOLTAREN® Gel acquisition	98,124	9	(41,893)	56,240
Other	16,256	(2,186)	(2,464)	11,606
Total	$ 190,442	$ 19,910	$ (93,649)	$ 116,703

Nonrecurring Fair Value Measurements

The Company's financial assets and liabilities measured at fair value on a nonrecurring basis during the years ended December 31, 2019 and 2018 were as follows (in thousands):

	Fair Value Measurements during the Year Ended December 31, 2019 (1) using:			Total Expense for the Year Ended December 31, 2019
	Level 1 Inputs	Level 2 Inputs	Level 3 Inputs	
Intangible assets, excluding goodwill (Note 10)	$ —	$ —	$ 229,680	$ (347,706)
Certain property, plant and equipment (Note 9)	—	—	—	(6,468)
Total	$ —	$ —	$ 229,680	$ (354,174)

	Fair Value Measurements during the Year Ended December 31, 2018 (1) using:			Total Expense for the Year Ended December 31, 2018
	Level 1 Inputs	Level 2 Inputs	Level 3 Inputs	
Intangible assets, excluding goodwill (Note 10)	$ —	$ —	$ 239,857	$ (230,418)
Certain property, plant and equipment (Note 9)	—	—	—	(6,521)
Total	$ —	$ —	$ 239,857	$ (236,939)

(1) The fair value amounts are presented as of the date of the fair value measurement as these assets are not measured at fair value on a recurring basis. Such measurements generally occur in connection with our quarter-end financial reporting close procedures.

The Company also performed fair value measurements in connection with its goodwill impairment tests. Refer to Note 10. Goodwill and Other Intangibles for additional information, including the valuation methodologies utilized.

NOTE 7. INVENTORIES

Inventories consist of the following at December 31, 2019 and December 31, 2018 (in thousands):

	December 31, 2019	December 31, 2018
Raw materials (1)	$ 124,171	$ 122,825
Work-in-process (1)	65,392	70,458
Finished goods (1)	138,302	128,896
Total	$ 327,865	$ 322,179

(1) The components of inventory shown in the table above are net of allowance for obsolescence.

Inventory that is in excess of the amount expected to be sold within one year is classified as noncurrent inventory and is not included in the table above. At December 31, 2019 and December 31, 2018, $29.0 million and $8.1 million, respectively, of noncurrent inventory was included in Other assets in the Consolidated Balance Sheets. As of December 31, 2019 and December 31, 2018, the Company's Consolidated Balance Sheets included approximately $17.6 million and $12.5 million, respectively, of capitalized pre-launch inventories related to products that were not yet available to be sold.

NOTE 8. LEASES

We have entered into contracts with third parties to lease a variety of assets, including certain real estate, machinery, equipment, automobiles and other assets.

Our leases frequently allow for lease payments that could vary based on factors such as inflation or the degree of utilization of the underlying asset and the incurrence of contractual charges such as those for common area maintenance or utilities.

Renewal and/or early termination options are common in our lease arrangements, particularly with respect to our real estate leases. Our ROU assets and lease liabilities generally exclude periods covered by renewal options and include periods covered by early termination options (based on our conclusion that it is not reasonably certain that we will exercise such options).

Our most significant lease is for our Malvern, Pennsylvania location. The initial term of the lease is through 2024 and includes three renewal options, each for an additional 60-month period. These renewal options are not considered reasonably certain of exercise and are therefore excluded from the ROU asset and lease liability.

We are party to certain sublease arrangements, primarily related to our real estate leases, where we act as the lessee and intermediate lessor. For example, we sublease portions of our Malvern, Pennsylvania facility to multiple tenants through sublease arrangements ending in 2024, with certain limited renewal and early termination options.

The following table presents information about the Company's ROU assets and lease liabilities at December 31, 2019 (in thousands):

	Consolidated Balance Sheets Line Items	December 31, 2019
ROU assets:		
Operating lease ROU assets	Operating lease assets	$ 51,700
Finance lease ROU assets	Property, plant and equipment, net	56,793
Total ROU assets		$ 108,493
Operating lease liabilities:		
Current operating lease liabilities	Current portion of operating lease liabilities	$ 10,763
Noncurrent operating lease liabilities	Operating lease liabilities, less current portion	48,299
Total operating lease liabilities		$ 59,062
Finance lease liabilities:		
Current finance lease liabilities	Accounts payable and accrued expenses	$ 5,672
Noncurrent finance lease liabilities	Other liabilities	31,312
Total finance lease liabilities		$ 36,984

At December 31, 2018, our lease assets and liabilities determined in accordance with ASC 840, which related primarily to our Malvern, Pennsylvania lease that was accounted for as a build-to-suit lease arrangement, totaled $49.0 million and $36.1 million, respectively. Lease assets had a cost basis of $98.3 million and accumulated depreciation of $49.3 million and were reflected as Property, plant and equipment, net in the Consolidated Balance Sheets. Lease liabilities consisted of current liabilities of $5.3 million included in Accounts payable and accrued expenses and noncurrent liabilities of $30.8 million included in Other liabilities.

The following table presents information about lease costs and expenses and sublease income for the year ended December 31, 2019 (in thousands):

	Consolidated Statements of Operations Line Items	2019
Operating lease cost	Various (1)	$ 13,648
Finance lease cost:		
Amortization of ROU assets	Various (1)	$ 9,407
Interest on lease liabilities	Interest expense, net	$ 1,986
Other lease costs and income:		
Variable lease costs (2)	Various (1)	$ 9,653
Sublease income	Various (1)	$ (3,689)

(1) Amounts are included in the Consolidated Statements of Operations based on the function that the underlying leased asset supports. The following table presents the components of such aggregate amounts for the year ended December 31, 2019 (in thousands):

	2019
Cost of revenues	$ 11,168
Selling, general and administrative	$ 17,648
Research and development	$ 203

(2) Amounts represent variable lease costs incurred that were not included in the initial measurement of the lease liability such as common area maintenance and utilities costs associated with leased real estate and certain costs associated with our automobile leases.

Expenses incurred under operating leases, determined in accordance with ASC 840, were $18.7 million in both 2018 and 2017.

The following table provides the undiscounted amount of future cash flows included in our lease liabilities at December 31, 2019 for each of the five years subsequent to December 31, 2019 and thereafter, as well as a reconciliation of such undiscounted cash flows to our lease liabilities at December 31, 2019 (in thousands):

	Operating Leases	Finance Leases
2020	$ 14,103	$ 7,446
2021	13,262	7,593
2022	12,688	7,743
2023	10,017	7,897
2024	5,176	8,054
Thereafter	15,332	13,483
Total future lease payments	$ 70,578	$ 52,216
Less: amount representing interest	11,516	15,232
Present value of future lease payments (lease liability)	$ 59,062	$ 36,984

The Company's future minimum lease commitments as of December 31, 2018, as determined in accordance with ASC 840 and reported in the Annual Report on Form 10-K for the year ended December 31, 2018, were as follows:

	Capital Leases (1)	Operating Leases
2019	$ 6,884	$ 15,800
2020	6,819	14,519
2021	6,921	12,883
2022	7,072	12,454
2023	7,225	9,945
Thereafter	9,127	20,573
Total minimum lease payments	$ 44,048	$ 86,174
Less: Amount representing interest	4,084	
Total present value of minimum payments	$ 39,964	
Less: Current portion of such obligations	5,845	
Long-term capital lease obligations	$ 34,119	

(1) The Malvern, Pennsylvania location's lease arrangement is included under Capital Leases.

The following table provides the weighted average remaining lease term and weighted average discount rates for our leases as of December 31, 2019:

	December 31, 2019
Weighted average remaining lease term (years), weighted based on lease liability balances:	
Operating leases	5.9 years
Finance leases	9.5 years
Weighted average discount rate (percentages), weighted based on the remaining balance of lease payments:	
Operating leases	5.8%
Finance leases	5.5%

The following table provides certain cash flow and supplemental noncash information related to our lease liabilities for the year ended December 31, 2019 (in thousands):

	2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash payments for operating leases	$ 14,940
Operating cash payments for finance leases	$ 2,000
Financing cash payments for finance leases	$ 9,196
Lease liabilities arising from obtaining right-of-use assets:	
Operating leases	$ 623
Finance leases	$ 5,953

NOTE 9. PROPERTY, PLANT AND EQUIPMENT

Changes in the amount of Property, plant and equipment for the year ended December 31, 2019 are set forth in the table below (in thousands).

Cost:	Land and Buildings	Machinery and Equipment	Leasehold Improvements	Computer Equipment and Software	Furniture and Fixtures	Assets under Construction	Total
At January 1, 2019	$ 230,035	$ 211,491	$ 69,256	$ 117,134	$ 12,495	$ 121,024	$ 761,435
Additions (1)	49,716	56,888	9,934	8,359	954	(46,715)	79,136
Disposals, transfers, impairments and other (2)	6,115	(6,394)	(8,926)	(8,951)	(515)	(1,096)	(19,767)
Effect of currency translation	—	71	60	495	509	—	1,135
At December 31, 2019	$ 285,866	$ 262,056	$ 70,324	$ 117,037	$ 13,443	$ 73,213	$ 821,939
Accumulated Depreciation:							
At January 1, 2019	$ (69,656)	$ (83,906)	$ (30,600)	$ (71,437)	$ (6,944)	$ —	$ (262,543)
Additions	(17,670)	(22,012)	(7,337)	(20,696)	(1,285)	—	(69,000)
Disposals, transfers and other (2)	2,850	1,605	1,110	8,617	515	—	14,697
Effect of currency translation	—	(44)	(31)	(142)	(11)	—	(228)
At December 31, 2019	$ (84,476)	$ (104,357)	$ (36,858)	$ (83,658)	$ (7,725)	$ —	$ (317,074)
Net Book Amount:							
At December 31, 2019	$ 201,390	$ 157,699	$ 33,466	$ 33,379	$ 5,718	$ 73,213	$ 504,865
At December 31, 2018	$ 160,379	$ 127,585	$ 38,656	$ 45,697	$ 5,551	$ 121,024	$ 498,892

(1) Costs incurred during the construction or development of property, plant and equipment are initially recorded as additions to Assets under Construction. Once an asset has been placed into service, the cost of that asset is transferred from Assets under Construction to one of the other classes of assets.
(2) Amounts include the effect of the Company's January 1, 2019 adoption of ASC 842, which is further described in Note 2. Summary of Significant Accounting Policies.

Depreciation expense was $69.0 million, $101.4 million and $210.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

During the years ended December 31, 2019, 2018 and 2017, the Company recorded property, plant and equipment impairment charges totaling $6.5 million, $6.5 million and $65.7 million, respectively. These charges are included in the Asset impairment charges line item in our Consolidated Statement of Operations.

In 2019 and 2018, impairment charges reflect the write-off of certain property, plant and equipment, including amounts that were abandoned or sold as part of our ongoing efforts to improve our operating efficiency and consolidate certain locations.

In 2017, impairment charges primarily relate to an aggregate charge of $47.2 million recorded in connection with the 2017 Generic Pharmaceuticals Restructuring Initiative, which is described further in Note 4. Restructuring, and $11.9 million recorded following the initiation of held-for-sale accounting resulting from the Company's June 30, 2017 definitive agreement to sell Somar, which is described in Note 3. Discontinued Operations and Divestitures.

NOTE 10. GOODWILL AND OTHER INTANGIBLES

Goodwill

Changes in the carrying amount of our goodwill for the years ended December 31, 2019 and 2018 were as follows (in thousands):

	Branded Pharmaceuticals	Sterile Injectables	Generic Pharmaceuticals	International Pharmaceuticals	Total
Goodwill as of December 31, 2017	$ 828,818	$ —	$ 3,531,301	$ 89,963	$ 4,450,082
Allocation to current segments (1)	—	2,731,193	(2,731,193)	—	—
Effect of currency translation	—	—	—	(5,446)	(5,446)
Goodwill impairment charges	—	—	(649,000)	(31,000)	(680,000)
Goodwill as of December 31, 2018	$ 828,818	$ 2,731,193	$ 151,108	$ 53,517	$ 3,764,636
Effect of currency translation	—	—	—	2,456	2,456
Goodwill impairment charges	—	—	(151,108)	(20,800)	(171,908)
Goodwill as of December 31, 2019	$ 828,818	$ 2,731,193	$ —	$ 35,173	$ 3,595,184

(1) This allocation relates to the change in segments described below under the heading “Impairments.” The amount of goodwill allocated was determined using a relative fair value methodology in accordance with U.S. GAAP.

The carrying amounts of goodwill at December 31, 2019 and December 31, 2018 are net of the following accumulated impairments (in thousands):

	Branded Pharmaceuticals	Sterile Injectables	Generic Pharmaceuticals	International Pharmaceuticals	Total
Accumulated impairment losses as of December 31, 2018	$ 855,810	$ —	$ 2,991,549	$ 456,408	$ 4,303,767
Accumulated impairment losses as of December 31, 2019	$ 855,810	$ —	$ 3,142,657	$ 500,417	$ 4,498,884

Other Intangible Assets

Changes in the amount of other intangible assets from December 31, 2018 to December 31, 2019 are set forth in the table below (in thousands).

Cost basis:	**Balance as of December 31, 2018**	**Acquisitions**	**Impairments**	**Other (1)**	**Effect of Currency Translation**	**Balance as of December 31, 2019**
Indefinite-lived intangibles:						
In-process research and development	$ 93,900	$ —	$ —	$ —	$ —	$ 93,900
Total indefinite-lived intangibles	$ 93,900	$ —	$ —	$ —	$ —	$ 93,900
Finite-lived intangibles:						
Licenses (weighted average life of 14 years)	$ 457,402	$ —	$ —	$ —	$ —	$ 457,402
Tradenames	6,409	—	—	—	—	6,409
Developed technology (weighted average life of 11 years)	6,182,015	—	(347,706)	(2,197)	12,327	5,844,439
Total finite-lived intangibles (weighted average life of 11 years)	$ 6,645,826	$ —	$ (347,706)	$ (2,197)	$ 12,327	$ 6,308,250
Total other intangibles	$ 6,739,726	$ —	$ (347,706)	$ (2,197)	$ 12,327	$ 6,402,150

Accumulated amortization:	**Balance as of December 31, 2018**	**Amortization**	**Impairments**	**Other (1)**	**Effect of Currency Translation**	**Balance as of December 31, 2019**
Finite-lived intangibles:						
Licenses	$ (398,182)	$ (12,154)	$ —	$ —	$ —	$ (410,336)
Tradenames	(6,409)	—	—	—	—	(6,409)
Developed technology	(2,877,829)	(531,708)	—	2,197	(6,798)	(3,414,138)
Total other intangibles	$ (3,282,420)	$ (543,862)	$ —	$ 2,197	$ (6,798)	$ (3,830,883)
Net other intangibles	$ 3,457,306					$ 2,571,267

(1) Other adjustments relate to the removal of certain fully amortized intangible assets.

Amortization expense for the years ended December 31, 2019, 2018 and 2017 totaled $543.9 million, $622.3 million and $773.8 million, respectively. Amortization expense is included in Cost of revenues in the Consolidated Statements of Operations. Estimated amortization of intangibles for the five fiscal years subsequent to December 31, 2019 is as follows (in thousands):

2020	$ 437,420
2021	$ 396,864
2022	$ 381,312
2023	$ 351,805
2024	$ 308,986

Impairments

Goodwill and indefinite-lived intangible assets are tested for impairment annually and when events or changes in circumstances indicate that the asset might be impaired. Our annual assessment is performed as of October 1.

As part of our goodwill and intangible asset impairment assessments, we estimate the fair values of our reporting units and our intangible assets using an income approach that utilizes a discounted cash flow model or, where appropriate, a market approach.

The discounted cash flow models are dependent upon our estimates of future cash flows and other factors including estimates of (i) future operating performance, including future sales, long-term growth rates, operating margins, discount rates, variations in the amount and timing of cash flows and the probability of achieving the estimated cash flows and (ii) future economic conditions. These assumptions are based on significant inputs not observable in the market and thus represent Level 3 measurements within the fair value hierarchy. The discount rates applied to the estimated cash flows for the Company's October 1, 2019, 2018 and 2017 annual goodwill and indefinite-lived intangible assets impairment tests ranged from 9.5% to 13.5%, from 9.5% to 11.5% and from 9.5% to 12.5%, respectively, depending on the overall risk associated with the particular assets and other market factors. We believe the discount rates and other inputs and assumptions are consistent with those that a market participant would use. Any impairment charges resulting from annual or interim goodwill and intangible asset impairment assessments are recorded to Asset impairment charges in our Consolidated Statements of Operations.

During the years ended December 31, 2019, 2018 and 2017, the Company incurred the following goodwill and other intangible asset impairment charges (in thousands):

	2019	2018	2017
Goodwill impairment charges	$ 171,908	$ 680,000	$ 288,745
Other intangible asset impairment charges	$ 347,706	$ 230,418	$ 799,955

A summary of significant goodwill and other intangible asset impairment tests and related charges is included below. Except as described below, pre-tax non-cash intangible asset impairment charges related primarily to certain in-process research and development and/or developed technology intangible assets that were tested for impairment following changes in market conditions and certain other factors impacting recoverability.

Annual Goodwill Impairment Tests

As a result of our annual test performed as of October 1, 2019, the Company determined that the estimated carrying amount of the Paladin reporting unit exceeded its fair value; therefore, the Company recorded a pre-tax non-cash goodwill impairment charge of $20.8 million during the fourth quarter of 2019. The Paladin impairment was primarily a result of certain anticipated product discontinuation activities. The impairment also reflects the estimated impact of Canadian pricing regulations that were issued in the second half of 2019 and that we expect will become effective as early as July 2020. We did not record goodwill impairment charges for the other reporting units as a result of the 2019 annual tests.

As a result of our annual test performed as of October 1, 2018, the Company determined that the estimated carrying amounts of the Generic Pharmaceuticals and Paladin reporting units exceeded their respective fair values; therefore, the Company recorded pre-tax non-cash goodwill impairment charges of $258.0 million and $31.0 million, respectively, during the fourth quarter of 2018. The Generic Pharmaceuticals impairment can be primarily attributed to an increase in the discount rate used in the determination of fair value and unfavorable underlying business outlook assumption changes. The Paladin impairment was primarily a result of increased competition and slower than expected product launches in our Canadian market. We did not record goodwill impairment charges for the other reporting units as a result of the 2018 annual tests.

As a result of our annual test performed as of October 1, 2017, the Company determined that the estimated fair values of its Branded, Generics and Paladin reporting units exceeded their carrying amounts; therefore, no related goodwill impairment charges were required.

Other Impairment Tests

As a result of certain competitive events that occurred during the first quarter of 2019, we tested the goodwill of our Generic Pharmaceuticals reporting unit for impairment as of March 31, 2019. The fair value of the reporting unit was estimated using an income approach that utilized a discounted cash flow model. The discount rate utilized in this test was 10.5%. This goodwill impairment test resulted in a pre-tax non-cash goodwill impairment charge of $86.0 million during the three months ended March 31, 2019, representing the excess of this reporting unit's carrying amount over its estimated fair value. This Generic Pharmaceuticals impairment can be primarily attributed to the impact of the competitive events referenced above and an increase in the discount rate used in the determination of fair value.

During the second quarter of 2019, unfavorable competitive and pricing events occurred that caused us to update certain assumptions from those used in our first-quarter 2019 Generic Pharmaceuticals goodwill impairment test. The Company considered these events, together with the fact that this reporting unit's carrying amount equaled its fair value immediately subsequent to the first-quarter 2019 goodwill impairment charge, as part of its qualitative assessment of goodwill triggering events for the second quarter of 2019. As a result, we concluded that it was more likely than not that the fair value of this reporting unit was below its carrying amount as of June 30, 2019 and a goodwill impairment test was required. After performing this quantitative test, we determined that this reporting unit's carrying amount exceeded its estimated fair value. The fair value of the reporting unit was estimated using an income approach that utilized a discounted cash flow model. The discount rate utilized in this test was 10.5%. Based on the excess of this reporting unit's carrying amount over its estimated fair value, we recorded a pre-tax non-cash goodwill impairment charge of $65.1 million during the three months ended June 30, 2019, representing the entire remaining amount of this reporting unit's goodwill.

During the first quarter of 2018, a change in segments resulted in changes to our reporting units for goodwill impairment testing purposes, including the creation of a new Sterile Injectables reporting unit, which was previously part of our Generics reporting unit. As a result of these changes, under U.S. GAAP, we tested the goodwill of the former Generics reporting unit immediately before the segment realignment and the goodwill of both the new Sterile Injectables and Generic Pharmaceuticals reporting units immediately after the segment realignment. These goodwill tests were performed using an income approach that utilized a discounted cash flow model. The results of these goodwill impairment tests were as follows:

- The former Generics reporting unit's estimated fair value exceeded its carrying amount, resulting in no related goodwill impairment charge.
- The new Sterile Injectables reporting unit's estimated fair value exceeded its carrying amount, resulting in no related goodwill impairment charge.
- The new Generic Pharmaceuticals reporting unit's carrying amount exceeded its estimated fair value, resulting in a pre-tax non-cash goodwill impairment charge of $391.0 million.

In March 2017, we announced that the FDA's Drug Safety and Risk Management and Anesthetic and Analgesic Drug Products Advisory Committees voted that the benefits of reformulated OPANA® ER (oxymorphone hydrochloride extended release) no longer outweigh its risks. In June 2017, we became aware of the FDA's request that we voluntarily withdraw OPANA® ER from the market and, in July 2017, after careful consideration and consultation with the FDA, we decided to voluntarily remove OPANA® ER from the market. As a result of our decision, the Company determined that the carrying amount of its OPANA® ER intangible asset was no longer recoverable, resulting in a pre-tax, non-cash impairment charge of $20.6 million in the second quarter of 2017, representing the remaining carrying amount.

As a result of the withdrawal of OPANA® ER from the market and the continued erosion of our Branded Pharmaceuticals segment's Established Products portfolio, we initiated an interim goodwill impairment analysis of our Branded reporting unit during the second quarter of 2017. We recorded a pre-tax, non-cash goodwill impairment charge of $180.4 million during the three months ended June 30, 2017 for the amount by which the reporting unit's carrying amount exceeded its fair value. We estimated the fair value of the Branded reporting unit using an income approach that utilized a discounted cash flow model.

Following the announcement of the 2017 Generic Pharmaceuticals Restructuring Initiative, which is further described in Note 4. Restructuring, the Company assessed the recoverability of certain products that were discontinued as part of this initiative, resulting in pre-tax, non-cash intangible asset impairment charges of approximately $57.5 million during the second quarter of 2017.

Pursuant to an existing agreement with a wholly-owned subsidiary of Novartis, Paladin licensed the Canadian rights to commercialize serelaxin, an investigational drug for the treatment of acute heart failure (AHF). In March 2017, Novartis announced that a Phase 3 study of serelaxin in patients with AHF failed to meet its primary endpoints. As a result, we concluded that the full carrying amount of our serelaxin in-process research and development intangible asset was impaired, resulting in a $45.5 million pre-tax non-cash impairment charge during the three months ended March 31, 2017. In addition, and as a result of the serelaxin impairment, we assessed the recoverability of our Paladin goodwill balance and determined that the estimated fair value of the Paladin reporting unit was below its carrying amount. We recorded a pre-tax, non-cash goodwill impairment charge of $82.6 million during the three months ended March 31, 2017 for the amount by which the carrying amount exceeded the reporting unit's fair value. We estimated the fair value of the Paladin reporting unit using an income approach that utilized a discounted cash flow model.

As further discussed in Note 3. Discontinued Operations and Divestitures, we entered into a definitive agreement to sell Somar on June 30, 2017, which resulted in Somar's assets and liabilities being classified as held for sale. The initiation of held-for-sale accounting, together with the agreed upon sale price, triggered an impairment review. Accordingly, we performed an impairment analysis using a market approach and determined that impairment charges were required. We recorded pre-tax, non-cash impairment charges of $25.7 million and $89.5 million related to Somar's goodwill and other intangible assets, respectively, during the second quarter of 2017, each of which represented the remaining carrying amounts of the corresponding assets.

NOTE 11. LICENSE AND COLLABORATION AGREEMENTS

Our subsidiaries have entered into certain license, collaboration and discovery agreements with third parties for product development. These agreements require our subsidiaries to share in the development costs of such products and the third parties grant marketing rights to our subsidiaries for such products.

Generally, under these agreements: (i) we are required to make upfront payments and other payments upon successful completion of regulatory or sales milestones and/or (ii) we are required to pay royalties on sales of the products arising from these agreements.

BioSpecifics Technologies Corp. (BioSpecifics)

The Company, through an affiliate, is party to a development and license agreement, as amended (the BioSpecifics Agreement) with BioSpecifics. The BioSpecifics Agreement was originally entered into in June 2004 to obtain exclusive worldwide rights to develop, market and sell certain products containing BioSpecifics' enzyme CCH, which is included in our XIAFLEX® product. The Company's licensed rights concern the development and commercialization of products, other than dermal formulations labeled for topical administration, and currently, the Company's licensed rights cover the indications of DC, Dupuytren's nodules, PD, adhesive capsulitis, cellulite, plantar fibromatosis, lateral hip fat and other potential indications. The Company may further expand the BioSpecifics Agreement, at its option, to cover other indications as they are developed by the Company or BioSpecifics.

Under the BioSpecifics Agreement, we are responsible, at our own cost and expense, for developing the formulation and finished dosage form of products and arranging for the clinical supply of products. BioSpecifics may from time to time conduct exploratory clinical trials evaluating CCH as a treatment for a number of conditions, including uterine fibroids. In certain cases, the Company has the option to license development and marketing rights to future indications based on a full analysis of the data from the clinical trials, which would transfer responsibility for the future development costs to the Company and trigger opt-in payments and potential future milestone and royalty payments to BioSpecifics.

The BioSpecifics Agreement extends, on a country-by-country and product-by-product basis, for the longer of the patent life, the expiration of any regulatory exclusivity period or twelve years from the effective date. Either party may terminate the BioSpecifics Agreement as a result of the other party's breach or bankruptcy. We may terminate the BioSpecifics Agreement with 90 days' written notice.

We must pay BioSpecifics on a country-by-country and product-by-product basis a specified percentage within a range of 5% to 15% of net sales for products covered by the BioSpecifics Agreement. This royalty applies to net sales by the Company and/or any of its sublicensees. We are also obligated to pay a percentage of any future regulatory or commercial milestone payments received from any sublicensees. In addition, the Company and its affiliates pay BioSpecifics an amount equal to a specified mark-up on certain cost of goods related to supply of XIAFLEX® (which mark-up is capped at a specified percentage within the range of 5% to 15% of the cost of goods of XIAFLEX®) for products sold by the Company and its affiliates.

Nevakar, Inc.

During the second quarter of 2018, we entered into a development, license and commercialization agreement with Nevakar, Inc. related to five sterile injectable product candidates. Pursuant to this agreement, Nevakar, Inc. will generally be responsible, at its expense, to develop and seek regulatory approval for these product candidates, and the Company will generally be responsible, at its expense, to launch and distribute any products that are approved. The Company will have exclusive license rights to all of these products launched in the U.S. and a first right of refusal for the Canadian territory. Upon entering into this agreement, the Company became obligated to make an upfront payment, which was recorded as R&D expense in the Consolidated Statements of Operations during the three months ended June 30, 2018. The Company could become obligated to make additional payments based on certain potential future milestones being achieved.

NOTE 12. CONTRACT ASSETS AND LIABILITIES

Our revenue consists almost entirely of sales of our pharmaceutical products to customers, whereby we ship products to a customer pursuant to a purchase order. Revenue contracts such as these do not generally give rise to contract assets or contract liabilities because: (i) the underlying contracts generally have only a single performance obligation and (ii) we do not generally receive consideration until the performance obligation is fully satisfied. At December 31, 2019, the unfulfilled performance obligations for these types of contracts relate to ordered but undelivered products. We generally expect to fulfill the performance obligations and recognize revenue within one week of entering into the underlying contract. Based on the short-term initial contract duration, additional disclosure about the remaining performance obligations is not required.

Certain of our other revenue-generating contracts, including license and collaboration agreements, may result in contract assets and/or contract liabilities. For example, we may recognize contract liabilities upon receipt of certain upfront and milestone payments from customers when there are remaining performance obligations.

The following table shows the opening and closing balances of contract assets and contract liabilities from contracts with customers (dollars in thousands):

	December 31, 2019	December 31, 2018	$ Change	% Change
Contract assets, net (1)	$ —	$ 12,065	$ (12,065)	(100)%
Contract liabilities, net (2)	$ 6,592	$ 19,217	$ (12,625)	(66)%

(1) At December 31, 2018, approximately $9.3 million of the contract asset amount is classified as a current asset and is included in Prepaid expenses and other current assets in the Company's Consolidated Balance Sheets. The remaining amount is classified as noncurrent and is included in Other assets. The net decrease in contract assets during the year ended December 31, 2019 was primarily due to reclassifications to accounts receivable following the resolution of certain conditions other than the passage of time affecting the Company's rights to consideration for the sale of certain goods, as well as certain product discontinuation activities in our International Pharmaceuticals segment.

(2) At December 31, 2019 and December 31, 2018, approximately $1.4 million and $1.7 million, respectively, of these contract liability amounts are classified as current liabilities and are included in Accounts payable and accrued expenses in the Company's Consolidated Balance Sheets. The remaining amounts are classified as noncurrent and are included in Other liabilities. During the year ended December 31, 2019, the Company entered into new contracts resulting in an increase to contract liabilities of approximately $4.0 million. This increase was more than offset by approximately $14.9 million in reductions following certain product discontinuation activities in our International Pharmaceuticals segment and approximately $1.2 million in revenue recognized during the period.

During the year ended December 31, 2019, we recognized revenue of $10.8 million relating to performance obligations satisfied, or partially satisfied, in prior periods. Such revenue generally relates to changes in estimates with respect to our variable consideration.

NOTE 13. ACCOUNTS PAYABLE AND ACCRUED EXPENSES

Accounts payable and accrued expenses include the following at December 31, 2019 and December 31, 2018 (in thousands):

	December 31, 2019	December 31, 2018
Trade accounts payable	$ 101,532	$ 96,024
Returns and allowances	206,248	236,946
Rebates	129,056	144,860
Chargebacks	1,594	2,971
Accrued interest	112,860	130,182
Accrued payroll and related benefits	79,869	89,895
Accrued royalties and other distribution partner payables	115,816	122,028
Acquisition-related contingent consideration—current	6,534	36,514
Other	146,440	149,780
Total	$ 899,949	$ 1,009,200

NOTE 14. DEBT

The following table presents information about the Company's total indebtedness at December 31, 2019 and December 31, 2018 (dollars in thousands):

	December 31, 2019			December 31, 2018		
	Effective Interest Rate	Principal Amount	Carrying Amount	Effective Interest Rate	Principal Amount	Carrying Amount
7.25% Senior Notes due 2022	7.25%	$ 8,294	$ 8,294	7.91%	$ 400,000	$ 392,947
5.75% Senior Notes due 2022	5.75%	182,479	182,479	6.04%	700,000	694,464
5.375% Senior Notes due 2023	5.62%	210,440	209,018	5.62%	750,000	743,438
6.00% Senior Notes due 2023	6.28%	1,439,840	1,426,998	6.28%	1,635,000	1,616,817
5.875% Senior Secured Notes due 2024	6.14%	300,000	296,647	6.14%	300,000	296,062
6.00% Senior Notes due 2025	6.27%	1,200,000	1,185,726	6.27%	1,200,000	1,183,415
7.50% Senior Secured Notes due 2027	7.71%	1,500,000	1,482,212		—	—
Term Loan Facility	6.21%	3,329,625	3,302,675	7.02%	3,363,775	3,331,276
Revolving Credit Facility	4.25%	300,000	300,000		—	—
Total long-term debt, net		$ 8,470,678	$ 8,394,049		$ 8,348,775	$ 8,258,419
Less current portion, net		34,150	34,150		34,150	34,150
Total long-term debt, less current portion, net		$ 8,436,528	$ 8,359,899		$ 8,314,625	$ 8,224,269

The Company and its subsidiaries, with certain customary exceptions, guarantee or serve as issuers or borrowers of the debt instruments representing substantially all of the Company's indebtedness at December 31, 2019. The obligations under (i) all of the senior secured notes and (ii) the Credit Agreement (as defined below) and related loan documents are secured on a *pari passu* basis by a perfected first priority (subject to certain permitted liens) lien on the collateral securing such instruments, which collateral represents substantially all of the assets of the issuers or borrowers and the guarantors party thereto (subject to customary exceptions). Our senior unsecured notes are unsecured and effectively subordinated in right of priority to the Credit Agreement and our senior secured notes, in each case to the extent of the value of the collateral securing such instruments.

The aggregate estimated fair value of the Company's long-term debt, which was estimated using inputs based on quoted market prices for the same or similar debt issuances, was $7.4 billion and $7.2 billion at December 31, 2019 and December 31, 2018, respectively. Based on this valuation methodology, we determined these debt instruments represent Level 2 measurements within the fair value hierarchy.

Credit Facilities

The Company and certain of its subsidiaries are party to a credit agreement (the Credit Agreement), which provides for (i) a $1,000.0 million senior secured revolving credit facility (the Revolving Credit Facility) and (ii) a senior secured term loan facility in an initial principal amount of $3,415.0 million (the Term Loan Facility and, together with the Revolving Credit Facility, the Credit Facilities). Current amounts outstanding under the Credit Facilities are set forth in the table above. After giving effect to borrowings under the Revolving Credit Facility and previously issued and outstanding letters of credit, approximately $696.8 million of remaining credit is available under the Revolving Credit Facility as of December 31, 2019. The Company's outstanding debt agreements contain a number of restrictive covenants, including certain limitations on the Company's ability to incur additional indebtedness.

The Credit Agreement contains affirmative and negative covenants that the Company believes to be usual and customary for a senior secured credit facility of this type. The negative covenants include, among other things, limitations on asset sales, mergers and acquisitions, indebtedness, liens, dividends and other restricted payments, investments and transactions with the Company's affiliates. As of December 31, 2019 and December 31, 2018, we were in compliance with all such covenants.

In addition, after each fiscal year-end, the Company is required to perform a calculation of Excess Cash Flow (as defined in the Credit Agreement), which could result in certain pre-payments of the principal relating to the Term Loan Facility in accordance with the terms of the Credit Agreement. No such payment is required at December 31, 2019.

The commitments under the Revolving Credit Facility generally mature in 2024, with the exception of $76.0 million of commitments that mature in 2022. Principal payments on the Term Loan Facility equal to 0.25% of the initial principal amount are generally payable quarterly until the Term Loan Facility's ultimate maturity date in 2024, at which time the remaining principal amount outstanding will be payable. However, with certain exceptions set forth in the Credit Agreement, maturities under the Credit Facilities will be accelerated if any of the following of our senior notes are not refinanced or repaid in full at least 91 days prior to the respective maturity dates thereof:

Instrument	Maturity Date
7.25% Senior Notes Due 2022	January 15, 2022
5.75% Senior Notes Due 2022	January 15, 2022
5.375% Senior Notes Due 2023	January 15, 2023
6.00% Senior Notes Due 2023	July 15, 2023

Borrowings under the Revolving Credit Facility bear interest, at the borrower's election, at a rate equal to (i) an applicable margin between 1.50% and 3.00% depending on the Company's Total Net Leverage Ratio plus LIBOR or (ii) an applicable margin between 0.50% and 2.00% depending on the Company's Total Net Leverage Ratio plus the Alternate Base Rate (as defined in the Credit Agreement). In addition, borrowings under our Term Loan Facility bear interest, at the borrower's election, at a rate equal to (i) 4.25% plus LIBOR, subject to a LIBOR floor of 0.75%, or (ii) 3.25% plus the Alternate Base Rate, subject to an Alternate Base Rate floor of 1.75%.

Senior Notes and Senior Secured Notes

Our various senior notes and senior secured notes mature between 2022 and 2027. The indentures governing these notes generally allow for redemption prior to maturity, in whole or in part, subject to certain restrictions and limitations described therein, in the following ways:

- Until a date specified in each indenture (the Non-Call Period), the notes may be redeemed, in whole or in part, by paying the sum of: (i) 100% of the principal amount being redeemed, (ii) an applicable make-whole premium as described in each indenture and (iii) accrued and unpaid interest. As of December 31, 2019, the Non-Call Period has expired for each of our notes except for the 5.875% Senior Secured Notes due 2024, the 6.00% Senior Notes due 2025 and the 7.50% Senior Secured Notes due 2027.
- After the Non-Call Period specified in each indenture, the notes may be redeemed, in whole or in part, at redemption prices set forth in each indenture, plus accrued and unpaid interest. The redemption prices for each of our notes vary over time. The redemption prices pursuant to this clause range from 100.000% to 105.625% of principal at December 31, 2019; however, these redemption prices generally decrease to 100% of the principal amount of the applicable notes over time as the notes approach maturity pursuant to a step-down schedule set forth in each of the indentures.
- Until a date specified in each indenture, the notes may be redeemed, in part (up to 35% of the principal amount outstanding), with the net cash proceeds from specified equity offerings at redemption prices set forth in each indenture, plus accrued and unpaid interest. As of December 31, 2019, this clause has expired for each of our notes except for the 5.875% Senior Secured Notes due 2024 and the 7.50% Senior Secured Notes due 2027, for which the specified redemption premiums are 105.875% and 107.500%, respectively.

The indentures governing our various senior notes contain affirmative and negative covenants that the Company believes to be usual and customary for similar indentures. Under the senior secured notes indentures, the negative covenants, among other things, restrict the Company's ability and the ability of its restricted subsidiaries (as defined in the indentures) to incur certain additional indebtedness and issue preferred stock; make certain dividends, distributions, investments and other restricted payments; sell certain assets; enter into sale and leaseback transactions; agree to certain restrictions on the ability of restricted subsidiaries to make certain payments to the Company or any of its restricted subsidiaries; create certain liens; merge, consolidate or sell all or substantially all of the Company's assets; enter into certain transactions with affiliates or designate subsidiaries as unrestricted subsidiaries. Under the senior unsecured notes indentures, the negative covenants, among other things, restrict the ability of Endo Designated Activity Company and its restricted subsidiaries (as defined in the indentures) to incur certain additional indebtedness and issue preferred stock; make certain dividends, distributions, investments and other restricted payments; sell certain assets; enter into sale and leaseback transactions; agree to certain restrictions on the ability of restricted subsidiaries to make certain payments to the issuer or any of the restricted subsidiaries; create certain liens; merge, consolidate or sell all or substantially all of Endo Designated Activity Company's, its co-issuers' or guarantors' assets; enter into certain transactions with affiliates or designate subsidiaries as unrestricted subsidiaries. These covenants are subject to a number of exceptions and qualifications, including the fall away or revision of certain of these covenants and release of collateral in the case of the senior secured notes, upon the notes receiving investment grade credit ratings. As of December 31, 2019 and December 31, 2018, we were in compliance with all such covenants. Additionally, pursuant to the terms of the indentures governing certain of our senior unsecured notes, the restricted subsidiaries of Endo International plc, whose assets comprise substantially all of the Company's consolidated total assets after intercompany eliminations, are subject to various restrictions limiting their ability to transfer assets in excess of certain thresholds to Endo International plc.

Debt Financing Transactions

Set forth below are certain disclosures relating to debt financing transactions that occurred during the years ended December 31, 2019, 2018 and 2017.

April 2017 Refinancing

In April 2017, the Company executed certain transactions (the April 2017 Refinancing Transactions) that included entry into a credit agreement, which provided for a term loan facility and a revolving credit facility, and the issuance of $300.0 million of 5.875% Senior Secured Notes due 2024 (the 2024 Notes). The Company used the net proceeds from this term loan facility, the 2024 Notes and cash on hand to refinance certain of its prior indebtedness and to pay related fees and expenses.

In connection with the April 2017 Refinancing Transactions, the Company incurred new debt issuance costs of approximately $56.7 million, which were allocated among the new debt instruments as follows: (i) $41.3 million to the new term loan facility, (ii) $10.5 million to the new revolving credit facility and (iii) $4.9 million to the 2024 Notes. These costs, together with $10.1 million of the previously deferred debt issuance costs associated with our prior revolving credit facility, were deferred to be amortized as interest expense over the terms of the respective instruments. The remaining $51.7 million of deferred debt issuance costs associated with our prior revolving and term loan facilities were charged to expense in the second quarter of 2017. These net expenses were included in the (Gain) loss on extinguishment of debt line item in the Consolidated Statements of Operations.

March 2019 Refinancing

In March 2019, the Company executed certain transactions (the March 2019 Refinancing Transactions) that included:

- entry into an amendment (the Revolving Credit Facility Amendment) to the Company's existing credit agreement, which was originally dated April 27, 2017 (the amended credit agreement is described above under the heading "Credit Agreement");
- issuance of $1,500.0 million of 7.50% Senior Secured Notes due 2027 (the 2027 Notes);
- repurchase of $1,642.2 million aggregate principal amount of certain of the Company's senior unsecured notes for $1,500.0 million in cash, excluding accrued interest (the Notes Repurchases); and
- solicitation of consents from the holders of the existing 7.25% Senior Notes due 2022 and 5.75% Senior Notes due 2022 (together, the Consent Notes) to certain amendments to the indentures governing such notes, which eliminated substantially all of the restrictive covenants, certain events of default and other provisions contained in each such indenture.

The Revolving Credit Facility Amendment amended the Credit Agreement to, among other things, (i) extend the maturity of the commitments under the Revolving Credit Facility from April 2022 to March 2024 (with the exception of $76.0 million of commitments that were not extended), (ii) provide greater covenant flexibility by increasing the maximum Secured Net Leverage Ratio described in the Financial Covenant (as defined in the Credit Agreement) from 3.50 to 1.00 to 4.50 to 1.00 and (iii) limit the scenarios under which such Financial Covenant will be tested.

The 2027 Notes were issued by PPI, a wholly-owned indirect subsidiary of the Company, in a private offering to "qualified institutional buyers" (as defined in Rule 144A under the Securities Act) and outside the U.S. to non-U.S. persons in compliance with Regulation S under the Securities Act. The 2027 Notes are guaranteed on a senior secured basis by the Company and its subsidiaries that also guarantee the Credit Agreement (collectively, the Guarantors). The 2027 Notes are senior secured obligations of PPI and the Guarantors and are secured by the same collateral that secures the Credit Agreement and the Company's existing senior secured notes. Interest on the 2027 Notes is payable semiannually in arrears on April 1 and October 1 of each year, beginning on October 1, 2019.

The 2027 Notes will mature on April 1, 2027; however, the indenture governing these notes generally allow for redemption prior to maturity, in whole or in part, subject to certain restrictions and limitations described therein, in the following ways:

- Before April 1, 2022, the 2027 Notes may be redeemed, in whole or in part, by paying the sum of: (i) 100% of the principal amount being redeemed, (ii) an applicable make-whole premium as described in the indenture and (iii) accrued and unpaid interest.
- On or after April 1, 2022, the 2027 Notes may be redeemed, in whole or in part, at redemption prices set forth in the indenture, plus accrued and unpaid interest. The redemption prices for the 2027 Notes vary over time pursuant to a step-down schedule set forth in the indenture, beginning at 105.625% of the principal amount redeemed and decreasing to 100% by April 1, 2025.
- Before April 1, 2022, the 2027 Notes may be redeemed, in part (up to 35% of the principal amount outstanding), with the net cash proceeds from specified equity offerings at 107.500% of the principal amount redeemed, plus accrued and unpaid interest.

The Company used the net proceeds from the 2027 Notes and cash on hand primarily to fund the Notes Repurchases and to pay certain premiums, fees and expenses related thereto. The Notes Repurchases were completed by Endo Finance LLC (Endo Finance), a wholly-owned subsidiary of the Company, pursuant to a tender offer to repurchase portions of the Company's outstanding 7.25% Senior Notes due 2022, 5.75% Senior Notes due 2022, 5.375% Senior Notes due 2023 and 6.00% Senior Notes due 2023. In connection with the Notes Repurchases, Endo Finance repurchased $1,642.2 million of senior unsecured note indebtedness, representing the aggregate principal amount repurchased, for $1,500.0 million in cash (including certain cash premiums related thereto). The $1,642.2 million aggregate repurchase amount consisted of (i) $389.9 million aggregate principal amount of the 7.25% Senior Notes due 2022, (ii) $517.5 million aggregate principal amount of the 5.75% Senior Notes due 2022, (iii) $539.6 million aggregate principal amount of the 5.375% Senior Notes due 2023 and (iv) $195.2 million aggregate principal amount of the 6.00% Senior Notes due 2023. The aggregate carrying amount of notes repurchased was $1,624.0 million. In conjunction with the Notes Repurchases, Endo Finance also solicited consents from holders of the Consent Notes to certain proposed amendments to the applicable indentures under which each series of Consent Notes were issued, which would eliminate substantially all restrictive covenants, certain events of default and certain other provisions contained in each such indenture. The proposed amendments were effected pursuant to a supplemental indenture to each such indenture executed by Endo Finance and the guarantors of the Consent Notes, which became operative upon the repurchase of at least the requisite consent amount of the applicable series of Consent Notes tendered.

The difference between the cash paid and the carrying amount of notes repurchased in the Notes Repurchases resulted in a $124.0 million gain. In connection with the March 2019 Refinancing Transactions, we also incurred costs and fees totaling $26.2 million, of which $4.2 million related to the Notes Repurchases, $19.1 million related to the 2027 Notes issuance and $2.9 million related to the Revolving Credit Facility Amendment. The costs incurred in connection with the Notes Repurchases were charged to expense in the first quarter of 2019 and recorded as a partial offset to the gain. The costs incurred in connection with the 2027 Notes issuance and the Revolving Credit Facility Amendment, together with previously deferred debt issuance costs associated with the Revolving Credit Facility, have been deferred to be amortized as interest expense over the terms of the respective instruments. The net gain resulting from the March 2019 Refinancing Transactions was included in the (Gain) loss on extinguishment of debt line item in the Consolidated Statements of Operations.

June 2019 Revolving Credit Facility Borrowing

In June 2019, the Company borrowed $300.0 million under the Revolving Credit Facility. These proceeds will be used for purposes consistent with the Company's capital allocation priorities, including for general corporate purposes.

Maturities

The following table presents the maturities on our long-term debt for each of the five fiscal years subsequent to December 31, 2019 (in thousands):

	Maturities (1)
2020	$ 34,150
2021	$ 34,150
2022 (2)	$ 247,723
2023	$ 1,684,430
2024 (2)	$ 3,770,225

(1) Certain amounts borrowed pursuant to the Credit Facilities will immediately mature if certain of our senior notes are not refinanced or repaid in full prior to the date that is 91 days prior to the respective stated maturity dates thereof. Accordingly, we may seek to repay or refinance certain senior notes prior to their stated maturity dates. The amounts in this maturities table do not reflect any such early repayment or refinancing; rather, they reflect stated maturity dates.

(2) Based on the Company's borrowings under the Revolving Credit Facility that were outstanding at December 31, 2019, $22.8 million will mature in 2022, with the remainder maturing in 2024.

NOTE 15. COMMITMENTS AND CONTINGENCIES

Manufacturing, Supply and Other Service Agreements

Our subsidiaries contract with various third party manufacturers, suppliers and service providers to provide raw materials used in our subsidiaries' products and semi-finished and finished goods, as well as certain packaging, labeling services, customer service support, warehouse and distribution services. If, for any reason, we are unable to obtain sufficient quantities of any of the finished goods or raw materials or components required for our products or services needed to conduct our business, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In addition to the manufacturing and supply agreements described above, we have agreements with various companies for clinical development services. Although we have no reason to believe that the parties to these agreements will not meet their obligations, failure by any of these third parties to honor their contractual obligations may have a material adverse effect on our business, financial condition, results of operations and cash flows.

Jubilant HollisterStier Laboratories LLC (JHS)

During the second quarter of 2016, we entered into an agreement with JHS (the JHS Agreement). Pursuant to the JHS Agreement, JHS fills and lyophilizes the XIAFLEX® bulk drug substance, which is manufactured by the Company, and produces sterile diluent. The initial term of the JHS Agreement is three years, with automatic renewal provisions thereafter for subsequent one-year terms, unless or until either party provides notification prior to expiration of the then current term of the contract. The Company is required to purchase a specified percentage of its total forecasted volume of XIAFLEX® from JHS each year, unless JHS is unable to supply XIAFLEX® within the timeframe established under such forecasts. Amounts purchased pursuant to the JHS Agreement were $8.6 million, $7.5 million and $5.6 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Milestones and Royalties

See Note 11. License and Collaboration Agreements for a description of future milestone and royalty commitments pursuant to our material license and collaboration agreements.

Legal Proceedings and Investigations

We and certain of our subsidiaries are involved in various claims, legal proceedings and internal and governmental investigations (collectively, proceedings) that arise from time to time, including, among others, those relating to product liability, intellectual property, regulatory compliance, consumer protection, tax and commercial matters. While we cannot predict the outcome of these proceedings and we intend to vigorously prosecute or defend our position as appropriate, there can be no assurance that we will be successful or obtain any requested relief. An adverse outcome in any of these proceedings could have a material adverse effect on our business, financial condition, results of operations and cash flows. Matters that are not being disclosed herein are, in the opinion of our management, immaterial both individually and in the aggregate with respect to our financial position, results of operations and cash flows. If and when such matters, in the opinion of our management, become material, either individually or in the aggregate, we will disclose them.

We believe that certain settlements and judgments, as well as legal defense costs, relating to certain product liability or other matters are or may be covered in whole or in part under our insurance policies with a number of insurance carriers. In certain circumstances, insurance carriers reserve their rights to contest or deny coverage. We intend to contest vigorously any disputes with our insurance carriers and to enforce our rights under the terms of our insurance policies. Accordingly, we will record receivables with respect to amounts due under these policies only when the realization of the potential claim for recovery is considered probable. Amounts recovered under our insurance policies could be materially less than stated coverage limits and may not be adequate to cover damages, other relief and/or costs relating to claims. In addition, there is no guarantee that insurers will pay claims or that coverage will otherwise be available.

As of December 31, 2019, our accrual for loss contingencies totaled $513.0 million, the most significant components of which relate to product liability and related matters associated with vaginal mesh. Although we believe there is a reasonable possibility that a loss in excess of the amount recognized exists, we are unable to estimate the possible loss or range of loss in excess of the amount recognized at this time. While the timing of the resolution of certain of the matters accrued for as loss contingencies remains uncertain and could extend beyond 12 months, as of December 31, 2019, the entire liability accrual amount is classified in the Current portion of legal settlement accrual in the Consolidated Balance Sheets.

Product Liability and Related Matters

We and certain of our subsidiaries have been named as defendants in numerous lawsuits in various U.S. federal and state courts, and in Canada, Australia and other countries, alleging personal injury resulting from the use of certain products of our subsidiaries, including the product liability and other related matters described below in more detail.

Vaginal Mesh. Since 2008, we and certain of our subsidiaries, including AMS (subsequently converted to Astora Women's Health Holding LLC and merged into Astora Women's Health LLC and referred to herein as AMS and/or Astora), have been named as defendants in multiple lawsuits in various state and federal courts in the U.S. (including a federal multidistrict litigation (MDL) in the U.S. District Court for the Southern District of West Virginia), and in Canada, Australia and other countries, alleging personal injury resulting from the use of transvaginal surgical mesh products designed to treat POP and SUI. Plaintiffs claim a variety of personal injuries, including chronic pain, incontinence, inability to control bowel function and permanent deformities, and seek compensatory and punitive damages, where available.

We and certain plaintiffs' counsel have entered into various Master Settlement Agreements (MSAs) and other agreements to resolve up to approximately 71,000 filed and unfiled mesh claims handled or controlled by the participating counsel in the U.S. These MSAs and other agreements were entered into at various times between June 2013 and the present, were solely by way of compromise and settlement and were not in any way an admission of liability or fault by us or any of our subsidiaries. All MSAs are subject to a process that includes guidelines and procedures for administering the settlements and the release of funds. In certain cases, the MSAs provide for the creation of QSFs into which the settlement funds will be deposited, establish participation requirements and allow for a reduction of the total settlement payment in the event participation thresholds are not met. Funds deposited in QSFs are considered restricted cash and/or restricted cash equivalents. Distribution of funds to any individual claimant is conditioned upon the receipt of documentation substantiating product use, the dismissal of any lawsuit and the release of the claim as to us and all affiliates. Prior to receiving funds, an individual claimant must represent and warrant that liens, assignment rights or other claims identified in the claims administration process have been or will be satisfied by the individual claimant. Confidentiality provisions apply to the settlement funds, amounts allocated to individual claimants and other terms of the agreement.

In October 2019, the Ontario Superior Court of Justice approved a class action settlement covering unresolved claims by Canadian women implanted with an AMS vaginal mesh device. Astora funded the settlement in February 2020.

The following table presents the changes in the QSFs and mesh liability accrual balances during the year ended December 31, 2019 (in thousands):

	Qualified Settlement Funds	Mesh Liability Accrual
Balance as of January 1, 2019	$ 299,733	$ 748,606
Additional charges	—	30,000
Cash contributions to Qualified Settlement Funds	253,520	—
Cash distributions to settle disputes from Qualified Settlement Funds	(314,266)	(314,266)
Cash distributions to settle disputes	—	(15,330)
Other (1)	3,855	5,021
Balance as of December 31, 2019	$ 242,842	$ 454,031

(1) Amounts deposited in the QSFs may earn interest, which is generally used to pay administrative costs of the fund and is reflected in the table above as an increase to the QSF and Mesh Liability Accrual balances. Any interest remaining after all claims have been paid will generally be distributed to the claimants who participated in that settlement. Also included within this line are foreign currency adjustments for settlements not denominated in U.S. dollars.

Charges related to vaginal mesh liability and associated legal fees and other expenses for all periods presented are reported in Discontinued operations, net of tax in our Consolidated Statements of Operations.

To date, the Company has made total mesh liability payments of approximately $3.5 billion, $242.8 million of which remains in the QSFs as of December 31, 2019. We currently expect to fund into the QSFs during 2020 the remaining payments under all existing settlement agreements. As the funds are disbursed out of the QSFs from time to time, the liability accrual will be reduced accordingly with a corresponding reduction to restricted cash and cash equivalents. In addition, we may pay cash distributions to settle disputes separate from the QSFs, which will also decrease the liability accrual and decrease cash and cash equivalents.

We were contacted in October 2012 regarding a civil investigation initiated by various state attorneys general into mesh products, including transvaginal surgical mesh products designed to treat POP and SUI. In November 2013, we received a subpoena relating to this investigation from the state of California, and we have subsequently received additional subpoenas from California and other states. We are cooperating with the investigations.

We will continue to vigorously defend any unresolved claims and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any additional losses that could be incurred.

Although the Company believes it has appropriately estimated the probable total amount of loss associated with all mesh-related matters as of the date of this report, litigation is ongoing in certain cases that have not settled, trials may occur as early as April 2020, and it is reasonably possible that further claims may be filed or asserted and that adjustments to our overall liability accrual may be required. This could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Testosterone. A federal MDL in the U.S. District Court for the Northern District of Illinois includes multiple lawsuits against manufacturers of prescription medications containing testosterone, including our subsidiaries EPI and Auxilium Pharmaceuticals, Inc. (subsequently converted to Auxilium Pharmaceuticals, LLC and hereinafter referred to as Auxilium). Plaintiffs in these suits have generally alleged various personal injuries resulting from the use of such medications (including FORTESTA® Gel, DELATESTRYL®, TESTIM®, TESTOPEL®, AVEED® and STRIANT®), including pulmonary embolism, stroke or other vascular and/or cardiac injuries, and sought compensatory and/or punitive damages, where available.

In June 2018, counsel for plaintiffs, on the one hand, and Auxilium and EPI, on the other, executed an MSA allowing for the resolution of all known TRT product liability claims against our subsidiaries. The MSA was solely by way of compromise and settlement and was not in any way an admission of liability or fault by us or any of our subsidiaries.

The MSA established various guidelines and procedures for administering the settlement and the release of funds. Among other things, the MSA provides for the creation of a QSF into which the settlement funds will be deposited, establishes participation requirements and allows for a reduction of the total settlement payment in the event the participation threshold is not met. Auxilium and EPI funded the QSF in November 2019. Distribution of funds to any individual claimant is conditioned upon the receipt of documentation substantiating product use and injury as determined by a third-party special master, the dismissal of any lawsuit and the release of the claim as to us and all affiliates. Prior to receiving funds, an individual claimant must represent and warrant that liens, assignment rights or other claims identified in the claims administration process have been or will be satisfied by the individual claimant. Confidentiality provisions apply to the settlement funds, amounts allocated to individual claimants and other terms of the agreement.

The MDL court has been dismissing cases pursuant to the settlement or for failure to comply with court orders. As of February 18, 2020, we were aware of approximately 5 cases (some of which may have been filed on behalf of multiple plaintiffs) that remained pending in the MDL against one or more of our subsidiaries.

The MDL also included a lawsuit filed in November 2014 in the U.S. District for the Northern District of Illinois against EPI, Auxilium and various other manufacturers of testosterone products on behalf of a proposed class of health insurance companies and other third party payers. This lawsuit was not part of the settlement described above. After a series of motions to dismiss, plaintiff filed a third amended complaint in April 2016, asserting civil claims for alleged violations of the Racketeer Influenced and Corrupt Organizations Act and negligent misrepresentation based on defendants' marketing of certain testosterone products. In February 2019, the court granted defendants' motion for summary judgment. In November 2019, the Seventh Circuit affirmed.

Although the Company believes it has appropriately estimated the probable total amount of loss associated with testosterone-related matters as of the date of this report, it is reasonably possible that further claims may be filed or asserted and that adjustments to our overall liability accrual may be required. This could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We will continue to vigorously defend any unresolved claims and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any additional losses that could be incurred.

Opioid-Related Matters

Since 2014, multiple U.S. states and other governmental persons or entities and private plaintiffs in the U.S. and Canada have filed suit against us and/or certain of our subsidiaries, including EHSI, EPI, PPI, PPCI, Endo Generics Holdings, Inc. (EGHI), Vintage Pharmaceuticals, LLC, Generics Bidco I, LLC and DAVA Pharmaceuticals, LLC, and in Canada, Paladin, as well as various other manufacturers, distributors, pharmacies and/or others, asserting claims relating to defendants' alleged sales, marketing and/or distribution practices with respect to prescription opioid medications, including certain of our products. As of February 18, 2020, the cases in the U.S. of which we were aware include, but are not limited to, approximately 20 cases filed by or on behalf of states; approximately 2,700 cases filed by counties, cities, Native American tribes and/or other government-related persons or entities; approximately 280 cases filed by hospitals, health systems, unions, health and welfare funds or other third-party payers and approximately 160 cases filed by individuals. Certain of the cases have been filed as putative class actions. The Canadian cases include an action filed by British Columbia on behalf of a proposed class of all federal, provincial and territorial governments and agencies in Canada that paid healthcare, pharmaceutical and treatment costs related to opioids, as well as three additional putative class actions, filed in Ontario, Quebec and British Columbia, seeking relief on behalf of Canadian residents who were prescribed and/or consumed opioid medications.

Many of the U.S. cases have been coordinated in a federal MDL pending in the U.S. District Court for the Northern District of Ohio. Other cases are pending in various federal or state courts. The cases are at various stages. The first MDL trial, relating to the claims of two Ohio counties (Track One plaintiffs), was set for October 2019 but did not go forward after most defendants settled. EPI, EHSI, PPI and PPCI executed a settlement agreement with the Track One plaintiffs in September 2019 which provided for payments totaling $10 million and up to $1 million of VASOSTRICT® and/or ADRENALIN®. Under the settlement agreement, the Track One plaintiffs may be entitled to additional payments in the event of a comprehensive resolution of government-related opioid claims. The settlement agreement was solely by way of compromise and settlement and was not in any way an admission of liability or fault by us or any of our subsidiaries. Certain state court cases are scheduled for trial in 2020, with the first of these trials currently scheduled to begin in March. Most other cases remain at the pleading and/or discovery stage.

The complaints in the cases assert a variety of claims, including but not limited to statutory claims asserting violations of public nuisance, consumer protection, unfair trade practices, racketeering, Medicaid fraud and/or drug dealer liability laws and/or common law claims for public nuisance, fraud/misrepresentation, strict liability, negligence and/or unjust enrichment. The claims are generally based on alleged misrepresentations and/or omissions in connection with the sale and marketing of prescription opioid medications and/or alleged failures to take adequate steps to identify and report suspicious orders and to prevent abuse and diversion. Plaintiffs generally seek declaratory and/or injunctive relief; compensatory, punitive and/or treble damages; restitution, disgorgement, civil penalties, abatement, attorneys' fees, costs and/or other relief.

We will continue to vigorously defend the foregoing matters and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In addition to the lawsuits described above, the Company and/or its subsidiaries have received certain subpoenas, civil investigative demands (CIDs) and informal requests for information concerning the sale, marketing and/or distribution of prescription opioid medications, including the following:

Various state attorneys general have served subpoenas and/or CIDs on EHSI and/or EPI. We are cooperating with the investigations.

In January 2018, our subsidiary EPI received a federal grand jury subpoena from the U.S. District Court for the Southern District of Florida seeking documents and information related to OPANA® ER, other oxymorphone products and marketing of opioid medications. We are cooperating with the investigation.

In September 2019, EPI, EHSI, PPI and PPCI received subpoenas from the New York State Department of Financial Services seeking documents and information regarding the marketing, sale and distribution of opioid medications in New York. We are providing information responsive to these subpoenas.

Similar investigations may be brought by others or the foregoing matters may be expanded or result in litigation. We are unable to predict the outcome of these matters or to estimate the possible range of any losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In January 2020, EPI and PPI executed a settlement agreement with the state of Oklahoma providing for a payment of approximately $8.75 million in resolution of potential opioid-related claims. The settlement agreement was solely by way of compromise and settlement and was not in any way an admission of liability or fault by us or any of our subsidiaries.

Generic Drug Pricing Matters

Since March 2016, various private plaintiffs and state attorneys general have filed cases against our subsidiary PPI and/or, in some instances, the Company, Generics Bidco I, LLC, DAVA Pharmaceuticals, LLC and/or PPCI, as well as other pharmaceutical manufacturers and, in some instances, other corporate and/or individual defendants, alleging price-fixing and other anticompetitive conduct with respect to generic pharmaceutical products. These cases, which include proposed class actions filed on behalf of direct purchasers, end-payers and indirect purchaser resellers, as well as non-class action suits, have generally been consolidated and/or coordinated for pretrial proceedings in a federal MDL pending in the U.S. District Court for the Eastern District of Pennsylvania.

The various complaints and amended complaints generally assert claims under federal and/or state antitrust law, state consumer protection statutes and/or state common law regarding certain of our products, and seek damages, treble damages, civil penalties, disgorgement, declaratory and injunctive relief, costs and attorneys' fees. Some claims are based on alleged product-specific conspiracies and other claims allege broader, multiple-product conspiracies. Under these overarching conspiracy theories, plaintiffs seek to hold all alleged participants in a particular conspiracy jointly and severally liable for all harms caused by the alleged conspiracy, not just harms related to the products manufactured and/or sold by a particular defendant.

The MDL court has issued various case management and substantive orders, including orders denying certain motions to dismiss, and discovery is ongoing.

We will continue to vigorously defend the foregoing matters and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In December 2014, our subsidiary PPI received from the Antitrust Division of the DOJ a federal grand jury subpoena issued by the U.S. District Court for the Eastern District of Pennsylvania addressed to “Par Pharmaceuticals.” The subpoena requested documents and information focused primarily on product and pricing information relating to the authorized generic version of Lanoxin (digoxin) oral tablets and generic doxycycline products, and on communications with competitors and others regarding those products. We are cooperating with the investigation.

In May 2018, we and our subsidiary PPCI each received a CID from the DOJ in relation to a False Claims Act investigation concerning whether generic pharmaceutical manufacturers engaged in price-fixing and market allocation agreements, paid illegal remuneration and caused the submission of false claims. We are cooperating with the investigation.

Similar investigations may be brought by others or the foregoing matters may be expanded or result in litigation. We are unable to predict the outcome of these matters or to estimate the possible range of any losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Other Antitrust Matters

Beginning in November 2013, multiple alleged purchasers of LIDODERM® sued our subsidiary EPI and other pharmaceutical companies alleging violations of antitrust law arising out of their settlement of certain patent infringement litigation. The various complaints asserted claims under Sections 1 and 2 of the Sherman Act, state antitrust and consumer protection statutes and/or state common law and sought damages, treble damages, disgorgement of profits, restitution, injunctive relief and attorneys’ fees. These cases were consolidated and/or coordinated in a federal MDL in the U.S. District Court for the Northern District of California. The last cases remaining in the MDL were dismissed with prejudice in September 2018, when the court approved EPI’s settlements with direct and indirect purchaser classes. Those settlement agreements provided for aggregate payments of approximately $100 million. Of this total, EPI paid approximately $60 million in 2018, $30 million in the first quarter of 2019 and $10 million in the first quarter of 2020. In September 2019, Blue Cross Blue Shield of Michigan and Blue Care Network of Michigan filed a complaint against EPI and other pharmaceutical companies in the Third Judicial Circuit Court, Wayne County, Michigan, asserting claims substantially similar to those asserted in the MDL. In October 2019, certain defendants removed the case to federal court. In November 2019, plaintiffs moved to remand the case to state court.

Beginning in June 2014, multiple alleged purchasers of OPANA® ER sued our subsidiaries EHSI and EPI and other pharmaceutical companies (including Impax Laboratories, LLC (formerly Impax Laboratories, Inc. and referred to herein as Impax) and Penwest Pharmaceuticals Co., which our subsidiary EPI had acquired), alleging violations of antitrust law arising out of an agreement reached by EPI and Impax to settle certain patent infringement litigation and EPI’s introduction of reformulated OPANA® ER. Some cases were filed on behalf of putative classes of direct and indirect purchasers, while others were filed on behalf of individual retailers or health care benefit plans. The cases have been consolidated and/or coordinated for pretrial proceedings in a federal MDL pending in the U.S. District Court for the Northern District of Illinois. The various complaints assert claims under Sections 1 and 2 of the Sherman Act, state antitrust and consumer protection statutes and/or state common law. Plaintiffs generally seek damages, treble damages, disgorgement of profits, restitution, injunctive relief and attorneys’ fees. In March 2019, direct and indirect purchaser plaintiffs filed motions for class certification, which remain pending.

Beginning in February 2009, the FTC and certain private plaintiffs sued our subsidiaries PPCI (since June 2016, EGHI) and/or PPI as well as other pharmaceutical companies alleging violations of antitrust law arising out of the settlement of certain patent litigation concerning the generic version of AndroGel® and seeking damages, treble damages, equitable relief and attorneys’ fees and costs. The cases were consolidated and/or coordinated for pretrial proceedings in a federal MDL pending in the U.S. District Court for the Northern District of Georgia. In May 2016, plaintiffs representing a putative class of indirect purchasers voluntarily dismissed their claims with prejudice. In February 2017, the FTC voluntarily dismissed its claims against EGHI with prejudice. In June 2018, the MDL court granted in part and denied in part various summary judgment and evidentiary motions filed by defendants. In particular, among other things, the court rejected two of the remaining plaintiffs’ causation theories and rejected damages claims related to AndroGel® 1.62%. In July 2018, the court denied certain plaintiffs’ motion for certification of a direct purchaser class. In November 2019, PPI and PPCI entered into settlement agreements with all but one of the remaining plaintiffs in the MDL. The settlement agreements were solely by way of compromise and settlement and were not in any way an admission of liability or fault. Separately, in August 2019, several alleged direct purchasers filed suit in the U.S. District Court for the Eastern District of Pennsylvania asserting claims substantially similar to those asserted in the MDL, as well as additional claims against other defendants relating to other alleged conduct. In January 2020, the U.S. District Court for the Eastern District of Pennsylvania denied defendants’ motion to transfer venue to the Northern District of Georgia.

Beginning in February 2018, several alleged indirect purchasers filed proposed class actions against our subsidiary PPI and other pharmaceutical companies alleging violations of antitrust law arising out of the settlement of certain patent litigation concerning the generic version of Zetia® (ezetimibe). The various complaints asserted claims under Sections 1 and 2 of the Sherman Act, state antitrust and consumer protection statutes and/or state common law and sought injunctive relief, damages, treble damages, attorneys' fees and costs. In June 2018, these and other related cases, including proposed direct purchaser class actions in which PPI was not named as a defendant, were consolidated and/or coordinated for pretrial proceedings in a federal MDL in the U.S. District Court for the Eastern District of Virginia. In September 2018, the indirect purchaser plaintiffs dismissed their claims against PPI without prejudice. In June and July 2019, the MDL court granted the direct purchaser plaintiffs and certain retailer plaintiffs leave to file amended complaints adding PPI as a defendant. In July 2019, PPI entered into settlement agreements with both the direct purchaser plaintiffs and the retailer plaintiffs. The direct purchaser settlement is subject to court approval. The settlement agreements were solely by way of compromise and settlement, were not in any way an admission of liability or fault and involved no monetary payment.

Beginning in May 2018, multiple complaints were filed in the U.S. District Court for the Southern District of New York against PPI, EPI and/or us, as well as other pharmaceutical companies, alleging violations of antitrust law arising out of the settlement of certain patent litigation concerning the generic version of Exforge® (amlodipine/valsartan). Some cases were filed on behalf of putative classes of direct and indirect purchasers; others are non-class action suits. The various complaints assert claims under Sections 1 and 2 of the Sherman Act, state antitrust and consumer protection statutes and/or state common law. Plaintiffs generally seek damages, treble damages, equitable relief and attorneys' fees and costs. In September 2018, the putative class plaintiffs stipulated to the dismissal without prejudice of their claims against EPI and us, and the retailer plaintiffs later did the same. PPI filed a partial motion to dismiss certain claims in September 2018, which was granted in August 2019. The cases are currently in discovery.

Beginning in August 2019, multiple complaints were filed in the U.S. District Court for the Southern District of New York against PPI and other pharmaceutical companies alleging violations of antitrust law arising out the settlement of certain patent litigation concerning generic versions of Seroquel XR® (extended release quetiapine fumarate). The claims against PPI are based on allegations that PPI entered into an exclusive acquisition and license agreement with Handa Pharmaceuticals, LLC (Handa) in 2012 pursuant to which Handa assigned to PPI certain rights under a prior settlement agreement between Handa and AstraZeneca resolving certain patent litigation. Some cases were filed on behalf of putative classes of direct and indirect purchasers; others are non-class action suits. The various complaints assert claims under Sections 1 and 2 of the Sherman Act, state antitrust and consumer protection statutes and/or state common law. Plaintiffs generally seek damages, treble damages, equitable relief and attorneys' fees and costs. In October 2019, the defendants filed various motions to dismiss and, in the alternative, moved to transfer the litigation to the U.S. District Court for the District of Delaware.

To the extent unresolved, we will continue to vigorously defend the foregoing matters and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In February 2015, EGHI and affiliates received a CID from the Office of the Attorney General for the state of Alaska seeking documents and information regarding EGHI's settlement of AndroGel® patent litigation as well as documents produced in the aforementioned litigation filed by the FTC. Also in February 2015, EHSI received a CID from Alaska's Office of the Attorney General seeking production of certain documents and information concerning agreements with Actavis and Impax settling OPANA® ER patent litigation. We are cooperating with the investigations.

In July 2019, EPI received a CID from the FTC seeking documents and information regarding oxymorphone ER and EPI's settlement of a contract dispute with Impax Laboratories (now Amneal) in August 2017. We are cooperating with the investigation.

Similar investigations may be brought by others or the foregoing matters may be expanded or result in litigation. We are unable to predict the outcome of these matters or to estimate the possible range of any additional losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Securities Litigation

In February 2017, a putative class action entitled *Public Employees' Retirement System of Mississippi v. Endo International plc* was filed in the Court of Common Pleas of Chester County, Pennsylvania by an institutional purchaser of shares in our June 2, 2015 public offering. The complaint alleged violations of Sections 11, 12(a)(2) and 15 of the Securities Act of 1933 against us, certain of our current and former directors and officers, and the underwriters who participated in the offering, based on certain disclosures about Endo's generics business. In June 2019, the parties entered into a settlement providing for, among other things, a $50 million payment to the investor class in exchange for a release of their claims. In December 2019, the court denied a petition to intervene filed by the lead plaintiff in the *Pelletier* litigation described below, and granted final approval of the settlement. In December 2019, the putative intervenor appealed the denial of its petition to intervene and the final approval order to Pennsylvania Superior Court. That appeal remains pending. As a result of the settlement, during the first quarter of 2019, the Company recorded an increase of approximately $50 million to its accrual for loss contingencies. As the Company's insurers agreed to fund the settlement, the Company also recorded a corresponding insurance receivable of approximately $50 million during the first quarter of 2019, which was recorded as Prepaid expenses and other current assets in the Consolidated Balance Sheets. The Company's insurers funded the settlement during the third quarter of 2019, resulting in corresponding decreases to the Company's accrual for loss contingencies and insurance receivable.

In April 2017, a putative class action entitled *Phaedra A. Makris v. Endo International plc, Rajiv Kanishka Liyanaarchchie de Silva and Suketu P. Upadhyay* was filed in the Superior Court of Justice in Ontario, Canada by an individual shareholder on behalf of herself and similarly-situated Canadian-based investors who purchased Endo's securities between January 11 and May 5, 2016. The statement of claim sought class certification, declaratory relief, damages, interest and costs based on alleged violations of the Ontario Securities Act arising out of alleged negligent misrepresentations concerning the Company's revenues, profit margins and earnings per share; its receipt of a subpoena from the state of Connecticut regarding doxycycline hyclate, amitriptyline hydrochloride, doxazosin mesylate, methotrexate sodium and oxybutynin chloride; and the erosion of the Company's U.S. generic pharmaceuticals business. In January 2019, plaintiff amended her statement of claim to add a claim on behalf of herself and similarly-situated Canadian investors who purchased Endo's securities between January 11, 2016 and June 8, 2017, based on our decision to voluntarily remove reformulated OPANA® ER from the market.

In August 2017, an alleged individual shareholder filed a putative class action entitled *Bier v. Endo International plc* in the U.S. District Court for the Eastern District of Pennsylvania, alleging violations of Sections 10(b) and 20(a) of the Exchange Act against us, EHSI and certain of our current and former directors and officers, based on our decision to voluntarily remove reformulated OPANA® ER from the market. In December 2017, the court appointed SEB Investment Management AB lead plaintiff in the action. In August 2019, the parties entered into a settlement providing for, among other things, a payment of $82.5 million to the investor class in exchange for a release of their claims. The settlement received preliminary court approval in September 2019 and final approval in December 2019. As a result of the settlement, during the second quarter of 2019, the Company recorded an increase of approximately $82.5 million to its accrual for loss contingencies. As the Company's insurers agreed to fund the settlement, the Company also recorded a corresponding insurance receivable of approximately $82.5 million during the second quarter of 2019, which was recorded as Prepaid expenses and other current assets in the Consolidated Balance Sheets. With respect to this settlement, the Company's insurers funded $20.0 million during the third quarter of 2019 and the remainder in October 2019, resulting in corresponding decreases to the Company's accrual for loss contingencies and insurance receivable.

In November 2017, a putative class action entitled *Pelletier v. Endo International plc, Rajiv Kanishka Liyanaarchchie De Silva, Suketu P. Upadhyay and Paul V. Campanelli* was filed in the U.S. District Court for the Eastern District of Pennsylvania by an individual shareholder on behalf of himself and all similarly situated shareholders. The lawsuit alleges violations of Section 10(b) and 20(a) of the Exchange Act relating to the pricing of various generic pharmaceutical products. In June 2018, the court appointed Park Employees' and Retirement Board Employees' Annuity Benefit Fund of Chicago lead plaintiff in the action. In September 2018, the defendants filed a motion to dismiss, which the court granted in part and denied in part in February 2020. In particular, the court granted the motion and dismissed the claims with prejudice insofar as they were based on an alleged price-fixing conspiracy; the court otherwise denied the motion to dismiss, allowing other aspects of lead plaintiff's claims to proceed.

To the extent unresolved, we will continue to vigorously defend the foregoing matters and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

VASOSTRICT® Related Matters

In July 2016, Fresenius sued our subsidiaries PPCI and PSP LLC in the U.S. District Court for the District of New Jersey alleging an anticompetitive scheme to exclude competition for PPCI's VASOSTRICT®, a vasopressin-based cardiopulmonary drug. In particular, Fresenius alleged violations of Sections 1 and 2 of the Sherman Antitrust Act, as well as state antitrust and common law, based on assertions that our subsidiaries entered into exclusive supply agreements with one or more API manufacturers and that, as a result, Fresenius could not obtain vasopressin API in order to file an ANDA to obtain U.S. FDA approval for its own vasopressin product. Fresenius sought actual, treble and punitive damages, attorneys' fees and costs and injunctive relief. In February 2020, the court granted our subsidiaries' motion for summary judgment on all claims and denied Fresenius's cross-motion for partial summary judgment.

In August 2017, our subsidiaries PPI and PSP LLC filed a complaint for actual, exemplary and punitive damages, injunctive relief and other relief against QuVa, Stuart Hinchen, Peter Jenkins and Mike Rutkowski in the U.S. District Court for the District of New Jersey. The complaint alleges misappropriation in violation of the federal Defend Trade Secrets Act, New Jersey's Trade Secrets Act and New Jersey common law, as well as unfair competition, breach of contract, breach of fiduciary duty, breach of the duty of loyalty, tortious interference with contractual relations and breach of the duty of confidence in connection with VASOSTRICT®. In November 2017, we filed a motion for preliminary injunction seeking various forms of relief. In March 2018, the court granted in part our motion for preliminary injunction and enjoined QuVa from marketing and releasing its planned vasopressin product through the conclusion of trial. We subsequently deposited a bond to the court's interest-bearing account to secure the preliminary injunction. In May 2018, defendants filed a notice of appeal to the Third Circuit Court of Appeals indicating intent to appeal the court's preliminary injunction. In February 2019, the defendants filed counterclaims for defamation, tortious interference with contract, tortious interference with prospective business relations and witness interference. The counterclaims seek actual, exemplary and punitive damages and other relief. In March 2019, we filed a motion to dismiss all of the defendants' counterclaims. In April 2019, the Third Circuit Court of Appeals affirmed the court's preliminary injunction but remanded for additional fact-finding concerning the duration of the preliminary injunction and, if needed, consideration of the additional trade secrets raised in our motion for preliminary injunction but not addressed by the preliminary injunction order. In September 2019, following the decision in *Athenex Inc. v. Azar*, No. 19-cv-00603, 2019 WL 3501811 (D.D.C. Aug. 1, 2019), which upheld the FDA's determination that there is no clinical need for outsourcing facilities to compound drugs using bulk vasopressin (described below), the parties submitted a proposed consent order to the district court agreeing to a lifting of the preliminary injunction against QuVa but reserving PPI and PSP LLC's right to seek return or reduction of the bond. In January 2020, the court granted our motion to dismiss the defendants' counterclaims and ordered the preliminary injunction lifted while the bond remains in place pending an adjudication on the merits.

Beginning in April 2018, PSP LLC and PPI received notice letters from Eagle, Sandoz, Inc., Amphastar Pharmaceuticals, Inc., Amneal Pharmaceuticals LLC, American Regent and Fresenius advising of the filing by such companies of ANDAs for generic versions of VASOSTRICT® (vasopressin IV solution (infusion)) 20 units/ml and/or 200 units/10 ml. Beginning in May 2018, PSP LLC, PPI and EPIC filed lawsuits against the companies in the U.S. District Court for the District of Delaware and New Jersey within the 45-day deadline to invoke a 30-month stay of FDA approval pursuant to the Hatch-Waxman legislative scheme. The earliest trial is scheduled for May 2020.

The Company's accrual for loss contingencies includes, among other things, an estimated accrual for certain VASOSTRICT®-related matters. We will continue to vigorously defend or prosecute the foregoing matters as appropriate, to protect our intellectual property rights, to pursue all available legal and regulatory avenues and to explore other options as appropriate in our best interests. Similar matters may be brought by others or the foregoing matters may be expanded. We are unable to predict the outcome of these matters or to estimate the possible range of any additional losses that could be incurred. Adjustments to our overall liability accrual may be required in the future, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Other Proceedings and Investigations

Proceedings similar to those described above may also be brought in the future. Additionally, we are involved in, or have been involved in, arbitrations or various other proceedings that arise from the normal course of our business. We cannot predict the timing or outcome of these other proceedings. Currently, neither we nor our subsidiaries are involved in any other proceedings that we expect to have a material effect on our business, financial condition, results of operations and cash flows.

NOTE 16. OTHER COMPREHENSIVE LOSS

There were no significant tax effects allocated to any component of Other comprehensive income (loss) for the years ended December 31, 2019, 2018 and 2017. The 2017 reclassification adjustment out of Other comprehensive income (loss) included in the Consolidated Statements of Comprehensive Loss, which relates to foreign currency translation, was recorded upon the liquidations of Litha and Somar in 2017. Substantially all of the Company's Accumulated other comprehensive loss balances at December 31, 2019 and December 31, 2018 consist of Foreign currency translation loss.

NOTE 17. SHAREHOLDERS' DEFICIT

The Company has issued 4,000,000 euro deferred shares of $0.01 each at par. The euro deferred shares are held by nominees in order to satisfy an Irish legislative requirement to maintain a minimum level of issued share capital denominated in euro and to have at least seven registered shareholders. The euro deferred shares carry no voting rights and are not entitled to receive any dividend or distribution.

Effects of Changes in Accounting Principles

The Company early adopted ASU No. 2016-16, *Intra-Entity Transfers of Assets Other Than Inventory* (ASU 2016-16) on January 1, 2017, resulting in, among other effects, the elimination of previously recorded deferred charges that were established in 2016. Specifically, effective January 1, 2017, the Company eliminated $372.8 million of deferred charges and recorded a corresponding increase to its Accumulated deficit.

As further discussed in Note 2. Summary of Significant Accounting Policies, the Company adopted ASC 606 on January 1, 2018. This adoption resulted in a net decrease of $3.1 million to the Company’s Accumulated deficit at January 1, 2018.

As further discussed in Note 2. Summary of Significant Accounting Policies, the Company adopted ASC 842 on January 1, 2019. This adoption resulted in a net increase of $4.6 million to the Company’s Accumulated deficit at January 1, 2019.

Share Repurchase Program

Pursuant to Article 11 of the Company’s Articles of Association, the Company has broad shareholder authority to conduct ordinary share repurchases by way of redemptions. The Company’s authority to repurchase ordinary shares is subject to legal limitations and the existence of sufficient distributable reserves. For example, the Companies Act requires Irish companies to have distributable reserves equal to or greater than the amount of any proposed ordinary share repurchase amount. Unless we are able to generate sufficient distributable reserves or create distributable reserves by reducing our share premium account, we will not be able to repurchase our ordinary shares. As permitted by Irish Law and the Company’s Articles of Association, any ordinary shares redeemed shall be cancelled upon redemption.

The Board has approved the 2015 Share Buyback Program that authorizes the Company to redeem, in the aggregate, $2.5 billion of its outstanding ordinary shares. To date, the Company has redeemed and cancelled approximately 4.4 million of its ordinary shares under the 2015 Share Buyback Program for $250.0 million, not including related fees.

NOTE 18. SHARE-BASED COMPENSATION

Stock Incentive Plans

In June 2015, the Company’s shareholders approved the 2015 Stock Incentive Plan (the 2015 Plan), which has subsequently been amended, as approved by the Company’s shareholders, on multiple occasions, including in 2017, 2018 and 2019. Under the 2015 Plan, stock options (including incentive stock options), stock appreciation rights, restricted stock awards, performance awards and other share- or cash-based awards may be issued at the discretion of the Compensation Committee of the Board from time to time. No ordinary shares are to be granted under previously approved plans, including the Company’s 2000, 2004, 2007, 2010 and Assumed Stock Incentive Plans. All awards previously granted and outstanding under these prior plans remain subject to the terms of those prior plans.

During the third quarter of 2017, the Company issued approximately 1.0 million stock options and 0.1 million restricted stock units that were initially subject to shareholder approval and were subsequently approved by shareholders on June 7, 2018 at the Company’s Annual General Meeting of Shareholders. The options have an exercise price equal to the closing share price on their issuance date in August 2017. For accounting and disclosure purposes, these stock options and restricted stock units were considered to have been granted in 2018 upon approval by shareholders.

As further described below, certain of the Company’s outstanding Performance Share Units (PSUs) are measured against targets covering three independent successive one-year performance periods, which are generally established for each performance period during the first quarter of that calendar year. The determination of the grant-date(s) underlying such PSUs depends in part on the date(s) on which each of the performance targets with respect to those PSUs are approved. Therefore, for certain PSUs, a single unit may give rise to multiple grant dates depending, in part, on the dates on which the respective performance targets are approved.

Beginning in 2017, long-term cash incentive (LTCI) awards were provided to certain employees. LTCI awards were designed to vest ratably, in equal amounts, over a three-year service period. Upon vesting, each vested LTCI unit would be settled in cash in an amount equal to the price of Endo's ordinary shares on the vest date. As of September 30, 2018, approximately 3.0 million unvested LTCI awards were outstanding for approximately 570 employees. The outstanding awards had a weighted average remaining requisite service period of 2.3 years. A corresponding liability of $14.9 million was recorded as of September 30, 2018 in Accounts payable and accrued expenses and Other liabilities in the Company's Consolidated Balance Sheets. On October 1, 2018, the Compensation Committee of the Board authorized the Company to settle each of the outstanding unvested LTCI awards in shares, rather than cash, upon vesting in accordance with the original vesting terms of the awards. With the authorization of the Compensation Committee, management's intent to settle the awards in shares rather than cash is a modification that changes the awards' classification from liability to equity, effective October 1, 2018. The accounting for the modification occurred in the fourth quarter of 2018. Prior to this modification, LTCI awards were excluded from amounts in this Note 18. Share-based Compensation. Subsequent to this modification, LTCI awards are generally treated the same as restricted stock units (RSUs), including for accounting, financial statement classification and disclosure purposes. However, adjustments to pre-modification amounts of LTCI expense that are recorded in the Consolidated Statements of Operations subsequent to this modification, including adjustments related to actual or estimated forfeitures, are excluded from the determination of share-based compensation expense.

At December 31, 2019, approximately 7.7 million ordinary shares were reserved for future grants under the 2015 Plan. As of December 31, 2019, stock options, restricted stock awards, PSUs, RSUs and LTCI awards have been granted under the stock incentive plans.

Generally, the grant-date fair value of each award is recognized as expense over the requisite service period. However, expense recognition differs in the case of certain performance share units where the ultimate payout is performance-based. For these awards, at each reporting period, the Company estimates the ultimate payout and adjusts the cumulative expense based on its estimate and the percent of the requisite service period that has elapsed.

Presented below are the components of total share-based compensation as recorded in our Consolidated Statements of Operations for the years ended December 31, 2019, 2018 and 2017 (in thousands).

	2019	2018	2017
Selling, general and administrative expenses	$ 44,159	$ 44,454	$ 38,292
Research and development expenses	4,501	2,251	4,197
Cost of revenues	10,482	7,366	7,660
Total share-based compensation expense	$ 59,142	$ 54,071	$ 50,149

As of December 31, 2019, the total remaining unrecognized compensation cost related to all non-vested share-based compensation awards for which a grant date has been established as of December 31, 2019 amounted to $48.3 million.

Stock Options

From time to time, the Company grants stock options to its employees as part of their annual share compensation awards and, in certain circumstances, on an ad hoc basis or upon their commencement of service with the Company.

Employee stock options generally vest ratably, in equal amounts, over a three or four-year service period and generally expire ten years from the grant date. The fair value of option grants is estimated at the date of grant using the Black-Scholes option-pricing model. This model utilizes assumptions related to volatility, the risk-free interest rate, the dividend yield (which is assumed to be zero as the Company has not paid cash dividends to date and does not currently expect to pay cash dividends) and the expected term of the option. Expected volatilities utilized in the model are based mainly on the historical volatility of the Company's share price over a period commensurate with the expected life of the share option as well as other factors. The risk-free interest rate is derived from the U.S. Treasury yield curve in effect at the time of grant. We estimate the expected term of options granted based on our historical experience with our employees' exercise of stock options and other factors.

A summary of the activity for each of the years ended December 31, 2019, 2018 and 2017 is presented below:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (1)
Outstanding as of January 1, 2017	4,325,209	$ 41.70		
Granted	5,288,675	$ 10.42		
Forfeited	(623,987)	$ 28.32		
Expired	(741,767)	$ 40.29		
Outstanding as of December 31, 2017	8,248,130	$ 22.79		
Granted	971,590	$ 7.55		
Exercised	(94,392)	$ 9.89		
Forfeited	(605,737)	$ 19.01		
Expired	(446,873)	$ 36.80		
Outstanding as of December 31, 2018	8,072,718	$ 20.62		
Exercised	(557)	$ 7.55		
Forfeited	(125,739)	$ 14.38		
Expired	(665,883)	$ 40.37		
Outstanding as of December 31, 2019	7,280,539	$ 18.93	6.30	$ —
Vested and expected to vest as of December 31, 2019	7,212,334	$ 19.00	6.29	$ —
Exercisable as of December 31, 2019	5,003,163	$ 21.60	6.07	$ —

(1) The intrinsic value of a stock option is the excess, if any, of the closing price of the Company's ordinary shares on the last trading day of the fiscal year over the exercise price. The aggregate intrinsic values presented in the table above represent sum of the intrinsic values of all corresponding stock options that are "in-the-money," if any.

The range of exercise prices for the above stock options outstanding at December 31, 2019 is from $7.55 to $86.54.

The total intrinsic values of options exercised during the years ended December 31, 2019 and 2018 were less than $0.1 million and $0.6 million, respectively. No tax benefits from stock option exercises were realized during the years ended December 31, 2019, 2018 and 2017. The weighted average grant-date fair values of the stock options granted during the years ended December 31, 2018 and 2017 were $3.97 and $4.73 per option, respectively, determined using the following weighted average assumptions:

	2018	2017
Expected term (years)	4.0	4.0
Risk-free interest rate	2.7%	1.7%
Dividend yield	—	—
Expected volatility	63%	58%

As of December 31, 2019, the weighted average remaining requisite service period of non-vested stock options was 0.9 years and the total remaining unrecognized compensation cost related to non-vested stock options amounted to $3.1 million.

Restricted Stock Units and Performance Share Units

From time to time, the Company grants RSUs and PSUs to its employees as part of their annual share compensation awards and, in certain circumstances, on an ad hoc basis or upon their commencement of service with the Company.

RSUs vest ratably, in equal amounts, over a three or four-year service period. PSUs vest in full after a three-year service period and are conditional upon the achievement of performance and/or market conditions established by the Compensation Committee of the Board.

PSUs awarded in 2019, 2018 and 2017 were based upon two discrete measures: relative total shareholder return (TSR) and an adjusted free cash flow performance metric (FCF), each accounting for 50% of the PSU awards upon issuance. TSR performance is measured against the three-year TSR of a custom index of companies. For PSUs awarded in 2019, FCF performance is measured against a target covering a single three-year performance period, which is generally established at the grant date. For PSUs awarded in 2018 and 2017, FCF performance is measured against targets covering three independent successive one-year performance periods, which are generally established for each performance period during the first quarter of that calendar year. Upon the completion of the three-year performance period, the PSUs vest and the actual number of shares awarded is adjusted to between zero and 200% of the target award amount based upon the performance criteria described above. In addition to meeting the performance conditions, grant recipients are also generally subject to being employed by the Company until the conclusion of the three-year vesting period in order to receive the awards. TSR is considered a market condition under applicable authoritative guidance, while FCF is considered performance condition.

RSUs are valued based on the closing price of Endo's ordinary shares on the date of grant. PSUs with TSR conditions are valued using a Monte-Carlo variant valuation model, while those with adjusted free cash flow conditions are valued taking into consideration the probability of achieving the specified performance goal. The Monte-Carlo variant valuation model considered a variety of potential future share prices for Endo as well as our peer companies in a selected market index.

A summary of our non-vested RSUs and PSUs for the years ended December 31, 2019, 2018 and 2017 is presented below:

	Number of Shares	Aggregate Intrinsic Value (1)
Non-vested as of January 1, 2017	1,685,060	
Granted	4,168,477	
Forfeited	(552,981)	
Vested	(575,883)	
Non-vested as of December 31, 2017	4,724,673	
Granted	5,609,561	
LTCI modification (2)	2,989,965	
Forfeited	(753,653)	
Vested	(1,551,074)	
Non-vested as of December 31, 2018	11,019,472	
Granted	6,687,695	
Forfeited	(918,425)	
Vested	(3,872,453)	
Non-vested as of December 31, 2019	12,916,289	$ 60,577,395
Vested and expected to vest as of December 31, 2019	12,098,438	$ 56,741,674

(1) The aggregate intrinsic values of RSUs and PSUs presented in the table above are calculated by multiplying the closing price of the Company's ordinary shares on the last trading day of the fiscal year by the corresponding number of RSUs and PSUs.

(2) As a result of the October 1, 2018 modification to the Company's LTCI awards described above, modified LTCI awards are treated as RSUs for disclosure purposes; thus, the table above reflects an increase to the non-vested number of shares on the modification date.

As of December 31, 2019, the weighted average remaining requisite service period of the units presented in the table above was 1.6 years and the corresponding total remaining unrecognized compensation cost amounted to $39.4 million in the case of RSUs and LTCI awards and $5.8 million in the case of PSUs. The weighted average grant-date fair value of the units granted during the years ended December 31, 2019, 2018 and 2017 was $7.72, $6.88 and $11.42 per unit, respectively.

NOTE 19. OTHER EXPENSE (INCOME), NET

The components of Other expense (income), net for the years ended December 31, 2019, 2018 and 2017 are as follows (in thousands):

	2019	2018	2017
Net gain on sale of business and other assets (1)	$ (6,367)	$ (45,155)	$ (13,809)
Foreign currency loss (gain), net (2)	5,247	(3,762)	(2,801)
Net loss from our investments in the equity of other companies (3)	2,346	3,444	898
Other miscellaneous, net (4)	15,451	(6,480)	(1,311)
Other expense (income), net	$ 16,677	$ (51,953)	$ (17,023)

(1) Amounts in 2018 include a $12.5 million gain on the sale of the Company's Huntsville, Alabama facilities, as further discussed in Note 4. Restructuring. Amounts in 2017 include a $10.1 million gain resulting from the sale of Litha, as further described in Note 3. Discontinued Operations and Divestitures. The remaining amounts primarily relate to the sales of various ANDAs.
(2) Amounts relate to the remeasurement of the Company's foreign currency denominated assets and liabilities.
(3) Amounts relate to the income statement impacts of our investments in the equity of other companies, including investments accounted for under the equity method.
(4) Amounts in 2019 primarily relate to $17.5 million of contract termination costs incurred as a result of certain product discontinuation activities in our International Pharmaceuticals segment.

NOTE 20. INCOME TAXES

Tax Reform

The TCJA, which was signed into law on December 22, 2017, has resulted in significant changes to the U.S. corporate income tax system, including the reduction of the U.S. statutory federal corporate income tax rate from 35% to 21% effective January 1, 2018. The TCJA also contains a broad range of domestic and international provisions, many of which differ significantly from those contained in previous U.S. tax law. Although the rate of U.S. federal income tax was reduced prospectively, changes in tax rates and laws are accounted for in the period of enactment. Therefore, during the year ended December 31, 2017, we recorded a benefit of $36.2 million as our provisional estimate of the impact of the TCJA in accordance with Staff Accounting Bulletin 118. This benefit, which is primarily related to remeasurement of deferred tax liabilities related to tax deductible goodwill, has been recorded in our Consolidated Statements of Operations in the Income tax expense (benefit) line. The Company has completed its accounting for the tax effects of the TCJA in accordance with Staff Accounting Bulletin 118. There were no significant subsequent adjustments to the provisional amounts recorded.

Loss from continuing operations before income tax

Our operations are conducted through our various subsidiaries in numerous jurisdictions throughout the world. We have provided for income taxes based upon the tax laws and rates in the jurisdictions in which our operations are conducted.

The components of our Loss from continuing operations before income tax by geography for the years ended December 31, 2019, 2018 and 2017 are as follows (in thousands):

	2019	2018	2017
U.S.	$ (688,224)	$ (1,342,860)	$ (1,866,222)
International	343,320	404,028	383,218
Total (loss) income from continuing operations before income tax	$ (344,904)	$ (938,832)	$ (1,483,004)

Income tax from continuing operations consists of the following for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Current:			
U.S. Federal	$ 15,317	$ 6,236	$ (86,478)
U.S. State	(3,002)	2,864	(6,462)
International	8,926	8,278	(1,224)
Total current income tax	$ 21,241	$ 17,378	$ (94,164)
Deferred:			
U.S. Federal	$ (515)	$ 10,084	$ (124,682)
U.S. State	(482)	(778)	(3,225)
International	(4,564)	(3,749)	(28,222)
Total deferred income tax	$ (5,561)	$ 5,557	$ (156,129)
Total income tax	$ 15,680	$ 22,935	$ (250,293)

Tax Rate

A reconciliation of income tax from continuing operations at the U.S. federal statutory income tax rate to the total income tax provision from continuing operations for the years ended December 31, 2019, 2018 and 2017 is as follows (in thousands):

	2019	2018	2017
Notional U.S. federal income tax provision at the statutory rate	$ (72,430)	$ (197,155)	$ (519,051)
State income tax, net of federal benefit	(4,455)	494	(11,473)
U.S. tax reform impact	—	5,664	(36,216)
Uncertain tax positions	43,273	46,317	58,120
Residual tax on non-U.S. net earnings	(67,987)	(638,724)	(1,350,811)
Non-deductible goodwill impairment	27,493	109,189	60,808
Change in valuation allowance	30,123	748,562	1,644,879
Intra-entity transfers of assets	—	(63,335)	(53,509)
International Pharmaceuticals segment divestitures	—	—	(56,092)
Base erosion minimum tax	13,662	—	—
Non-deductible expenses	21,299	3,446	3,957
Executive compensation limitation	4,547	5,955	2,178
Other	20,155	2,522	6,917
Income tax	$ 15,680	$ 22,935	$ (250,293)

The income tax expense in 2019 primarily related to accrued interest on uncertain tax positions. The income tax expense in 2018 primarily related to the establishment of a valuation allowance against certain U.S. deferred tax assets. The income tax benefit in 2017 primarily related to pre-tax losses incurred by certain U.S. subsidiaries.

Deferred Tax Assets and Liabilities

Deferred income taxes result from temporary differences between the amount of assets and liabilities recognized for financial reporting and tax purposes. The significant components of the net deferred income tax liability shown on the balance sheets as of December 31, 2019 and 2018 are as follows (in thousands):

	December 31, 2019	December 31, 2018
Deferred tax assets:		
Accrued expenses and customer allowances	$ 112,489	$ 185,910
Deferred interest expense	317,997	240,736
Fixed assets and intangible assets	598,730	604,385
Loss on capital assets	61,971	62,033
Net operating loss carryforward	9,743,763	8,751,544
Other	89,501	65,266
Research and development and other tax credit carryforwards	16,620	9,551
Total gross deferred income tax assets	$ 10,941,071	$ 9,919,425
Deferred tax liabilities:		
Other	$ (10,086)	$ (1,965)
Outside basis difference	—	(73,652)
Intercompany notes	(1,131,537)	—
Total gross deferred income tax liabilities	$ (1,141,623)	$ (75,617)
Valuation allowance	(9,828,959)	(9,877,617)
Net deferred income tax liability	$ (29,511)	$ (33,809)

At December 31, 2019, the Company had the following significant deferred tax assets for tax credits, net operating and capital loss carryforwards, net of unrecognized tax benefits (in thousands):

Jurisdiction	Amount	Begin to Expire
Ireland	$ 16,862	Indefinite
Luxembourg	$ 9,336,611	2034
U.S.:		
Federal-ordinary losses	$ 200,671	2021
Federal-capital losses	$ 34,740	2020
Federal-tax credits	$ 7,305	2026
State-ordinary losses	$ 186,211	2020
State-capital losses	$ 26,459	2026
State-tax credits	$ 6,643	2020

A valuation allowance is required when it is more likely than not that all or a portion of a deferred tax asset will not be realized. The Company assesses the available positive and negative evidence to estimate whether the existing deferred tax assets will be realized.

The Company has recorded a valuation allowance against certain jurisdictional net operating loss carryforwards and other tax attributes. As of December 31, 2019 and 2018, the total valuation allowance was $9,829.0 million and $9,877.6 million, respectively. During the year ended December 31, 2019, the Company decreased its valuation allowance by $48.7 million, which was primarily driven by statutory rate changes in Luxembourg. During the year ended December 31, 2018, the Company increased its valuation allowance by $1,814.6 million, which was primarily driven by losses within jurisdictions unable to support recognition of a deferred tax asset, of which the largest jurisdiction was Luxembourg, where the Company had significant interest expense and losses on its investments in the equity of consolidated subsidiaries.

At December 31, 2019, the Company had the following significant valuation allowances (in thousands):

Jurisdiction	December 31, 2019
Ireland	$ 189,581
Luxembourg	$ 8,205,074
U.S.	$ 1,430,762

We have provided income taxes for earnings that are currently distributed as well as the taxes associated with certain earnings that are expected to be distributed in the future. No additional provision has been made for Irish and non-Irish income taxes on the undistributed earnings of subsidiaries or for unrecognized deferred tax liabilities for temporary differences related to basis differences in investments in subsidiaries as such earnings are expected to be indefinitely reinvested. As of December 31, 2019, certain subsidiaries had approximately $1,092.0 million of cumulative undistributed earnings that have been permanently reinvested because our plans do not demonstrate a need to repatriate such earnings. A liability could arise if our intention to indefinitely reinvest such earnings were to change and amounts are distributed by such subsidiaries or if such subsidiaries are ultimately disposed. It is not practicable to estimate the additional income taxes related to indefinitely reinvested earnings or the basis differences related to investments in subsidiaries.

Uncertain Tax Positions

The Company and its subsidiaries are subject to income taxes in the U.S., various states and numerous foreign jurisdictions with varying statutes as to which tax years are subject to examination by the tax authorities. The Company has taken positions on its tax returns that may be challenged by various tax authorities. The Company believes it has appropriately established reserves for tax-related uncertainties. The Company endeavors to resolve matters with a tax authority at the examination level and could reach agreement with a tax authority at any time. The accruals for tax-related uncertainties are based on the Company's best estimate of the potential tax exposures. When particular matters arise, a number of years may elapse before such matters are audited and finally resolved, and the final outcome with a tax authority may result in a tax liability that is more or less than that reflected in our financial statements. Favorable resolution of such matters could be recognized as a reduction of the Company's effective tax rate in the year of resolution, while a resolution that is not favorable could increase the effective tax rate and may require the use of cash, including in the year of resolution. Uncertain tax positions are reviewed quarterly and adjusted as necessary when events occur that affect potential tax liabilities, such as lapsing of applicable statutes of limitations, proposed assessments by tax authorities, identification of new issues and issuance of new legislation, regulations or case law.

As of December 31, 2019, the Company had total unrecognized income tax benefits (UTBs) of $530.2 million. If recognized in future years, $320.3 million of such amounts would impact the income tax provision and effective tax rate. As of December 31, 2018, the Company had total UTBs of $479.4 million. If recognized in future years, $304.3 million of such amounts would have impacted the income tax provision and effective tax rate. The following table summarizes the activity related to UTBs during the years ended December 31, 2019, 2018 and 2017 (in thousands):

	Unrecognized Tax Benefit Federal, State, and Foreign Tax
UTB Balance at January 1, 2017	$ 424,601
Gross additions for current year positions	44,293
Gross reductions for prior period positions	(64,887)
Gross additions for prior period positions	22,765
Decrease due to lapse of statute of limitations	(13,151)
Currency translation adjustment	2,330
UTB Balance at December 31, 2017	$ 415,951
Gross additions for current year positions	36,088
Gross reductions for prior period positions	(3,570)
Gross additions for prior period positions	7,950
Decrease due to lapse of statute of limitations	(2,129)
Currency translation adjustment	(2,600)
UTB Balance at December 31, 2018	$ 451,690
Gross additions for current year positions	35,766
Gross reductions for prior period positions	(2,377)
Gross additions for prior period positions	880
Decrease due to lapse of statute of limitations	(1,006)
Currency translation adjustment	1,528
UTB Balance at December 31, 2019	$ 486,481
Accrued interest and penalties	43,710
Total UTB balance including accrued interest and penalties	$ 530,191

The Company records accrued interest as well as penalties related to uncertain tax positions as part of the provision for income taxes. As of December 31, 2019 and 2018, $43.7 million and $27.7 million, respectively, of corresponding accrued interest and penalties is included in the Consolidated Balance Sheets, all of which is recorded in income taxes.

During the years ended December 31, 2019, 2018, and 2017, we recognized expense of $13.8 million, $8.6 million and $1.4 million, respectively. The expense is primarily related to interest. The current portion of our UTB liability of $6.8 million is included in our Consolidated Balance Sheet as Accounts payable and accrued expenses. The noncurrent portion of our UTB liability is included in our Consolidated Balance Sheet as Other liabilities or, if and to the extent appropriate, as a reduction to Deferred tax assets.

Our subsidiaries file income tax returns in the countries in which they have operations. Generally, these countries have statutes of limitations ranging from 3 to 5 years. Certain subsidiary tax returns are currently under examination by taxing authorities, including U.S. tax returns for the 2011 through 2015 tax years by the IRS.

It is expected that the amount of UTBs will change during the next twelve months; however, the Company does not currently anticipate any adjustments that would lead to a material impact on our results of operations or our financial position.

As of December 31, 2019, we may be subject to examination in the following major tax jurisdictions:

Jurisdiction	Open Years
Canada	2013 through 2019
India	2012 through 2019
Ireland	2014 through 2019
Luxembourg	2014 through 2019
U.S. - federal, state and local	2006 through 2019

NOTE 21. NET LOSS PER SHARE

The following is a reconciliation of the numerator and denominator of basic and diluted net loss per share for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Numerator:			
Loss from continuing operations	$ (360,584)	$ (961,767)	$ (1,232,711)
Loss from discontinued operations, net of tax	(62,052)	(69,702)	(802,722)
Net loss	$ (422,636)	$ (1,031,469)	$ (2,035,433)
Denominator:			
For basic per share data—weighted average shares	226,050	223,960	223,198
Dilutive effect of ordinary share equivalents	—	—	—
For diluted per share data—weighted average shares	226,050	223,960	223,198

Basic net loss per share amounts are computed based on the weighted average number of ordinary shares outstanding during the period. Diluted net loss per share amounts are computed based on the weighted average number of ordinary shares outstanding and, if there is net income from continuing operations during the period, the dilutive effect of ordinary share equivalents outstanding during the period.

The dilutive effect of ordinary share equivalents is measured using the treasury stock method. Stock options and awards that have been issued but for which a grant date has not yet been established are not considered in the calculation of basic or diluted weighted average shares.

All potentially dilutive items were excluded from the diluted share calculation for the years ended December 31, 2019, 2018 and 2017 because their effect would have been anti-dilutive, as the Company was in a loss position.

NOTE 22. SAVINGS AND INVESTMENT PLAN AND DEFERRED COMPENSATION PLANS

Savings and Investment Plan

The Company maintains a defined contribution Savings and Investment Plan (the Endo 401(k) Plan) covering all U.S.-based eligible employees. The Company matches 100% of the first 3% of eligible cash compensation that a participant contributes to the Endo 401(k) Plan plus 50% of the next 2% for a total of up to 4%, subject to statutory limitations. Participants are immediately vested with respect to their own contributions and the Company's matching contributions, except that, for employees hired after 2017, the Company's matching contributions will vest ratably over a two-year period.

Costs incurred for contributions made by the Company to the Endo 401(k) Plan amounted to $7.4 million, $6.4 million and $9.4 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Directors Stock Election Plan

The Company maintains a directors stock election plan. The purpose of this plan is to provide non-employee directors the opportunity to have their cash retainer fees, or a portion thereof, delivered in the form of Endo ordinary shares. The amount of shares will be determined by dividing the portion of cash fees elected to be received as shares by the closing price of the shares on the day the payment would have otherwise been paid in cash.

NOTE 23. QUARTERLY FINANCIAL DATA (UNAUDITED)

The following table presents select unaudited financial data for each of the three-month periods ending March 31, 2019, June 30, 2019, September 30, 2019 and December 31, 2019, as well as the comparable 2018 periods (in thousands, except per share data):

	Quarter Ended			
	March 31,	June 30,	September 30,	December 31,
2019 (1)				
Total revenues	$ 720,411	$ 699,727	$ 729,426	$ 764,800
Gross profit	$ 328,502	$ 311,519	$ 340,261	$ 364,744
Loss from continuing operations	$ (12,612)	$ (98,052)	$ (41,431)	$ (208,489)
Discontinued operations, net of tax	$ (5,961)	$ (7,953)	$ (37,984)	$ (10,154)
Net loss	$ (18,573)	$ (106,005)	$ (79,415)	$ (218,643)
Net loss per share—Basic:				
Continuing operations	$ (0.06)	$ (0.43)	$ (0.18)	$ (0.92)
Discontinued operations	(0.02)	(0.04)	(0.17)	(0.04)
Basic	$ (0.08)	$ (0.47)	$ (0.35)	$ (0.96)
Net loss per share—Diluted:				
Continuing operations	$ (0.06)	$ (0.43)	$ (0.18)	$ (0.92)
Discontinued operations	(0.02)	(0.04)	(0.17)	(0.04)
Diluted	$ (0.08)	$ (0.47)	$ (0.35)	$ (0.96)
Weighted average shares—Basic	224,594	226,221	226,598	226,787
Weighted average shares—Diluted	224,594	226,221	226,598	226,787
2018 (2)				
Total revenues	$ 700,527	$ 714,696	$ 745,466	$ 786,389
Gross profit	$ 296,929	$ 332,791	$ 332,501	$ 353,175
Loss from continuing operations	$ (497,738)	$ (52,479)	$ (146,071)	$ (265,479)
Discontinued operations, net of tax	$ (7,751)	$ (8,388)	$ (27,134)	$ (26,429)
Net loss	$ (505,489)	$ (60,867)	$ (173,205)	$ (291,908)
Net loss per share—Basic:				
Continuing operations	$ (2.23)	$ (0.23)	$ (0.65)	$ (1.18)
Discontinued operations	(0.03)	(0.04)	(0.12)	(0.12)
Basic	$ (2.26)	$ (0.27)	$ (0.77)	$ (1.30)
Net loss per share—Diluted:				
Continuing operations	$ (2.23)	$ (0.23)	$ (0.65)	$ (1.18)
Discontinued operations	(0.03)	(0.04)	(0.12)	(0.12)
Diluted	$ (2.26)	$ (0.27)	$ (0.77)	$ (1.30)
Weighted average shares—Basic	223,521	223,834	224,132	224,353
Weighted average shares—Diluted	223,521	223,834	224,132	224,353

(1) Loss from continuing operations for the year ended December 31, 2019 was impacted by (i) acquisition-related and integration items, net of $(37.5) million, $(5.5) million, $16.0 million and $(19.1) million during the first, second, third and fourth quarters, respectively, which related primarily to changes in the fair value of contingent consideration, (ii) asset impairment charges of $165.4 million, $88.4 million, $4.8 million and $267.4 million during the first, second, third and fourth quarters, respectively, (iii) certain retention and separation benefits and other cost reduction initiatives incurred in connection with continued efforts to enhance the Company's operations of $2.0 million, $2.1 million, $11.0 million and $19.4 million during the first, second, third and fourth quarters, respectively, (iv) amounts related to litigation-related and other contingent matters totaling $10.3 million, $(14.4) million and $15.3 million during the second, third and fourth quarters, respectively, and (v) amounts related to sales of businesses and other assets of $1.3 million, $(2.5) million, $(1.9) million and $(3.3) million during the first, second, third and fourth quarters, respectively.

(2) Loss from continuing operations for the year ended December 31, 2018 was impacted by (i) acquisition-related and integration items, net of $6.8 million, $5.2 million, $1.3 million and $8.6 million during the first, second, third and fourth quarters, respectively, which related primarily to changes in the fair value of contingent consideration, (ii) asset impairment charges of $448.4 million, $22.8 million, $142.2 million and $303.5 million during the first, second, third and fourth quarters, respectively, (iii) certain retention and separation benefits and other cost reduction initiatives incurred in connection with continued efforts to enhance the Company's operations of $49.0 million, $29.2 million, $4.0 million and $4.2 million during the first, second, third and fourth quarters, respectively, (iv) amounts related to litigation-related and other contingent matters totaling $(2.5) million, $19.6 million, $(1.8) million and $(1.6) million during the first, second, third and fourth quarters, respectively, and (v) amounts related to sales of businesses and other assets of $(2.4) million, $(24.6) million, $(2.9) million and $(15.3) million during the first, second, third and fourth quarters, respectively.

The operating results of the Astora business are reported as Discontinued operations, net of tax in the Consolidated Statements of Operations for all periods presented. For additional information, see Note 3. Discontinued Operations and Divestitures. Quarterly and year-to-date computations of per share amounts are made independently; therefore, the sum of the per share amounts for the quarters may not equal the per share amounts for the year.

Exhibit 4.1

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of the date of our annual report on Form 10-K of which this exhibit is a part, we have the following class of securities registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"): ordinary shares of Endo International plc (the "Company"), par value $0.0001 per share (the "Ordinary Shares"), which is the only security of the Company registered under the Exchange Act.

Except as otherwise indicated or the context otherwise requires, the terms "Company," "we," "us" and "our" mean Endo International plc and all entities included in its consolidated financial statements.

Set forth below is a summary description of the material terms of our Ordinary Shares, which does not purport to be complete. For more information, please see our certificate of incorporation and memorandum and articles of association, each of which are incorporated by reference as an exhibit to our annual report on Form 10-K.

General

The Company is authorized to issue 1,000,000,000 Ordinary Shares, par value $0.0001 per share, of which 226,833,617 shares were issued and outstanding as of February 18, 2020. There are no sinking fund rights with respect to our Ordinary Shares.

We may issue shares subject to the maximum authorized share capital contained in our memorandum and articles of association. The authorized share capital may be increased or reduced by a resolution approved by a simple majority of the votes cast at a general meeting of our shareholders at which a quorum is present (referred to under Irish law as an "ordinary resolution"). The shares comprising our authorized share capital may be divided into shares of such nominal value as the resolution shall prescribe. As a matter of Irish company law, the directors of a company may issue new Ordinary Shares without shareholder approval once authorized to do so by the memorandum and articles of association or by an ordinary resolution adopted by the shareholders at a general meeting. The authorization must include the maximum amount that may be allotted and may be granted for a maximum period of five years, at which point it must be renewed by the shareholders by an ordinary resolution. Our shareholders adopted an ordinary resolution at the 2019 annual general meeting of the Company on June 11, 2019 authorizing our directors to issue up to an aggregate nominal amount of $7,464 (74,639,777 Ordinary Shares) (being equivalent to approximately 33% of the aggregate nominal value of the issued ordinary share capital of the Company as of April 12, 2019), for a period of 18 months from June 11, 2019.

The rights and restrictions to which our Ordinary Shares are subject are prescribed in our articles of association.

We may, by ordinary resolution and without obtaining any vote or consent of the holders of any class or series of shares, unless expressly provided by the terms of that class or series of shares, provide from time to time for the issuance of other classes or series of shares and to establish the

characteristics of each class or series, including the number of shares, designations, relative voting rights, dividend rights, liquidation and other rights, redemption, repurchase or exchange rights and any other preferences and relative, participating, optional or other rights and limitations not inconsistent with applicable law.

Irish law does not recognize fractional shares held of record. Accordingly, our articles of association do not provide for the issuance of fractional shares and our official Irish register will not reflect any fractional shares.

Whenever an issuance, alteration, reorganization, consolidation, division or subdivision of our share capital would result in any shareholder becoming entitled to fractions of a share, no such fractions shall be issued or delivered to any shareholder. All such fractions of a share will be aggregated into whole shares and sold in the open market at prevailing market prices and the aggregate cash proceeds from such sale (net of tax, commissions, costs and other expenses) shall be distributed on a pro rata basis, rounding down to the nearest cent, to each shareholder who would otherwise have been entitled to receive fractions of a share.

Ordinary Shares

Voting

Each of our shareholders is entitled to one vote for each Ordinary Share that he or she holds as of the record date for the meeting. Voting rights may be exercised by shareholders registered in our share register as of the record date for the meeting or by a duly appointed proxy, which proxy need not be a Company shareholder.

Irish law requires special resolutions of our shareholders at a general meeting to approve certain matters. A special resolution requires the approval of three-quarters of the votes of our shareholders cast at a general meeting at which a quorum is present. Ordinary resolutions, by contrast, require the approval of a simple majority of shareholders at a general meeting at which a quorum is present.

Examples of matters requiring special resolutions include:

- amending the objects or our memorandum of association;
- amending our articles of association;
- approving a change in our name;
- authorizing the entering into of a guarantee or provision of security in connection with a loan, quasi-loan or credit transaction to a director or connected person;
- opting out of pre-emption rights on the issuance of new shares;
- our re-registration from a public limited company to a private company;
- variation of class rights attaching to classes of shares (where our articles of association do not provide otherwise);
- purchase of our Ordinary Shares off market;
- reduction of issued share capital;
- resolving that we be wound up by the Irish courts;
- resolving in favor of a shareholders' voluntary winding-up;
- re-designation of shares into different share classes; and
- setting the re-issue price of treasury shares.

Variation of Rights Attaching to a Class or Series of Shares

Neither Irish company law nor any of our constitutional documents place limitations on the right of non-resident or foreign owners to vote or hold our Ordinary Shares.

Under our articles of association and the Irish Companies Act 2014 (the "Companies Act"), any variation of class rights attaching to our issued shares must be approved by a special resolution of the shareholders of the affected class or with the consent in writing of the holders of three-quarters of all the votes of that class of shares.

The provisions of our articles of association relating to general meetings apply to general meetings of the holders of any class of shares except that the necessary quorum is determined in reference to the shares of the holders of the class. Accordingly, for general meetings of holders of a particular class of shares, a quorum consists of one or more persons holding or representing by proxy at least one-half of the issued shares of the class.

Dividends

Our memorandum and articles of association authorize our board of directors to declare dividends without shareholder approval to the extent they appear justified by profits. Our board of directors may also recommend a dividend to be approved and declared by the shareholders at a general meeting. No dividend issued may exceed the amount recommended by our board of directors.

Dividends may be declared and paid in the form of cash or non-cash assets, including shares, and may be paid in dollars or any other currency. Our board of directors may deduct from any dividend payable to any shareholder any amounts payable by such shareholder to us in relation to our shares.

Under Irish law, dividends and distributions may only be made from distributable reserves. Distributable reserves generally means accumulated realized profits, so far as not previously utilized by distribution or capitalization, less accumulated, realized losses, so far as not previously written off in a reduction or reorganization of capital duly made. In addition, no distribution or dividend may be made unless our net assets are equal to, or in excess of, the aggregate of our called up share capital plus undistributable reserves and the distribution does not reduce our net assets below such aggregate. Undistributable reserves include the undenominated capital (effectively the share premium account and capital redemption reserve) and the amount by which our accumulated unrealized profits, so far as not previously utilized by any capitalization, exceed our accumulated unrealized losses, so far as not previously written off in a reduction or reorganization of capital.

The determination as to whether or not we have sufficient distributable reserves to fund a dividend must be made by reference to our "relevant financial statements." Our "relevant financial statements" will be either our last set of unconsolidated annual audited financial statements or other financial statements properly prepared in accordance with the Companies Act (not in accordance with U.S. GAAP), which give a "true and fair view" of our unconsolidated financial position and accord with accepted accounting practice. Our relevant financial statements must be filed in the Companies Registration Office (the official public registry for companies in Ireland).

Bonus Shares

Under our memorandum and articles of association, our board of directors may resolve to capitalize any amount credited to any reserve available for distribution or the share premium account or other of our undistributable reserves for issuance and distribution to shareholders as fully paid up bonus shares on the same basis of entitlement as would apply in respect of a dividend distribution.

Preemption Rights and Share Options

Under Irish law, certain statutory pre-emption rights apply automatically in favor of shareholders where shares are to be issued for cash. However, we initially opted out of these pre-emption rights on incorporation in our articles of association as permitted under Irish company law. As Irish law requires this opt-out to be renewed every five years by a special resolution of shareholders, our memorandum and articles of association provided that this opt-out must be so renewed. If the opt-out is not renewed, shares issued for cash must be offered to our existing shareholders on a pro rata basis to their existing shareholding before the shares can be issued to any new shareholders. The statutory pre-emption rights do not apply where shares are issued for non-cash consideration (such as in a share-for-share acquisition) and do not apply to the issue of non-equity shares (that is, shares that have the right to participate only up to a specified amount in any income or capital distribution) or where shares are issued pursuant to an employee option or similar equity plan. Our shareholders passed a special resolution at the 2019 annual general meeting of the Company on June 11, 2019 authorizing the directors of the Company to opt out of pre-emption rights with respect to equity securities with up to an aggregate nominal value of $2,262 (22,618,114 Ordinary Shares) (being equivalent to approximately 10% of the aggregate nominal value of the issued ordinary share capital of the Company as of April 12, 2019) for a period of 18 months from June 11, 2019 (provided that with respect to 11,309,057 of such shares (being equivalent to approximately 5% of the issued ordinary share capital as of April 12, 2019), such allotment is to be used for the purposes of an acquisition or a specified capital investment).

Our memorandum and articles of association provide that, subject to any shareholder approval requirement under any laws, regulations or the rules of any stock exchange to which we are subject, our board of directors is authorized, from time to time, in its discretion, to grant such persons, for such periods and upon such terms as our board of directors deems advisable, options to purchase such number of shares of any class or classes or of any series of any class as our board of directors may deem advisable and to cause warrants or other appropriate instruments evidencing such options to be issued. The Companies Act provides that directors may issue share warrants or options without shareholder approval once authorized to do so by the articles of association or an ordinary resolution of shareholders. We are subject to the rules of NASDAQ and the United States Internal Revenue Code of 1986 that require shareholder approval of certain equity plans and share issuances. Our board of directors may issue shares upon exercise of warrants or options without shareholder approval or authorization (up to the relevant authorized share capital limit).

Share Repurchases, Redemptions and Conversions

Our memorandum and articles of association provide that any Ordinary Share that we have agreed to acquire shall be deemed to be a redeemable share, unless our board of directors resolves otherwise. Accordingly, for Irish company law purposes, our repurchase of Ordinary

Shares will technically be effected as a redemption of those shares as described below under "—Repurchases and Redemptions by Endo." If our memorandum and articles of association did not contain such provision, all repurchases we undertake would be subject to many of the same rules that apply to purchases of our Ordinary Shares by our subsidiaries as described below under "—Purchases by Subsidiaries of Endo, " including the shareholder approval requirements described below and the requirement that any purchases on market be effected on a "recognized stock exchange," which, for purposes of the Companies Act, includes NASDAQ.

Repurchases and Redemptions by Endo

Under Irish law, a company may issue redeemable shares and redeem them out of distributable reserves or the proceeds of a new issue of shares for that purpose. We may only issue redeemable shares if the nominal value of our issued share capital that is not redeemable is not less than 10% of the nominal value of our total issued share capital. All redeemable shares must also be fully-paid and the terms of redemption of the shares must provide for payment on redemption. Redeemable shares may, upon redemption, be cancelled or held in treasury. Based on the provisions of our memorandum and articles of association described above, shareholder approval will not be required to redeem our Ordinary Shares.

We may also be given an additional general authority to purchase our own shares on market by way of ordinary resolution, which would take effect on the same terms and be subject to the same conditions as applicable to purchases by our subsidiaries as described below.

Repurchased and redeemed shares may be cancelled or held as treasury shares. The nominal value of treasury shares held by us at any time must not exceed 10% of the nominal value of our issued share capital. We may not exercise any voting rights in respect of any shares held as treasury shares. We may cancel or re-issue treasury shares subject to certain conditions.

Purchases by Subsidiaries of Endo

Under Irish law, an Irish or non-Irish subsidiary of the Company may purchase our shares either on market or off market. For one of our subsidiaries to make purchases on market of our Ordinary Shares, our shareholders must provide general authorization for such purchase by way of ordinary resolution. However, as long as this general authority has been granted, no specific shareholder authority for a particular on-market purchase by one of our subsidiaries of our Ordinary Shares is required. For an off-market purchase by one of our subsidiaries, the proposed purchase contract must be authorized by special resolution of our shareholders before the contract is entered into. The person whose shares are to be bought back cannot vote in favor of the special resolution and from the date of the notice of the meeting at which the resolution approving the contract is proposed, the purchase contract must be on display or must be available for inspection by our shareholders at our registered office.

The number of shares held by our subsidiaries at any time will count as treasury shares and will be included in any calculation of the permitted treasury share threshold of 10% of the nominal value of our issued share capital. While a subsidiary holds our shares, it cannot exercise any voting rights in respect of those shares. The acquisition of our Ordinary Shares by a subsidiary must be funded out of distributable reserves of the subsidiary.

Lien on Shares, Calls on Shares and Forfeiture of Shares

Our memorandum and articles of association provide that we have a first and paramount lien on every share that is not a fully paid up share for all amounts payable at a fixed time or called in respect of that share. Subject to the terms of their allotment, our board of directors may call for any unpaid amounts in respect of any shares to be paid, and if payment is not made, the shares may be forfeited. These provisions are standard inclusions in the memorandum and articles of association of an Irish public limited company such as the Company and are only applicable to our shares that have not been fully paid up.

Consolidation and Division; Subdivision

Under our articles of association, we may, by ordinary resolution, consolidate and divide all or any of our share capital into shares of larger nominal value than our existing shares or subdivide our shares into smaller amounts than is fixed by our memorandum of association.

Reduction of Share Capital

We may, by ordinary resolution, reduce our authorized share capital in any way. We also may, by special resolution and subject to confirmation by the Irish High Court, reduce or cancel our issued share capital in any manner permitted by the Companies Act.

Election of Directors

The Companies Act provides for a minimum of two directors on the board of an Irish public limited company. Our memorandum and articles of association provide that the number of directors shall not be less than five (5) nor more than twelve (12) with the exact number of directors being fixed from time to time by resolution of our board of directors.

At each annual general meeting, all of our directors shall retire from office and be re-eligible for re-election. Each director shall hold office until the next annual general meeting or until his or her earlier resignation or removal.

Directors are elected by ordinary resolution at a general meeting. Irish law requires majority voting for the election of directors, which could result in the number of directors falling below the prescribed minimum number of directors due to the failure of nominees to be elected.

Removal of Directors; Vacancies

Under the Companies Act and notwithstanding anything contained in our memorandum and articles of association or in any agreement between us and a director, our shareholders may, by an ordinary resolution, remove a director from office before the expiration of his or her term at a meeting held on no less than 28 days' notice and at which the director is entitled to be heard. The power of removal is without prejudice to any claim for damages for breach of contract (e.g., employment contract) that the director may have against us in respect of his or her removal. Our memorandum and articles of association provide that our board of directors may fill any vacancy occurring on our board of directors. If our board of directors fills a vacancy, the director's term expires at the next annual general meeting. A vacancy on our board of directors created by the removal of a director may be filled by our shareholders at the meeting at which such director is removed.

Annual General Meetings of Shareholders

We are required to hold an annual general meeting at intervals of no more than 15 months from the previous annual general meeting, provided that an annual general meeting is held in each calendar year following our first annual general meeting. Each general meeting will be held at such time and place as designated by our board of directors and as specified in the notice of meeting. Subject to section 176 of the Companies Act, all general meetings may be held outside of Ireland.

The only matters that must, as a matter of Irish law, be transacted at an annual general meeting are the consideration of the statutory financial statements, the report of the directors and the report of the auditors on those statements and that report, the review by the members of the Company's affairs, the appointment of new auditors and the fixing of the auditor's remuneration (or delegation of same).

If no resolution is made in respect of the reappointment of an existing auditor at an annual general meeting, the existing auditor will be deemed to have continued in office.

The provisions of our memorandum and articles of association relating to general meetings will apply to every such general meeting of the holders of any class of shares except that the necessary quorum shall be one person holding or representing by proxy at least one-half of the issued shares of such class.

Our memorandum and articles of association provide that a resolution may only be put to vote at a general meeting or of the holders of any class of shares if (i) it is specified in the notice of the meeting; (ii) it is proposed by or at the direction of the board of directors; (iii) it is proposed at the direction of a court of competent jurisdiction; (iv) it is proposed on the requisition in writing of the holder of shares as is prescribed by, and is made in accordance with, section 178(3) of the Companies Act; (v) the chairman of the meeting in his or her absolute discretion decides that the resolution may properly be regarded as within the scope of the meeting; or (vi) it is proposed in accordance with the procedures and requirements set out in our articles with respect to nominations of directors.

Extraordinary General Meetings of Shareholders

Extraordinary general meetings of the Company may be convened by (i) our board of directors; (ii) on requisition of our shareholders holding not less than 10% of our paid up share capital carrying voting rights; (iii) on requisition of our auditors; or (iv) in exceptional cases, by order of the Irish High Court. Extraordinary general meetings are generally held for the purpose of approving shareholder resolutions as may be required from time to time. At any extraordinary general meeting, only such business shall be conducted as is set forth in the notice thereof.

In the case of an extraordinary general meeting convened by our shareholders, the purpose of the meeting must be set out in the requisition notice. Upon receipt of any such valid requisition notice, our board of directors has 21 days to convene a meeting of our shareholders to vote on the matters set out in the requisition notice. This meeting must be held within two months of the receipt of the requisition notice. If our board of directors does not convene the meeting within such 21-day period, the requisitioning shareholders, or any of them representing more than one half of the total voting rights of all of them, may themselves convene a meeting, which meeting must be held within three months of our receipt of the requisition notice.

If our board of directors becomes aware that our net assets are not greater than half of the amount of our called-up share capital, it must convene an extraordinary general meeting of our shareholders not later than 28 days from the date that the directors learn of this fact to consider how to address the situation.

Record Date; Notice Provisions

Our memorandum and articles of association provide that our board of directors may fix in advance a record date (i) to determine the shareholders entitled to notice of or to vote at a meeting of the shareholders that is no more than 60 days and no less than 10 days before the date of the meeting and (ii) for the purpose of determining the shareholders entitled to receive payment of any dividend, or in order to make a determination of shareholders for any other proper purpose that is no more than 60 days prior to the date of payment of the dividend or the date of any other action to which the determination of shareholders is relevant. The record date may not precede the date upon which the resolution fixing the record date is adopted by our directors.

If the register of our shareholders is closed in connection with a meeting, it must be closed for at least five days preceding the meeting and the record date for determination of the shareholders entitled to receive notice of, and to vote at, that meeting will be the date of the closing of the register of our shareholders.

Notice of an annual or extraordinary general meeting must be given to all of our shareholders and to our auditors. Our memorandum and articles of association provide for a minimum notice period of 21 days for an annual general meeting, which is the minimum permitted under Irish law. In addition, under Irish law and our memorandum and articles of association, the minimum notice periods are 21 days' notice in writing for an extraordinary general meeting to approve a special resolution and 14 days' notice in writing for any other extraordinary general meeting.

Advance Notice of Director Nominations and Other Proposals

The Companies Act provides that shareholders holding not less than 10% of the total voting rights may call an extraordinary general meeting for the purpose of considering director nominations or other proposals, as described under "—Extraordinary General Meetings of Shareholders."

Our memorandum and articles of association provide that shareholder nominations of persons to be elected to our board of directors at an annual general meeting must be made following written notice to our secretary executed by a shareholder accompanied by certain background and other information specified in our memorandum and articles of association.

Such written notice and information must be received by our secretary not less than 60 days nor more than 90 days before the anniversary date of the prior year's annual general meeting, provided, however, that in the event that the annual general meeting is called for a date that is not within 30 days before or after such anniversary date, notice must be received not later than the close of business on the 10th day following the day on which notice of the annual general meeting is published.

Quorum for General Meetings

Our memorandum and articles of association provide that no business shall be transacted at any general meeting unless a quorum is present. One or more shareholders present in person or by proxy holding not less than a majority of our issued and outstanding shares entitled to vote at the meeting in question constitute a quorum.

Anti-Takeover Provisions

Irish Takeover Rules and Substantial Acquisition Rules

A transaction in which a third party seeks to acquire 30% or more of our voting rights will be governed by the Irish Takeover Panel Act 1997, which is referred to in this exhibit as the "Takeover Panel Act," and the Irish Takeover Rules made thereunder and will be regulated by the Irish Takeover Panel, which is referred to in this exhibit as the "Panel." The "General Principles" of the Irish Takeover Rules and certain important aspects of the Irish Takeover Rules are described below.

General Principles

The Takeover Rules are built on the following General Principles which will apply to any transaction regulated by the Panel:

- in the event of an offer, all holders of securities of the target company should be afforded equivalent treatment and, if a person acquires control of a company, the other holders of securities must be protected;
- the holders of securities in the target company must have sufficient time and information to enable them to reach a properly informed decision on the offer; where it advises the holders of securities, the board of the target company must give its views on the effects of implementation of the offer on employment, conditions of employment and the locations of the target company's places of business;
- the board of the target company must act in the interests of the company as a whole and must not deny the holders of securities the opportunity to decide on the merits of the offer;
- false markets must not be created in the securities of the target company, the bidder or of any other company concerned by the offer in such a way that the rise or fall of the prices of the securities becomes artificial and the normal functioning of the markets is distorted;
- a bidder must announce an offer only after ensuring that he or she can fulfill in full, any cash consideration, if such is offered and after taking all reasonable measures to secure the implementation of any other type of consideration;
- a target company must not be hindered in the conduct of its affairs for longer than is reasonable by an offer for its securities; and
- a substantial acquisition of securities (whether such acquisition is to be effected by one transactions or a series of transaction) shall take place only at an acceptable speed and shall be subject to adequate and timely disclosure.

Mandatory Bid

Under certain circumstances, a person who acquires our shares or other voting rights in Endo may be required under the Takeover Rules to make a mandatory cash offer for our remaining outstanding shares at a price not less than the highest price paid for the shares by the acquirer (or

any parties acting in concert with the acquirer) during the previous 12 months. This mandatory bid requirement is triggered if an acquisition of shares would increase the aggregate holding of an acquirer (including the holdings of any parties acting in concert with the acquirer) to shares representing 30% or more of the voting rights in Endo, unless the Panel otherwise consents. An acquisition of shares by a person holding (together with its concert parties) shares representing between 30% and 50% of the voting rights in Endo would also trigger the mandatory bid requirement if, after giving effect to the acquisition, the percentage of the voting rights held by that person (together with its concert parties) would increase by 0.05% within a 12-month period. Any person (excluding any parties acting in concert with the holder) holding shares representing more than 50% of the voting rights of a company is not subject to these mandatory offer requirements in purchasing additional securities.

Voluntary Bid; Requirements to Make a Cash Offer and Minimum Price Requirements

If a person makes a voluntary offer to acquire our outstanding Ordinary Shares, the offer price must be no less than the highest price paid for our Ordinary Shares by the bidder or its concert parties during the three-month period prior to the commencement of the offer period. The Panel has the power to extend the "look back" period to 12 months if the Panel, taking into account the General Principles, believes it is appropriate to do so.

If the bidder or any of its concert parties has acquired our Ordinary Shares (i) during the period of 12 months prior to the commencement of the offer period which represent more than 10% of our total Ordinary Shares or (ii) at any time after the commencement of the offer period, the offer must be in cash (or accompanied by a full cash alternative) and the price per Ordinary Share must not be less than the highest price paid by the bidder or its concert parties during, in the case of (i), the 12-month period prior to the commencement of the offer period and, in the case of (ii), the offer period. The Panel may apply this rule to a bidder who, together with its concert parties, has acquired less than 10% of our total Ordinary Shares in the 12-month period prior to the commencement of the offer period if the Panel, taking into account the General Principles, considers it just and proper to do so. An offer period will generally commence from the date of the first announcement of the offer or proposed offer.

Substantial Acquisition Rules

The Irish Takeover Rules also contain rules governing substantial acquisitions of shares which restrict the speed at which a person may increase his or her holding of shares and rights over shares to an aggregate of between 15% and 30% of the voting rights of Endo. Except in certain circumstances, an acquisition or series of acquisitions of shares or rights over shares representing 10% or more of the voting rights of Endo is prohibited, if such acquisition(s), when aggregated with shares or rights already held, would result in the acquirer holding 15% or more but less than 30% of the voting rights of Endo and such acquisitions are made within a period of seven days. These rules also require accelerated disclosure of acquisitions of shares or rights over shares relating to such holdings.

Frustrating Action

Under the Takeover Rules, our board of directors is not permitted to take any action which might frustrate an offer for our shares once our board of directors has received an approach which may lead to an offer or has reason to believe an offer is or may be imminent, subject to certain exceptions.

Potentially frustrating actions such as (i) the issue of shares, options or convertible securities; (ii) material acquisitions or disposals; (iii) entering into contracts other than in the ordinary course of business; or (iv) any action, other than seeking alternative offers, which may result in frustration of an offer, are prohibited during the course of an offer or at any time during which the board has reason to believe an offer is or may be imminent. Exceptions to this prohibition are available where:

- the action is approved by our shareholders at a general meeting; or
- the Panel has given its consent, where:
  - it is satisfied the action would not constitute frustrating action;
  - our shareholders that hold 50% of the voting rights in Endo state in writing that they approve the proposed action and would vote in favor of it at a general meeting;
  - the action is taken in accordance with a contract entered into prior to the announcement of the offer; or
  - the decision to take such action was made before the announcement of the offer and either has been at least partially implemented or is in the ordinary course of business.

Rights Agreement

Our memorandum and articles of association expressly authorize the adoption of a shareholders' rights plan. Irish law does not expressly authorize or prohibit companies from issuing share purchase rights or adopting a shareholder rights plan as an anti-takeover measure.

However, there is no directly relevant case law on the validity of such plans under Irish law and their interaction with the Irish Takeover Rules and the General Principles underlying the Irish Takeover Rules.

Subject to the Irish Takeover Rules described above, our board of directors also has power to issue any authorized and unissued shares on such terms and conditions as it may determine and any such action should be taken in our best interests.

Duration; Dissolution; Rights upon Liquidation

Our duration is unlimited. We may be dissolved and wound up at any time by way of a shareholders' voluntary winding up or a creditors' winding up. In the case of a shareholders' voluntary winding-up, a special resolution of shareholders is required. We may also be dissolved by way of court order on the application of a creditor, or by the Companies Registration Office as an enforcement measure where we have failed to file certain returns.

The rights of the shareholders to a return of our assets on dissolution or winding up, following the settlement of all claims of creditors are prescribed in our articles of association.

Acquisitions

An Irish public limited company may be acquired in a number of ways, including:

- a court-approved scheme of arrangement under the Companies Act. A scheme of arrangement requires a court order from the Irish High Court and the approval of a majority in number representing 75% in value of the shareholders present and voting in person or by proxy at a meeting called to approve the scheme;

- through a tender or takeover offer by a third party for all of our shares. Where the holders of 80% or more of our Ordinary Shares have accepted an offer for their shares in us, the remaining shareholders may also be statutorily required to transfer their shares. If the bidder does not exercise its "squeeze out" right, then the non-accepting shareholders also have a statutory right to require the bidder to acquire their shares on the same terms. If our shares were to be listed on the Irish Stock Exchange or another regulated stock exchange in the European Union, this threshold would be increased to 90%; and
- by way of a merger with a company incorporated in the European Economic Area ("EEA") under the EU Directive 2017/1132 of the European Parliament and of the Council of 14 June 2017 as implemented in Ireland by the European Communities (Cross- Border Mergers) Regulations 2008 (as amended) or with another Irish company under the Companies Act. Such a merger must be approved by a special resolution. Shareholders also may be entitled to have their shares acquired for cash. See "Appraisal Rights."

Irish law does not generally require shareholder approval for a sale, lease or exchange of all or substantially all of a company's property and assets.

Appraisal Rights

Generally, under Irish law, shareholders of an Irish company do not have dissenters' or appraisal rights. If we are being merged as the transferor company with an EEA company the EU Directive 2017/1132 of the European Parliament and of the Council of 14 June 2017 as implemented in Ireland by the European Communities (Cross- Border Mergers) Regulations 2008 (as amended), or if we are being merged with another Irish company under the Irish Companies Act, (i) any of our shareholders who voted against the special resolution approving the transaction or (ii) if 90% of our shares are held by the successor company, any of our other shareholders, may be entitled to require that the successor company acquire its shares for cash at a price determined in accordance with the share exchange ratio set out in the merger agreement.

Stock Exchange Listing

Our Ordinary Shares are traded on NASDAQ under the ticker symbol "ENDP."

Transfer and Registration of Shares

An affiliate of our transfer agent, Computershare Investor Services Inc., Computershare Investor Services (Ireland) Limited, maintains the share register, registration in which will be determinative of membership in Endo. Each of our shareholders who holds shares beneficially will not be the holder of record of such shares. Instead, the depository or other nominee will be the holder of record of those shares. Accordingly, a transfer of shares from a person who holds such shares beneficially to a person who also holds such shares beneficially through a depository or other nominee will not be registered in our official share register, as the depository or other nominee will remain the record holder of any such shares.

A written instrument of transfer is required under Irish law in order to register on our official share register any transfer of shares (i) from a person who holds such shares directly to any other person; (ii) from a person who holds such shares beneficially to a person who holds such shares directly; or (iii) from a person who holds such shares beneficially to another person who holds

such shares beneficially where the transfer involves a change in the depository or other nominee that is the record owner of the transferred shares.

An instrument of transfer is also required for a shareholder who directly holds shares to transfer those shares into his or her own broker account (or vice versa). Such instruments of transfer may give rise to Irish stamp duty, which must be paid prior to registration of the transfer on our official Irish share register. However, a shareholder who directly holds shares may transfer those shares into his or her own broker account (or vice versa) without giving rise to Irish stamp duty, provided there is no change in the ultimate beneficial ownership of the shares as a result of the transfer and the transfer is not made in contemplation of a sale of the shares.

Any transfer of our Ordinary Shares that is subject to Irish stamp duty will not be registered in the name of the buyer unless an instrument of transfer is duly stamped and provided to the transfer agent. Our articles of association allow us, in our absolute discretion, to create an instrument of transfer and pay (or procure the payment of) any stamp duty, which is the legal obligation of a buyer. In the event of any such payment, we are (on our own behalf or on behalf of our affiliates) entitled to (i) seek reimbursement from the buyer or seller (at our discretion); (ii) set-off the amount of the stamp duty against future dividends payable to the buyer or seller (at our discretion); and (iii) claim a lien against our Ordinary Shares on which we have paid stamp duty. Parties to a share transfer may assume that any stamp duty arising in respect of a transaction in our Ordinary Shares has been paid unless one or both of such parties is otherwise notified by us.

Our memorandum and articles of association delegate to our secretary (or duly appointed nominee) the authority to execute an instrument of transfer on behalf of a transferring party.

In order to help ensure that the official share register is regularly updated to reflect trading of our Ordinary Shares occurring through normal electronic systems, we intend to regularly produce any required instruments of transfer in connection with any transactions for which we pay stamp duty (subject to the reimbursement and set-off rights described above). In the event that we notify one or both of the parties to a share transfer that we believe stamp duty is required to be paid in connection with the transfer and that we will not pay the stamp duty, the parties may either themselves arrange for the execution of the required instrument of transfer (and may request a form of instrument of transfer from us for this purpose) or request that we execute an instrument of transfer on behalf of the transferring party in a form determined by us. In either event, if the parties to the share transfer have the instrument of transfer duly stamped (to the extent required) and then provide it to our transfer agent, the buyer will be registered as the legal owner of the relevant shares on our official Irish share register (subject to the matters described below). The directors may suspend registration of transfers from time to time, not exceeding 30 days in aggregate each year.

Exhibit 10.18.1

EXECUTION VERSION

ENDO HEALTH SOLUTIONS INC.

EXECUTIVE EMPLOYMENT AGREEMENT

THIS AGREEMENT (this "Agreement") is hereby entered into as of February 19, 2020, effective as of March 6, 2020 (the "Effective Date"), by and between Endo Health Solutions Inc. (the "Company"), a wholly-owned subsidiary of Endo International plc ("Endo"), and Blaise Coleman ("Executive") (hereinafter collectively referred to as "the parties").

In consideration of the respective agreements of the parties contained herein, it is agreed as follows:

1. Term. The term of this Agreement shall be for the period commencing on the Effective Date and ending, subject to earlier termination as set forth in Section 7, on the third anniversary thereof (the "Employment Term").

2. Employment. During the Employment Term:

(a) Executive shall serve as President and Chief Executive Officer of Endo and shall be assigned with the customary duties and responsibilities of such position. In addition, as of the Effective Date, Executive shall serve as a member of the board of directors of Endo (the "Board"). For as long as Executive is the Chief Executive Officer of Endo, Endo shall nominate Executive for re-election to the Board. At the time of Executive's termination of employment with the Company for any reason, Executive shall resign from the Board and the board of directors of any of Endo's affiliates. Executive shall not receive any compensation in addition to the compensation described in Sections 3, 4 and 5 of this Agreement for serving as a director of Endo or as a director or officer of any of Endo's affiliates, but shall be covered under the indemnification and directors' and officers' liability insurance provisions of Section 15(d) for any such services.

(b) Executive shall report directly to the Board. Executive shall perform the duties, undertake the responsibilities and exercise the authority customarily performed, undertaken and exercised by persons situated in a similar executive capacity.

(c) Executive shall devote substantially full-time attention to the business and affairs of the Company and its affiliates. Executive may (i) serve on corporate, civic, charitable or non-profit boards or committees, subject in all cases to the prior

approval of the Board and other applicable written policies of the Company and its affiliates as in effect from time to time, and (ii) manage personal and family investments, participate in industry organizations and deliver lectures at educational institutions or events, so long as no such service or activity unreasonably interferes, individually or in the aggregate, with the performance of Executive's responsibilities hereunder.

(d) Executive shall be subject to and shall abide by each of the personnel and compliance policies of the Company and its affiliates applicable and communicated in writing to senior executives.

(e) Executive shall provide services at the Company's U.S. headquarters in Malvern, Pennsylvania, and will travel to the Company's Chestnut Ridge, New York location and Endo's headquarters in Ireland to the extent reasonably necessary and appropriate to fulfill Executive's duties.

3. Special Long-Term Incentive Compensation. On March 6, 2020 (the "Grant Date"), Executive shall receive a grant of performance share units (the "Initial PSUs") under Endo's Amended and Restated 2015 Stock Incentive Plan (the "Plan") with a targeted grant date fair market value equal to $2,000,000, with the number of such Initial PSUs as determined by the Compensation Committee of the Board (the "Committee") in its good faith discretion (rounded down to the nearest whole share). The Initial PSUs shall be eligible to vest on the third anniversary of the grant date, provided Executive is then employed by the Company and subject to the achievement of the applicable performance goals, as determined by the Committee. On the Grant Date, Executive will also receive a Long-Term Cash award (the "Initial LTC") under the Plan, with a grant value equal to $2,000,000. The Initial LTC award shall be eligible to vest ratably over a three-year period, at a rate of one-sixth of the total award on each 6-month anniversary of the Grant Date, provided Executive is employed in good standing on such dates by the Company. All such Initial PSUs and Initial LTC shall be subject to the terms and conditions of the Plan and applicable award agreements.

4. Annual Compensation.

(a) Base Salary. The Company agrees to pay or cause to be paid to Executive during the Employment Term a base salary at the rate of $850,000 per annum or such increased amount in accordance with this Section 4(a) (hereinafter referred to as the "Base Salary"). Such Base Salary shall be payable in accordance with the Company's customary practices applicable to its executives. Such Base Salary shall be reviewed at least annually by the Committee, with the first such planned

review to occur in February 2021, and may be increased in the sole discretion of the Committee, but not decreased.

(b) Annual Incentive Compensation. For each fiscal year of the Company ending during the Employment Term, effective as of the 2020 fiscal year, Executive shall be eligible to receive a target annual cash bonus of 100% of Executive's Base Salary (such target bonus, as may hereafter be increased, the "Target Bonus") with the opportunity to receive a maximum annual cash bonus in accordance with the terms of the applicable annual cash bonus plan as in effect from time to time, subject to the achievement of performance targets set by the Committee. Such annual cash bonus ("Incentive Compensation") shall be paid in no event later than the 15th day of the third month following the end of the taxable year (of the Company or Executive, whichever is later) in which the performance targets have been achieved. If the parties (following good faith negotiation) fail to enter into a new employment agreement following expiration of the Employment Term and Executive terminates Executive's employment within ninety (90) days following expiration of the Employment Term under circumstances that would have constituted Good Reason had such termination occurred during the Employment Term or if, during such 90-day period, the Company terminates Executive's employment under circumstances that would not have constituted Cause had such termination occurred during the Employment Term, then the Company shall pay Executive a Pro-Rata Bonus (as defined in Section 9(b)(ii) below) in a lump sum at the time bonuses are payable to other senior executives of the Company.

5. Long-Term Incentive Compensation. During the Employment Term and beginning with grants made in 2021, Executive shall be eligible to receive long-term incentive compensation to be awarded, in the sole discretion of the Committee (at a level commensurate with his position as Chief Executive Officer, as compared to other senior executives of the Company), which may be subject to the achievement of certain performance targets set by the Committee. Notwithstanding the foregoing, to the extent the shares available under the Company's shareholder approved incentive plans are insufficient to make such grant (after taking into account the totality of grants to be made by the Company in a given year), in the Committee's sole discretion, all or a portion of the long-term incentive compensation may be issued in the form of a cash-based award on terms determined by the Committee. All such equity-based or cash-based awards shall be subject to the terms and conditions set forth in the applicable plan and award agreements, and in all cases shall be as determined by the Committee; provided, that, such terms and conditions shall be no less favorable than those provided for other senior executives of the Company. If the parties (following good faith negotiation) fail to enter into a new employment agreement following expiration of the Employment Term and

Executive terminates Executive's employment within ninety (90) days following expiration of the Employment Term under circumstances that would have constituted Good Reason had such termination occurred during the Employment Term or if, during such 90-day period, the Company terminates Executive's employment under circumstances that would not have constituted Cause had such termination occurred during the Employment Term, then such termination of employment shall be treated as a termination of employment for "Good Reason" or without Cause, as applicable, for purposes of the performance share units held by Executive as of the date of such termination of employment (and such awards shall be treated in accordance with the terms of the applicable award agreements).

6. Other Benefits.

(a) Employee Benefits. During the Employment Term, Executive shall be entitled to participate in all employee benefit plans, practices and programs maintained by the Company or its affiliates and made available to similarly situated employees generally, including all pension, retirement, profit sharing, savings, medical, hospitalization, disability, dental, life or travel accident insurance benefit plans, to the extent Executive is eligible under the terms of such plans. Executive's participation in such plans, practices and programs shall be on the same basis and terms as are applicable to employees of the Company generally. During the Employment Term, Executive shall also be entitled to participate in all executive benefit plans and entitled to all fringe benefits and perquisites generally made available by the Company or its affiliates to its senior executives in accordance with current Company policy now maintained or hereafter established by the Company or its affiliates for the purpose of providing executive benefits or perquisites to comparable executive employees of the Company including, but not limited to, the Company's supplemental retirement, deferred compensation, supplemental medical or life insurance plans. Unless otherwise provided herein, Executive's participation in such plans and programs shall be on the same basis and terms as other senior executives of the Company. No additional compensation provided under any of such plans shall be deemed to modify or otherwise affect the terms of this Agreement or any of Executive's entitlements hereunder. Executive is responsible for any taxes (other than taxes that are the Company's responsibility) that may be due based upon the value of the benefits or perquisites provided pursuant to this Agreement whether provided during or following the Employment Term. For the avoidance of doubt, Executive shall not be entitled to any excise tax gross-up under Section 280G or Section 4999 of the Internal Revenue Code of 1986, as amended (the "Code") (or any successor provision), or any other tax gross-up.

(b) Business Expenses. Upon submission of proper invoices in accordance with the Company's normal procedures, Executive shall be entitled to receive prompt reimbursement of all reasonable out-of-pocket business, entertainment and travel expenses (including travel in first-class) incurred by Executive in connection with the performance of Executive's duties hereunder. Such reimbursement shall be made in no event later than the end of the calendar year following the calendar year in which the expenses were incurred.

(c) Office and Facilities. During the Employment Term, Executive shall be provided with appropriate offices at the Company's U.S. headquarters in Malvern, Pennsylvania and the Company's Chestnut Ridge, New York location, with such secretarial and other support facilities as are commensurate with Executive's status with the Company and its affiliates, which facilities shall be adequate for the performance of Executive's duties hereunder.

(d) Vacation and Sick Leave. Executive shall be entitled, without loss of pay, to absent himself voluntarily from the performance of Executive's employment under this Agreement, pursuant to the following:

(i) Executive shall be entitled to annual vacation in accordance with the vacation policies of the Company as in effect from time to time, which shall in no event be less than four weeks per year; and

(ii) Executive shall be entitled to sick leave (without loss of pay) in accordance with the Company's policies as in effect from time to time.

7. Termination. The Employment Term and Executive's employment hereunder may be terminated under the circumstances set forth below; provided, however, that notwithstanding anything contained herein to the contrary, Executive shall not be considered to have terminated employment with the Company for purposes of this Agreement unless Executive would be considered to have incurred a "separation from service" from the Company within the meaning of Section 409A of the Code.

(a) Disability. The Company may terminate Executive's employment, on written notice to Executive after having reasonably established Executive's Disability. For purposes of this Agreement, Executive will be deemed to have a "Disability" if, as a result of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months, Executive is unable to perform the core functions of Executive's position (with or without reasonable accommodation) or is receiving income replacement benefits for a period of six (6) months or more

under the Company's long-term disability plan. Executive shall be entitled to the compensation and benefits provided for under this Agreement for any period prior to Executive's termination by reason of Disability during which Executive is unable to work due to a physical or mental infirmity in accordance with the Company's policies for similarly situated executives.

(b) Death. Executive's employment shall be terminated as of the date of Executive's death.

(c) Cause. The Company may terminate Executive's employment for Cause (as defined below), effective as of the date of the Notice of Termination (as defined in Section 8 below) that notifies Executive of Executive's termination for Cause and as evidenced by a resolution adopted by two-thirds of the independent members of the Board. "Cause" shall mean, for purposes of this Agreement: (i) the continued failure by Executive to use good faith efforts in the performance of Executive's duties under this Agreement (other than any such failure resulting from Disability, illness or other allowable leave of absence); (ii) the criminal felony indictment (or non-U.S. equivalent) of Executive by a court of competent jurisdiction; (iii) the engagement by Executive in misconduct that has caused, or, is reasonably likely to cause, material harm (financial or otherwise) to the Company, including (A) the unauthorized disclosure of material secret or Confidential Information (as defined in Section 11(d) below) of the Company, (B) the debarment of the Company by the U.S. Food and Drug Administration or any successor agency (the "FDA") or any non-U.S. equivalent, or (C) the registration of the Company with the U.S. Drug Enforcement Administration of any successor agency (the "DEA") being revoked; (iv) the debarment of Executive by the FDA; (v) the continued material breach by Executive of this Agreement; (vi) any material breach by Executive of a Company policy; (vii) any material breach by Executive of a Company policy related to sexual or other types of harassment or abusive conduct, which breach is injurious to the Company; or (viii) Executive making, or being found to have made, a certification relating to the Company's financial statements and public filings that is known to Executive to be false. Notwithstanding the foregoing, prior to having Cause for Executive's termination (other than as described in clauses (ii) , (iv) and (vii) above), the Company must deliver a written demand to Executive which specifically identifies the conduct that may provide grounds for Cause within ninety (90) calendar days of the Company's actual knowledge of such conduct, events or circumstances. During the thirty (30) day period after receipt of such demand, Executive shall have an opportunity to cure or remedy such conduct, events or circumstances and present his case to the full Board (with the assistance of counsel chosen by Executive)

before any termination for Cause is finalized by a vote by at least two-thirds of the independent members of the Board at a meeting of the Board called and held for such purpose. References to the Company in subsections (i) through (viii) of this paragraph shall also include affiliates of the Company.

(d) Without Cause. The Company may terminate Executive's employment without Cause. The Company shall deliver to Executive a Notice of Termination (as defined in Section 8 below) not less than thirty (30) days prior to the termination of Executive's employment without Cause and the Company shall have the option of terminating Executive's duties and responsibilities prior to the expiration of such thirty-day notice period, provided the Company pays Base Salary through the end of such notice period.

(e) Good Reason. Executive may terminate employment with the Company for Good Reason (as defined below) by delivering to the Company a Notice of Termination not less than thirty (30) days prior to the termination of Executive's employment for Good Reason. The Company shall have the option of terminating Executive's duties and responsibilities prior to the expiration of such thirty-day notice period provided the Company pays Base Salary through the end of such notice period. For purposes of this Agreement, "Good Reason" means any of the following without Executive's written consent: (i) a diminution in Executive's Base Salary, a material diminution in Target Bonus (provided that failure to earn a bonus equal to or in excess of the Target Bonus by reason of failure to achieve applicable performance goals shall not be deemed Good Reason) or material diminution in benefits; (ii) a material diminution of Executive's position, responsibilities, duties or authorities from those in effect as of the Effective Date; (iii) any change in reporting structure such that Executive is required to report to someone other than the Board; (iv) any material breach by the Company of its obligations under this Agreement (including the material failure to pay any amounts due hereunder when due or the failure of the Company to abide by the requirements of Section 15(a)(i) below with respect to successors or permitted assigns); or (v) the Company requiring Executive to be based at any office or location that increases the length of Executive's commute by more than fifty (50) miles. Executive shall provide notice of the existence of the Good Reason condition within ninety (90) days of the date Executive learns of the condition, and the Company shall have a period of thirty (30) days during which it may remedy the condition, and in case of full remedy such condition shall not be deemed to constitute Good Reason hereunder.

(f) Without Good Reason. Executive may voluntarily terminate Executive's employment without Good Reason by delivering to the Company a Notice of Termination not less than thirty (30) days prior to the termination of Executive's employment and the Company shall have the option of terminating Executive's duties and responsibilities prior to the expiration of such thirty-day notice period provided the Company shall not be obligated to pay any amount through the end of such notice period.

8. Notice of Termination. Any purported termination by the Company or by Executive shall be communicated by written Notice of Termination to the other party hereto. For purposes of this Agreement, a "Notice of Termination" shall mean a notice that indicates a termination date, the specific termination provision in this Agreement relied upon and sets forth in reasonable detail the facts and circumstances claimed to provide a basis for termination of Executive's employment under the provision so indicated. For purposes of this Agreement, no such purported termination of Executive's employment hereunder shall be effective without such Notice of Termination (unless waived by the party entitled to receive such notice).

9. Compensation Upon Termination. Upon termination of Executive's employment during the Employment Term, Executive shall be entitled to the following benefits:

(a) Termination by the Company for Cause or by Executive Without Good Reason. If Executive's employment is terminated by the Company for Cause or by Executive without Good Reason, the Company shall pay Executive:

(i) any accrued and unpaid Base Salary, payable on the next payroll date;

(ii) any Incentive Compensation earned but unpaid in respect of any completed fiscal year preceding the termination date, payable at the time annual incentive compensation is paid to other senior executives;

(iii) reimbursement for any and all monies advanced or expenses incurred in connection with Executive's employment for reasonable and necessary expenses incurred by Executive on behalf of the Company for the period ending on the termination date, which amount shall be reimbursed within thirty (30) days of the Company's receipt of proper documentation from Executive;

(iv) any accrued and unpaid vacation pay, payable on the next payroll date;

(v) any previous compensation that Executive has previously deferred (including any interest earned or credited thereon), in accordance with the terms and conditions of the applicable deferred compensation plans or arrangements then in effect, to the extent vested as of Executive's termination date, paid pursuant to the terms of such plans or arrangements; and

(vi) any amount or benefit as provided under any benefit plan or program in accordance with the terms thereof (the foregoing items in Sections 9(a)(i) through 9(a)(vi) being collectively referred to as the "Accrued Compensation").

(b) Termination by the Company for Disability. If Executive's employment is terminated by the Company for Disability, the Company shall pay Executive:

(i) the Accrued Compensation;

(ii) an amount equal to the Incentive Compensation that Executive would have been entitled to receive in respect of the fiscal year in which Executive's termination date occurs, had Executive continued in employment until the end of such fiscal year, which amount, determined based on actual performance for such year relative to the performance goals applicable to Executive (but without any exercise of negative discretion with respect to Executive in excess of that applied to either senior executives of the Company generally or in accordance with the Company's historical past practice), shall be multiplied by a fraction (A) the numerator of which is the number of days in such fiscal year through the termination date and (B) the denominator of which is 365 (the "Pro-Rata Bonus") and shall be payable in a lump sum payment at the time such bonus or annual incentive awards are payable to other participants. Further, upon Executive's Disability (irrespective of any termination of employment related thereto), the Company shall pay Executive for twenty-four (24) consecutive months thereafter regular payments in the amount by which Executive's monthly Base Salary exceeds Executive's monthly Disability insurance benefit; and

(iii) continued coverage for Executive and Executive's dependents under any health, medical, dental, vision and basic life insurance (but not supplemental life insurance) program or policy in which Executive was eligible to participate as of the time of Executive's employment termination (as may be amended by the Company from time to time in the

ordinary course), for twenty-four (24) months following such termination on the same basis as active employees, which such twenty-four month period shall run concurrently with the COBRA period; provided, however, that (x) the Company may instead, in its discretion, provide substantially similar benefits or payment outside of the Company's benefit plans if the Company reasonably determines that providing such alternative benefits or payment is appropriate to minimize potential adverse tax consequences and penalties; and (y) the coverage provided hereunder shall become secondary to any coverage provided to Executive by a subsequent employer and to any Medicare coverage for which Executive becomes eligible, and it shall be the obligation of Executive to inform the Company if Executive becomes eligible for such subsequent coverage (the "Benefits Continuation").

(c) Termination By Reason of Death. If Executive's employment is terminated by reason of Executive's death, the Company shall pay Executive's beneficiaries:

(i) the Accrued Compensation;

(ii) the Pro-Rata Bonus; and

(iii) continued coverage for Executive's dependents under any health, medical, dental, vision and basic life insurance (but not supplemental life insurance) program or policy in which Executive was eligible to participate as of the time of Executive's employment termination (as may be amended or replaced by the Company from time to time in the ordinary course), for twenty-four (24) months following such termination on the same basis as the dependents of active employees, which such twenty-four-month period shall run concurrently with the COBRA period.

(d) Termination by the Company Without Cause or by Executive for Good Reason Other Than in Connection with a Change in Control. If Executive's employment is terminated by the Company without Cause (other than on account of Executive's Disability or death) or by Executive for Good Reason, in either case other than where such termination would entitle Executive to the benefits provided in Section 9(e) of this Agreement, then, subject to Section 15(f), the Company shall pay Executive:

(i) the Accrued Compensation;

(ii) the Pro-Rata Bonus;

(iii) in lieu of any further Base Salary or other compensation and benefits for periods subsequent to the termination date, an amount in cash, which amount shall be payable in a lump sum payment within sixty (60) days following such termination (subject to Section 10(c)), equal to two (2) times the sum of (A) Executive's Base Salary and (B) the Target Bonus;

(iv) accelerated vesting and non-forfeitability, as of the termination date, of the Initial LTC and Initial PSUs, with performance and other terms determined in accordance with the applicable award agreements, except that with respect to the Initial PSUs, the number of Initial PSUs that are earned and vested will not be subject to proration for any partial period of service during the performance period; and

(v) the Benefits Continuation.

(e) Termination by the Company Without Cause or by Executive for Good Reason Following a Change in Control. If Executive's employment by the Company shall be terminated by the Company without Cause (other than on account of Executive's Disability or death) or by Executive for Good Reason within twenty-four (24) months following a Change in Control, then, in lieu of the amounts due under Section 9(d) above and subject to Section 15(f) of this Agreement, Executive shall be entitled to the benefits provided in this Section 9(e):

(i) the Accrued Compensation;

(ii) the Pro-Rata Bonus;

(iii) in lieu of any further Base Salary or other compensation and benefits for periods subsequent to the termination date, an amount in cash, which amount shall be payable in a lump sum payment within sixty (60) days following such termination (subject to Section 10(c)), equal to three (3) times the sum of (A) Executive's Base Salary and (B) the Target Bonus;

(iv) accelerated vesting and non-forfeitability, as of the termination date, of the Initial LTC and Initial PSUs, with performance and other terms determined in accordance with the applicable award agreements;

(v) continued coverage for Executive and Executive's dependents under any health, medical, dental, vision and basic life insurance (but not supplemental life insurance) program or policy in which Executive was eligible to participate as of the time of Executive's employment

termination (as may be amended by the Company from time to time in the ordinary course), for three (3) years following such termination on the same basis as active employees, which such three year period shall run concurrently with the COBRA period; provided, however, that (x) the Company may instead, in its discretion, provide substantially similar benefits or payment outside of the Company's benefit plans if the Company reasonably determines that providing such alternative benefits or payment is appropriate to minimize potential adverse tax consequences and penalties; and (y) the coverage provided hereunder shall become secondary to any coverage provided to Executive by a subsequent employer and to any Medicare coverage for which Executive becomes eligible, and it shall be the obligation of Executive to inform the Company if Executive becomes eligible for such subsequent coverage; and

(vi) For purposes of this Agreement, "Change in Control" shall have the meaning set forth in the award agreement governing the Initial PSUs and Initial LTC.

(f) No Mitigation. Executive shall not be required to mitigate the amount of any payment provided for under this Section 9 by seeking other employment or otherwise and, except as provided in Sections 9(b)(iii), 9(d)(v), and 9(e)(v) above, no such payment shall be offset or reduced by the amount of any compensation or benefits provided to Executive in any subsequent employment. Further, the Company's obligations to make any payments hereunder shall not be subject to or affected by any set-off, counterclaim or defense which the Company may have against Executive.

10. Certain Tax Treatment.

(a) Golden Parachute Tax. To the extent that the payments and benefits provided under this Agreement and benefits provided to, or for the benefit of, Executive under any other plan or agreement of the Company or any of its affiliates (such payments or benefits are collectively referred to as the "Payments") would be subject to the excise tax (the "Excise Tax") imposed under Section 4999 of the Code or any successor provision thereto, or any similar tax imposed by state or local law, then Executive may, in Executive's sole discretion (except as provided herein below) waive the right to receive any payments or distributions (or a portion thereof) by the Company in the nature of compensation to or for Executive's benefit if and to the extent necessary so that no Payment to be made or benefit to be provided to Executive shall be subject to the Excise Tax (such

reduced amount is hereinafter referred to as the "Limited Payment Amount"), but only if such reduction results in a higher after-tax payment to Executive after taking into account the Excise Tax and any additional taxes (including federal, state and local income taxes, employment, social security and Medicare taxes and all other applicable taxes) Executive would pay if such Payments were not reduced. If so waived, the Company shall reduce or eliminate the Payments, to effect the provisions of this Section 10 based upon Section 10(b) below. The determination of the amount of Payments that would be required to be reduced to the Limited Payment Amount pursuant to this Agreement and the amount of such Limited Payment Amount shall be made, at the Company's expense, by a reputable accounting firm selected by Executive and reasonably acceptable to the Company (the "Accounting Firm"). The Accounting Firm shall provide its determination (the "Determination"), together with detailed supporting calculations and documentation to the Company and Executive within ten (10) days of the date of termination, if applicable, or such other time as specified by mutual agreement of the Company and Executive, and if the Accounting Firm determines that no Excise Tax is payable by Executive with respect to the Payments, it shall furnish Executive with an opinion reasonably acceptable to Executive that no Excise Tax will be imposed with respect to any such Payments. The Determination shall be binding, final and conclusive upon the Company and Executive, absent manifest error. For purposes of making the calculations required by this Section 10(a), the Accounting Firm may make reasonable assumptions and approximations concerning applicable taxes and rates, and rely on reasonable, good faith interpretations concerning the application of the Code, and other applicable legal authority. In furtherance of the above, to the extent requested by Executive, the Company shall cooperate in good faith in valuing, and the Accounting Firm shall value, services to be provided by Executive (including Executive refraining from performing services pursuant to any covenant not to compete) before, on or after the date of the transaction which causes the application of Section 4999 of the Code, such that payments in respect of such services may be considered to be "reasonable compensation" within the meaning of the regulations under Section 4999 of the Code.

(b) Ordering of Reduction. In the case of a reduction in the Payments pursuant to Section 10(a), the Payments will be reduced in the following order: (i) payments that are payable in cash that are valued at full value under Treasury Regulation Section 1.280G-1, Q&A 24(a) will be reduced (if necessary, to zero), with amounts that are payable last reduced first; (ii) payments and benefits due in respect of any equity valued at full value under Treasury Regulation Section

1.280G-1, Q&A 24(a), with the highest values reduced first (as such values are determined under Treasury Regulation Section 1.280G-1, Q&A 24) will next be reduced; (iii) payments that are payable in cash that are valued at less than full value under Treasury Regulation Section 1.280G-1, Q&A 24, with amounts that are payable last reduced first, will next be reduced; (iv) payments and benefits due in respect of any equity valued at less than full value under Treasury Regulation Section 1.280G-1, Q&A 24, with the highest values reduced first (as such values are determined under Treasury Regulation Section 1.280G-1, Q&A 24) will next be reduced; and (v) all other non-cash benefits not otherwise described in clauses (ii) or (iv) will be next reduced pro-rata.

(c) Section 409A. The parties intend for the payments and benefits under this Agreement to be exempt from Section 409A of the Code or, if not so exempt, to be paid or provided in a manner which complies with the requirements of such section, and intend that this Agreement shall be construed and administered in accordance with such intention. In the event the Company determines that a payment or benefit under this Agreement may not be in compliance with Section 409A of the Code, subject to Section 6(a) herein, the Company shall reasonably confer with Executive in order to modify or amend this Agreement to comply with Section 409A of the Code and to do so in a manner to best preserve the economic benefit of this Agreement. Notwithstanding anything contained herein to the contrary, to the extent required in order to avoid accelerated taxation and/or tax penalties under Section 409A of the Code, (i) no amounts shall be paid to Executive under Section 9 of this Agreement until Executive would be considered to have incurred a “separation from service” from the Company within the meaning of Section 409A of the Code; (ii) amounts that would otherwise be payable and benefits that would otherwise be provided pursuant to this Agreement during the six-month period immediately following Executive’s separation from service shall instead be paid on the first business day after the date that is six (6) months following Executive’s separation from service (or death, if earlier), with interest for any cash payments so delayed, from the date such cash amounts would otherwise have been paid at the short-term applicable federal rate, compounded semi-annually, as determined under Section 1274 of the Code for the month in which the payment would have been made but for the delay in payment required to avoid the imposition of an additional rate of tax on Executive; (iii) each amount to be paid or benefit to be provided under this Agreement shall be construed as a separately identified payment for purposes of Section 409A of the Code; (iv) any payments that are due within the “short term deferral period” as defined in Section 409A of the Code shall not be treated as deferred compensation unless

applicable law requires otherwise; and (v) amounts reimbursable to Executive under this Agreement shall be paid to Executive on or before the last day of the year following the year in which the expense was incurred and the amount of expenses eligible for reimbursement (and in-kind benefits provided to Executive) during any one (1) year may not affect amounts reimbursable or provided in any subsequent year.

11. Records and Confidential Data.

(a) Executive acknowledges that in connection with the performance of Executive's duties during the Employment Term, the Company and its affiliates will make available to Executive, or Executive will develop and have access to, certain Confidential Information (as defined below) of the Company and its affiliates. Executive acknowledges and agrees that any and all Confidential Information learned or obtained by Executive during the course of Executive's employment by the Company or otherwise, whether developed by Executive alone or in conjunction with others or otherwise, shall be and is the property of the Company and its affiliates.

(b) During the Employment Term and thereafter, Confidential Information will be kept confidential by Executive, will not be used in any manner that is detrimental to the Company or its affiliates, will not be used other than in connection with Executive's discharge of Executive's duties hereunder, and will be safeguarded by Executive from unauthorized disclosure; provided, however, that Confidential Information may be disclosed by Executive (i) to the Company and its affiliates, or to any authorized agent or representative of any of them, (ii) in connection with performing Executive's duties hereunder, (iii) without limiting Section 11(g) of this Agreement, when required to do so by law or requested by a court, governmental agency, legislative body, arbitrator or other person with apparent jurisdiction to order Executive to divulge, disclose or make accessible such information, provided that Executive, to the extent legally permitted, notifies the Company prior to such disclosure, (iv) in the course of any proceeding under Sections 12 or 13 of this Agreement or Section 6 of the Release, subject to the prior entry of a confidentiality order, or (v) in confidence to an attorney or other professional advisor for the purpose of securing professional advice, so long as such attorney or advisor is subject to confidentiality restrictions no less restrictive than those applicable to Executive hereunder.

(c) On Executive's last day of employment with the Company, or at such earlier date as requested by the Company, (i) Executive will return to the Company all written

Confidential Information that has been provided to, or prepared by, Executive; (ii) at the election of the Company, Executive will return to the Company or destroy all copies of any analyses, compilations, studies or other documents prepared by Executive or for Executive's use containing or reflecting any Confidential Information; and (iii) Executive will return all Company property. Executive shall deliver to the Company a document certifying Executive's compliance with this Section 11(c).

(d) For the purposes of this Agreement, "Confidential Information" shall mean all confidential and proprietary information of the Company and its affiliates, including:

(i) trade secrets concerning the business and affairs of the Company and its affiliates, product specifications, data, know-how, formulae, compositions, processes, non-public patent applications, designs, sketches, photographs, graphs, drawings, samples, inventions and ideas, past, current, and planned research and development, current and planned manufacturing or distribution methods and processes, customer lists, current and anticipated customer requirements, price lists, market studies, business plans, computer software and programs (including object code and source code), computer software and database technologies, systems, structures, and architectures (and related formulae, compositions, processes, improvements, devices, know-how, inventions, discoveries, concepts, ideas, designs, methods and information);

(ii) information concerning the business and affairs of the Company and its affiliates (which includes unpublished financial statements, financial projections and budgets, unpublished and projected sales, capital spending budgets and plans, the names and backgrounds of key personnel, to the extent not publicly known, personnel training and techniques and materials) however documented; and

(iii) notes, analysis, compilations, studies, summaries, and other material prepared by or for the Company or its affiliates containing or based, in whole or in part, on any information included in the foregoing. For purposes of this Agreement, Confidential Information shall not include and Executive's obligations shall not extend to (A) information that is generally available to the public, (B) information obtained by Executive other than pursuant to or in connection with this employment, (C) information that is required to be disclosed by law or legal process, and

(D) Executive's rolodex and similar address books, including electronic address books, containing contact information.

(e) Nothing herein or elsewhere shall preclude Executive from retaining and using (i) Executive's personal papers and other materials of a personal nature, including photographs, contacts, correspondence, personal diaries, and personal files (so long as no such materials are covered by any Company hold order), (ii) documents relating to Executive's personal entitlements and obligations, and (iii) information that is necessary for Executive's personal tax purposes.

(f) Pursuant to 18 U.S.C. § 1833(b), Executive understands that Executive will not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret of the Company or its affiliates that (i) is made (A) in confidence to a Federal, State, or local government official, either directly or indirectly, or to Executive's attorney and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document that is filed under seal in a lawsuit or other proceeding. Executive understands that if Executive files a lawsuit for retaliation by the Company for reporting a suspected violation of law, Executive may disclose the trade secret to Executive's attorney and use the trade secret information in the court proceeding if Executive (x) files any document containing the trade secret under seal, and (y) does not disclose the trade secret, except pursuant to court order. Nothing in this Agreement, or any other agreement that Executive has with the Company or its affiliates, is intended to conflict with 18 U.S.C. § 1833(b) or create liability for disclosures of trade secrets that are expressly allowed by such section.

(g) Notwithstanding anything set forth in this Agreement or any other agreement that Executive has with the Company or its affiliates to the contrary, Executive shall not be prohibited from reporting possible violations of federal or state law or regulation to any governmental agency or entity, legislative body, or any self-regulatory organization, or making other disclosures that are protected under the whistleblower provisions of federal or state law or regulation, nor is Executive required to notify the Company regarding any such reporting, disclosure or cooperation with the government.

12. Covenant Not to Solicit, Not to Compete, Not to Disparage, to Cooperate in Litigation and Not to Cooperate with Non-Governmental Third Parties.

(a) Covenant Not to Solicit. To protect the Confidential Information and other trade secrets of the Company and its affiliates as well as the goodwill and competitive

business of the Company and its affiliates, Executive agrees, during the Employment Term and for a period of twenty-four (24) months after Executive's cessation of employment with the Company, not to solicit or participate in or assist in any way in the solicitation of any (i) customers or clients of the Company or its affiliates whom Executive first met or about whom learned Confidential Information through Executive's employment with the Company and (ii) suppliers, employees or agents of the Company or its affiliates. For purposes of this covenant, "solicit" or "solicitation" means directly or indirectly influencing or attempting to influence any customers, clients, suppliers, employees or agents of the Company or its affiliates to cease doing business with, or to reduce the level of business with, the Company and its affiliates or, with respect to employees or exclusive agents, to become employed or engaged by any other person, partnership, firm, corporation or other entity. Executive agrees that the covenants contained in this Section 12(a) are reasonable and desirable to protect the Confidential Information of the Company and its affiliates; provided, that solicitation through general advertising not targeted at the Company's or its affiliates' employees or the provision of references shall not constitute a breach of such obligations.

(b) Covenant Not to Compete.

(i) The Company and its affiliates are currently engaged in the business of branded and generic pharmaceuticals, with a focus on product development, clinical development, manufacturing, distribution and sales & marketing. To protect the Confidential Information and other trade secrets of the Company and its affiliates as well as the goodwill and competitive business of the Company and its affiliates, Executive agrees, during the Employment Term and for a period of twenty-four (24) months after Executive's cessation of employment with the Company, that Executive will not, unless otherwise agreed to by the Board, anywhere in the world where, at the time of Executive's termination of employment, the Company develops, manufactures, distributes, markets or sells its products, except in the course of Executive's employment hereunder, directly or indirectly manage, operate, control, or participate in the management, operation, or control of, be employed by, associated with, or in any manner connected with, lend Executive's name to, or render services or advice to, any third party or any business whose products or services compete in whole or in part with the products or services (both on the market and in development) material to the Company or any business unit on the termination date that constitutes more than 5% of the

Company's revenue on the termination date (a "Competing Business"); provided, however, that Executive may in any event (x) own up to a 5% passive ownership interest in any public or private entity and (y) serve on the board of any Competing Business that competes with the business of the Company and its affiliates as an immaterial part of its overall business, provided that Executive recuses himself fully and completely from all matters relating to such business.

(ii) For purposes of this Section 12(b), any third party or any business whose products compete includes any entity with which the Company or its affiliates has had a product(s) licensing agreement during the Employment Term and any entity with which the Company or any of its affiliates is at the time of termination actively negotiating, and eventually concludes within twelve (12) months of the Employment Term, a commercial agreement.

(iii) Notwithstanding the foregoing, it shall not be a violation of this Section 12(b), for Executive to provide services to (or engage in activities involving): (A) a subsidiary, division or affiliate of a Competing Business where such subsidiary, division or affiliate is not engaged in a Competing Business and Executive does not provide services to, or have any responsibilities regarding, the Competing Business; (B) any entity that is, or is a general partner in, or manages or participates in managing, a private or public fund (including a hedge fund) or other investment vehicle, which is engaged in venture capital investments, leveraged buy-outs, investments in public or private companies, other forms of private or alternative equity transactions, or in public equity transactions, and that might make an investment which Executive could not make directly, provided that in connection therewith, Executive does not provide services to, engage in activities involved with, or have any responsibilities regarding a Competing Business; and (C) an affiliate of a Competing Business if Executive does not provide services, directly or indirectly, to such Competing Business and the basis of the affiliation is solely due to common ownership by a private equity or similar investment fund; provided, that, in each case, Executive shall remain bound by all other post-employment obligations under this Agreement including Executive's obligations under Sections 11, 12(a), (c) and (d) herein; provided, further, that Executive's provision of services to (or engagement in activities involving) any entity described in clauses (A) or (B) of this Section 12(b)(iii) shall be subject to the prior approval of the Board.

(c) Nondisparagement. Executive covenants that during and following the Employment Term, Executive will not disparage or encourage or induce others to disparage the Company or its affiliates, together with all of their respective past and present directors and officers, as well as their respective past and present managers, officers, shareholders, partners, employees, agents, attorneys, servants and customers and each of their predecessors, successors and assigns (collectively, the "Company Entities and Persons"); provided, that such limitation shall extend to past and present managers, officers, shareholders, partners, employees, agents, attorneys, servants and customers only in their capacities as such or in respect of their relationship with the Company and its affiliates. The Company shall instruct its officers and directors not to, during and following the Employment Term, make or issue any statement that disparages Executive to any third parties or otherwise encourage or induce others to disparage Executive. The term "disparage" includes, without limitation, comments or statements adversely affecting in any manner (i) the conduct of the business of the Company Entities and Persons or Executive, or (ii) the business reputation of the Company Entities and Persons or Executive. Nothing in this Agreement is intended to or shall prevent either party from providing, or limiting testimony in any judicial, administrative or legal process or otherwise as required by law, prevent either party from engaging in truthful testimony pursuant to any proceeding under this Section 12 or Section 13 below or Section 6 of the Release or prevent Executive from making statements in the course of doing Executive's normal duties for the Company.

(d) Cooperation in Any Investigations and Litigation; No Cooperation with Non-Governmental Third Parties. During the Employment Term and thereafter, Executive shall provide truthful information and otherwise assist and cooperate with the Company and its affiliates, and its counsel, (i) in connection with any investigation, inquiry, administrative, regulatory or judicial proceedings, or in connection with any dispute or claim of any kind that may be made against, by, or with respect to the Company, as reasonably requested by the Company (including Executive being available to the Company upon reasonable notice for interviews and factual investigations, appearing at the Company's request to give testimony without requiring service of a subpoena or other legal process, volunteering to the Company all pertinent information and turning over to the Company all relevant documents which are in or may come into Executive's possession), and (ii) in all matters concerning requests for information about the services or advice Executive provides or provided to the Company during Executive's employment with Endo, its affiliates and their predecessors. Such cooperation shall be subject

to Executive's business and personal commitments and shall not require Executive to cooperate against Executive's own legal interests or the legal interests of any future employer of Executive. Executive shall use the Company's counsel for all matters in connection with this Section 12(d); provided, however, that if there exists an actual conflict of interest between Executive and the Company's counsel, Executive may retain separate counsel reasonably acceptable to the Company. The existence of an actual conflict of interest, and whether such conflict may be waived, shall be determined pursuant to the rules of attorney professional conduct and applicable law. The Company agrees to promptly reimburse Executive for reasonable expenses reasonably incurred by Executive, in connection with Executive's cooperation pursuant to this Section 12(d) (including travel expenses at the level of travel permitted by this Agreement and reasonable attorney fees in the event separate legal counsel for Executive is required due to a conflict of interest). Such reimbursements shall be made as soon as practicable, and in no event later than the calendar year following the year in which the expenses are incurred. Executive also shall not support (financially or otherwise), counsel or assist any attorneys or their clients or any other non-governmental person in the presentation or prosecution of, encourage any non-governmental person to raise, or suggest or recommend to any non-governmental person that such person could or should raise, in each case, any disputes, differences, grievances, claims, charges, or complaints against the Company and/or its affiliates that (x) arises out of, or relates to, any period of time on or prior to Executive's last day of employment with the Company or (y) involves any information Executive learned during Executive's employment with the Company; provided, that, following the second anniversary of Executive's termination of employment with the Company, such prohibition shall not extend to any such actions taken by Executive on behalf of (A) Executive's then current employer, (B) any entity with respect to which Executive is then a member of the board of directors or managers (as applicable), or (C) any non-publicly traded entity with respect to which Executive is a 5% or more equity owner (or any affiliate of any such entities referenced in clauses (A), (B) or (C)). Executive agrees that, in the event Executive is subpoenaed by any person or entity (including any government agency) to give testimony (in a deposition, court proceeding or otherwise) which in any way relates to Executive's employment by the Company, Executive will, to the extent not legally prohibited from doing so, give prompt notice of such request to the Chief Legal Officer of the Company so that the Company may contest the right of the requesting person or entity to such disclosure before making such disclosure. Nothing in this provision shall require Executive to violate Executive's obligation to comply with valid legal process.

(e) Blue Pencil. It is the intent and desire of Executive and the Company that the provisions of this Section 12 be enforced to the fullest extent permissible under the laws and public policies as applied in each jurisdiction in which enforcement is sought. If any particular provision of this Section 12 shall be determined to be invalid or unenforceable, such covenant shall be amended, without any action on the part of either party hereto, to delete therefrom the portion so determined to be invalid or unenforceable, such deletion to apply only with respect to the operation of such covenant in the particular jurisdiction in which such adjudication is made.

13. Remedies for Breach of Obligations under Sections 11 or 12 hereof. Executive acknowledges that the Company and its affiliates will suffer irreparable injury, not readily susceptible of valuation in monetary damages, if Executive breaches Executive's obligations under Sections 11 or 12 hereof. Accordingly, Executive agrees that the Company and its affiliates will be entitled, in addition to any other available remedies, to obtain injunctive relief against any breach or prospective breach by Executive of Executive's obligations under Sections 11 or 12 hereof in any Federal or state court sitting in the State of Delaware or, at the Company's election, in any other state in which Executive maintains Executive's principal residence or Executive's principal place of business**.** Executive hereby submits to the non-exclusive jurisdiction of all those courts for the purposes of any actions or proceedings instituted by the Company or its affiliates to obtain that injunctive relief, and Executive agrees that process in any or all of those actions or proceedings may be served by registered mail, addressed to the last address provided by Executive to the Company, or in any other manner authorized by law.

14. Representations and Warranties.

(a) The Company represents and warrants that (i) it is fully authorized by action of the Board (and of any other person or body whose action is required) to enter into this Agreement and to perform its obligations under it, (ii) the execution, delivery and performance of this Agreement by it does not violate any applicable law, regulation, order, judgment or decree or any agreement, arrangement, plan or corporate governance document (x) to which it is a party or (y) by which it is bound, and (iii) upon the execution and delivery of this Agreement by the parties, this Agreement shall be its valid and binding obligation, enforceable against it in accordance with its terms, except to the extent that enforceability may be limited by applicable bankruptcy, insolvency or similar laws affecting the enforcement of creditors' rights generally.

(b) Executive represents and warrants to the Company that the execution and delivery by Executive of this Agreement do not, and the performance by Executive of

Executive's obligations hereunder will not, with or without the giving of notice or the passage of time, or both: (a) violate any judgment, writ, injunction, or order of any court, arbitrator, or governmental agency applicable to Executive; or (b) conflict with, result in the breach of any provisions of or the termination of, or constitute a default under, any agreement to which Executive is a party or by which Executive is or may be bound.

15. Miscellaneous.

(a) Successors and Assigns.

(i) This Agreement shall be binding upon and shall inure to the benefit of the Company, its successors and permitted assigns and the Company shall require any successor or permitted assign to expressly assume and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform if no such succession or assignment had taken place. The Company may not assign or delegate any rights or obligations hereunder except to any of its affiliates, or to a successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company. The term the "Company" as used herein shall include a corporation or other entity acquiring all or substantially all the assets and business of the Company (including this Agreement) whether by operation of law or otherwise.

(ii) Neither this Agreement nor any right or interest hereunder shall be assignable or transferable by Executive, Executive's beneficiaries or legal representatives, except by will or by the laws of descent and distribution. This Agreement shall inure to the benefit of and be enforceable by Executive's legal personal representatives.

(b) Fees and Expenses. The Company shall pay reasonable and documented legal fees and related expenses, up to a maximum amount of $10,000, incurred by Executive in connection with the negotiation of this Agreement and related employment arrangements. Such reimbursement shall be made as soon as practicable, but in no event later than sixty (60) days from the execution of the Agreement. Executive is responsible for any taxes that may be due based upon the value of the fees and expenses reimbursed by the Company. Executive acknowledges that Executive has had the opportunity to consult with legal counsel of Executive's choice in connection with the drafting, negotiation and execution of this Agreement and related employment arrangements.

(c) Notice. For the purposes of this Agreement, notices and all other communications provided for in the Agreement (including the Notice of Termination) shall be in writing and shall be deemed to have been duly given when personally delivered or sent by Certified mail, return receipt requested, postage prepaid, addressed to the respective addresses last given by each party to the other; provided, that all notices to the Company shall be directed to the attention of the Chief Legal Officer of the Company with a copy to the Chairman of the Committee. All notices and communications shall be deemed to have been received on the date of delivery thereof or on the third business day after the mailing thereof, except that notice of change of address shall be effective only upon receipt.

(d) Indemnification. Executive shall be indemnified by the Company as, and to the extent, to the maximum extent permitted by applicable law as provided in the memorandum and articles of association of Endo. In addition, the Company agrees to continue and maintain, at the Company's sole expense, a directors' and officers' liability insurance policy covering Executive both during and the Employment Term and while the potential liability exists (but in no event longer than six (6) years, if such limitation applies to all other individuals covered by such policy) after the Employment Term, that is no less favorable than the policy covering Board members and other executive officers of the Company from time to time. The obligations under this paragraph shall survive any termination of the Employment Term.

(e) Withholding. The Company shall be entitled to withhold the amount, if any, of all taxes of any applicable jurisdiction required to be withheld by an employer with respect to any amount paid to Executive hereunder. The Company, in its sole and absolute discretion, shall make all determinations as to whether it is obligated to withhold any taxes hereunder and the amount thereof.

(f) Release of Claims. The termination benefits described in Sections 9(d)(ii) – (v) and 9(e)(ii) – (v) of this Agreement shall be conditioned on Executive delivering to the Company, a signed release of claims in the form of Exhibit A hereto within forty-five (45) days or twenty-one (21) days, as may be applicable under the Age Discrimination in Employment Act of 1967, as amended by the Older Workers Benefit Protection Act, following Executive's termination date, and not revoking Executive's consent to such release of claims within seven (7) days of such execution; provided, however, that Executive shall not be required to release any rights Executive may have to be indemnified by, or be covered under any directors' and officers' liability insurance of, the Company under Section 15(d) of this Agreement, and provided further that, following a Change in Control,

Executive's requirement to deliver a release shall be contingent on the Company delivering to Executive a release of claims in the form of Exhibit A hereto.

(g) Resignation as Officer or Director. Upon a termination of employment for any reason, Executive shall, resign each position (if any) that Executive then holds as an officer or director of the Company and any of its affiliates. Executive's execution of this Agreement shall be deemed the grant by Executive to the officers of the Company of a limited power of attorney to sign in Executive's name and on Executive's behalf any such documentation as may be required to be executed solely for the limited purposes of effectuating such resignations.

(h) Executive Acknowledgement. Executive acknowledges the Common Stock Ownership Guidelines for Non-Employee Directors and Executive Management of Endo International plc, as may be amended from time to time, and Endo's compensation recoupment policy, as may be amended from time to time.

(i) Modification. No provision of this Agreement may be modified, waived or discharged unless such waiver, modification or discharge is agreed to in writing and signed by Executive and the Company. No waiver by either party hereto at any time of any breach by the other party hereto of, or compliance with, any condition or provision of this Agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions or conditions at the same or at any prior or subsequent time. No agreement or representations, oral or otherwise, express or implied, with respect to the subject matter hereof have been made by either party which are not expressly set forth in this Agreement.

(j) Effect of Other Law. Anything herein to the contrary notwithstanding, the terms of this Agreement shall be modified to the extent required to meet the provisions of the Sarbanes-Oxley Act of 2002, Section 409A of the Code, or other federal law applicable to the employment arrangements between Executive and the Company. Any delay in providing benefits or payments, any failure to provide a benefit or payment, or any repayment of compensation that is required under the preceding sentence shall not in and of itself constitute a breach of this Agreement; provided, however, that the Company shall provide economically equivalent payments or benefits to Executive to the extent permitted by law.

(k) Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Delaware applicable to contracts executed in and to be performed entirely within such State, without giving effect to the conflict of law principles thereof. Any dispute hereunder may be

adjudicated in any Federal or state court sitting in the State of Delaware or, at the Company's election, in any other state in which Executive maintains Executive's principal residence or Executive's principal place of business.

(l) No Conflicts. (A) Executive represents and warrants to the Company that Executive is not a party to or otherwise bound by any agreement or arrangement (including any license, covenant, or commitment of any nature), or subject to any judgment, decree, or order of any court or administrative agency, that would conflict with or will be in conflict with or in any way preclude, limit or inhibit Executive's ability to execute this Agreement or to carry out Executive's duties and responsibilities hereunder. (B) The Company represents and warrants to Executive that the Company is not a party to or otherwise bound by any agreement or arrangement (including any license, covenant, or commitment of any nature), or subject to any judgment, decree, or order of any court or administrative agency, that would conflict with or will be in conflict with or in any way preclude, limit or inhibit the Company's ability to execute this Agreement or to carry out the Company's duties and responsibilities hereunder.

(m) Severability. The provisions of this Agreement shall be deemed severable and the invalidity or unenforceability of any provision shall not affect the validity or enforceability of the other provisions hereof.

(n) Inconsistencies. In the event of any inconsistency between any provision of this Agreement and any provision of any employee handbook, personnel manual, program, policy, or arrangement of the Company or its affiliates (including any provisions relating to notice requirements and post-employment restrictions), the provisions of this Agreement shall control, unless Executive otherwise agrees in a writing that expressly refers to the provision of this Agreement whose control Executive is waiving.

(o) Beneficiaries/References. In the event of Executive's death or a judicial determination of Executive's incompetence, references in this Agreement to Executive shall be deemed, where appropriate, to refer to Executive's beneficiary, estate or other legal representative.

(p) Survival. Except as otherwise set forth in this Agreement, the respective rights and obligations of the parties hereunder shall survive the Employment Term and any termination of Executive's employment. Without limiting the generality of the forgoing, the provisions of Sections 9, 11, 12, and 13 shall survive the termination of the Employment Term.

(q) Entire Agreement. This Agreement constitutes the entire agreement between the parties hereto and, as of the Effective Date, supersedes all prior agreements, understandings and arrangements, oral or written, between the parties hereto with respect to the subject matter hereof, including the employment agreement between Executive and the Company dated December 19, 2019; provided, that the contribution retention bonus arrangement dated August 1, 2019 shall remain in effect in accordance with its terms.

(r) Counterparts. This Agreement may be executed in one or more counterparts, each of which will be deemed to be an original copy of this Agreement and all of which, when taken together, will be deemed to constitute one and the same agreement.

16. Certain Rules of Construction.

(a) The headings and subheadings set forth in this Agreement are inserted for the convenience of reference only and are to be ignored in any construction of the terms set forth herein.

(b) Wherever applicable, the neuter, feminine or masculine pronoun as used herein shall also include the masculine or feminine, as the case may be.

(c) The term “including” is not limiting and means “including without limitation.”

(d) References in this Agreement to any statute or statutory provisions include a reference to such statute or statutory provisions as from time to time amended, modified, reenacted, extended, consolidated or replaced (whether before or after the date of this Agreement) and to any subordinate legislation made from time to time under such statute or statutory provision.

(e) References to “writing” or “written” include any non-transient means of representing or copying words legibly, including by facsimile or electronic mail.

(f) References to “$” are to United States Dollars.

IN WITNESS WHEREOF, the Company has caused this Agreement to be executed by its duly authorized officer and Executive has executed this Agreement as of the day and year first above written.

ENDO HEALTH SOLUTIONS INC.

By: /s/ Paul V. Campanelli
Name: Paul V. Campanelli
Title: Chairman of the Board of Directors

EXECUTIVE

By: /s/ Blaise Coleman
Name: Blaise Coleman

EXHIBIT A

FORM OF RELEASE AGREEMENT

THIS RELEASE AGREEMENT (the "Release") is made by and between Blaise Coleman ("Executive") and Endo Health Solutions, Inc. (the "Company").

1. FOR AND IN CONSIDERATION of the payments and benefits provided in [Section 9(d) (excluding clause (i))] [Section 9(e) (excluding clause (i))][1] of the Employment Agreement between Executive and the Company dated as of March 6, 2020, (the "Employment Agreement"), Executive, for Executive, his successors and assigns, executors and administrators, now and forever hereby releases and discharges the Company, together with all of its past and present parents, subsidiaries, and affiliates, together with each of their officers, directors, stockholders, partners, employees, agents, representatives and attorneys, and each of their subsidiaries, affiliates, estates, predecessors, successors, and assigns (hereinafter collectively referred to as the "Releasees") from any and all rights, claims, charges, actions, causes of action, complaints, sums of money, suits, debts, covenants, contracts, agreements, promises, obligations, damages, demands or liabilities of every kind whatsoever, in law or in equity, whether known or unknown, suspected or unsuspected, which Executive or Executive's executors, administrators, successors or assigns ever had, now has or may hereafter claim to have by reason of any matter, cause or thing whatsoever; arising from the beginning of time up to the date Executive executes the Release: (i) relating in any way to Executive's employment relationship with the Company or any of the Releasees, or the termination of Executive's employment relationship with the Company or any of the Releasees; (ii) arising under or relating to the Employment Agreement; (iii) arising under any federal, local or state statute or regulation, including, without limitation, the Age Discrimination in Employment Act of 1967, as amended by the Older Workers Benefit Protection Act, Title VII of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, the Employee Retirement Income Security Act of 1974, the Equal Pay Act, Sections 1981 through 1988 of Title 42 of the United States Code, the Immigration Reform and Control Act, the Workers Adjustment and Retraining Notification Act, the Occupational Safety and Health Act, the Family and Medical Leave Act, the Fair Labor Standards Act of 1938, Executive Order 11246, the Pennsylvania Human Relations Act, the Pennsylvania Whistleblower Law, the New York State Human Rights Law, the New York Labor Law and the New York Civil Rights Law and/or the applicable state or local law or ordinance against discrimination, each as amended; (iv) relating to wrongful employment termination or breach of contract; or (v) arising under or relating to any policy, agreement, understanding or promise, written or oral, formal or informal, between the Company and any of the Releasees and Executive; provided, however, that

[1] As applicable based upon whether the termination is in connection with a change in control under the terms of the Agreement.

notwithstanding the foregoing, nothing contained in the Release shall in any way diminish or impair: (a) any rights Executive may have, from and after the date the Release is executed; (b) any rights to indemnification that may exist from time to time under the Company's certificate of incorporation or bylaws, or state law or any other indemnification agreement entered into between Executive and the Company; (c) any rights Executive may have under any applicable general liability and/or directors and officers insurance policy maintained by the Company; (d) any rights Executive may have to payments and benefits specified under Sections 9(a)(i) and (iii) of the definition of Accrued Compensation under the Employment Agreement; (e) the right to receive the following payments and benefits: [SPECIFIC LIST OF COMPENSATION AND BENEFITS PAYABLE UNDER SECTIONS 9(a)(ii), (iv), (v) AND (vi) OF THE EMPLOYMENT AGREEMENT TO BE INCLUDED]; (f) Executive's ability to bring appropriate proceedings to enforce the Release; and (g) any rights or claims Executive may have that cannot be waived under applicable law (collectively, the "Excluded Claims"). Executive further acknowledges and agrees that, except with respect to Excluded Claims, the Company and the Releasees have fully satisfied any and all obligations whatsoever owed to Executive arising out of Executive's employment with the Company or any of the Releasees, and that no further payments or benefits are owed to Executive by the Company or any of the Releasees.

2. [Upon the Release becoming effective, the Company hereby discharges and generally releases Executive from all claims, causes of action, suits, agreements, and damages which the Company may have now or in the future against Executive for any act, omission or event relating to his employment with the Company or termination of employment therefrom occurring up to and including the date on which the Company signs the Release (excluding any acts or omissions constituting fraud, theft, embezzlement or breach of fiduciary duty by Executive) to the extent that such claim, cause of action, suit, agreement or damages is based on facts, acts, omissions, circumstances or events actually known, or which should have been reasonably known, on the date on which the Company signs the Release by any officer or member of the Board of Directors of the Company.][2]

3. Executive acknowledges and agrees that Executive has been advised to consult with an attorney of Executive's choosing prior to signing the Release. Executive understands and agrees that Executive has the right and has been given the opportunity to review the Release with an attorney of Executive's choice should Executive so desire. Executive also agrees that Executive has entered into the Release freely and voluntarily. Executive further acknowledges and agrees that Executive has had at least [twenty-one (21)][forty-five (45)] calendar days to consider the Release, although Executive may sign it sooner if Executive wishes, but in any case, not prior to the termination date. In addition, once Executive has signed the Release, Executive shall have seven (7) additional days from the date of execution to revoke Executive's consent and may do so by writing to:

[2] Insert upon a qualifying termination following a Change in Control.

_____. The Release shall not be effective, and no payments shall be due hereunder, earlier than the eighth (8th) day after Executive shall have executed the Release and returned it to the Company, assuming that Executive had not revoked Executive's consent to the Release prior to such date.

4. It is understood and agreed by Executive that any payment made to Executive is not to be construed as an admission of any liability whatsoever on the part of the Company or any of the other Releasees, by whom liability is expressly denied.
5. The Release is executed by Executive voluntarily and is not based upon any representations or statements of any kind made by the Company or any of the other Releasees as to the merits, legal liabilities or value of Executive's claims. Executive further acknowledges that Executive has had a full and reasonable opportunity to consider the Release and that Executive has not been pressured or in any way coerced into executing the Release.
6. The exclusive venue for any disputes arising hereunder shall be the state or federal courts located in the State of Delaware or, at the Company's election, in any other state in which Executive maintains Executive's principal residence or Executive's principal place of business, and each of the parties hereto irrevocably waives, to the fullest extent permitted by law, any objection which it may now or hereafter have to the laying of the venue of any such proceeding brought in such a court and any claim that any such proceeding brought in such a court has been brought in an inconvenient forum. Each of the parties hereto also agrees that any final and unappealable judgment against a party hereto in connection with any action, suit or other proceeding may be enforced in any court of competent jurisdiction, either within or outside of the United States. A certified or exemplified copy of such award or judgment shall be conclusive evidence of the fact and amount of such award or judgment.

7. The Release and the rights and obligations of the parties hereto shall be governed and construed in accordance with the laws of the State of Delaware. If any provision hereof is unenforceable or is held to be unenforceable, such provision shall be fully severable, and this document and its terms shall be construed and enforced as if such unenforceable provision had never comprised a part hereof, the remaining provisions hereof shall remain in full force and effect, and the court construing the provisions shall add as a part hereof a provision as similar in terms and effect to such unenforceable provision as may be enforceable, in lieu of the unenforceable provision.
8. The Release shall inure to the benefit of and be binding upon the Company and its successors and assigns.

IN WITNESS WHEREOF, Executive and the Company have executed the Release as of the date and year provided below.

IMPORTANT NOTICE: BY SIGNING BELOW YOU RELEASE AND GIVE UP ANY AND ALL LEGAL CLAIMS, KNOWN AND UNKNOWN, THAT YOU MAY HAVE AGAINST THE COMPANY AND RELATED PARTIES.

ENDO HEALTH SOLUTIONS INC.	Blaise Coleman
Dated: _____	Dated: _____

Exhibit 10.19

EXECUTION VERSION

ENDO HEALTH SOLUTIONS INC.

EXECUTIVE EMPLOYMENT AGREEMENT

THIS AGREEMENT (this "Agreement") is hereby entered into as of February 19, 2020, effective as of March 6, 2020 (the "Effective Date"), by and between Endo Health Solutions Inc. (the "Company"), a wholly-owned subsidiary of Endo International plc ("Endo"), and Mark Bradley ("Executive") (hereinafter collectively referred to as "the parties").

In consideration of the respective agreements of the parties contained herein, it is agreed as follows:

1. Term. The term of this Agreement shall be for the period commencing on the Effective Date and ending, subject to earlier termination as set forth in Section 6, on the third anniversary thereof (the "Employment Term").

2. Employment. During the Employment Term:

(a) Executive shall serve as Executive Vice President and Chief Financial Officer of Endo and shall be assigned with the customary duties and responsibilities of such position. If Executive serves as a director of Endo or as a director or officer of any of Endo's affiliates, then Executive will fulfill Executive's duties as such director or officer without additional compensation.

(b) Executive shall report directly to Endo's Chief Executive Officer. Executive shall perform the duties, undertake the responsibilities and exercise the authority customarily performed, undertaken and exercised by persons situated in a similar executive capacity.

(c) Executive shall devote substantially full-time attention to the business and affairs of the Company and its affiliates. Executive may (i) serve on corporate, civic, charitable or non-profit boards or committees, subject in all cases to the prior approval of the board of directors of Endo (the "Board") and other applicable written policies of the Company and its affiliates as in effect from time to time, and (ii) manage personal and family investments, participate in industry organizations and deliver lectures at educational institutions or events, so long as

no such service or activity unreasonably interferes, individually or in the aggregate, with the performance of Executive's responsibilities hereunder.

(d) Executive shall be subject to and shall abide by each of the personnel and compliance policies of the Company and its affiliates applicable and communicated in writing to senior executives.

(e) Executive shall primarily provide services at the Company's U.S. headquarters in Malvern, Pennsylvania, and will travel to the Company's Chestnut Ridge, New York location to the extent reasonably necessary and appropriate to fulfill Executive's duties.

3. Annual Compensation.

(a) Base Salary. The Company agrees to pay or cause to be paid to Executive during the Employment Term a base salary at the rate of $575,000 per annum or such increased amount in accordance with this Section 3(a) (hereinafter referred to as the "Base Salary"). Such Base Salary shall be payable in accordance with the Company's customary practices applicable to its executives. Such Base Salary shall be reviewed at least annually by the Compensation Committee of the Board (the "Committee"), with the first such planned review to occur in Februrary 2021, and may be increased in the sole discretion of the Committee, but not decreased.

(b) Annual Incentive Compensation. For each fiscal year of the Company ending during the Employment Term, effective as of the 2020 fiscal year, Executive shall be eligible to receive a target annual cash bonus of 55% of Executive's Base Salary (such target bonus, as may hereafter be increased, the "Target Bonus") with the opportunity to receive a maximum annual cash bonus in accordance with the terms of the applicable annual cash bonus plan as in effect from time to time, subject to the achievement of performance targets set by the Committee. Such annual cash bonus ("Incentive Compensation") shall be paid in no event later than the 15th day of the third month following the end of the taxable year (of the Company or Executive, whichever is later) in which the performance targets have been achieved. If the parties (following good faith negotiation) fail to enter into a new employment agreement following expiration of the Employment Term and Executive terminates Executive's employment within ninety (90) days following expiration of the Employment Term under circumstances that would have constituted Good Reason had such termination occurred during the Employment Term or if, during such 90-day period, the Company terminates Executive's employment under circumstances that would not have constituted Cause had such

termination occurred during the Employment Term, then the Company shall pay Executive a Pro-Rata Bonus (as defined in Section 8(b)(ii) below) in a lump sum at the time bonuses are payable to other senior executives of the Company.

4. Long-Term Incentive Compensation. During the Employment Term, Executive shall be eligible to receive long-term incentive compensation, which may be subject to the achievement of certain performance targets set by the Committee. Beginning with grants made in 2021, Executive shall be eligible to receive long-term incentive compensation awards with a targeted grant date fair market value (as determined in the sole discretion of the Committee) equal to 250% of Executive's Base Salary. Notwithstanding the foregoing, to the extent the shares available under the Company's shareholder approved incentive plans are insufficient to make such grant (after taking into account the totality of grants to be made by the Company in a given year), in the Committee's sole discretion, all or a portion of the long-term incentive compensation may be issued in the form of a cash-based award on terms determined by the Committee. All such equity-based or cash-based awards shall be subject to the terms and conditions set forth in the applicable plan and award agreements, and in all cases shall be as determined by the Committee; provided, that, such terms and conditions shall be no less favorable than those provided for other senior executives of the Company. If the parties (following good faith negotiation) fail to enter into a new employment agreement following expiration of the Employment Term and Executive terminates Executive's employment within ninety (90) days following expiration of the Employment Term under circumstances that would have constituted Good Reason had such termination occurred during the Employment Term or if, during such 90-day period, the Company terminates Executive's employment under circumstances that would not have constituted Cause had such termination occurred during the Employment Term, then such termination of employment shall be treated as a termination of employment for "Good Reason" or without Cause, as applicable, for purposes of the performance-based restricted stock units held by Executive as of the date of such termination of employment (and such awards shall be treated in accordance with the terms of the applicable award agreements).

5. Other Benefits.

(a) Employee Benefits. During the Employment Term, Executive shall be entitled to participate in all employee benefit plans, practices and programs maintained by the Company or its affiliates and made available to similarly situated employees generally, including all pension, retirement, profit sharing, savings, medical, hospitalization, disability, dental, life or travel accident insurance benefit plans, to the extent Executive is eligible under the terms of such plans. Executive's participation in such plans, practices and programs shall be on the same basis and

terms as are applicable to employees of the Company generally. During the Employment Term, Executive shall also be entitled to participate in all executive benefit plans and entitled to all fringe benefits and perquisites generally made available by the Company or its affiliates to its senior executives in accordance with current Company policy now maintained or hereafter established by the Company or its affiliates for the purpose of providing executive benefits or perquisites to comparable executive employees of the Company including, but not limited to, the Company's supplemental retirement, deferred compensation, supplemental medical or life insurance plans. Unless otherwise provided herein, Executive's participation in such plans and programs shall be on the same basis and terms as other senior executives of the Company. No additional compensation provided under any of such plans shall be deemed to modify or otherwise affect the terms of this Agreement or any of Executive's entitlements hereunder. Executive is responsible for any taxes (other than taxes that are the Company's responsibility) that may be due based upon the value of the benefits or perquisites provided pursuant to this Agreement, whether provided during or following the Employment Term. For the avoidance of doubt, Executive shall not be entitled to any excise tax gross-up under Section 280G or Section 4999 of the Internal Revenue Code of 1986, as amended (the "Code") (or any successor provision), or any other tax gross-up.

(b) Business Expenses. Upon submission of proper invoices in accordance with the Company's normal procedures, Executive shall be entitled to receive prompt reimbursement of all reasonable out-of-pocket business, entertainment and travel expenses incurred by Executive in connection with the performance of Executive's duties hereunder. Such reimbursement shall be made in no event later than the end of the calendar year following the calendar year in which the expenses were incurred.

(c) Office and Facilities. During the Employment Term, Executive shall be provided with an appropriate office, with such secretarial and other support facilities as are commensurate with Executive's status with the Company and its affiliates, which facilities shall be adequate for the performance of Executive's duties hereunder.

(d) Vacation and Sick Leave. Executive shall be entitled, without loss of pay, to absent himself voluntarily from the performance of Executive's employment under this Agreement, pursuant to the following:

(i) Executive shall be entitled to annual vacation in accordance with the vacation policies of the Company as in effect from time to time, which shall in no event be less than four weeks per year; and

(ii) Executive shall be entitled to sick leave (without loss of pay) in accordance with the Company's policies as in effect from time to time.

6. Termination. The Employment Term and Executive's employment hereunder may be terminated under the circumstances set forth below; provided, however, that notwithstanding anything contained herein to the contrary, Executive shall not be considered to have terminated employment with the Company for purposes of this Agreement unless Executive would be considered to have incurred a "separation from service" from the Company within the meaning of Section 409A of the Code.

(a) Disability. The Company may terminate Executive's employment, on written notice to Executive after having reasonably established Executive's Disability. For purposes of this Agreement, Executive will be deemed to have a "Disability" if, as a result of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months, Executive is unable to perform the core functions of Executive's position (with or without reasonable accommodation) or is receiving income replacement benefits for a period of six (6) months or more under the Company's long-term disability plan. Executive shall be entitled to the compensation and benefits provided for under this Agreement for any period prior to Executive's termination by reason of Disability during which Executive is unable to work due to a physical or mental infirmity in accordance with the Company's policies for similarly situated executives.

(b) Death. Executive's employment shall be terminated as of the date of Executive's death.

(c) Cause. The Company may terminate Executive's employment for Cause (as defined below), effective as of the date of the Notice of Termination (as defined in Section 7 below) that notifies Executive of Executive's termination for Cause. "Cause" shall mean, for purposes of this Agreement: (i) the continued failure by Executive to use good faith efforts in the performance of Executive's duties under this Agreement (other than any such failure resulting from Disability or other allowable leave of absence); (ii) the criminal felony indictment (or non-U.S. equivalent) of Executive by a court of competent jurisdiction; (iii) the engagement by Executive in misconduct that has caused, or, is reasonably likely to cause,

material harm (financial or otherwise) to the Company, including (A) the unauthorized disclosure of material secret or Confidential Information (as defined in Section 10(d) below) of the Company, (B) the debarment of the Company by the U.S. Food and Drug Administration or any successor agency (the "FDA") or any non-U.S. equivalent, or (C) the registration of the Company with the U.S. Drug Enforcement Administration of any successor agency (the "DEA") being revoked; (iv) the debarment of Executive by the FDA; (v) the continued material breach by Executive of this Agreement; (vi) any material breach by Executive of a Company policy; (vii) any breach by Executive of a Company policy related to sexual or other types of harassment or abusive conduct; or (viii) Executive making, or being found to have made, a certification relating to the Company's financial statements and public filings that is known to Executive to be false. Notwithstanding the foregoing, prior to having Cause for Executive's termination (other than as described in clauses (ii), (iv) and (vii) above), the Company must deliver a written demand to Executive which specifically identifies the conduct that may provide grounds for Cause within ninety (90) calendar days of the Company's actual knowledge of such conduct, events or circumstances, and Executive must have failed to cure such conduct (if curable) within thirty (30) days after such demand. References to the Company in subsections (i) through (viii) of this paragraph shall also include affiliates of the Company.

(d) Without Cause. The Company may terminate Executive's employment without Cause. The Company shall deliver to Executive a Notice of Termination (as defined in Section 7 below) not less than thirty (30) days prior to the termination of Executive's employment without Cause and the Company shall have the option of terminating Executive's duties and responsibilities prior to the expiration of such thirty-day notice period, provided the Company pays Base Salary through the end of such notice period.

(e) Good Reason. Executive may terminate employment with the Company for Good Reason (as defined below) by delivering to the Company a Notice of Termination not less than thirty (30) days prior to the termination of Executive's employment for Good Reason. The Company shall have the option of terminating Executive's duties and responsibilities prior to the expiration of such thirty-day notice period provided the Company pays Base Salary through the end of such notice period. For purposes of this Agreement, "Good Reason" means any of the following without Executive's written consent: (i) a diminution in Executive's Base Salary, a material diminution in Target Bonus (provided that failure to earn a bonus equal to or in excess of the Target Bonus by reason of failure to achieve applicable performance goals shall not be deemed Good Reason) or material diminution in

benefits; (ii) a material diminution of Executive's position, responsibilities, duties or authorities from those in effect as of the Effective Date; (iii) any change in reporting structure such that Executive is required to report to someone other than Endo's Chief Executive Officer; (iv) any material breach by the Company of its obligations under this Agreement; or (v) the Company requiring Executive to be based at any office or location that increases the length of Executive's commute by more than fifty (50) miles. Executive shall provide notice of the existence of the Good Reason condition within ninety (90) days of the date Executive learns of the condition, and the Company shall have a period of thirty (30) days during which it may remedy the condition, and in case of full remedy such condition shall not be deemed to constitute Good Reason hereunder.

(f) Without Good Reason. Executive may voluntarily terminate Executive's employment without Good Reason by delivering to the Company a Notice of Termination not less than thirty (30) days prior to the termination of Executive's employment and the Company shall have the option of terminating Executive's duties and responsibilities prior to the expiration of such thirty-day notice period provided the Company shall not be obligated to pay any amount through the end of such notice period.

7. Notice of Termination. Any purported termination by the Company or by Executive shall be communicated by written Notice of Termination to the other party hereto. For purposes of this Agreement, a "Notice of Termination" shall mean a notice that indicates a termination date, the specific termination provision in this Agreement relied upon and sets forth in reasonable detail the facts and circumstances claimed to provide a basis for termination of Executive's employment under the provision so indicated. For purposes of this Agreement, no such purported termination of Executive's employment hereunder shall be effective without such Notice of Termination (unless waived by the party entitled to receive such notice).

8. Compensation Upon Termination. Upon termination of Executive's employment during the Employment Term, Executive shall be entitled to the following benefits:

(a) Termination by the Company for Cause or by Executive Without Good Reason. If Executive's employment is terminated by the Company for Cause or by Executive without Good Reason, the Company shall pay Executive:

(i) any accrued and unpaid Base Salary, payable on the next payroll date;

(ii) any Incentive Compensation earned but unpaid in respect of any completed fiscal year preceding the termination date, payable at the time annual incentive compensation is paid to other senior executives;

(iii) reimbursement for any and all monies advanced or expenses incurred in connection with Executive's employment for reasonable and necessary expenses incurred by Executive on behalf of the Company for the period ending on the termination date, which amount shall be reimbursed within thirty (30) days of the Company's receipt of proper documentation from Executive;

(iv) any accrued and unpaid vacation pay, payable on the next payroll date;

(v) any previous compensation that Executive has previously deferred (including any interest earned or credited thereon), in accordance with the terms and conditions of the applicable deferred compensation plans or arrangements then in effect, to the extent vested as of Executive's termination date, paid pursuant to the terms of such plans or arrangements; and

(vi) any amount or benefit as provided under any benefit plan or program in accordance with the terms thereof (the foregoing items in Sections 8(a)(i) through 8(a)(vi) being collectively referred to as the "Accrued Compensation").

(b) Termination by the Company for Disability. If Executive's employment is terminated by the Company for Disability, the Company shall pay Executive:

(i) the Accrued Compensation;

(ii) an amount equal to the Incentive Compensation that Executive would have been entitled to receive in respect of the fiscal year in which Executive's termination date occurs, had Executive continued in employment until the end of such fiscal year, which amount, determined based on actual performance for such year relative to the performance goals applicable to Executive (but without any exercise of negative discretion with respect to Executive in excess of that applied to either senior executives of the Company generally or in accordance with the Company's historical past practice), shall be multiplied by a fraction (A) the numerator of which is the number of days in such fiscal year through the termination date and (B) the denominator of which is 365 (the "Pro-Rata Bonus") and shall be

payable in a lump sum payment at the time such bonus or annual incentive awards are payable to other participants. Further, upon Executive's Disability (irrespective of any termination of employment related thereto), the Company shall pay Executive for twenty-four (24) consecutive months thereafter regular payments in the amount by which Executive's monthly Base Salary exceeds Executive's monthly Disability insurance benefit; and

(iii) continued coverage for Executive and Executive's dependents under any health, medical, dental, vision and basic life insurance (but not supplemental life insurance) program or policy in which Executive was eligible to participate as of the time of Executive's employment termination (as may be amended by the Company from time to time in the ordinary course), for twenty-four (24) months following such termination on the same basis as active employees, which such twenty-four month period shall run concurrently with the COBRA period; provided, however, that (x) the Company may instead, in its discretion, provide substantially similar benefits or payment outside of the Company's benefit plans if the Company reasonably determines that providing such alternative benefits or payment is appropriate to minimize potential adverse tax consequences and penalties; and (y) the coverage provided hereunder shall become secondary to any coverage provided to Executive by a subsequent employer and to any Medicare coverage for which Executive becomes eligible, and it shall be the obligation of Executive to inform the Company if Executive becomes eligible for such subsequent coverage (the "Benefits Continuation").

(c) Termination By Reason of Death. If Executive's employment is terminated by reason of Executive's death, the Company shall pay Executive's beneficiaries:

(i) the Accrued Compensation;

(ii) the Pro-Rata Bonus; and

(iii) continued coverage for Executive's dependents under any health, medical, dental, vision and basic life insurance (but not supplemental life insurance) program or policy in which Executive was eligible to participate as of the time of Executive's employment termination (as may be amended or replaced by the Company from time to time in the ordinary course), for twenty-four (24) months following such termination on the

same basis as the dependents of active employees, which such twenty-four-month period shall run concurrently with the COBRA period.

(d) Termination by the Company Without Cause or by Executive for Good Reason. If Executive's employment is terminated by the Company without Cause (other than on account of Executive's Disability or death) or by Executive for Good Reason, then, subject to Section 14(e), the Company shall pay Executive:

(i) the Accrued Compensation;

(ii) the Pro-Rata Bonus;

(iii) in lieu of any further Base Salary or other compensation and benefits for periods subsequent to the termination date, an amount in cash, which amount shall be payable in a lump sum payment within sixty (60) days following such termination (subject to Section 9(c)), equal to two (2) times the sum of (A) Executive's Base Salary and (B) the Target Bonus; and

(iv) the Benefits Continuation.

(e) No Mitigation. Executive shall not be required to mitigate the amount of any payment provided for under this Section 8 by seeking other employment or otherwise and, except as provided in Section 8(b)(iii) and 8(d)(iv) above, no such payment shall be offset or reduced by the amount of any compensation or benefits provided to Executive in any subsequent employment. Further, the Company's obligations to make any payments hereunder shall not be subject to or affected by any set-off, counterclaim or defense which the Company may have against Executive.

9. Certain Tax Treatment.

(a) Golden Parachute Tax. To the extent that the payments and benefits provided under this Agreement and benefits provided to, or for the benefit of, Executive under any other plan or agreement of the Company or any of its affiliates (such payments or benefits are collectively referred to as the "Payments") would be subject to the excise tax (the "Excise Tax") imposed under Section 4999 of the Code or any successor provision thereto, or any similar tax imposed by state or local law, then Executive may, in Executive's sole discretion (except as provided herein below) waive the right to receive any payments or distributions (or a portion thereof) by the Company in the nature of compensation to or for Executive's benefit if and to the extent necessary so that no Payment to be made

or benefit to be provided to Executive shall be subject to the Excise Tax (such reduced amount is hereinafter referred to as the "Limited Payment Amount"), but only if such reduction results in a higher after-tax payment to Executive after taking into account the Excise Tax and any additional taxes (including federal, state and local income taxes, employment, social security and Medicare taxes and all other applicable taxes) Executive would pay if such Payments were not reduced. If so waived, the Company shall reduce or eliminate the Payments to effect the provisions of this Section 9 based upon Section 9(b) below. The determination of the amount of Payments that would be required to be reduced to the Limited Payment Amount pursuant to this Agreement and the amount of such Limited Payment Amount shall be made, at the Company's expense, by a reputable accounting firm selected by Executive and reasonably acceptable to the Company (the "Accounting Firm"). The Accounting Firm shall provide its determination (the "Determination"), together with detailed supporting calculations and documentation to the Company and Executive within ten (10) days of the date of termination, if applicable, or such other time as specified by mutual agreement of the Company and Executive, and if the Accounting Firm determines that no Excise Tax is payable by Executive with respect to the Payments, it shall furnish Executive with an opinion reasonably acceptable to Executive that no Excise Tax will be imposed with respect to any such Payments. The Determination shall be binding, final and conclusive upon the Company and Executive, absent manifest error. For purposes of making the calculations required by this Section 9(a), the Accounting Firm may make reasonable assumptions and approximations concerning applicable taxes and rates, and rely on reasonable, good faith interpretations concerning the application of the Code, and other applicable legal authority. In furtherance of the above, to the extent requested by Executive, the Company shall cooperate in good faith in valuing, and the Accounting Firm shall value, services to be provided by Executive (including Executive refraining from performing services pursuant to any covenant not to compete) before, on or after the date of the transaction which causes the application of Section 4999 of the Code, such that payments in respect of such services may be considered to be "reasonable compensation" within the meaning of the regulations under Section 4999 of the Code.

(b) Ordering of Reduction. In the case of a reduction in the Payments pursuant to Section 9(a), the Payments will be reduced in the following order: (i) payments that are payable in cash that are valued at full value under Treasury Regulation Section 1.280G-1, Q&A 24(a) will be reduced (if necessary, to zero), with amounts that are payable last reduced first; (ii) payments and benefits due in

respect of any equity valued at full value under Treasury Regulation Section 1.280G-1, Q&A 24(a), with the highest values reduced first (as such values are determined under Treasury Regulation Section 1.280G-1, Q&A 24) will next be reduced; (iii) payments that are payable in cash that are valued at less than full value under Treasury Regulation Section 1.280G-1, Q&A 24, with amounts that are payable last reduced first, will next be reduced; (iv) payments and benefits due in respect of any equity valued at less than full value under Treasury Regulation Section 1.280G-1, Q&A 24, with the highest values reduced first (as such values are determined under Treasury Regulation Section 1.280G-1, Q&A 24) will next be reduced; and (v) all other non-cash benefits not otherwise described in clauses (ii) or (iv) will be next reduced pro-rata.

(c) Section 409A. The parties intend for the payments and benefits under this Agreement to be exempt from Section 409A of the Code or, if not so exempt, to be paid or provided in a manner which complies with the requirements of such section, and intend that this Agreement shall be construed and administered in accordance with such intention. In the event the Company determines that a payment or benefit under this Agreement may not be in compliance with Section 409A of the Code, subject to Section 5(a) herein, the Company shall reasonably confer with Executive in order to modify or amend this Agreement to comply with Section 409A of the Code and to do so in a manner to best preserve the economic benefit of this Agreement. Notwithstanding anything contained herein to the contrary, to the extent required in order to avoid accelerated taxation and/or tax penalties under Section 409A of the Code, (i) no amounts shall be paid to Executive under Section 8 of this Agreement until Executive would be considered to have incurred a “separation from service” from the Company within the meaning of Section 409A of the Code; (ii) amounts that would otherwise be payable and benefits that would otherwise be provided pursuant to this Agreement during the six-month period immediately following Executive’s separation from service shall instead be paid on the first business day after the date that is six (6) months following Executive’s separation from service (or death, if earlier), with interest for any cash payments so delayed, from the date such cash amounts would otherwise have been paid at the short-term applicable federal rate, compounded semi-annually, as determined under Section 1274 of the Code for the month in which the payment would have been made but for the delay in payment required to avoid the imposition of an additional rate of tax on Executive; (iii) each amount to be paid or benefit to be provided under this Agreement shall be construed as a separately identified payment for purposes of Section 409A of the Code; (iv) any payments that are due within the “short term deferral period” as defined in

Section 409A of the Code shall not be treated as deferred compensation unless applicable law requires otherwise; and (v) amounts reimbursable to Executive under this Agreement shall be paid to Executive on or before the last day of the year following the year in which the expense was incurred and the amount of expenses eligible for reimbursement (and in-kind benefits provided to Executive) during any one (1) year may not affect amounts reimbursable or provided in any subsequent year.

10. Records and Confidential Data.

(a) Executive acknowledges that in connection with the performance of Executive's duties during the Employment Term, the Company and its affiliates will make available to Executive, or Executive will develop and have access to, certain Confidential Information (as defined below) of the Company and its affiliates. Executive acknowledges and agrees that any and all Confidential Information learned or obtained by Executive during the course of Executive's employment by the Company or otherwise, whether developed by Executive alone or in conjunction with others or otherwise, shall be and is the property of the Company and its affiliates.

(b) During the Employment Term and thereafter, Confidential Information will be kept confidential by Executive, will not be used in any manner that is detrimental to the Company or its affiliates, will not be used other than in connection with Executive's discharge of Executive's duties hereunder, and will be safeguarded by Executive from unauthorized disclosure; provided, however, that Confidential Information may be disclosed by Executive (i) to the Company and its affiliates, or to any authorized agent or representative of any of them, (ii) in connection with performing Executive's duties hereunder, (iii) without limiting Section 10(g) of this Agreement, when required to do so by law or requested by a court, governmental agency, legislative body, arbitrator or other person with apparent jurisdiction to order Executive to divulge, disclose or make accessible such information, provided that Executive, to the extent legally permitted, notifies the Company prior to such disclosure, (iv) in the course of any proceeding under Section 11 or 12 of this Agreement or Section 6 of the Release, subject to the prior entry of a confidentiality order, or (v) in confidence to an attorney or other professional advisor for the purpose of securing professional advice, so long as such attorney or advisor is subject to confidentiality restrictions no less restrictive than those applicable to Executive hereunder.

(c) On Executive's last day of employment with the Company, or at such earlier date as requested by the Company, (i) Executive will return to the Company all written Confidential Information that has been provided to, or prepared by, Executive; (ii) at the election of the Company, Executive will return to the Company or destroy all copies of any analyses, compilations, studies or other documents prepared by Executive or for Executive's use containing or reflecting any Confidential Information; and (iii) Executive will return all Company property. Executive shall deliver to the Company a document certifying Executive's compliance with this Section 10(c).

(d) For the purposes of this Agreement, "Confidential Information" shall mean all confidential and proprietary information of the Company and its affiliates, including:

(i) trade secrets concerning the business and affairs of the Company and its affiliates, product specifications, data, know-how, formulae, compositions, processes, non-public patent applications, designs, sketches, photographs, graphs, drawings, samples, inventions and ideas, past, current, and planned research and development, current and planned manufacturing or distribution methods and processes, customer lists, current and anticipated customer requirements, price lists, market studies, business plans, computer software and programs (including object code and source code), computer software and database technologies, systems, structures, and architectures (and related formulae, compositions, processes, improvements, devices, know-how, inventions, discoveries, concepts, ideas, designs, methods and information);

(ii) information concerning the business and affairs of the Company and its affiliates (which includes unpublished financial statements, financial projections and budgets, unpublished and projected sales, capital spending budgets and plans, the names and backgrounds of key personnel, to the extent not publicly known, personnel training and techniques and materials) however documented; and

(iii) notes, analysis, compilations, studies, summaries, and other material prepared by or for the Company or its affiliates containing or based, in whole or in part, on any information included in the foregoing. For purposes of this Agreement, Confidential Information shall not include and Executive's obligations shall not extend to (A) information that is generally available to the public, (B) information obtained by Executive

other than pursuant to or in connection with this employment, (C) information that is required to be disclosed by law or legal process, and (D) Executive's rolodex and similar address books, including electronic address books, containing contact information.

(e) Nothing herein or elsewhere shall preclude Executive from retaining and using (i) Executive's personal papers and other materials of a personal nature, including photographs, contacts, correspondence, personal diaries, and personal files (so long as no such materials are covered by any Company hold order), (ii) documents relating to Executive's personal entitlements and obligations, and (iii) information that is necessary for Executive's personal tax purposes.

(f) Pursuant to 18 U.S.C. § 1833(b), Executive understands that Executive will not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret of the Company or its affiliates that (i) is made (A) in confidence to a Federal, State, or local government official, either directly or indirectly, or to Executive's attorney and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document that is filed under seal in a lawsuit or other proceeding. Executive understands that if Executive files a lawsuit for retaliation by the Company for reporting a suspected violation of law, Executive may disclose the trade secret to Executive's attorney and use the trade secret information in the court proceeding if Executive (x) files any document containing the trade secret under seal, and (y) does not disclose the trade secret, except pursuant to court order. Nothing in this Agreement, or any other agreement that Executive has with the Company or its affiliates, is intended to conflict with 18 U.S.C. § 1833(b) or create liability for disclosures of trade secrets that are expressly allowed by such section.

(g) Notwithstanding anything set forth in this Agreement or any other agreement that Executive has with the Company or its affiliates to the contrary, Executive shall not be prohibited from reporting possible violations of federal or state law or regulation to any governmental agency or entity, legislative body, or any self-regulatory organization, or making other disclosures that are protected under the whistleblower provisions of federal or state law or regulation, nor is Executive required to notify the Company regarding any such reporting, disclosure or cooperation with the government.

11. Covenant Not to Solicit, Not to Compete, Not to Disparage, to Cooperate in Litigation and Not to Cooperate with Non-Governmental Third Parties.

(a) Covenant Not to Solicit. To protect the Confidential Information and other trade secrets of the Company and its affiliates as well as the goodwill and competitive business of the Company and its affiliates, Executive agrees, during the Employment Term and for a period of eighteen (18) months after Executive's cessation of employment with the Company, not to solicit or participate in or assist in any way in the solicitation of any (i) customers or clients of the Company or its affiliates whom Executive first met or about whom learned Confidential Information through Executive's employment with the Company and (ii) suppliers, employees or agents of the Company or its affiliates. For purposes of this covenant, "solicit" or "solicitation" means directly or indirectly influencing or attempting to influence any customers, clients, suppliers, employees or agents of the Company or its affiliates to cease doing business with, or to reduce the level of business with, the Company and its affiliates or, with respect to employees or exclusive agents, to become employed or engaged by any other person, partnership, firm, corporation or other entity. Executive agrees that the covenants contained in this Section 11(a) are reasonable and desirable to protect the Confidential Information of the Company and its affiliates; provided, that solicitation through general advertising not targeted at the Company's or its affiliates' employees or the provision of references shall not constitute a breach of such obligations.

(b) Covenant Not to Compete.

(i) The Company and its affiliates are currently engaged in the business of branded and generic pharmaceuticals, with a focus on product development, clinical development, manufacturing, distribution and sales & marketing. To protect the Confidential Information and other trade secrets of the Company and its affiliates as well as the goodwill and competitive business of the Company and its affiliates, Executive agrees, during the Employment Term and for a period of twelve (12) months after Executive's cessation of employment with the Company, that Executive will not, unless otherwise agreed to by the Chief Executive Officer of Endo (following approval by the Chairman of the Committee), anywhere in the world where, at the time of Executive's termination of employment, the Company develops, manufactures, distributes, markets or sells its products, except in the course of Executive's employment hereunder, directly or indirectly manage, operate, control, or participate in the

management, operation, or control of, be employed by, associated with, or in any manner connected with, lend Executive's name to, or render services or advice to, any third party or any business whose products or services compete in whole or in part with the products or services (both on the market and in development) material to the Company or any business unit on the termination date that constitutes more than 5% of the Company's revenue on the termination date (a "Competing Business"); provided, however, that Executive may in any event (x) own up to a 5% passive ownership interest in any public or private entity and (y) serve on the board of any Competing Business that competes with the business of the Company and its affiliates as an immaterial part of its overall business, provided that Executive recuses himself fully and completely from all matters relating to such business.

(ii) For purposes of this Section 11(b), any third party or any business whose products compete includes any entity with which the Company or its affiliates has had a product(s) licensing agreement during the Employment Term and any entity with which the Company or any of its affiliates is at the time of termination actively negotiating, and eventually concludes within twelve (12) months of the Employment Term, a commercial agreement.

(iii) Notwithstanding the foregoing, it shall not be a violation of this Section 11(b), for Executive to provide services to (or engage in activities involving): (A) a subsidiary, division or affiliate of a Competing Business where such subsidiary, division or affiliate is not engaged in a Competing Business and Executive does not provide services to, or have any responsibilities regarding, the Competing Business; (B) any entity that is, or is a general partner in, or manages or participates in managing, a private or public fund (including a hedge fund) or other investment vehicle, which is engaged in venture capital investments, leveraged buy-outs, investments in public or private companies, other forms of private or alternative equity transactions, or in public equity transactions, and that might make an investment which Executive could not make directly, provided that in connection therewith, Executive does not provide services to, engage in activities involved with, or have any responsibilities regarding a Competing Business; and (C) an affiliate of a Competing Business if Executive does not provide services, directly or indirectly, to such Competing Business and the basis of the affiliation is solely due to common ownership by a private equity or similar investment fund;

provided, that, in each case, Executive shall remain bound by all other post-employment obligations under this Agreement including Executive's obligations under Sections 10, 11(a), (c) and (d) herein; provided, further, that Executive's provision of services to (or engagement in activities involving) any entity described in clauses (A) or (B) of this Section 11(b)(iii) shall be subject to the prior approval of the Board.

(c) Nondisparagement. Executive covenants that during and following the Employment Term, Executive will not disparage or encourage or induce others to disparage the Company or its affiliates, together with all of their respective past and present directors and officers, as well as their respective past and present managers, officers, shareholders, partners, employees, agents, attorneys, servants and customers and each of their predecessors, successors and assigns (collectively, the "Company Entities and Persons"); provided, that such limitation shall extend to past and present managers, officers, shareholders, partners, employees, agents, attorneys, servants and customers only in their capacities as such or in respect of their relationship with the Company and its affiliates. The Company shall instruct its officers and directors not to, during and following the Employment Term, make or issue any statement that disparages Executive to any third parties or otherwise encourage or induce others to disparage Executive. The term "disparage" includes, without limitation, comments or statements adversely affecting in any manner (i) the conduct of the business of the Company Entities and Persons or Executive, or (ii) the business reputation of the Company Entities and Persons or Executive. Nothing in this Agreement is intended to or shall prevent either party from providing, or limiting testimony in any judicial, administrative or legal process or otherwise as required by law, prevent either party from engaging in truthful testimony pursuant to any proceeding under this Section 11 or Section 12 below or Section 6 of the Release or prevent Executive from making statements in the course of doing Executive's normal duties for the Company.

(d) Cooperation in Any Investigations and Litigation; No Cooperation with Non-Governmental Third Parties. During the Employment Term and thereafter, Executive shall provide truthful information and otherwise assist and cooperate with the Company and its affiliates, and its counsel, (i) in connection with any investigation, inquiry, administrative, regulatory or judicial proceedings, or in connection with any dispute or claim of any kind that may be made against, by, or with respect to the Company, as reasonably requested by the Company (including Executive being available to the Company upon reasonable notice for interviews and factual investigations, appearing at the Company's request to give testimony

without requiring service of a subpoena or other legal process, volunteering to the Company all pertinent information and turning over to the Company all relevant documents which are in or may come into Executive's possession), and (ii) in all matters concerning requests for information about the services or advice Executive provides or provided to the Company during Executive's employment with Endo, its affiliates and their predecessors. Such cooperation shall be subject to Executive's business and personal commitments and shall not require Executive to cooperate against Executive's own legal interests or the legal interests of any future employer of Executive. Executive shall use the Company's counsel for all matters in connection with this Section 11(d); provided, however, that if there exists an actual conflict of interest between Executive and the Company's counsel, Executive may retain separate counsel reasonably acceptable to the Company. The existence of an actual conflict of interest, and whether such conflict may be waived, shall be determined pursuant to the rules of attorney professional conduct and applicable law. The Company agrees to promptly reimburse Executive for reasonable expenses reasonably incurred by Executive, in connection with Executive's cooperation pursuant to this Section 11(d) (including travel expenses at the level of travel permitted by this Agreement and reasonable attorney fees in the event separate legal counsel for Executive is required due to a conflict of interest). Such reimbursements shall be made as soon as practicable, and in no event later than the calendar year following the year in which the expenses are incurred. Executive also shall not support (financially or otherwise), counsel or assist any attorneys or their clients or any other non-governmental person in the presentation or prosecution of, encourage any non-governmental person to raise, or suggest or recommend to any non-governmental person that such person could or should raise, in each case, any disputes, differences, grievances, claims, charges, or complaints against the Company and/or its affiliates that (x) arises out of, or relates to, any period of time on or prior to Executive's last day of employment with the Company or (y) involves any information Executive learned during Executive's employment with the Company; provided, that, following the second anniversary of Executive's termination of employment with the Company, such prohibition shall not extend to any such actions taken by Executive on behalf of (A) Executive's then current employer, (B) any entity with respect to which Executive is then a member of the board of directors or managers (as applicable), or (C) any non-publicly traded entity with respect to which Executive is a 5% or more equity owner (or any affiliate of any such entities referenced in clauses (A), (B) or (C)). Executive agrees that, in the event Executive is subpoenaed by any person or entity (including any government agency) to give testimony (in a deposition, court

proceeding or otherwise) which in any way relates to Executive's employment by the Company, Executive will, to the extent not legally prohibited from doing so, give prompt notice of such request to the Chief Legal Officer of the Company so that the Company may contest the right of the requesting person or entity to such disclosure before making such disclosure. Nothing in this provision shall require Executive to violate Executive's obligation to comply with valid legal process.

(e) Blue Pencil. It is the intent and desire of Executive and the Company that the provisions of this Section 11 be enforced to the fullest extent permissible under the laws and public policies as applied in each jurisdiction in which enforcement is sought. If any particular provision of this Section 11 shall be determined to be invalid or unenforceable, such covenant shall be amended, without any action on the part of either party hereto, to delete therefrom the portion so determined to be invalid or unenforceable, such deletion to apply only with respect to the operation of such covenant in the particular jurisdiction in which such adjudication is made.

12. Remedies for Breach of Obligations under Sections 10 or 11 hereof. Executive acknowledges that the Company and its affiliates will suffer irreparable injury, not readily susceptible of valuation in monetary damages, if Executive breaches Executive's obligations under Sections 10 or 11 hereof. Accordingly, Executive agrees that the Company and its affiliates will be entitled, in addition to any other available remedies, to obtain injunctive relief against any breach or prospective breach by Executive of Executive's obligations under Sections 10 or 11 hereof in any Federal or state court sitting in the State of Delaware or, at the Company's election, in any other state in which Executive maintains Executive's principal residence or Executive's principal place of business**.** Executive hereby submits to the non-exclusive jurisdiction of all those courts for the purposes of any actions or proceedings instituted by the Company or its affiliates to obtain that injunctive relief, and Executive agrees that process in any or all of those actions or proceedings may be served by registered mail, addressed to the last address provided by Executive to the Company, or in any other manner authorized by law.

13. Representations and Warranties.

(a) The Company represents and warrants that (i) it is fully authorized by action of the Board (and of any other person or body whose action is required) to enter into this Agreement and to perform its obligations under it, (ii) the execution, delivery and performance of this Agreement by it does not violate any applicable law, regulation, order, judgment or decree or any agreement, arrangement, plan or corporate governance document (x) to which it is a party or (y) by which it is bound, and (iii) upon the execution and delivery of this Agreement by the parties,

this Agreement shall be its valid and binding obligation, enforceable against it in accordance with its terms, except to the extent that enforceability may be limited by applicable bankruptcy, insolvency or similar laws affecting the enforcement of creditors' rights generally.

(b) Executive represents and warrants to the Company that the execution and delivery by Executive of this Agreement do not, and the performance by Executive of Executive's obligations hereunder will not, with or without the giving of notice or the passage of time, or both: (a) violate any judgment, writ, injunction, or order of any court, arbitrator, or governmental agency applicable to Executive; or (b) conflict with, result in the breach of any provisions of or the termination of, or constitute a default under, any agreement to which Executive is a party or by which Executive is or may be bound.

14. Miscellaneous.

(a) Successors and Assigns.

(i) This Agreement shall be binding upon and shall inure to the benefit of the Company, its successors and permitted assigns and the Company shall require any successor or permitted assign to expressly assume and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform if no such succession or assignment had taken place. The Company may not assign or delegate any rights or obligations hereunder except to any of its affiliates, or to a successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Company. The term the "Company" as used herein shall include a corporation or other entity acquiring all or substantially all the assets and business of the Company (including this Agreement) whether by operation of law or otherwise.

(ii) Neither this Agreement nor any right or interest hereunder shall be assignable or transferable by Executive, his beneficiaries or legal representatives, except by will or by the laws of descent and distribution. This Agreement shall inure to the benefit of and be enforceable by Executive's legal personal representatives.

(b) Notice. For the purposes of this Agreement, notices and all other communications provided for in the Agreement (including the Notice of Termination) shall be in writing and shall be deemed to have been duly given when personally delivered or

sent by Certified mail, return receipt requested, postage prepaid, addressed to the respective addresses last given by each party to the other; provided, that all notices to the Company shall be directed to the attention of the Chief Legal Officer of the Company. All notices and communications shall be deemed to have been received on the date of delivery thereof or on the third business day after the mailing thereof, except that notice of change of address shall be effective only upon receipt.

(c) Indemnification. Executive shall be indemnified by the Company as, and to the extent, to the maximum extent permitted by applicable law as provided in the memorandum and articles of association of Endo. In addition, the Company agrees to continue and maintain, at the Company's sole expense, a directors' and officers' liability insurance policy covering Executive both during and the Employment Term and while the potential liability exists (but in no event longer than six (6) years, if such limitation applies to all other individuals covered by such policy) after the Employment Term, that is no less favorable than the policy covering Board members and other executive officers of the Company from time to time. The obligations under this paragraph shall survive any termination of the Employment Term.

(d) Withholding. The Company shall be entitled to withhold the amount, if any, of all taxes of any applicable jurisdiction required to be withheld by an employer with respect to any amount paid to Executive hereunder. The Company, in its sole and absolute discretion, shall make all determinations as to whether it is obligated to withhold any taxes hereunder and the amount thereof.

(e) Release of Claims. The termination benefits described in Section 8(d)(ii) – (iv) of this Agreement shall be conditioned on Executive delivering to the Company, a signed release of claims in the form of Exhibit A hereto within forty-five (45) days or twenty-one (21) days, as may be applicable under the Age Discrimination in Employment Act of 1967, as amended by the Older Workers Benefit Protection Act, following Executive's termination date, and not revoking Executive's consent to such release of claims within seven (7) days of such execution; provided, however, that Executive shall not be required to release any rights Executive may have to be indemnified by, or be covered under any directors' and officers' liability insurance of, the Company under Section 14(c) of this Agreement, and provided further that, following a Change in Control (as defined in Endo's Amended and Restated 2015 Stock Incentive Plan), Executive's requirement to deliver a release shall be contingent on the Company delivering to Executive a release of claims in the form of Exhibit A hereto.

(f) Resignation as Officer or Director. Upon a termination of employment for any reason, Executive shall, resign each position (if any) that Executive then holds as an officer or director of the Company and any of its affiliates. Executive's execution of this Agreement shall be deemed the grant by Executive to the officers of the Company of a limited power of attorney to sign in Executive's name and on Executive's behalf any such documentation as may be required to be executed solely for the limited purposes of effectuating such resignations.

(g) Executive Acknowledgement. Executive acknowledges the Common Stock Ownership Guidelines for Non-Employee Directors and Executive Management of Endo International plc, as may be amended from time to time, and Endo's compensation recoupment policy, as may be amended from time to time.

(h) Modification. No provision of this Agreement may be modified, waived or discharged unless such waiver, modification or discharge is agreed to in writing and signed by Executive and the Company. No waiver by either party hereto at any time of any breach by the other party hereto of, or compliance with, any condition or provision of this Agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions or conditions at the same or at any prior or subsequent time. No agreement or representations, oral or otherwise, express or implied, with respect to the subject matter hereof have been made by either party which are not expressly set forth in this Agreement.

(i) Effect of Other Law. Anything herein to the contrary notwithstanding, the terms of this Agreement shall be modified to the extent required to meet the provisions of the Sarbanes-Oxley Act of 2002, Section 409A of the Code, or other federal law applicable to the employment arrangements between Executive and the Company. Any delay in providing benefits or payments, any failure to provide a benefit or payment, or any repayment of compensation that is required under the preceding sentence shall not in and of itself constitute a breach of this Agreement; provided, however, that the Company shall provide economically equivalent payments or benefits to Executive to the extent permitted by law.

(j) Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Delaware applicable to contracts executed in and to be performed entirely within such State, without giving effect to the conflict of law principles thereof. Any dispute hereunder may be adjudicated in any Federal or state court sitting in the State of Delaware or, at the Company's election, in any other state in which Executive maintains Executive's principal residence or Executive's principal place of business.

(k) No Conflicts. (A) Executive represents and warrants to the Company that Executive is not a party to or otherwise bound by any agreement or arrangement (including any license, covenant, or commitment of any nature), or subject to any judgment, decree, or order of any court or administrative agency, that would conflict with or will be in conflict with or in any way preclude, limit or inhibit Executive's ability to execute this Agreement or to carry out Executive's duties and responsibilities hereunder. (B) The Company represents and warrants to Executive that the Company is not a party to or otherwise bound by any agreement or arrangement (including any license, covenant, or commitment of any nature), or subject to any judgment, decree, or order of any court or administrative agency, that would conflict with or will be in conflict with or in any way preclude, limit or inhibit the Company's ability to execute this Agreement or to carry out the Company's duties and responsibilities hereunder.

(l) Severability. The provisions of this Agreement shall be deemed severable and the invalidity or unenforceability of any provision shall not affect the validity or enforceability of the other provisions hereof.

(m) Inconsistencies. In the event of any inconsistency between any provision of this Agreement and any provision of any employee handbook, personnel manual, program, policy, or arrangement of the Company or its affiliates (including any provisions relating to notice requirements and post-employment restrictions), the provisions of this Agreement shall control, unless Executive otherwise agrees in a writing that expressly refers to the provision of this Agreement whose control Executive is waiving.

(n) Beneficiaries/References. In the event of Executive's death or a judicial determination of Executive's incompetence, references in this Agreement to Executive shall be deemed, where appropriate, to refer to Executive's beneficiary, estate or other legal representative.

(o) Survival. Except as otherwise set forth in this Agreement, the respective rights and obligations of the parties hereunder shall survive the Employment Term and any termination of Executive's employment. Without limiting the generality of the forgoing, the provisions of Section 8, 10, 11, and 12 shall survive the termination of the Employment Term.

(p) Entire Agreement. This Agreement constitutes the entire agreement between the parties hereto and, as of the Effective Date, supersedes the Executive Employment Agreement between the parties hereto dated November 6, 2018 and all prior

agreements, understandings and arrangements, oral or written, between the parties hereto with respect to the subject matter hereof, other than the Executive Retention Bonus arrangement dated May 17, 2018 and the contribution retention bonus arrangement dated August 1, 2019, which shall remain in effect in accordance with its terms.

(q) Counterparts. This Agreement may be executed in one or more counterparts, each of which will be deemed to be an original copy of this Agreement and all of which, when taken together, will be deemed to constitute one and the same agreement.

15. Certain Rules of Construction.

(a) The headings and subheadings set forth in this Agreement are inserted for the convenience of reference only and are to be ignored in any construction of the terms set forth herein.

(b) Wherever applicable, the neuter, feminine or masculine pronoun as used herein shall also include the masculine or feminine, as the case may be.

(c) The term “including” is not limiting and means “including without limitation.”

(d) References in this Agreement to any statute or statutory provisions include a reference to such statute or statutory provisions as from time to time amended, modified, reenacted, extended, consolidated or replaced (whether before or after the date of this Agreement) and to any subordinate legislation made from time to time under such statute or statutory provision.

(e) References to “writing” or “written” include any non-transient means of representing or copying words legibly, including by facsimile or electronic mail.

(f) References to “$” are to United States Dollars.

IN WITNESS WHEREOF, the Company has caused this Agreement to be executed by its duly authorized officer and Executive has executed this Agreement as of the day and year first above written.

ENDO HEALTH SOLUTIONS INC.

By: /s/ Paul V. Campanelli
Name: Paul V. Campanelli
Title: Chairman of the Board of Directors

EXECUTIVE

By: /s/ Mark Bradley
Name: Mark Bradley

EXHIBIT A

FORM OF RELEASE AGREEMENT

THIS RELEASE AGREEMENT (the "Release") is made by and between Mark Bradley ("Executive") and Endo Health Solutions, Inc. (the "Company").

1. FOR AND IN CONSIDERATION of the payments and benefits provided in Section 8(d) (excluding clause (i)) of the Employment Agreement between Executive and the Company dated as of March 6, 2020, (the "Employment Agreement"), Executive, for Executive, his successors and assigns, executors and administrators, now and forever hereby releases and discharges the Company, together with all of its past and present parents, subsidiaries, and affiliates, together with each of their officers, directors, stockholders, partners, employees, agents, representatives and attorneys, and each of their subsidiaries, affiliates, estates, predecessors, successors, and assigns (hereinafter collectively referred to as the "Releasees") from any and all rights, claims, charges, actions, causes of action, complaints, sums of money, suits, debts, covenants, contracts, agreements, promises, obligations, damages, demands or liabilities of every kind whatsoever, in law or in equity, whether known or unknown, suspected or unsuspected, which Executive or Executive's executors, administrators, successors or assigns ever had, now has or may hereafter claim to have by reason of any matter, cause or thing whatsoever; arising from the beginning of time up to the date Executive executes the Release: (i) relating in any way to Executive's employment relationship with the Company or any of the Releasees, or the termination of Executive's employment relationship with the Company or any of the Releasees; (ii) arising under or relating to the Employment Agreement; (iii) arising under any federal, local or state statute or regulation, including, without limitation, the Age Discrimination in Employment Act of 1967, as amended by the Older Workers Benefit Protection Act, Title VII of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, the Employee Retirement Income Security Act of 1974, the Equal Pay Act, Sections 1981 through 1988 of Title 42 of the United States Code, the Immigration Reform and Control Act, the Workers Adjustment and Retraining Notification Act, the Occupational Safety and Health Act, the Family and Medical Leave Act, the Fair Labor Standards Act of 1938, Executive Order 11246, the Pennsylvania Human Relations Act, the Pennsylvania Whistleblower Law, the New York State Human Rights Law, the New York Labor Law and the New York Civil Rights Law and/or the applicable state or local law or ordinance against discrimination, each as amended; (iv) relating to wrongful employment termination or breach of contract; or (v) arising under or relating to any policy, agreement, understanding or promise, written or oral, formal or informal, between the Company and any of the Releasees and Executive; provided, however, that notwithstanding the foregoing, nothing contained in the Release shall in any way diminish or impair: (a) any rights Executive may have, from and after the date the Release is executed; (b) any rights to indemnification that may exist from time to time under the Company's certificate of

incorporation or bylaws, or state law or any other indemnification agreement entered into between Executive and the Company; (c) any rights Executive may have under any applicable general liability and/or directors and officers insurance policy maintained by the Company; (d) any rights Executive may have to payments and benefits under Sections 8(a)(i) and (iii) of the Employment Agreement; (e) the right to receive the following payments and benefits: [SPECIFIC LIST OF COMPENSATION AND BENEFITS PAYABLE UNDER SECTIONS 8(a)(ii), (iv), (v) AND (vi) OF THE EMPLOYMENT AGREEMENT TO BE INCLUDED]; (f) Executive's ability to bring appropriate proceedings to enforce the Release; and (g) any rights or claims Executive may have that cannot be waived under applicable law (collectively, the "Excluded Claims"). Executive further acknowledges and agrees that, except with respect to Excluded Claims, the Company and the Releasees have fully satisfied any and all obligations whatsoever owed to Executive arising out of Executive's employment with the Company or any of the Releasees, and that no further payments or benefits are owed to Executive by the Company or any of the Releasees.

2. [Upon the Release becoming effective, the Company hereby discharges and generally releases Executive from all claims, causes of action, suits, agreements, and damages which the Company may have now or in the future against Executive for any act, omission or event relating to his employment with the Company or termination of employment therefrom occurring up to and including the date on which the Company signs the Release (excluding any acts or omissions constituting fraud, theft, embezzlement or breach of fiduciary duty by Executive) to the extent that such claim, cause of action, suit, agreement or damages is based on facts, acts, omissions, circumstances or events actually known, or which should have been reasonably known, on the date on which the Company signs the Release by any officer or member of the Board of Directors of the Company.][1]

3. Executive acknowledges and agrees that Executive has been advised to consult with an attorney of Executive's choosing prior to signing the Release. Executive understands and agrees that Executive has the right and has been given the opportunity to review the Release with an attorney of Executive's choice should Executive so desire. Executive also agrees that Executive has entered into the Release freely and voluntarily. Executive further acknowledges and agrees that Executive has had at least [twenty-one (21)][forty-five (45)] calendar days to consider the Release, although Executive may sign it sooner if Executive wishes, but in any case, not prior to the termination date. In addition, once Executive has signed the Release, Executive shall have seven (7) additional days from the date of execution to revoke Executive's consent and may do so by writing to: _____. The Release shall not be effective, and no payments shall be due hereunder, earlier than the eighth (8th) day after Executive shall have executed the Release and returned it to the Company, assuming that Executive had not revoked Executive's consent to the Release prior to such date.

[1] Insert upon a qualifying termination following a Change in Control.

4. It is understood and agreed by Executive that any payment made to Executive is not to be construed as an admission of any liability whatsoever on the part of the Company or any of the other Releasees, by whom liability is expressly denied.
5. The Release is executed by Executive voluntarily and is not based upon any representations or statements of any kind made by the Company or any of the other Releasees as to the merits, legal liabilities or value of Executive's claims. Executive further acknowledges that Executive has had a full and reasonable opportunity to consider the Release and that Executive has not been pressured or in any way coerced into executing the Release.
6. The exclusive venue for any disputes arising hereunder shall be the state or federal courts located in the State of Delaware or, at the Company's election, in any other state in which Executive maintains Executive's principal residence or Executive's principal place of business, and each of the parties hereto irrevocably waives, to the fullest extent permitted by law, any objection which it may now or hereafter have to the laying of the venue of any such proceeding brought in such a court and any claim that any such proceeding brought in such a court has been brought in an inconvenient forum. Each of the parties hereto also agrees that any final and unappealable judgment against a party hereto in connection with any action, suit or other proceeding may be enforced in any court of competent jurisdiction, either within or outside of the United States. A certified or exemplified copy of such award or judgment shall be conclusive evidence of the fact and amount of such award or judgment.

7. The Release and the rights and obligations of the parties hereto shall be governed and construed in accordance with the laws of the State of Delaware. If any provision hereof is unenforceable or is held to be unenforceable, such provision shall be fully severable, and this document and its terms shall be construed and enforced as if such unenforceable provision had never comprised a part hereof, the remaining provisions hereof shall remain in full force and effect, and the court construing the provisions shall add as a part hereof a provision as similar in terms and effect to such unenforceable provision as may be enforceable, in lieu of the unenforceable provision.
8. The Release shall inure to the benefit of and be binding upon the Company and its successors and assigns.

IN WITNESS WHEREOF, Executive and the Company have executed the Release as of the date and year provided below.

IMPORTANT NOTICE: BY SIGNING BELOW YOU RELEASE AND GIVE UP ANY AND ALL LEGAL CLAIMS, KNOWN AND UNKNOWN, THAT YOU MAY HAVE AGAINST THE COMPANY AND RELATED PARTIES.

ENDO HEALTH SOLUTIONS INC.	Mark Bradley
Dated: _____	Dated: _____

Exhibit 10.23

Endo
1400 Atwater Drive
Malvern, PA 19355
484.216.0000

endo.com

August 1, 2019

Mark Bradley
9 Dillon Court
Exton, Pennsylvania, 19341

Dear Mark,

As we continue to execute on our corporate strategy, your leadership and expertise is essential to the Company. With the progress made to date, we are positioning ourselves for continued growth in Branded Pharmaceuticals and U.S. Branded Sterile Injectables, while continuing to stabilize our Retail Generics segment. Our capabilities in these core growth areas will be further enhanced by the expected emergence of the Company's Aesthetics segment as we transition to the crucial next phase of our multi-year turnaround plan.

Based upon the impact of your leadership across the enterprise and the criticality of your ongoing contributions to the planning and execution of Endo's ("Endo" or the "Company") transformation and turnaround plan, I am pleased to offer you a special compensation arrangement that demonstrates your importance to our Company. Specifically, you are eligible for the contribution retention bonus arrangement described in this Letter Agreement ("Letter Agreement").

Your total Contribution Retention Bonus amount is 700,000 USD (the "Contribution Bonus"), subject to applicable tax withholdings. This Contribution Bonus will be paid in installments within thirty (30) days following the end of the first, second, third and fourth Retention Period (each a "Retention Period" as defined below), provided you are employed on such dates by the Company or one of its affiliates. The Retention Periods and the associated installment amounts are as follows: (1) 175,000 USD following September 30, 2019; (2) 175,000 USD following December 31, 2019; (3) 175,000 USD following June 30, 2020; and (4) 175,000 USD following December 31, 2020. To qualify for the Contribution Bonus payments, you must maintain strong work performance and remain actively employed with Endo or one of its affiliates through the applicable Retention Periods.

Payment of the Contribution Bonus will be accelerated if your employment is terminated by Endo without cause (no misconduct or rule violation; *i.e.*, restructuring, reorganization or RIF) before the end of any applicable Retention Period and will be paid within 30 days of your termination date. Any unpaid Contribution Bonus amounts will be forfeited if you are terminated for cause (*i.e.*, misconduct, violation of rule or policy, etc.) or if you resign before the end of a Retention Period.

The offer of this Contribution Bonus is being made to you with the *highest confidentiality*, and it is important that this information and the terms of this offer remain confidential. We therefore request that you not disclose this information to anyone *other than your immediate family members or legal or tax professionals*, and we ask that you direct any questions to Tracy Basso, Chief Human Resources Officer, or Vito Romano, SVP, Total Rewards & HR Operations. By signing this Letter Agreement and returning one copy to Vito Romano (romano.vito@endo.com), you are agreeing to these terms.

The Contribution Bonus will not become part of your remuneration, salary, or compensation (other than for tax purposes) for purposes of the calculation of any severance, notice or redundancy pay, or any other amount that you may be or become entitled to in relation to your employment or the termination of your employment. Nor is the Contribution Bonus an acquired right, since it is part of a global employee retention program implemented by the Company. This Contribution Bonus is a one-time retention award and will not create any legal claim for you in respect to its cause or amount, either for the past or for the future.

This Letter Agreement does not change the at-will employment relationship between you and Endo or alter any other terms and conditions of your employment. You or Endo may terminate your employment at any time, for any reason, with or without Cause. To the extent permitted by applicable law, any controversy or claim arising out of or relating to this Letter Agreement, or a breach thereof, including, but not limited to, any claims arising out of federal, state, or local laws, rules, or regulations, shall be exclusively settled by an arbitration proceeding conducted through Judicial Arbitration & Mediation Services ("JAMS"). This means that the Company and you are waiving your right to a have jury or judge adjudicate such claims or controversies, and that such claims or controversies will be exclusively decided by a single arbitrator. The arbitration will be conducted in accordance with the then-current JAMS Employment Arbitration Rules & Procedures (and no other JAMS rules). The decision of the arbitrator shall be final and binding. Judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction. You and the Company shall each bear your and its own legal expenses, except where otherwise required by law. The arbitration shall take place in Chester County, Pennsylvania, and no dispute under this Letter Agreement shall be adjudicated in any other venue or forum. This Letter Agreement shall be governed by the laws of the State of Pennsylvania, and it may not be modified in the absence of a written document signed by the parties.

Thank you for your ongoing contributions and commitment to our Company as we execute our strategic vision and operating plans at the highest performance level in support of our customers and patients. Please indicate your acceptance by signing and returning one copy of this Letter Agreement to Vito Romano by August 9, 2019.

Sincerely,

/S/ PAUL V. CAMPANELLI

Paul V. Campanelli
President & Chief Executive Officer

Signed and agreed by:

/S/ MARK BRADLEY	August 6, 2019
Mark Bradley	Date

Exhibit 10.24

Endo
1400 Atwater Drive
Malvern, PA 19355
484.216.0000

endo.com

May 17, 2018

Mark Bradley
9 Dillon Court
Exton, PA 19341

Dear Mark:

Based upon your outstanding achievements in 2017 and the criticality of your ongoing contributions to the planning and execution of Endo's ("Endo" or the "Company") transformation and turnaround, I am pleased to provide you with a special employment arrangement that demonstrates your importance to our Company. Included in this special arrangement is your eligibility for retention incentive compensation and a special severance commitment, collectively described in this Letter Agreement ("Letter Agreement").

The total Retention Bonus amount is $450,000 (the "Retention Bonus"), subject to applicable tax withholdings. This Retention Bonus will be paid in three installments within thirty (30) days following each of the payment dates ("Payment Dates"), provided you are employed on such dates by the Company or one of its affiliates. The Payment Dates and the associated amounts are as follows: $100,000 payable as of September 30, 2018; $150,000 payable as of September 30, 2019; and $200,000 payable as of September 30, 2020. Payment of the Retention Bonus will be accelerated if your employment is terminated by the Company without cause ("Cause"), with payment of any remaining amount of the Retention Bonus payable within thirty (30) days of a without Cause employment termination by the Company. Payment of the Retention Bonus will be forfeited if you are terminated for Cause or resign for any reason.

This offer of a Retention Bonus is being made to you with the highest confidentiality and it is important that this information and the terms of the contents remain confidential. We therefore expect that you will NOT disclose this information to any other persons and that you direct any questions to Larry Cunningham, EVP of Human Resources or me. ***Any disclosure to persons other than your immediate family members (or legal counsel or financial advisor) will result in forfeiture of this Retention Bonus. By signing this Letter Agreement and returning one copy to Larry Cunningham (Cunningham.larry@endo.com) you agree to these terms***.

Further, in the event that your employment is terminated by the Company without Cause (as defined in the Endo International PLC Amended and Restated 2015 Stock Incentive Plan) or the Company requires you to be based at any office or location that increases the length of your commute by more than fifty (50) miles, you will receive a severance payment ("Severance Payment") in lieu of any further Base Salary or other compensation and benefits for periods subsequent to the Termination Date, payable in cash as either pay continuation or in a lump sum within sixty (60) days following such termination, equal to one (1.5) times your Final Base Salary, plus the greater of one times (1x) the Final Target Bonus or an amount

equivalent to your last IC payment under the Company's annual incentive plan (excluding any supplemental performance incentive not part of the standard and customary annual IC plan), payable in cash in a lump sum within sixty (60) days following such termination, and the Company shall provide continued coverage for you and your dependents under any health, medical, dental and vision program or policy in which you were eligible to participate as of the time of your employment termination, for twelve (12) months following such termination on the same basis as active employees, which such twelve month period shall run concurrently with the COBRA period, and which coverage shall become secondary to any coverage provided to you by a subsequent employer and to any Medicare coverage for which you become eligible; provided, however, the parties agree to cooperate such that the continued coverage is, to the extent practicable, provided in a manner so as to minimize adverse tax consequences to the Company (in aggregate "Benefit Coverage Continuation").

In order to receive the Severance Payment, any Benefit Coverage Continuation or any remaining Special Cash Award (detailed in the letter to you dated January 27, 2017) following the Termination Date, you are required to sign a general release releasing any and all claims against the Company and its affiliates within 21 days following your Termination Date and to not revoke your consent to such release of claims. For the purposes of this Letter Agreement: (i) "Final Base Salary" shall mean your annual base salary rate as of the Termination Date; (ii) "Final Target Bonus" shall mean your annual incentive compensation target as of the Termination Date; and (iii) "Termination Date" shall mean the date of termination of your employment for any reason, provided that such termination constitutes a "separation from service" from the Company within the meaning of Section 409A of the Internal Revenue Code of 1986, as amended (the "Code"). If the Company terminates your employment for Cause or you resign for any reason, you will not be eligible to receive the Severance Payment, any Benefit Coverage Continuation, or any remaining payment under any retention compensation plan, including the Special Cash Award.

The parties intend for the payments and benefits under this Letter Agreement to be exempt from Section 409A of the Code or, if not so exempt, to be paid or provided in a manner which complies with the requirements of such section, and intend that the Letter Agreement shall be construed and administered in accordance with such intention. In the event the Company determines that a payment or benefit under the Letter Agreement may not be in compliance with Section 409A of the Code, the Company shall reasonably confer with you in order to modify or amend the Letter Agreement to comply with Section 409A of the Code and to do so in a manner to best preserve the economic benefit of the Letter Agreement. Notwithstanding anything contained herein to the contrary, to the extent required in order to avoid accelerated taxation and/or tax penalties under Section 409A of the Code, (i) the Severance Payment and the Benefit Coverage Continuation shall not be paid to you until you would be considered to have incurred a "separation from service" from the Company within the meaning of Section 409A of the Code, (ii) amounts that would otherwise be payable and benefits that would otherwise be provided pursuant to the Letter Agreement during the six-month period immediately following your separation from service shall instead be paid on the first business day after the date that is six (6) months following your separation from service (or death, if earlier), with interest for any cash payments so delayed, from the date such cash amounts would otherwise have been paid at the short-term applicable federal rate, compounded semi-annually, as determined under Section 1274 of the Code for the month in which the payment would have been made but for the delay in payment required to avoid the imposition of an additional rate of tax on you, (iii) each amount to be paid or benefit to be provided under the Letter Agreement shall be construed as a separately identified payment for purposes of Section 409A of the

Code, (iv) any payments that are due within the "short term deferral period" as defined in Section 409A of the Code shall not be treated as deferred compensation unless applicable law requires otherwise and (v) amounts reimbursable to you under the Letter Agreement shall be paid to you on or before the last day of the year following the year in which the expense was incurred and the amount of expenses eligible for reimbursement (and in-kind benefits provided to you) during any one (1) year may not affect amounts reimbursable or provided in any subsequent year.

Pursuant to Section 1833(b) of the Defend Trade Secrets Act of 2016, you acknowledge that you shall not have criminal or civil liability under any federal or State trade secret law for the disclosure of a trade secret that (i) is made (A) in confidence to a federal, state, or local government official, either directly or indirectly, or to an attorney and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Nothing in this Letter Agreement is intended to conflict with Section 1833(b) of the Defend Trade Secrets Act of 2016 or create liability for disclosures of trade secrets that are expressly allowed by such Section. Notwithstanding anything set forth in the Letter Agreement to the contrary, you shall not be prohibited from reporting possible violations of federal or state law or regulation to any governmental agency or entity or making other disclosures that are protected under the whistleblower provisions of federal or state law or regulation, nor are you required to notify the Company regarding any such reporting, disclosure or cooperation with the government.

To protect the Confidential Information (as defined in the Letter Agreement hereto) and other trade secrets of the Company and its affiliates as well as the goodwill and competitive business of the Company and its affiliates, you agree, during the term of your employment with the Company and for a period of twelve (12) months after your cessation of employment with the Company, not to solicit or participate in or assist in any way in the solicitation of any customer, client, supplier, employee or agent of the Company or its affiliates. For purposes of this covenant, "solicit" or "solicitation" means directly or indirectly influencing or attempting to influence any customers, clients, suppliers, employees or agents of the Company or its affiliates to cease doing business with, or to reduce the level of business with, the Company and its affiliates or, with respect to employees or exclusive agents, to become employed or engaged by any other person, partnership, firm, corporation or other entity. You agree that this covenant is reasonable and desirable to protect the Confidential Information of the Company and its affiliates; provided that solicitation is not targeted at the Company's or its affiliates' employees or the provision of references shall not constitute a breach of such obligations. In addition, the terms and conditions of your Proprietary Information, Nondisclosure and Non-Solicitation Agreement in full force and effect.

This Letter Agreement does not change the at-will employment relationship between you and Endo or any other terms and conditions of your employment. You or Endo may terminate your employment at any time, for any reason, with or without Cause. Any controversy or claim arising out of or relating to this Letter Agreement, or a breach thereof, including but not limited to any claims arising out of federal, state or local laws, rules or regulations, shall be exclusively settled by an arbitration proceeding conducted through Judicial Arbitration & Mediation Services (JAMS). The arbitration shall take place in Chester County, Pennsylvania, and no dispute under this Letter Agreement shall be adjudicated in any other venue or forum. The arbitration will be conducted in accordance with the then-current JAMS Employment Arbitration Rules & Procedures (and no other JAMS rules). The decision of the arbitrator shall be final and binding. Judgment on the award rendered by the arbitrator(s) may be entered in any court having

jurisdiction thereof. You and the Company shall split the cost of the arbitration services, and you and the Company shall each bear your and its own legal expenses. This Letter Agreement shall be governed by the laws of the State of Pennsylvania, and no modification(s) hereof may be made in the absence of a written document signed by the parties. This Letter Agreement constitutes the entire agreement between the parties and supersede all prior agreements, understandings and arrangements, oral or written, between the parties with respect to the subject matter hereof; provided, however, that this Letter Agreement shall not supersede the Special Cash Award letter agreement by and between you and Endo dated January 17, 2017; which shall remain in full force and effect.

Mark, thank you for your ongoing contributions and commitment to our Company as we execute our strategic vision and operating plans at the highest performance level in support of our customers and patients. Please indicate your acceptance by signing and returning one copy of this Letter Agreement to Larry Cunningham.

Sincerely,

/S/ BLAISE COLEMAN

Blaise Coleman
EVP & Chief Financial Officer

Signed and agreed by:

/S/ MARK BRADLEY	May 22, 2018
Mark Bradley	Date

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

The following is a list of significant subsidiaries of the Company as of December 31, 2019.

Subsidiary	Jurisdiction of Incorporation or Organization	Ownership by Endo International plc
Actient Pharmaceuticals LLC	Delaware	Indirect
Actient Therapeutics, LLC	Delaware	Indirect
Anchen Pharmaceuticals 2, Inc.	Delaware	Indirect
Astora Women's Health, LLC	Delaware	Indirect
Auxilium Pharmaceuticals, LLC	Delaware	Indirect
Endo Designated Activity Company	Ireland	Direct
Endo Eurofin Unlimited Company	Ireland	Indirect
Endo Finance II Unlimited Company	Ireland	Indirect
Endo Finance IV Unlimited Company	Ireland	Indirect
Endo Finance Unlimited Company	Ireland	Indirect
Endo Finance LLC	Delaware	Indirect
Endo Finance Operations LLC	Delaware	Indirect
Endo Global Biologics Limited	Ireland	Indirect
Endo Health Solutions Inc.	Delaware	Indirect
Endo Ireland Finance Unlimited Company	Ireland	Indirect
Endo Luxembourg Finance Company I S.a r.l.	Luxembourg	Indirect
Endo Luxembourg Finance Company II S.a r.l.	Luxembourg	Indirect
Endo Luxembourg Holding Company S.a r.l.	Luxembourg	Indirect
Endo Management Limited	Ireland	Indirect
Endo Par Innovation Company, LLC	Delaware	Indirect
Endo Pharmaceuticals Inc.	Delaware	Indirect
Endo Pharmaceuticals Valera Inc.	Delaware	Indirect
Endo TopFin Limited	Ireland	Indirect
Endo U.S. Inc.	Delaware	Indirect
Endo U.S. Finance LLC	Delaware	Indirect
Endo US Holdings Luxembourg I S.a r.l.	Luxembourg	Indirect
Endo Ventures Limited	Ireland	Indirect
Generics Bidco I, LLC (doing business as Par Pharmaceutical)	Delaware	Indirect
Generics International (US Parent), Inc.	Delaware	Indirect
Generics International (US) 2, Inc.	Delaware	Indirect
Hawk Acquisition Ireland Limited	Ireland	Indirect
JHP Group Holdings 2, Inc.	Delaware	Indirect
Luxembourg Endo Specialty Pharmaceuticals Holding I S.a r.l.	Luxembourg	Indirect
Paladin Labs Canadian Holding Inc.	Canada	Indirect
Paladin Labs Inc.	Canada	Indirect
Par Pharmaceutical 2, Inc.	Delaware	Indirect
Par Pharmaceutical Companies, Inc.	Delaware	Indirect
Par Pharmaceutical Holdings, Inc.	Delaware	Indirect
Par Pharmaceutical, Inc. (doing business as Par Pharmaceutical)	New York	Indirect
Par Sterile Products, LLC	Delaware	Indirect

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-194253, No. 333-204958, No. 333-219806, No. 333-226677 and No. 333-233029) and Form S-3 (No. 333-226676) of Endo International plc of our report dated February 26, 2020 relating to the financial statements and financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Philadelphia, Pennsylvania
February 26, 2020

Exhibit 24.1

POWER OF ATTORNEY

Each of the undersigned, hereby constitutes and appoints each of Paul V. Campanelli, Blaise Coleman, Matthew J. Maletta and Yoon Ah Oh to be his or her true and lawful attorneys-in-fact and agents, with full power of each to act alone, and to sign for the undersigned and in each of their respective names in any and all capacities stated below, this Annual Report on Form 10-K (and any amendments hereto) and to file the same, with exhibits hereto and thereto and other documents in connection herewith and therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his or her substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Power of Attorney has been signed by the following persons in the capacities and on the dates indicated.

Signature	**Title**	**Date**
/s/ Roger H. Kimmel Roger H. Kimmel	Senior Independent Director	February 19, 2020
/s/ Shane M. Cooke Shane M. Cooke	Director	February 19, 2020
/s/ Nancy J. Hutson, Ph.D. Nancy J. Hutson, Ph.D.	Director	February 19, 2020
/s/ Michael Hyatt Michael Hyatt	Director	February 19, 2020
/s/ William P. Montague William P. Montague	Director	February 19, 2020

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Paul V. Campanelli, certify that:

1. I have reviewed this annual report on Form 10-K of Endo International plc;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's Board of Directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/S/ PAUL V. CAMPANELLI

Paul V. Campanelli

President and Chief Executive Officer
(Principal Executive Officer)

Date: February 26, 2020

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Blaise Coleman, certify that:

1. I have reviewed this annual report on Form 10-K of Endo International plc;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's Board of Directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/S/ BLAISE COLEMAN

Blaise Coleman

Executive Vice President, Chief Financial Officer
(Principal Financial Officer)

Date: February 26, 2020

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Paul V. Campanelli, as President and Chief Executive Officer of Endo International plc (the Company), hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Annual Report on Form 10-K of the Company for the annual period ended December 31, 2019 (the Report) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m); and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/S/ PAUL V. CAMPANELLI

Name: Paul V. Campanelli

Title: President and Chief Executive Officer
(Principal Executive Officer)

Date: February 26, 2020

A signed original of this written statement required by Section 906 has been provided to, and will be retained by, Endo International plc and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Blaise Coleman, as Chief Financial Officer of Endo International plc (the Company), hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Annual Report on Form 10-K of the Company for the annual period ended December 31, 2019 (the Report) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m); and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/S/ BLAISE COLEMAN

Name: Blaise Coleman

Title: Executive Vice President, Chief Financial Officer
(Principal Financial Officer)

Date: February 26, 2020

A signed original of this written statement required by Section 906 has been provided to, and will be retained by, Endo International plc and furnished to the Securities and Exchange Commission or its staff upon request.