UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-K

[☒] 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 - 1-11353

LABORATORY CORP OF AMERICA HOLDINGS

(Exact name of registrant as specified in its charter)

Delaware	**13-3757370**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

358 South Main Street		
Burlington,	**North Carolina**	**27215**
(Address of principal executive offices)		(Zip Code)

(Registrant's telephone number, including area code) **336-229-1127**

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

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock, $0.10 par value	LH	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark whether the registrant is well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes [X] No [ ].

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes [ ] No [X].

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 [X] 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 [X] 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 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 [X].

As of June 30, 2019, the aggregate market value of the common stock held by non-affiliates of the registrant was approximately $16.1 billion, based on the closing price on such date of the registrant's common stock on the New York Stock Exchange.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date: 97.3 million shares as of February 26, 2020.

DOCUMENTS INCORPORATED BY REFERENCE

List hereunder the following documents if incorporated by reference and the Part of the Form 10-K into which the document is incorporated:

Portions of the Registrant's Notice of Annual Meeting and Proxy Statement to be filed no later than 120 days following December 31, 2019, are incorporated by reference into Part III.

Index

PART I

Item 1. BUSINESS

Laboratory Corporation of America® Holdings (LabCorp® or the Company) is a leading global life sciences company that is deeply integrated in guiding patient care. The Company provides comprehensive clinical laboratory and end-to-end drug development services through its LabCorp Diagnostics (LCD) and Covance Drug Development (CDD) segments. LabCorp is positioned at the convergence of research and care delivery to enable more precise and individualized healthcare, bringing together world-class diagnostics and drug development capabilities.

With nearly 65,000 employees worldwide, the Company's mission is to improve health and improve lives by delivering world-class diagnostics, accelerating the availability of innovative medicines to patients, and using technology to change the way care is delivered. LabCorp, an S&P 500 company, was named to FORTUNE magazine's 2019 List of World's Most Admired Companies. The Company has also been recognized as a Best Place to Work for LGBTQ Equality with a perfect score from Human Rights Campaign's Corporate Equality Index (CEI), the nation's premier benchmarking survey and report on corporate policies and practices related to LGBTQ workplace equality.

The Company provides diagnostic, drug development and technology-enabled solutions for more than 160 million patient encounters per year, or more than 3 million per week. The Company also supports clinical trial activity in approximately 100 countries through its industry-leading central laboratory, preclinical, and clinical development businesses, generating more safety and efficacy data to support drug approvals than any other company. CDD collaborated on 85% of the novel drugs approved by the U.S. Food and Drug Administration (FDA) in 2019, including 100% of the novel oncology drugs and 86% of the rare and orphan disease drugs. In addition, CDD has been involved in the development of all of the current top 50 drugs on the market as measured by sales revenue.

The Company celebrated its 50th anniversary in 2019, marking its transformation from a laboratory in a former hospital in 1969 to a leading global life sciences company today. The Company, a Delaware corporation, is headquartered in Burlington, North Carolina, and was incorporated in 1971. Since its incorporation, the Company has continually expanded and diversified its business offerings, technological expertise, geographic reach, revenue base, and financial growth opportunities through a combination of organic investments and disciplined acquisitions.

The Company serves a broad range of customers, including managed care organizations (MCOs), biopharmaceutical, medical device and diagnostics companies, governmental agencies, physicians and other healthcare providers, hospitals and health systems, employers, patients and consumers, contract research organizations (CROs) and independent clinical laboratories. Leveraging the Company's extensive scientific and therapeutic experience, cutting-edge technology, and considerable real-world data and patient intelligence, the Company's customers can understand and respond to evolving patient needs with precision.

The breadth of the Company's offerings has accelerated revenue and profit growth while generating strong returns for shareholders through share price appreciation. The Company's diversified service offerings also help to balance the impact of changes in the U.S. healthcare payment system, such as the reductions to the Medicare fee schedule under the Protecting Access to Medicare Act (PAMA), and associated reductions to other payer fee schedules, including Medicaid.

Power of Combined Capabilities

Today, the Company participates in drug development from discovery through commercialization; it is the go-to partner for the development, validation and commercialization of companion diagnostics, which are key drivers of precision medicine; it offers a growing menu of high-quality, high-value clinical laboratory tests; and, increasingly, it provides guidance to consumers and care providers about how to integrate drugs and diagnostics into patient care. The Company has proprietary data sets with approximately 35 billion lab test results, including approximately 50 percent of the United States (U.S.) population and a significant database of experienced investigators and trial sites.

The combination of LCD's and CDD's core capabilities and scientific expertise enables the Company to create compelling solutions for clients. As an example, the combination has contributed to the Company's position as a market leader in the development and commercialization of companion and complementary diagnostics. LCD and CDD have been involved in the development of drugs and their associated companion diagnostics for more than 20 years, and together have supported more FDA-approved companion diagnostics than any other company. In 2019, the Company's dedicated companion diagnostics team collaborated with 30 clients on more than 150 companion diagnostics projects.

Health systems customers continue to express interest in the Company's ability to both reduce their lab testing costs and bring them meaningful clinical research opportunities through the power of the Company's uniquely combined capabilities. The Company continues to increase CDD site partnerships with U.S.-based health systems and have offered these health systems many meaningful clinical research opportunities. The two-pronged value proposition continues to gain traction with health system partners.

By combining LCD patient population data with CDD's site location tools and protocol design insights, the Company delivers a truly integrated patient-centric approach to recruitment. Through the LCD portal, patients can consent to release their medical information to CDD to be contacted for opportunities to participate in research including clinical studies, medical device studies and other studies to inform new therapies and better understand patients' needs. As a result of the powerful combination of LCD and CDD insights and data, the Company has the opportunity to win studies and recruit patients and investigators for trials more efficiently in important therapeutic areas like oncology.

Focus on the Future

The Company believes that it can play a larger role in the rapidly evolving healthcare environment by supporting customers' transition to value-based care, streamlining the drug development process, and creating a leading and differentiated consumer experience.

Value-Based Care

As the healthcare system continues the transition to value-based care, the Company is supporting customers that are more focused on quality of care and outcomes through its differentiated, comprehensive solutions including leading laboratory services, clinical decision support (CDS), robust data integration offerings, drug development solutions, and payer and provider collaborations. The Company is a critical player in enabling targeted, tailored, high-value care in part by helping physicians choose the right test to determine the right medication at the right dosage, and helping to deliver the next generation of lifesaving drugs.

In 2019, LabCorp established new data collaborations with more than 30 value-based care organizations including the announcement of a strategic collaboration with New Jersey Primary Care Association (NJPCA) to advance value-based care at 23 community health centers throughout New Jersey. The project will help NJPCA members achieve value-based care objectives by providing integrated lab and clinical data in a more accessible, comprehensive and secure manner, with a focus on improving outcomes for patients with chronic conditions, such as diabetes and chronic kidney disease. The platform will be available through LabCorp's Care Intelligence application, which is supported by HealthEC. It will allow for population health analyses, showing trends across communities, and for enhanced monitoring of individual patients to understand when intervention is needed and how a patient is responding to treatment.

Through the efforts of a dedicated team, LabCorp also continues to expand its service solutions to support clients in meeting value-based care goals and objectives, and to work with organizations focused directly on value-based care, such as Accountable Care Organizations, Clinically Integrated Networks, Integrated Delivery Networks, Independent Physicians Associations, national provider groups and Federally Qualified Health Centers. In 2019, LabCorp launched lab-based data reports called Insight Analytics. These reports support provider organizations in the efficient use of laboratory testing (laboratory stewardship), and the enhanced management of patients with chronic conditions such as diabetes, chronic kidney disease, and cardiovascular disease.

Streamlining Drug Development

In today's healthcare landscape, there is a need to streamline the drug and device development process to bring new therapies to market faster. However, the number of compounds in the pipeline continues to grow and the development path is increasingly complex and costly. These trends have led to growing competition for investigators and patients in clinical studies. In this environment, demand from biopharmaceutical companies for data-driven study design and execution, scalable, innovative tools and processes, and access to relevant analytes, biomarkers and tests continues to rise.

CDD's unique end-to-end global capabilities provide biopharmaceutical and medical device companies with differentiated solutions to streamline development with a focus on more efficient study design, and faster and more targeted identification of eligible patients and investigators with the power of combined capabilities with LCD. The Company's investment in CDD's unmatched combination of capabilities, analytics and scale has strengthened its leadership advantage in areas such as precision medicine, companion diagnostics and decentralized trials. The Company's integration of new innovations in this space, using sophisticated analytics capabilities and artificial intelligence, are intended to enhance efficiency and quality. In addition, LCD's strategic relationships with hospitals and health systems create opportunities for those organizations to become research partners to participate in studies and clinical trials with CDD.

The unique combination of the Company's diagnostic and drug development operating models enables the Company to create differentiated and innovative solutions to streamline the drug and device development process. In 2019, the Company introduced an innovative new patient direct offering, streamlining patient recruitment by using LCD data to quickly and effectively contact appropriate candidates for trials through targeting a set of patients likely to qualify for the study based on diagnosis code, test results, and geographic location. After patients are enrolled, they are then routed to a LCD patient service center (PSC) for testing.

The Company also expects to see increasing adoption of decentralized, hybrid and virtual clinical trials by clinical trial sponsors. These offerings, individually or in combination, may speed patient recruitment and site selection, and improve trial design and data quality, thereby decreasing study duration, costs, and the patient burden of participating in clinical research.

The Growing Importance of the Consumer in Healthcare

As patients have more responsibility for the costs of their care and technological advances drive an expectation of convenient channels for accessing healthcare, the Company continues to invest heavily in new tools, technology and services to facilitate a differentiated consumer experience.

In 2019, the Company announced an expansion to its Pixel by LabCorp™ platform, which was first introduced in 2018 with an initial offering of self-collection kits to empower consumers to order and obtain wellness tests in the comfort and privacy of their homes. The expanded Pixel offering allows consumers to purchase testing online, visit a convenient LCD PSC for specimen collection by a phlebotomist, and receive confidential results through a secure online portal. The tests are performed in LCD's laboratories, using the same equipment and processes as the testing that clinicians order for their patients during in-office visits. The Company also continues to invest in and evaluate technologies that may enable additional methods for self-collection of specimens, and is exploring the potential use of wearable devices for diagnostics and in clinical trials.

The Company also continued its partnership with Walgreens to open comfortable and convenient PSCs inside Walgreens stores. At the close of 2019, more than 130 LabCorp at Walgreens sites were open or in progress to open in multiple states.

The Company performs the DNA testing for 23andMe. The Company also continues to support telemedicine, and other new care delivery models, that empower and engage healthcare consumers.

Hospital and Health System Partnerships

As the healthcare industry continues to consolidate, the new combined organizations can provide economies of scale and the capital to make substantially greater investments in technology, and in some cases they can exercise greater control over how and where patients access care. That industry consolidation generates additional opportunities for the Company's unique combination of diagnostics and drug development. The Company can offer a wide range of highly efficient and integrated lab testing across multiple types of care settings and can simplify information technology structures and interfaces to standardize lab testing and data. That data can also lead to differentiated integrated solutions, as the Company can identify patients who may be eligible for clinical trials and physicians who may be able to serve as clinical trial investigators.

For more than three decades, the Company has developed and maintained a broad range of collaborations with hospitals and health systems and the Company continues to develop those relationships. In 2019, the Company announced a collaboration with the Mount Sinai Health System, New York City's largest integrated healthcare delivery system, to establish the Mount Sinai Digital and Artificial Intelligence (AI)-Enabled Pathology Center of Excellence. The Company, which has implemented the Philips IntelliSite Pathology Solution in four of its laboratories and plans to deploy it to additional laboratories, will use its experience and expertise to lead the integration of digital pathology into clinical practice across Mount Sinai's hospitals. Other new or extended strategic relationships with health systems and other large provider organizations across the country include South Bend Medical Foundation, MetroPath and New Jersey Primary Care Association. The Company believes that these relationships are foundational in delivering high-quality, outcomes-driven, and cost-effective care to patients.

Company Reporting

The Company's Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and all amendments to those reports are made available free of charge through the Investor Relations section of the Company's website at www.labcorp.com as soon as reasonably practicable after such material is electronically filed with, or furnished to, the U.S. Securities and Exchange Commission (SEC). Additionally, the SEC maintains a website at http://www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers, including the Company, that file electronically with the SEC.

The matters discussed in this "Business" section should be read in conjunction with the Consolidated Financial Statements found in Item 8 of Part II of this report, which include additional financial information about the Company. This report includes forward-looking statements that involve risks or uncertainties. The Company's results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risk factors described in Item 1A of Part I of this report and elsewhere. For more information about forward-looking statements, see "Forward-Looking Statements" in Item 7.

Business Segments

The Company reports its business in two segments, LCD and CDD. In 2019, LCD and CDD contributed 60% and 40%, respectively, of revenues to the Company, and in 2018 contributed 62% and 38%, respectively. For further financial information about these segments, including information for each of the last three fiscal years regarding revenue, operating income and other important information, see Note 21 Business Segment Information to the Consolidated Financial Statements.

LCD Segment

LCD is an independent clinical laboratory business. It offers a comprehensive menu of frequently requested and specialty testing through an integrated network of primary and specialty laboratories across the U.S. This network is supported by a sophisticated information technology system, with more than 65,000 electronic interfaces to deliver test results, nimble and efficient logistics, and local labs offering rapid response testing. The Company also provides patient access points, strategically and conveniently located throughout the U.S., including nearly 2,000 PSCs operated by the Company and more than 6,000 in-office phlebotomists who are located in customer offices and facilities. Although testing for healthcare purposes and customers who provide healthcare services represents the most significant portion of the clinical laboratory industry, clinical laboratories also perform testing for other purposes and customers, including employment and occupational testing, DNA testing to determine parentage and to assist in immigration eligibility determinations, environmental testing, wellness testing, toxicology testing, pain management testing, and medical drug monitoring. LCD offers an expansive test menu including a wide range of clinical, anatomic pathology, genetic and genomic tests, and regularly adds new tests and improves the methodology of existing tests to enhance patient care.

With the introduction of Pixel by LabCorp in 2018, the Company also offers consumer-initiated wellness testing.

Through the dedicated effort of approximately 39,000 employees, LCD typically processes tests for more than 3 million patient encounters each week and has laboratory locations throughout the U.S. and other countries, including Canada.

Clinical Laboratory Testing Industry

It is estimated that although laboratory services account for less than 3.0% of total U.S. healthcare spending (and approximately 1.0% of Medicare expenditures), the results of those tests impact a majority of all clinical decisions regarding a patient's care.

Laboratory tests and procedures are used to assist in the diagnosis, monitoring and treatment of diseases and medical conditions through the examination of substances in blood, urine, tissues and other specimen types. The results of such tests can help in the evaluation of health, the detection of conditions or pathogens and the selection of appropriate therapies. Clinical laboratory testing is generally categorized as either clinical pathology testing, which is performed on body fluids including blood, or anatomical pathology testing, in which a pathologist examines histologic (i.e., tissue) or cytologic (i.e., human cells) samples. Clinical and anatomical pathology procedures are frequently ordered as part of regular healthcare office visits and hospital admissions in connection with patient care. Certain of these tests and procedures are used in the diagnosis and management of a wide variety of medical conditions such as cancer, infectious disease, endocrine disorders, cardiac disorders and genetic disease.

The Company believes that in 2019, the U.S. clinical laboratory testing industry generated revenues of approximately $80 billion. The clinical laboratory industry consists primarily of three types of providers: hospital-based laboratories, physician-office laboratories and independent clinical and anatomical pathology laboratories, such as those operated by LCD. The clinical laboratory business is intensely competitive. The Centers for Medicare and Medicaid Services (CMS) of the U.S. Department of Health and Human Services (HHS) has estimated that in 2019 there were approximately 9,000 hospital-based laboratories, more than 212,000 physician-office laboratories and approximately 6,500 independent clinical laboratories in the U.S. LCD competes with all of those laboratories.

LCD believes that the selection of a laboratory is primarily based on the following factors:

- Quality, timeliness and consistency in reporting test results;
- Reputation of the laboratory in the medical community or field of specialty;
- Contractual relationships with MCOs;
- Service capability and convenience;
- Number and type of tests performed;
- Connectivity solutions offered; and
- Pricing of the laboratory’s services.

LCD believes that it competes favorably in all of these areas.

LCD believes that consolidation in the clinical laboratory testing business will continue. In addition, LCD believes that it and other large, independent clinical laboratory testing companies will be able to increase their share of the overall clinical laboratory testing market due to a number of factors, including cost efficiencies afforded by large-scale automated testing, mergers and acquisitions of complementary businesses, changes in payment models to performance and value-based reimbursement to deliver better outcomes at lower cost, and large, integrated service networks. In addition, legal restrictions on physician referrals and physician ownership of laboratories, as well as ongoing regulation of laboratories, are expected to continue to contribute to the ongoing consolidation of the industry.

LCD Testing Operations and Productivity

LCD has a network of PSCs offering specimen collection services, phlebotomists placed at a customer location, branches, rapid response (STAT) laboratories, primary testing laboratories, and specialty testing laboratories. A number of LCD's regional and specialty laboratories hold ISO 15189 certification, providing customers with the assurance of quality that comes with this rigorous global standard.

Generally, a PSC is a facility maintained by LCD to serve patients. The PSC staff collects specimens for testing as requested by the physician. PSC staff also perform specimen preparation to produce laboratory-ready samples that can be tested upon receipt by the testing laboratory, expediting the delivery of test results. A significant portion of patient specimens are collected by the customer's staff at its office or facility, or in some cases, by an LCD phlebotomist who has been placed in the customer location for the specific purpose of collecting and processing specimens to be tested by LCD.

The Company has developed a comprehensive and nimble supply chain that efficiently moves specimens from the point of collection to the testing laboratory. Extending across the entire life cycle of a patient sample, from sample collection to the delivery of the test result, the LCD supply chain leverages optimized logistics, specimen intake, tracking, and processing procedures that minimize errors and expedite the performance of testing and delivery of results. Specimens collected at PSCs and at customer locations are picked up principally by LCD's in-house courier system and delivered to a branch or directly to one of LCD's laboratories for testing. A branch is a regional facility which serves as a logistics hub, collecting specimens in a specific geographic region for shipment to a primary or specialty laboratory for testing, and is also frequently used as a base for sales and distribution staff. STAT laboratories, which may be co-located with a branch or a PSC, perform critical testing for nearby customers, with results typically delivered within 2-3 hours of receipt of the specimen. Primary testing laboratories perform frequently requested testing on a large scale. Specialty testing laboratories perform one or more types of specialty and esoteric testing.

Each specimen and the associated test order is checked for completeness and given a unique identification number. The unique identification number assigned to each specimen associates the results to the appropriate patient. Test orders, including patient demographics, ordering physician information, specific testing requested, a specimen inventory, and billing information are entered into LCD's systems electronically or manually depending on the method of receipt and the preferences of the ordering physician. Most of LCD's automated testing equipment is connected to its information systems, and test results are entered electronically or manually depending on the test type and equipment involved.

Most specimens are picked up from the customer's location by late afternoon or early evening and delivered to the testing laboratory by late evening on the day of collection or overnight. Test results are, in most cases, electronically delivered to the physician via electronic medical record interfaces, the LabCorp Link™ platform, smart printers, mobile, or other digital platforms. The Company makes test results available directly to patients through its LabCorp | Patient mobile app and online tool, and by enabling access to test results through Health Records on iPhone.

LCD remains focused on improving quality and productivity while lowering costs throughout all phases of its operations, and LCD's commitment to technology, automation, process optimization, and facility rationalization initiatives support the Company's commitment to continuous improvement and elimination of waste. As part of an ongoing commitment to be an efficient and high value provider of laboratory services, between 2015 and 2017, LCD executed the first phase of a comprehensive business process improvement initiative, referred to as LaunchPad, to reengineer its systems and processes to create a sustainable and more efficient business model, and to improve the experience of all stakeholders. The Company achieved goals for that initial phase of LaunchPad of delivering both short- and long-term savings, and implementing system and process improvements that will continue to yield benefits for the foreseeable future. In late 2018, the Company began phase II of LaunchPad for LCD. The Company is on track for LCD’s LaunchPad phase II initiative to deliver approximately $200.0 million in net savings by the end of 2021, while incurring approximately $40.0 million in one-time implementation costs.

LCD Testing Services

LCD offers a growing menu of nearly 5,000 tests. Several hundred of those tests are used in general patient care by physicians to establish or support a diagnosis, to monitor treatment or to search for an otherwise undiagnosed condition. The most frequently requested tests include blood chemistry analyses, urinalyses, blood cell counts, thyroid tests, Pap tests, hemoglobin A1C, prostate-specific antigen (PSA), tests for sexually-transmitted diseases (e.g. chlamydia, gonorrhea, trichomoniasis and human immunodeficiency virus (HIV)), hepatitis C (HCV), tests, vitamin D, microbiology cultures and procedures, and alcohol and other substance-abuse tests. LCD performs this core group of tests in its major laboratories using sophisticated instruments, with most results reported within 24 hours or less.

In addition, LCD provides a comprehensive range of specialty testing services in the areas of women's health, allergy, diagnostic genetics, cardiovascular disease, infectious disease, endocrinology, oncology, coagulation, pharmacogenetics, toxicology, and medical drug monitoring. LCD also performs a range of other testing services, including parentage and occupational testing and wellness testing for employers.

LCD's Specialty Testing Group performs esoteric testing, cancer diagnostics and other complex procedures. The Specialty Testing Group offers advanced methods and access to scientific expertise and consultation in the following disciplines:

Anatomic Pathology/Oncology. LCD offers advanced comprehensive tissue analysis, including immunohistochemistry, (IHC), cancer cytogenetics and fluorescence in situ hybridization (FISH), through its Dianon Pathology and Integrated Oncology specialty testing laboratories. Applications for molecular diagnostics continue to increase in oncology for leukemia analysis and solid tumor assessment. In cancers such as colon and lung cancer, assays that analyze genetic mutations can help guide appropriate therapy choices for a given patient. Through the combined expertise of LCD and CDD, the Company is a recognized leader in the development and introduction of companion and complementary diagnostics, which are becoming increasingly important in the treatment of cancer with new, targeted therapies for which only certain patients may be eligible, or which may provide greater or lesser benefits to certain patients, based on their individual genetic makeup.

Cardiovascular Disease. LCD's cardiovascular menu includes cholesterol tests, expanded lipid profiles, a metabolic syndrome profile and tests for heart failure, thrombosis and stroke. LCD also offers complete testing for monitoring disease progression and therapy response, including its Cardiovascular Disease Surveillance portfolio to help guide treatment and monitoring decisions.

Coagulation. LCD offers an extensive menu of tests for hemostasis and thrombosis, including bleeding profiles and screening tests, factor analysis, thrombin generation markers, and thrombotic risk evaluation. LCD also performs testing in support of clinical trials largely for therapies to treat hemophilia.

Diagnostic Genetics. LCD offers cytogenetic, molecular cytogenetic, biochemical and molecular genetic tests. The biochemical genetics offerings include a variety of prenatal screening options, including integrated and sequential prenatal assays and non-invasive prenatal testing (NIPT) for more sensitive and earlier assessment of risk for multiple fetal chromosomal aneuploidies, such as Down syndrome. LCD has expanded its cytogenetics offerings through the use of whole genome single-nucleotide polymorphism (SNP) microarray technology, which provides enhanced detection of subtle chromosomal changes associated with the etiology of mental retardation, developmental delay and autism. The molecular genetics services include multiplex analyses of a variety of disorders, gene sequencing applications for both somatic and germ-line alterations and whole exome sequencing. Through Integrated Genetics, LCD provides the most comprehensive genetic test menu in the industry, as well as an experienced team of genetic counselors and medical geneticists to provide patients and their physicians with analysis, assessment and interpretation of genetic test results to help optimize patient decisions and outcomes.

Endocrinology. LCD is a leading provider of advanced hormone/steroid testing, including comprehensive services for the endocrine specialist. LCD has expanded its menu in esoteric endocrine testing and has launched an initiative to develop steroid testing utilizing mass spectrometry technology. Mass spectrometry is used for detection of low levels of small molecule steroids, including testosterone in women, children and hypogonadal men. Additionally, LCD offers endocrine-related tests for genetic conditions including congenital adrenal hyperplasia, short stature, and thyroid cancer, along with providing extensive age- and gender-related reference intervals for those tests.

Infectious Disease. LCD provides complete HIV testing services, including viral load measurements, genotyping and phenotyping, and host genetic factors that are important tools in managing and treating HIV infections. The addition of resistance tests, including PhenoSense®, PhenoSenseGT®, Trofile®, and GenoSure PRIme® complements the existing HIV GenoSure® assay and provides LCD with an industry-leading, comprehensive portfolio of HIV resistance testing services. LCD also provides extensive testing services for HCV infections, including both viral load determinations and strain genotyping and host genetic factors. LCD continues to develop molecular assays for infectious disease.

Women's Health. LCD offers a comprehensive menu of women's health testing. A key feature of this menu is the industry's leading suite of NIPT tests, including MaterniT® GENOME, a fully validated genome-wide NIPT test, reflecting the Company's deep prenatal genetics capabilities. Other LCD testing options for women's health include the NuSwab® portfolio, featuring high-quality, convenient single-swab tests for common infections of the genital tract; an innovative age-based test protocol for cervical cancer and sexually-transmitted disease screening; liquid-based Pap testing with image-guided cervical cytology for improved cervical cancer detection; and out-of-the-vial Pap testing with options for human papillomavirus (HPV). LCD also offers tests that utilize the latest technical innovations for the full range of reproductive care, including maternal serum screening, prenatal diagnostics, ethnicity carrier screening, testing for causes of infertility or miscarriage as well as postnatal testing services.

Pharmacogenetics. LCD provides access to the latest tests in the emerging field of pharmacogenetics. These tests can help physicians understand how a patient metabolizes certain drugs, allowing them to select the most appropriate therapies or adjust dosing.

Parentage and Donor Testing. LCD provides forensic testing used in connection with parentage evaluation services that assist in determining parentage for child support enforcement proceedings and determining genetic relationships for

immigration purposes. Parentage testing involves the evaluation of immunological and genetic markers in specimens obtained from the child, the mother and the alleged or putative father. LCD also provides testing services in reconstruction cases, which assist in determining parentage without the presence of the parent in question. Additionally, LCD provides human leukocyte antigen testing to match organ and tissue transplant recipients with compatible donors.

Occupational Testing Services. LCD provides testing services for the detection of drug and alcohol use for private and government customers. These testing services are designed to produce forensic quality test results that satisfy the rigorous requirements of regulated and non-regulated workplace drug testing programs. Additionally, LCD provides employee wellness screenings comprised of biometric measurements and diagnostic tests to assist in the detection of health risks including cardiovascular disease and diabetes. LCD also provides medical drug monitoring tests that detect common pain medications and illicit drugs to assist physicians with assessing the full scope of a patient's drug use.

Medical Drug Monitoring Services. Medical drug monitoring is laboratory testing that monitors patients for the use of prescription pain medications or other controlled substances. These testing services are designed to provide physicians with information relevant to the treatment of patients who are prescribed controlled substances, including opioid pain medications, antianxiety medications, stimulants, and medications prescribed in medication-assisted treatment programs. This testing can help physicians identify patients who are not taking their prescribed doses, which could be an indication that the drugs are being diverted elsewhere, and also to identify patients who may be supplementing their prescribed medication with other, non-prescribed substances. LCD offers broad choice in medical drug monitoring test options. LCD testing may assist in identifying patients who may benefit from greater caution and increased monitoring or interventions when risk factors are identified.

Chronic Disease Programs. LCD uses a programmatic approach to the comprehensive evaluation and treatment of chronic diseases, including chronic kidney disease, cardiovascular disease, metabolic bone disease and diabetes, and it offers CDS reports to both physicians and patients. LCD believes these chronic disease programs represent potential significant savings to the healthcare system by facilitating more effective management of these chronic diseases.

Kidney Stone Prevention. LCD provides services to assist physicians and patients to prevent or minimize the formation of kidney stones, a painful and often debilitating condition that can also require expensive treatment if kidney stones are formed. Through sophisticated algorithms created by the leading specialists in the field, LCD provides patient-specific treatment recommendations and other clinical and patient support for those who have a history of kidney stones or are identified as likely to develop kidney stones.

Development of New Tests

Advances in medicine continue to fundamentally change diagnostic testing. New tests are allowing clinical laboratories to provide unprecedented amounts of health-related information to physicians and patients. New molecular diagnostic tests that have been introduced over the past several years, including a gene-based test for HPV, HIV drug resistance assays, and molecular genetic testing for cystic fibrosis, have now become part of standard clinical practice. LCD continued its industry leadership in gene-based and esoteric testing in 2019. As science continues to advance, LCD expects new testing technologies to emerge and, therefore, intends to continue to invest in advanced testing capabilities so that it can remain on the forefront of diagnostic laboratory testing. The Company has added, and expects to continue to add, new testing technologies and capabilities through a combination of internal development initiatives, technology licensing and partnership transactions, and selected business acquisitions. Through its sales force, LCD rapidly introduces new testing technologies to customers. These capabilities are important in the retention and growth of business.

In 2019, LCD continued its emphasis on scientific innovation and leadership with the introduction of significant test menu and automation enhancements and by launching more than 100 new tests. LCD is focused on the expansion of existing programs in molecular diagnostics as well as the introduction of new assays and assay platforms through licensing partnerships, acquisitions and internal development. The Company's commitment to the scientific advancement in the development and assessment of new diagnostics and therapeutics is evidenced by producing more than 600 scientific studies, articles, and presentations at scientific and industry meetings, along with regular presentations in academic medical center grand rounds and seminars, in 2019. Among the studies published was the largest to date on the performance of cell-free DNA screening of multifetal pregnancies, finding that LCD's MateriniT21® PLUS test provided reliable results that compare favorably to those for singleton pregnancies.

Examples of noteworthy new tests and services introduced by LCD in 2019 include companion diagnostics for bladder cancer and breast cancer, and expansion of its therapeutic drug monitoring portfolio to support personalized treatment of patients with certain inflammatory diseases, such as rheumatoid arthritis and Crohn's disease. LCD introduced a significant expansion to its testing for inherited genetic disorders available through the Inheritest® portfolio of tests. The Company also acquired MNG laboratories in 2019, which greatly enhanced the scope of its specialized test offerings for neurology and brought added capabilities in next-generation sequencing (NGS) testing. LCD extended its exclusive distribution agreement with OmniSeq®, whose NGS-

based assays provide comprehensive genomic and immune profiling to enable oncologists to select the most appropriate therapies or clinical trials for each patient.

LCD continues its collaborations with university, hospital and academic institutions, such as Cedars-Sinai Medical Center, the Centre for Addiction and Mental Health, Cincinnati Children's Hospital Medical Center, Duke University, Johns Hopkins University, the Medical College of Wisconsin, The Mount Sinai Hospital (New York), Mount Sinai Hospital (Toronto), Roswell Park Comprehensive Cancer Center, the University of Tennessee, and Virginia Commonwealth University, to license and commercialize new diagnostic tests.

LCD Technology-Enabled Solutions

LCD's technology-enabled solutions include an innovative and proprietary suite of applications to enable patients, healthcare providers, health systems, accountable care organizations (ACOs), and insurers with convenient and secure access to LCD's data and services. These industry-leading solutions are designed to improve health and improve lives by providing a better laboratory experience for physicians and patients, and ultimately improving the delivery of care.

LCD's centralized and proprietary LabCorp | Link™, which focuses on physicians and health systems, is a suite of capabilities that enhance the customer experience and provide an end-to-end lab solution. These assets and functionalities include:

- A physician portal optimized for web and mobile devices;
- Express electronic ordering for essentially all of LCD's brands and services;
- Integrated results viewing and enhanced reports;
- Lab analytics that provide one-click trending of patient, test and population data;
- CDS tools at the point of testing and resulting;
- AccuDraw, which provides graphical, step-by-step guidance to help improve accuracy, workflow and turnaround time in the collection and processing of specimens at the point of collection;
- Services-oriented architecture with rules-based engines, content aggregation and seamless integration with practice workflow; and
- An installable mobile app available through the Apple and Google app stores that enables healthcare providers to receive alerts that test results are available, view test results, and access test information and contact information for LCD experts from their own mobile device at any time or location.

LCD's centralized and proprietary LabCorp | Patient is a suite of web and mobile applications that enhances the patient's experience. These assets and functionalities include:

- A patient web application optimized for use on desktop computers and mobile devices;
- An installable mobile app available through the Apple Store and Google app stores;
- Biometric ID login support;
- Integrated results viewing and patient education materials;
- Online appointment scheduling;
- Electronic invoice presentment and payment;
- An online patient cost estimator for select genetic tests; and
- An option to receive information about clinical trials.

LCD has also fully deployed two patient self-service products across all PSCs nationwide.

- LabCorp | PreCheck™ is a mobile-optimized web application that allows patients to easily schedule a PSC visit in advance and to complete all demographic and insurance entry and verification in advance, to streamline the check-in process when they arrive for service. PreCheck also features a mobile check-in to indicate arrival in the waiting room without having to wait in line for an Express tablet.
- LabCorp | Express™ uses tablets in custom enclosures and proprietary software located in PSC waiting rooms to enable patients with or without an appointment to check into the PSC. If they do not already have an appointment, they can find the next available one at that or a nearby PSC. Express is optimized to capture and confirm demographic and insurance information through barcode scanning and OCR technologies, eliminating typing on the screen. During 2018, payment processing was also added to Express, enabling card payments of overdue or current balances.

These solutions are designed to expedite the intake process and improve patient flow at the PSC. Both also provide options to receive testing and appointment notifications via email or text message. These apps have demonstrably increased patient and staff satisfaction. In addition, the notifications may help increase test compliance, and the patient data collected will help accelerate enrollment in LabCorp | Patient and further increase the growing population of patients who may receive information about clinical study opportunities with CDD.

LCD's centralized and proprietary LabCorp | Payer™ enables healthcare insurers and ACOs to obtain test results and quality data through a self-service web application. Results and quality data are increasingly important as the healthcare system focuses

on new payment models and the need to deliver better patient outcomes and reduce cost. Over time, this new portal will be expanded to deliver a wide variety of data and analytic value.

During 2019, LCD delivered nearly 7.0 million enhanced CDS reports for chronic health conditions, including kidney disease, cardiovascular disease, metabolic bone disease and diabetes. LCD's proprietary CDS reports integrate patient-specific diagnostic information and evidence-based healthcare content to help physicians and patients better manage health. In addition, these decision-support programs promote physician adherence to evidence-based treatment guidelines.

LCD continues to develop new population health analytics programs that provide healthcare business intelligence tools to health systems, physician practices, and ACOs. These tools are intended to assist customers in their compliance and reporting requirements with respect to efficient management of their productivity, quality and patient outcome metrics.

Billing for Laboratory Services

Billing for laboratory services is a complicated process involving many payers such as MCOs, Medicare, Medicaid, physicians and physician groups, hospitals, patients and employer groups, all of which have different billing requirements. In addition, billing arrangements with third-party administrators may further complicate the billing process. Most testing services are billed to a party other than the physician or other authorized person who ordered the test. A growing portion of revenue is derived from patients in the form of deductibles, coinsurance, copayments, and charges for non-covered tests.

LCD utilizes a centralized billing system in the collection of approximately 95.1% of its domestic revenue (90.5% of consolidated LCD revenue). This system generates bills to LCD customers based on payer type. Client payers (which includes physicians, hospitals, health systems, ACOs, employers and other entities) are typically billed monthly, whereas patient, Medicare, Medicaid, and MCO bills are typically generated daily. Accounts receivable are then monitored by billing personnel and follow-up activities are conducted as necessary.

Revenue is adjusted for price concessions related to negotiated discounts and the anticipated impact of adjustments, denials (Medicare, Medicaid and MCOs), and account write-offs (collection risk). Anticipated write-offs are recorded as an adjustment to revenue and at an amount considered necessary to record the segment's revenue at its net realizable value.

The majority of LCD's collection risk is related to accounts receivable from both insured and uninsured patients who are unwilling or unable to pay. In 2019, LCD continued its focus on process, technology innovation and account management initiatives to reduce the negative impact of patient accounts receivable write-offs.

Non-credit-related issues that slow the billing process, such as missing or incorrect billing information on test requisitions also contribute to a reduction in sales. LCD vigorously attempts to obtain any missing information or rectify any incorrect billing information received from the ordering physician. However, LCD typically performs the requested tests and returns the test results regardless of whether billing information is correct or complete. LCD believes that this experience is similar to that of its primary competitors. LCD continues to focus on process initiatives aimed at reducing the impact of these non-credit-related issues. This is accomplished through ongoing identification of root-cause issues, deploying technology-enabled solutions, training provided to internal and external resources involved in the patient data capture process, and an emphasis on the use of electronic test ordering. Over the last several years, LCD has introduced a series of new technology-enabled solutions to improve the billing and collection process, including insurance eligibility verification and address validation at the time of service in all PSCs, an estimate of out-of-pocket costs for patients presenting at a PSC, and a self-serve platform for physicians to resolve claim issues related to diagnosis denials.

For the Company's operations in Ontario, Canada, the Ontario Ministry of Health and Long-Term Care (Ministry) determines who can establish a licensed community medical laboratory and caps the amount that each of these licensed laboratories can bill the government-sponsored healthcare plan. The Ontario government-sponsored healthcare plan covers the cost of clinical laboratory testing performed by the licensed laboratories. The provincial government discounts the annual testing volumes based on certain utilization discounts and establishes an annual maximum it will pay for all community laboratory tests. The agreed-upon reimbursement rates are subject to Ministry review at the end of each year and can be adjusted at the government's discretion based upon the actual volume and mix of testing services performed by the licensed healthcare providers in the province during the year. In 2019, the amount of the Company's capitated revenue derived from the Ontario government-sponsored healthcare plan was CAD 185.8 million.

Effect of U.S. Market Changes on the Clinical Laboratory Business

The delivery of, and reimbursement for, healthcare continues to change in the U.S., impacting all stakeholders, including the clinical laboratory business. Medicare (which principally serves patients who are 65 and older), Medicaid (which principally serves low-income patients) and insurers have increased their efforts to control the cost, utilization and delivery of healthcare services. Measures to regulate healthcare delivery in general and clinical laboratories in particular have resulted in reduced prices, added costs and decreased test utilization for the clinical laboratory industry by imposing new, increasingly complex regulatory and

administrative requirements. The government also has continued to adjust the Medicare and Medicaid fee schedules at the national and local level, and LCD believes that pressure to reduce government reimbursement will continue.

Fees for most laboratory services reimbursed by Medicare are established in the Clinical Laboratory Fee Schedule (CLFS) and fees for other testing reimbursed by Medicare, primarily related to pathology, are covered by the Physician Fee Schedule (PFS). During 2019, approximately 11.7% of LCD's revenue was reimbursed under the CLFS (12.9% in 2018), and approximately 0.6% was reimbursed under the PFS (0.7% in 2018). Over the past several years, LCD has experienced governmental reimbursement reductions as a direct result of the Patient Protection and Affordable Care Act (ACA), the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), the Achieving a Better Life Experience Act of 2014 (ABLE Act), and PAMA. Payer policy changes have further impacted the reimbursement for LCD. PAMA, which became law on April 1, 2014, and went into effect on January 1, 2018, resulted in a net reduction in reimbursement revenue of approximately $107.0 million in 2019 from all payers affected by the CLFS (approximately $70.0 million in 2018). Unless further implementation of PAMA is delayed or changed, an additional reduction of approximately $90.0 million is expected for 2020, from all payers affected by the CLFS. These laws include provisions designed to control healthcare expenses reimbursed by government programs through a combination of reductions to fee schedules, incentives to physicians to participate in alternative payment models such as risk-sharing, and new methods to establish and adjust fees.

In 2019, LCD realized a net reduction of approximately $1.9 million in PFS revenue, driven by reductions in reimbursement for flow cytometry procedures ($1.7 million in 2018). In 2020, LCD anticipates it will realize an additional net reduction of approximately $0.7 million in PFS revenue attributable to continued reductions in reimbursement for flow cytometry procedures.

Beginning in 2018, under PAMA, CMS set the CLFS using the weighted median of reported private payer prices paid to certain laboratories that receive a majority of their Medicare revenue from the CLFS and PFS and that bill Medicare under their own National Provider Identifier (NPI). On June 23, 2016, CMS issued a final rule to implement PAMA that required applicable laboratories, including LCD, to begin reporting their test-specific private payer payment amounts to CMS during the first quarter of 2017. CMS exercised enforcement discretion to permit reporting for an additional 60 days, through May 30, 2017. CMS used that private market data to calculate weighted median prices for each test (based on applicable current procedural technology (CPT) codes) to represent the new CLFS rates beginning in 2018, subject to certain phase-in limits. For 2018-2020, a test price cannot be reduced by more than 10.0% per year; for 2021-2023, a test price cannot be reduced by more than 15.0% per year. The process of data reporting and repricing will be repeated every three years for Clinical Diagnostic Laboratory Tests (CDLTs) beginning in 2021. Under current law, the second data reporting period for CDLTs (based on data collected in 2019) will occur during the first quarter of 2021, and new CLFS rates for CDLTs will be established based on that data beginning in 2022, subject to the previously described phase-in limits for 2022-2023. The third data reporting period for CDLTs (based on data collected in 2023) will occur during the first quarter of 2024, and new CLFS rates for CDLTs will be established based on that data beginning in 2025. CLFS rates for 2024 and subsequent periods will not be subject to phase-in limits. CLFS rates for Advanced Diagnostic Laboratory Tests (ADLTs) will be updated annually.

CMS published its initial proposed CLFS rates under PAMA for 2018-2020 on September 22, 2017. Following a public comment period, CMS made adjustments and published final CLFS rates for 2018-2020 on November 17, 2017, with additional adjustments published on December 1, 2017.

The final rates published by CMS were based on data reported by only 1% of all laboratories paid by Medicare in 2015, and only 1% of the reported data was from hospital laboratories. Consequently, the American Clinical Laboratory Association (ACLA) filed a federal civil action against HHS for declaratory and injunctive relief on December 11, 2017, arguing that CMS violated the PAMA statute by excluding most of the laboratory market from reporting data on which the rates were based, resulting in rates that do not fairly reflect the private market as the clear language of PAMA requires. On September 21, 2018, the U.S. District Court for the District of Columbia dismissed the action for lack of subject matter jurisdiction, and in December 2018, ACLA filed an appeal. On July 30, 2019, the U.S. Court of Appeals for the District of Columbia reversed the decision and remanded the case to the District Court for a determination of whether the CMS final rule violates the Administrative Procedure Act.

On November 1, 2018, CMS released its final rule for the 2019 PFS, which included two revisions to the regulatory definition of "applicable laboratory" under PAMA. First, CMS indicated that hospital outreach labs that bill Medicare Part B using bill type 14X will now qualify as applicable laboratories even if they do not bill Medicare Part B using their own NPI, provided they meet other applicable requirements. Second, CMS removed Medicare Advantage (Medicare Part C) revenue from the denominator of the "majority of Medicare revenues" ratio for identifying applicable laboratories.

A November 2018 report issued by the U.S. Government Accountability Office (GAO) questioned the methodology used by CMS for the new payment rates under PAMA and suggested that implementation of PAMA could lead to significant increases in Medicare expenditures. In January 2019, the U.S. Senate Finance Committee sent a letter to HHS about the GAO report and inquired about the potential cost to taxpayers. ACLA has stated that the GAO's report reflects inaccurate assumptions and a misunderstanding of standard industry practice for laboratory billing.

ACLA continues to work with Congress on potential legislative reform of PAMA, which if adopted could reduce the negative impact of PAMA as currently implemented by CMS. The Laboratory Access for Beneficiaries (LAB) Act, which was enacted on December 20, 2019, as Section 105 of Division N of H.R. 1865, the Further Consolidated Appropriations Act for Fiscal Year 2020, delayed the next data reporting period for CDLTs under PAMA by one year, from the first quarter of 2020 to the first quarter of 2021. Implementation of new CLFS rates has been delayed from 2021 to 2022, and each subsequent year of data collection, reporting and rate implementation has been delayed by one year to retain a three-year cycle. In addition, the LAB Act requires the Medicare Payment Advisory Commission (MedPAC) to conduct a study and make recommendations to Congress on ways to improve data collection, reporting, and rate setting under PAMA to achieve, in a less burdensome manner, CLFS rates that accurately and fairly reflect private market rates. The Company supports the ongoing efforts to prevent or lessen the negative impact of the changes to the CLFS pursuant to PAMA, and the full impact of those efforts, and what the long-term effect will be on the CLFS rates is not yet known.

On November 4, 2016, CMS noted in a final rule implementing MACRA that it intended to apply Merit-Based Incentive Payment System (MIPS) requirements to pathologists practicing in independent laboratories, including LCD. Under this requirement, LCD pathologists would have been required to begin reporting certain quality metrics in 2017 for LCD to avoid negative PFS payment adjustments or to qualify for positive PFS payment adjustments beginning in 2019. ACLA met with CMS on March 9, 2017, regarding implementation of this requirement, which was not proposed in the MACRA proposed rule. CMS clarified that it would not apply MIPS requirements to pathologists practicing in independent laboratories.

Further healthcare reform could occur in 2020, including changes to the ACA and Medicare reform, initiatives to address surprise billing and increased price transparency, as well as administrative requirements that may continue to affect coverage, reimbursement, and utilization of laboratory services in ways that are currently unpredictable.

In addition, market-based changes have affected and will continue to affect the clinical laboratory business. Reimbursement from commercial payers for diagnostic testing has shifted and will continue to shift away from traditional, fee-for-service models to alternatives, including value-based, bundled pay-for-performance, and other risk-sharing payment models. The growth of the managed care sector and consolidation of MCOs present various challenges and opportunities to LCD and other clinical laboratories.

The Company is a contracted laboratory partner for all of the major national managed care plans, which reinforces the Company's differentiated value proposition to physicians and patients. In May 2018, the Company signed an extension of its long-term agreement with UnitedHealthcare, however, effective January 1, 2019, the Company ceased to be UnitedHealthcare’s exclusive national laboratory in the U.S. The Company also signed an agreement with Aetna in May 2018, under which it became a preferred national laboratory for Aetna, effective January 1, 2019; the Company had previously been in-network for a limited number of Aetna members. In November 2018, the Company also extended its agreement with Horizon Blue Cross Blue Shield of New Jersey. The Company continues to be the exclusive laboratory for Horizon Medicaid members and is an in-network laboratory for all Horizon members, including HMO members; however, the Company is no longer the exclusive capitated laboratory for Horizon HMO Members. These agreements reflect a trend by MCOs away from laboratory exclusivity, and toward opening their networks to additional laboratory providers in order to give their members increased choice.

The Company also serves many other MCOs. These organizations have different contracting philosophies, which are influenced by the design of their products. Some MCOs contract with a limited number of clinical laboratories and engage in direct negotiation of rates. Other MCOs adopt broader networks with generally uniform fee structures for participating clinical laboratories. In some cases, those fee structures are specific to independent clinical laboratories, while the fees paid to hospital-based and physician-office laboratories may be different, and are typically higher. MCOs may also offer Managed Medicare or Managed Medicaid plans. In addition, some MCOs use capitation rates to fix the cost of laboratory testing services for their enrollees. Under a capitated reimbursement arrangement, the clinical laboratory receives a per-member, per-month payment for an agreed upon menu of laboratory tests provided to MCO members during the month, regardless of the number of tests performed. For the year ended December 31, 2019, capitated contracts with MCOs accounted for approximately $298.0 million, or 4.3%, of LCD's revenues. LCD's ability to attract and retain MCO customers has become even more important as the impact of various healthcare reform initiatives continues, including expanded health insurance exchanges and ACOs.

In addition to reductions in test reimbursement, the Company also anticipates potential declines in test volumes as a result of increased controls over the utilization of laboratory services by Medicare, Medicaid, and other third-party payers, particularly MCOs. MCOs are implementing, directly or through third parties, various types of laboratory benefit management programs, which may include lab networks, utilization management tools (such as prior authorization and/or prior notification), and claims edits, which impact coverage and reimbursement of clinical laboratory tests. Some of these programs address clinical laboratory testing broadly, while others are focused on certain types of testing, including molecular, genetic and toxicology testing. In addition, continued movement by patients into consumer-driven health plans may have an impact on the utilization of laboratory testing.

Despite the overall negative market changes regarding reimbursement discussed above, LCD believes that the volume of clinical laboratory testing is positively influenced by several factors, including the expansion of Medicaid, managed care, and private insurance exchanges. In addition, LCD believes that increased knowledge of the human genome and continued innovation

in laboratory medicine will continue to foster greater appreciation of the value of gene-based diagnostic assays. Additional factors that may lead to future volume growth include an increase in the number and types of tests that are readily available (due to advances in technology and increased cost efficiencies) for the diagnosis of disease, and the general aging of the U.S. population. As previously discussed, LCD also believes that it and other large, independent clinical laboratory testing companies will be able to increase their share of the overall clinical laboratory testing market due to a number of market factors, primarily related to a continued drive to improve outcomes and reduce costs across the healthcare system. LCD believes that its enhanced and growing esoteric menu of tests, leading position with companion diagnostics, broad geographic footprint, and operating efficiency provide a strong platform for growth.

CDD Segment

CDD provides end-to-end drug development, medical device and companion diagnostic development solutions from early-stage research to clinical development and commercial market access. Its customers comprise biopharmaceutical, medical device and diagnostic companies across the world. With more than 26,000 employees worldwide and a global network of operations, CDD offers deep expertise in early development and clinical trials in each therapeutic area. Through its industry-leading central laboratory business, it supports clinical trial activity in approximately 100 countries, generating more safety and efficacy data to support drug approvals than any other company. CDD collaborated on 85% of the novel drugs approved by the FDA in 2019, including 100% of the novel oncology drugs and 86% of the novel rare and orphan disease drugs. In addition, CDD has been involved in the development of all current top 50 drugs on the market as measured by sales revenue.

Drug Development Industry

Drug development services companies like CDD are also referred to as CROs and typically derive substantially all of their revenue from research and development (R&D), as well as marketing expenditures of the biopharmaceutical industry. Outsourcing of R&D services by biopharmaceutical companies to CROs has increased in the past, and is expected to continue increasing in the future. Increasing pressures to improve return on investment, to increase R&D productivity, to stay abreast of scientific advances and to comply with stringent government regulations have all contributed to this outsourcing to CROs. A CRO provides biopharmaceutical companies flexibility in aligning resources to demand. In the face of mounting complexity, the investment and amount of time required to develop new products are significant and have been increasing. These trends create opportunities for CDD and other CROs that can help make the development process more efficient.

The drug development industry has many participants ranging from hundreds of small providers to a limited number of large CROs with global capabilities. CDD competes against these small and large CROs, as well as in-house departments of biopharmaceutical, medical device and diagnostic companies, and to a lesser extent, selected academic research centers, universities and teaching hospitals.

CDD believes that customers selecting a CRO often consider the following factors, among others:

- Reputation for quality and regulatory compliance;
- Efficient, timely performance;
- Expertise and experience in operations;
- Application of technology and innovation;
- Specific therapeutic and scientific expertise;
- Data and analytical capabilities;
- Post approval and market access services;
- Ability to recruit patients;
- Scope of service offerings;
- Strengths in various geographic markets;
- Price;
- Quality of facilities;
- Quality of relationships, including investigator and patient;
- Ability to manage large-scale clinical trials both domestically and internationally, including the recruitment of appropriate and sufficient clinical-trial subjects;
- Size and scale; and
- Access to talent.

CDD believes that it competes favorably in all of these areas.

Preclinical Services

CDD's preclinical service offerings include lead optimization, analytical services, safety assessment, and chemistry manufacturing and control (CMC) services for development of new drugs, devices, and crop protection/chemical agents. In 2019,

CDD expanded its preclinical capabilities and capacity following the acquisition of Envigo's nonclinical contract research services. At the same time, Envigo acquired CDD's research products business. CDD retains access to a full range of high-quality research models and services through its strategic multi-year collaboration with the new Envigo research model and services business. CDD offers solution-based approaches by leveraging highly experienced program development directors and project managers to help guide strategic decisions and manage development in an integrated, streamlined manner across CDD's 16 analytical laboratories and preclinical laboratories in the U.S., the United Kingdom (U.K.), Germany and China.

Lead Optimization. Lead optimization services are non-regulated experiments designed to connect early discovery activities to regulated pre-clinical studies. These services include toxicology, *in vivo* pharmacology with integrated safety and efficacy capabilities, nonclinical imaging, nonclinical pathology services, pharmacokinetic/toxicokinetic (PK/TK) analysis and immunology services.

Analytical Services. Bioanalytical testing services help determine appropriate dose and frequency of drug administration from late discovery through Phase III clinical testing. CDD's analytical services include liquid chromatography-mass spectroscopy immunoanalysis, translational biomarkers, discovery bioanalysis, vaccine analysis, and PK/TK analysis. In addition, CDD offers validated, nonproprietary assays for hundreds of compounds, eliminating method development and validation time, and reducing program cost. CDD has dedicated lab facilities across three continents providing *in vitro* drug metabolism, *in vivo* radiolabeled absorption, distribution, metabolism and excretion studies; metabolite identification/profiling, nonclinical PK screening, and radiosynthesis services. CDD also provides pharmaceutical chemistry services to determine metabolic profile and bioavailability of drug candidates.

Safety Assessment. Safety assessment services include general, genetic, and immunotoxicology services; nonclinical pathology services; safety pharmacology services; preclinical medical device services; respiratory services; and developmental and reproductive toxicology (DART) studies. CDD's services employ state-of-the-art technology and an integrated program for both large and small molecules with facilities across three continents. CDD's nonclinical pathology group comprises certified veterinary pathologists who provide critical insights and recommendations to help customers navigate the drug development process.

CMC Manufacturing Solutions. CDD's CMC solutions offer packages supporting FDA Investigational New Drug Application and New Drug Application/Biologics License Application submissions, as well as programs to help CDD's customers meet acceptance criteria for release of drug products for both biologics and small molecules. CDD's CMC solutions provide capabilities and expertise operating within a global quality system framework to deliver robust, cost-effective solutions. Capabilities include safety, identity, strength, quality and purity assessments for biologics.

Early Phase Development Solutions. Early Phase Development Solutions (EPDS) offers access to a focused, multidisciplinary team of experts that crafts integrated solutions to identify and develop lead drug candidates and reduce development challenges. EPDS provides seamless integration of the complete array of CDD nonclinical and early clinical services, with a focus on scientific integrity and human subject safety. EPDS also offers an innovative parallel study approach for shorter proof-of-concept studies. This approach can increase clinical return on investment through the application of medical, scientific and therapeutic expertise, along with patient stratification strategies.

Crop Protection and Chemical Testing. Crop Protection and Chemical Testing services involve a range of testing and consulting services for chemical manufacturers and other firms engaged in the development of modern crop protection technology.

Central Laboratory Services

CDD provides central laboratory and specialty testing services to biopharmaceutical customers through its global network of central laboratories in the U.S., Switzerland, Singapore and China, as well as its strategic agreement for central laboratory services testing in Japan with BML, Inc., a leading Japanese laboratory testing company.

CDD's capabilities provide customers the flexibility to conduct studies on a global basis. Because CDD uses standardized laboratory equipment, methods, reagents and calibrators for studies, data can be combined with clinical trials in different regions to produce global trial reference ranges. Combinable data eliminates the cumbersome process of harmonizing results generated using different methods in different laboratories on different equipment. CDD also offers external-facing tools such as LabLink+ and Xcellerate® Investigator Portal, which are internet-based customer programs that allow customers to review and query clinical trial lab data on a near real-time basis, that provide an opportunity for enhanced collaboration between the investigator sites, CROs and sponsors.

CDD operates the world's largest automated clinical trial sample collection kit production line, located in Indianapolis, Indiana. This facility provides kits and supplies to investigator sites around the world, promoting global consistency in sample collection. Extensive automation in the kit production process enables kits to be produced with 5.5 sigma precision, while maintaining the scalability needed to meet increasing global demand. CDD's biorepository facility in Greenfield, Indiana, is dedicated to long-term storage of clinical trial specimens. CDD has additional sample storage facilities in Indianapolis, Indiana; Geneva, Switzerland;

Singapore; and Shanghai, China, as well as a state-of-the-art distribution center in Mechelen, Belgium. These actively monitored facilities are able to store a wide range of specimens, including plasma, serum, whole blood, DNA and tissue.

CDD has seven ISO 15189-certified laboratories that provide customers with the assurance that comes with this rigorous global standard. In addition to utilizing the broad scientific expertise of the LCD Specialty Testing Group, CDD has implemented a novel model for external lab selection and management that provides rigor and reduces internal resource drain for trial sponsors. The extended laboratory management solutions team focuses on managing all aspects of referral laboratory services, including vendor negotiations, governance, quality management, data services and contract services.

CDD, in conjunction with LCD's expertise in a wide range of specialty and esoteric testing disciplines, offers a scientifically rich and diverse menu of specialty testing capabilities, spanning the clinical development continuum. These include applied genomics, next-generation sequencing, anatomic and molecular pathology, flow cytometry, chemistry manufacturing controls, clinical immunoassays as well as preclinical and exploratory biomarker development. The combination of CDD and LCD differentiated capabilities and unparalleled experience in companion and complementary diagnostic services support the parallel development of a new medicine and its associated diagnostic assay. The Company's dedicated companion diagnostics team collaborated with 30 clients on more than 150 companion diagnostic projects in 2019. CDD can support the development of in-vitro diagnostic, companion diagnostics and laboratory-developed tests (LDTs). By combining CDD's strength in central laboratory and early-stage clinical development with LCD's strength in test commercialization, the Company is well positioned to offer comprehensive, end-to-end support for companion diagnostic development.

Clinical Development and Commercialization Services

CDD offers a comprehensive range of clinical development and commercialization services, including the full service delivery of Phase I through IV clinical studies, along with a wide offering of functional service provider (FSP) solutions. CDD has extensive experience in all major therapeutic and scientific areas, as well as molecule types. It provides the following core services either on an individual or aggregated basis to meet its customers' needs: protocol optimization; recruitment optimization; coordination of study activities; trial logistics; monitoring of study site performance; clinical data management and biostatistical analysis; pharmacovigilance/safety assessments; and medical writing and regulatory services. CDD also has a dedicated group with extensive experience in the conduct of trials for medical devices and diagnostics, to provide services for the expanding market in medical devices, including mobile health (mHealth) devices. Its solutions are underpinned by an unmatched combination of data sources and sophisticated analytics to drive informed decision-making.

CDD has extensive experience in designing and managing global clinical trials and regional clinical trial activities in North America, Europe, Latin America and the Asia-Pacific region. These trials may be conducted separately or simultaneously as part of a multinational or global development plan. CDD can manage every aspect of a clinical trial, from clinical development plans and protocol design to new drug applications and other supporting services.

CDD is a leader in clinical pharmacology, providing services at its four clinics in the U.S. and Europe, including first-in-human trials, and early clinical trial subject proof-of-concept studies of new biopharmaceuticals.

CDD offers a range of commercialization solutions, including life cycle management and post-approval studies, which are typically conducted after a drug has successfully undergone clinical efficacy and safety testing and the New Drug Application/ Biologics License Application has been submitted to and approved by the FDA and/or comparable applications are submitted to and approved by other regulatory bodies. CDD also offers market access solutions, including reimbursement consulting and hotlines, patient assistance programs, health economic and outcomes research services, observational studies, real-world evidence and analytics services, and value communication services. Biopharmaceutical companies purchase these services to serve patients in need of therapy and to help optimize their return on R&D investments.

CDD Technology-Enabled Solutions

CDD's technology-enabled solutions are designed to improve the drug development process, by providing its biopharmaceutical customers with greater access to key insights and improved trial management. These proprietary software as a service (SaaS) solutions include the award-winning Xcellerate informatics platform, the PharmAcuity suite of software applications, and CDD's endpoint trial management solution. In addition to these solutions, CDD offers its biopharmaceutical customers unique laboratory specimen management solutions from its Global Specimen Solutions (GSS) service platform as well as an efficient, global interactive study randomization technology, to optimize study management and reduce trial-supply costs. Covance MarketPlace securely connects developers with interested companies for licensing opportunities and to accelerate strategic discussions.

Xcellerate integrates and operates with multiple sources of data to deliver unique and timely information throughout the course of customer studies. Xcellerate helps to reduce the cost, time, complexity and risk associated with clinical trials. These solutions leverage a highly innovative data integration and visualization technology that provides timely, secure, integrated and contextualized access to all clinical trial data to enable proactive risk management and informed decision making. Key Xcellerate modules include Trial Design, Clinical Trial Management, Clinical Data Hub, Monitoring, Data Management and Insights:

- Xcellerate Trial Design enables customers to map available patient populations and identify optimal sites and investigators by drawing on the world's largest proprietary clinical trial knowledge base.
- Xcellerate Clinical Trial Management provides the foundational operating systems to enable frictionless execution of clinical trials.
- Xcellerate Clinical Data Hub integrates clinical trial data from any source and makes it accessible to study teams in a timely, secure and contextualized manner to support a broad range of monitoring, analytic, and reporting needs.
- Xcellerate Data Management enables data managers to enhance data quality and completeness, and accelerates database locking by identifying missing, erroneous or inconsistent data as well as managing queries holistically.
- Xcellerate Monitoring enables customers to improve data quality, clinical trial subject safety and protocol compliance in the execution of clinical trials by proactively identifying and mitigating risks at the study site and clinical trial subject level.
- Xcellerate Insights enables effective operational oversight by providing interactive, up-to-date views of a broad range of operational metrics and key performance indicators at the study and portfolio levels through a secure collaboration portal, producing insights that enable its users to make decisions about study management and patient impacts.

PharmAcuity is a cloud-based suite of software applications that helps biopharmaceutical companies fine-tune their clinical trial strategy, planning, and design months before a trial begins. The performance data available via PharmAcuity is derived from past trials and public data sources covering more than 130 countries, reflecting the worldwide nature of clinical trials. Key PharmAcuity modules include Metrics and Benchmarking, and Trial Forecasting:

- PharmAcuity Metrics and Benchmarking enables clients to assess the performance of historical trials relative to current targets, as well as set accurate and feasible targets for a variety of future trial milestones. Utilizing the rest of the biopharmaceutical industry's performance data as a benchmark, this module allows the client to evaluate clinical trial performance against the industry, leading to more efficient trial, enrollment, and country planning.
- PharmAcuity Trial Forecasting empowers clients to forecast their own clinical trial performance and build different forecasting scenarios across multiple dimensions, all based on proprietary inputs and historical, contextual industry performances.

Covance MarketPlace enables biopharmaceutical companies to showcase therapeutic assets to interested parties for licensing opportunities during the early phases of drug development. With unprecedented access to the Company's exclusive network of drug developers and through its private, secure web portal, companies can share non-confidential information about their assets to attract potential investors or partners. Interested parties can find asset listings via targeted asset alerts and easy-to-use search functions. The platform provides users with direct, secure communication with asset owners, accelerating strategic discussions. It is one more way the Company helps transform drug development programs, delivered by the only global drug development partner with the expertise spanning preclinical, clinical and commercial phases.

GSS provides a suite of innovative software applications for lifecycle specimen management. GSS' GlobalCODE® application provides unified data from a single-interface that allows for tracking of specimens from collection through destruction, as well as cross-protocol analytics and management of samples according to informed consent-allowable usage. The GSS SnapTRACK® application provides for capture of information upon sample collection, and pushes sample-related information into GlobalCODE in near real-time. The GSS LabCODE® platform provides an innovative and client-configurable cloud-based Laboratory Information Management System (LIMS) to biopharmaceutical companies, enabling rapid data integration across numerous in-house laboratories.

CDD's endpoint trial management solutions offer interactive response technology (IRT) to provide visibility across a client's clinical development portfolio, enabling optimization of study management and reduced trial supply costs while helping to bring novel therapies to market faster. Key endpoint modules include:

- endpoint's proprietary PULSE® platform comprises pre-validated, configurable study components that enable rapid development and quicker modification to a client's existing IRT system. PULSE can help to streamline complex trial randomization methods, improve drug supply management, and simplify site, study, and subject management. The fully digital, mobile-ready system allows access to patient data and outcomes in real time.
- endpoint's DRIVE platform provides visibility into supplies management for an entire clinical development portfolio. It provides automated supply functionality to help minimize costs, reduce waste, and manage regulatory compliance across multiple trial sites.

CDD's other proprietary technology assets include an investigator database and analytic methodologies that are used to design and manage site selection and clinical trial subject enrollment.

Together, CDD's technology-enabled solutions improve the transparency, quality and speed of clinical trials, resulting in reduced costs and increased market potential for biopharmaceutical customers.

Customers

The Company provides its services to a broad range of customers. The primary customer groups serviced by the Company include:

MCOs. The Company serves many MCOs, each of which operate on a national, regional or local basis. Fees for clinical laboratory testing services rendered for physicians may be billed to a patient's third-party payer, such as an MCO, with reimbursement typically based on a negotiated, fee-for-service basis, and in some circumstances reimbursement is based on a capitated arrangement.

Biopharmaceutical, Medical Device and Diagnostics Companies. The Company provides development services to hundreds of biopharmaceutical (including pharmaceutical and biotechnology-based organizations), medical device, and diagnostics companies, ranging from the world's largest multi-nationals to emerging to mid-market companies. Contracts with these organizations generally take the form of fee-for-service or fixed-price arrangements.

Physicians and Other Healthcare Providers. Physicians who require clinical laboratory testing for their patients are a primary source of requests for LCD's testing services. Physicians may practice individually, or as part of small or large physician groups, including those operated as part of a broader health system. Fees for clinical laboratory testing services rendered for physicians are billed either to the physician, the physician group, the patient or the patient's third-party payer, such as an MCO, Medicare or Medicaid. Billings are typically on a fee-for-service basis. If the billings are to the physician, they are based on a customer-specific fee schedule and are subject to negotiation. Otherwise, the patient or third-party payer is billed at the Company's patient list price fee schedule, subject to third-party payer contract terms. Patient sales are recorded at the Company's patient list price fee schedule, net of any discounts negotiated with physicians on behalf of their patients, or made available at a reduced charge or for free through charity care or an uninsured or underinsured patient program. Revenues received from Medicare and Medicaid billings are based on government-set fee schedules and reimbursement rules.

Hospitals and Health Systems. The Company provides hospitals and health systems with services ranging from core and specialty testing to supply chain and technical support services, and the opportunity to be a research partner for participation in studies and clinical trials with CDD. Individual hospitals generally maintain on-site laboratories to perform immediately and frequently needed testing for patients receiving inpatient and outpatient care. However, they also refer less time-sensitive procedures, less frequently needed procedures and highly specialized procedures to outside facilities, including independent clinical laboratories such as LCD and laboratories operated by larger hospitals or health systems. In some cases, a hospital's on-site laboratory may be operated or managed by an outside contractor or independent laboratory, including the Company. The Company typically charges hospitals for any such tests on a fee-for-service basis that is derived from the Company's client list price fee schedule. Fees for laboratory management services are typically billed monthly at contractual rates.

Other Customers. The Company serves a broad range of other customers, including, but not limited to, governmental agencies, employers, patients and consumers, CROs, crop protection and chemical companies, academic institutions and independent clinical laboratories. These customers typically pay on a negotiated fee-for-service basis or based on a set fee schedule.

Capital Allocation

The Company believes it has a strong track record of deploying capital to investments that enhance the Company's business and return capital to shareholders.

From 2015, the Company has invested net cash of approximately $7.2 billion and equity of $1.8 billion in strategic business acquisitions. These acquisitions have significantly expanded the Company's service offerings, expanded its customer and revenue mix, as well as strengthened and broadened the scope of its geographic presence. The Company continues to evaluate acquisition opportunities that leverage the Company's core competencies, complement existing scientific and technological capabilities, increase the Company's presence in key geographic, therapeutic and strategic areas, and meet or exceed the Company's financial criteria.

From 2015, the Company repurchased approximately $1.5 billion in shares at an average price of approximately $154.66 per share. On February 6, 2019, the board of directors replaced the Company's existing share repurchase plan with a new plan authorizing repurchase of up to $1.25 billion of the Company's shares. The repurchase authorization has no expiration date. During 2019, the Company purchased 2.9 million shares of its common stock at an average price of $154.94 for a total cost of $450.0 million, of which $100.0 million was repurchased prior to the new plan in February 2019. At the end of 2019, the Company had outstanding authorization from the board of directors to purchase an additional $900.0 million of Company common stock.

On June 3, 2019, the Company entered into a new $850.0 million term loan (the 2019 Term Loan). The 2019 Term Loan will mature on June 3, 2021. Proceeds of the 2019 Term Loan were used to repay approximately $250.0 million of the 2017 Term Loan and to fund the acquisition of Envigo's nonclinical research services business.

On November 25, 2019, the Company issued $1,050.0 million in debt securities, consisting of $400.0 million aggregate principal amount of 2.300% Senior Notes due 2024 and $650.0 million aggregate principal amount of 2.950% Senior Notes due 2029. The net proceeds from the new Senior Notes were used to redeem all of the outstanding $500.0 million principal amount of its 2.625% Senior Notes due February 1, 2020, redeem $187.9 million of the outstanding 4.625% Senior Notes due November 15, 2020 in a tender offer, and the repayment of $348.3 million outstanding under the Company's term loan credit facilities.

In total, during 2019, the Company redeemed or repaid $687.9 million of its Senior Notes and $1,002.0 million of its term loans. In addition, the Company borrowed and repaid a total of $495.0 million of debt through its revolving credit facility within 2019. The Company will continue to evaluate all opportunities for strategic deployment of capital in light of market conditions.

From 2015, capital expenditures other than acquisitions have been $1.6 billion, representing approximately 3.2% of the Company’s total revenues during the same period. The Company expects capital expenditures in 2020 to be approximately 3.5% to 4.0% of revenues, primarily in connection with projects to support growth in the Company's core businesses, facility expansion and updates, projects related to LaunchPad initiatives within LCD and CDD, and further acquisition integration initiatives.

Seasonality and External Factors

The Company experiences seasonality in both segments of its business. For example, testing volume generally declines during the year-end holiday period and other major holidays and can also decline due to inclement weather or natural disasters. Declines in testing volume reduce revenues, operating margins and cash flows. Operations are also impacted by changes in the global economy, exchange rate fluctuations, political and regulatory changes, the progress of ongoing studies and the startup of new studies, as well as the level of expenditures made by the biopharmaceutical industry in R&D. The results of both segments are impacted by exchange rate fluctuations. Approximately 22.3% of the Company's revenues are billed in currencies other than the U.S. dollar, with the Swiss franc, British pound, Canadian dollar and the euro representing the largest components of its currency exposure. Given the seasonality and changing economic factors impacting the business, comparison of the results for successive quarters may not accurately reflect trends or results for the full year.

Investments in Joint Venture Partnerships

The Company holds investments in joint venture partnerships, with two located in Alberta, Canada, one located in Florence, South Carolina, and one in Buffalo, New York. These businesses are primarily represented by partnership agreements between the Company and other independent diagnostic laboratory investors. Under these agreements, all partners share in the profits and losses of the businesses in proportion to their respective ownership percentages. All partners are actively involved in the major business decisions made by each joint venture. The Company does not consolidate the results of these joint ventures.

The first Canadian partnership is a leader in occupational testing across Canada similar to LCD's U.S. occupational testing services. The second Canadian partnership has a license to conduct diagnostic testing services in the province of Alberta. Substantially all of its revenue is received as reimbursement from the Alberta government's healthcare programs (AHS). In August 2016, AHS and the Canadian partnership reached an agreement to extend the contract for five additional years through March 2022, with the intent to have the services provided pursuant to the contract transferred to AHS at the end of the five-year period. In consideration of AHS acquiring the assets and assuming liabilities in accordance with the parties’ agreement, AHS will pay CAD 50.0 million to the partnership when the transfer is effective, subject to a working capital adjustment. In December 2019, AHS issued a Request for Expression of Interest, that seeks to gauge market interest from private third parties for the provision of community lab services in Alberta. The Canadian partnership submitted a response indicating its interest in providing lab services.

Sales, Marketing and Customer Service

LCD offers its diagnostic services through a sales force focused on serving the specific needs of customers in different market segments. These market segments generally include primary care, women's health, specialty medicine (e.g., infectious disease, endocrinology, gastroenterology and rheumatology), oncology, ACOs, and hospitals and health systems. LCD's general sales force is also supported by a team of clinical specialists that focuses on selling esoteric testing and meeting the unique needs of the specialty medicine markets.

CDD’s global sales activities are conducted by sales personnel in North America, Europe and the Asia-Pacific region. The sales force provides customer coverage across the biopharmaceutical industry for services including lead optimization, preclinical safety assessment, analytical services, clinical trials, central laboratories, biomarkers and companion diagnostics, market access and technology solutions. Customer segments called upon include global and regional biopharmaceutical companies, other CROs and academic institutions.

The sales force is responsible for both new sales and for customer retention and relationship building and is compensated through a combination of salaries, commissions and bonuses at levels commensurate with each individual’s qualifications, performance and responsibilities.

Information Systems

The Company is committed to developing and commercializing technology-enabled solutions to support its operations and provide better care. LCD and CDD each operate standard platforms for their core business services, and the Company operates standard platforms for its financial and reporting systems. These standard systems provide consistency within workflows and information as well as a high level of system availability, security, and stability. LCD's and CDD's primary laboratory systems include standardized support for molecular diagnostics, digital pathology and enhanced specialty laboratory solutions. The Company's centralized information systems are responsible for tremendous operational efficiencies, enabling the Company to achieve consistent, structured, and standardized operating results and superior patient care.

In addition, LCD and CDD each offer proprietary and industry-leading information systems, which are discussed in more detail in the sections dedicated to each of those segments.

Quality

LCD and CDD have comprehensive quality systems and processes that the Company believes are appropriate for their respective businesses. This includes licensing, credentialing, training and competency of professional and technical staff, and internal auditing. In addition to the Company's own quality programs, the Company's laboratories, facilities and processes are subject to on-site regulatory agency inspections and accreditation evaluations, and surveys, as applicable, by local or national government agencies; external proficiency testing programs; and inspections and audits by customers.

Virtually all facets of the Company's services are subject to quality programs and procedures, including accuracy and reproducibility of tests; turnaround time; customer service; data integrity; patient satisfaction; and billing. The Company's quality program includes measures that compare current performance against desired performance goals to monitor critical aspects of service to its customers and patients.

The Company has procedures for monitoring its internal performance, as well as that of its vendors, suppliers and other key stakeholders. In addition, various groups and departments within the Company provide oversight to monitor and control vendor products and performance, and play an essential role in the Company's approach to quality through improvements in processes and automation. These groups include LCD's National Office of Quality, CDD's Global Regulatory Compliance and Quality Assurance Unit, the Company's supply chain management department, CDD's clinical trial services global vendor management department, CDD's central laboratory services expanded laboratory management services department, and project management staff supporting LCD and CDD.

Customer Interaction. Continual improvement in the customers' experience with the Company is essential. Use of technology and workflow improvements are helping to improve the patient experience by: reducing patient wait times at PSCs through advance appointment scheduling and patient check-in through LabCorp | PreCheck; expediting the patient registration process at the PSC through LabCorp | Express; enhancing the specimen collection process through LabCorp Touch and AccuDraw; and allowing patients to access their test results, obtain educational materials, schedule appointments and pay bills directly through LabCorp | Patient. LabCorp | Payer provides healthcare organizations with a centralized location to access test results and quality data. CDD processes permit faster clinical trial study start-up and subject enrollment along with timely delivery of established deliverables to enhance and improve customer interaction.

Specimen Management. The Company's standardized logistics and specimen tracking technologies allow the timely transportation, monitoring, and storage of specimens. The Company is continually working to maintain and improve its ability to timely collect, transport and track specimens from collection points to all Company or designated external locations.

Quality Control. The Company regularly performs quality control testing. This may include in-process and post-process quality control checks; use of applicable control materials and reference standards, peer reviews, and data review meetings; programmed data edit checks to detect variances and unusual data patterns; dual programming; and mock runs.

Internal Proficiency Testing. LCD has an extensive internal proficiency testing program to assess LCD's analytical and post-analytical phases of laboratory testing, accuracy, precision of its testing protocols, and technologist/technician performance. This program supplements the external proficiency programs required by the laboratory accrediting agencies.

Accreditation. The Company participates in numerous externally administered quality surveillance programs, including the College of American Pathologists (CAP) program. CAP is an independent non-governmental organization of board-certified pathologists that offers an accreditation program to which laboratories voluntarily subscribe. CAP has been granted deemed status authority by CMS to inspect clinical laboratories to determine adherence to the Clinical Laboratory Improvement Amendments of 1988 (CLIA) requirements. The CAP program involves both on-site inspections of the laboratory and participation in a CAP accepted proficiency testing program for all categories in which the laboratory is accredited. A laboratory's receipt of accreditation by CAP satisfies the CMS requirement for CLIA certification. LCD's major diagnostic laboratories, CDD's major central laboratory facilities, and CDD's Phase I clinical research unit in Dallas, Texas, are accredited by CAP.

The Company has multiple labs that have received ISO 15189 accreditation. ISO 15189 is an international standard that recognizes the quality and technical competence of medical laboratories. The list below reflects the Company's labs that have achieved this accreditation and the year in which it was achieved:

LCD

- Regional Testing Facility, Raritan, New Jersey - January 2017
- Regional Testing Facility, Knoxville, Tennessee - November 2016
- Regional Testing Facility, San Antonio, Texas - July 2016
- Colorado Coagulation, Denver, Colorado - January 2016
- Dynacare, Laval, Québec - March 2015
- Regional Testing Facility, Dublin, Ohio - March 2015
- Endocrine Sciences, Calabasas, California - January 2015
- Regional Testing Facility, Dallas, Texas - April 2014
- Regional Testing Facility, Denver, Colorado - March 2014
- Integrated Genetics, Santa Fe, New Mexico - October 2013
- Integrated Genetics, Westborough, Massachusetts - September 2013
- Dynacare, Montreal, Québec - June 2013
- Regional Testing Facility, Phoenix, Arizona - April 2013
- Regional Testing Facility, Birmingham, Alabama - February 2013
- Integrated Oncology, Brentwood, Tennessee - February 2012
- ViroMed, Burlington, North Carolina - January 2012
- Center for Molecular Biology and Pathology (CMBP), Research Triangle Park, North Carolina - February 2011
- Regional Testing Facility, Tampa, Florida - January 2010
- Integrated Oncology, Phoenix, Arizona - September 2009

CDD

- Covance Central Laboratory Services Inc., Los Angeles, California - August 2018
- Covance Central Laboratory Services Inc., Indianapolis, Indiana - August 2015
- BML Covance Central Laboratory, Tokyo, Japan - March 2015 (Operated for CDD pursuant to a strategic agreement with BML, Inc.)
- Covance Pharmaceutical Research and Development (Shanghai) Co. Ltd., Shanghai, China - March 2015
- Covance (Asia) Pte. Ltd., Singapore - June 2014
- Covance Central Laboratory Services SARL, Geneva, Switzerland - October 2013
- RCRI Medical Devices - ISO 13485 - January 2019

In 2019, the Company’s Aviation Department achieved International Standard for Business Aircraft Operations (IS-BAO) Stage 3 certification, which is the final and highest level in a performance-based assessment and audit of the Company’s aviation Safety Management System.

Intellectual Property Rights

The Company relies on a combination of patents, trademarks, copyrights, trade secrets, and nondisclosure and non-competition agreements to establish and protect its proprietary technology. The Company has filed and obtained numerous patents in the U.S. and abroad, and regularly files patent applications, when appropriate, to establish and protect its proprietary technology. Occasionally, the Company also licenses U.S. and non-U.S. patents, patent applications, technology, trade secrets, know-how, copyrights or trademarks owned by others. The Company believes, however, that no single patent, technology, trademark, intellectual property asset or license is material to its business as a whole.

Patents covering the Company's technologies are subject to challenges. Issued patents may be successfully challenged, invalidated, circumvented, or declared unenforceable so that patent rights would not create an effective competitive barrier. In addition, the laws of some countries may not protect proprietary rights to the same extent as do the laws of the U.S.

Parties may file claims asserting that the Company's technologies infringe on their intellectual property. The Company cannot predict whether parties will assert such claims against it, or whether those claims will harm its business. If the Company is forced to defend against such claims, the Company could face costly litigation and diversion of management’s attention and resources. As result of such disputes, the Company may have to develop costly non-infringing technology or enter into licensing agreements. These agreements, if necessary, may require financial or other terms that could have an adverse effect on the Company's business and financial condition.

Employees

As of December 31, 2019, the Company had nearly 65,000 employees worldwide, approximately 28.0% of whom were employed outside of the U.S. The Company's U.S. based subsidiaries have three collective bargaining agreements, which cover approximately 700 employees. Non-U.S. based subsidiaries have nine collective bargaining agreements, which cover approximately 1,700 employees.

The Company's success is highly dependent on its ability to attract and retain qualified employees, and the Company believes that it has good working relationships with its employees.

Regulation and Reimbursement

General

Because the Company operates in a number of distinct environments and in a variety of locations worldwide, it is subject to numerous, and sometimes overlapping, regulatory requirements. Both the clinical laboratory industry and the drug development business are subject to significant governmental regulation at the national, state and local levels. As described below, these regulations concern licensure and operation of clinical laboratories, claim submission and reimbursement for laboratory services, healthcare fraud and abuse, drug development services, security and confidentiality of health information, quality, and environmental and occupational safety.

Regulation of Clinical Laboratories

Virtually all clinical laboratories operating in the U.S. must be certified by the federal government or by a federally approved accreditation agency. In most cases, that certification is regulated by CMS through CLIA. CLIA requires that applicable clinical laboratories meet quality assurance, quality control and personnel standards. Laboratories also must undergo proficiency testing and are subject to inspections. Clinical laboratories in locations other than the U.S. are generally subject to comparable regulation in their respective jurisdictions.

Standards for testing under CLIA are based on the complexity of the tests performed by the laboratory, with tests classified as "high complexity," "moderate complexity," or "waived." Laboratories performing high-complexity testing are required to meet more stringent requirements than moderate-complexity laboratories. Laboratories performing only waived tests, which are tests determined by the FDA to have a low potential for error and requiring little oversight, may apply for a certificate of waiver exempting them from most CLIA requirements. All major and many smaller Company facilities hold CLIA certificates to perform high-complexity testing. The Company's remaining smaller testing sites hold CLIA certificates to perform moderate-complexity testing or a certificate of waiver. The sanctions for failure to comply with CLIA requirements include suspension, revocation or limitation of a laboratory's CLIA certificate, which is necessary to conduct business; cancellation or suspension of the laboratory's approval to receive Medicare and/or Medicaid reimbursement; as well as significant fines and/or criminal penalties. The loss or suspension of a CLIA certification, imposition of a fine or other penalties, or future changes in the CLIA law or regulations (or interpretation of the law or regulations) could have a material adverse effect on the Company.

The Company is also subject to state and local laboratory regulation. CLIA provides that a state may adopt laboratory regulations different from or more stringent than those under federal law, and a number of states have implemented their own laboratory regulatory requirements. State laws may require that laboratory personnel meet certain qualifications, specify certain quality controls, or require maintenance of certain records.

The Company believes that it is in compliance in all material respects with all laboratory requirements applicable to its laboratories operating both within the U.S. and in other countries. The Company's laboratories have continuing programs to maintain operations in compliance with all such regulatory requirements, but no assurances can be given that the Company's laboratories will pass all future licensure or certification inspections.

FDA and Other Regulatory Agency Laws and Regulations

Various regulatory agencies, including the FDA in the U.S., have regulatory responsibility over the development, testing, manufacturing, labeling, advertising, marketing, distribution, and surveillance of diagnostic and therapeutic products and services, including certain products and services offered by the Company, and the development of therapeutic products that comprise the majority of CDD's business. The FDA and other regulatory agencies periodically inspect and review the manufacturing processes and product performance of diagnostic and therapeutic products. The FDA and other regulatory agencies also periodically inspect clinical study sites and CROs that conduct clinical trials, including test facilities that perform tests on samples from human subjects enrolled in such clinical studies of drugs, biologics, and medical devices. These agencies have the authority to take various administrative and legal actions for noncompliance, such as fines, product suspensions, warning or untitled letters, recalls, injunctions and other civil and criminal sanctions. There are similar national and regional regulatory agencies in the jurisdictions outside the U.S. in which the Company operates.

On October 3, 2014, the FDA issued draft guidance regarding FDA regulation of LDTs. On November 18, 2016, the FDA announced that it would not release final guidance at this time and instead would continue to work with stakeholders, the new administration, and Congress to determine the right approach, and on January 13, 2017, the FDA released a discussion paper outlining a possible risk-based approach for FDA and CMS oversight of LDTs. Later in 2017, the FDA indicated that Congress should enact legislation to address improved oversight of diagnostics including LDTs, rather than the FDA addressing the issue through administrative policy proposals. There are other regulatory and legislative proposals that would increase general FDA oversight of clinical laboratories and LDTs. The outcome and ultimate impact of such proposals on the Company is difficult to predict at this time.

CDD's laboratory facilities and LCD's clinical laboratory facilities that perform testing in support of clinical trials, must conform to a range of standards and regulations, including good laboratory practice (GLP) and good clinical practice (GCP), good manufacturing practice (GMP), human subject protection and investigational product exemption regulations, and quality system regulation (QSR) requirements, as applicable. The preclinical and clinical studies that the Company conducts are subject to periodic inspections by the FDA as well as other regulatory agencies in the jurisdictions outside the U.S. in which the Company operates, which may include, without limitation, the Medicines and Healthcare products Regulatory Agency (MHRA), in the U.K., the European Medicines Agency, the National Medical Products Administration in China (NMPA), and the Pharmaceuticals and Medical Devices Agency in Japan, to determine compliance with GLP and GCP as well as other applicable standards and regulations. If a regulatory agency determines during an inspection that the Company's equipment, facilities, laboratories, operations, or processes do not comply with applicable regulations and GLP and/or GCP standards, the regulatory agency may issue a formal notice, which may be followed by a warning letter if observations are not addressed satisfactorily. Noncompliance may result in, among other things, unanticipated compliance expenditures, or the regulatory agency seeking civil, criminal or administrative sanctions and/or remedies against the Company, including suspension of its operations.

Additionally, certain CDD services and activities, such as CMC services and manufacturing of investigational medicinal products for use in certain Phase I studies managed by CDD, must conform to GMP. CDD is subject to periodic inspections by the FDA and the MHRA, as well as other regulatory agencies in the jurisdictions outside the U.S. in which the Company operates, in order to assess, among other things, GMP compliance. If a regulatory agency identifies deficiencies during an inspection, it may issue a formal notice, which may be followed by a warning letter if observations are not addressed satisfactorily. Failure to maintain compliance with GMP regulations and other applicable requirements of various regulatory agencies could result in, among other things, fines, unanticipated compliance expenditures, suspension of manufacturing, enforcement actions, injunctions, or criminal prosecution.

The U.S Animal Welfare Act (AWA)

The conduct of animal research at CDD's facilities in the U.S. must be in compliance with the AWA, which governs the care and use of warm-blooded animals for research in the U.S. other than laboratory rats, mice and chickens, and is enforced through periodic inspections by the U.S. Department of Agriculture (USDA). The AWA establishes facility standards regarding several aspects of animal welfare, including housing, ventilation, lighting, feeding and watering, handling, veterinary care, and recordkeeping. CDD complies with licensing and registration requirement standards set by the USDA and similar agencies in foreign jurisdictions such as the European Union and China for the care and use of regulated species. If the USDA determines that CDD's equipment, facilities, laboratories or processes do not comply with applicable AWA standards, it may issue an inspection report documenting the deficiencies and setting deadlines for any required corrective actions. The USDA may impose fines, suspend and/or revoke licenses and registrations, or confiscate research animals. Other countries where the Company conducts business have similar laws and regulations with which the Company must also comply. In addition, certain of CDD's animal-related activities may be subject to regulation by the U.S. Centers for Disease Control and Prevention, the Office of Laboratory Animal Welfare of the National Institutes of Health, the U.S. Fish and Wildlife Service, and similar organizations in other jurisdictions.

Payment for Clinical Laboratory Services

In 2019, LCD derived approximately 14.5% of its revenue directly from the Medicare and Medicaid programs. In addition, LCD's other commercial laboratory testing business that is not directly related to Medicare or Medicaid nevertheless depends significantly on continued participation in these programs and in other government healthcare programs, in part because customers often want a single laboratory to perform all of their testing services. In recent years, both governmental and private sector payers have made efforts to contain or reduce healthcare costs, including reducing reimbursement for clinical laboratory services.

Reimbursement under the Medicare PFS is capped at different rates in each Medicare Administrative Contractor's jurisdiction. Pursuant to PAMA, reimbursement under the CLFS is set at a national rate that is updated every three years for most tests. State Medicaid programs are prohibited from paying more than the Medicare fee schedule limit for clinical laboratory services furnished to Medicaid recipients. Laboratories primarily bill and are reimbursed by Medicare and Medicaid directly for covered tests performed on behalf of Medicare and Medicaid beneficiaries; for beneficiaries that participate in Managed Medicare and Managed Medicaid plans, laboratory bills are submitted to and paid by MCOs that manage those plans. Approximately 11.7% of LCD's revenue is reimbursed directly by Medicare under the CLFS.

Many pathology services performed by LCD are reimbursed by Medicare under the PFS. The PFS assigns relative value units to each procedure or service, and a conversion factor is applied to calculate the reimbursement. The PFS is also subject to adjustment on an annual basis. Such adjustments can impact both the conversion factor and relative value units. The Sustainable Growth Rate (SGR), the formula previously used to calculate the fee schedule conversion factor, would have resulted in significant decreases in payment for most physician services for each year since 2003. However, Congress intervened repeatedly to prevent these payment reductions, and the conversion factor was increased or frozen for the subsequent year. MACRA permanently replaced the SGR formula and transitioned PFS reimbursement to a value-based payment system. MACRA retroactively avoided a 21.2% reduction in PFS reimbursement that had been scheduled for April 1, 2015, and provided for PFS conversion factor increases of 0.5% from July 1, 2015 to December 31, 2015, and 0.5% in each of years 2016-2019, followed by 0.0% updates for 2020-2025, and updates that vary based on participation in alternative payment models in subsequent years. These changes to the conversion factor may be offset by reductions to the relative value units, as was the case with the 2016 PFS reductions. Approximately 0.6% of LCD's revenue is reimbursed under the PFS.

In addition to changes in reimbursement rates, LCD is also impacted by changes in coverage policies for laboratory tests and annual CPT coding revisions. Medicare, Medicaid and private payer diagnosis code requirements and payment policies negatively impact LCD's ability to be paid for some of the tests it performs. Further, some payers require additional information to process claims, employ third-party utilization management tools, or have implemented prior authorization policies which delay or prohibit payment. CLFS coding and billing changes related to toxicology and other procedures were implemented in 2016 and 2017. The Company experienced delays in the pricing and implementation of the new toxicology codes; however, the Company largely overcame issues related to price and margins through direct negotiation with the associated payers. Limited coding and billing changes related to other procedure types were implemented in 2018 and 2019. While limited changes are expected to be implemented in 2020, the Company expects some delays in pricing and implementation of these new codes.

Future changes in national, state and local laws and regulations (or in the interpretation of current regulations) affecting government payment for clinical laboratory testing could have a material adverse effect on the Company.

Further healthcare reform could occur in 2020, including changes to the ACA and Medicare reform, initiatives to address surprise billing and increased price transparency, as well as administrative requirements that may continue to affect coverage, reimbursement, and utilization of laboratory services in ways that are currently unpredictable.

Privacy, Security and Confidentiality of Health Information and Other Personal Information

In the U.S., the Health Insurance Portability and Accountability Act of 1996 (HIPAA) was designed to address issues related to the security and confidentiality of health information and to improve the efficiency and effectiveness of the healthcare system by facilitating the electronic exchange of information in certain financial and administrative transactions. These regulations apply to health plans and healthcare providers that conduct standard transactions electronically and healthcare clearinghouses (covered entities). Six such regulations include: (i) the Transactions and Code Sets Rule; (ii) the Privacy Rule; (iii) the Security Rule; (iv) the Standard Unique Employer Identifier Rule, which requires the use of a unique employer identifier in connection with certain electronic transactions; (v) the National Provider Identifier Rule, which requires the use of a unique healthcare provider identifier in connection with certain electronic transactions; and (vi) the Health Plan Identifier Rule, which required the use of a unique health plan identifier in connection with certain electronic transactions.

The Company believes that it is in compliance in all material respects with the current Transactions and Code Sets Rule. The Company implemented Version 5010 of the HIPAA Transaction Standards and believes it has fully adopted the ICD-10-CM code set. While to date the Company has not experienced any sustained disruption in receipts or indications of substantive reductions to reimbursement and revenues related to the implementation of the ICD-10-CM code set, further future application of restrictive clinical or payment policies could negatively impact the Company. The Company believes it is in compliance in all material respects with applicable laws and regulations for electronic funds transfers and remittance advice transactions.

The Privacy Rule regulates the use and disclosure of protected health information (PHI) by covered entities. It also sets forth certain rights that an individual has with respect to his or her PHI maintained by a covered entity, such as the right to access or amend certain records containing PHI or to request restrictions on the use or disclosure of PHI. The Privacy Rule requires covered entities to contractually bind third parties, known as business associates, in the event that they perform an activity or service for or on behalf of the covered entity that involves the creation, receipt, maintenance, or transmission of PHI. The Company believes that it is in compliance in all material respects with the requirements of the HIPAA Privacy Rule.

On December 12, 2018, HHS issued a request for information (RFI) seeking input from the public on how the HIPAA regulations, and the Privacy Rule in particular, could be modified to amend existing, or impose additional, obligations relating to the processing of PHI. The Company participated in this process and no further action has yet been taken by HHS.

The Security Rule establishes requirements for safeguarding patient information that is electronically transmitted or electronically stored. The Company believes that it is in compliance in all material respects with the requirements of the HIPAA

Security Rule.

The U.S. Health Information Technology for Economic and Clinical Health Act (HITECH), which was enacted in February 2009, with regulations effective on September 23, 2013, strengthened and expanded the HIPAA Privacy and Security Rules and their restrictions on use and disclosure of PHI. HITECH includes, but is not limited to, prohibitions on exchanging PHI for remuneration and additional restrictions on the use of PHI for marketing. HITECH also fundamentally changes a business associate's obligations by imposing a number of Privacy Rule requirements and a majority of Security Rule provisions directly on business associates that were previously only directly applicable to covered entities. Moreover, HITECH requires covered entities to provide notice to individuals, HHS, and, as applicable, the media when unsecured PHI is breached, as that term is defined by HITECH. Business associates are similarly required to notify covered entities of a breach. The Company believes its policies and procedures are fully compliant with HIPAA as modified by the HITECH requirements.

On February 6, 2014, CMS and HHS published final regulations that amended the HIPAA Privacy Rule to provide individuals (or their personal representatives) with the right to receive copies of their test reports from laboratories subject to HIPAA, or to request that copies of their test reports be transmitted to designated third parties. The Company believes its policies and procedures and privacy notice comply with the Privacy Rule access requirements.

The Standard Unique Employer Identifier Rule requires that employers have standard national numbers that identify them on standard transactions. The Employer Identification Number, or a Federal Tax Identification Number, issued by the Internal Revenue Service was selected as the identifier for employers and was adopted effective July 30, 2002. The Company believes it is in compliance with these requirements.

The administrative simplification provisions of HIPAA mandate the adoption of standard unique identifiers for healthcare providers. The intent of these provisions is to improve the efficiency and effectiveness of the electronic transmission of health information. The National Provider Identifier Rule requires that all HIPAA-covered healthcare providers, whether they are individuals or organizations, must obtain a NPI to identify themselves in standard HIPAA transactions. NPI replaces the unique provider identification number and other provider numbers previously assigned by payers and other entities for the purpose of identifying healthcare providers in standard electronic transactions. The Company believes that it is in compliance with the HIPAA National Provider Identifier Rule in all material respects.

The Health Plan Identifier (HPID) was a unique identifier designed to furnish a standard way to identify health plans in electronic transactions. CMS published the final rule adopting the HPID for health plans required by HIPAA on September 12, 2012. Effective October 31, 2014, CMS announced a delay, until further notice, in enforcement of regulations pertaining to health plan enumeration and use of the HPID in HIPAA transactions adopted in the HPID final rule. On October 28, 2019, CMS published a final rule rescinding the adopted standard unique HPID and implementation specifications and requirements for its use and other entity identifier (OEID) and implementation specifications for its use, effective December 27, 2019. This delay remains in effect. The Company will continue to monitor future developments related to the HPID and respond accordingly.

Violations of the HIPAA provisions could result in civil and/or criminal penalties, including significant fines and up to 10 years in prison. HITECH also significantly strengthened HIPAA enforcement by increasing the civil penalty amounts that may be imposed, requiring HHS to conduct periodic audits to confirm compliance and authorizing state attorneys general to bring civil actions seeking either injunctions or damages in response to violations of the HIPAA privacy and security regulations that affect the privacy of state residents.

The total cost associated with meeting the ongoing requirements of HIPAA and HITECH is not expected to be material to the Company's operations or cash flows. However, future regulations and interpretations of HIPAA and HITECH could impose significant costs on the Company.

In addition to the HIPAA regulations described above, numerous other data protection, privacy and similar laws govern the confidentiality, security, use and disclosure of personal information. These laws vary by jurisdiction, but they most commonly regulate or restrict the collection, use and disclosure of medical and financial information and other personal information. In the U.S., some state laws are more restrictive and, therefore, are not preempted by HIPAA. Penalties for violation of these laws may include sanctions against a laboratory's licensure, as well as civil and/or criminal penalties.

On June 28, 2018, the California legislature passed the California Consumer Privacy Act (CCPA), which was effective January 1, 2020. The CCPA created new transparency requirements and granted California residents several new rights with regard their personal information. Failure to comply with the CCPA may result in, among other things, significant civil penalties and injunctive relief, or potential statutory or actual damages. The Company implemented processes to manage compliance with the CCPA. In addition, California residents have the right to bring a private right of action in connection with certain types of incidents. These claims may result in significant liability and potential damages.

On January 2, 2018, the Substance Abuse and Mental Health Services Administration of HHS (SAMHSA) announced the finalization of proposed changes to the Confidentiality of Substance Use Disorder Patient Records regulation, 42 Code of Federal

Regulations Part 2. This regulation protects the confidentiality of patient records relating to the identity, diagnosis, prognosis, or treatment that are maintained in connection with the performance of any federally assisted program or activity relating to substance use disorder education, prevention, training, treatment, rehabilitation, or research. Under the regulation, patient identifying information may only be released with the individual's written consent, subject to certain limited exceptions. The latest changes to this regulation seek to align to its requirements more closely with HIPAA, while maintaining more stringent confidentiality of substance use disorder information. The Company will adopt such changes to its policies and procedures as may be necessary for compliance.

The European Union General Data Protection Regulation (GDPR) Regulation (EU) 2016/679, became effective May 25, 2018, replacing Directive 95/46/EC. The GDPR established new requirements applicable to the use and transfer of personal data and imposes penalties for noncompliance of up to the greater of €20 million or 4% of worldwide revenue. The GDPR requires transparency with regard to the means and purposes of processing of personal data; collection of consent to process personal data in certain circumstances; the ability to provide records of processing upon request by a supervisory authority or data controller; implementation of appropriate technical and organizational measures to maintain security of personal data; notification of personal data breaches to supervisory authorities, data controllers and individuals within expedient time frames; and performance of data protection impact assessments for certain processing activities. Personal data may only be transferred outside of the European Union to a country that offers an adequate level of data protection under standards set by the European Union. The GDPR also provides individual data subjects with certain rights, where applicable, including the right of access, the right to rectification, the right to be forgotten, the right to restrict or object to processing and the right to data portability. The Company has established processes and frameworks to manage compliance with the GDPR and other global privacy and data protection requirements, and to manage preparation for future enacted regulations. Compliance could impose significant costs on the Company.

In addition to the GDPR, numerous other countries have laws governing the collection, use, disclosure and transmission (including cross-border transfer) of personal information, including medical information. The legislative and regulatory landscape for privacy and data protection is complex and continually evolving. Data protection regulations have been enacted or updated in countries where the Company does business including in Asia, Latin America, Canada, and Europe. Failure to comply with these regulations may result in, among other things, civil, criminal and contractual liability, fines, regulatory sanctions and damage to the Company's reputation.

Fraud and Abuse Laws and Regulations

Existing U.S. laws governing federal healthcare programs, including Medicare and Medicaid, as well as similar state laws, impose a variety of broadly described fraud and abuse prohibitions on healthcare providers, including clinical laboratories. These laws are interpreted liberally and enforced aggressively by multiple government agencies, including the U.S. Department of Justice, HHS' Office of Inspector General (OIG) and various state agencies. Historically, the clinical laboratory industry has been the focus of major governmental enforcement initiatives. The U.S. government's enforcement efforts have been conducted under regulations such as HIPAA, which includes several provisions related to fraud and abuse enforcement, including the establishment of a program to coordinate and fund U.S., state and local law enforcement efforts, and the Deficit Reduction Act of 2005, which includes requirements directed at Medicaid fraud, including increased spending on enforcement and financial incentives for states to adopt false claims act provisions similar to the U.S. False Claims Act. Amendments to the False Claims Act, and other enhancements to the U.S. fraud and abuse laws enacted as part of the ACA, have further increased fraud and abuse enforcement efforts and compliance risks. For example, the ACA established an obligation to report and refund overpayments from Medicare or Medicaid within 60 days of identification (whether or not paid through any fault of the recipient); failure to comply with this requirement can give rise to additional liability under the False Claims Act and Civil Monetary Penalties statute.

The U.S. Anti-Kickback Statute prohibits knowingly providing anything of value in return for, or to induce the referral of, Medicare, Medicaid or other U.S. healthcare program business. Violations can result in imprisonment, fines, penalties, and/or exclusion from participation in U.S. healthcare programs. The OIG has published "safe harbor" regulations that specify certain arrangements that are protected from prosecution under the Anti-Kickback Statute if all conditions of the relevant safe harbor are met. Failure to fit within a safe harbor does not necessarily constitute a violation of the Anti-Kickback Statute; rather, the arrangement would be subject to scrutiny by regulators and prosecutors and would be evaluated on a case-by-case basis. Many states have their own Medicaid anti-kickback laws, and several states also have anti-kickback laws that apply to all payers (i.e., not just government healthcare programs).

From time to time, the OIG issues alerts and other guidance on certain practices in the healthcare industry that implicate the Anti-Kickback Statute or other fraud and abuse laws. Examples of such guidance documents particularly relevant to the Company and its operations follow.

In October 1994, the OIG issued a Special Fraud Alert on arrangements for the provision of clinical laboratory services. The Fraud Alert set forth a number of practices allegedly engaged in by some clinical laboratories and healthcare providers that raise issues under the U.S. fraud and abuse laws, including the Anti-Kickback Statute. These practices include: (i) providing employees to furnish valuable services for physicians (other than collecting patient specimens for testing) that are typically the responsibility

of the physicians' staff; (ii) offering certain laboratory services at prices below fair market value in return for referrals of other tests that are billed to Medicare at higher rates; (iii) providing free testing to physicians' managed care patients in situations where the referring physicians benefit from such reduced laboratory utilization; (iv) providing free pickup and disposal of biohazardous waste for physicians for items unrelated to a laboratory's testing services; (v) providing general-use facsimile machines or computers to physicians that are not exclusively used in connection with the laboratory services; and (vi) providing free testing for healthcare providers, their families and their employees (i.e., so-called "professional courtesy" testing). The OIG emphasized in the Special Fraud Alert that when one purpose of such arrangements is to induce referrals of program-reimbursed laboratory testing, both the clinical laboratory and the healthcare provider (e.g., physician) may be liable under the Anti-Kickback Statute, and may be subject to criminal prosecution and exclusion from participation in the Medicare and Medicaid programs. More recently, in June 2014, the OIG issued another Special Fraud Alert addressing compensation paid by laboratories to referring physicians for blood specimen processing and for submitting patient data to registries. This Special Fraud Alert reiterates the OIG's long-standing concerns about payments from laboratories to physicians in excess of the fair market value of the physician's services and payments that reflect the volume or value of referrals of federal U.S. program business.

The OIG has expressed additional concern about the provision of discounts on laboratory services billed to customers in return for the referral of U.S. healthcare program business. In a 1999 Advisory Opinion, the OIG concluded that a laboratory's offer to a physician of significant discounts on non-U.S. healthcare program laboratory tests might violate the Anti-Kickback Statute on the basis that such discounts could be viewed as in exchange for referrals by the physician of business to be billed by the laboratory to Medicare at non-discounted rates.

The OIG issued guidance in 1989 and 2003 regarding joint venture arrangements that may be viewed as suspect under the Anti-Kickback Statute. These documents have relevance to clinical laboratories that are part of (or are considering establishing) joint ventures with potential sources of U.S. healthcare program business. Some of the elements of joint ventures that the OIG identified as "suspect" include: arrangements in which the capital invested by referring providers is disproportionately small and the return on investment is disproportionately large when compared to a typical investment; specific selection of investors who are in a position to make referrals to the venture; and arrangements in which one of the parties to the joint venture expands into a line of business that is dependent on referrals from the other party (sometimes called "shell" joint ventures). In a 2004 advisory opinion, the OIG expressed concern about a proposed joint venture in which a laboratory company would assist physician groups in establishing off-site pathology laboratories where the physicians' financial and business risk in the venture was minimal and the physicians would contract out substantially all laboratory operations, committing very little in the way of financial, capital, or human resources.

In addition to the Anti-Kickback Statute, in October 2018, the U.S. enacted the Eliminating Kickbacks in Recovery Act of 2018 (EKRA), as part of the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act (SUPPORT Act). EKRA is an all-payer anti-kickback law that makes it a criminal offense to pay any remuneration to induce referrals to, or in exchange for, patients using the services of a recovery home, a substance use clinical treatment facility, or laboratory. Although it appears that EKRA was intended to reach patient brokering and similar arrangements to induce patronage of substance use recovery and treatment, the language in EKRA is broadly written. As drafted, an EKRA prohibition on incentive compensation to sales employees is inconsistent with the federal anti-kickback statute and regulations, which permit payment of employee incentive compensation, a practice that is common in the industry. Significantly, EKRA permits the U.S. Department of Justice to issue regulations clarifying EKRA's exceptions or adding additional exceptions, but such regulations have not yet been issued. The Company is working through its trade association to address the scope of EKRA and is seeking clarification or correction.

Violations of other fraud and abuse laws can also result in exclusion from participation in U.S. healthcare programs, including Medicare and Medicaid. One basis for such exclusion is an individual or entity's submission of claims to Medicare or Medicaid that are substantially in excess of that individual or entity's usual charges for like items or services. In a June 18, 2007, withdrawal of proposed rulemaking, the OIG stated that it would continue evaluating billing patterns on a case-by-case basis, noting that it is "concerned about disparities in the amounts charged to Medicare and Medicaid when compared to private payers," that it continues to believe its exclusion authority for excess charges "provides useful backstop protection for the public from providers that routinely charge Medicare or Medicaid substantially more than their other customers" and that it will use "all tools available … to address instances where Medicare or Medicaid are charged substantially more than other payers." An enforcement action by the OIG under this statutory exclusion basis or an enforcement action by Medicaid officials of similar state law restrictions could have an adverse effect on the Company.

Enrollment and re-enrollment in U.S. healthcare programs, including Medicare and Medicaid, are subject to certain program integrity requirements intended to protect the programs from fraud, waste, and abuse. In September 2019, the Centers for Medicare and Medicaid Services (CMS) published a final rule implementing program integrity enhancements to provider enrollment requiring Medicare, Medicaid, and Children's Health Insurance Program (CHIP) providers and suppliers to disclose on an enrollment application or a revalidation application any current or previous direct or indirect affiliation with a provider or supplier that-(1) has uncollected debt; (2) has been or is subject to a payment suspension under a federal health care program; (3) has been or is

excluded by the Office of Inspector General (OIG) from Medicare, Medicaid, or CHIP; or (4) has had its Medicare, Medicaid, or CHIP billing privileges denied or revoked. This rule permits CMS to deny enrollment based on such an affiliation when CMS determines that the affiliation poses an undue risk of fraud, waste, or abuse. CMS is phasing in this new affiliation disclosure requirement.

Under another U.S. statute, known as the Stark Law or "physician self-referral" prohibition, physicians who have a financial or a compensation relationship with a commercial laboratory may not, unless an exception applies, refer Medicare or Medicaid patients for testing to the laboratory, regardless of the intent of the parties. Similarly, laboratories may not bill Medicare or Medicaid for services furnished pursuant to a prohibited self-referral. There are several Stark Law exceptions that are relevant to arrangements involving clinical laboratories, including: i) fair market value compensation for the provision of items or services; ii) payments by physicians to a laboratory for commercial laboratory services; iii) ancillary services (including laboratory services) provided within the referring physician's own office, if certain criteria are satisfied; iv) physician investment in a company whose stock is traded on a public exchange and has stockholder equity exceeding $75.0 million; and v) certain space and equipment rental arrangements that are set at a fair market value rate and satisfy other requirements. Many states have their own self-referral laws as well, which in some cases apply to all patient referrals, not just government reimbursement programs.

In October 2019, the OIG and CMS published proposed rules to amend the regulations implementing the Anti-Kickback Statute and the Stark Law, respectively. The proposed amendments are primarily intended to alleviate perceived impediments to coordinated care and value-based compensation arrangements, and have varying degrees of applicability to laboratories. These proposed rules, which would establish new safe harbors and exceptions and amend existing safe harbors and exceptions, have not been finalized, and are subject to change before finalization.

There are a variety of other types of U.S. and state fraud and abuse laws, including laws prohibiting submission of false or fraudulent claims. The Company seeks to conduct its business in compliance with all U.S. and state fraud and abuse laws. The Company is unable to predict how these laws will be applied in the future, and no assurances can be given that its arrangements will not be subject to scrutiny under such laws. Sanctions for violations of these laws may include exclusion from participation in Medicare, Medicaid and other U.S. or state healthcare programs, significant criminal and civil fines and penalties, and loss of licensure. Any exclusion from participation in a U.S. healthcare program, or material loss of licensure, arising from any action by any federal or state regulatory or enforcement authority, would likely have a material adverse effect on the Company's business. In addition, any significant criminal or civil penalty resulting from such proceedings could have a material adverse effect on the Company's business.

Environmental, Health and Safety

The Company is subject to licensing and regulation under laws and regulations relating to the protection of the environment, and human health and safety laws and regulations relating to the handling, transportation and disposal of medical specimens and hazardous materials, infectious and hazardous waste and radioactive materials. All Company laboratories are subject to applicable laws and regulations relating to biohazard disposal of all laboratory specimens, and the Company generally utilizes outside vendors for disposal of such specimens. In addition, the U.S. Occupational Safety and Health Administration (OSHA) has established extensive requirements relating to workplace safety for healthcare employers, including clinical laboratories, whose workers may be exposed to blood-borne pathogens such as HIV, HCV and hepatitis B virus (HCB). These regulations, among other things, require work practice controls, protective clothing and equipment, training, medical follow-up, vaccinations and other measures designed to minimize exposure to, and transmission of, blood-borne pathogens. Other countries where the Company conducts business have similar laws and regulations concerning the environment and human health and safety with which the Company must also comply.

The Company is committed to reducing its carbon footprint. Energy-saving measures are continuing at Company facilities, including installation of energy-saving LED lighting, engaging in waste-to-energy projects, and helping reduce waste going to landfills, as well as capital investments to systems to improve energy and water usage. CDD has achieved a 9.8% reduction in carbon emissions from 2014 to 2018 from the replacement of older infrastructure and ongoing energy efficiency and conservation efforts. As part of a project with its waste disposal vendor, LCD reduced its rate of waste going to landfills from 2.7% in 2017 to 1.99% in 2018. Funding for these and similar projects continued through 2019 and are continuing in 2020.

The Company seeks to comply with all relevant environmental and human health and safety laws and regulations. Failure to comply could subject the Company to various administrative and/or other enforcement actions.

Drug Testing

Drug testing for public sector employees is regulated by the SAMHSA, which has established detailed performance and quality standards that laboratories must meet to be approved to perform drug testing on employees of U.S. government contractors and certain other entities. To the extent that the Company's laboratories perform such testing, each must be certified as meeting

SAMHSA standards. The Company's laboratories in Research Triangle Park, North Carolina; Raritan, New Jersey; Houston, Texas; Southaven, Mississippi; Spokane, Washington; and St. Paul, Minnesota are all SAMHSA certified.

Controlled Substances

CDD handles controlled substances as part of the services it provides in preclinical testing and clinical trials. The use of controlled substances in testing for drugs of abuse is regulated by the U.S. Drug Enforcement Administration. The Company seeks to conduct its business in compliance with these regulations as applicable. Violations of these rules may result in criminal and civil fines and penalties.

Compliance Program

The Company maintains a comprehensive, global compliance program that includes ongoing evaluation and monitoring of its compliance with the laws and regulations of the U.S. and the other countries in which it has operations. The objective of the Company's compliance program is to develop, implement, monitor and update compliance safeguards, as appropriate. Although the Company is subject to a broad range of regulations, its compliance program has a particular focus on regulations related to healthcare fraud and abuse, anti-kickback, physician self-referral, government reimbursement programs, anti-bribery/anti-corruption, anti-human trafficking and trade sanctions, among others. Emphasis is placed on developing and implementing compliance policies and guidelines, personnel training programs and monitoring and auditing activities. The compliance program demonstrates the Company's commitment to conducting business at the highest standards of ethical conduct and integrity.

The Company seeks to conduct its business in compliance with all statutes, regulations, and other requirements applicable to its clinical laboratory operations and drug development business. The clinical laboratory industry and drug development industries are, however, subject to extensive regulation, and many of these statutes and regulations have not been interpreted by the courts. In addition, the applicability or interpretation of statutes and regulations may not be clear in light of emerging changes in clinical testing science, healthcare technology, and healthcare organizations. Applicable statutes and regulations may be interpreted or applied by a prosecutorial, regulatory or judicial authority in a manner that would materially adversely affect the Company. Potential sanctions for violation of these statutes and regulations include significant civil and criminal penalties, fines, exclusion from participation in governmental healthcare programs, and the loss of various licenses, certificates, and authorizations necessary to operate, as well as potential liabilities from third-party claims, all of which could have a material adverse effect on the Company's business.

Information Security

Information security is one of the Company's top priorities. Securing personal and health information is critical to the Company's business operations and to future growth, as the Company is committed to using technology to improve the delivery of care. A security breach could have a material adverse operational, financial, regulatory, and reputational impact to the Company. The Company employs a secure technology framework that enables continuous operations of laboratory devices, computers, and communications systems. The Company has experienced and expects to continue to confront attempts by cybercriminals who seek access to its systems and data.

The Company uses state-of-the art tools and advanced analytics to proactively identify and protect against potential information system disruptions and breaches; to monitor, test and secure key networks and services; and to facilitate prompt resumption of operations if a system disruption or interruption should occur. The Company has implemented policies and procedures designed to comply with global laws and regulations related to the privacy and security of personal or health information. In addition, the Company follows protocols for evaluating the cybersecurity status of any vendor or third-party that will have access to the Company's data or information technology systems. The Company also carries cybercrime and business interruption insurance.

Over the past several years, the Company has significantly increased its investment in cybersecurity technology and training to help protect its information technology systems and operations in response to the ever-evolving cyberthreat landscape. Additional resources have been and will be dedicated to expand the Company's ability to investigate and remediate any cybersecurity vulnerabilities, and to manage any impact of a cybersecurity event on its business and operations.

In July 2018, the Company experienced a ransomware incident which affected certain LCD information technology systems. The incident temporarily affected test processing and customer access to test results, and also affected certain other information technology systems involved in conducting Company-wide operations. The investigation determined that the ransomware did not and could not transfer patient or client data outside of Company systems and that there was no theft or misuse of patient or client data.

The Company is also exposed to risks related to information security arising from the information technology systems and operations of third parites, including those of the Company's vendors and partners. For example, on May 14, 2019, Retrieval-Masters Credit Bureau, Inc. d/b/a/ American Medical Collections Agency (AMCA), an external collection agency, notified the Company about a security incident AMCA experienced that may have involved certain personal information about some of the

Company's patients (the AMCA Incident). The Company referred patient balances to AMCA only when direct collection efforts were unsuccessful. The Company's systems were not impacted by the AMCA Incident. Upon learning of the AMCA Incident, the Company promptly stopped sending new collection requests to AMCA and stopped AMCA from continuing to work on any pending collection requests on behalf of the Company. AMCA informed the Company that it appeared that an unauthorized user had access to AMCA's system between August 1, 2018 and March 30, 2019, and that AMCA could not rule out the possibility that personal information on AMCA's system was at risk during that time period. Information on AMCA's affected system from the Company may have included name, address, and balance information for the patient and person responsible for payment, along with the patient's phone number, date of birth, referring physician, and date of service. The Company was later informed by AMCA that health insurance information may have been included for some individuals, and because some insurance carriers utilize the Social Security Number as a subscriber identification number, the Social Security Number for some individuals may also have been affected. No ordered tests, laboratory test results, or diagnostic information from the Company were in the AMCA affected system. The Company notified individuals for whom it had a valid mailing address. For the individuals whose Social Security Number was affected, the notice included an offer to enroll in credit monitoring and identity protection services that will be provided free of charge for 24 months. The Company has incurred, and expects to continue to incur, costs related to the AMCA Incident. In addition, the Company is involved in pending and threatened litigation related to the AMCA Incident, as well as various government and regulatory inquiries and processes. For additional information about the AMCA Incident, see Note 16 Commitments and Contingencies to the Consolidated Financial Statements.

The Company continues to invest in its technology and training to help protect its information technology systems and operations from cyberattacks.

Item 1A. Risk Factors

Investors should carefully consider all of the information set forth in this report, including the following risk factors, before deciding to invest in any of the Company's securities. The risks below are not the only ones that the Company faces. Additional risks not presently known to the Company, or that it presently deems immaterial, may also negatively impact the Company. The Company's business, consolidated financial condition, revenues, results of operations, profitability, reputation or cash flows could be materially impacted by any of these factors.

This report also includes forward-looking statements that involve risks or uncertainties. The Company's results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks described below and elsewhere. See "Forward-Looking Statements" in Item 7.

Changes in payer regulations or policies (or in the interpretation of current regulations or policies), insurance regulations or approvals, or changes in other laws, regulations or policies in the United States (U.S.), may adversely affect U.S. governmental and third-party coverage or reimbursement for clinical laboratory testing and may have a material adverse effect upon the Company.

U.S. and state government payers, such as Medicare and Medicaid, as well as insurers, including managed care organizations (MCOs), have increased their efforts to control the cost, utilization and delivery of healthcare services. From time to time, Congress has considered and implemented changes in Medicare fee schedules in conjunction with budgetary legislation. The first phase of reductions pursuant to the Protecting Access to Medicare Act (PAMA) came into effect on January 1, 2018, and will continue annually subject to certain phase-in limits through 2025, and without limitations for subsequent periods. Further reductions due to changes in policy regarding coverage of tests or other requirements for payment, such as prior authorization, diagnosis code and other claims edits, or a physician or qualified practitioner's signature on test requisitions, may be implemented from time to time. Reimbursement for pathology services performed by LabCorp Diagnostics (LCD) is also subject to statutory and regulatory reduction. Reductions in the reimbursement rates and changes in payment policies of other third-party payers may occur as well. Such changes in the past have resulted in reduced payments as well as added costs and have decreased test utilization for the commercial laboratory industry by adding more complex new regulatory and administrative requirements. Further changes in third-party payer regulations, policies, or laboratory benefit or utilization management programs may have a material adverse effect on LCD's business. Actions by federal and state agencies regulating insurance, including healthcare exchanges, or changes in other laws, regulations, or policies may also have a material adverse effect upon LCD's business.

The Company could face significant monetary damages and penalties and/or exclusion from government programs if it violates anti-fraud and abuse laws.

The Company is subject to extensive government regulation at the federal, state, and local levels in the U.S. and other countries where it operates. The Company's failure to meet governmental requirements under these regulations, including those relating to billing practices and financial relationships with physicians, hospitals, and health systems could lead to civil and criminal penalties, exclusion from participation in Medicare and Medicaid and possible prohibitions or restrictions on the use of its laboratories. While the Company believes that it is in material compliance with all statutory and regulatory requirements, there is a risk that government authorities might take a contrary position. This risk includes, but is not limited to, the potential that government enforcement

authorities may take a contrary position with respect to the Eliminating Kickbacks in Recovery Act (EKRA), given its recent passage and lack of associated regulations to clarify or add exceptions. Such occurrences, regardless of their outcome, could damage the Company's reputation and adversely affect important business relationships.

The Company's business could be harmed from the loss or suspension of a license or imposition of a fine or penalties under, or future changes in, or interpretations of, the law or regulations of the Clinical Laboratory Improvement Act of 1967, and the Clinical Laboratory Improvement Amendments of 1988 (CLIA), or those of Medicare, Medicaid or other national, state or local agencies in the U.S. and other countries where the Company operates laboratories.

The commercial laboratory testing industry is subject to extensive U.S. regulation, and many of these statutes and regulations have not been interpreted by the courts. CLIA extends federal oversight to virtually all clinical laboratories operating in the U.S. by requiring that they be certified by the federal government or by a federally approved accreditation agency. The sanction for failure to comply with CLIA requirements may be suspension, revocation or limitation of a laboratory's CLIA certificate, which is necessary to conduct business, as well as significant fines and/or criminal penalties. In addition, the Company is subject to regulation under state law. State laws may require that laboratories and/or laboratory personnel meet certain qualifications, specify certain quality controls or require maintenance of certain records. The Company also operates laboratories outside of the U.S. and is subject to laws governing its laboratory operations in the other countries where it operates.

Applicable statutes and regulations could be interpreted or applied by a prosecutorial, regulatory or judicial authority in a manner that would adversely affect the Company's business. Potential sanctions for violation of these statutes and regulations include significant fines and the suspension or loss of various licenses, certificates and authorizations, which could have a material adverse effect on the Company's business. In addition, compliance with future legislation could impose additional requirements on the Company, which may be costly.

U.S. Food and Drug Administration (FDA) regulation of diagnostic products and increased FDA regulation of laboratory-developed tests (LDTs) could result in increased costs and the imposition of fines or penalties, and could have a material adverse effect upon the Company's business.

The FDA has regulatory responsibility for instruments, test kits, reagents and other devices used by clinical laboratories. The FDA enforces laws and regulations that govern the development, testing, manufacturing, performance, labeling, advertising, marketing, distribution and surveillance of diagnostic products, and it regularly inspects and reviews the manufacturing processes and product performance of diagnostic products. LCD's point-of-care testing devices are subject to regulation by the FDA.

Since the 1990s, the FDA has asserted that it has authority to regulate LDTs as medical devices, but has exercised enforcement discretion to refrain from systematic regulation of LDTs. In 2014, the FDA issued draft guidance describing how it intended to discontinue its enforcement discretion policy and begin regulating LDTs as medical devices; however, that draft guidance has not been finalized, and FDA has instead continued its enforcement discretion policy and has indicated that it intends to work with Congress to enact comprehensive legislative preform of diagnostics oversight. As such, LDTs developed by high complexity clinical laboratories are currently generally offered as services to health care providers under the CLIA regulatory framework administered by the Centers for Medicare and Medicaid Services (CMS) of the U.S. Department of Health and Human Services (HHS), without the requirement for FDA clearance or approval. There are other regulatory and legislative proposals that would increase general FDA oversight of clinical laboratories and LDTs. The outcome and ultimate impact of such proposals on the business is difficult to predict at this time. On February 20, 2020, the FDA issued a statement with a table of pharmacogenetic associations setting forth certain gene-drug interactions that the agency has determined are supported by the scientific literature to help ensure that claims being made for pharmacogenetic tests are grounded in sound science, thereby reducing the risk of enforcement actions with respect to LDTs offering claims consistent with the table. The FDA noted that while it is committed to work with Congress on new comprehensive diagnostic oversight reform legislation, it could still take enforcement actions under the current medical device framework regarding diagnostic claims the agency determines not to be sufficiently supported. Even without issuance of a finalized LDT oversight framework, in light of the April 4, 2019, FDA warning letter issued to Inova Genomics Laboratory related to certain LDTs that Inova offered, as well as the February 2020 pharmacogenetics statement, there may be an increased risk of FDA enforcement actions for laboratory tests offered by companies without FDA clearance or approval.

Current FDA regulation of the Company's diagnostic products and potential future increased regulation of the Company's LDTs could result in increased costs and administrative and legal actions for noncompliance, including warning letters, fines, penalties, product suspensions, product recalls, injunctions and other civil and criminal sanctions, which could have a material adverse effect upon the Company.

Failure to comply with U.S., state, local or international environmental, health and safety laws and regulations, including the U.S. Occupational Safety and Health Administration Act and the U.S. Needlestick Safety and Prevention Act, could result in fines and penalties and loss of licensure, and have a material adverse effect upon the Company's business.

As previously discussed in Item 1 of Part I of this report, the Company is subject to licensing and regulation under laws and regulations relating to the protection of the environment and human health and safety, including laws and regulations relating to the handling, transportation and disposal of medical specimens, infectious and hazardous waste and radioactive materials, as well as regulations relating to the safety and health of laboratory employees. Failure to comply with these laws and regulations could subject the Company to denial of the right to conduct business, fines, criminal penalties and/or other enforcement actions that would have a material adverse effect on its business. In addition, compliance with future legislation could impose additional requirements on the Company that may be costly.

Failure to comply with privacy and security laws and regulations could result in fines, penalties and damage to the Company's reputation with customers and have a material adverse effect upon the Company's business.

If the Company does not comply with existing or new laws and regulations related to protecting the privacy and security of personal or health information, it could be subject to monetary fines, civil penalties or criminal sanctions.

In the U.S., the Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy and security regulations, including the expanded requirements under U.S. Health Information Technology for Economic and Clinical Health Act (HITECH), establish comprehensive standards with respect to the use and disclosure of protected health information (PHI), by covered entities, in addition to setting standards to protect the confidentiality, integrity and security of PHI.

HIPAA restricts the Company's ability to use or disclose PHI, without patient authorization, for purposes other than payment, treatment or healthcare operations (as defined by HIPAA), except for disclosures for various public policy purposes and other permitted purposes outlined in the privacy regulations. HIPAA and HITECH provide for significant fines and other penalties for wrongful use or disclosure of PHI in violation of the privacy and security regulations, including potential civil and criminal fines and penalties. The regulations establish a complex regulatory framework on a variety of subjects, including:

- The circumstances under which the use and disclosure of PHI are permitted or required without a specific authorization by the patient, including, but not limited to, treatment purposes, activities to obtain payments for the Company's services, and its healthcare operations activities;
- A patient's rights to access, amend and receive an accounting of certain disclosures of PHI;
- The content of notices of privacy practices for PHI;
- Administrative, technical and physical safeguards required of entities that use or receive PHI; and
- The protection of computing systems maintaining electronic PHI.

The Company has implemented policies and procedures designed to comply with the HIPAA privacy and security requirements as applicable. The privacy and security regulations establish a "floor" and do not supersede state laws that are more stringent. Therefore, the Company is required to comply with both additional federal privacy and security regulations and varying state privacy and security laws. In addition, federal and state laws that protect the privacy and security of patient information may be subject to enforcement and interpretations by various governmental authorities and courts, resulting in complex compliance issues. For example, the Company could incur damages under state laws pursuant to an action brought by a private party for the wrongful use or disclosure of health information or other personal information.

On June 28, 2018, the California legislature passed the California Consumer Privacy Act (CCPA), which was effective January 1, 2020. The CCPA created new transparency requirements and granted California residents several new rights with regard their personal information. Failure to comply with the CCPA may result in, among other things, significant civil penalties and injunctive relief, or potential statutory or actual damages. The Company implemented processes to manage compliance with the CCPA. In addition, California residents have the right to bring a private right of action in connection with certain types of incidents. These claims may result in significant liability and potential damages.

The Company may also be required to comply with the data privacy and security laws of other countries in which it operates or with which it transfers and receives data. For example, the European Union's (EU) General Data Protection Regulation (GDPR), which took effect May 25, 2018, created a range of new compliance obligations for subject companies and imposes penalties for noncompliance of up to the greater of €20 million or 4% of worldwide revenue. The Company has established processes and frameworks to manage compliance with the GDPR, but there remains uncertainty as to how EU supervisory authorities will interpret and enforce the regulation. The costs of compliance with the GDPR could be significant. Potential fines and penalties in the event of a violation of the GDPR could have a material adverse effect on the Company's business and operations. In addition, similar data protection regulations addressing access, use, disclosure and transfer of personal data have been enacted or updated in countries where the Company does business, including in Asia, Latin America, Canada and Europe. The Company expects to make changes to its business practices and to incur additional costs associated with compliance with these evolving and complex regulations.

Failure to maintain the security of customer-related information or compliance with security requirements could damage the Company's reputation with customers, cause it to incur substantial additional costs and become subject to litigation and enforcement actions.

The Company receives and stores certain personal and financial information about its customers. In addition, the Company depends upon the secure transmission of confidential information over public networks, including information permitting cashless payments. The Company also works with third-party service providers and vendors that provide technology systems and services that are used in connection with the receipt, storage, and transmission of customer personal and financial information. A compromise in the Company's security systems, or those of the Company's third party service providers and vendors, that results in customer personal information being obtained by unauthorized persons or the Company's or third party's failure to comply with security requirements for financial transactions could adversely affect the Company's reputation with its customers and others, as well as the Company's results of operations, financial condition and liquidity. It could also result in litigation against the Company and the imposition of fines and penalties. For example, in connection with the AMCA Incident the Company has incurred, and expects to continue to incur, costs, and the Company is involved in pending and threatened litigation, as well as various government and regulatory inquiries and processes. For additional information about the AMCA Incident, see Note 16 Commitments and Contingencies to the Consolidated Financial Statements.

The Company depends on third parties to provide services critical to the Company's business, and depends on them to comply with applicable laws and regulations. Additionally, any breaches of the information technology systems of third parties could have a material adverse effect on the Company's operations.

The Company depends on third parties to provide services critical to the Company's business, including supplies, ground and air transport of clinical and diagnostic testing supplies and specimens, research products, and people, among other services. Third parties that provide services to the Company are subject to similar risks related to security of customer-related information and compliance with U.S., state, local, or international environmental, health and safety, and privacy and security laws and regulations as the Company. Any failure by third parties to comply with applicable laws, or any failure of third parties to provide services more generally, could have a material impact on the Company, whether because of the loss of the ability to receive services from the third parties, legal liability of the Company for the actions or inactions of third parties, or otherwise.

In addition, third parties to whom the Company outsources certain services or functions may process personal data, or other confidential information of the Company. A breach or attack affecting these third parties could also harm the Company's business, results of operations and reputation.

Discontinuation or recalls of existing testing products; failure to develop or acquire licenses for new or improved testing technologies; or the Company's customers using new technologies to perform their own tests could adversely affect the Company's business.

From time to time, manufacturers discontinue or recall reagents, test kits or instruments used by the Company to perform laboratory testing. Such discontinuations or recalls could adversely affect the Company's costs, testing volume and revenue.

The commercial laboratory industry is subject to changing technology and new product introductions. The Company's success in maintaining a leadership position in genomic and other advanced testing technologies will depend, in part, on its ability to develop, acquire or license new and improved technologies on favorable terms and to obtain appropriate coverage and reimbursement for these technologies. The Company may not be able to negotiate acceptable licensing arrangements, and it cannot be certain that such arrangements will yield commercially successful diagnostic tests. If the Company is unable to license these testing methods at competitive rates, its research and development (R&D) costs may increase as a result. In addition, if the Company is unable to license new or improved technologies to expand its esoteric testing operations, its testing methods may become outdated when compared with the Company's competition, and testing volume and revenue may be materially and adversely affected.

In addition, advances in technology may lead to the development of more cost-effective technologies such as point-of-care testing equipment that can be operated by physicians or other healthcare providers (including physician assistants, nurse practitioners and certified nurse midwives, generally referred to herein as physicians) in their offices or by patients themselves without requiring the services of freestanding clinical laboratories. Development of such technology and its use by the Company's customers could reduce the demand for its laboratory testing services and the utilization of certain tests offered by the Company and negatively impact its revenues.

Currently, most commercial laboratory testing is categorized as high or moderate complexity, and thereby is subject to extensive and costly regulation under CLIA. The cost of compliance with CLIA makes it impractical for most physicians to operate clinical laboratories in their offices, and other laws limit the ability of physicians to have ownership in a laboratory and to refer tests to such a laboratory. Manufacturers of laboratory equipment and test kits could seek to increase their sales by marketing point-of-care laboratory equipment to physicians and by selling test kits approved for home or physician office use to both physicians and patients. Diagnostic tests approved for home use are automatically deemed to be "waived" tests under CLIA and may be performed in physician office laboratories as well as by patients in their homes with minimal regulatory oversight. Other tests meeting certain FDA criteria also may be classified as "waived" for CLIA purposes. The FDA has regulatory responsibility over instruments, test kits, reagents and other devices used by clinical laboratories, and it has taken responsibility from the U.S. Centers for Disease Control and Prevention for classifying the complexity of tests for CLIA purposes. Increased approval of "waived" test kits could

lead to increased testing by physicians in their offices or by patients at home, which could affect the Company's market for laboratory testing services and negatively impact its revenues.

Healthcare reform and changes to related products (e.g., health insurance exchanges), changes in government payment and reimbursement systems, or changes in payer mix, including an increase in capitated reimbursement mechanisms and evolving delivery models, could have a material adverse effect on the Company's revenues, profitability and cash flow.

LCD's testing services are billed to MCOs, Medicare, Medicaid, physicians and physician groups, hospitals, patients and employer groups. Most testing services are billed to a party other than the physician or other authorized person who ordered the test. Increases in the percentage of services billed to government and MCOs could have an adverse effect on the Company's revenues.

The Company serves many MCOs. These organizations have different contracting philosophies, which are influenced by the design of their products. Some MCOs contract with a limited number of clinical laboratories and engage in direct negotiation of rates. Other MCOs adopt broader networks with generally uniform fee structures for participating clinical laboratories. In some cases, those fee structures are specific to independent clinical laboratories, while the fees paid to hospital-based and physician-office laboratories may be different, and are typically higher. MCOs may also offer Managed Medicare or Managed Medicaid plans. In addition, some MCOs use capitation rates to fix the cost of laboratory testing services for their enrollees. Under a capitated reimbursement arrangement, the clinical laboratory receives a per-member, per-month payment for an agreed upon menu of laboratory tests provided to MCO members during the month, regardless of the number of tests performed.

Capitation shifts the risk of increased test utilization (and the underlying mix of testing services) to the commercial laboratory provider. The Company makes significant efforts to obtain adequate compensation for its services in its capitated arrangements. For the year ended December 31, 2019, such capitated contracts accounted for approximately $298.0 million, or 4.3%, of LCD's revenues.

The Company's ability to attract and retain MCOs is critical given the impact of healthcare reform, related products and expanded coverage (e.g. health insurance exchanges and Medicaid expansion) and evolving value-based care and risk-based reimbursement delivery models (e.g., accountable care organizations (ACOs) and Independent Physician Associations (IPAs)).

A portion of the managed care fee-for-service revenues is collectible from patients in the form of deductibles, coinsurance and copayments. As patient cost-sharing has been increasing, the Company's collections may be adversely impacted.

In addition, Medicare and Medicaid and private insurers have increased their efforts to control the cost, utilization and delivery of healthcare services, including commercial laboratory services. Measures to regulate healthcare delivery in general, and clinical laboratories in particular, have resulted in reduced prices, added costs and decreased test utilization for the commercial laboratory industry by increasing complexity and adding new regulatory and administrative requirements. Pursuant to legislation passed in late 2003, the percentage of Medicare beneficiaries enrolled in Managed Medicare plans has increased. The percentage of Medicaid beneficiaries enrolled in Managed Medicaid plans has also increased, and is expected to continue to increase; however, changes to, or repeal of, the Patient Protection and Affordable Care Act (ACA) may continue to affect coverage, reimbursement, and utilization of laboratory services, as well as administrative requirements, in ways that are currently unpredictable. Further healthcare reform could adversely affect laboratory reimbursement from Medicare, Medicaid or commercial carriers.

The Company also experienced delays in the pricing and implementation of new molecular pathology codes among various payers, including Medicaid, Medicare and commercial carriers. While some delays were expected, several non-commercial payers required an extended period of time to price key molecular codes, and a number of those payers, mostly government entities, indicated that they would no longer pay for tests that they had previously covered. These issues (particularly payer policy changes) and changes in coverage had a negative impact on revenue, revenue per requisition, and margins and cash flows beginning in 2014, and are expected to have a continuing negative impact. Similarly, the Clinical Laboratory Fee Schedule (CLFS) coding and billing changes related to toxicology and other procedures were implemented in 2016 and 2017. The Company experienced delays in the pricing and implementation of the new toxicology codes; however, the Company largely overcame issues related to price and margins through direct negotiation with the associated payers. Limited coding and billing changes related to other procedure types were implemented in 2018 and 2019. While limited changes are expected to be implemented in 2020, the Company expects some delays in pricing and implementation of these new codes.

In addition, some MCOs are implementing, directly or through third parties, various types of laboratory benefit management programs that may include lab networks, utilization management tools (such as prior authorization and/or prior notification), and claims edits, which may impact coverage or reimbursement for commercial laboratory tests. Some of these programs address commercial laboratory testing broadly, while others are focused on certain types of testing such as molecular, genetic and toxicology testing.

The Company expects the efforts to impose reduced reimbursement, more stringent payment policies, and utilization and cost controls by government and other payers to continue. If LCD cannot offset additional reductions in the payments it receives for

its services by reducing costs, increasing test volume, and/or introducing new services and procedures, it could have a material adverse effect on the Company's revenues, profitability and cash flows. In 2014, Congress passed PAMA, requiring Medicare to change the way payment rates are calculated for tests paid under the CLFS, and to base the payment on the weighted median of rates paid by private payers. On June 23, 2016, CMS issued a final rule to implement PAMA that required applicable laboratories, including LCD, to begin reporting their test-specific private payer payment amounts to CMS during the first quarter of 2017. CMS exercised enforcement discretion to permit reporting for an additional 60 days, through May 30, 2017. CMS used that private market data to calculate weighted median prices for each test (based on applicable current procedural technology (CPT) codes) to represent the new CLFS rates beginning in 2018, subject to certain phase-in limits, which were revised by Congress in 2019. For 2018-2020, a test price cannot be reduced by more than 10.0% per year; for 2021-2023, a test price cannot be reduced by more than 15.0% per year. The process of data reporting and repricing will be repeated every three years for Clinical Diagnostic Laboratory Tests (CDLTs) beginning in 2021. Under the current law, the second data reporting period for CDLTs will occur during the first quarter of 2021 (based on data collected in 2019), and new CLFS rates for CDLTs will be established based on that data beginning in 2022, subject to the previously described phase-in limits for 2022-2023. The third data reporting period for CDLTs will occur during the first quarter of 2024, and new CLFS rates for CDLTs will be established based on that data beginning in 2025. CLFS rates for 2024 and subsequent periods will not be subject to phase-in limits. CLFS rates for Advanced Diagnostic Laboratory Tests (ADLTs) will be updated annually. CMS published its initial proposed CLFS rates under PAMA for 2018-2020 on September 22, 2017. Following a public comment period, CMS made adjustments and published final CLFS rates for 2018-2020 on November 17, 2017, with additional adjustments published on December 1, 2017. For 2019, the Company realized a net reduction in reimbursement of approximately $107.0 million from all payers affected by the CLFS (approximately $70.0 million in 2018). Unless implementation of PAMA is further delayed or changed, an additional reduction of approximately $90.0 million is expected for 2020, from all payers affected by the CLFS.

Healthcare reform legislation also contains numerous regulations that will require the Company, as an employer, to implement significant process and record-keeping changes to be in compliance. These changes increase the cost of providing healthcare coverage to employees and their families. Given the limited release of regulations to guide compliance, as well as potential changes to the ACA, the exact impact to employers, including the Company, is uncertain.

Changes in government regulation or in practices relating to the biopharmaceutical industry could decrease the need for certain services that Covance Drug Development (CDD) provides.

CDD assists biopharmaceutical companies in navigating the regulatory drug approval process. Changes in regulations such as a relaxation in regulatory requirements or the introduction of simplified drug approval procedures, or an increase in regulatory requirements that CDD has difficulty satisfying or that make its services less competitive, could eliminate or substantially reduce the demand for its services. Also, if government efforts to contain drug costs impact biopharmaceutical company profits from new drugs, or if health insurers were to change their practices with respect to reimbursement for biopharmaceutical products, some of CDD's customers may spend less, or reduce their growth in spending on R&D.

On December 13, 2016, the 21st Century Cures Act was signed into law. This Act provides funding designed to increase government spending on certain drug development initiatives; contains several provisions designed to help make the drug development process more streamlined and efficient; and allows the FDA to increase staffing to support drug development, review and regulation. These provisions should be helpful to biopharmaceutical companies and contract research organizations (CROs), including CDD, to the extent that they capitalize on the use of data, adaptive trial designs, real-world evidence, biomarkers and other development tools that are accepted by the FDA.

In addition, implementation of healthcare reform legislation that adds costs could limit the profits that can be made from the development of new drugs. This could adversely affect R&D expenditures by biopharmaceutical companies, which could in turn decrease the business opportunities available to CDD both in the U.S. and other countries. New laws or regulations may create a risk of liability, increase CDD costs or limit service offerings through CDD.

Failure to comply with the regulations of drug regulatory agencies, such as the FDA, the Medicines and Healthcare products Regulatory Agency in the United Kingdom (U.K.), the European Medicines Agency, the National Medical Products Administration in China (NMPA), and the Pharmaceuticals and Medical Devices Agency in Japan, could result in sanctions and/or remedies against CDD and have a material adverse effect upon the Company.

The operation of CDD's preclinical laboratory facilities and clinical trial operations must conform to good laboratory practice (GLP) and good clinical practice (GCP), as applicable, as well as all other applicable standards and regulations, as further described in Item 1 of Part I of this report. The business operations of CDD's clinical and preclinical laboratories also require the import, export and use of medical devices, in vitro diagnostic devices, reagents, and human and animal biological products. Such activities are subject to numerous applicable local and international regulations with which CDD must comply. If CDD does not comply, CDD could potentially be subject to civil, criminal or administrative sanctions and/or remedies, including suspension of its ability to conduct preclinical and clinical studies, and to import or export to or from certain countries, which could have a material adverse

effect upon the Company.

Additionally, certain CDD services and activities must conform to current good manufacturing practice GMP, as further described in Item 1 of Part I of this report. Failure to maintain compliance with GLP, GCP, or GMP regulations and other applicable requirements of various regulatory agencies could result in warning or untitled letters, fines, unanticipated compliance expenditures, suspension of manufacturing, and civil, criminal or administrative sanctions and/or remedies against CDD, including suspension of its laboratory operations, which could have a material adverse effect upon the Company.

Increased competition, including price competition, could have a material adverse effect on the Company's revenues and profitability.

As further described in Item 1 of Part I of this report, both LCD and CDD operate in highly competitive industries. The commercial laboratory business is intensely competitive both in terms of price and service. Pricing of laboratory testing services is often one of the most significant factors used by physicians, third-party payers and consumers in selecting a laboratory. As a result of significant consolidation in the commercial laboratory industry, larger commercial laboratory providers are able to increase cost efficiencies afforded by large-scale automated testing. This consolidation results in greater price competition. LCD may be unable to increase cost efficiencies sufficiently, if at all, and as a result, its net earnings and cash flows could be negatively impacted by such price competition. The Company may also face increased competition from companies that do not comply with existing laws or regulations or otherwise disregard compliance standards in the industry. Additionally, the Company may also face changes in fee schedules, competitive bidding for laboratory services, or other actions or pressures reducing payment schedules as a result of increased or additional competition.

Competitors in the CRO industry range from hundreds of smaller CROs to a limited number of large CROs with global capabilities. CDD's main competition consists of these small and large CROs, as well as in-house departments of biopharmaceutical companies and, to a lesser extent, select universities and teaching hospitals. CDD's services have from time to time experienced periods of increased price competition that had an adverse effect on a segment's profitability and consolidated revenues and net income. There is competition among CROs for both customers and potential acquisition candidates. Additionally, few barriers to entering the CRO industry further increases possible new competition.

These competitive pressures may affect the attractiveness or profitability of LCD's and CDD's services, and could adversely affect the financial results of the Company.

Failure to obtain and retain new customers, the loss of existing customers or material contracts, or a reduction in services or tests ordered or specimens submitted by existing customers, or the inability to retain existing and/or create new relationships with health systems could impact the Company's ability to successfully grow its business.

To maintain and grow its business, the Company needs to obtain and retain new customers and business partners. In addition, a reduction in tests ordered or specimens submitted by existing customers, a decrease in demand for the Company's services from existing customers, or the loss of existing contracts, without offsetting growth in its customer base, could impact the Company's ability to successfully grow its business and could have a material adverse effect on the Company's revenues and profitability. The Company competes primarily on the basis of the quality of services, reporting and information systems, reputation in the medical community and the drug development industry, the pricing of services and ability to employ qualified personnel. The Company's failure to successfully compete on any of these factors could result in the loss of existing customers, an inability to gain new customers and a reduction in the Company's business.

Continued and increased consolidation of MCOs, biopharmaceutical companies, health systems, physicians and other customers could adversely affect the Company's business.

Many healthcare companies and providers, including MCOs, biopharmaceutical companies, health systems and physician practices are consolidating through mergers, acquisitions, joint ventures and other types of transactions and collaborations. In addition to these more traditional horizontal mergers that involve entities that previously competed against each other, the healthcare industry is experiencing an increase in vertical mergers, which involve entities that previously did not offer competing goods or services. As the healthcare industry consolidates, competition to provide goods and services may become more intense, and vertical mergers may give those combined companies greater control over more aspects of healthcare, including increased bargaining power. This competition and increased customer bargaining power may adversely affect the price and volume of the Company's services.

In addition, as the broader healthcare industry trend of consolidation continues, including the acquisition of physician practices by health systems, relationships with hospital-based health systems and integrated delivery networks are becoming more important. LCD has a well-established base of relationships with those systems and networks, including collaborative agreements. LCD's inability to retain its existing relationships with those physicians as they become part of healthcare systems and networks and/or to create new relationships could impact its ability to successfully grow its business.

Changes or disruption in services or supplies provided by third parties, including transportation, could adversely affect the Company's business.

The Company depends on third parties to provide services critical to the Company's business. Although the Company has a significant proprietary network of ground and air transport capabilities, certain of the Company's businesses are heavily reliant on third-party ground and air travel for transport of clinical trial and diagnostic testing supplies and specimens, research products, and people. A significant disruption to these travel systems, or the Company's access to them, could have a material adverse effect on the Company's business. The Company is also reliant on an extensive network of third-party suppliers and vendors of certain services and products, including for certain animal populations. Disruptions to the continued supply of these services, products, or animal populations may arise from export/import restrictions or embargoes, political or economic instability, pressure from animal rights activists, adverse weather, natural disasters, public health crises, transportation disruptions, or other causes, as well as from termination of relationships with suppliers or vendors for their failure to follow the Company's performance standards and requirements. Disruption of supply could have a material adverse effect on the Company's business.

Damage or disruption to the Company's facilities could adversely affect the Company's business.

Many of the Company's facilities could be difficult to replace in a short period of time. Any event that causes a disruption of the operation of these facilities might impact the Company's ability to provide service to customers and, therefore, could have a material adverse effect on the Company's financial condition, results of operations and cash flows.

The Company bears financial risk for contracts that, for reasons beyond the Company's control, may be underpriced, subject to cost overruns, delayed, or terminated or reduced in scope.

The Company has many contracts that are structured as fixed-price for fixed-contracted services or fee-for-service with a cap. The Company bears the financial risk if these contracts are underpriced or if contract costs exceed estimates. Such underpricing or significant cost overruns could have an adverse effect on the Company's business, results of operations, financial condition and cash flows.

Many of CDD's contracts, in particular, provide for services on a fixed-price or fee-for-service with a cap basis and they may be terminated or reduced in scope either immediately or upon notice. Cancellations may occur for a variety of reasons, including:

- Failure of products to satisfy safety requirements;
- Unexpected or undesired results of the products;
- Insufficient clinical trial subject enrollment;
- Insufficient investigator recruitment;
- A customer's decision to terminate the development of a product or to end a particular study; and
- CDD's failure to perform its duties properly under the contract.

Although its contracts often entitle it to receive the costs of winding down the terminated projects, as well as all fees earned up to the time of termination, the loss, reduction in scope or delay of a large contract or the loss, delay or conclusion of multiple contracts could materially adversely affect CDD.

Contract research services in the drug development industry create liability risks.

In contracting to work on drug development trials and studies, CDD faces a range of potential liabilities, including:

- Errors or omissions that create harm to clinical trial subjects during a trial or to consumers of a drug after the trial is completed and regulatory approval of the drug has been granted;
- General risks associated with clinical pharmacology facilities, including negative consequences from the administration of drugs to clinical trial participants or the professional malpractice of clinical pharmacology physicians;
- Risks that animals in CDD's facilities may be infected with diseases that may be harmful and even lethal to themselves and humans despite preventive measures contained in CDD's business policies, including those for the quarantine and handling of imported animals; and
- Errors and omissions during a trial that may undermine the usefulness of a trial or data from the trial or study or may delay the entry of a drug to the market.

CDD contracts with physicians, also referred to as investigators, to conduct the clinical trials to test new drugs on clinical trial subjects. These tests can create a risk of liability for personal injury or death to clinical trial subjects resulting from negative reactions to the drugs administered or from professional malpractice by third party investigators.

While CDD endeavors to include in its contracts provisions entitling it to be indemnified and entitling it to a limitation of liability, these provisions are not always successfully obtained and, even if obtained, do not uniformly protect CDD against liability arising from certain of its own actions. CDD could be materially and adversely affected if it were required to pay damages or bear the costs of defending any claim that is not covered by a contractual indemnification provision, or in the event that a party which must indemnify it does not fulfill its indemnification obligations, or in the event that CDD is not successful in limiting its liability

or in the event that the damages and costs exceed CDD's insurance coverage. CDD may also be required to agree to contract provisions with clinical trial sites or its customers related to the conduct of clinical trials, and CDD could be materially and adversely affected if it were required to indemnify a site or customer against claims pursuant to such contract terms. There can be no assurance that CDD will be able to maintain sufficient insurance coverage on acceptable terms.

Adverse results in material litigation matters could have a material adverse effect upon the Company's business.

The Company may become subject in the ordinary course of business to material legal actions related to, among other things, intellectual property disputes, contract disputes, data and privacy issues, professional liability and employee-related matters. The Company may also receive inquiries and requests for information from governmental agencies and bodies, including Medicare or Medicaid payers, requesting comment and/or information on allegations of billing irregularities, billing and pricing arrangements, or privacy practices that are brought to their attention through audits or third parties. Legal actions could result in substantial monetary damages as well as damage to the Company's reputation with customers, which could have a material adverse effect upon its business.

The Company's quarterly operating results may vary.

The Company's operating results, may vary significantly from quarter to quarter and are influenced by factors over which the Company has little control, such as:

- Changes in the general global economy;
- Exchange rate fluctuations;
- The commencement, completion, delay or cancellation of large projects or contracts or groups of projects;
- The progress of ongoing projects;
- Weather;
- The timing of and charges associated with completed acquisitions or other events; and
- Changes in the mix of the Company's services.

The Company believes that operating results for any particular quarter are not necessarily a meaningful indication of future results. While fluctuations in the Company's quarterly operating results could negatively or positively affect the market price of the Company's common stock, these fluctuations may not be related to the Company's future overall operating performance.

The failure to successfully obtain, maintain and enforce intellectual property rights and defend against challenges to the Company's intellectual property rights could adversely affect the Company.

Many of the Company's services, products and processes rely on intellectual property, including patents, copyrights, trademarks and trade secrets. In some cases, that intellectual property is owned by another party and licensed to the Company, sometimes exclusively. The value of the Company's intellectual property relies in part on the Company's ability to maintain its proprietary rights to such intellectual property. If the Company is unable to obtain or maintain the proprietary rights to its intellectual property, if it is unable to prevent attempted infringement against its intellectual property, or if it is unable to defend against claims that it is infringing on another party's intellectual property, the Company could be adversely affected. These adverse effects could include the Company having to abandon, alter and/or delay the deployment of products, services or processes that rely on such intellectual property; having to procure and pay for licenses from the holders of intellectual property rights that the Company seeks to use; and having to pay damages, fines, court costs and attorney's fees in connection with intellectual property litigation.

CDD's revenues depend on the biopharmaceutical industry.

CDD's revenues depend greatly on the expenditures made by the biopharmaceutical industry in R&D. In some instances, biopharmaceutical companies are reliant on their ability to raise capital in order to fund their R&D projects. Biopharmaceutical companies are also reliant on reimbursement for their products from government programs and commercial payers. Accordingly, economic factors and industry trends affecting CDD's customers in these industries may also affect CDD. If these companies were to reduce the number of R&D projects they conduct or outsource, whether through the inability to raise capital, reductions in reimbursement from governmental programs or commercial payers, industry trends, economic conditions or otherwise, CDD could be materially adversely affected.

Actions of animal rights activists may have an adverse effect on the Company.

CDD's preclinical services utilize animals in preclinical testing of the safety and efficacy of drugs. Such activities are required for the development of new medicines and medical devices under regulatory regimes in the U.S., Europe, Japan and other countries. Acts of vandalism and other acts by animal rights activists who object to the use of animals in drug development could have an adverse effect on the Company.

Animal populations may suffer diseases that can damage CDD's inventory, harm its reputation, result in decreased sales of research products or result in other liability.

It is important that research products be free of diseases, including infectious diseases. The presence of diseases can distort or compromise the quality of research results, cause loss of animals in CDD's inventory, result in harm to humans or outside animal populations if the disease is not contained to animals in inventory, or result in other losses. Such results could harm CDD's reputation or have an adverse effect on CDD's financial condition, results of operations, and cash flows.

Failure to conduct animal research in compliance with animal welfare laws and regulations could result in sanctions and/ or remedies against CDD and have a material adverse effect upon the Company.

The conduct of animal research at CDD's facilities must be in compliance with applicable laws and regulations in the jurisdictions in which those activities are conducted. These laws and regulations include the U.S Animal Welfare Act (AWA), which governs the care and use of warm-blooded animals for research in the U.S. other than laboratory rats, mice and chickens, and is enforced through periodic inspections by the U.S. Department of Agriculture (USDA). The AWA establishes facility standards regarding several aspects of animal welfare, including housing, ventilation, lighting, feeding and watering, handling, veterinary care and recordkeeping. Similar laws and regulations apply in other jurisdictions in which CDD conducts animal research, including the European Union (E.U.) and China. CDD complies with licensing and registration requirement standards set by these laws and regulations in the jurisdictions in which it conducts animal research. If an enforcement agency determines that CDD's equipment, facilities, laboratories or processes do not comply with applicable standards, it may issue an inspection report documenting the deficiencies and setting deadlines for any required corrective actions. For noncompliance, the agency may take action against CDD that may include fines, suspension and/or revocation of animal research licenses, or confiscation of research animals.

An inability to attract and retain experienced and qualified personnel, including key management personnel, could adversely affect the Company's business.

The loss of key management personnel or the inability to attract and retain experienced and qualified employees at the Company's clinical laboratories, drug development, and diagnostic facilities could adversely affect the business. The success of the Company is dependent in part on the efforts of key members of its management team. Success in maintaining the Company's leadership position in genomic and other advanced testing and diagnostic technologies will depend in part on the Company's ability to attract and retain skilled research professionals. In addition, the success of the Company's early discovery, clinical and commercial laboratories also depends on employing and retaining qualified and experienced professionals, including specialists, who perform laboratory research activities and testing services. The same is true for patient-facing staff with specialized training required to perform activities related to specimen collection or clinical research activities. In the future, if competition for the services of these professionals increases, the Company may not be able to continue to attract and retain individuals in its markets. Changes in key management, or the ability to attract and retain qualified personnel, could lead to strategic and operational challenges and uncertainties, distractions of management from other key initiatives, and inefficiencies and increased costs, any of which could adversely affect the Company's business, financial condition, results of operations, and cash flows.

Unproductive labor environment, union strikes, work stoppages, Works Council negotiations, or failure to comply with labor or employment laws could adversely affect the Company's operations and have a material adverse effect upon the Company's business.

The Company is a party to a limited number of collective bargaining agreements with various labor unions and is subject to unionization activity, employment and labor laws and unionization activity in the U.S. Similar employment and labor obligations exist across other countries in which it conducts business, including appropriate engagement with Works Councils in Europe. Disputes with regard to the terms of labor agreements or obligations for consultation, potential inability to negotiate acceptable contracts with these unions, unionization activity, or a failure to comply with labor or employment laws could result in, among other things, labor unrest, strikes, work stoppages, slowdowns by the affected workers, fines and penalties. If any of these events were to occur, or other employees were to become unionized, the Company could experience a significant disruption of its operations or higher ongoing labor costs, either of which could have a material adverse effect upon the Company's business. Additionally, future labor agreements, or renegotiation of labor agreements or provisions of labor agreements, or changes in labor or employment laws, could compromise its service reliability and significantly increase its costs, which could have a material adverse effect upon the Company's business. Also, the Company may incur substantial additional costs and become subject to litigation and enforcement actions if the Company fails to comply with legal requirements affecting its workforce and labor practices, including laws and regulations related to wage and hour practices, Office of Federal Contract Compliance Programs (OFCCP) compliance, and unlawful workplace harassment and discrimination.

A significant increase in LCD's or CDD's days sales outstanding could have an adverse effect on the Company's business, including its cash flow, by increasing its bad debt or decreasing its cash flow.

Billing for laboratory services is a complex process. Laboratories bill many different payers, including doctors, patients, hundreds of insurance companies, Medicare, Medicaid and employer groups, all of which have different billing requirements. In addition to billing complexities, LCD has experienced an increase in patient responsibility as a result of managed care fee-for-service plans that continue to increase patient deductibles, coinsurance and copayments, or implement restrictive coverage or

administrative policies that can further increase patient costs. LCD expects this trend to continue. A material increase in LCD's days sales outstanding level could have an adverse effect on the Company's business, including potentially increasing its bad debt rate and decreasing its cash flows. Although CDD does not face the same level of complexity in its billing processes, it could also experience delays in billing or collection, and a material increase in CDD's days sales outstanding could have an adverse effect on the Company's business, including potentially decreasing its cash flows.

Failure in the Company's information technology systems or delays or failures in the development and implementation of updates or enhancements to those systems could significantly increase testing turnaround time or delay billing processes and otherwise disrupt the Company's operations or customer relationships.

The Company's operations and customer relationships depend, in part, on the continued performance of its information technology systems. Despite network security measures and other precautions the Company has taken, its information technology systems are potentially vulnerable to physical or electronic break-ins, computer viruses and similar disruptions. In addition, the Company is in the process of integrating the information technology systems of its recently acquired subsidiaries, and the Company may experience system failures or interruptions as a result of this process. Sustained system failures or interruption of the Company's systems in one or more of its operations could disrupt the Company's ability to process laboratory requisitions, perform testing, provide test results or drug development data in a timely manner and/or bill the appropriate party. Failure of the Company's information technology systems could adversely affect the Company's business, profitability and financial condition.

Hardware and software failures, delays in the operation of computer and communications systems, the failure to implement new systems or system enhancements to existing systems, and cybersecurity breaches may harm the Company.

The Company's success depends on the efficient and uninterrupted operation of its computer and communications systems. A failure of the network or data-gathering procedures could impede the processing of data, delivery of databases and services, customer orders and day-to-day management of the business and could result in the corruption or loss of data. While certain operations have appropriate disaster recovery plans in place, there currently are not redundant facilities everywhere in the world to provide information technology capacity in the event of a system failure. Despite any precautions the Company may take, damage from fire, floods, hurricanes, power loss, telecommunications failures, computer viruses, break-ins, cybersecurity breaches and similar events at the Company's various computer facilities could result in interruptions in the flow of data to the servers and from the servers to customers. In addition, any failure by the computer environment to provide required data communications capacity could result in interruptions in service. In the event of a delay in the delivery of data, the Company could be required to transfer data collection operations to an alternative provider of server-hosting services. Such a transfer could result in delays in the ability to deliver products and services to customers. Additionally, significant delays in the planned delivery of system enhancements, or improvements and inadequate performance of the systems once they are completed could damage the Company's reputation and harm the business.

Security breaches and unauthorized access to the Company's or its customers' data could harm the Company's reputation and adversely affect its business.

The Company has experienced and expects to continue to experience attempts by computer programmers and hackers to attack and penetrate the Company's layered security controls, like the 2018 ransomware attack. The Company has also experienced and expects to continue to experience similar attempts to attack and penetrate the systems of third-party suppliers and vendors to whom the Company has provided data, like the 2019 data breach of Retrieval-Masters Credit Bureau, Inc. d/b/a/ American Medical Collections Agency (AMCA). These attempts, if successful, could result in the misappropriation or compromise of personal information or proprietary or confidential information stored within the Company's systems or within the systems of third-parties, create system disruptions or cause shutdowns. External actors may be able to develop and deploy viruses, worms and other malicious software programs that attack the Company's systems, the systems of third-parties, or otherwise exploit any security vulnerabilities. Outside parties may also attempt to fraudulently induce employees to take actions, including the release of confidential or sensitive information or to make fraudulent payments through illegal electronic spamming, phishing, spear phishing, or other tactics. The Company has robust information security procedures and other safeguards in place, including evaluating the cybersecurity status of third-party suppliers and vendors that will have access to the Company's data or information technology systems, which are monitored and routinely tested internally and by external parties. However, because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems change frequently and often are not recognized until launched against a target, the Company may be unable to anticipate all of these techniques or to implement adequate preventive measures. In addition, as cyber threats continue to evolve, the Company may be required to expend additional resources to continue to enhance the Company's information security measures or to investigate and remediate any information security vulnerabilities. The Company's remediation efforts may not be successful and could result in interruptions, delays or cessation of service. This could also impact the cost and availability of cyber insurance to the Company. Breaches of the Company's or third-parties' security measures and the unauthorized dissemination of personal, proprietary or confidential information about the Company or its customers or other third-parties could expose customers' private information. Such breaches could expose customers to the risk of financial or medical identity theft or expose the Company or other third-parties to a risk of loss or misuse of this information, result in litigation and

potential liability for the Company, damage the Company's brand and reputation or otherwise harm the Company's business. Any of these disruptions or breaches of security could have a material adverse effect on the Company's business, regulatory compliance, financial condition and results of operations.

Operations may be disrupted and adversely impacted by the effects of natural disasters, political crises, public health crises, and other events outside of the Company's control.

Natural disasters, such as adverse weather, fires, earthquakes, power shortages and outages, political crises, such as terrorism, war, political instability, or other conflict, criminal activities, public health crises, such as coronavirus (COVID-19) and disease epidemics and pandemics, and other disruptions or events outside of the Company's control could negatively affect the Company's operations. Any of these events may result in a temporary decline of volumes in both segments. In addition, such events may temporarily interrupt the Company's ability to transport specimens, the Company's ability to efficiently commence studies, the Company's information technology systems, the Company's ability to utilize certain laboratories, and/or the Company's ability to receive material from its suppliers. Such events can also affect customer operations and thereby impact testing volume. Long-term disruptions in the infrastructure and operations caused by such events (particularly involving locations in which the Company has operations), could harm the Company's operating results.

A significant deterioration in the economy could negatively impact testing volumes, drug development services, cash collections and the availability of credit.

The Company's operations are dependent upon ongoing demand for diagnostic testing and drug development services by patients, physicians, hospitals, MCOs, biopharmaceutical companies and others. A significant downturn in the economy could negatively impact the demand for diagnostic testing and drug development services, as well as the ability of customers to pay for services rendered. In addition, uncertainty in the credit markets could reduce the availability of credit and impact the Company's ability to meet its financing needs in the future.

Foreign currency exchange fluctuations could have an adverse effect on the Company's business.

The Company has business and operations outside the U.S., and CDD derives a significant portion of its revenues from international operations. Since the Company's consolidated financial statements are denominated in U.S. dollars, fluctuations in exchange rates from period to period will have an impact on reported results. In addition, CDD may incur costs in one currency related to its services or products for which it is paid in a different currency. As a result, factors associated with international operations, including changes in foreign currency exchange rates, could significantly affect CDD's results of operations, financial condition and cash flows.

The Company's international operations could subject it to additional risks and expenses that could adversely impact the business or results of operations.

The Company's international operations expose it to risks from failure to comply with foreign laws and regulations that differ from those under which the Company operates in the U.S. In addition, the Company may be adversely affected by other risks of expanded operations in foreign countries, including, but not limited to, changes in reimbursement by foreign governments for services provided by the Company; compliance with export controls and trade regulations; changes in tax policies or other foreign laws; compliance with foreign labor and employee relations laws and regulations; restrictions on currency repatriation; judicial systems that less strictly enforce contractual rights; countries that do not have clear or well-established laws and regulations concerning issues relating to commercial laboratory testing or drug development services; countries that provide less protection for intellectual property rights; and procedures and actions affecting approval, production, pricing, reimbursement and marketing of products and services. Further, international operations could subject the Company to additional expenses that the Company may not fully anticipate, including those related to enhanced time and resources necessary to comply with foreign laws and regulations, difficulty in collecting accounts receivable and longer collection periods, and difficulties and costs of staffing and managing foreign operations. In some countries, the Company's success will depend in part on its ability to form relationships with local partners. The Company's inability to identify appropriate partners or reach mutually satisfactory arrangements could adversely affect the business and operations.

Expanded international operations may increase the Company's exposure to liabilities under the anti-corruption laws.

Anti-corruption laws in the countries where the Company conducts business, including the U.S. Foreign Corrupt Practices Act (FCPA), U.K. Bribery Act, and similar laws in other jurisdictions, prohibit companies and their intermediaries from engaging in bribery including improperly offering, promising, paying or authorizing the giving of anything of value to individuals or entities for the purpose of corruptly obtaining or retaining business. The Company operates in some parts of the world where corruption may be common and where anti-corruption laws may conflict to some degree with local customs and practices. The Company maintains an anti-corruption program including policies, procedures and training and safeguards in the engagement and management of third parties acting on the Company's behalf. Despite these safeguards, the Company cannot guarantee protection from corrupt acts committed by employees or third parties associated with the Company. Violations or allegations of violations of anti-corruption

laws could have a significant adverse effect on the business or results of operations.

Changes in tax laws and regulations or the interpretation of such may have a significant impact on the financial position, results of operations and cash flows of the Company.

U.S. and foreign governments continue to review, reform and modify tax laws, including with respect to the Organisation for Economic Co-operation and Development's base erosion and profit shifting initiative. Changes in tax laws and regulations could result in material changes to the domestic and foreign taxes that the Company is required to provide for and pay.

In addition, the Company is subject to regular audits with respect to its various tax returns and processes in the jurisdictions in which it operates. Errors or omissions in tax returns, process failures or differences in interpretation of tax laws by tax authorities and the Company may lead to litigation, payments of additional taxes, penalties and interest.

A failure to identify and successfully close and integrate strategic acquisition targets could have a material adverse effect on the Company's business objectives and its revenues and profitability.

Part of the Company's strategy involves deploying capital in investments that enhance the Company's business, which includes pursuing strategic acquisitions to strengthen the Company's scientific capabilities and enhance therapeutic expertise, enhance esoteric testing and global drug development capabilities, and increase presence in key geographic areas. Since 2015, the Company has invested net cash of approximately $7.2 billion and equity of $1.8 billion in strategic business acquisitions. However, the Company cannot assure that it will be able to identify acquisition targets that are attractive to the Company or that are of a large enough size to have a meaningful impact on the Company's operating results. Furthermore, the successful closing and integration of a strategic acquisition entails numerous risks, including, among others:

- Failure to obtain regulatory clearance, including due to antitrust concerns;
- Loss of key customers or employees;
- Difficulty in consolidating redundant facilities and infrastructure and in standardizing information and other systems;
- Unidentified regulatory problems;
- Failure to maintain the quality of services that such companies have historically provided;
- Unanticipated costs and other liabilities;
- Potential liabilities related to litigation including the acquired companies;
- Potential periodic impairment of goodwill and intangible assets acquired;
- Coordination of geographically separated facilities and workforces; and
- The potential disruption of the ongoing business and diversion of management's resources.

The Company cannot assure that current or future acquisitions, if any, or any related integration efforts will be successful, or that the Company's business will not be adversely affected by any future acquisitions, including with respect to revenues and profitability. Even if the Company is able to successfully integrate the operations of businesses that it may acquire in the future, the Company may not be able to realize the benefits that it expects from such acquisitions.

The Company's level of indebtedness could adversely affect the Company's liquidity, results of operations and business.

At December 31, 2019, indebtedness on the Company's outstanding Senior Notes totaled approximately $5,860.0 million in aggregate principal. The Company is also a party to credit agreements relating to a $1.0 billion revolving credit facility and a 2019 term loan with a balance of $375.0 million as of December 31, 2019. Under the term loan facility and the revolving credit facility, the Company is subject to negative covenants limiting subsidiary indebtedness and certain other covenants typical for investment-grade-rated borrowers, and the Company is required to maintain a leverage ratio within certain limits.

The Company's level of indebtedness could adversely affect its business. In particular, it could increase the Company's vulnerability to sustained, adverse macroeconomic weakness, limit its ability to obtain further financing, and limit its ability to pursue certain operational and strategic opportunities, including large acquisitions.

The Company may also enter into additional transactions or credit facilities, including other long-term debt, which may increase its indebtedness and result in additional restrictions upon the business. In addition, major debt rating agencies regularly evaluate the Company's debt based on a number of factors. There can be no assurance that the Company will be able to maintain its existing debt ratings, and failure to do so could adversely affect the Company's cost of funds, liquidity and access to capital markets.

Global economic conditions and government and regulatory changes, including, but not limited to, the U.K.'s exit from the European Union (E.U.) could adversely impact the Company's business and results of operations.

The Company could be adversely impacted due to the consequences of changes in the economy, governments or regulations across the globe. On January 31, 2020 the U.K. withdrew from its membership of the E.U. (often referred to as Brexit). During an implementation period which is due to end on December 31, 2020, E.U. laws and regulations will continue to apply to the U.K. The terms of future relations between the U.K. and E.U. following this implementation period have not yet been determined. Until

this process is completed, it is difficult to anticipate how the clinical trial landscape in the U.K. might change in the next several years.

This type of development or other government or regulatory change could depress economic activity, which could adversely impact the Company's business, financial condition and results of operations. This could include long-term volatility in the currency markets and long-term detrimental effects on the value of affected currencies.

The Company's uses of financial instruments to limit its exposure to interest rate and currency fluctuations could expose it to risks and financial losses that may adversely affect the Company's financial condition, liquidity and results of operations.

To reduce the Company's exposure to interest rate fluctuations and currency exchange fluctuations, it has entered into, and in the future may enter into for these or other purposes, financial swaps, or hedging arrangements, with various financial counterparties. In addition to any risks related to the counterparties, there can be no assurances that the Company's hedging activity will be effective in insulating it from the risks associated with the underlying transactions, that the Company would not have been better off without entering into these hedges, or that the Company will not have to pay additional amounts upon settlement.

Item 1B. UNRESOLVED STAFF COMMENTS

None.

Item 2. PROPERTIES

The Company's corporate headquarters are located in Burlington, North Carolina, and include facilities that are both owned and leased.

LabCorp Diagnostics (LCD) operates through a network of patient service centers, branches, rapid response laboratories, primary laboratories, and specialty laboratories. The table below summarizes certain information as to LCD's principal operating and administrative facilities as of December 31, 2019.

Location	Nature of Occupancy
Primary Facilities:	
Birmingham, Alabama	Leased
Phoenix, Arizona	Owned
Los Angeles, California	Leased
Monrovia, California	Leased
San Diego, California	Leased
San Francisco, California	Leased
Shelton, Connecticut	Leased
Tampa, Florida	Leased
Westborough, Massachusetts	Leased
St. Paul, Minnesota	Owned
Kansas City, Missouri	Owned
Raritan, New Jersey	Owned
Burlington, North Carolina (5)	Owned/Leased
Research Triangle Park, North Carolina (3)	Leased
Dublin, Ohio	Owned
Brentwood, Tennessee	Leased
Dallas, Texas	Leased
Houston, Texas	Leased
Herndon, Virginia	Leased
Seattle, Washington	Leased
Spokane, Washington (3)	Leased

Covance Drug Development (CDD) operates on a global scale. The table below summarizes certain information as to CDD's principal operating and administrative facilities as of December 31, 2019.

Location	Nature of Occupancy
Primary Facilities:	
Mechelen, Belgium	Leased
Beijing, China	Leased
Shanghai, China (3)	Owned/Leased
Muenster, Germany	Owned
Pune, India	Leased
Bangalore, India	Leased
Singapore	Leased
Geneva, Switzerland	Owned
Eye, United Kingdom	Owned
Harrogate, United Kingdom	Owned
Huntington, United Kingdom	Owned
Leeds, United Kingdom	Owned
Maidenhead, United Kingdom	Leased
Shardlow, United Kingdom	Owned
York, United Kingdom	Leased
San Francisco, California	Leased
Daytona Beach, Florida	Leased
Greenfield, Indiana	Owned
Indianapolis, Indiana	Leased
Gaithersburg, Maryland	Leased
Ann Arbor, Michigan	Leased
Minneapolis, Minnesota	Leased
Princeton, New Jersey	Leased
Somerset, New Jersey	Owned
Dallas, Texas	Leased
Chantilly, Virginia	Leased
Madison, Wisconsin	Owned

All of the Company’s primary laboratory and drug development facilities have been built or improved for the purpose of providing commercial laboratory testing or drug development services. The Company believes that these existing facilities and plans for expansion are suitable and adequate and will provide sufficient production capacity for the Company's currently foreseeable level of operations. The Company believes that if it were unable to renew a lease or if a lease were to be terminated on any of the facilities it presently leases, it could find alternate space at competitive market rates and readily relocate its operations to such new locations without material disruption to its operations.

Item 3. LEGAL PROCEEDINGS

See Note 16 Commitments and Contingencies to the Consolidated Financial Statements.

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

The Company's common stock, par value $0.10 per share, or Common Stock, trades on the New York Stock Exchange or NYSE under the symbol “LH.”

Holders

On February 26, 2020, there were approximately 1,038 holders of record of the Common Stock.

Transfer Agent

The transfer agent for the Company's Common Stock is American Stock Transfer & Trust Company, Shareholder Services, 6201 Fifteenth Avenue, Brooklyn, NY 11219, telephone: 800-937-5449, website: www.amstock.com.

Dividends

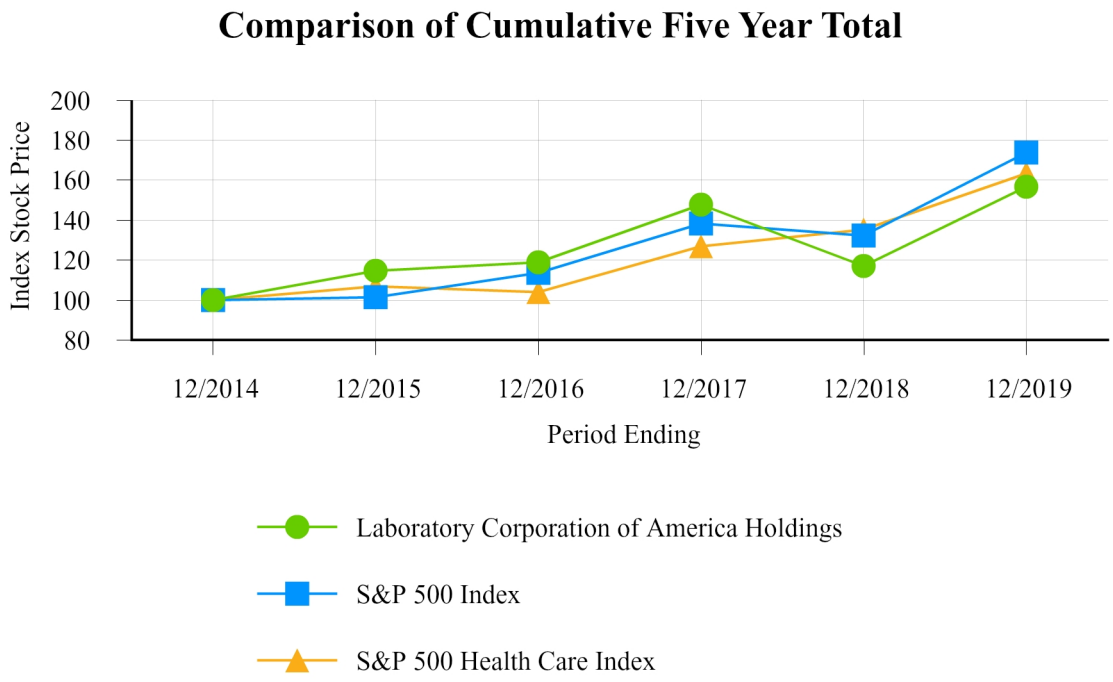
The Company has not historically paid dividends on its Common Stock and does not presently anticipate paying any dividends on its Common Stock in the foreseeable future.

Common Stock Performance

The graph below shows the cumulative total return assuming an investment of $100 on December 31, 2014, in each of the Company’s common stock, the Standard & Poor’s, or S&P Composite-500 Stock Index and the S&P 500 healthcare Index, or Peer Group, and assuming that all dividends were reinvested.

Comparison of Five Year Cumulative Total Return

	12/2014	12/2015	12/2016	12/2017	12/2018	12/2019
Laboratory Corporation of America Holdings	$ 100.00	$ 114.59	$ 118.98	$ 147.83	$ 117.11	$ 156.78
S&P 500 Index	$ 100.00	$ 101.38	$ 113.51	$ 138.29	$ 132.23	$ 173.86
S&P 500 Health Care Index	$ 100.00	$ 106.89	$ 104.01	$ 126.98	$ 135.19	$ 163.34



Issuer Purchases of Equity Securities (all amounts in millions, except per share amounts)

The following table sets forth information with respect to purchases of shares of the Company's Common Stock made during the quarter ended December 31, 2019, by or on behalf of the Company:

	Total Number of Shares Repurchased	Average Price Paid Per Share	Total Number of Shares Repurchased as Part of Publicly Announced Program	Maximum Dollar Value of Shares that May Yet Be Repurchased Under the Program
October 1 - October 31	0.3	$ 165.91	0.3	$ 900.0
November 1 - November 30	—	—	—	900.0
December 1 - December 31	—	—	—	900.0
	0.3	$ 165.91	0.3	

At the end of 2018, the Company had outstanding authorization from the board of directors to purchase up to $443.5 of Company common stock. On February 6, 2019, the board of directors replaced the Company's existing share repurchase plan with a new plan authorizing repurchase of up to $1.25 billion of the Company's shares. The repurchase authorization has no expiration date. During 2019, the Company purchased 2.9 shares of its common stock at an average price of $154.94 for a total cost of $450.0, of which $100.0 was repurchased prior to the new plan in February 2019. At the end of 2019, the Company had outstanding authorization from the board of directors to purchase an additional $900.0 of Company common stock.

Item 6. SELECTED FINANCIAL DATA (in millions, except per share amounts)

The selected financial data presented below under the captions "Statement of Operations Data" and "Balance Sheet Data" as of and for the five-year period ended December 31, 2019, are derived from consolidated financial statements of the Company, which have been audited by an independent registered public accounting firm.

	Years Ended December 31,				
	(a) 2019	(b) 2018	(c) 2017	(d) 2016	(e) 2015
Statement of Operations Data:					
Revenues	$ 11,554.8	$ 11,333.4	$ 10,308.0	$ 9,552.9	$ 8,505.7
Gross profit	3,252.5	3,176.4	3,091.8	2,854.0	2,903.3
Operating income (h)	1,330.2	1,325.7	1,305.2	1,270.6	996.8
Net earnings attributable to Laboratory Corporation of America Holdings	823.8	883.7	1,227.1	711.8	437.6
Basic earnings per common share	$ 8.42	$ 8.71	$ 11.99	$ 6.94	$ 4.43
Diluted earnings per common share	$ 8.35	$ 8.61	$ 11.81	$ 6.82	$ 4.35
Basic weighted average common shares outstanding	97.9	101.4	102.4	102.5	98.8
Diluted weighted average common shares outstanding	98.6	102.6	103.9	104.3	100.6
Balance Sheet Data:					
Cash and cash equivalents and short-term investments	$ 337.5	$ 426.8	$ 316.6	$ 433.6	$ 716.4
Goodwill and intangible assets, net (g)	11,899.5	11,271.4	11,567.0	9,824.9	9,526.6
Total assets (g) (f)	18,046.4	16,185.3	16,673.0	14,334.8	14,104.7
Long-term obligations (f)	7,107.6	6,059.8	6,762.1	5,849.5	6,364.2
Total shareholders' equity	7,567.0	6,971.4	6,804.1	5,518.2	4,945.1

(a) During 2019, the Company recorded net restructuring charges of $54.6. The charges were comprised of $32.9 in severance and other personnel costs and $24.9 in facility-related costs primarily associated with facility closures and general integration initiatives. These charges were offset by the reversal of previously established reserves of $1.7 in unused severance and $1.5 in unused facility-related costs.

(b) During 2018, the Company recorded net restructuring charges of $48.1. The charges were comprised of $40.3 in severance and other personnel costs and $11.8 in facility-related costs primarily associated with facility closures and general integration initiatives. These charges were offset by the reversal of previously established reserves of $2.0 in unused severance and $2.0 in unused facility-related costs.

(c) During 2017, the Company recorded net restructuring charges of $70.9. The charges were comprised of $36.1 in severance and other personnel costs and $39.9 in facility-related costs primarily associated with facility closures and general integration initiatives. These charges were offset by the reversal of previously established reserves of $0.5 in unused severance and $4.6 in unused facility-related costs. The Company also recognized asset impairment losses of $23.5 related to the termination of software development projects within the Covance Drug Development (CDD) segment and the forgiveness of certain indebtedness for LabCorp Diagnostics (LCD) customers in areas heavily impacted by hurricanes during the third quarter.

(d) During 2016, the Company recorded net restructuring charges of $58.4. The charges were comprised of $30.9 in severance and other personnel costs and $33.8 in facility-related costs primarily associated with facility closures and general integration initiatives. These charges were offset by the reversal of previously established reserves of $2.8 in unused severance and $3.5 in unused facility-related costs.

(e) During 2015, the Company recorded net restructuring charges of $113.9. The charges were comprised of $59.2 in severance and other personnel costs and $55.8 in facility-related costs primarily associated with facility closures and general integration initiatives. These charges were offset by the reversal of previously established reserves of $1.1 in unused facility-related costs.

(f) See Note 5 Leases and Note 12 Debt to the Consolidated Financial Statements.

(g) During 2016, the Company revised the final purchase price allocation for Covance. As a result, an out of period adjustment of $25.6 was recorded to reduce goodwill and increase a deferred tax asset as of December 31, 2015. The Company concluded that the impact of this adjustment was not material to the current or prior periods.

(h) Net earnings attributable to Laboratory Corporation of America Holdings in 2017 includes a provisional net benefit of $519.0 due to the Tax Cuts and Jobs Act (TCJA). For additional information on the TCJA, see Note 14 Income Taxes to the Consolidated Financial Statements.

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS (in millions)

General

During the year ended December 31, 2019, the Company's revenue grew by 2.0%, driven by growth from acquisitions of 2.3% and organic growth of 1.6% (which includes the negative impact from PAMA of 0.9%), partially offset by the disposition of businesses of 1.4% and negative foreign currency translation of 0.5%.

The Company defines organic growth as the increase in revenue excluding revenue from acquisitions for the first twelve months after the close of each acquisition.

On June 3, 2019, the Company's CDD segment completed the acquisition of Envigo's nonclinical contract research services business, expanding CDD's global nonclinical drug development capabilities with additional locations and resources. Additionally, the Company divested the Covance Research Products (CRP) business, which was a part of the CDD segment, to Envigo. As part of this sale, CDD entered into a multi-year, renewable supply agreement with Envigo. The Company paid cash consideration of $601.0, received a floating rate secured note of $110.0, and recorded a loss on the sale of CRP of $12.2. The Company funded the transaction through a new term loan facility. During the year ended December 31, 2019, the Company also acquired various other businesses and related assets for approximately $286.4 in cash (net of cash acquired).

The Company remains on track to deliver $150.0 of net savings from CDD's three-year LaunchPad initiative by the end of 2020. The Company expects phase II of LCD’s LaunchPad initiative to deliver approximately $200.0 in net savings by the end of 2021, while incurring approximately $40.0 in one-time implementation costs. Approximately one-third of the total savings are expected to be realized each year.

The Company is also exposed to risks related to information security arising from the information technology systems and operations of third parites, including thosse of the Company's vendors and partners. For example, on May 14, 2019, Retrieval-Masters Credit Bureau, Inc. d/b/a/ American Medical Collections Agency (AMCA), an external collection agency, notified the Company about a security incident AMCA experienced that may have involved certain personal information about some of the Company's patients (the AMCA Incident). The Company referred patient balances to AMCA only when direct collection efforts were unsuccessful. The Company's systems were not impacted by the AMCA Incident. Upon learning of the AMCA Incident, the Company promptly stopped sending new collection requests to AMCA and stopped AMCA from continuing to work on any pending collection requests on behalf of the Company. AMCA informed the Company that it appeared that an unauthorized user had access to AMCA's system between August 1, 2018 and March 30, 2019, and that AMCA could not rule out the possibility that personal

information on AMCA's system was at risk during that time period. Information on AMCA's affected system from the Company may have included name, address, and balance information for the patient and person responsible for payment, along with the patient's phone number, date of birth, referring physician, and date of service. The Company was later informed by AMCA that health insurance information may have been included for some individuals, and because some insurance carriers utilize the Social Security Number as a subscriber identification number, the Social Security Number for some individuals may also have been affected. No ordered tests, laboratory test results, or diagnostic infonnation from the Company were in the AMCA affected system. The Company notified individuals for whom it had a valid mailing address. For the individuals whose Social Security Number was affected, the notice included an offer to enroll in credit monitoring and identity protection services that will be provided free of charge for 24 months. The Company has incurred, and expects to continue to incur, costs related to the AMCA Incident. In addition, the Company is involved in pending and threatened litigation related to the AMCA Incident, as well as various government and regulatory inquiries and processes. For additional information about the AMCA Incident, see Note 16 Commitments and Contingencies to the Consolidated Financial Statements.

PAMA, which went into effect on January 1, 2018, resulted in a net reduction of revenue of approximately $107.0 and $70.0 in 2019 and 2018, respectively from all payers affected by the Clinical Lab Fee Schedule. Unless further implementation of PAMA is delayed or changed, an additional reduction of approximately $90.0 is expected for 2020.

Effective January 1, 2019, the Company adopted Accounting Standards Codification (ASC) 842 *Leases* using the modified retrospective method. The Company elected the package of practical expedients, which includes not reassessing whether existing contracts contain leases under the new definition of a lease, reassessing the classification of existing leases, and reassessing whether previously capitalized initial direct costs qualify for capitalization under the new standard. The Company also elected not to separate lease and non-lease components. The adoption of this standard resulted in the recording of $778.1 of additional operating lease liabilities as of December 31, 2019.

Results of Operations

The following tables present the financial measures that management considers to be the most significant indicators of the Company's performance. For discussion of 2018 results and comparison with 2017 results refer to “Management's Discussion and Analysis of Financial Conditions and Results of Operations” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

Years ended December 31, 2019 and 2018

Revenues

	Years Ended December 31,		
	2019	2018	Change
LCD	$ 7,000.1	$ 7,030.8	(0.4)%
CDD	4,578.1	4,313.1	6.1 %
Intercompany eliminations	(23.4)	(10.5)	122.9 %
Total	$ 11,554.8	$ 11,333.4	2.0 %

The 2.0% increase in revenues for the year ended December 31, 2019, as compared with the corresponding period in 2018 was primarily due to growth from acquisitions of 2.3%, organic growth of 1.6% (which includes the negative impact from PAMA of 0.9%), partially offset by the disposition of businesses of 1.4% and negative foreign currency translation of 0.5%.

LCD revenues for the year ended December 31, 2019, were $7,000.1, a decrease of 0.4% over revenues of $7,030.8 in the corresponding period in 2018. The decline in revenues was due to the negative impact from the disposition of businesses of 1.9% and negative currency translation of 0.1%, partially offset by acquisitions of 1.2% and organic revenue growth of 0.4% which includes the negative impact of lower reimbursement from PAMA of 1.5%.

CDD revenues for the year ended December 31, 2019, were $4,578.1, an increase of 6.1% over revenues of $4,313.1 in the corresponding period in 2018. The increase in revenues was due to acquisitions, which contributed growth of 4.1%, an increase in organic growth of 3.8%, partially offset by negative foreign currency translation of approximately 1.2% and a business disposition of 0.6%. Excluding pass-throughs, organic revenue grew mid-to-high single digits.

Cost of Revenues

	Years Ended December 31,		
	2019	2018	Change
Cost of revenues	$ 8,302.3	$ 8,157.0	1.8%
Cost of revenues as a % of revenues	71.9%	72.0%	

Cost of revenues (primarily laboratory, labor and distribution costs) increased 1.8% in 2019 as compared with 2018 primarily due to acquisitions and organic volume growth. Cost of revenues as a percentage of revenues remained consistent in 2019 as compared to 2018 at approximately 72.0%.

Labor and testing supplies for the year ended December 31, 2019, comprise over 71.3% of the Company's cost of revenues. Cost of revenues has increased over the two-year period ended December 31, 2019, primarily due to the impact of acquisitions, overall growth in the Company's volume, and increases in merit-based labor costs.

Selling, General and Administrative Expenses

	Years Ended December 31,		
	2019	2018	Change
Selling, general and administrative expenses	$ 1,624.5	$ 1,570.9	3.4%
SG&A as a % of revenues	14.1%	13.9%	

Selling, general and administrative expenses as a percentage of revenues increased to 14.1% in 2019 compared to 13.9% in 2018. The increase in selling, general and administrative expenses as a percentage of revenues is primarily due to acquisitions and cybersecurity investments.

During 2019, the Company incurred $69.2 of acquisition and divestiture related costs, $15.2 in management transition costs, $11.5 in costs related to the Retrieval-Masters Credit Bureau, Inc. d/b/a/ American Medical Collection Agency (AMCA) data breach, and $10.1 of non-capitalized costs associated with the implementation of a major system as part of its LaunchPad business process improvement initiative, partially offset by $9.1 in reimbursements related to the 2018 ransomware attack and a $14.1 gain related to the settlement of a contingent purchase price related to a 2016 acquisition. These items increased selling, general and administrative expenses by $82.8. Excluding these charges, selling, general and administrative expenses as a percentage of revenues were 13.3% for the year ended December 31, 2019.

During 2018, the Company incurred integration and other costs of $54.7 primarily relating to the Chiltern acquisition and the sale of the Covance Food Solutions business. On July 16, 2018, the Company reported that it had detected suspicious activity on its information technology network and was taking steps to respond to and contain the activity. The activity was subsequently determined to be a new variant of ransomware affecting certain LCD information technology systems. As a direct result of the ransomware attack experienced during July, the Company incurred $12.6 in consulting fees and employee overtime during the recovery period following the attack. The Company also recorded $9.6 in consulting expenses relating to the Chiltern integration and management integration costs along with a special one-time bonus of $31.1 ($6.3 of which was recorded in selling, general and administrative expenses) to its non-bonus eligible employees in recognition of the benefits the Company received from the passage of the TCJA. In addition, the Company incurred $9.8 of non-capitalized costs associated with the implementation of a major system as part of its LaunchPad business process improvement initiative. Excluding these charges, selling, general and administrative expenses as a percentage of revenues were 13.0% for the year ended December 31, 2018.

Amortization Expense

	Years Ended December 31,		
	2019	2018	Change
LCD	$ 102.0	$ 104.0	(1.9)%
CDD	141.2	127.7	10.6 %
Amortization of intangibles and other assets	$ 243.2	$ 231.7	5.0 %

The increase in amortization of intangibles and other assets from 2018 through 2019 primarily reflects the impact of acquisitions offset by the impact of business dispositions and working capital and earnout adjustments.

Restructuring and Other Charges

	Years Ended December 31,		
	2019	2018	Change
Restructuring and other charges	$ 54.6	$ 48.1	13.5%

During 2019, the Company recorded net restructuring charges of $54.6; $26.7 within LCD and $27.9 within CDD. The charges were comprised of $32.9 in severance and other personnel costs and $24.9 in facility-related costs primarily associated with general integration activities. The charges were offset by the reversal of previously established reserves of $1.7 in unused severance and $1.5 in unused facility-related costs.

During 2018, the Company recorded net restructuring charges of $48.1; $20.5 within LCD and $27.6 within CDD. The charges were comprised of $40.3 in severance and other personnel costs and $11.8 in facility-related costs primarily associated with general

integration activities. The charges were offset by the reversal of previously established reserves of $2.0 in unused severance and $2.0 in unused facility-related costs.

Interest Expense

	Years Ended December 31,		
	2019	2018	Change
Interest expense	$ 240.7	$ 244.2	(1.4)%

The decrease in interest expense for 2019 as compared with the corresponding period in 2018 is primarily due to lower average debt balances, partially offset by $5.0 of accelerated deferred financing fees and make-whole premiums associated with the debt refinancing in the fourth quarter of 2019.

Equity Method Income, Net

	Years Ended December 31,		
	2019	2018	Change
Equity method income, net	$ 9.8	$ 11.6	(15.5)%

Equity method income, net represents the Company's ownership share in joint venture partnerships along with equity investments in other companies in the healthcare industry. All of these partnerships and investments reside within the LCD segment. The decrease in income for 2019 as compared with the corresponding period in 2018 was primarily due to the decreased profitability of the Company's joint ventures combined with the consolidation of a joint venture during the second quarter of 2018 related to the acquisition of Pathology Associates Medical Laboratories (PAML).

Other, Net

	Years Ended December 31,		
	2019	2018	Change
Other, net	$ (3.2)	$ 167.7	101.9%

For the year ended December 31, 2019, Other, net included a loss of $13.3, primarily related to the sale of its CRP business, offset by $20.9 in net gains on venture fund investments. For the year ended December 31, 2018, Other, net included a gain of $258.3 recognized on the sale of the Covance Food Solutions (CFS) business offset by losses on the dispositions of the Company's forensic testing services businesses in the U.K. and the U.S. of $48.9 and $24.5, respectively, the impairment of a venture fund investment of $5.2 and a $7.5 pension settlement charge. In addition, foreign currency transaction losses were $11.1 and $3.6, respectively, for the 2019 and 2018 periods presented.

Income Tax Expense

	Years Ended December 31,	
	2019	2018
Income tax expense	$ 280.0	$ 384.4
Income tax expense as a % of income before tax	25.3%	30.3%

In 2019, the Company's effective tax rate was 25.3%. The 2019 rate was favorable compared to the 2018 rate as a result of the favorable revaluation of deferred taxes resulting from tax law changes and clarifications. The Company's share-based compensation benefit was unfavorable compared to 2018.

In 2018, the Company's effective tax rate was 30.3%. The 2018 rate was unfavorable as a result of the re-measurement of deferred taxes primarily due to the Company's state rate mix and state income tax law changes. In 2018, the Company recorded additional tax for TCJA under SAB 118. Additionally, the 2018 rate was higher due to increased income taxes paid on divestitures where next tax basis was lower than net book basis.

Both 2019 and 2018 were negatively impacted by the global intangible low taxed income tax.

The Company considers substantially all of its foreign earnings to be permanently reinvested overseas.

Operating Results by Segment

	Years Ended December 31,		
	2019	2018	Change
LCD operating income	$ 1,086.0	$ 1,166.7	(6.9)%
LCD operating margin	15.5%	16.6%	(1.1)%
CDD operating income	$ 411.5	$ 303.6	35.5 %
CDD operating margin	9.0%	7.0%	2.0 %
General corporate expenses	$ (167.3)	$ (144.6)	15.7 %
Total operating income	$ 1,330.2	$ 1,325.7	0.3 %

LCD operating income was $1,086.0 for the year ended December 31, 2019, a decrease of 6.9% over operating income of $1,166.7 in the corresponding period of 2018 and a decrease of 110 basis points in operating margin year-over-year. The decrease in operating income and margin was primarily due to lower reimbursement as a result of PAMA, higher personnel costs, disposition of businesses, and cybersecurity expenses, partially offset by the Company's LaunchPad initiatives, and acquisitions. The Company remains on track to deliver approximately $200.0 of net savings from its three-year, phase II of LabCorp Diagnostics' LaunchPad initiative by the end of 2021.

CDD operating income was $411.5 for the year ended December 31, 2019, an increase of 35.5% over operating income of $303.6 in the corresponding period of 2018 and an increase of 200 basis points in operating margin year-over-year. The increase in operating income and margin were primarily due to organic demand, LaunchPad savings, acquisitions and currency translation, partially offset by personnel costs, and cybersecurity investments. The Company is on track to deliver $150.0 of net savings from its three-year CDD LaunchPad initiative by the end of 2020.

General corporate expenses are comprised primarily of administrative services such as executive management, human resources, legal, finance, corporate affairs, and information technology. Corporate expenses were $167.3 for the year ended December 31, 2019, an increase of 15.7% over corporate expenses of $144.6 in the corresponding period of 2018. The increase in corporate expenses in 2019 is primarily due to higher personnel costs, including executive transition costs and increases in merit based labor costs, as well as the benefit of a favorable legal settlement in 2018.

Liquidity, Capital Resources and Financial Position

The Company's strong cash-generating capability and financial condition typically have provided ready access to capital markets. The Company's principal source of liquidity is operating cash flow, supplemented by proceeds from debt offerings. The Company's senior unsecured revolving credit facility is further discussed in Note 12 Debt to the Company's Consolidated Financial Statements.

Management's discussion and analysis of cash flows for the year ended December 31, 2018 compared to the year ended December 31, 2017 may be found in the "Management's Discussion and Analysis of Financial Condition and Results of Operations Liquidity, Capital Resources and Financial Position" section of our Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

In summary the Company's cash flows were as follows:

	For the Year Ended December 31,		
	2019	2018	2017
Net cash provided by operating activities	$ 1,444.7	$ 1,305.4	$ 1,498.1
Net cash (used in) provided by investing activities	(1,283.1)	206.7	(2,228.7)
Net cash (used in) provided by financing activities	(252.7)	(1,389.9)	593.2
Effect of exchange rate on changes in cash and cash equivalents	1.8	(12.0)	20.5
Net change in cash and cash equivalents	$ (89.3)	$ 110.2	$ (116.9)

Cash and Cash Equivalents

Cash and cash equivalents at December 31, 2019 and 2018 totaled $337.5 and $426.8, respectively. Cash and cash equivalents consist of highly liquid instruments, such as time deposits and other money market investments, which have original maturities of three months or less.

Cash Flows from Operating Activities

During the year ended December 31, 2019, the Company's operations provided $1,444.7 of cash as compared to $1,305.4 in 2018. The $139.3 increase in cash provided from operations in 2019 as compared with the corresponding 2018 period was primarily due to higher cash earnings, partially offset by increased working capital to support growth. In addition, the Company had a net tax payment of approximately $105.0 related to the divestiture of its food and forensic testing service businesses in 2018, the

proceeds from which are recorded in net cash provided by investing activities. The Company's 2019 earnings were impacted by $54.6 of restructuring and other charges compared to an impact of $48.1 during the same period in 2018.

Cash Flows from Investing Activities

Net cash used by investing activities for the year ended December 31, 2019, was $1,283.1 as compared to net cash provided by investing activities of $206.7 for the year ended December 31, 2018. The $1,489.8 increase in cash used by investing activities for the year ended December 31, 2019, was primarily due to a year over year increase of $758.2 in cash paid for acquisitions. In addition, the Company had proceeds of $708.3 from the sale of assets and disposition of businesses during 2018 in comparison to $7.7 during 2019. Capital expenditures were $400.2 and $379.8 for the years ended December 31, 2019 and 2018, respectively. Capital expenditures in 2019 were 3.5% of revenues primarily in connection with projects to support growth in the Company's core businesses, projects related to LaunchPad and further Covance integration initiatives. The Company intends to continue to pursue acquisitions to fund growth, to make important investments in its business, including in information technology, and to improve efficiency and enable the execution of the Company's mission. Such expenditures are expected to be funded by cash flow from operations or, as needed, through borrowings under debt facilities, including the Company's revolving credit facility or any successor facility. The Company expects capital expenditures in 2020 to be approximately 3.5% to 4.0% of revenues, primarily in connection with projects to support growth in the Company's core businesses, facility updates, ongoing projects related to LaunchPad within the LCD business, LaunchPad's expansion within the CDD business, and further acquisition integration initiatives.

Cash Flows from Financing Activities

Net cash used in financing activities for the year ended December 31, 2019, was $252.7 compared to cash used in financing activities of $1,389.9 for the year ended December 31, 2018. This movement in cash within financing activities for 2019, as compared to 2018, was primarily a result of $198.5 net financing proceeds offset by $450.0 in share repurchases in 2019 compared to $695.0 in net financing payments and $700.0 in share repurchases in 2018.

On June 3, 2019, the Company entered into a new $850.0 term loan facility in addition to its $750.0 2017 term loan facility. The 2019 term loan facility will mature on June 3, 2021. Proceeds of the 2019 term loan facility were used for general corporate purposes, including to repay approximately $250.0 of the 2017 term loan facility and in connection with the acquisition of Envigo's nonclinical research services business.

On November 25, 2019, the Company issued $1,050.0 in debt securities, consisting of $400.0 aggregate principal amount of 2.300% Senior Notes due 2024 and $650.0 aggregate principal amount of 2.950% Senior Notes due 2029. The net proceeds from the new Senior Notes were used to redeem all of the outstanding $500.0 principal amount of its 2.625% Senior Notes due February 1, 2020, redeem $187.9 of the outstanding 4.625% Senior Notes due November 15, 2020 in a tender offer, and to repay $348.3 outstanding under the Company's term loan credit facilities.

In total, during 2019, the Company redeemed or repaid $687.9 million of its Senior Notes and $1,002.0 million of its term loans. In addition, the Company borrowed and repaid a total of $495.0 million of debt through its revolving credit facility within 2019. The Company will continue to evaluate all opportunities for strategic deployment of capital in light of market conditions.

The Company's revolving credit facility consists of a five year revolving facility in the principal amount of up to $1,000.0 with the option of increasing the facility by up to an additional $350.0, subject to the agreement of one or more new or existing lenders to provide such additional amounts and certain other customary conditions.

Under the Company's term loan credit facilities and the revolving credit facility, the Company is subject to negative covenants limiting subsidiary indebtedness and certain other covenants typical for investment grade-rated borrowers and the Company is required to maintain certain leverage ratios. The Company was in compliance with all covenants under the term loan credit facilities and the revolving credit facility at December 31, 2019. As of December 31, 2019, the ratio of total debt to consolidated pro forma trailing 12 month earnings before interest, tax, depreciation, and amortization (EBITDA) was 3.1 to 1.0.

At the end of 2018, the Company had outstanding authorization from the board of directors to purchase up to $443.5 of Company common stock. On February 6, 2019, the board of directors replaced the Company's existing share repurchase plan with a new plan authorizing repurchase of up to $1.25 billion of the Company's shares. The repurchase authorization has no expiration date. During 2019, the Company purchased 2.9 shares of its common stock at an average price of $154.94 for a total cost of $450.0, of which $100.0 was repurchased prior to the new plan in February 2019. At the end of 2019, the Company had outstanding authorization from the board of directors to purchase an additional $900.0 of Company common stock.

During 2019 and 2018, the Company settled notices to convert $8.6 and $0.3 aggregate principal amount at maturity of its zero-coupon subordinated notes due 2021 (the zero-coupon notes) with a conversion value of $16.6 and $0.7, respectively. The total cash used for these settlements was $8.2 and $0.3 and the Company also issued 0.1 and 0.0 additional shares of common stock, respectively. As a result of these conversions in 2019 and 2018, the Company also reversed approximately $2.0 and $0.2, respectively,

of deferred tax liability to reflect the tax benefit realized upon issuance of the shares. On December 19, 2019, the Company redeemed any remaining outstanding zero-coupon notes that did not convert.

Credit Ratings

The Company's investment grade debt ratings from Moody's and BBB from Standard & Poor's (S&P) contribute to its ability to access capital markets.

Contractual Cash Obligations

	Payments Due by Period				
	Total	2020	2021 - 2022	2023 - 2024	2025 and thereafter
Operating lease obligations	$ 913.0	$ 196.2	$ 271.1	$ 155.8	$ 289.9
Contingent future licensing payments (a)	23.1	3.5	13.8	4.8	1.0
Minimum royalty payments	28.0	3.3	14.6	9.7	0.4
Purchase obligations	93.9	42.2	51.7	—	—
Finance lease obligations	162.4	15.8	26.5	23.3	96.8
Scheduled interest payments on Senior Notes	1,955.2	220.8	381.0	307.6	1,045.8
Scheduled interest payments on Term Loan (d)	12.8	9.6	3.2	—	—
Long-term debt (e)	6,247.9	415.9	1,375.0	1,300.0	3,157.0
Total contractual cash obligations (b) (c)	$ 9,436.3	$ 907.3	$ 2,136.9	$ 1,801.2	$ 4,590.9

(a) Contingent future licensing payments will be made if certain events take place, such as the launch of a specific test, the transfer of certain technology, and the achievement of specified revenue milestones.

(b) The table does not include obligations under the Company's pension and postretirement benefit plans, which are included in Note 17 Pension and Postretirement Plans to Consolidated Financial Statements. Benefits under the Company's postretirement medical plan are made when claims are submitted for payment, the timing of which is not practicable to estimate.

(c) The table does not include the Company's reserve for unrecognized tax benefits. The Company had a $37.2 and $26.7 reserve for unrecognized tax benefits, including interest and penalties, at December 31, 2019, and 2018, respectively, which is included in Note 14 Income Taxes to Consolidated Financial Statements. For the year ended December 31, 2019, approximately $6.1 of the tax reserve is classified in accrued expenses and other in the Company's Consolidated Balance Sheet while the remaining $31.1 is classified in deferred income taxes and other tax liabilities. For the year ended December 31, 2018, approximately $6.0 of the tax reserve is classified in accrued expenses and other in the Company's Consolidated Balance Sheet while the remaining $20.7 is classified in deferred income taxes and other tax liabilities.

(d) Interest payments due by period for the Company's debt subject to variable interest rates are calculated based on rates in place as of December 31, 2019.

(e) Excludes amount of debt issuance costs included in the long-term debt balance.

Off-Balance Sheet Arrangements

The Company does not have transactions or relationships with "special purpose" entities, and the Company does not have any off-balance sheet financing other than normal operating leases and letters of credit.

Other Commercial Commitments

As of December 31, 2019, the Company provided letters of credit aggregating approximately $76.3, primarily in connection with certain insurance programs. Letters of credit provided by the Company are secured by the Company's revolving credit facility and are renewed annually.

The contractual value of the noncontrolling interest put in the Company's Ontario subsidiary totaled $15.8 and $15.0 at December 31, 2019, and 2018, respectively, and has been classified as mezzanine equity in the Company's consolidated balance sheet.

Based on current and projected levels of cash flows from operations, coupled with availability under its revolving credit facility, the Company believes it has sufficient liquidity to meet both its anticipated short-term and long-term cash needs; however, the Company continually reassesses its liquidity position in light of market conditions and other relevant factors.

Critical Accounting Policies

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and

liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported periods. While the Company believes these estimates are reasonable and consistent, they are by their very nature estimates of amounts that will depend on future events. Accordingly, actual results could differ from these estimates. The Company's Audit Committee periodically reviews the Company's significant accounting policies. The Company's critical accounting policies arise in conjunction with the following:

- Revenue recognition;
- Business combinations;
- Pension expense;
- Accruals for self-insurance reserves;
- Income taxes; and
- Goodwill and indefinite-lived assets.

Revenue Recognition

LCD

Within the LCD segment, a revenue transaction is initiated when LCD receives a requisition order to perform a diagnostic test. The information provided on the requisition form is used to determine the party that will be billed for the testing performed and the expected reimbursement. LCD recognizes revenue and satisfies its performance obligation for services rendered when the testing process is complete and the associated results are reported. Revenues are distributed among four payer portfolios - clients, patients, Medicare and Medicaid and third-party.

The following are descriptions of the LCD payer portfolios:

Clients

Client payers represent the portion of LCD's revenue related to physicians, hospitals, health systems, accountable care organizations (ACOs), employers and other entities where payment is received exclusively from the entity ordering the testing service. Generally, client revenues are recorded on a fee-for-service basis at LCD's client list price, less any negotiated discount. A portion of client billing is for laboratory management services, collection kits and other non-testing services or products. In these cases, revenue is recognized when services are rendered or delivered.

Patients

This portfolio includes revenue from uninsured patients and member cost-share for insured patients (e.g., coinsurance, deductibles and non-covered services). Uninsured patients are billed based upon LCD's patient fee schedules, net of any discounts negotiated with physicians on behalf of their patients. LCD bills insured patients as directed by their health plan and after consideration of the fees and terms associated with an established health plan contract.

Medicare and Medicaid

This portfolio relates to fee-for-service revenue from traditional Medicare and Medicaid programs. Net revenue from these programs is based on the fee schedule established by the related government authority. In addition to contractual discounts, other adjustments including anticipated payer denials are considered when determining net revenue. Any remaining adjustments to revenue are recorded at the time of final collection and settlement. These adjustments are not material to LCD's results of operations in any period presented.

Third-Party

Third-party includes revenue related to MCOs. The majority of LCD's third-party revenue is reimbursed on a fee-for-service basis. These payers are billed at LCD's established list price and revenue is recorded net of contractual discounts. The majority of LCD's MCO revenues are recorded based upon contractually negotiated fee schedules with revenues for non-contracted MCOs recorded based on historical reimbursement experience.

Third-party reimbursement is also received through capitation agreements with MCOs and independent physician associations (IPAs). Under capitated agreements, revenue is recognized based on a negotiated per-member, per-month payment for an agreed upon menu of tests, or based upon the proportionate share earned by LCD from a capitation pool. When the agreed upon reimbursement is based solely on an established rate per member, revenue is not impacted by the volume of testing performed. Under a capitation pool arrangement, the aggregate value of an established rate per member is distributed based on the volume and complexity of the procedures performed by laboratories participating in the agreement. LCD recognizes revenue monthly, based upon the established capitation rate or anticipated distribution from a capitated pool.

LCD has a formal process to estimate implicit price concessions for uncollectable accounts. The majority of LCD's collection risk is related to accounts receivable from both insured and uninsured patients who are unwilling or unable to pay. Anticipated

write-offs are recorded as adjustments to revenue an at an amount considered necessary to record the segment's revenue at its net realizable value. In addition to contractual discounts, other adjustments including anticipated payer denials and other external factors that could affect the collectablity of its receivables are considered when determining revenue and the net receivable amount. Any remaining adjustments to revenue are recorded at the time of final collection and settlement. These adjustments are not material to LCD's results of operations in any period presented.

CDD

The nature of CDD's obligations include agreements to provide preclinical services, to manage a full clinical trial, provide services for a specific phase of a trial, or provide research products to the customer. Generally, the amount of the transaction price estimated at the beginning of the contract is equal to the amount expected to be billed to the customer. Other payments may also factor into the calculation of transaction price, such as volume-based rebates that are retroactively applied to prior transactions in the period.

Historically a majority of CDD's revenues have been earned under contracts that range in duration from a few months to a few years, but can extend in duration up to five years or longer. Occasionally, CDD also has entered into minimum volume arrangements with certain customers. Under these types of arrangements, if the annual minimum dollar value of a service commitment is not reached, the customer is required to pay CDD for the shortfall. Annual minimum commitment shortfalls are not recognized until the end of the period when the amount has been determined and agreed to by the customer.

CDD recognizes revenue either as services are performed or as products are delivered, depending on the nature of the work contracted. If performance is completed at a specific point in time, the Company evaluates the nature of the agreement to determine when the good or service is transferred into the customer's control.

Service contracts generally take the form of fee-for-service or fixed-price arrangements subject to pricing adjustments based on changes in scope. In cases where performance spans multiple accounting periods, revenue is recognized as services are performed, measured on a proportional-performance basis, using either input or output methods that are specific to the service provided. In an output method, revenue is determined by dividing the actual units of output achieved by the total units of output required under the contract and multiplying that percentage by the total contract value. The total contract value, or total contractual payments, represents the aggregate contracted price for each of the agreed upon services to be provided.

When using an input method, revenue is recognized by dividing the actual units of input incurred by the total units of input budgeted in the contract, and multiplying that percentage by the total contract value. In each situation, the Company believes that the methods used most accurately depict the progress of the Company towards completing its obligations. Billing schedules and payment terms are generally negotiated on a contract-by-contract basis. In some cases, CDD bills the customer for the total contract value in progress-based installments as certain non-contingent billing milestones are reached over the contract duration. These milestones include, but are not limited to, contract signing, initial dosing, investigator site initiation, patient enrollment and/or database lock. The term "billing milestone" relates only to a billing trigger in a contract whereby amounts become billable and payable in accordance with a negotiated predetermined billing schedule throughout the term of a project. These billing milestones are generally not performance-based (i.e., there is no potential additional consideration tied to specific deliverables or performance). In other cases, billing and payment terms are tied to the passage of time (e.g., monthly billings). In either case, the total contract value and aggregate amounts billed to the customer would be the same at the end of the project.

Proportional performance contracts typically contain a single service (e.g., management of a clinical study) and therefore no allocation of the contract price is required. Fee-for-service contracts are typically priced based on transaction volume. Since the volume of activities in a fee-for-service contract is unspecified, the contract price is entirely variable and is allocated to the time period in which it is earned. For contracts that include multiple distinct goods and services, CDD allocates the contract price to the goods and services based on a customer price list, if available. If a price list is not available, CDD will estimate the transaction price using either market prices or an "expected cost plus margin" approach.

While CDD attempts to negotiate terms that provide for billing and payment of services prior or within close proximity to the provision of services, this is not always possible. While a project is ongoing, cash payments are not necessarily representative of aggregate revenue earned at any particular point in time, as revenues are recognized when services are provided, while amounts billed and paid are in accordance with the negotiated billing and payment terms.

In some cases, payments received are in excess of revenue recognized. For example, a contract invoicing schedule may provide for an upfront payment of 10% of the full contract value upon contract signing, but at the time of signing performance of services has not yet begun. Payments received in advance of services being provided are deferred as contract liabilities on the balance sheet. As the contracted services are subsequently performed and the associated revenue is recognized, the contract liability balance is reduced by the amount of revenue recognized during the period.

In other cases, services may be provided and revenue recognized before the customer is invoiced. In these cases, revenue recognized will exceed amounts billed, and the difference, representing a contract asset, is recorded for the amount that is currently

not billable to the customer pursuant to contractual terms. Once the customer is invoiced, the contract asset is reduced for the amount billed, and a corresponding account receivable is recorded. All contract assets are billable to customers within one year from the respective balance sheet date.

Most contracts are terminable with or without cause by the customer, either immediately or upon notice. These contracts often require payment to CDD of expenses to wind down the study or project, fees earned to date and, in some cases, a termination fee or a payment to CDD of some portion of the fees or profits that could have been earned by CDD under the contract if it had not been terminated early. Termination fees are included in revenues when services are performed and realization is assured.

The following are descriptions of the full range of drug development services provided by CDD:

Preclinical services include fee-for-service activities such as bioanalytical testing services, and proportional performance activities such as toxicology studies. Until June 3, 2019, preclinical services also included the sale of research models. See Note 3 Business Acquisitions and Dispositions to the Consolidated Financial Statements for more information. Revenue for sale of research models was recognized at a point in time, typically upon shipment, when control transferred to the customer. Revenue for bioanalytical testing services is recognized at a point in time upon communication of results to the customer. Revenue for proportional performance activities, including toxicology studies, is recognized using an input-based measure of progress in which revenue is recognized as expenses are incurred for the research models, labor hours, and other costs attributable to the study.

Through its central laboratory, CDD produces and supplies specimen collection kits that are utilized in clinical studies, and provides transportation, project management, data management, and laboratory testing services on an as-needed basis throughout the duration of its customers' clinical studies. Revenue for central laboratory services is recognized using an output-based measure of progress based on volume of activities in each period. CDD also provides long-term specimen storage services, for which revenue is recognized using an input-based measure of progress based on costs incurred.

CDD provides clinical development and commercialization services, including clinical pharmacology services, full management of Phase II through IV clinical studies, and market access solutions. Revenue for clinical pharmacology services, which includes first-in-human trials, is recognized using an output-based measure of progress based on bed nights. The majority of clinical development and commercialization service long-term contracts are service contracts for clinical research that represent a single performance obligation (e.g., management of a clinical study). Revenue for these service contracts is recognized over time based on the progress of the performance obligation which was measured by the proportion of the actual costs incurred to the total costs expected to complete the contract (including labor and pass-through costs such as investigator grants and reimbursable out-of-pocket expenses). This cost-based method of revenue recognition required management to estimate the costs to complete these services on an ongoing basis. Clinical services utilizing the input-based measure of progress account for approximately 50% of CDD revenue. Revenue for market access solutions is recognized using various methods. Revenue for fee-for-service arrangements, such as reimbursement consulting hotlines and patient assistance programs, is recognized using an output method based on transaction volume which corresponds to the amount charged to the customer. For consulting services billed based on time and materials, revenue is recognized using the right to invoice practical expedient.

CDD endeavors to assess and monitor the creditworthiness of its customers to which it grants credit terms in the ordinary course of business. CDD maintains a provision for doubtful accounts relating to amounts due that may not be collected. This bad debt provision is monitored on a monthly basis and adjusted as circumstances warrant. Since the recorded bad debt provision is based upon management's judgment, actual bad debt write-offs may be greater or less than the amount recorded. Historically, bad debt write-offs have not been material.

Business Combinations

The Company accounted for business combination transactions under the acquisition method of accounting and reported the results of operations of the acquired entities from its respective date of acquisition. Assets acquired were recorded at their estimated fair values as of the acquisition date. Estimated fair values were based on various valuation methodologies including: an income approach using primarily discounted cash flow techniques for the customer relationships intangible assets. The aforementioned income methods utilize management's estimates of future operating results and cash flows discounted using a weighted-average cost of capital that reflects market participant assumptions. The excess of the fair value of the consideration conveyed over the fair value of the assets acquired was recorded as goodwill. The goodwill reflects management's expectations of the ability to gain access to and penetrate the acquired entities' historical patient base and the benefits of being able to leverage operational efficiencies with favorable growth opportunities based on positive demographic trends in the market. None of the goodwill recorded as a result from these transactions is deductible for federal income tax purposes.

As described in Note 3 Business Acquisitions and Dispositions to the consolidated financial statements, the Company acquired the nonclinical contract research services business of Envigo for consideration of $601.0 in 2019, which resulted in $141.4 of identifiable intangible assets and $379.3 of goodwill being recorded. Management applied significant judgment in estimating the fair value of identifiable intangible assets, which involved the use of significant estimates and assumptions with respect to the

customer attrition rates and the discount rate. During the year ended December 31, 2019, the Company also acquired various businesses and related assets for approximately $286.4 in cash (net of cash acquired). The purchase consideration for all acquisitions year to date has been allocated to the estimated fair market value of the net assets acquired, including approximately $184.3 in identifiable intangible assets and a residual amount of non-tax-deductible goodwill of approximately $115.1.

Pension Expense

The Company has a defined-benefit retirement plan (Company Plan) and a non-qualified supplemental retirement plan (PEP). In October 2009, the Company received approval from its board of directors to freeze any additional service-based credits for any years of service after December 31, 2009, on the Company Plan and the PEP. Both plans have been closed to new participants. Employees participating in the Company Plan and the PEP no longer earn service-based credits, but continue to earn interest credits.

The Company Plan covers substantially all employees employed by the Company prior to December 31, 2009. The benefits to be paid under the Company Plan are based on years of credited service through December 31, 2009, interest credits and average compensation. The Company's policy is to fund the Company Plan with at least the minimum amount required by applicable regulations. The PEP covers a portion of the Company's senior management group. Prior to 2010, the PEP provided for the payment of the difference, if any, between the amount of any maximum limitation on annual benefit payments under the Employee Retirement Income Security Act of 1974 and the annual benefit that would be payable under the Company Plan but for such limitation. Effective January 1, 2010, employees participating in the PEP no longer earn service-based credits. The PEP is an unfunded plan.

As a result of the Covance acquisition, the Company sponsors two defined-benefit pension plans for the benefit of its employees at two U.K. subsidiaries (U.K. Plans) and one defined-benefit pension plan for the benefit of its employees at a German subsidiary (German Plan), all of which are legacy plans of previously acquired companies and are closed to new entrants. Benefit amounts for all three plans are based upon years of service and compensation. The German Plan is unfunded while the U.K. Plans are funded. The Company’s funding policy for the U.K. Plans has been to contribute annually amounts at least equal to the local statutory funding requirements.

As a result of the Envigo acquisition, the Company assumed a defined benefit pension plan for the benefit of Envigo's U.K. employees (the Envigo plan), which is a legacy plan of a company previously acquired by Envigo. The Envigo plan is a funded plan that is closed to future accrual. The Company’s funding policy has been to contribute amounts at least equal to the local statutory funding requirements.

The Company's net pension cost is developed from actuarial valuations. Inherent in these valuations are key assumptions, including discount rates and expected return on plan assets, which are updated on an annual basis at the beginning of each year. The Company is required to consider current market conditions, including changes in interest rates, in making these assumptions. Changes in pension costs may occur in the future due to changes in these assumptions. The key assumptions used in accounting for the defined-benefit retirement plans were a 3.3% discount rate and a 6.5% expected long-term rate of return on plan assets for the Company Plan, a 3.4% discount rate for the PEP, a 1.9% discount rate and a 2.0% expected salary increase for the German plan and a 2.9% discount rate, a 3.6% expected salary increase for the U.K. Plans and a 2.3% discount rate and 3.9% expected return on assets for the Envigo plan as of December 31, 2019.

Discount Rate

The Company evaluates several approaches toward setting the discount rate assumption that is used to value the benefit obligations of its retirement plans. At year-end, priority was given to use of the Towers Watson Bond:Link model, which simulates the purchase of investment-grade corporate bonds at current market yields with principal amounts and maturity dates closely matching the Company's projected cash disbursements from its plans. This completed model represents the yields to maturity at which the Company could theoretically settle its plan obligations at year end. The weighted-average yield on the modeled bond portfolio is then used to form the discount rate assumption used for each retirement plan. A one percentage point decrease or increase in the discount rate would have resulted in a respective increase or decrease in 2019 retirement plan expense of $2.0 for the Company Plan and PEP. A one percentage point decrease or increase in the discount rate would have resulted in a respective increase or decrease in 2019 retirement plan expense of $0.4 for the U.K. Plans.

Return on Plan Assets

In establishing its expected return on plan assets assumption, the Company reviews its asset allocation and develops return assumptions based on different asset classes adjusting for plan operating expenses. Actual asset over/under performance compared to expected returns will respectively decrease/increase unrecognized loss. The change in the unrecognized loss will change amortization cost in upcoming periods. A one percentage point increase or decrease in the expected return on plan assets would have resulted in a corresponding change in 2019 pension expense of $2.4 for the Company Plan. A one percentage point increase or decrease in the expected return on plan assets would have resulted in a corresponding change in 2019 pension expense of $3.5 for the U.K. Plans.

Net pension cost for 2019 was $13.8 as compared with $20.9 in 2018 and $14.6 in 2017. The decrease in pension expense was due to decreases in the amount of net amortization and deferral as a result of higher discount rates. In addition, a $7.5 settlement charge was incurred in 2018. Pension expense for the Company Plan and the PEP is expected to decrease to $11.8 in 2020 primarily due to the impact of strong asset returns in 2019 for the Company Plan offset by lower discount rates impacting the PEP. Pension expense for the Germany Plan and the U.K. Plans is expected to decrease to a credit of $3.5 in 2020, primarily due to the impact of freezing the legacy U.K. Plans as of December 31, 2019, leading to a lower service cost in 2020.

Further information on the Company's defined-benefit retirement plans is provided in Note 17 Pension and Postretirement Plans to the Consolidated Financial Statements.

Accruals for Self-Insurance Reserves

Accruals for self-insurance reserves (including workers' compensation, auto and employee medical) are determined based on a number of assumptions and factors, including historical payment trends and claims history, actuarial assumptions and current and estimated future economic conditions. These estimated liabilities are not discounted.

The Company is self-insured (up to certain limits) for professional liability claims arising in the normal course of business, generally related to the testing and reporting of laboratory test results. The Company maintains excess insurance which limits the Company's maximum exposure on individual claims. The Company estimates a liability that represents the ultimate exposure for aggregate losses below those limits. The liability is based on assumptions and factors for known and incurred but not reported claims, including the frequency and payment trends of historical claims.

If actual trends differ from these estimates, the financial results could be impacted. Historical trends have not differed significantly from these estimates.

Income Taxes

The Company accounts for income taxes utilizing the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and for tax loss carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. The Company does not recognize a tax benefit, unless the Company concludes that it is more likely than not that the benefit will be sustained on audit by the taxing authority based solely on the technical merits of the associated tax position. If the recognition threshold is met, the Company recognizes a tax benefit measured at the largest amount of the tax benefit that the Company believes is greater than 50% likely to be realized. The Company records interest and penalties in income tax expense.

Goodwill and Indefinite-Lived Assets

The Company assesses goodwill and indefinite-lived intangibles for impairment at least annually or whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. In accordance with updates to the Financial Accounting Standards Board's (FASB) authoritative guidance regarding goodwill and indefinite-lived intangible asset impairment testing, an entity is allowed to first assess qualitative factors as a basis for determining whether it is necessary to perform quantitative impairment testing. If an entity determines that it is not more likely than not that the estimated fair value of an asset is less than its carrying value, then no further testing is required. Otherwise, impairment testing must be performed in accordance with the original accounting standards. The updated FASB guidance also allows an entity to bypass the qualitative assessment for any reporting unit in its goodwill assessment and proceed directly to performing the quantitative assessment. Similarly, a company can proceed directly to a quantitative assessment in the case of impairment testing for indefinite-lived intangible assets as well.

The quantitative goodwill impairment test includes the estimation of the fair value of each reporting unit as compared to the carrying value of the reporting unit. Reporting units are businesses with discrete financial information that is available and reviewed by management. The Company estimates the fair value of a reporting unit using both income-based and market-based valuation methods. The income-based approach is based on the reporting unit's forecasted future cash flows that are discounted to the present value using the reporting unit's weighted average cost of capital. For the market-based approach, the Company utilizes a number of factors such as publicly available information regarding the market capitalization of the Company as well as operating results, business plans, market multiples, and present value techniques. Based upon the range of estimated values developed from the income and market-based methods, the Company determines the estimated fair value for the reporting unit. If the estimated fair value of the reporting unit exceeds the carrying value, the goodwill is not impaired and no further review is required. An entity should recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit.

The income-based fair value methodology requires management's assumptions and judgments regarding economic conditions in the markets in which the Company operates and conditions in the capital markets, many of which are outside of management's control. At the reporting unit level, fair value estimation requires management's assumptions and judgments regarding the effects of overall economic conditions on the specific reporting unit, along with assessment of the reporting unit's strategies and forecasts of future cash flows. Forecasts of individual reporting unit cash flows involve management's estimates and assumptions regarding:

- Annual cash flows, on a debt-free basis, arising from future revenues and profitability, changes in working capital, capital spending and income taxes for at least a five-year forecast period.
- A terminal growth rate for years beyond the forecast period. The terminal growth rate is selected based on consideration of growth rates used in the forecast period, historical performance of the reporting unit and economic conditions.
- A discount rate that reflects the risks inherent in realizing the forecasted cash flows. A discount rate considers the risk-free rate of return on long-term treasury securities, the risk premium associated with investing in equity securities of comparable companies, the beta obtained from the comparable companies and the cost of debt for investment grade issuers. In addition, the discount rate may consider any company-specific risk in achieving the prospective financial information.

Under the market-based fair value methodology, judgment is required in evaluating market multiples and recent transactions. Management believes that the assumptions used for its impairment tests are representative of those that would be used by market participants performing similar valuations of the reporting units.

Management performed its annual goodwill and intangible asset impairment testing as of the beginning of the fourth quarter of 2019. The Company elected to perform the qualitative assessment for goodwill and intangible assets for the domestic LCD reporting units, a quantitative assessment for the CDD reporting units and a quantitative assessment for the Canadian reporting unit and its indefinite-lived assets consisting of acquired Canadian licenses.

In the qualitative assessment, the Company considered relevant events and circumstances for each reporting unit, including (i) current year results, ii) financial performance versus management’s annual and five-year strategic plans, iii) changes in the reporting unit carrying value since prior year, (iv) industry and market conditions in which the reporting unit operates, (v) macroeconomic conditions, including discount rate changes, and (vi) changes in products or services offered by the reporting unit. If applicable, performance in recent years was compared to forecasts included in prior valuations. Based on the results of the qualitative assessment, the Company concluded that it was not more likely than not that the carrying values of the goodwill and intangible assets were greater than their fair values, and that further quantitative testing was not necessary.

In 2019, the Company utilized a combination of the market and income approaches to determine the fair value of the CDD reporting units and the income approach to determine the fair value of the Canadian reporting unit and its indefinite-lived assets consisting of acquired Canadian licenses. Based upon the results of the quantitative assessments, the Company concluded that the fair values of the goodwill and intangible assets, including the indefinite-lived Canadian licenses, was greater than the carrying value.

It is possible that the Company's conclusions regarding impairment or recoverability of goodwill or intangible assets in any reporting unit could change in future periods. There can be no assurance that the estimates and assumptions used in the Company's goodwill and intangible asset impairment testing performed as of the beginning of the fourth quarter of 2019 will prove to be accurate predictions of the future, if, for example, (i) the businesses do not perform as projected, (ii) overall economic conditions in 2019 or future years vary from current assumptions (including changes in discount rates), (iii) business conditions or strategies for a specific reporting unit change from current assumptions, including loss of major customers, (iv) investors require higher rates of return on equity investments in the marketplace or (v) enterprise values of comparable publicly traded companies, or actual sales transactions of comparable companies, were to decline, resulting in lower multiples of revenues and EBITDA. The Company will continue to monitor the financial performance of and assumptions for one of the CDD reporting units for which an income approach was performed in 2019 and where the fair value exceeded carrying value by approximately 10%. Goodwill for this reporting unit as of December 31, 2019, was $2.2 billion. Management's impairment analysis for this reporting unit utilized significant judgments and assumptions related to the market comparable method analysis, such as selected market multiples, and related to cash flow projections, such as revenue and terminal growth rate, projected operating income, and the discount rate. A significant increase in the discount rate, decrease in the revenue and terminal growth rate, decreased operation margin or substantial reductions in end markets and volume assumptions could have a negative impact on the estimated fair value of this reporting unit. A future impairment charge for goodwill or intangible assets could have a material effect on the Company's consolidated financial position and results of operations. Management notes that a 1% change in the discount rate would reduce the headroom to approximately 1%.

FORWARD-LOOKING STATEMENTS

Laboratory Corporation of America® Holdings together with its subsidiaries (the Company) has made in this report, and from time to time may otherwise make in its public filings, press releases and discussions by Company management, forward-looking statements concerning the Company's operations, performance and financial condition, as well as its strategic objectives. Some of these forward-looking statements relate to future events and expectations and can be identified by the use of forward-looking words such as "believes", "expects", "may", "will", "should", "seeks", "approximately", "intends", "plans", "estimates", or "anticipates" or the negative of those words or other comparable terminology. Such forward-looking statements are subject to various risks and uncertainties and the Company claims the protection afforded by the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995. Actual results could differ materially from those currently anticipated due to a number of factors in addition to those discussed elsewhere herein, including in the "Risk Factors" section of this Annual Report on Form 10-K, and in the Company's other public filings, press releases, and discussions with Company management, including:

1. changes in government and third-party payer regulations, reimbursement, or coverage policies or other future reforms in the healthcare system (or in the interpretation of current regulations), new insurance or payment systems, including state, regional or private insurance cooperatives (e.g., health insurance exchanges) affecting governmental and third-party coverage or reimbursement for commercial laboratory testing, including the impact of the U.S. Protecting Access to Medicare Act of 2014 (PAMA);

2. significant monetary damages, fines, penalties, assessments, refunds, repayments, damage to the Company's reputation, unanticipated compliance expenditures and/or exclusion or debarment from or ineligibility to participate in government programs, among other adverse consequences, arising from enforcement of anti-fraud and abuse laws and other laws applicable to the Company in jurisdictions in which the Company conducts business;

3. significant fines, penalties, costs, unanticipated compliance expenditures and/or damage to the Company's reputation arising from the failure to comply with applicable privacy and security laws and regulations, including the U.S. Health Insurance Portability and Accountability Act of 1996, the U.S. Health Information Technology for Economic and Clinical Health Act, the European Union's General Data Protection Regulation and similar laws and regulations in jurisdictions in which the Company conducts business;

4. loss or suspension of a license or imposition of a fine or penalties under, or future changes in, or interpretations of applicable licensing laws or regulations regarding the operation of clinical laboratories and the delivery of clinical laboratory test results, including, but not limited to, the U.S. Clinical Laboratory Improvement Act of 1967 and the U.S. Clinical Laboratory Improvement Amendments of 1988 and similar laws and regulations in jurisdictions in which the Company conducts business;

5. penalties or loss of license arising from the failure to comply with applicable occupational and workplace safety laws and regulations, including the U.S. Occupational Safety and Health Administration requirements and the U.S. Needlestick Safety and Prevention Act and similar laws and regulations in jurisdictions in which the Company conducts business;

6. fines, unanticipated compliance expenditures, suspension of manufacturing, enforcement actions, damage to the Company's reputation, injunctions, or criminal prosecution arising from failure to maintain compliance with current good manufacturing practice regulations and similar requirements of various regulatory agencies in jurisdictions in which the Company conducts business;

7. sanctions or other remedies, including fines, unanticipated compliance expenditures, enforcement actions, injunctions or criminal prosecution arising from failure to comply with the Animal Welfare Act or applicable national, state and local laws and regulations in jurisdictions in which the Company conducts business;

8. changes in testing guidelines or recommendations by government agencies, medical specialty societies and other authoritative bodies affecting the utilization of laboratory tests;

9. changes in applicable government regulations or policies affecting the approval, availability of, and the selling and marketing of diagnostic tests, drug development, or the conduct of drug development and medical device and diagnostic studies and trials, including regulations and policies of the U.S. Food and Drug Administration, the U.S. Department of Agriculture, the Medicine and Healthcare products Regulatory Agency in the United Kingdom (U.K.), the National Medical Products Administration in China, the Pharmaceutical and Medical Devices Agency in Japan, the European Medicines Agency and similar regulations and policies of agencies in other jurisdictions in which the Company conducts business;

10. changes in government regulations or reimbursement pertaining to the biopharmaceutical and medical device and diagnostic industries, changes in reimbursement of biopharmaceutical products or reduced spending on research and development by biopharmaceutical customers;

11. liabilities that result from the failure to comply with corporate governance requirements;

12. increased competition, including price competition, potential reduction in rates in response to price transparency and consumerism, competitive bidding and/or changes or reductions to fee schedules and competition from companies that do not comply with existing laws or regulations or otherwise disregard compliance standards in the industry;

13. changes in payer mix or payment structure, including insurance carrier participation in health insurance exchanges, an increase in capitated reimbursement mechanisms, the impact of a shift to consumer-driven health plans or plans carrying an increased level of member cost-sharing, and adverse changes in payer reimbursement or payer coverage policies (implemented directly or through a third-party utilization management organization) related to specific diagnostic tests, categories of testing or testing methodologies;

14. failure to retain or attract managed care organization (MCO) business as a result of changes in business models, including new risk-based or network approaches, out-sourced laboratory network management or utilization management companies, or other changes in strategy or business models by MCOs;

15. failure to obtain and retain new customers, an unfavorable change in the mix of testing services ordered, or a reduction in tests ordered, specimens submitted or services requested by existing customers;

16. difficulty in maintaining relationships with customers or retaining key employees as a result of uncertainty surrounding the integration of acquisitions and the resulting negative effects on the business of the Company;

17. consolidation and convergence of MCOs, biopharmaceutical companies, health systems, large physician organizations and other customers, potentially causing material shifts in insourcing, utilization, pricing and reimbursement, including full and partial risk-based models;

18. failure to effectively develop and deploy new systems, system modifications or enhancements required in response to evolving market and business needs;

19. customers choosing to insource services that are or could be purchased from the Company;

20. failure to identify, successfully close and effectively integrate and/or manage acquisitions of new businesses;

21. inability to achieve the expected benefits and synergies of newly-acquired businesses, including due to items not discovered in the due diligence process, and the impact on the Company's cash position, levels of indebtedness and stock price;

22. termination, loss, delay, reduction in scope or increased costs of contracts, including large contracts and multiple contracts;

23. liability arising from errors or omissions in the performance of testing services, contract research services or other contractual arrangements;

24. changes or disruption in the provision or transportation of services or supplies provided by third parties; or their termination for failure to follow the Company's performance standards and requirements;

25. damage or disruption to the Company's facilities;

26. damage to the Company's reputation, loss of business, or other harm from acts of animal rights activists or potential harm and/or liability arising from animal research activities;

27. adverse results in litigation matters;

28. inability to attract and retain experienced and qualified personnel;

29. failure to develop or acquire licenses for new or improved technologies, such as point-of-care testing, mobile health technologies, and digital pathology, or potential use of new technologies by customers and/or consumers to perform their own tests;

30. substantial costs arising from the inability to commercialize newly licensed tests or technologies or to obtain appropriate coverage or reimbursement for such tests;

31. failure to obtain, maintain and enforce intellectual property rights for protection of the Company's products and services and defend against challenges to those rights;

32. scope, validity and enforceability of patents and other proprietary rights held by third parties that may impact the Company's ability to develop, perform, or market the Company's products or services or operate its business;

33. business interruption or other impact on the business due to natural disasters, including adverse weather, fires and earthquakes, political crises, including terrorism and war, public health crises and disease epidemics and pandemics, and other events outside of the Company's control;

34. discontinuation or recalls of existing testing products;

35. a failure in the Company's information technology systems, including with respect to testing turnaround time and billing processes, or the failure of the Company or its third-party suppliers and vendors to maintain the security of business information or systems or to protect against cybersecurity attacks such as denial of service attacks, malware, ransomware and computer viruses, or delays or failures in the development and implementation of the Company's automation platforms, any of which could result in a negative effect on the Company's performance of services, a loss of business or increased costs, damages to the Company's reputation, significant litigation exposure, an inability to meet required financial reporting deadlines, or the failure to meet future regulatory or customer information technology, data security and connectivity requirements;

36. business interruption, increased costs, and other adverse effects on the Company's operations due to the unionization of employees, union strikes, work stoppages, general labor unrest or failure to comply with labor or employment laws;

37. failure to maintain the Company's days sales outstanding levels, cash collections (in light of increasing levels of patient responsibility), profitability and/or reimbursement arising from unfavorable changes in third-party payer policies, payment delays introduced by third party utilization management organizations and increasing levels of patient payment responsibility;

38. impact on the Company's revenues, cash collections and the availability of credit for general liquidity or other financing needs arising from a significant deterioration in the economy or financial markets or in the Company's credit ratings by Standard & Poor's and/or Moody's;

39. failure to maintain the expected capital structure for the Company, including failure to maintain the Company's investment grade rating;

40. changes in reimbursement by foreign governments and foreign currency fluctuations;

41. inability to obtain certain billing information from physicians, resulting in increased costs and complexity, a temporary disruption in receipts and ongoing reductions in reimbursements and revenues;

42. expenses and risks associated with international operations, including, but not limited to, compliance with the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act, other applicable anti-corruption laws and regulations, trade sanction laws and regulations, and economic, political, legal and other operational risks associated with foreign jurisdictions;

43. failure to achieve expected efficiencies and savings in connection with the Company's business process improvement initiatives;

44. changes in tax laws and regulations or changes in their interpretation, including the U.S. Tax Cuts and Jobs Act (TCJA); and

45. global economic conditions and government and regulatory changes, including, but not limited to the U.K.'s exit from the European Union.

Except as may be required by applicable law, the Company undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Given these uncertainties, one should not put undue reliance on any forward-looking statements.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK (in millions)

Market risk is the potential loss arising from adverse changes in market rates and prices, such as foreign currency exchange rates, interest rates and other relevant market rate or price changes. In the ordinary course of business, the Company is exposed to various market risks, including changes in foreign currency exchange and interest rates, and the Company regularly evaluates the exposure to such changes. The Company addresses its exposure to market risks, principally the market risks associated with changes in foreign currency exchange rates and interest rates, through a controlled program of risk management that includes, from time to time, the use of derivative financial instruments such as foreign currency forward contracts, cross currency swaps and interest rate swap agreements. Although, as set forth below, the Company's zero-coupon subordinated notes contained features were considered to be embedded derivative instruments, the Company does not hold or issue derivative financial instruments for trading purposes.

Foreign Currency Exchange Rates

Approximately 12.7% and 13.6% of the Company's revenues for the year ended December 31, 2019 and 2018, respectively, were denominated in currencies other than the U.S. dollar (USD). The Company's financial statements are reported in USD and, accordingly, fluctuations in exchange rates will affect the translation of revenues and expenses denominated in foreign currencies into USD for purposes of reporting the Company's consolidated financial results. In both 2019 and 2018, the most significant

currency exchange rate exposures were to the Canadian dollar, Swiss franc, euro and British pound. Excluding the impacts from any outstanding or future hedging transactions, a hypothetical change of 10% in average exchange rates used to translate all foreign currencies to USD would have impacted income before income taxes for 2019 by approximately $4.3. Gross accumulated currency translation adjustments recorded as a separate component of shareholders' equity were $104.4 and $(176.6) at December 31, 2019, and 2018, respectively. The Company does not have significant operations in countries in which the economy is considered to be highly inflationary.

The Company earns revenue from service contracts over a period of several months and, in some cases, over a period of several years. Accordingly, exchange rate fluctuations during this period may affect the Company's profitability with respect to such contracts. The Company is also subject to foreign currency transaction risk for fluctuations in exchange rates during the period of time between the consummation and cash settlement of transactions. The Company limits its foreign currency transaction risk through exchange rate fluctuation provisions stated in some of its contracts with customers, or it may hedge transaction risk with foreign currency forward contracts. At December 31, 2019, the Company had 34 open foreign exchange forward contracts with various amounts maturing monthly through January 2020 with a notional value totaling approximately $369.2. At December 31, 2018, the Company had 34 open foreign exchange forward contracts with various amounts maturing monthly through January 2019 with a notional value totaling approximately $487.9.

The Company is party to USD to Swiss Franc cross-currency swap agreements with an aggregate notional amount of $600.0, maturing in 2022 and 2025, as a hedge against the impact of foreign exchange movements on its net investment in a Swiss Franc functional currency subsidiary.

Interest Rates

Some of the Company's debt is subject to interest at variable rates. As a result, fluctuations in interest rates affect the Company's financial results. The Company attempts to manage interest rate risk and overall borrowing costs through an appropriate mix of fixed and variable rate debt including the utilization of derivative financial instruments, primarily interest rate swaps.

Borrowings under the Company's term loan credit facilities and revolving credit facility are subject to variable interest rates, unless fixed through interest rate swaps or other agreements. As of December 31, 2019, and 2018, the Company had approximately $375.0 and $0.0, respectively, of unhedged variable rate debt under the 2019 term loan credit facility and $0.0 and $527.1, respectively, under the 2017 term loan credit facility.

Each quarter-point increase or decrease in the variable rate would result in the Company's interest expense changing by approximately $0.9 per year for the Company's unhedged variable rate debt.

During the third quarter of 2013, the Company entered into two fixed-to-variable interest rate swap agreements for its 4.625% Senior Notes due 2020 with an aggregate notional amount of $600.0 and variable interest rates based on one-month London Interbank Offered Rate **(**LIBOR) plus 2.298% to hedge against changes in the fair value of a portion of the Company's long-term debt. The Company exited one of these swap arrangements in December 2019 in connection with the redemption of $187.9 of the 4.625% Senior Notes due 2020 and recorded a gain of $1.6.

On December 19, 2019, the Company redeemed any remaining outstanding zero-coupon subordinated notes due 2021 (the zero-coupon notes) that did not convert.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Information required by this item is incorporated by reference to the *Report of Independent Registered Public Accounting Firm* and the consolidated financial statements, related notes and supplementary data. See the Index on Page F-1.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not Applicable.

Item 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

As of the end of the period covered by this report, the Company carried out under the supervision and with the participation of the Company's management, including the Company's principal executive officer and principal financial officer, an evaluation of the effectiveness of the Company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended). Based upon this evaluation, the Company's principal executive officer and principal

financial officer concluded that the Company's disclosure controls and procedures were effective as of the end of the period covered by this annual report.

Changes in Internal Control over Financial Reporting

On June 3, 2019, the Company completed the acquisition of Envigo's nonclinical contract research services business. The Company's management has extended its oversight and monitoring processes that support internal control over financial reporting to include the acquired Envigo operations. The Company's management is continuing to integrate the acquired operations of Envigo's nonclinical contract research services business into the Company's overall internal control over financial reporting process. However, management has excluded these operations from its annual assessment of internal controls over financial reporting for the year ending December 31, 2019. There have been no changes in the Company's internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) during the quarter ended December 31, 2019, that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Report of Management on Internal Control over Financial Reporting

The Company's management 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 Securities Exchange Act of 1934).

The internal control over financial reporting at the Company was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the U.S. Internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the U.S.;
- provide reasonable assurance that receipts and expenditures of the Company are being made only in accordance with authorization of management and directors of the Company; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements.

The Company's management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019. Management based this assessment on criteria for effective internal control over financial reporting described in "Internal Control - Integrated Framework 2013" issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, the Company's management determined that, as of December 31, 2019, the Company maintained effective internal control over financial reporting. Management reviewed the results of its assessment with the Audit Committee of the Company's board of directors.

On June 3, 2019, the Company completed the acquisition of Envigo's nonclinical contract research services business. As a result, management has excluded Envigo from its assessment of internal control over financial reporting. Envigo is a wholly-owned subsidiary whose total assets and total revenues, excluded from management's assessment, represent 1.3% and 1.1%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, who audited and reported on the consolidated financial statements of the Company included in this annual report, also audited the effectiveness of the Company's internal control over financial reporting as of December 31, 2019, as stated in its report, which is included herein immediately preceding the Company's audited financial statements.

Item 9B. OTHER INFORMATION

None.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by the item regarding directors is incorporated by reference to the Company's Definitive Proxy Statement to be filed with the Securities and Exchange Commission in connection with the Annual Meeting of Stockholders to be held in 2020 (the 2020 Proxy Statement) under the caption Election of Directors. Information regarding executive officers is incorporated by reference to the Company's 2020 Proxy Statement under the caption Executive Officers. Information concerning the Company's Audit Committee, including the designation of audit committee financial experts and information regarding compliance with Section 16(a) of the Exchange Act responsive to this item is incorporated by reference to the Company's 2020 Proxy Statement under the captions Corporate Governance and Section 16(a) Beneficial Ownership Reporting Compliance respectively. Information concerning the Company's code of ethics is incorporated by reference to the Company's 2020 Proxy Statement under the caption Corporate Governance Policies and Procedures.

Item 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference to information in the 2020 Proxy Statement under the captions "Executive Compensation" and "Director Compensation."

Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

See Note 15 Stock Compensation Plans to the Consolidated Financial Statements for a discussion of the Company's Stock Compensation Plans. Except for the above referenced footnote, the information called for by this item is incorporated by reference to information in the 2020 Proxy Statement under the captions "Security Ownership of Certain Beneficial Holders and Management," "Compensation Discussion and Analysis" and "Executive Compensation."

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated by reference to information in the 2020 Proxy Statement under the captions "Board Independence" and "Related Party Transactions."

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item is incorporated by reference to information in the 2020 Proxy Statement under the caption "Fees to Independent Registered Public Accounting Firm."

PART IV

Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) List of documents filed as part of this report:

(1) Consolidated Financial Statements and Report of Independent Registered Public Accounting Firm included herein:

See Index on page F-1

(2) Financial Statement Schedules:

All schedules are omitted as they are inapplicable or the required information is furnished in the Consolidated Financial Statements or notes thereto.

(3) Index to and List of Exhibits

3.1	Amended and Restated Certificate of Incorporation of the Company dated May 24, 2001 (incorporated herein by reference to Exhibit 3.1 to the Company's Registration Statement on Form S-3, filed with the Commission on October 19, 2001, File No. 333-71896).
3.2	Amended and Restated By-Laws of the Company, as amended dated February 5, 2020*
4.1	Specimen of the Company's Common Stock Certificate (incorporated herein by reference to Exhibit 4.1 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2001).
4.2	Registration Rights Agreement, dated as of January 28, 2003, between the Company and the Initial Purchasers (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed with the Commission on February 3, 2003).
4.3	Indenture, dated as of November 19, 2010, between the Company and U.S. Bank National Association, as trustee (incorporated herein by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on November 19, 2010).
4.4	Second Supplemental Indenture, dated as of November 19, 2010, between the Company and U.S. Bank National Association, as trustee, including the form of the 2020 Notes (incorporated herein by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on November 19, 2010).
4.5	Third Supplemental Indenture, dated as of August 23, 2012, between the Company and U.S. Bank National Association, as trustee, including the form of the 2017 Notes (incorporated herein by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on August 23, 2012).
4.6	Fourth Supplemental Indenture, dated as of August 23, 2012, between the Company and U.S. Bank National Association, as trustee, including the form of the 2022 Notes (incorporated herein by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on August 23, 2012).
4.7	Fifth Supplemental Indenture, dated as of November 1, 2013, between the Company and U.S. Bank National Association, as trustee, including the form of the 2018 Notes (incorporated herein by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on November 1, 2013).
4.8	Sixth Supplemental Indenture, dated as of November 1, 2013, between the Company and U.S. Bank National Association, as trustee, including the form of the 2023 Notes (incorporated herein by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on November 1, 2013).
4.9	Seventh Supplemental Indenture, dated as of January 30, 2015, between the Company and U.S. Bank National Association, as trustee, including the form of the 2020 Notes (incorporated herein by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on January 30, 2015).
4.1	Eighth Supplemental Indenture, dated as of January 30, 2015, between the Company and U.S. Bank National Association, as trustee, including the form of the 2022 Notes (incorporated herein by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on January 30, 2015).
4.11	Ninth Supplemental Indenture, dated as of January 30, 2015, between the Company and U.S. Bank National Association, as trustee, including the form of the 2025 Notes (incorporated herein by reference to Exhibit 4.4 to the Company's Current Report on Form 8-K filed on January 30, 2015).
4.12	Tenth Supplemental Indenture, dated as of January 30, 2015, between the Company and U.S. Bank National Association, as trustee, including the form of the 2045 Notes (incorporated herein by reference to Exhibit 4.5 to the Company's Current Report on Form 8-K filed on January 30, 2015).
4.13	Eleventh Supplemental Indenture, dated as of August 22, 2017, between the Company and U.S. Bank National Association, as trustee, including the form of the 2024 Notes (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on August 22, 2017).
4.14	Twelfth Supplemental Indenture, dated as of August 22, 2017, between the Company and U.S. Bank National Association, as trustee, including the form of the 2027 Notes (incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on August 22, 2017).
4.15	Thirteenth Supplemental Indenture, dated as of November 25, 2019, between the Company and U.S. Bank National Association, as trustee, including the form of the 2024 Notes (incorporated herein by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on November 25, 2019).
4.16	Fourteenth Supplemental Indenture, dated as of November 25, 2019, between the Company and U.S. Bank National Association, as trustee, including the form of the 2029 Notes (incorporated herein by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on November 25, 2019).
4.17	Description of Securities*
10.1**	National Health Laboratories Incorporated Pension Equalization Plan (incorporated herein by reference to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 1992).
10.2**	Laboratory Corporation of America Holdings amended and restated new Pension Equalization Plan (incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the period ended September 30, 2004).

10.3**	First Amendment to the Laboratory Corporation of America Holdings amended and restated new Pension Equalization Plan (incorporated herein by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the period ended September 30, 2004).
10.4**	Second Amendment to the Laboratory Corporation of America Holdings amended and restated new Pension Equalization Plan. (incorporated herein by reference to Exhibit 10.4 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2004).
10.5**	Laboratory Corporation of America Holdings Senior Executive Transition Policy (incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the period ended June 30, 2004).
10.6**	Laboratory Corporation of America Holdings Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.22 the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2004).
10.7**	First Amendment to the Laboratory Corporation of America Holdings Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2004).
10.8**	Second Amendment to the Laboratory Corporation of America Holdings Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.8 to the Company's Quarterly Report on Form 10-Q for the period ended June 30, 2005).
10.9**	Third Amendment to the Laboratory Corporation of America Amended and Restated New Pension Equalization Plan (incorporated herein by reference Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q for the period ended June 30, 2005).
10.10**	Third Amendment to the Laboratory Corporation of America Holdings Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.28 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2006).
10.11**	Fourth Amendment to the Laboratory Corporation of America Holdings Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.34 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2007).
10.12**	Laboratory Corporation of America Holdings 2008 Stock Incentive Plan (incorporated herein by reference to Annex III to the Company's Definitive Proxy Statement on Schedule 14A filed on March 25, 2008).
10.13**	Amendment to Laboratory Corporation of America Holdings 2008 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 7, 2008).
10.14**	Laboratory Corporation of America Holdings Amended and Restated Master Senior Executive Severance Plan (incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2009).
10.15**	Laboratory Corporation of America Holdings Master Senior Executive Change in Control Severance Plan (incorporated herein by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2009).
10.16**	First Amendment to the Laboratory Corporation of America Holdings Master Senior Executive Change in Control Severance Plan (incorporated herein by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2010).
10.17**	Second Amendment to the Laboratory Corporation of America Holdings Master Senior Executive Change in Control Severance Plan (incorporated herein by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the period ended March 31, 2010).
10.18**	Laboratory Corporation of America Holdings 2012 Omnibus Incentive Plan (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May, 2, 2012).
10.19	Second Amended and Restated Credit Agreement, dated as of September 15, 2017, (originally dated as of December 21, 2011), among the Company, Bank of America, N.A. as Administrative Agent, Swing Line Lender and L/C Issuer, Wells Fargo Bank, National Association as Syndication Agent and L/C Issuer, Credit Suisse AG, Caymen Islands Branch as Documentation Agent and L/C Issuer, the Bank of Tokyo-Mitsubishi UFJ, LTD., Barclays Bank PLC, Credit Suisse AG, Cayman Islands Branch, KeyBank National Association, PNC Bank, National Association, TD Bank, N.A., and U.S. Bank National Association, as Documentation Agents, Merrill Lynch, Pierce, Fenner & Smith Incorporated, Wells Fargo Securities, LLC and Credit Suisse Securities (USA) LL as Joint Lead Arrangers and Joint Book Managers, and the lenders named therein (incorporated herein by reference to Exhibit 10.3 to the Company's Annual Report on Form 10-Q filed on November 2, 2017).
10.20**	Laboratory Corporation of America Holdings 2016 Omnibus Incentive Plan (incorporated by reference herein to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 16, 2016).
10.21**	Laboratory Corporation of America Holdings 2016 Employee Stock Purchase Plan (incorporated by reference herein to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 16, 2016).
10.22**	Retirement Agreement, dated February 8, 2019, by and between the Company and F. Samuel Eberts III (incorporated by reference herein to Exhibit 10.1 to the Company's Quarterly report on Form 10-Q filed on May 3, 2019).

10.23	Term Loan Credit Agreement, dated June 3, 2019, by and among Laboratory Corporation of America Holdings, Bank of America, N.A., as administrative agent, and the lenders party thereto (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 3, 2019).
10.24**	Executive Employment Agreement, dated June 4, 2019, by and between Laboratory Corporation of America Holdings and Adam H. Schechter (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 5, 2019).
10.25**	Transition Agreement dated August 6, 2019 between the Company and David P. King (incorporated by reference herein to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed on August 8, 2019).
21*	List of Subsidiaries of the Company
23.1*	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm
24.1*	Power of Attorney of Kerrii B. Anderson
24.2*	Power of Attorney of Jean-Luc Bélingard
24.3*	Power of Attorney of Jeffrey A. Davis
24.4*	Power of Attorney of D. Gary Gilliland, M.D., Ph.D.
24.5*	Power of Attorney of David P. King
24.6*	Power of Attorney of Garheng Kong, M.D., Ph.D.
24.7*	Power of Attorney of Peter M. Neupert
24.8*	Power of Attorney of Richelle P. Parham
24.9*	Power of Attorney of R. Sanders Williams, M.D.
31.1*	Certification by the Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a)
31.2*	Certification by the Chief Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a)
32*	Written Statement of Chief Executive Officer and Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. Section 1350)
101.INS*	Inline XBRL Instance Document - The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

*	Filed herewith
**	Management contracts or compensatory plans or arrangements

Item 16. FORM 10-K SUMMARY

None.

SIGNATURES

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.

LABORATORY CORPORATION OF AMERICA HOLDINGS
Registrant

By: /s/ ADAM H. SCHECHTER
Adam H. Schechter
President and Chief Executive Officer

Dated: February 28, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant on February 28, 2020 in the capacities indicated.

Signature	Title
/s/ ADAM H. SCHECHTER Adam H. Schechter	President and Chief Executive Officer (Principal Executive Officer)
/s/ GLENN A. EISENBERG Glenn A. Eisenberg	Executive Vice President, Chief Financial Officer (Principal Financial Officer)
/s/ PETER J. WILKINSON Peter J. Wilkinson	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)
* Kerrii B. Anderson	Director
* Jean-Luc Bélingard	Director
* Jeffrey A. Davis	Director
* D. Gary Gilliland, M.D., Ph.D.	Director
* David P. King	Executive Chairman of the Board, Director
* Garheng Kong, M.D., Ph.D.	Director
* Peter M. Neupert	Director
* Richelle Parham	Director
* R. Sanders Williams, M.D.	Director

* Sandra van der Vaart, by her signing her name hereto, does hereby sign this report on behalf of the directors of the Registrant after whose typed names asterisks appear, pursuant to powers of attorney duly executed by such directors and filed with the Securities and Exchange Commission.

By: /s/ Sandra van der Vaart
Sandra van der Vaart
Attorney-in-fact

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS
AND SCHEDULE

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Laboratory Corporation of America Holdings

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Laboratory Corporation of America Holdings and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, comprehensive earnings, changes in shareholders' equity and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (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 1 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 Report of Management on Internal Control over Financial Reporting appearing under Item 9A. 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.

As described in the Report of Management on Internal Control over Financial Reporting, management has excluded Envigo's nonclincial contract research services business (Envigo) from its assessment of internal control over financial reporting as of December 31, 2019, because it was acquired by the Company in a purchase business combination during 2019. We have also excluded Envigo from our audit of internal control over financial reporting. Envigo is a wholly-owned subsidiary whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting represent 1.3% and 1.1%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

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.

Valuation of LabCorp Diagnostics Segment (LCD) Net Accounts Receivable

As described in Notes 2 and 7 to the consolidated financial statements, the LCD business's revenues are distributed among four payer portfolios - clients, patients, Medicare and Medicaid, and third-party. LCD accounts receivable due from these payer portfolios was $798.1 million as of December 31, 2019. The Company has a formal process to estimate implicit price concessions for uncollectable accounts. The Company considers negotiated discounts and anticipated adjustments, including historical collection experience for each of the payer portfolios, when revenues and accounts receivable are recorded. Anticipated write-offs are recorded as an adjustment to revenue and at an amount considered necessary to record the revenue at its net realizable value. In addition to contractual discounts, other adjustments including anticipated payer denials and other external factors that could affect the collectability of its receivables are considered when determining revenue and the net receivable amounts.

The principal considerations for our determination that performing procedures relating to the valuation of LCD net accounts receivable is a critical audit matter are there was significant judgment and estimation by management to determine net accounts receivable related to the LCD segment. This in turn led to a high degree of auditor judgment, subjectivity and effort to evaluate the audit evidence obtained related to the valuation of net LCD accounts receivable. 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 LCD net accounts receivable, including controls over management's valuation analysis, data, and assumptions used to estimate amounts due from payers. These procedures also included, among others, testing management's process for developing the estimate of net accounts receivable, and the relevance of historical billing and collection data as an input to the analysis; testing the accuracy of a sample of revenue transactions and a sample of cash collections from the historical billing data and the historical collection which is used in management's analysis; and performing a retrospective comparison of actual cash collected to the prior year estimate of net accounts receivable.

Revenue Recognition - Estimating Costs to Complete for Clinical Research Services

As described in Note 21 to the consolidated financial statements, Covance Drug Development (CDD) revenue was $4,578.1 million for the year ended December 31, 2019. Clinical services utilizing the cost-based measure of progress account for 50% of CDD revenue. The majority of clinical development and commercialization service long-term contracts within the Covance Drug Development segment (CDD) are service contracts for clinical research that represent a single performance obligation (e.g., management of a clinical study). Revenue for these service contracts is recognized over time based on the progress of the performance obligation which was measured by the proportion of the actual costs incurred to the total costs expected to complete the contract (including labor and pass-through costs such as investigator grants and reimbursable out-of-pocket expenses). This cost-based method of revenue recognition required management to estimate the costs to complete these service contracts on an ongoing basis.

The principal considerations for our determination that performing procedures relating to estimating costs to complete for clinical research services is a critical audit matter are there was significant judgment and estimation by management when developing the costs to complete, including the labor and third party costs to complete the service contracts. This led to a high degree of auditor judgment, subjectivity and effort in evaluating evidence related to the cost estimates made by management.

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 revenue recognition process, including controls over the determination of estimated costs to complete. These procedures also included, among others, testing, for a sample of contracts, actual costs incurred and evaluating the reasonableness of management's estimation of costs to complete projects, including labor and third party costs to complete service contracts, based upon current scope, as well as evaluating whether the assumptions used were reasonable by performing a retrospective comparison of current year project costs to historical cost estimates made by management.

Acquisition of Nonclinical Contract Research Services Business of Envigo

As described in Note 3 to the consolidated financial statements, the Company acquired the nonclinical contract research services business of Envigo for consideration of $601.0 million in 2019, which resulted in $141.4 million of identifiable intangible assets. As disclosed, management applied significant judgment in estimating the fair value of identifiable intangible assets, which involved the use of significant estimates and assumptions with respect to the customer attrition rates and the discount rate.

The principal considerations for our determination that performing procedures relating to the acquisition of the nonclinical contract research services business of Envigo is a critical audit matter are there was significant judgment and estimation by management to determine the identifiable intangible assets. This in turn led to a high degree of auditor judgment, subjectivity and effort to evaluate the significant assumptions relating to the estimate, such as the customer attrition rates and the discount rate and to evaluate the audit evidence obtained related to the valuation of identifiable intangible assets acquired. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the 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 acquisition accounting, including controls over management's valuation of the identifiable intangible assets and controls over development of the assumptions related to the valuation of the identifiable intangible assets, including customer attrition rates and the discount rate. These procedures also included, among others, reading the purchase agreement, testing management's process for estimating the fair value of identifiable intangible assets, and testing management's significant assumptions used to estimate the fair value of the identifiable intangible assets. Testing management's process included evaluating the appropriateness of the valuation methods and the reasonableness of significant assumptions including customer attrition rates, and the discount rate for identifiable intangible assets. Evaluating the reasonableness of customer attrition rates involved considering past performance of the acquired business as well as economics and industry forecasts. The discount rate was evaluated by considering the costs of capital of comparable businesses and other industry factors. Professionals with specialized skill and knowledge were used to assist in testing the discount rate.

Goodwill Impairment Assessment - Reporting Unit within the Covance Drug Development Segment

As described in Notes 1 and 9 to the consolidated financial statements, the Company's consolidated goodwill balance was $7.9 billion as of December 31, 2019, and the goodwill associated with one of its reporting units within the Company's Covance Drug Development (CDD) segment was $2.2 billion. The Company assesses goodwill for impairment at least annually or whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Potential impairment is identified by comparing the fair value of a reporting unit to its carrying value, including goodwill. Fair value of a reporting unit is estimated using both income-based and market-based valuation methods. In particular, management's impairment analysis for this reporting unit utilized significant judgments and assumptions related to the market comparable method analysis, such as selected market multiples and related to cash flow projections, such as revenue and terminal growth rates, projected operating margin, and the discount rate.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the reporting unit within the CDD segment is a critical audit matter are there was significant judgment by management when developing the fair value estimate of the reporting unit. This in turn led to a high degree of auditor judgment, subjectivity, and audit effort in performing procedures to evaluate management's market comparable method analysis and cash flow projections, including significant assumptions for the selected market multiples, revenue and terminal growth rates, projected operating margin,

and the discount rate. Also, 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 management's goodwill impairment assessment, including controls over the significant assumptions used in the valuation of the reporting unit. These procedures also included, among others, testing management's process for estimating the fair value of the reporting unit which involved evaluating the appropriateness of the valuation methods and the reasonableness of significant assumptions used in the market comparable method analysis and cash flow projections, including the revenue and terminal growth rates, projected operating margin, discount rate and selected market multiples. Evaluating the reasonableness of the revenue and terminal growth rates and projected operating margin involved considering the past performance of the reporting unit and considering whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the appropriateness of the Company's valuation methods and the reasonableness of the significant assumptions, including (i) the terminal growth rates impacting the reporting unit's future cash flows, (ii) the selected market multiple applied to the reporting unit's financial information and (iii) the discount rate.

/s/ PricewaterhouseCoopers LLP
Raleigh, North Carolina
February 28, 2020

We have served as the Company's auditor since 1997.

PART I – FINANCIAL INFORMATION

Item 1. Financial Information

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(In Millions)

	December 31, 2019	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 337.5	$ 426.8
Accounts receivable	1,543.9	1,467.9
Unbilled services	481.4	394.4
Supplies inventory	244.7	237.3
Prepaid expenses and other	373.7	309.0
Total current assets	2,981.2	2,835.4
Property, plant and equipment, net	2,636.6	1,740.3
Goodwill, net	7,865.0	7,360.3
Intangible assets, net	4,034.5	3,911.1
Joint venture partnerships and equity method investments	84.9	60.5
Deferred income taxes	8.8	1.7
Other assets, net	435.4	276.0
Total assets	$ 18,046.4	$ 16,185.3
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 632.3	$ 634.6
Accrued expenses and other	942.4	870.0
Unearned revenue	451.0	356.4
Short-term operating lease liabilities	206.5	—
Short-term finance lease liabilities	8.4	7.9
Short-term borrowings and current portion of long-term debt	415.2	10.0
Total current liabilities	2,655.8	1,878.9
Long-term debt, less current portion	5,789.8	5,990.9
Operating lease liabilities	596.6	—
Financing lease liabilities	91.1	51.0
Deferred income taxes and other tax liabilities	942.8	940.0
Other liabilities	383.2	334.0
Total liabilities	10,459.3	9,194.8
Commitments and contingent liabilities		
Noncontrolling interest	20.1	19.1
Shareholders' equity		
Common stock, 97.2 and 98.9 shares outstanding at December 31, 2019 and 2018, respectively	9.0	11.7
Additional paid-in capital	26.8	1,451.1
Retained earnings	7,903.6	7,079.8
Less common stock held in treasury	—	(1,108.1)
Accumulated other comprehensive loss	(372.4)	(463.1)
Total shareholders' equity	7,567.0	6,971.4
Total liabilities and shareholders' equity	$ 18,046.4	$ 16,185.3

The accompanying notes are an integral part of these consolidated financial statements.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(In Millions, Except Per Share Data)

	Years Ended December 31,		
	2019	**2018**	**2017**
Revenues	$ 11,554.8	$ 11,333.4	$ 10,308.0
Cost of revenues	8,302.3	8,157.0	7,216.2
Gross profit	3,252.5	3,176.4	3,091.8
Selling, general and administrative expenses	1,624.5	1,570.9	1,499.2
Amortization of intangibles and other assets	243.2	231.7	216.5
Restructuring and other charges	54.6	48.1	70.9
Operating income	1,330.2	1,325.7	1,305.2
Other income (expense):			
Interest expense	(240.7)	(244.2)	(235.1)
Equity method income, net	9.8	11.6	11.3
Investment income	8.8	7.5	2.1
Other, net	(3.2)	167.7	(6.0)
Earnings before income taxes	1,104.9	1,268.3	1,077.5
Provision (benefit) for income taxes	280.0	384.4	(155.4)
Net earnings	824.9	883.9	1,232.9
Less: Net earnings attributable to the noncontrolling interest	(1.1)	(0.2)	(5.8)
Net earnings attributable to Laboratory Corporation of America Holdings	$ 823.8	$ 883.7	$ 1,227.1
Basic earnings per common share	$ 8.42	$ 8.71	$ 11.99
Diluted earnings per common share	$ 8.35	$ 8.61	$ 11.81

The accompanying notes are an integral part of these consolidated financial statements.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE EARNINGS
(In Millions, Except Per Share Data)

	Years Ended December 31,		
	2019	2018	2017
Net earnings	$ 824.9	$ 883.9	$ 1,232.9
Foreign currency translation adjustments	104.4	(176.6)	265.1
Net benefit plan adjustments	(17.4)	29.3	20.9
Other comprehensive earnings (loss) before tax	87.0	(147.3)	286.0
Provision (benefit) for income tax related to items of comprehensive earnings	3.7	17.9	(37.8)
Other comprehensive earnings (loss), net of tax	90.7	(129.4)	248.2
Comprehensive earnings	915.6	754.5	1,481.1
Less: Net earnings attributable to the noncontrolling interest	(1.1)	(0.2)	(5.8)
Comprehensive earnings attributable to Laboratory Corporation of America Holdings	$ 914.5	$ 754.3	$ 1,475.3

The accompanying notes are an integral part of these consolidated financial statements.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
(In Millions)

	Common Stock	Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Earnings (Loss)	Total Shareholders' Equity
BALANCE AT DECEMBER 31, 2016	$ 12.1	$ 2,131.7	$ 4,969.0	$ (1,012.7)	$ (581.9)	$ 5,518.2
Net earnings attributable to Laboratory Corporation of America Holdings	—	—	1,227.1	—	—	1,227.1
Other comprehensive earnings, net of tax	—	—	—	—	248.2	248.2
Issuance of common stock under employee stock plans	0.1	73.5	—	—	—	73.6
Net share settlement tax payments from issuance of stock to employees	—	—	—	(47.4)	—	(47.4)
Conversion of zero-coupon convertible debt	—	12.8	—	—	—	12.8
Stock compensation	—	109.7	—	—	—	109.7
Purchase of common stock	(0.2)	(337.9)	—	—	—	(338.1)
BALANCE AT DECEMBER 31, 2017	12.0	1,989.8	6,196.1	(1,060.1)	(333.7)	6,804.1
Net earnings attributable to Laboratory Corporation of America Holdings	—	—	883.7	—	—	883.7
Other comprehensive loss, net of tax	—	—	—	—	(129.4)	(129.4)
Issuance of common stock under employee stock plans	—	69.1	—	—	—	69.1
Net share settlement tax payments from issuance of stock to employees	—	—	—	(48.0)	—	(48.0)
Conversion of zero-coupon convertible debt	—	0.3	—	—	—	0.3
Stock compensation	—	91.6	—	—	—	91.6
Purchase of common stock	(0.3)	(699.7)	—	—	—	(700.0)
BALANCE AT DECEMBER 31, 2018	11.7	1,451.1	7,079.8	(1,108.1)	(463.1)	6,971.4
Net earnings attributable to Laboratory Corporation of America Holdings	—	—	823.8	—	—	823.8
Other comprehensive earnings, net of tax	—	—	—	—	90.7	90.7
Issuance of common stock under employee stock plans		64.7	—	—	—	64.7
Net share settlement tax payments from issuance of stock to employees	—	(0.5)	—	(40.1)	—	(40.6)
Stock compensation	—	107.0	—	—	—	107.0
Retirement of treasury stock	(2.4)	(1,145.8)	—	1,148.2	—	—
Purchase of common stock	(0.3)	(449.7)	—	—	—	(450.0)
BALANCE AT DECEMBER 31, 2019	$ 9.0	$ 26.8	$ 7,903.6	$ —	$ (372.4)	$ 7,567.0

The accompanying notes are an integral part of these consolidated financial statements.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In Millions)

	Years Ended December 31,		
	2019	**2018**	**2017**
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net earnings	$ 824.9	$ 883.9	$ 1,232.9
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation and amortization	577.2	552.1	533.2
Stock compensation	107.0	91.6	109.7
Loss (gain) on sale of business	13.2	(184.9)	—
Operating lease right-of-use asset expense	194.1	—	—
Deferred income taxes	29.2	22.2	(525.8)
Other	(6.5)	10.8	25.8
Change in assets and liabilities (net of effects of acquisitions and divestitures):			
(Increase) decrease in accounts receivable	(64.1)	50.2	(13.2)
(Increase) decrease in unbilled services	(59.0)	(81.0)	4.0
Increase in inventory	(21.9)	(18.9)	(16.4)
(Increase) decrease in prepaid expenses and other	(42.6)	(57.9)	19.8
Increase (decrease) in accounts payable	(12.8)	43.3	172.3
Increase (decrease) in deferred revenue	38.1	(33.8)	58.6
Increase (decrease) in accrued expenses and other	(132.1)	27.8	(102.8)
Net cash provided by operating activities	1,444.7	1,305.4	1,498.1
CASH FLOWS FROM INVESTING ACTIVITIES:			
Capital expenditures	(400.2)	(379.8)	(312.9)
Purchases of investments	(27.5)	(22.3)	(36.2)
Proceeds from sale of assets	7.7	50.1	5.5
Proceeds from sale or distributions of investments	11.2	—	—
Proceeds from sale of business	—	658.2	—
Proceeds from exit of swaps	1.7	18.3	—
Acquisition of licensing technology	—	—	(2.5)
Acquisition of businesses, net of cash acquired	(876.0)	(117.8)	(1,882.6)
Net cash (used for) provided by investing activities	(1,283.1)	206.7	(2,228.7)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceeds from Senior Notes offerings	1,050.0	—	1,200.0
Proceeds from term loan	850.0	—	750.0
Payments on term loan	(1,002.0)	(295.0)	(493.0)
Proceeds from revolving credit facilities	495.0	467.2	1,392.2
Payments on revolving credit facilities	(495.0)	(467.2)	(1,392.2)
Payments on Senior Notes	(687.9)	(400.0)	(500.1)
Payment of debt issuance costs	(11.6)	—	(15.3)
Other	(25.3)	(16.0)	(36.5)
Net share settlement tax payments from issuance of stock to employees	(40.6)	(48.0)	(47.4)
Net proceeds from issuance of stock to employees	64.7	69.1	73.6
Purchase of common stock	(450.0)	(700.0)	(338.1)
Net cash (used for) provided by financing activities	(252.7)	(1,389.9)	593.2
Effect of exchange rate changes on cash and cash equivalents	1.8	(12.0)	20.5
Net increase (decrease) in cash and cash equivalents	(89.3)	110.2	(116.9)
Cash and cash equivalents at beginning of period	426.8	316.6	433.6
Cash and cash equivalents included in assets held for sale	—	—	(0.1)
Cash and cash equivalents at end of period	$ 337.5	$ 426.8	$ 316.6

The accompanying notes are an integral part of these consolidated financial statements.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Financial Statement Presentation

Laboratory Corporation of America Holdings® together with its subsidiaries (the Company), is a leading global life sciences company that is deeply integrated in guiding patient care, providing comprehensive clinical laboratory and end-to-end drug development services. The Company's mission is to improve health and improve lives by delivering world-class diagnostic solutions, bringing innovative medicines to patients faster and using technology to provide better care. The Company serves a broad range of customers, including managed care organizations (MCOs), biopharmaceutical companies, governmental agencies, physicians and other healthcare providers (e.g. physician assistants and nurse practitioners, generally referred to herein as physicians), hospitals and health systems, employers, patients and consumers, contract research organizations (CROs) and independent clinical laboratories. During 2018, the Company sold its Covance Food Solutions (CFS) business, which provided food testing and integrity services, as well as its domestic and international forensic analysis businesses. During 2019, the Company's CDD segment completed the acquisition of Envigo's nonclinical contract research services business, expanding CDD's global nonclinical drug development capabilities with additional locations and resources. Additionally, the Company divested the Covance Research Products (CRP) business, which was part of the CDD segment, to Envigo. As part of this sale, CDD entered into a multi-year, renewable supply agreement with Envigo.

The Company reports its business in two segments, LabCorp Diagnostics (LCD) and Covance Drug Development (CDD). For further financial information about these segments, including information for each of the last three fiscal years regarding revenue, operating income, and other important information, see Note 21 Business Segment Information to the Consolidated Financial Statements. In 2019, LCD and CDD contributed 60% and 40%, respectively, of revenues to the Company, and in 2018 contributed 62% and 38%, respectively.

The consolidated financial statements include the accounts of the Company and its majority-owned subsidiaries for which it exercises control. Long-term investments in affiliated companies in which the Company exercises significant influence, but which it does not control, are accounted for using the equity method. Investments in which the Company does not exercise significant influence (generally, when the Company has an investment of less than 20% and no representation on the investee's board of directors) are accounted for at fair value or at cost minus impairment adjusted for observable price changes in orderly transactions for an identical or similar investment of the same issuer for those investments that do not have readily determinable fair values. All significant inter-company transactions and accounts have been eliminated. The Company does not have any variable interest entities or special purpose entities whose financial results are not included in the consolidated financial statements.

The financial statements of the Company's operating foreign subsidiaries are measured using the local currency as the functional currency. Assets and liabilities are translated at exchange rates as of the balance sheet date. Revenues and expenses are translated at average monthly exchange rates prevailing during the year. Resulting translation adjustments are included in "Accumulated other comprehensive income."

Recently Adopted Guidance

Leases

In February 2016, the Financial Accounting Standards Board (FASB) issued a new accounting standard that sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e., lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease. A lessee is also required to record a right-of-use (ROU) asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. The Company has elected to utilize the short-term lease exemption and not record leases with initial terms of 12 months or less on the balance sheet. The new standard requires lessors to account for leases using an approach that is substantially equivalent to existing guidance for sales-type leases and direct financing leases.

The Company adopted the standard on January 1, 2019, using the modified retrospective method. Comparative periods were not adjusted and are presented in accordance with lease guidance in effect for that period. The Company elected the package of practical expedients, which includes not reassessing whether existing contracts contain leases under the new definition of a lease, reassessing the classification of existing leases, and reassessing whether previously capitalized initial direct costs qualify for capitalization under the new standard. Leases with an initial term of 12 months or less are not recorded on the Consolidated Balance Sheets. Operating lease expense is recognized on a straight-line basis over the lease term.

Operating lease assets and liabilities are recognized at the commencement date, based on the present value of the future lease payments over the lease term. A certain number of these leases contain rent escalation clauses either fixed or adjusted periodically for inflation or market rates that are factored into the Company's determination of lease payments. The Company also has variable lease payments that do not depend on a rate or index, for items such as volume purchase commitments, which are recorded as variable cost when incurred. As most of the Company's leases do not provide an implicit rate, the Company estimates an incremental borrowing rate based on the credit quality of the Company and by comparing interest rates available in the market for similar borrowings, and adjusting this amount based on the impact of collateral over the term of each lease. The Company uses this rate to discount payments to present value. Some operating leases contain renewal options, some of which also include options to early terminate the leases. The exercise of these options is at the Company's discretion. The Company determined that all renewal options within leases for main laboratories, rapid response (STAT) laboratories, branches or combination sites were reasonably possible to be exercised and therefore are included in the accounting lease term.

The standard had a material impact in the consolidated balance sheets, but no material impact in the consolidated income statements. The most significant impact was the recognition of right-of-use (ROU) assets and lease liabilities for operating leases. See Note 5 Leases to the Consolidated Financial Statements.

Other

In July 2017, the FASB issued a new accounting standard intended to reduce the complexity associated with the issuer's accounting for certain financial instruments with characteristics of liabilities and equity. Specifically, a down round feature would no longer cause a free-standing equity-linked financial instrument (or embedded conversion option) to be accounted for as a derivative liability at fair value with changes in fair value recognized in current earnings. The Company adopted this standard effective January 1, 2019. The adoption of this standard did not have a material impact on the consolidated financial statements.

In February 2018, the FASB issued a new accounting standard update that gives entities the option to reclassify to retained earnings tax effects related to items in accumulated other comprehensive income that the FASB refers to as having been stranded in accumulated other comprehensive income as a result of tax reform. The Company's adoption of this standard effective January 1, 2019, did not have a material impact on the Company's consolidated financial statements.

Reimbursable Out-of-Pocket Expenses

CDD pays on behalf of its customers certain out-of-pocket costs for which the Company is reimbursed at cost, without mark-up or profit. Out-of-pocket costs paid by CDD are reflected in operating expenses, while the reimbursements received are reflected in revenues in the consolidated statements of operations.

Cost of Revenues

Cost of revenue includes direct labor and related benefit charges, other direct costs, shipping and handling fees, and an allocation of facility charges and information technology costs. Selling, general and administrative expenses consist primarily of administrative payroll and related benefit charges, advertising and promotional expenses, administrative travel and an allocation of facility charges and information technology costs. Cost of advertising is expensed as incurred.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires the Company to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported periods. Significant estimates include implicit price concessions, revenue estimates, the allowances for doubtful accounts, deferred tax assets, fair values of acquired assets and assumed liabilities in business combinations, amortization lives for acquired intangible assets, and accruals for self-insurance reserves, litigation reserves and pensions. The allowance for doubtful accounts is determined based on historical collections trends, the aging of accounts, current economic conditions and regulatory changes. Actual results could differ from those estimates.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents and accounts receivable.

The Company maintains cash and cash equivalents with various major financial institutions. The total cash and cash equivalent balances that exceeded the balances insured by the Federal Deposit Insurance Commission, were approximately $335.0 and $423.0 at December 31, 2019, and 2018, respectively.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

Substantially all of the Company's accounts receivable are with companies in the healthcare or biopharmaceutical industry and individuals. However, concentrations of credit risk are mitigated due to the number of the Company's customers as well as their dispersion across many different geographic regions.

Although LCD has receivables due from U.S. and state governmental agencies, the Company does not believe that such receivables represent a credit risk since the related healthcare programs are funded by U.S. and state governments, and payment is primarily dependent upon submitting appropriate documentation. Accounts receivable balances (gross) from Medicare and Medicaid were $81.4 and $88.8 at December 31, 2019, and 2018, respectively.

For the Company's operations in Ontario, Canada, the Ontario Ministry of Health and Long-Term Care (Ministry) determines who can establish a licensed community medical laboratory and caps the amount that each of these licensed laboratories can bill the government sponsored healthcare plan. The Ontario government-sponsored healthcare plan covers the cost of commercial laboratory testing performed by the licensed laboratories. The provincial government discounts the annual testing volumes based on certain utilization discounts and establishes an annual maximum it will pay for all community laboratory tests. The agreed-upon reimbursement rates are subject to Ministry review at the end of year and can be adjusted (at the government's discretion) based upon the actual volume and mix of test work performed by the licensed healthcare providers in the province during the year. The capitated accounts receivable balances from the Ontario government sponsored healthcare plan were CAD 3.2 and CAD 0.5 at December 31, 2019, and 2018, respectively.

The portion of the Company's accounts receivable due from patients comprises the largest portion of credit risk. At December 31, 2019, and 2018, receivables due from patients represented approximately 21.1% and 21.5% of the Company's consolidated gross accounts receivable, respectively. The Company applies assumptions and judgments including historical collection experience for assessing collectability and determining allowances for doubtful accounts for accounts receivable from patients.

Earnings per Share

Basic earnings per share is computed by dividing net earnings attributable to Laboratory Corporation of America Holdings by the weighted average number of common shares outstanding. Diluted earnings per share is computed by dividing net earnings including the impact of dilutive adjustments by the weighted average number of common shares outstanding plus potentially dilutive shares, as if they had been issued at the earlier of the date of issuance or the beginning of the period presented. Potentially dilutive common shares result primarily from the Company's outstanding stock options, restricted stock awards, performance share awards, and shares issuable upon conversion of zero-coupon subordinated notes.

The following represents a reconciliation of basic earnings per share to diluted earnings per share:

	2019			2018			2017		
	Income	Shares	Per Share Amount	Income	Shares	Per Share Amount	Income	Shares	Per Share Amount
Basic earnings per share	$ 823.8	97.9	$ 8.42	$ 883.7	101.4	$ 8.71	$1,227.1	102.4	$ 11.99
Stock options and stock awards	—	0.7		—	1.2		—	1.4	
Effect of convertible debt, net of tax	—	—		—	—		—	0.1	
Diluted earnings per share	$ 823.8	98.6	$ 8.35	$ 883.7	102.6	$ 8.61	$1,227.1	103.9	$ 11.81

The following table summarizes the potential common shares not included in the computation of diluted earnings per share because their impact would have been antidilutive:

	Years Ended December 31,		
	2019	2018	2017
Stock options	0.2	0.1	0.1

Stock Compensation Plans

The Company measures stock compensation cost for all equity awards at fair value on the date of grant and recognizes compensation expense over the service period for awards expected to vest. The fair value of restricted stock units is determined based on the number of shares granted and the quoted price of the Company's common stock on the grant date. The grant date fair value of performance awards is based on a Monte Carlo simulated fair value for the relative (as compared to the peer companies) total shareholder return component of the performance awards. Such value is recognized as expense over the service period, net of estimated forfeitures and the Company's determination of whether it is probable that the performance targets will be achieved. At the end of each reporting period, the Company reassesses the probability of achieving performance targets. The estimation of equity awards that will ultimately vest requires judgment and the Company considers many factors when estimating expected forfeitures,

(Dollars and shares in millions, except per share data)

including types of awards, employee class, and historical experience. Forfeitures are recognized as a reduction of compensation expense in earnings in the period in which they occur.

See Note 15 Stock Compensation Plans for assumptions used in calculating compensation expense for the Company's stock compensation plans.

Cash Equivalents

Cash and cash equivalents consist of highly liquid instruments, such as commercial paper, time deposits, and other money market instruments, substantially all of which have maturities when purchased of three months or less.

Supplies Inventory

Inventories, consisting primarily of purchased laboratory and customer supplies and finished goods, are stated at the lower of cost (first-in, first-out) or net realizable value. Supplies accounted for $228.3 and $200.1 and finished goods accounted for $16.4 and $37.2 of total inventory at December 31, 2019, and 2018, respectively.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost. Depreciation and amortization expense is computed on all classes of assets based on their estimated useful lives, as indicated below, using the straight-line method.

	Years
Buildings and building improvements	10 - 40
Machinery and equipment	3 - 10
Furniture and fixtures	5 - 10
Software	3 - 10

Leasehold improvements are amortized over the shorter of their estimated useful lives or the term of the related leases. Expenditures for repairs and maintenance are charged to operations as incurred. Retirements, sales and other disposals of assets are recorded by removing the cost and accumulated depreciation from the related accounts with any resulting gain or loss reflected in the consolidated statements of operations.

Capitalized Software Costs

The Company capitalizes purchased software which is ready for service and capitalizes software development costs incurred on significant projects starting from the time that the preliminary project stage is completed and the Company commits to funding a project until the project is substantially complete and the software is ready for its intended use. Capitalized costs include direct material and service costs and payroll and payroll-related costs. Research and development (R&D) costs and other computer software maintenance costs related to software development are expensed as incurred. Capitalized software costs are amortized using the straight-line method over the estimated useful life of the underlying system ranging from three to ten years, generally five years. Amortization begins once the underlying system is substantially complete and ready for its intended use.

Long-Lived Assets

The Company assesses goodwill and indefinite-lived intangibles for impairment at least annually or whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable.

Management performed its annual goodwill and intangible asset impairment testing as of the beginning of the fourth quarter of 2019. The Company elected to perform the qualitative assessment for goodwill and intangible assets for the domestic LCD reporting units, a quantitative assessment for the CDD reporting units and a quantitative assessment for the Canadian reporting unit and its indefinite-lived assets consisting of acquired Canadian licenses.

In the qualitative assessment, the Company considered relevant events and circumstances for each reporting unit, including (i) current year results, ii) financial performance versus management's annual and five-year strategic plans, iii) changes in the reporting unit carrying value since prior year, (iv) industry and market conditions in which the reporting unit operates, (v) macroeconomic conditions, including discount rate changes, and (vi) changes in products or services offered by the reporting unit. If applicable, performance in recent years was compared to forecasts included in prior valuations. Based on the results of the qualitative assessment, the Company concluded that it was not more likely than not that the carrying values of the goodwill and intangible assets were greater than their fair values, and that further quantitative testing was not necessary.

In 2019, the Company utilized a combination of income and market approaches to determine the fair value of the CDD reporting units and an income approach to determine the fair value of the Canadian reporting unit and its indefinite-lived assets consisting of acquired Canadian licenses. Based upon the results of the quantitative assessments, the Company concluded that the fair values of the goodwill and intangible assets, including the indefinite-lived Canadian licenses, was greater than the carrying value.

(Dollars and shares in millions, except per share data)

The Company will continue to monitor the financial performance of and assumptions for one of the CDD reporting units for which a combination of income and market approaches was performed in 2019 and where the fair value exceeded carrying value by approximately 10%. Goodwill for this reporting unit as of December 31, 2019, was $2.2 billion. Management's impairment analysis for this reporting unit utilized significant judgments and assumptions related to the market comparable method analysis, such as selected market multiples, and related to cash flow projections, such as revenue and terminal growth rates, projected operating margin,and the discount rate. A significant increase in the discount rate, decrease in the revenue and terminal growth rate, or decreased operating margin, or substantial reductions in end markets and volume assumptions could have a negative impact on the estimated fair value of this reporting unit. A future impairment charge for goodwill or intangible assets could have a material effect on the Company's consolidated financial position and results of operations. Management notes that a 1% change in the discount rate would reduce the headroom to approximately 1%.

Long-lived assets, other than goodwill and indefinite-lived assets, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable. Recoverability of assets to be held and used is determined by the Company at the level for which there are identifiable cash flows by comparison of the carrying amount of the assets to future undiscounted net cash flows before interest expense and income taxes expected to be generated by the assets. Impairment, if any, is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets (based on market prices in an active market or on discounted cash flows). Assets to be disposed of are reported at the lower of the carrying amount or fair value.

Intangible Assets

Intangible assets are amortized on a straight-line basis over the expected periods to be benefited, as set forth in the table below, such as legal life for patents and technology and contractual lives for non-compete agreements.

	Years		
Customer relationships	10	-	36
Patents, licenses and technology	3	-	15
Non-compete agreements	3		5
Trade names	1	-	15

Debt Issuance Costs

The costs related to the issuance of debt are capitalized, netted against the related debt for presentation purposes and amortized to interest expense over the terms of the related debt.

Professional Liability

The Company is self-insured (up to certain limits) for professional liability claims arising in the normal course of business, generally related to the testing and reporting of laboratory test results. The Company estimates a liability that represents the ultimate exposure for aggregate losses below those limits. The liability is based on assumptions and factors for known and incurred but not reported claims, including the frequency and payment trends of historical claims.

Income Taxes

The Company accounts for income taxes utilizing the asset and liability method. Under this method deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and for tax loss carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. The Company does not recognize a tax benefit unless the Company concludes that it is more likely than not that the benefit will be sustained on audit by the taxing authority based solely on the technical merits of the associated tax position. If the recognition threshold is met, the Company recognizes a tax benefit measured at the largest amount of the tax benefit that the Company believes is greater than 50% likely to be realized. The Company records interest and penalties in income tax expense.

Derivative Financial Instruments

Interest rate swap agreements, which have been used by the Company from time to time in the management of interest rate exposure, are accounted for at fair value.

The Company’s zero-coupon subordinated notes contained two features that were considered to be embedded derivative instruments under authoritative guidance in connection with accounting for derivative instruments and hedging activities. On

December 19, 2019, the Company redeemed any remaining outstanding zero-coupon notes that did not convert. The Company believes these embedded derivatives had no fair value at December 31, 2018.

Cross currency swap agreements, which have been used by the Company to hedge exposure of its net investment in a foreign subsidiary denominated in non-U.S. currency, are accounted for at fair value.

See Note 19 Derivative Instruments and Hedging Activities for the Company's objectives in using derivative instruments and the effect of derivative instruments and related hedged items on the Company's financial position, financial performance and cash flows.

Fair Value of Financial Instruments

Fair value measurements for financial assets and liabilities are determined based on the assumptions that a market participant would use in pricing an asset or liability. A three-tiered fair value hierarchy draws distinctions between market participant assumptions based on (i) observable inputs such as quoted prices in active markets (Level 1), (ii) inputs other than quoted prices in active markets that are observable either directly or indirectly (Level 2) and (iii) unobservable inputs that require the Company to use present value and other valuation techniques in the determination of fair value (Level 3).

Research and Development

The Company expenses R&D costs as incurred.

Foreign Currencies

For subsidiaries outside of the U.S. that operate in a local currency environment, income and expense items are translated to U.S. dollars at the monthly average rates of exchange prevailing during the period, assets and liabilities are translated at period-end exchange rates and equity accounts are translated at historical exchange rates. Translation adjustments are accumulated in a separate component of shareholders' equity in the consolidated balance sheets and are included in the determination of comprehensive income in the consolidated statements of comprehensive earnings and consolidated statements of changes in shareholders' equity. Transaction gains and losses are included in the determination of net income in the consolidated statements of operations.

New Accounting Pronouncements

In June 2016, the FASB issued a new accounting standard intended to provide financial statement users with more decision-useful information about expected credit losses and other commitments to extend credit held by the reporting entity. The standard replaces the incurred loss impairment methodology in current Generally Accepted Accounting Principles (GAAP) with one that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. The update is effective on January 1, 2020. The Company does not expect the adoption of this standard to have a material impact on the consolidated financial statements.

In August 2018, the FASB issued a new accounting standard to remove, modify, and add to the disclosure requirements on fair value measurements. The standard is effective on January 1, 2020. The Company does not expect the adoption of this new standard to have a material impact on the consolidated financial statements.

In August 2018, the FASB issued a new accounting standard to remove, modify, and add to the disclosure requirements on defined benefit pension and other postretirement plans. The standard is effective on January 1, 2021, with early adoption permitted. The Company is currently evaluating the impact this new standard will have on the consolidated financial statements.

In August 2018, the FASB issued a new accounting standard to align 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. The standard is effective on January 1, 2020. The Company does not expect the adoption of this standard to have a material impact on the consolidated financial statements.

In December 2019, the FASB issued a new accounting standard to simplify accounting for income taxes and remove, modify, and add to the disclosure requirements of income taxes. The standard is effective January 1, 2021, with early adoption permitted. The Company is currently evaluating the impact this new standard will have on the consolidated financial statements.

In January 2020, the FASB issued a new accounting standard to clarify the interaction of the accounting for equity securities and investments accounted for under the equity method of accounting and the accounting for certain forward contracts and purchased options. This standard is effective January 1, 2021. The Company is currently evaluating the impact this new standard will have on the consolidated financial statements.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

Reclassifications and Revisions

In conjunction with the adoption of the new lease standard, the Company reclassified the capital lease asset balance of $44.4 at December 31, 2018 from Property, plant and equipment, net to Other assets.

2. REVENUES

Description of Revenues

The Company's revenue by segment payers/customer groups for the years ended December 31, 2019, 2018 and 2017 is as follows:

	For the Year Ended December 31, 2019						
	U.S.	Canada	United Kingdom	Switzerland	Other Europe	Other	Total
Payer/Customer							
LCD							
Clients	16%	1%	—%	—%	—%	—%	17%
Patients	8%	—%	—%	—%	—%	—%	8%
Medicare and Medicaid	8%	—%	—%	—%	—%	—%	8%
Third-party	25%	2%	—%	—%	—%	—%	27%
Total LCD revenues by payer	57%	3%	—%	—%	—%	—%	60%
CDD							
Biopharmaceutical and medical device companies	21%	—%	4%	5%	3%	7%	40%
Total revenues	78%	3%	4%	5%	3%	7%	100%

	For the Year Ended December 31, 2018						
	U.S.	Canada	United Kingdom	Switzerland	Other Europe	Other	Total
Payer/Customer							
LCD							
Clients	17%	1%	—%	—%	—%	—%	18%
Patients	8%	—%	—%	—%	—%	—%	8%
Medicare and Medicaid	9%	—%	—%	—%	—%	—%	9%
Third-party	25%	2%	—%	—%	—%	—%	27%
Total LCD revenues by payer	59%	3%	—%	—%	—%	—%	62%
CDD							
Biopharmaceutical and medical device companies	19%	—%	4%	5%	3%	7%	38%
Total revenues	78%	3%	4%	5%	3%	7%	100%

	For the Year Ended December 31, 2017						
	U.S.	Canada	United Kingdom	Switzerland	Other Europe	Other	Total
Payer/Customer							
LCD							
Clients	19%	1%	—%	—%	—%	—%	20%
Patients	8%	—%	—%	—%	—%	—%	8%
Medicare and Medicaid	10%	—%	—%	—%	—%	—%	10%
Third-party	27%	2%	—%	—%	—%	—%	29%
Total LCD revenues by payer	64%	3%	—%	—%	—%	—%	67%
CDD							
Biopharmaceutical and medical device companies	15%	—%	3%	5%	3%	7%	33%
Total revenues	79%	3%	3%	5%	3%	7%	100%

The following is a description of the current revenue recognition policies of the Company:

LCD

LCD is an independent clinical laboratory business. It offers a comprehensive menu of frequently requested and specialty diagnostic tests through an integrated network of primary and specialty laboratories across the U.S. In addition to diagnostic testing along with occupational and wellness testing for employers and forensic DNA analysis, LCD also offered a range of other testing services.

Within the LCD segment, a revenue transaction is initiated when LCD receives a requisition order to perform a diagnostic test. The information provided on the requisition form is used to determine the party that will be billed for the testing performed and the expected reimbursement. LCD recognizes revenue and satisfies its performance obligation for services rendered when the testing process is complete and the associated results are reported. Sales are distributed among four payer portfolios - clients, patients, Medicare and Medicaid and third-party. LCD considers negotiated discounts and anticipated adjustments, including historical collection experience for the payer portfolio, when sales are recorded.

The following are descriptions of the LCD payer portfolios:

Clients

Client payers represent the portion of LCD's revenue related to physicians, hospitals, health systems, accountable care organizations (ACOs), employers and other entities where payment is received exclusively from the entity ordering the testing service. Generally, client sales are recorded on a fee-for-service basis at LCD's client list price, less any negotiated discount. A portion of client billing is for laboratory management services, collection kits and other non-testing services or products. In these cases, revenue is recognized when services are rendered or delivered.

Patients

This portfolio includes revenue from uninsured patients and member cost-share for insured patients (e.g., coinsurance, deductibles and non-covered services). Uninsured patients are billed based upon LCD's patient list fee schedules, net of any discounts negotiated with physicians on behalf of their patients. LCD bills insured patients as directed by their health plan and after consideration of the fees and terms associated with an established health plan contract.

Medicare and Medicaid

This portfolio relates to fee-for-service revenue from traditional Medicare and Medicaid programs. Revenue from these programs is based on the fee schedule established by the related government authority. In addition to contractual discounts, other adjustments including anticipated payer denials are considered when determining revenue. Any remaining adjustments to revenue are recorded at the time of final collection and settlement. These adjustments are not material to LCD's results of operations in any period presented.

Third-Party

Third-party includes revenue related to MCOs. The majority of LCD's third-party revenue is reimbursed on a fee-for-service basis. These payers are billed at LCD's established list price and revenue is recorded net of contractual discounts. The majority of LCD's MCO sales are recorded based upon contractually negotiated fee schedules with sales for non-contracted MCOs recorded based on historical reimbursement experience.

In addition to contractual discounts, other adjustments including anticipated payer denials are considered when determining revenue. Any remaining adjustments to revenue are recorded at the time of final collection and settlement. These adjustments are not material to LCD's results of operations in any period presented.

Third-party reimbursement is also received through capitation agreements with MCOs and independent physician associations (IPAs). Under capitated agreements, revenue is recognized based on a negotiated per-member, per-month payment for an agreed upon menu of tests, or based upon the proportionate share earned by LCD from a capitation pool. When the agreed upon reimbursement is based solely on an established rate per member, revenue is not impacted by the volume of testing performed. Under a capitation pool arrangement, the aggregate value of an established rate per member is distributed based on the volume and complexity of the procedures performed by laboratories participating in the agreement. LCD recognizes revenue monthly, based upon the established capitation rate or anticipated distribution from a capitated pool.

CDD

CDD is a CRO business that provides end-to-end drug development services from early-stage research to clinical trial management and beyond. CDD provides these services predominantly to biopharmaceutical and medical device companies worldwide. Because CDD's client base generally consumes these drug development services across the entire portfolio of CDD pre-clinical and clinical services offerings, there is little variability in the customer base of any particular CDD service offering. The nature of CDD's

obligations include agreements to provide preclinical services, to manage a full clinical trial, provide services for a specific phase of a trial, or provide research products to the customer. Generally, the amount of the transaction price estimated at the beginning of the contract is equal to the amount expected to be billed to the customer. Other payments may also factor into the calculation of transaction price, such as volume-based rebates that are retroactively applied to prior transactions in the period.

Historically, a majority of CDD's revenues have been earned under contracts that range in duration from a few months to a few years, but can extend in duration up to five years or longer. Occasionally, CDD also has entered into minimum volume arrangements with certain customers. Under these types of arrangements, if the annual minimum dollar value of a service commitment is not reached, the customer is required to pay CDD for the shortfall. Annual minimum commitment shortfalls are not recognized until the end of the period when the amount has been determined and agreed to by the customer.

CDD recognizes revenue either as services are performed or as products are delivered, depending on the nature of the work contracted. If performance is completed at a specific point in time, the Company evaluates the nature of the agreement to determine when the good or service is transferred into the customer's control.

Service contracts generally take the form of fee-for-service or fixed-price arrangements subject to pricing adjustments based on changes in scope. In cases where performance spans multiple accounting periods, revenue is recognized as services are performed, measured on a proportional-performance basis, using either input or output methods that are specific to the service provided. In an output method, revenue is determined by dividing the actual units of output achieved by the total units of output required under the contract and multiplying that percentage by the total contract value. The total contract value, or total contractual payments, represents the aggregate contracted price for each of the agreed upon services to be provided. When using an input method, revenue is recognized by dividing the actual units of input incurred by the total units of input budgeted in the contract, and multiplying that percentage by the total contract value. In each situation, the Company believes that the methods used most accurately depict the progress of the Company towards completing its obligations. Billing schedules and payment terms are generally negotiated on a contract-by-contract basis. In some cases, CDD bills the customer for the total contract value in progress-based installments as certain non-contingent billing milestones are reached over the contract duration. These milestones include, but are not limited to, contract signing, initial dosing, investigator site initiation, patient enrollment and/or database lock. The term "billing milestone" relates only to a billing trigger in a contract whereby amounts become billable and payable in accordance with a negotiated predetermined billing schedule throughout the term of a project. These billing milestones are generally not performance-based (i.e., there is no potential additional consideration tied to specific deliverables or performance). In other cases, billing and payment terms are tied to the passage of time (e.g., monthly billings). In either case, the total contract value and aggregate amounts billed to the customer would be the same at the end of the project.

Proportional performance contracts typically contain a single service (e.g., management of a clinical study) and therefore no allocation of the contract price is required. Fee-for-service contracts are typically priced based on transaction volume. Since the volume of activities in a fee-for-service contract is unspecified, the contract price is entirely variable and is allocated to the time period in which it is earned. For contracts that include multiple distinct goods and services, CDD allocates the contract price to the goods and services based on a customer price list, if available. If a price list is not available, CDD will estimate the transaction price using either market prices or an "expected cost plus margin" approach.

While CDD attempts to negotiate terms that provide for billing and payment of services prior or within close proximity to the provision of services, this is not always possible. While a project is ongoing, cash payments are not necessarily representative of aggregate revenue earned at any particular point in time, as revenues are recognized when services are provided, while amounts billed and paid are in accordance with the negotiated billing and payment terms.

In some cases, payments received are in excess of revenue recognized. For example, a contract invoicing schedule may provide for an upfront payment of 10% of the full contract value upon contract signing, but at the time of signing performance of services has not yet begun. Payments received in advance of services being provided are deferred as contract liabilities on the balance sheet. As the contracted services are subsequently performed and the associated revenue is recognized, the contract liability balance is reduced by the amount of revenue recognized during the period.

In other cases, services may be provided and revenue recognized before the customer is invoiced. In these cases, revenue recognized will exceed amounts billed, and the difference, representing a contract asset, is recorded for the amount that is currently not billable to the customer pursuant to contractual terms. Once the customer is invoiced, the contract asset is reduced for the amount billed, and a corresponding account receivable is recorded. All contract assets are billable to customers within one year from the respective balance sheet date.

Most contracts are terminable with or without cause by the customer, either immediately or upon notice. These contracts often require payment to CDD of expenses to wind-down the study or project, fees earned to date and, in some cases, a termination fee

(Dollars and shares in millions, except per share data)

or a payment to CDD of some portion of the fees or profits that could have been earned by CDD under the contract if it had not been terminated early. Termination fees are included in revenues when services are performed and realization is assured.

The following are descriptions of the full range of drug development services provided by CDD:

Preclinical services include fee-for-service activities such as bioanalytical testing services, and proportional performance activities such as toxicology studies. Until June 3, 2019, preclinical services also included the sale of research models. See Note 3 Business Acquisitions and Dispositions to the Consolidated Financial Statements for more information. Revenue for sale of research models was recognized at a point in time, typically upon shipment, when control transferred to the customer. Revenue for bioanalytical testing services is recognized at a point in time upon communication of results to the customer. Revenue for proportional performance activities, including toxicology studies, is recognized using an input-based measure of progress in which revenue is recognized as expenses are incurred for the research models, labor hours, and other costs attributable to the study.

Through its central laboratory, CDD produces and supplies specimen collection kits that are utilized in clinical studies, and provides transportation, project management, data management, and laboratory testing services on an as-needed basis throughout the duration of its customers' clinical studies. Revenue for central laboratory services is recognized using an output-based measure of progress based on volume of activities in each period. CDD also provides long-term specimen storage services, for which revenue is recognized using an input-based measure of progress based on costs incurred.

CDD provides clinical development and commercialization services, including clinical pharmacology services, full management of Phase II through IV clinical studies, and market access solutions. Revenue for clinical pharmacology services, which includes first-in-human trials, is recognized using an output-based measure of progress based on bed nights. Revenue for full service clinical studies is recognized using an input-based measure of progress based on costs incurred (including pass-through costs such as investigator grants and reimbursable out-of-pocket expenses). Revenue for market access solutions is recognized using various methods. Revenue for fee-for-service arrangements, such as reimbursement consulting hotlines and patient assistance programs, is recognized using an output method based on transaction volume which corresponds to the amount charged to the customer. For consulting services billed based on time and materials, revenue is recognized using the right to invoice practical expedient.

Contract costs

CDD incurs sales commissions in the process of obtaining contracts with customers, which are recoverable through the service fees in the contract. Sales commissions that are payable upon contract award are recognized as assets and amortized over the expected contract term, along with related payroll tax expense. The amortization of commission expense is based on the weighted average contract duration for all commissionable awards in the respective business in which the commission expense is paid, which approximates the period over which goods and services are transferred to the customer. The amortization period of sales commissions ranges from approximately 12-57 months, depending on the business. For businesses that enter primarily short-term contracts, the Company applies the practical expedient which allows costs to obtain a contract to be expensed when incurred if the amortization period of the assets that would otherwise have been recognized is one year or less. Amortization of assets from sales commissions is included in selling, general, and administrative expense.

CDD incurs costs to fulfill contracts with customers, which are recoverable through the service fees in the contract. Contract fulfillment costs include software implementation costs and setup costs for certain market access solutions. These costs are recognized as assets and amortized over the expected term of the contract to which the implementation relates, which is the period over which services are expected to be provided to the customer. This period typically ranges from 24-60 months. Amortization of deferred contract fulfillment costs is included in cost of goods sold.

	December 31, 2019	December 31, 2018
Sales commission assets	$ 28.6	$ 24.2
Deferred contract fulfillment costs	14.9	12.9
Total	$ 43.5	$ 37.1

Amortization related to sales commission assets and associated payroll taxes for the year ended December 31, 2019, 2018, and 2017 was $21.2, $16.9 and $14.3, respectively. Amortization related to deferred contract fulfillment costs for the years ended December 31, 2019, 2018 and 2017 was $8.7, $4.4 and $0.3, respectively. Impairment expense related to contract costs was immaterial to the Company's consolidated statement of operations. The Company applies the practical expedient to not recognize the effect of financing in its contracts with customers, when the difference in timing of payment and performance is one year or less.

Receivables, Unbilled Services and Unearned Revenue

Unbilled services are comprised primarily of unbilled receivables, but also include contract assets. A contract asset is recorded when a right to payment has been earned for work performed, but billing and payment for that work is determined by certain

(Dollars and shares in millions, except per share data)

contractual milestones, whereas unbilled receivables are billable upon the passage of time. While CDD attempts to negotiate terms that provide for billing and payment of services prior or in close proximity to the provision of services, this is not always possible and there are fluctuations in the level of unbilled services and unearned revenue from period to period. The following table provides information about receivables, unbilled services, and unearned revenue (contract liabilities) from contracts with customers for the CDD segment:

	December 31, 2019	December 31, 2018
Receivables, which are included in Accounts Receivable	$ 771.1	$ 693.6
Unbilled services	483.7	396.9
Unearned revenue	449.2	354.1

Revenue recognized during the period, that was included in the unearned revenue balance at the beginning of the period, for the year ended December 31, 2019, and 2018, was $250.2 and $204.0, respectively. Bad debt expense on receivables, for the year ended December 31, 2019 was immaterial to the Company’s consolidated statement of operations.

Performance Obligations Under Long-Term Contracts

Long-term contracts at the Company consist primarily of fully managed clinical studies within the CDD segment. The amount of existing performance obligations under such long-term contracts unsatisfied as of December 31, 2019, and 2018, was $4,520.8 and $3,784.7, respectively. The Company expects to recognize approximately 35.0% of the remaining performance obligations as of December 31, 2019, as revenue over the next 12 months, and the balance thereafter. The Company's long-term contracts generally range from 1 to 8 years.

The Company applied the practical expedient and does not disclose information about remaining performance obligations that have original expected durations of one year or less. The Company also did not disclose information about remaining performance obligations when the variable consideration was related to a wholly unsatisfied performance obligation within a series of obligations.

Within CDD, revenue of $88.9 and $21.0 was recognized during the year ended December 31, 2019, and December 31, 2018, respectively, from performance obligations that were satisfied in previous periods. This revenue comes from adjustments related to changes in scope and estimates in full service clinical studies.

3. BUSINESS ACQUISITIONS AND DISPOSITIONS

On June 3, 2019, the Company's CDD segment acquired Envigo's nonclinical contract research services business, expanding CDD's global nonclinical drug development capabilities with additional locations and resources. Additionally, the Company divested the CRP business, which was a part of the CDD segment, to Envigo. As part of this sale, CDD entered into a multi-year, renewable supply agreement with Envigo. The Company paid cash consideration of $601.0, received a floating rate secured note of $110.0, and recorded a loss on the sale of CRP of $12.2. The Company funded the transaction through a new term loan facility.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

The preliminary valuation of acquired assets and assumed liabilities as of June 3, 2019, include the following:

Consideration Transferred	
Cash consideration	$ 601.0
Fair value of CRP	110.0
Total	$ 711.0

	Initial	Measurement Period Adjustments	Preliminary December 31, 2019
Net Assets Acquired			
Cash and cash equivalents	$ 15.1	$ (3.7)	$ 11.4
Accounts receivable	16.5	(4.5)	12.0
Unbilled services	26.5	(0.3)	26.2
Inventories	4.5	—	4.5
Prepaid expenses and other	3.5	5.9	9.4
Property, plant and equipment (including ROU operating lease assets)	99.1	28.1	127.2
Deferred income taxes	25.5	(12.0)	13.5
Goodwill	432.2	(52.9)	379.3
Customer relationships	125.8	15.0	140.8
Trade name and trademarks	0.6	—	0.6
Other assets	9.9	—	9.9
Total assets acquired	759.2	(24.4)	734.8
Accounts payable	15.4	(0.2)	15.2
Accrued expenses and other	11.6	(1.5)	10.1
Unearned revenue	49.9	—	49.9
Operating lease liabilities	15.0	(15.0)	—
Other liabilities	66.3	(7.7)	58.6
Total liabilities acquired	158.2	(24.4)	133.8
Net Envigo assets acquired	601.0	—	$ 601.0
Floating rate secured note receivable due 2022	110.0		
Total	$ 711.0		

The preliminary purchase consideration for Envigo has been allocated to the estimated fair market value of the net assets acquired, including approximately $141.4 in identifiable intangible assets and a residual amount of non-tax-deductible goodwill of approximately $379.3. The amortization period for intangible assets acquired is 11 years for customer relationships.

The Envigo transaction contributed $124.2 and $17.9 of revenues and operating income, respectively, during the year ended December 31, 2019. The divested CRP business contributed operating income of $5.5 and $13.2 for the years ended December 31, 2019 and 2018, respectively.

The purchase price allocation for the Envigo transaction is still preliminary and subject to change. The areas of the purchase price allocation that are not yet finalized relate primarily to goodwill, and the impact of finalizing deferred taxes. Accordingly, adjustments may be made as additional information is obtained about the facts and circumstances that existed as of the valuation date. The Company expects these purchase price allocations to be finalized by the second quarter of 2020. Any adjustments will be recorded in the period in which they are identified.

During the year ended December 31, 2019, the Company also acquired various businesses and related assets for approximately $286.4 in cash (net of cash acquired). The purchase consideration for all acquisitions year to date has been allocated to the estimated fair market value of the net assets acquired, including approximately $184.3 in identifiable intangible assets and a residual amount of non-tax-deductible goodwill of approximately $115.1. The amortization periods for intangible assets acquired from these businesses range from 12 to 15 years for customer relationships. These acquisitions were made primarily to extend the Company's geographic reach in important market areas, enhance the Company's scientific differentiation and to expand the breadth and scope of the Company's CRO services. The excess of the fair value of the consideration conveyed over the fair value of the net assets acquired was recorded as goodwill. The goodwill reflects the Company's expectations to utilize the acquired businesses' workforce and established relationships and the benefits of being able to leverage operational efficiencies with favorable growth opportunities in these markets. A summary of the net assets acquired in 2019 for these businesses is included below:

(Dollars and shares in millions, except per share data)

	Amounts Acquired During Year Ended December 31, 2019 (excluding Envigo)
Accounts receivable	$ 2.2
Unbilled services	0.8
Inventories	4.4
Prepaid expenses and other	1.1
Property, plant and equipment (including ROU operating lease assets)	8.5
Goodwill	115.1
Intangible assets	184.3
Other assets	0.1
Total assets acquired	316.5
Accounts payable	1.5
Accrued expenses and other	14.1
Unearned revenue	3.6
Other liabilities	10.9
Total liabilities acquired	30.1
Net assets acquired	$ 286.4

Unaudited Pro Forma Information

The Company completed the Envigo acquisition on June 3, 2019. Had the Envigo acquisition as well as the aggregate of the Company's other 2019 acquisitions been completed as of January 1, 2017, the Company's pro forma results would have been as follows:

	Years Ended December 31,	
	2019	2018
Revenues	$ 11,742.5	$ 11,738.5
Net earnings attributable to Laboratory Corporation of America Holdings	831.4	906.6

During the year ended December 31, 2018, the Company acquired various businesses and related assets for approximately $117.8 in cash (net of cash acquired). The purchase consideration for all acquisitions year to date has been allocated to the estimated fair market value of the net assets acquired, including approximately $67.8 in identifiable intangible assets and a residual amount of non-tax-deductible goodwill of approximately $70.5. These acquisitions were made primarily to extend the Company's geographic reach in important market areas, enhance the Company's scientific differentiation and to expand the breadth and scope of the Company's CRO services. The excess of the fair value of the consideration conveyed over the fair value of the net assets acquired was recorded as goodwill. The goodwill reflects the Company's expectations to utilize the acquired businesses' workforce and established relationships and the benefits of being able to leverage operational efficiencies with favorable growth opportunities in these markets.

On April 30, 2018, the Company entered into a definitive agreement to sell the CFS business, a global provider of innovative product design and product integrity services for end-user segments that span the global food supply chain, for an all-cash purchase price of $670.0. The transaction closed on August 1, 2018, and a net gain of $258.3 was recorded in Other, net in the consolidated statement of operations.

The Company also divested its forensic testing services business in the U.K. and the U.S. on August 7, 2018, and December 31, 2018, respectively, resulting in losses of $48.9 and $24.5, respectively, recorded in Other, net in the consolidated statement of operations.

Operating income for the Company's businesses divested in 2018 was $7.6 and $12.9, for the years ended December 31, 2018, (which includes divested operations through their respective disposal dates) and December 31, 2017, respectively.

4. RESTRUCTURING AND OTHER CHARGES

During 2019, the Company recorded net restructuring charges of $54.6; $26.7 within LCD and $27.9 within CDD. The charges were comprised of $32.9 in severance and other personnel costs and $24.9 in facility-related costs primarily associated with general integration activities. The charges were offset by the reversal of previously established liability of $1.7 in unused severance and $1.5 in unused facility-related costs.

During 2018, the Company recorded net restructuring charges of $48.1; $20.5 within LCD and $27.6 within CDD. The charges were comprised of $40.3 in severance and other personnel costs and $11.8 in facility-related costs primarily associated with general

(Dollars and shares in millions, except per share data)

integration activities. The charges were offset by the reversal of previously established liability of $2.0 in unused severance and $2.0 in unused facility-related costs. The Company also recorded $2.3 in impairment to land held for sale which is included in amortization expense.

During 2017, the Company recorded net restructuring charges of $70.9; $16.8 within LCD and $54.1 within CDD. The charges were comprised of $36.1 in severance and other personnel costs, $18.8 in facility-related costs primarily associated with general integration activities, and an asset impairment loss of $20.9 related to the termination of a software development project within the CDD segment and the forgiveness of indebtedness for LCD customers in areas heavily impacted by hurricanes experienced during the third quarter of 2017. The charges were offset by the reversal of previously established liability of $0.5 in unused severance and $4.4 in unused facility-related costs.

The following represents the Company's restructuring activities for the period indicated:

	LCD		CDD		
	Severance and Other Employee Costs	Lease and Other Facility Costs	Severance and Other Employee Costs	Lease and Other Facility Costs	Total
Balance as of December 31, 2017	$ 1.7	$ 10.1	$ 8.3	$ 34.6	$ 54.7
Restructuring charges	16.2	5.4	24.1	6.4	52.1
Reduction of prior restructure accruals	(0.4)	(0.7)	(1.6)	(1.3)	(4.0)
Cash payments and other adjustments	(15.4)	(7.4)	(24.3)	(12.1)	(59.2)
Balance as of December 31, 2018	$ 2.1	$ 7.4	$ 6.5	$ 27.6	43.6
Reclassification for ASC 842 adoption	—	(5.7)	—	(27.1)	(32.8)
Restructuring charges	17.3	(1.8)	15.6	2.0	33.1
Impairment of operating lease ROU asset	—	11.8	—	12.9	24.7
Reduction of prior restructuring accruals	(0.2)	(0.4)	(1.5)	(1.1)	(3.2)
Cash payments and other adjustments	(18.7)	(8.6)	(15.1)	(9.6)	(52.0)
Balance as of December 31, 2019	$ 0.5	$ 2.7	$ 5.5	$ 4.7	$ 13.4
Current					$ 9.8
Non-current					3.6
					$ 13.4

The non-current portion of the restructuring liabilities is expected to be paid out over 4.4 years. Cash payments and other adjustments include the reclassification of profit sharing, pension, and holiday accrual.

5. LEASES

The Company has operating and finance leases for patient service centers, laboratories and testing facilities, clinical facilities, general office spaces, vehicles, and office and laboratory equipment. Leases have remaining lease terms of less than a year to 15 years, some of which include options to extend the leases for up to 15 years.

The components of lease expense were as follows:

	For the Year Ended December 31, 2019
Operating lease cost	$ 224.0
Finance lease cost:	
Amortization of right-of-use assets	$ 11.1
Interest on lease liabilities	6.7
Total finance lease cost	$ 17.8

(Dollars and shares in millions, except per share data)

Supplemental cash flow information related to leases was as follows:

	For the Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	$ (227.3)
Operating cash flows from finance leases	(6.7)
Financing cash flows from finance leases	(8.9)
ROU assets obtained in exchange for lease obligations:	
Operating leases	$ 132.6
Finance leases	0.2

Supplemental balance sheet information related to leases was as follows:

	December 31, 2019
Operating Leases	
Operating lease ROU assets (included in Property, plant and equipment, net)	$ 732.8
Short-term operating lease liabilities	206.5
Operating lease liabilities	596.6
Total operating lease liabilities	$ 803.1

	December 31, 2019
Finance Leases	
Finance lease ROU assets (included in Other assets)	$ 87.7
Short-term finance lease liabilities	8.4
Financing lease liabilities	91.1
Total finance lease liabilities	$ 99.5
Weighted Average Remaining Lease Term	
Operating leases	7.6
Finance leases	15.5
Weighted Average Discount Rate	
Operating leases	4.1%
Finance leases	5.2%

Maturities of lease liabilities are as follows:

Year Ended December 31, 2019	Operating Leases	Finance Leases
2020	$ 206.5	$ 15.8
2021	164.8	13.9
2022	121.0	12.6
2023	88.2	12.4
2024	67.6	10.9
Thereafter	289.9	96.8
Total lease payments	$ 938.0	$ 162.4
Less imputed interest	(134.9)	(62.9)
Less current portion	(206.5)	(8.4)
Total maturities, due beyond one year	$ 596.6	$ 91.1

Rental expense for short term leases with a term less than one year for the year ended December 31, 2019, amounted to $10.6. The Company has variable lease payments that do not depend on a rate or index, primarily for purchase volume commitments, which are recorded as variable cost when incurred. Total variable payments for the year ended December 31, 2019, were $20.8. As of December 31, 2019, the Company has entered into approximately 3 additional operating leases, for patient service centers, that have not yet commenced and are not significant to the overall lease portfolio. These operating leases will commence in 2020 with lease terms ranging from 5 to 9 years.

(Dollars and shares in millions, except per share data)

The Company leases various facilities and equipment under non-cancelable lease arrangements. Future minimum rental commitments for leases with non-cancelable terms of one year or more at December 31, 2018 under Accounting Standard Codification 840 are as follows:

	Operating Leases	Finance Leases
2019	$ 191.1	8.6
2020	145.4	8.0
2021	107.0	6.7
2022	80.9	6.0
2023	61.5	6.5
Thereafter	155.6	23.1

Rental expense, which includes rent for real estate, equipment and automobiles under operating leases,under ASC 842 amounted to $393.1 for the year ended December 31, 2019. Rent expense, which includes rent for real estate, equipment and automobiles under operating leases under ASC 840 amounted to $358.7 and $313.8 for the years ended December 31, 2018 and 2017, respectively.

6. JOINT VENTURE PARTNERSHIPS AND EQUITY METHOD INVESTMENTS

At December 31, 2019, the Company had investments in the following unconsolidated joint venture partnerships and equity method investments:

Locations	Net Investment	Interest Owned
Joint Venture Partnerships:		
Alberta, Canada (2)	$ 43.7	43.37%
Florence, South Carolina	10.3	49.00%
Buffalo, New York	16.6	48.18%
Equity Method Investments:		
Various	13.7	various

The joint venture partnerships are governed by agreements that mandate unanimous agreement between partners on all major business decisions as well as providing other participating rights to each partner. The equity method investments represent the Company’s purchase of ownership interests in clinical diagnostic companies. The investments are accounted for under the equity method of accounting as the Company does not have control of these investments. The Company has no material obligations or guarantees to, or in support of, these unconsolidated investments and their operations.

The Company’s investment in one of its Alberta joint venture partnerships at December 31, 2019, includes $34.0 of value assigned to that partnership’s Canadian license to conduct diagnostic testing services in the province. Substantially all of the joint venture's revenue is received as reimbursement from the Alberta government's healthcare programs (AHS). While the Canadian license provides the joint venture the ability to conduct diagnostic testing in Alberta, it does not guarantee that the provincial government will continue to reimburse diagnostic laboratory testing in future years at current levels. A decision by the provincial government to limit or reduce its reimbursement of laboratory diagnostic services would have a negative impact on the profits and cash flows the Company derives from the joint venture. In August 2016, AHS and the Canadian partnership reached an agreement to extend the contract for five additional years through March 2022, with the intent to have the services provided pursuant to the contract transferred to AHS at the end of the five-year period. In consideration of AHS acquiring the assets and assuming liabilities in accordance with the parties’ agreement, AHS will pay CAD 50.0 to the partnership when the transfer is effective, subject to a working capital adjustment. The Company is amortizing the value of the partnership's Canadian license to its residual value over the remaining term of the agreement. In December 2019, AHS issued a Request for Expression of Interest, that seeks to gauge market interest from private third parties for the provision of community lab services in Alberta. The Canadian partnership submitted a response indicating its interest in providing lab services.

7. ACCOUNTS RECEIVABLE

	December 31, 2019	December 31, 2018
LCD accounts receivable	$ 798.1	$ 793.3
CDD accounts receivable	764.8	690.3
Less CDD allowance for doubtful accounts	(19.0)	(15.7)
Accounts receivable	$ 1,543.9	$ 1,467.9

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

8. PROPERTY, PLANT AND EQUIPMENT, NET

	December 31, 2019	December 31, 2018
Land	$ 90.9	$ 77.4
Buildings and building improvements	781.8	703.7
Machinery and equipment	1,345.1	1,243.2
Software	794.9	714.6
Leasehold improvements	411.7	340.7
Furniture and fixtures	97.0	93.8
Construction in progress	311.1	304.8
Operating lease ROU assets	732.8	—
	4,565.3	3,478.2
Less accumulated depreciation	(1,928.7)	(1,737.9)
	$ 2,636.6	$ 1,740.3

Depreciation expense and amortization of property, plant and equipment was $321.5, $311.5 and $306.8 for 2019, 2018 and 2017, respectively, including software depreciation of $90.4, $92.7, and $85.6 for 2019, 2018 and 2017, respectively.

9. GOODWILL AND INTANGIBLE ASSETS

The changes in the carrying amount of goodwill (net of accumulated amortization) for the years ended December 31, 2019 and 2018 are as follows:

	LCD		CDD		Total	
	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018
Balance as of January 1	$ 3,638.8	$ 3,673.9	$ 3,721.5	$ 3,727.0	$ 7,360.3	$ 7,400.9
Goodwill acquired during the year	80.2	7.2	414.3	63.3	494.5	70.5
Dispositions	—	(34.9)	(12.6)	—	(12.6)	(34.9)
Foreign currency impact and other adjustments to goodwill	2.5	(7.4)	20.3	(68.8)	22.8	(76.2)
Balance at end of year	$ 3,721.5	$ 3,638.8	$ 4,143.5	$ 3,721.5	$ 7,865.0	$ 7,360.3

The components of identifiable intangible assets are as follows:

	December 31, 2019			December 31, 2018		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Customer relationships	$ 4,441.7	$ (1,329.5)	$ 3,112.2	$ 4,119.4	$ (1,146.7)	$ 2,972.7
Patents, licenses and technology	453.6	(235.7)	217.9	447.3	(211.2)	236.1
Non-compete agreements	90.9	(60.5)	30.4	76.8	(53.7)	23.1
Trade names	408.2	(219.9)	188.3	404.0	(189.1)	214.9
Land use rights	10.9	(5.5)	5.4	10.8	(4.1)	6.7
Canadian licenses	480.3	—	480.3	457.6	—	457.6
	$ 5,885.6	$ (1,851.1)	$ 4,034.5	$ 5,515.9	$ (1,604.8)	$ 3,911.1

A summary of amortizable intangible assets acquired during 2019, and their respective weighted average amortization periods are as follows:

	Amount	Weighted Average Amortization Period
Customer relationships	$ 308.6	13.6
Trade name	3.0	0.8
Land use rights	0.3	10.7
Non-compete agreements	14.0	4.8
	$ 325.9	13.1

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

Amortization of intangible assets, including amortization of the Canadian license recorded in other assets, was $243.2, $231.7 and $216.5 in 2019, 2018 and 2017, respectively. The Company recorded purchase accounting adjustments and impairment losses through amortization expense of $0.4, $4.5, and $3.0 in 2019, 2018 and 2017, respectively. Amortization expense of intangible assets is estimated to be $243.2 in fiscal 2020, $234.0 in fiscal 2021, $228.0 in fiscal 2022, $224.8 in fiscal 2023, $219.6 in fiscal 2024, and $2,315.7 thereafter.

10. ACCRUED EXPENSES AND OTHER

	December 31, 2019	December 31, 2018
Employee compensation and benefits	$ 474.6	$ 427.6
Accrued taxes payable	156.7	124.8
Other	311.1	317.6
	$ 942.4	$ 870.0

11. OTHER LIABILITIES

	December 31, 2019	December 31, 2018
Defined-benefit plan obligation	$ 188.4	$ 125.8
Deferred compensation plan obligation	76.7	64.2
Other	118.1	144.0
	$ 383.2	$ 334.0

12. DEBT

Short-term borrowings and current portion of long-term debt at December 31, 2019, and 2018 consisted of the following:

	December 31, 2019	December 31, 2018
Zero-coupon convertible subordinated notes	$ —	$ 8.7
4.625% senior notes due 2020	413.7	—
Debt issuance costs	(0.7)	(0.5)
Current portion of note payable	2.2	1.8
Total short-term borrowings and current portion of long-term debt	$ 415.2	$ 10.0

Long-term debt at December 31, 2019, and 2018 consisted of the following:

	December 31, 2019	December 31, 2018
4.625% senior notes due 2020	—	597.0
2.625% senior notes due 2020	—	500.0
3.75% senior notes due 2022	500.0	500.0
3.20% senior notes due 2022	500.0	500.0
4.00% senior notes due 2023	300.0	300.0
3.25% senior notes due 2024	600.0	600.0
3.60% senior notes due 2025	1,000.0	1,000.0
3.60% senior notes due 2027	600.0	600.0
4.70% senior notes due 2045	900.0	900.0
2.30% senior notes due 2024	400.0	—
2.95% senior notes due 2029	650.0	—
2019 term loan	375.0	—
2017 term loan	—	527.1
Debt issuance costs	(42.2)	(40.3)
Note payable	7.0	7.1
Total long-term debt	$ 5,789.8	$ 5,990.9

Credit Facilities

On June 3, 2019, the Company entered into a new $850.0 term loan (the 2019 Term Loan). The 2019 Term Loan will mature

on June 3, 2021. Proceeds of the 2019 Term Loan were used to repay approximately $250.0 of the 2017 Term Loan and to fund the acquisition of Envigo's nonclinical research services business.

The 2019 Term Loan accrues interest at a per annum rate equal to, at the Company's election, either a LIBOR rate plus a margin ranging from 0.55% to 1.175%, or a base rate determined according to a prime rate or federal funds rate plus a margin ranging from 0.0% to 0.175%. As of December 31, 2019, the effective interest rate on the 2019 Term Loan was 2.59%.

On September 15, 2017, the Company entered into a new $750.0 term loan (the 2017 Term Loan). The 2017 Term Loan accrued interest at a per annum rate equal to, at the Company's election, either a LIBOR rate plus a margin ranging from 0.875% to 1.50%, or a base rate determined according to a prime rate or federal funds rate plus a margin ranging from 0.0% to 0.50%. The 2017 Term Loan was fully repaid in 2019.

The Company also maintains a senior revolving credit facility consists of a five-year revolving facility in the principal amount of up to $1,000.0, with the option of increasing the facility by up to an additional $350.0, subject to the agreement of one or more new or existing lenders to provide such additional amounts and certain other customary conditions. The revolving credit facility also provides for a subfacility of up to $100.0 for swing line borrowings and a subfacility of up to $150.0 for issuances of letters of credit. The Company is required to pay a facility fee on the aggregate commitments under the revolving credit facility, at a per annum rate ranging from 0.10% to 0.25%. The revolving credit facility is permitted to be used for general corporate purposes, including working capital, capital expenditures, funding of share repurchases and certain other payments, acquisitions, and other investments. There were no balances outstanding on the Company's current revolving credit facility at December 31, 2019, or December 31, 2018. As of December 31, 2019, the effective interest rate on the revolving credit facility was 2.74%. The credit facility expires on September 15, 2022.

Under the Company's term loan facilities and the revolving credit facility, the Company is subject to negative covenants limiting subsidiary indebtedness and certain other covenants typical for investment grade-rated borrowers and the Company is required to maintain certain leverage ratios. The Company was in compliance with all covenants in its term loans and the revolving credit facility at December 31, 2019, and December 31, 2018.

The Company’s availability of $923.7 at December 31, 2019, under its revolving credit facility is reduced by the amount of the Company's outstanding letters of credit.

Zero-Coupon Convertible Subordinated Notes

During 2019 and 2018, the Company settled notices to convert $8.6 and $0.3 aggregate principal amount at maturity of its zero-coupon subordinated notes with a conversion value of $16.6 and $0.7, respectively. The total cash used for these settlements was $8.2 and $0.3 and the Company also issued 0.1 and 0.0 additional shares of common stock, respectively. As a result of these conversions in 2019 and 2018, the Company also reversed approximately $2.0 and $0.2, respectively, of deferred tax liability to reflect the tax benefit realized upon issuance of the shares. On December 19, 2019, the Company redeemed all remaining outstanding zero-coupon notes that did not convert. The Company had $8.6 aggregate principal amount at maturity of zero-coupon convertible subordinated notes due 2021 outstanding at December 31, 2018.

Senior Notes

On November 25, 2019, the Company issued $1,050.0 in debt securities, consisting of $400.0 aggregate principal amount of 2.300% Senior Notes due 2024 and $650.0 aggregate principal amount of 2.950% Senior Notes due 2029. The net proceeds from the new Senior Notes were used to redeem of all of the outstanding $500.0 principal amount of its 2.625% Senior Notes due February 1, 2020, redeem $187.9 of the outstanding 4.625% Senior Notes due November 15, 2020 in a tender offer, and to repay $348.3 outstanding under the Company's term loan credit facilities. The Company recorded a loss of $4.0 on the extinguishment of the 2.625% Senior Notes and part of the outstanding 4.625% Senior Notes.

During the first quarter of 2018, the Company entered into six U.S. dollar (USD) to Swiss Franc cross-currency swap agreements with an aggregate notional value of $600.0 and which were accounted for as a hedge against its net investment in a Swiss subsidiary. Of the notional value, $300.0 was due to mature in 2022 and $300.0 was due to mature in 2025. These cross currency swaps maturing in 2022 and 2025 were settled on December 10, 2018 in cash.

During the fourth quarter of 2018, the Company entered into six new USD to Swiss Franc cross-currency swap agreements with an aggregate notional value of $600.0 and which are accounted for as a hedge against its net investment in a Swiss subsidiary. Of the notional value, $300.0 matures in 2022 and $300.0 matures in 2025. These cross currency swaps maturing in 2022 and 2025 are included in other long-term assets with an aggregate fair value of $0.2 and $3.0, respectively, as of December 31, 2019. Changes in the fair value of the cross-currency swaps are charged or credited through accumulated other comprehensive income in the Consolidated Balance Sheet until the hedged item is recognized in earnings.

(Dollars and shares in millions, except per share data)

The scheduled payments of long-term debt at the end of 2019 are summarized as follows:

2020	$	415.9
2021		375.0
2022		1,000.0
2023		300.0
2024		1,000.0
Thereafter		3,157.0
Total scheduled payments		6,247.9
Less total debt issuance costs		(42.9)
Total long-term debt		6,205.0
Less current portion		(415.2)
Long-term debt, due beyond one year	$	5,789.8

13. PREFERRED STOCK AND COMMON SHAREHOLDERS' EQUITY

The Company is authorized to issue up to 265.0 shares of common stock, par value $0.10 per share. Common shares issued and outstanding are summarized in the following table:

	2019	2018
Issued	97.2	122.4
In treasury	—	(23.5)
Outstanding	97.2	98.9

The Company is authorized to issue up to 30.0 shares of preferred stock, par value $0.10 per share. There were no preferred shares outstanding as of December 31, 2019 and 2018.

The changes in common shares issued and held in treasury are summarized below:

Common Shares Issued

	2019	2018	2017
Common stock issued at January 1	122.4	125.1	125.6
Common stock issued under employee stock plans	1.2	1.6	1.7
Common stock issued upon conversion of zero-coupon subordinated notes	0.1	—	0.3
Retirement of treasury stock	(23.6)	—	—
Purchase of common stock	(2.9)	(4.3)	(2.5)
Common stock issued at December 31	97.2	122.4	125.1

Common Shares Held in Treasury

	2019	2018	2017
Common shares held in treasury at January 1	23.5	23.2	22.9
Surrender of restricted stock and performance share awards	0.1	0.3	0.3
Retirement of treasury shares	(23.6)	—	—
Common shares held in treasury at December 31	—	23.5	23.2

The Company's treasury shares are recorded at aggregate cost. During 2019, the board of directors approved the retirement of all current treasury shares and future shares received in settlement of tax liabilities related to restricted stock vesting.

Share Repurchase Program

On February 6, 2019, the board of directors replaced the Company's existing share repurchase plan with a new plan authorizing repurchase of up to $1,250.0 of the Company's shares. The repurchase authorization has no expiration date. During 2019, the Company purchased 2.9 shares of its common stock at an average price of $154.94 for a total cost of $450.0, of which $100.0 was repurchased prior to the new plan in February 2019. At the end of 2019, the Company had outstanding authorization from its board of directors to purchase $900.0 of Company common stock. When the Company repurchases shares for retirement, the amount paid to repurchase the shares in excess of the par or stated value is allocated to additional paid-in capital unless subject to limitation or the balance in additional paid-in-capital is exhausted. Remaining amounts are recognized as a reduction in retained earnings.

(Dollars and shares in millions, except per share data)

Accumulated Other Comprehensive Earnings

The components of accumulated other comprehensive earnings are as follows:

	Foreign Currency Translation Adjustments	Net Benefit Plan Adjustments	Accumulated Other Comprehensive Earnings
Balance at December 31, 2017	$ (240.7)	$ (93.0)	$ (333.7)
Current year adjustments	(176.6)	29.4	(147.2)
Amounts reclassified from accumulated other comprehensive income for settlement charge	—	(7.5)	(7.5)
Amounts reclassified from accumulated other comprehensive income *(a)*	—	7.4	7.4
Tax effect of adjustments	27.5	(9.6)	17.9
Balance at December 31, 2018	(389.8)	(73.3)	(463.1)
Current year adjustments	104.4	(22.5)	81.9
Amounts reclassified from accumulated other comprehensive income *(a)*	—	5.1	5.1
Tax effect of adjustments	—	3.7	3.7
Balance at December 31, 2019	$ (285.4)	$ (87.0)	$ (372.4)

(a) The amortization of prior service cost is included in the computation of net periodic benefit cost. Refer to Note 17 Pension and Postretirement Plans for additional information regarding the Company's net periodic benefit cost.

14. INCOME TAXES

The sources of income before taxes, classified between domestic and foreign entities are as follows:

	2019	2018	2017
Domestic	$ 784.4	$ 937.7	$ 838.8
Foreign	320.5	330.6	238.7
Total pre-tax income	$ 1,104.9	$ 1,268.3	$ 1,077.5

The provisions (benefits) for income taxes in the accompanying consolidated statements of operations consist of the following:

	Years Ended December 31,		
	2019	2018	2017
Current:			
Federal	$ 126.7	$ 225.8	$ 300.8
State	40.2	61.2	32.9
Foreign	83.9	64.3	53.0
	$ 250.8	$ 351.3	$ 386.7
Deferred:			
Federal	$ 38.2	$ (2.5)	$ (547.8)
State	2.5	30.0	11.4
Foreign	(11.5)	5.6	(5.7)
	29.2	33.1	(542.1)
	$ 280.0	$ 384.4	$ (155.4)

A net benefit of $1.6, $10.2 and $16.9 in excess stock-based compensation was recorded directly to income tax expense in the years ended December 31, 2019, 2018 and 2017 respectively. The gross benefit was reduced by the Internal Revenue Code Section 162(m) disallowance for non-deductible stock compensation of $30.0, $5.9 and $2.0 for the years ended December 31, 2019, 2018, and 2017, respectively. The 2019 Section 162(m) disallowance includes the accelerated expensing of stock-based compensation for executive retirement.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

The effective tax rates on earnings before income taxes are reconciled to statutory U.S. income tax rates as follows:

	Years Ended December 31,		
	2019	2018	2017
Statutory U.S. rate	21.0%	21.0%	35.0 %
State and local income taxes, net of U.S. Federal income tax effect	3.2	3.4	2.6
Foreign earnings taxed at lower rates than the statutory U.S. rate	(0.1)	(0.3)	(3.7)
Restructuring and acquisition items	0.7	1.9	0.6
Share-based compensation	(0.1)	(0.8)	(1.6)
Re-measurement of deferred taxes	—	2.4	(36.9)
Deferred taxes on unremitted foreign earnings	—	—	(16.6)
Repatriation tax	—	1.2	5.3
GILTI	1.1	1.0	—
Other	(0.5)	0.5	0.9
Effective rate	25.3%	30.3%	(14.4)%

In December 2017, the U.S. enacted the Tax Cuts and Jobs Act (TCJA), which made widespread changes to the Internal Revenue Code. The TCJA, among other things, reduced the U.S. federal corporate tax rate from 35.0% to 21.0% beginning January 1, 2018, requires companies to pay a repatriation tax on earnings of certain foreign subsidiaries that were previously not subject to U.S. tax, and created new income taxes on certain foreign sourced earnings. Also on December 22, 2017, the U.S. Securities and Exchange Commission (SEC) issued Staff Accounting Bulletin No. 118 (SAB 118), which provided companies with additional guidance on how to account for the TCJA in its financial statements, allowing companies utilize a one year measurement period. At December 31, 2017, the Company had not completed the accounting for the tax effects of enactment of the TCJA; however, a reasonable estimate on the re-measurement of the Company's existing deferred tax balances, the deferred tax revaluation for unremitted foreign earnings, and the one-time repatriation tax was made. For these items, in accordance with SAB 118, a provisional net benefit was recognized, totaling $519.0, which is included as a component of income tax expense from continuing operations. The Company continued to assess the impact of TCJA throughout the 2018 calendar year and finalized the SAB 118 provisional estimate in the fourth quarter of 2018. For 2018, the Company recorded a total tax expense of $45.0, $14.8 related to the repatriation tax and $30.1 for the remeasurement of deferred taxes. Overall a net benefit of $474.0 was recorded for TCJA tax provisions effective as of the end of 2018. As additional regulations or guidance in relation to the TCJA are issued, the Company will analyze and record the necessary impacts during the quarter in which this occurs.

The TCJA includes provisions relating to global low-taxed intangible income (GILTI). The Company finalized its decision on accounting policy during the fourth quarter of 2018. The Company will account for GILTI as a periodic charge in the period it arises. The Company recorded $11.8 and $13.0 in 2019 and 2018 for GILTI, which is included as a component of income tax expense from continuing operations.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities are as follows:

	December 31, 2019	December 31, 2018
Deferred tax assets:		
Accounts receivable	$ 16.9	$ 13.9
Employee compensation and benefits	105.1	104.4
Operating lease liability	191.4	—
Acquisition and restructuring reserves	9.9	16.8
Tax loss carryforwards	207.1	209.0
Other	62.9	34.5
	593.3	378.6
Less: valuation allowance	(145.4)	(156.9)
Deferred tax assets, net of valuation allowance	$ 447.9	$ 221.7
Deferred tax liabilities:		
Right of use asset	$ (177.3)	$ —
Intangible assets	(910.5)	(891.8)
Property, plant and equipment	(194.6)	(182.8)
Other	(57.4)	(31.4)
Total gross deferred tax liabilities	(1,339.8)	(1,106.0)
Net deferred tax liabilities	$ (891.9)	$ (884.3)

The table below provides a rollforward of the valuation allowance.

	December 31, 2019	December 31, 2018	December 31, 2017
Beginning balance	$ 156.9	$ 153.5	$ 31.3
Additions charged to expense	—	3.4	11.5
Reductions and other adjustments	(11.5)	—	110.7
Ending balance	$ 145.4	$ 156.9	$ 153.5

The Company has U.S. federal tax loss carryforwards of approximately $209.5, which expire periodically through 2036, as well as post 2017 carryovers of $6.1 that are limited to 80% of taxable income and have an indefinite carryover. The utilization of tax loss carryforwards is limited due to change of ownership rules; however, at this time, the Company expects to fully utilize substantially all U.S. federal tax loss carryforwards with the exception of approximately $3.9 for which a full valuation allowance has been provided. The Company has U.S. state tax loss carryforwards of $594.1, which also expire periodically through 2038, and on which a valuation allowance of $311.4 has been provided. In addition to federal and state tax loss carryforwards, the Company has other federal and state attribute carryforwards of $252.5. These attribute carryforwards have indefinite lives and a valuation allowance of $209.6. The Company has foreign tax loss carryforwards of $116.9 which have an indefinite life and on which a valuation allowance of $26.7 has been provided, as well as foreign tax loss carryforwards of $443.8 which expire in 2034 that have a full valuation allowance. In addition to the foreign net operating losses, the Company has a foreign capital loss carryforward of $6.9. The foreign capital loss carryforward has an indefinite life and has a full valuation allowance.

The valuation allowance decreased from $156.9 in 2018 to $145.4 in 2019 primarily due to issuance of final guidance for tax laws affecting anticipated utilization of state NOLs.

Unrecognized income tax benefits were $31.7 and $18.0 at December 31, 2019, and 2018, respectively. It is anticipated that the amount of the unrecognized income tax benefits will change within the next 12 months; however, these changes are not expected to have a significant impact on the results of operations, cash flows or the financial position of the Company.

The Company recognizes interest and penalties related to unrecognized income tax benefits in income tax expense. Accrued interest and penalties related to uncertain tax positions totaled $5.5 and $8.7 as of December 31, 2019, and 2018, respectively. During the years ended December 31, 2019, 2018 and 2017, the Company recognized $2.0, $1.8 and $2.3, respectively, in interest and penalties expense, which was offset by a benefit from reversing previous accruals for interest and penalties of $5.8, $0.5 and $4.3, respectively. During 2019, the Company paid interest of $0.2, and $0.8 was added to the accrued interest from the opening balance sheet of an acquisition.

(Dollars and shares in millions, except per share data)

The following table shows a reconciliation of the unrecognized income tax benefits, excluding interest and penalties, from uncertain tax positions for the years ended December 31, 2019, 2018 and 2017:

	2019	2018	2017
Balance as of January 1	$ 18.0	$ 19.5	$ 18.4
Increase in reserve for tax positions taken in the current year	10.3	3.1	7.3
Increase in reserve from an acquisition's opening balance sheet	8.4	—	—
Decrease in reserve as a result of payments	(0.8)	(4.6)	—
Decrease in reserve as a result of lapses in the statute of limitations	(4.2)	—	(6.2)
Balance as of December 31	$ 31.7	$ 18.0	$ 19.5

As of December 31, 2019, and 2018, $31.7 and $18.0, respectively, are the approximate amounts of unrecognized income tax benefits that, if recognized, would favorably affect the effective income tax rate in any future periods.

The Company has substantially concluded all U.S. federal income tax matters for years through 2015. Substantially all material state and local and foreign income tax matters have been concluded through 2013 and 2010, respectively.

The Internal Revenue Service concluded the examination of Covance Inc.'s 2013 federal consolidated income tax return in the third quarter of 2018. There were no material changes as a result of the audit. The Company is appealing a Canada Revenue Agency assessment related to the 2014 income tax return. The Company believes adequate reserves have been established for the assessment. The Company has various state and foreign income tax examinations ongoing throughout the year. The Company believes adequate provisions have been recorded related to all open tax years.

As a result of the TCJA, the Company was effectively taxed on all of its previously unremitted foreign earnings. The TCJA also enacts a territorial tax system that allows, for the most part, tax-free repatriation of foreign earnings. The Company still considers the earnings of its foreign subsidiaries to be permanently reinvested, but if repatriation were to occur the Company would be required to accrue U.S. taxes, if any, and applicable withholding taxes as appropriate. The Company has unremitted earnings and profits of $601.4 and $490.1 that are permanently reinvested in its foreign subsidiaries as of December 31, 2019, and 2018, respectively. A determination of the amount of the unrecognized deferred tax liability related to these undistributed earnings is not practicable due to the complexity and variety of assumptions necessary based on the manner in which the undistributed earnings would be repatriated.

15. STOCK COMPENSATION PLANS

Stock Incentive Plans

There are currently 9.8 shares authorized for issuance under the Laboratory Corporation of America Holdings 2016 Omnibus Incentive Plan (the Plan), and at December 31, 2019 there were 6.3 additional shares available for grant under the Plan. The Plan was approved by shareholders at the 2016 annual meeting.

Stock Options

The following table summarizes grants of non-qualified options made by the Company to officers, key employees, and non-employee directors under all plans. Stock options are generally granted at an exercise price equal to or greater than the fair market price per share on the date of grant. Also, for each grant, options vest ratably over a period of three years on the anniversaries of the grant date, subject to their earlier expiration or termination.

Changes in options outstanding under the plans for the period indicated were as follows:

	Number of Options	Weighted-Average Exercise Price per Option	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at December 31, 2018	0.8	100.30		
Granted	0.2	163.80		
Exercised	(0.3)	85.74		
Cancelled	(0.1)	151.21		
Outstanding at December 31, 2019	0.6	125.26	5.4	$ 27.3
Vested and expected to vest at December 31, 2019	0.6	125.26	2.9	$ 24.5
Exercisable at December 31, 2019	0.4	99.86	2.9	$ 24.5

The aggregate intrinsic value in the table above represents the total pre-tax intrinsic value (the difference between the Company's closing stock price on the last trading day of 2019 and the exercise price, multiplied by the number of in-the-money options) that

(Dollars and shares in millions, except per share data)

would have been received by the option holders had all option holders exercised their options on December 31, 2019. The amount of intrinsic value will change based on the fair market value of the Company's stock.

Cash received by the Company from option exercises, the actual tax benefit realized for the tax deductions and the aggregate intrinsic value of options exercised from option exercises under all share-based payment arrangements during the years ended December 31, 2019, 2018, and 2017 were as follows:

	2019	2018	2017
Cash received by the Company	$ 27.6	$ 37.5	$ 43.9
Tax benefits realized	$ 6.9	$ 9.4	$ 13.4
Aggregate intrinsic value	$ 24.5	$ 44.1	$ 34.8

The following table shows the weighted average grant-date fair values of options issued during the respective year and the weighted average assumptions that the Company used to develop the fair value estimates:

	2019 Grant Dates			
	November 1	November 1	February 12	2018
Fair value per option	$ 39.85	$30.39	$ 34.40	$ 44.37
Valuation assumptions				
Weighted average expected life (in years)	6.0	6.0	6.0	6.0
Risk free interest rate	1.6%	1.6%	2.5%	2.7%
Expected volatility	20.8%	20.8%	20.0%	18.9%
Expected dividend yield	N/A	N/A	N/A	N/A

The Black Scholes model incorporates assumptions to value stock-based awards. The risk-free interest rate for periods within the contractual life of the option is based on a zero-coupon U.S. government instrument over the contractual term of the equity instrument. Expected volatility of the Company's stock is based on historical volatility of the Company's stock. The Company estimates expected option terms through an analysis of actual, historical post-vesting exercise, cancellation and expiration behavior by employees and projected post-vesting activity of outstanding options. Groups of employees and non-employee directors that have similar exercise behavior with regard to option exercise timing and forfeiture rates are considered separately for valuation purposes. For 2019, 2018 and 2017, expense related to the Company's stock option plan totaled $5.9, $3.5 and $0.9, respectively, and is included in selling, general and administrative expenses. The Company did not grant any options to employees during 2017.

Restricted Stock, Restricted Stock Units and Performance Shares

The Company grants restricted stock, restricted stock units and performance shares (non-vested shares) to officers and key employees and grants restricted stock and restricted stock units to non-employee directors. Restricted stock and units typically vest annually in equal one third increments beginning on the first anniversary of the grant. A performance share grant in 2017 represents a three-year award opportunity for the period 2017-2019, and if earned, vests fully (to the extent earned) in the first quarter of 2020. A performance share grant in 2018 represents a three-year award opportunity for the period of 2018-2020 and, if earned, vests fully (to the extent earned) in the first quarter of 2021. A performance share grant in 2019 represents a three-year award opportunity for the period of 2019-2021 and, if earned, vests fully (to the extent earned) in the first quarter of 2022. Performance share awards are subject to certain earnings per share, revenue and total shareholder return targets, the achievement of which may increase or decrease the number of shares which the grantee earns and therefore receives upon vesting. Unearned restricted stock and performance share compensation is amortized to expense, when probable, over the applicable vesting periods. For 2019, 2018 and 2017, total restricted stock, restricted stock unit and performance share compensation expense was $91.2, $80.1 and $100.8, respectively, and is included in selling, general and administrative expenses.

The following table shows a summary of non-vested shares for the year ended December 31, 2019:

	Number of Shares	Weighted-Average Grant Date Fair Value
Non-vested at January 1, 2019	1.3	$ 140.58
Granted	0.9	150.29
Vested	(0.8)	120.22
Canceled	(0.1)	153.10
Non-vested at December 31, 2019	1.3	$ 152.70

(Dollars and shares in millions, except per share data)

As of December 31, 2019, there was $112.2 of total unrecognized compensation cost related to non-vested stock options, restricted stock, restricted stock unit and performance share-based compensation arrangements granted under the Company's stock incentive plans. That cost is expected to be recognized over a weighted average period of 2.2 years and will be included in selling, general and administrative expenses.

Employee Stock Purchase Plan

Under the 2016 Employee Stock Purchase Plan, the Company is authorized to issue 1.8 shares of common stock. The plan permits substantially all employees to purchase a limited number of shares of Company stock at 85% of market value. The Company issues shares to participating employees semi-annually in January and July of each year. Approximately 0.2 shares were purchased by eligible employees in each of 2019, 2018 and 2017, respectively, under either the 2016 Employee Stock Purchase Plan or the prior plan, which began in 1997 and was amended in 1999, 2004, 2008 and 2012. For 2019, 2018 and 2017, expense related to the Company's employee stock purchase plan was $9.9, $8.0 and $8.0, respectively.

The Company uses the Black-Scholes model to calculate the fair value of the employee's purchase right. The fair value of the employee's purchase right and the assumptions used in its calculation are as follows:

	2019	2018	2017
Fair value of the employee's purchase right	$ 31.84	$ 34.43	$ 31.54
Valuation assumptions			
Risk free interest rate	1.9%	2.3%	1.3%
Expected volatility	0.2	0.2	0.2
Expected dividend yield	—	—	—

16. COMMITMENTS AND CONTINGENT LIABILITIES

The Company is involved from time to time in various claims and legal actions, including arbitrations, class actions, and other litigation (including those described in more detail below), arising in the ordinary course of business. Some of these actions involve claims that are substantial in amount. These matters include, but are not limited to, intellectual property disputes; commercial and contract disputes; professional liability claims; employee-related matters; and inquiries, including subpoenas and other civil investigative demands, from governmental agencies, Medicare or Medicaid payers and MCOs reviewing billing practices or requesting comment on allegations of billing irregularities that are brought to their attention through billing audits or third parties. The Company receives civil investigative demands or other inquiries from various governmental bodies in the ordinary course of its business. Such inquiries can relate to the Company or other parties, including physicians and other health care providers. The Company works cooperatively to respond to appropriate requests for information.

The Company also is named from time to time in suits brought under the *qui tam* provisions of the False Claims Act and comparable state laws. These suits typically allege that the Company has made false statements and/or certifications in connection with claims for payment from U.S. federal or state healthcare programs. The suits may remain under seal (hence, unknown to the Company) for some time while the government decides whether to intervene on behalf of the *qui tam* plaintiff. Such claims are an inevitable part of doing business in the healthcare field today.

The Company believes that it is in compliance in all material respects with all statutes, regulations and other requirements applicable to its commercial laboratory operations and drug development support services. The healthcare diagnostics and drug development industries are, however, subject to extensive regulation, and the courts have not interpreted many of the applicable statutes and regulations. Therefore, the applicable statutes and regulations could be interpreted or applied by a prosecutorial, regulatory or judicial authority in a manner that would adversely affect the Company. Potential sanctions for violation of these statutes and regulations include significant civil and criminal penalties, fines, the loss of various licenses, certificates and authorizations, additional liabilities from third-party claims, and/or exclusion from participation in government programs.

Many of the current claims and legal actions against the Company are in preliminary stages, and many of these cases seek an indeterminate amount of damages. The Company records an aggregate legal reserve, which is determined using calculations based on historical loss rates and assessment of trends experienced in settlements and defense costs. In accordance with FASB Accounting Standards Codification Topic 450 "Contingencies," the Company establishes reserves for judicial, regulatory, and arbitration matters outside the aggregate legal reserve if and when those matters present loss contingencies that are both probable and estimable and would exceed the aggregate legal reserve. When loss contingencies are not both probable and estimable, the Company does not establish separate reserves.

The Company is unable to estimate a range of reasonably probable loss for the proceedings described in more detail below in which damages either have not been specified or, in the Company's judgment, are unsupported and/or exaggerated and (i) the

proceedings are in early stages; (ii) there is uncertainty as to the outcome of pending appeals or motions; (iii) there are significant factual issues to be resolved; and/or (iv) there are novel legal issues to be presented. For these proceedings, however, the Company does not believe, based on currently available information, that the outcomes will have a material adverse effect on the Company's financial condition, though the outcomes could be material to the Company's operating results for any particular period, depending, in part, upon the operating results for such period.

As previously reported, the Company responded to an October 2007 subpoena from the U.S. Department of Health & Human Services Office of Inspector General's regional office in New York. On August 17, 2011, the U.S. District Court for the Southern District of New York unsealed a False Claims Act lawsuit, *United States of America ex rel. NPT Associates v. Laboratory Corporation of America Holdings*, which alleges that the Company offered UnitedHealthcare kickbacks in the form of discounts in return for Medicare business. The Plaintiff's Third Amended Complaint further alleges that the Company's billing practices violated the False Claims Acts of 14 states and the District of Columbia. The lawsuit seeks actual and treble damages and civil penalties for each alleged false claim, as well as recovery of costs, attorney's fees, and legal expenses. Neither the U.S. government nor any state government has intervened in the lawsuit. The Company's Motion to Dismiss was granted in October 2014 and Plaintiff was granted the right to replead. On January 11, 2016, Plaintiff filed a motion requesting leave to file an amended complaint under seal and to vacate the briefing schedule for the Company's Motion to Dismiss while the government reviews the amended complaint. The Court granted the motion and vacated the briefing dates. Plaintiff then filed the Amended Complaint under seal. The Company will vigorously defend the lawsuit.

In addition, the Company has received various other subpoenas since 2007 related to Medicaid billing. In October 2009, the Company received a subpoena from the State of Michigan Department of Attorney General seeking documents related to its billing to Michigan Medicaid. The Company cooperated with this request. In October 2013, the Company received a Civil Investigative Demand from the State of Texas Office of the Attorney General requesting documents related to its billing to Texas Medicaid. The Company cooperated with this request. On October 5, 2018, the Company received a second Civil Investigative Demand from the State of Texas Office of the Attorney General requesting documents related to its billing to Texas Medicaid. The Company is cooperating with this request.

On August 31, 2015, the Company was served with a putative class action lawsuit, *Patty Davis v. Laboratory Corporation of America, et al.,* filed in the Circuit Court of the Thirteenth Judicial Circuit for Hillsborough County, Florida. The complaint alleges that the Company violated the Florida Consumer Collection Practices Act by billing patients who were collecting benefits under the Workers' Compensation Statutes. The lawsuit seeks injunctive relief and actual and statutory damages, as well as recovery of attorney's fees and legal expenses. In April 2017, the Circuit Court granted the Company's Motion for Judgment on the Pleadings. The Plaintiff appealed the Circuit Court's ruling to the Florida Second District Court of Appeal. On October 16, 2019, the Court of Appeal reversed the Circuit Court's dismissal, but certified a controlling issue of Florida law to the Florida Supreme Court. On February 17, 2020, the Florida Supreme Court accepted jurisdiction of the lawsuit. The Company will vigorously defend the lawsuit.

In December 2014, the Company received a Civil Investigative Demand issued pursuant to the U.S. False Claims Act from the U.S. Attorney's Office for South Carolina, which requested information regarding alleged remuneration and services provided by the Company to physicians who also received draw and processing/handling fees from competitor laboratories Health Diagnostic Laboratory, Inc. (HDL) and Singulex, Inc. (Singulex). The Company cooperated with the request. On April 4, 2018, the U.S. District Court for the District of South Carolina, Beaufort Division, unsealed a False Claims Act lawsuit, *United States of America ex rel. Scarlett Lutz, et al. v. Laboratory Corporation of America Holdings*, which alleges that the Company's financial relationships with referring physicians violate federal and state anti-kickback statutes. The Plaintiffs' Fourth Amended Complaint further alleges that the Company conspired with HDL and Singulex in violation of the Federal False Claims Act and the California and Illinois insurance fraud prevention acts by facilitating HDL's and Singulex's offers of illegal inducements to physicians and the referral of patients to HDL and Singulex for laboratory testing. The lawsuit seeks actual and treble damages and civil penalties for each alleged false claim, as well as recovery of costs, attorney's fees, and legal expenses. Neither the U.S. government nor any state government has intervened in the lawsuit. The Company filed a Motion to Dismiss seeking the dismissal of the claims asserted under the California and Illinois insurance fraud prevention statutes, the conspiracy claim, the reverse False Claims Act claim, and all claims based on the theory that the Company performed medically unnecessary testing. On January 16, 2019, the Court entered an order granting in part and denying in part the Motion to Dismiss. The Court dismissed the Plaintiffs' claims based on the theory that the Company performed medically unnecessary testing, the claims asserted under the California and Illinois insurance fraud prevention statutes, and the reverse False Claims Act claim. The Court denied the Motion to Dismiss as to the conspiracy claim. The Company will vigorously defend the lawsuit.

Prior to the Company's acquisition of Sequenom Inc. (Sequenom) between August 15, 2016, and August 24, 2016, six putative class-action lawsuits were filed on behalf of purported Sequenom stockholders (captioned *Malkoff v. Sequenom, Inc., et al.*, No. 16-cv-02054-JAH-BLM, *Gupta v. Sequenom, Inc., et al.*, No. 16-cv-02084-JAH-KSC, *Fruchter v. Sequenom, Inc., et al.*, No. 16-

cv-02101-WQH-KSC, *Asiatrade Development Ltd. v. Sequenom, Inc., et al.*, No. 16-cv-02113-AJB-JMA, *Nunes v. Sequenom, Inc., et al.*, No. 16-cv-02128-AJB-MDD, and *Cusumano v. Sequenom, Inc., et al.*, No. 16-cv-02134-LAB-JMA) in the U.S. District Court for the Southern District of California challenging the acquisition transaction. The complaints asserted claims against Sequenom and members of its board of directors (the Individual Defendants). The *Nunes* action also named the Company and Savoy Acquisition Corp. (Savoy), a wholly owned subsidiary of the Company, as defendants. The complaints alleged that the defendants violated Sections 14(e), 14(d)(4) and 20 of the Securities Exchange Act of 1934 by failing to disclose certain allegedly material information. In addition, the complaints in the *Malkoff* action, *Asiatrade* action, and the *Cusumano* action alleged that the Individual Defendants breached their fiduciary duties to Sequenom shareholders. The actions sought, among other things, injunctive relief enjoining the merger. On August 30, 2016, the parties entered into a Memorandum of Understanding (MOU) in each of the above-referenced actions. On September 6, 2016, the Court entered an order consolidating for all pre-trial purposes the six individual actions described above under the caption *In re Sequenom, Inc. Shareholder Litig.*, Lead Case No. 16-cv-02054-JAH-BLM, and designating the complaint from the *Malkoff* action as the operative complaint for the consolidated action. On November 11, 2016, two competing motions were filed by two separate stockholders (James Reilly and Shikha Gupta) seeking appointment as lead plaintiff under the terms of the Private Securities Litigation Reform Act of 1995. On June 7, 2017, the Court entered an order declaring Mr. Reilly as the lead plaintiff and approving Mr. Reilly's selection of lead counsel. The parties agree that the MOU has been terminated. The Plaintiffs filed a Consolidated Amended Class Action Complaint on July 24, 2017, and the Defendants filed a Motion to Dismiss, which remains pending. On March 13, 2019, the Court stayed the action in its entirety pending the U.S. Supreme Court's anticipated decision in *Emulex Corp. v. Varjabedian.* On April 23, 2019, however, the U.S. Supreme Court dismissed the writ of certiorari in *Emulex* as improvidently granted. The Company will vigorously defend the lawsuit.

On March 10, 2017, the Company was served with a putative class action lawsuit, *Victoria Bouffard, et al. v. Laboratory Corporation of America Holdings*, filed in the U.S. District Court for the Middle District of North Carolina. The complaint alleges that the Company's patient list prices unlawfully exceed the rates negotiated for the same services with private and public health insurers in violation of various state consumer protection laws. The lawsuit also alleges breach of implied contract or quasi-contract, unjust enrichment, and fraud. The lawsuit seeks statutory, exemplary, and punitive damages, injunctive relief, and recovery of attorney's fees and costs. In May 2017, the Company filed a Motion to Dismiss Plaintiffs' Complaint and Strike Class Allegations; the Motion to Dismiss was granted in March 2018 without prejudice. On October 10, 2017, a second putative class action lawsuit, *Sheryl Anderson, et al. v. Laboratory Corporation of America Holdings*, was filed in the U.S. District Court for the Middle District of North Carolina. The complaint contained similar allegations and sought similar relief to the *Bouffard* complaint, and added additional counts regarding state consumer protection laws. On August 10, 2018, the Plaintiffs filed an Amended Complaint, which consolidated the *Bouffard* and *Anderson* actions. On September 10, 2018, the Company filed a Motion to Dismiss Plaintiffs' Amended Complaint and Strike Class Allegations. On August 16, 2019, the court entered an order granting in part and denying in part the Motion to Dismiss the Amended Complaint, and denying the Motion to Strike the Class Allegations. The Company will vigorously defend the lawsuit.

On December 20, 2018, the Company was served with a putative class action lawsuit, *Feckley v. Covance Inc., et al*., filed in the Superior Court of California, County of Orange. The complaint alleges that Covance Inc. violated the California Labor Code and California Business & Professions Code by failing to properly pay commissions to employees under a sales incentive compensation plan upon their termination of employment. The lawsuit seeks monetary damages, civil penalties, punitive damages, and recovery of attorney's fees and costs. On January 22, 2018, the case was removed to the U.S. District Court for the Central District of California. The Company will vigorously defend the lawsuit.

On April 1, 2019, Covance Research Products was served with a Grand Jury Subpoena issued by the Department of Justice (DOJ) in Miami, Florida requiring the production of documents related to the importation into the United States of live non-human primate shipments originating from or transiting through China, Cambodia, and/or Vietnam from April 1, 2014 through March 28, 2019. The Company is cooperating with the DOJ.

On April 22, 2019, the Company was served with a putative class action lawsuit, *Kawa Orthodontics LLP, et al. v. Laboratory Corporation of America Holdings, et al.*, filed in the U.S. District Court for the Middle District of Florida. The lawsuit alleges that on or about February 6, 2019, the defendants violated the U.S. Telephone Consumer Protection Act (TCPA) by sending unsolicited facsimiles to Plaintiff and at least 40 other recipients without the recipients' prior express invitation or permission. The lawsuit seeks the greater of actual damages or the sum of $0.0005 for each violation, subject to trebling under the TCPA, and injunctive relief. The Company filed a motion to dismiss the case on May 28, 2019. In response to the Motion to Dismiss, the Plaintiff filed an amended complaint, which contains additional allegations, including allegations related to another facsimile. On December 16, 2019, the Plaintiff filed a notice withdrawing its Motion for Class Certification and all class allegations in the Amended Complaint. In January 2020, the parties settled the lawsuit.

On May 14, 2019, Retrieval-Masters Creditors Bureau, Inc. d/b/a American Medical Collection Agency (AMCA), an external collection agency, notified the Company about a security incident AMCA experienced that may have involved certain personal information about some of the Company's patients (the AMCA Incident). The Company referred patient balances to AMCA only when direct collection efforts were unsuccessful. The Company's systems were not impacted by the AMCA Incident. Upon learning of the AMCA Incident, the Company promptly stopped sending new collection requests to AMCA and stopped AMCA from continuing to work on any pending collection requests from the Company. AMCA informed the Company that it appeared that an unauthorized user had access to AMCA's system between August 1, 2018 and March 30, 2019, and that AMCA could not rule out the possibility that personal information on AMCA's system was at risk during that time period. Information on AMCA's affected system from the Company may have included name, address, and balance information for the patient and person responsible for payment, along with the patient's phone number, date of birth, referring physician, and date of service. The Company was later informed by AMCA that health insurance information may have been included for some individuals, and because some insurance carriers utilize the Social Security Number as a subscriber identification number, the Social Security Number for some individuals may also have been affected. No ordered tests, laboratory test results, or diagnostic information from the Company were in the AMCA affected system. The Company notified individuals for whom it had a valid mailing address. For the individuals whose Social Security Number was affected, the notice included an offer to enroll in credit monitoring and identity protection services that will be provided free of charge for 24 months.

Twenty-three putative class action lawsuits were filed against the Company related to the AMCA Incident in various U.S. District Courts. Numerous similar lawsuits have been filed against other health care providers who used AMCA. These lawsuits have been consolidated into a multidistrict litigation in the District of New Jersey. On November 15, 2019, the Plaintiffs filed a Consolidated Class Action Complaint in the U.S. District Court of New Jersey. On January 22, 2020, the Company filed Motions to Dismiss all claims. The consolidated Complaint generally alleges that the Company did not adequately protect its patients' data and failed to timely notify those patients of the AMCA Incident. The Complaint asserts various causes of action, including, but not limited to, negligence, breach of implied contract, unjust enrichment, and the violation of state data protection statutes. The Complaint seeks damages on behalf of a class of all affected Company customers. The Company will vigorously defend the multi-district litigation.

Certain governmental entities have requested information from the Company related to the AMCA Incident. The Company has received requests for information from the Office of Civil Rights of the Department of Health and Human Services, and from a multi-state group of state Attorneys General. The Company is cooperating with these requests for information.

Three putative class-action lawsuits related to California wage and hour laws have been served on the Company. On September 21, 2018, the Company was served with a putative class action lawsuit, *Alma Haro v. Laboratory Corporation of America, et al.*, filed in the Superior Court of California, County of Los Angeles. On June 10, 2019, the Company was served with a putative class action lawsuit, *Ignacio v. Laboratory Corporation of America*, filed in Superior Court of California, County of Los Angeles. On July 1, 2019, the Company was served with a putative class action lawsuit, *Jan v. Laboratory Corporation of America*, filed in the Superior Court of California, County of Sacramento. All three cases were subsequently removed to the U.S. District Court for the Central District of California, and then consolidated for all pre-trial proceedings. In the lawsuits, Plaintiffs allege that employees were not properly paid overtime compensation, minimum wages, meal and rest break premiums, did not receive compliant wage statements, and were not properly paid wages upon termination of employment. The Plaintiffs assert these actions violate various California Labor Code provisions and constitute an unfair competition practice under California law. The lawsuits seek monetary damages, civil penalties, and recovery of attorney's fees and costs. The Company will vigorously defend the lawsuits.

On July 30, 2019, the Company was served with a class action lawsuit, *Mitchell v. Covance, Inc. et al.*, filed in the U.S. District Court for the Eastern District of Pennsylvania. Plaintiff alleges that certain individuals employed by Covance Inc. and Chiltern International Inc. were misclassified as exempt employees under the Fair Labor Standards Act and the Pennsylvania Minimum Wage Act and were thereby not properly paid overtime compensation. The lawsuit seeks monetary damages, liquidated damages, and recovery of attorney's fees and costs. On February 3, 2020, the Court denied without prejudice the Plaintiff's motion to conditionally certify a class action. The Company will vigorously defend the lawsuit.

On January 31, 2020, the Company was served with a putative class action lawsuit, *Luke Davis and Julian Vargas, et al. v. Laboratory Corporation of America* Holdings, filed in the U.S. District Court for the Central District of California. The lawsuit alleges that visually impaired patients are unable to use the Company's touchscreen kiosks at Company patient service centers in violation of the Americans with Disabilities Act and similar California statutes. The lawsuit seeks statutory damages, injunctive relief, and attorney's fees and costs. The Company will vigorously defend the lawsuit.

Under the Company's present insurance programs, coverage is obtained for catastrophic exposure as well as those risks required to be insured by law or contract. The Company is responsible for the uninsured portion of losses related primarily to general, professional and vehicle liability, certain medical costs and workers' compensation. The self-insured retentions are on a per-

(Dollars and shares in millions, except per share data)

occurrence basis without any aggregate annual limit. Provisions for losses expected under these programs are recorded based upon the Company's estimates of the aggregated liability of claims incurred.

17. PENSION AND POSTRETIREMENT PLANS

Retirement Plans

All employees eligible for the LCD defined-contribution retirement plan (401K Plan) receive a minimum 3% non-elective contribution (NEC) concurrent with each payroll period. Employees are not required to make a contribution to the LCD 401K Plan to receive the NEC. The NEC is non-forfeitable and vests immediately. The LCD 401K Plan also permits discretionary contributions by the Company of 1% and 3% of pay for eligible employees based on service. In 2019, 2018, and 2017, non-elective and discretionary contributions were $52.3, $65.0 and $58.1, while total expense was $65.6, $63.6 and $59.1, respectively.

All of the CDD U.S. employees are eligible to participate in the CDD 401K plan, which is available on a voluntary basis and features a maximum 4.5% Company match, based upon a percentage of the employee's contributions. Chiltern employees were previously eligible to participate in the Chiltern 401K plan, which featured a maximum 3% Company match, based upon a percentage of the employee's contributions. The Chiltern 401K plan merged into the CDD 401K plan effective January 7, 2019. The Company incurred expense of $73.9, $66.3, and $58.4 for the CDD 401K Plan in 2019, 2018 and 2017, respectively.

The Company also maintains several other small 401K plans associated with companies acquired over the last several years.

Pension Plans

The Company has a defined-benefit retirement plan (Company Plan) and a nonqualified supplemental retirement plan (PEP). Both plans have been closed to new participants since December 31, 2009. Employees participating in the Company Plan and the PEP no longer earn service-based credits, but continue to earn interest credits.

The Company Plan covers substantially all employees employed prior to December 31, 2009. The benefits to be paid under the Company Plan are based on years of credited service through December 31, 2009, interest credits and average compensation. The Company's policy is to fund the Company Plan with at least the minimum amount required by applicable regulations. The Company made contributions to the Company Plan of $0.0, $28.9 and $16.0 in 2019, 2018 and 2017, respectively.

The PEP covers a portion of the Company's senior management group. Prior to 2010, the PEP provided for the payment of the difference, if any, between the amount of any maximum limitation on annual benefit payments under the Employee Retirement Income Security Act of 1974 and the annual benefit that would be payable under the Company Plan but for such limitation. Effective January 1, 2010, employees participating in the PEP no longer earn service-based credits. The PEP is an unfunded plan.

Projected pension expense for the Company Plan and the PEP is expected to decrease to $11.8 in 2020. This amount excludes any accelerated recognition of pension cost due to the total lump-sum payouts exceeding certain components of net periodic pension cost in a fiscal year. If such levels were to be met in 2020, the Company projects that it would result in additional pension expense of several million dollars. The actual amount would be determined in the fiscal quarter when the lump-sum payments cross the threshold and would be based upon the plan's funded status and actuarial assumptions in effect at that time.

The Company plans to make contributions of $2.2 to the Company Plan and the PEP during 2020.

The effect on operations for both the Company Plan and the PEP are summarized as follows:

	Year ended December 31,		
	2019	2018	2017
Service cost for benefits earned	$ 4.1	$ 5.2	$ 5.5
Interest cost on benefit obligation	13.9	13.0	14.4
Expected return on plan assets	(15.1)	(16.5)	(16.3)
Net amortization and deferral	10.9	11.7	11.0
Settlements	—	7.5	—
Defined-benefit plan costs	$ 13.8	$ 20.9	$ 14.6

Amounts included in accumulated other comprehensive earnings consist of unamortized net loss of $111.2. The accumulated other comprehensive earnings that are expected to be recognized as components of the defined-benefit plan costs during 2020 are $10.2 related to amortization of the net loss. For the year ended December 31, 2018, the Company recorded a pension settlement charge of $7.5 recorded in Other, net on the Consolidated Statement of Operations as a result of lump sum distributions exceeding $16.5 threshold level for 2018.

(Dollars and shares in millions, except per share data)

A summary of the changes in the projected benefit obligations of the Company Plan and the PEP are summarized as follows:

	2019	2018
Balance at January 1	$ 334.6	$ 368.0
Service cost	4.1	5.2
Interest cost	13.9	13.0
Actuarial (gain) loss	33.3	(21.9)
Benefits and administrative expenses paid	(30.4)	(33.9)
Merger of Covance SERP	—	4.2
Balance at December 31	$ 355.5	$ 334.6

The Accumulated Benefit Obligation was $355.5 and $334.6 at December 31, 2019 and 2018, respectively.

A summary of the changes in the fair value of plan assets follows:

	2019	2018
Fair value of plan assets at beginning of year	$ 246.9	$ 263.7
Actual return on plan assets	43.4	(14.3)
Employer contributions	2.2	31.4
Benefits and administrative expenses paid	(30.4)	(33.9)
Fair value of plan assets at end of year	$ 262.1	$ 246.9

The net funded status of the Company Plan and the PEP at December 31:

	2019	2018
Funded status	$ 93.4	$ 87.6
Recorded as:		
Accrued expenses and other	$ 2.2	$ 2.1
Other liabilities	91.2	85.5
	$ 93.4	$ 87.6

Weighted average assumptions used in the accounting for the Company Plan and the PEP are summarized as follows:

	2019	2018	2017
Discount rate for the Company Plan	3.3%	4.4%	3.7%
Discount rate for the PEP	3.4%	4.4%	3.7%
Expected long term rate of return for the Company Plan	6.5%	6.5%	6.8%

The Company used the RP-2014 Mortality Tables to estimate life expectancy. The weighted average expected long-term rate of return on assets of the Company Plan and PEP is based on the target asset allocation and the average rate of growth expected for the asset classes invested. The rate of expected growth is derived from a combination of historic returns, current market indicators, the expected risk premium for each asset class over the risk-free rate, and the opinion of professional advisors.

The Company maintains an investment policy for the management of the Company Plan's assets. The objective of this policy is to build a portfolio designed to achieve a balance between investment return and asset protection by investing in indexed funds that are comprised of equities of high quality companies and in high quality fixed income securities which are broadly balanced and represent all market sectors. The target allocations for plan assets are 50% equity securities, 43% fixed income securities and 7% in other assets. Equity securities primarily include investments in large-cap, mid-cap and small-cap companies located in the U.S. and to a lesser extent international equities in developed and emerging countries. Fixed income securities primarily include U.S. Treasury securities, mortgage-backed bonds and corporate bonds of companies from diversified industries. Other assets include investments in real estate. The weighted average expected long-term rate of return for the Company Plan's assets is as follows:

	Target Allocation	Weighted Average Expected Long-Term Rate of Return
Equity securities	50.0%	3.3%
Fixed income securities	43.0%	2.8%
Other assets	7.0%	0.4%

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

The fair values of the Company Plan's assets at December 31, 2019, and 2018, by asset category are as follows:

Asset Category	Fair Value as of December 31, 2019	Fair Value Measurements as of December 31, 2019 Using Fair Value Hierarchy		
		Level 1	Level 2	Level 3
Cash	$ 4.3	$ 4.3	$ —	$ —
Equity securities:				
U.S. large cap - blend (a)	61.1	—	61.1	—
U.S. mid cap - blend (b)	23.8	—	23.8	—
U.S. small cap - blend (c)	8.5	—	8.5	—
International equity - blend (d)	40.6	—	40.6	—
Real estate (e)	12.7	—	12.7	—
Fixed income securities:				
U.S. fixed income (f)	111.1	—	111.1	—
U.S inflation protection income (g)	—	—	—	—
Total fair value of the Company Plan's assets	$ 262.1	$ 4.3	$ 257.8	$ —

Asset Category	Fair Value as of December 31, 2018	Fair Value Measurements as of December 31, 2018 Using Fair Value Hierarchy		
		Level 1	Level 2	Level 3
Cash	$ 7.8	$ 7.8	$ —	$ —
Equity securities:				
U.S. large cap - blend (a)	54.2	—	54.2	—
U.S. mid cap - blend (b)	20.4	—	20.4	—
U.S. small cap - blend (c)	6.4	—	6.4	—
International equity - blend (d)	36.4	—	36.4	—
Commodities index (h)	11.8	—	11.8	—
Fixed income securities:				
U.S. fixed income (f)	103.5	—	103.5	—
U.S inflation protection income (g)	6.4	—	6.4	—
Total fair value of the Company Plan's assets	$ 246.9	$ 7.8	$ 239.1	$ —

a) This category represents an equity index fund not actively managed that tracks the S&P 500 Index.
b) This category represents an equity index fund not actively managed that tracks the S&P mid-cap 400 Index.
c) This category represents an equity index fund not actively managed that tracks the Russell 2000 Index.
d) This category represents an equity index fund not actively managed that tracks the MSCI ACWI ex USA Index.
e) This category represents a real estate index fund not actively managed that tracks the Vanguard REIT Index.
f) This category primarily represents bond index funds not actively managed that track the Northern Trust U.S. Aggregate Index as well as an actively managed strategy which utilizes the Metropolitan West Total Return Bond Index as its primary prospectus benchmark.
g) This category primarily represents a bond index fund not actively managed that tracks the Northern Trust U.S. TIPS Index.
h) This category represents a commodities index fund not actively managed that tracks the Dow Jones - UBS Commodity Index.

The following estimated benefit payments under the Company Plan and PEP, which were used in the calculation of projected benefit obligations, are expected to be paid as follows:

2020	$ 27.6
2021	27.2
2022	26.8
2023	25.9
2024	25.2
Years 2025 and thereafter	115.1

In addition to the PEP, as a result of the Covance acquisition, the Company also has a frozen non-qualified Supplemental Executive Retirement Plan (SERP). The SERP, which is not funded, is intended to provide retirement benefits for certain employees

(Dollars and shares in millions, except per share data)

who were executive officers of Covance prior to the acquisition. Benefit amounts are based upon years of service and compensation of the participating employees. As of December 31, 2018, the SERP was combined with the PEP.

As a result of the Covance acquisition, the Company sponsors two defined-benefit pension plans for the benefit of its employees at two U.K. subsidiaries (U.K. Plans) and one defined-benefit pension plan for the benefit of its employees at a German subsidiary (German Plan), all of which are legacy plans of previously acquired companies. Benefit amounts for all three plans are based upon years of service and compensation. The German Plan is unfunded while the U.K. Plans are funded. The Company's funding policy has been to contribute annually a fixed percentage of the eligible employee's salary, and additional amounts, at least equal to the local statutory funding requirements. All plans have a measurement date of December 31.

As a result of the Envigo acquisition, the Company assumed a defined benefit pension plan for the benefit of Envigo's U.K. employees (the Envigo plan), which is a legacy plan of a company previously acquired by Envigo. The Envigo plan is a funded plan that is closed to future accrual. The related net pension obligation of $46.6, based on the preliminary valuation of acquired assets and assumed liabilities, is reported under Other liabilities in the Consolidated Balance Sheet as of December 31, 2019. The Company's funding policy has been to contribute amounts at least equal to the local statutory funding requirements. The Envigo plan has a measurement date of December 31. The U.K. Plans disclosures below are inclusive of the Envigo plan for 2019.

The components of the defined-benefit plan costs for these plans for 2019 and 2018 are as follows:

	U.K. Plans	
	Year Ended December 31, 2019	Year Ended December 31, 2018
Service cost	$ 4.6	$ 4.8
Interest cost	10.3	7.4
Expected return on plan assets	(15.0)	(12.6)
Expected participant contributions	(1.2)	(1.3)
Defined-benefit plan costs	$ (1.3)	$ (1.7)
Assumptions used to determine defined-benefit plan cost (Excluding Envigo Plan):		
Discount rate	2.9%	2.5%
Expected return on assets	4.4%	4.5%
Salary increases	3.6%	3.6%
Assumptions used to determine defined-benefit plan cost (Envigo Plan):		
Discount rate	2.3%	
Expected return on assets	3.9%	

	German Plan	
	Year Ended December 31, 2019	Year Ended December 31, 2018
Service cost	$ 1.1	$ 1.2
Interest cost	0.6	0.6
Defined-benefit plan costs	$ 1.7	$ 1.8
Assumptions used to determine defined-benefit plan cost:		
Discount rate	1.9%	1.7%
Expected return on assets	N/A	N/A
Salary increases	2.0%	2.0%

The weighted average expected long-term rate of return on assets of the U.K Plans is based on the target asset allocation and the average rate of growth expected for the asset classes invested. The rate of expected growth is derived from a combination of historic returns, current market indicators, the expected risk premium for each asset class over the risk-free rate, and the opinion of professional advisors.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

The change in the projected benefit obligation and plan assets, the funded status of the plan and a reconciliation of such funded status to the amounts reported in the consolidated balance sheet as of December 31, 2019, and December 31, 2018, is as follows:

Change in Projected Benefit Obligation:	U.K. Plans	
	2019	2018
Balance at beginning of year	$ 260.1	$ 303.4
Balance of acquired subsidiary at acquisition date	215.4	—
Service cost	4.6	4.8
Interest cost	10.3	7.4
Actuarial (gain) loss	64.1	(34.9)
Benefits paid	(11.3)	(6.3)
Plan amendments	—	1.4
Foreign currency exchange rate changes	20.8	(15.7)
Plan curtailment	(16.1)	—
Balance at end of year	$ 547.9	$ 260.1

Change in Projected Benefit Obligation:	German Plan	
	2019	2018
Balance at beginning of year	$ 34.0	$ 35.7
Service cost	1.1	1.2
Interest cost	0.6	0.6
Actuarial (gain) loss	8.2	(1.7)
Benefits paid	(0.3)	(0.2)
Foreign currency exchange rate changes	(0.8)	(1.6)
Balance at end of year	$ 42.8	$ 34.0

Change in Fair Value of Assets:	U.K. Plans	
	2019	2018
Balance at beginning of year	$ 254.6	$ 281.9
Plan assets of acquired subsidiary at acquisition date	168.3	—
Company contributions	11.4	6.5
Participant contributions	1.3	1.3
Actual return on assets	48.8	(13.6)
Benefits paid	(11.3)	(6.3)
Foreign currency exchange rate changes	18.6	(15.2)
Fair value of plan assets at end of year	$ 491.7	$ 254.6

	U.K. Plans	
	2019	2018
Funded status	$ 56.3	$ 5.6
Recorded as:		
Other liabilities	56.3	5.6
	$ 56.3	$ 5.6

	German Plan	
	2019	2018
Funded status	$ 42.8	$ 34.0
Recorded as:		
Accrued expenses and other	$ 0.5	$ 0.3
Other liabilities	42.3	33.7
	$ 42.8	$ 34.0

On December 31, 2019, the U.K. plans were closed to future accrual, which resulted in an estimated reduction in the projected benefit obligation of the plans of $16.1. The reduction in the projected benefit obligation due to the plan revisions resulted in a

(Dollars and shares in millions, except per share data)

curtailment gain, which was recorded as a reduction to the unrecognized actuarial losses present in accumulated other comprehensive income as of December 31, 2019.

The Company contributed $11.4 in 2019 to the U.K. Plans and expects to contribute $13.8 in 2020. No contributions were made to the German plan during 2019, nor are any contributions expected to be made in 2020, as the plan is unfunded.

The accumulated benefit obligation for the U.K. Plans and the German Plan was $547.9 and $37.8 at December 31, 2019, respectively. The accumulated benefit obligation for the U.K. Plans and the German Plan was $223.8 and $30.1 at December 31, 2018, respectively.

The amounts recognized in accumulated other comprehensive income for the year ended December 31, 2019, and December 31, 2018, is as follows:

	U.K. Plans	
	2019	2018
Net actuarial loss	$ 24.4	$ 10.1
Less: Tax benefit (deferred tax asset)	(4.2)	(1.7)
Accumulated other comprehensive income impact	$ 20.2	$ 8.4
Assumptions used to determine benefit obligations:		
Discount rate	2.0%	2.9%
Salary increases (excludes Envigo plan at 0%)	3.5%	3.6%

	German Plan	
	2019	2018
Net actuarial loss/(gain)	$ 7.1	$ (1.0)
Less: Tax expense (deferred tax liability)	(2.2)	0.3
Accumulated other comprehensive income impact	$ 4.9	$ (0.7)
Assumptions used to determine benefit obligations:		
Discount rate	0.9%	1.9%
Salary increases	2.0%	2.0%

The net actuarial loss for the U.K and German pension plans required to be amortized from accumulated other comprehensive income into net periodic pension cost in 2020 is expected to be $0.1 and $0.3, respectively.

The investment policies for the U.K. Plans are set by the plan trustees, based upon the guidance of professional advisors and after consultation with the Company, taking into consideration the plans' liabilities and future funding levels. The trustees have set the long-term investment policy largely in accordance with the asset allocation of a broadly diversified investment portfolio. Assets for the U.K. Plans are generally invested within the target ranges as follows:

	Legacy U.K. Plans			Envigo Plan		
Equity securities	60.0%	to	70.0%	20.0%	to	30.0%
Debt securities	10.0%	to	20.0%	60.0%	to	70.0%
Annuities	10.0%	to	20.0%	—%	to	—%
Real estate	—%	to	10.0%	5.0%	to	15.0%
Other	—%	to	5.0%	—%	to	5.0%

The weighted average asset allocation of the U.K. Pension Plans as of December 31, 2019, by asset category is as follows:

	December 31, 2019	
	Legacy U.K. Plans	Envigo Plan
Equity securities	64.0%	25.0%
Debt securities	21.0%	65.0%
Annuities	10.0%	—%
Real estate	4.0%	9.0%
Other	1.0%	1.0%

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

Investments are made in pooled investment funds. Pooled investment fund managers are regulated by the Financial Conduct Authority in the U.K. and operate under terms which contain restrictions on the way in which the portfolios are managed and require the managers to ensure that suitable internal operating procedures are in place. The trustees have set performance objectives for each fund manager and routinely monitor and assess the managers' performance against such objectives. Annuities represent annuity buy-in insurance policies purchased by the plan trustees from large, financially sound insurers. The cash flows from the annuities are intended to match the plan's obligations to specific groups of participants, typically those participants currently receiving benefits.

The fair value of the Company's U.K. Plans' assets as of December 31, 2019, and December 31, 2018, by asset category, are as follows:

		Fair Value Measurements as of December 31, 2019 Using Fair Value Hierarchy		
Asset Category	December 31, 2019	Level 1	Level 2	Level 3
Cash	$ 2.6	$ 2.6	$ —	$ —
Mutual funds (a)	458.5	—	458.5	—
Annuities (b)	30.6	—	—	30.6
Total fair value of the Company Plan's assets	$ 491.7	$ 2.6	$ 458.5	$ 30.6

		Fair Value Measurements as of December 31, 2018 Using Fair Value Hierarchy		
Asset Category	December 31, 2018	Level 1	Level 2	Level 3
Cash	$ 0.7	$ 0.7	$ —	$ —
Mutual funds (a)	226.6	—	226.6	—
Annuities (b)	27.3	—	—	27.3
Total fair value of the Company Plan's assets	$ 254.6	$ 0.7	$ 226.6	$ 27.3

a) Mutual funds represent pooled investment vehicles offered by investment managers, which are generally comprised of investments in equities, bonds, property and cash. The plans' trustees hold units in these funds, the value of which is determined by the number of units held multiplied by the unit price calculated by the investment managers. That unit price is derived based on the market value of the securities that comprise the fund, which are determined by quoted prices in active markets. No element of the valuation is based on inputs made by the plans' trustees.

b) Annuities represent annuity buy-in insurance policies, whereby the insurer pays the pension payments for the lifetime of the members covered. The annuities are assets of the plan and payments from the insurer are made to the plans' trustees, who then use those proceeds to pay the pensioners. The cash flows from the annuities are intended to effectively match the payments to the pensioners covered by the policy. As such, these assets are valued actuarially based upon the value of the liabilities with which they are associated. As the valuation of these assets is judgmental, and there are no observable inputs associated with the valuation, these assets are classified as Level 3 in the fair value hierarchy.

Fair Value Measurement of Level 3 Pension Assets	Annuities
Balance at January 1, 2018	$ 31.5
Actual return on plan assets	(4.2)
Balance at December 31, 2018	27.3
Actual return on plan assets	3.3
Balance at December 31, 2019	$ 30.6

Expected future benefit payments are as follows:

	U.K. Plans	German Plan
2020	$ 13.7	$ 0.5
2021	14.9	0.5
2022	16.1	0.6
2023	16.7	0.6
2024	18.0	0.7
Years 2025 and thereafter	95.7	3.6

(Dollars and shares in millions, except per share data)

Post-employment Retiree Health and Welfare Plan

As a result of the Covance acquisition, the Company sponsors a post-employment retiree health and welfare plan for the benefit of eligible employees at certain U.S. subsidiaries who retire after satisfying service and age requirements. This plan is funded on a pay-as-you-go basis and the cost of providing these benefits is shared with the retirees.

Post-retirement Medical Plan

The Company assumed obligations under a subsidiary's post-retirement medical plan. Coverage under this plan is restricted to a limited number of existing employees of the subsidiary. This plan is unfunded and the Company's policy is to fund benefits as claims are incurred. The effect on operations of the post-retirement medical plan is shown in the following table:

	Year ended December 31,		
	2019	2018	2017
Service cost for benefits earned	$ —	$ —	$ —
Interest cost on benefit obligation	0.3	0.3	0.3
Net amortization and deferral	0.4	(1.3)	(6.7)
Post-retirement medical plan costs	$ 0.7	$ (1.0)	$ (6.4)

Amounts included in accumulated other comprehensive earnings consist of unamortized net loss of $2.0. The accumulated other comprehensive earnings that are expected to be recognized as components of the post-retirement medical plan costs during 2020 are $0.3 related to amortization of the net gain resulting from the shift of Medicare-eligible participants to private exchanges.

A summary of the changes in the accumulated post-retirement benefit obligation follows:

	2019	2018
Balance at January 1	$ 6.9	$ 8.6
Interest cost on benefit obligation	0.3	0.3
Actuarial loss	—	(1.2)
Benefits paid	(0.7)	(0.8)
Balance at December 31	$ 6.5	$ 6.9
Recorded as:		
Accrued expenses and other	$ 0.8	$ 0.9
Other liabilities	5.7	6.0
	$ 6.5	$ 6.9

The weighted-average discount rates used in the calculation of the accumulated post-retirement benefit obligation were 3.2% and 4.2% as of December 31, 2019, and 2018, respectively. The healthcare cost trend rate was removed due to the expectation of future funding to be at the same level as the previous year's funding.

The following assumed benefit payments under the Company's post-retirement benefit plan, which reflect expected future service, as appropriate, and which were used in the calculation of projected benefit obligations, are expected to be paid as follows:

2020	$ 0.8
2021	0.8
2022	0.8
2023	0.7
2024	0.7
Years 2025 and thereafter	1.9

Deferred Compensation Plan

The Company has a Deferred Compensation Plan (DCP) under which certain of its executives may elect to defer up to 100.0% of their annual cash incentive pay and/or up to 50.0% of their annual base salary and/or eligible commissions subject to annual limits established by the U.S. government. The DCP provides executives a tax efficient strategy for retirement savings and capital accumulation without significant cost to the Company. The Company makes no contributions to the DCP. Amounts deferred by a participant are credited to a bookkeeping account maintained on behalf of each participant, which is used for measurement and determination of amounts to be paid to a participant, or his or her designated beneficiary, pursuant to the terms of the DCP. The amounts accrued under this plan were $76.7 and $64.2 at December 31, 2019, and 2018, respectively. Deferred amounts are the

(Dollars and shares in millions, except per share data)

Company's general unsecured obligations and are subject to claims by the Company's creditors. The Company's general assets may be used to fund obligations and pay DCP benefits.

18. FAIR VALUE MEASUREMENTS

The Company's population of financial assets and liabilities subject to fair value measurements as of December 31, 2019, and 2018 were as follows:

	Balance Sheet Classification	Fair Value as of December 31, 2019	Fair Value Measurements as of December 31, 2019 Using Fair Value Hierarchy		
			Level 1	Level 2	Level 3
Noncontrolling interest put	Noncontrolling interest	$ 15.8	$ —	$ 15.8	$ —
Interest rate swaps	Other assets, net	1.5	—	1.5	—
Cross currency swaps	Other assets, net	3.2	—	3.2	—
Cash surrender value of life insurance policies	Other assets, net	80.2	—	80.2	—
Deferred compensation liability	Other liabilities	76.7	—	76.7	—
Investment in equity securities	Other current assets	9.1	9.1	—	—
Contingent consideration	Other liabilities	7.8	—	—	7.8

	Balance Sheet Classification	Fair Value as of December 31, 2018	Fair Value Measurements as of December 31, 2018 Using Fair Value Hierarchy		
			Level 1	Level 2	Level 3
Noncontrolling interest put	Noncontrolling interest	$ 15.0	$ —	$ 15.0	$ —
Interest rate swap	Other liabilities	3.1	—	3.1	—
Cross currency swaps liability	Other liabilities	2.8	—	2.8	—
Cash surrender value of life insurance policies	Other assets, net	63.5	—	63.5	—
Deferred compensation liability	Other liabilities	64.2	—	64.2	—
Contingent consideration	Other liabilities	18.6	—	—	18.6

Fair Value Measurement of Level 3 Liabilities	Contingent Consideration
Balance at January 1, 2018	$ 16.5
Addition	2.1
Balance at December 31, 2018	18.6
Addition	3.3
Adjustments	(14.1)
Balance at December 31, 2019	$ 7.8

The Company has a noncontrolling interest put related to its Ontario subsidiary that has been classified as mezzanine equity in the Company's condensed consolidated balance sheets. The noncontrolling interest put is valued at its contractually determined value, which approximates fair value. During the year ended December 31, 2019, the carrying value of the noncontrolling interest put increased by $0.8 for foreign currency translation.

The Company offers certain employees the opportunity to participate in a DCP. A participant's deferrals are allocated by the participant to one or more of 16 measurement funds, which are indexed to externally managed funds. From time to time, to offset the cost of the growth in the participant's investment accounts, the Company purchases life insurance policies, with the Company named as beneficiary of the policies. Changes in the cash surrender value of the life insurance policies are based upon earnings and changes in the value of the underlying investments, which are typically invested in a similar manner to the participants' allocations. Changes in the fair value of the DCP obligation are derived using quoted prices in active markets based on the market price per unit multiplied by the number of units. The cash surrender value and the DCP obligations are classified within Level 2 because their inputs are derived principally from observable market data by correlation to the hypothetical investments.

Contingent accrued earn-out business acquisition consideration liabilities for which fair values are measured as Level 3 instruments. These contingent consideration liabilities were recorded at fair value on the acquisition date and are remeasured quarterly based on the then assessed fair value and adjusted if necessary. The increases or decreases in the fair value of contingent

(Dollars and shares in millions, except per share data)

consideration payable can result from changes in anticipated revenue levels and changes in assumed discount periods and rates. As the fair value measure is based on significant inputs that are not observable in the market, they are categorized as Level 3.

The carrying amounts of cash and cash equivalents, accounts receivable, income taxes receivable, and accounts payable are considered to be representative of their respective fair values due to their short-term nature. The fair market value of the zero-coupon subordinated notes, based on market pricing, was approximately $0.0 and $16.9 as of December 31, 2019, and 2018, respectively. The fair market value of the Senior Notes, based on market pricing, was approximately $5,281.1 and $5,318.0 as of December 31, 2019, and 2018, respectively. The Company's note and debt instruments are considered Level 2 instruments, as the fair market values of these instruments are determined using other observable inputs.

19. DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

The Company addresses its exposure to market risks, principally the market risk associated with changes in interest rates and currency exchange rates, through a controlled program of risk management that includes, from time to time, the use of derivative financial instruments. Although the Company’s zero-coupon subordinated notes contained features that were considered to be embedded derivative instruments, the Company does not hold or issue derivative financial instruments for trading purposes. The Company does not believe that its exposure to market risk is material to the Company’s financial position or results of operations.

Interest Rate Swap

During the third quarter of 2013, the Company entered into two fixed-to-variable interest rate swap agreements for the 4.625% Senior Notes due 2020 with an aggregate notional amount of $600.0 and variable interest rates based on one-month LIBOR plus 2.298% to hedge against changes in the fair value of a portion of the Company's long-term debt. The Company exited one of these swap arrangements in December 2019 in connection with the redemption of $187.9 of the 4.625% Senior Notes due 2020. These derivative financial instruments are accounted for as fair value hedges of the Senior Notes due 2020. These interest rate swaps are included in other long-term assets or liabilities, as applicable, and added to the value of the Senior Notes. As the specific terms and notional amounts of the derivative financial instruments match those of the fixed-rate debt being hedged, the derivative instruments are assumed to be perfectly effective hedges and accordingly, there is no impact to the Company's consolidated statements of operations. Cash flows from the interest rate swaps are including in operating activities.

	Carrying amount of hedged liabilities as of December 31,		Cumulative Amount of Fair Value Hedging Adjustment Included in the Carrying Amount of the Hedged Liabilities as of December 31,	
	2019	2018	2019	2018
Balance Sheet Line Item in which Hedged Items are Included				
Current portion, long term debt	$ 301.5	—	$ 1.5	$ —
Long-term debt, less current portion	—	$ 597.0	—	$ (3.1)

Foreign Currency Forward Contracts

The Company periodically enters into foreign currency forward contracts, which are recognized as assets or liabilities at their fair value. These contracts do not qualify for hedge accounting and the changes in fair value are recorded directly to earnings. The contracts are short-term in nature and the fair value of these contracts is based on market prices for comparable contracts. The fair value of these contracts is not significant as of December 31, 2019 and 2018.

Cross Currency Swaps

During the first quarter of 2018, the Company entered into six USD to Swiss Franc cross-currency swap agreements with an aggregate notional value of $600.0 and which were accounted for as a hedge against its net investment in a Swiss subsidiary. Of the notional value, $300.0 were due to mature in 2022 and $300.0 were due to mature in 2025. These cross currency swaps maturing in 2022 and 2025 were settled on December 10, 2018 in cash.

During the fourth quarter of 2018, the Company entered into six new USD to Swiss Franc cross-currency swap agreements with an aggregate notional value of $600.0 and which are accounted for as a hedge against the impact of foreign exchange movements on its net investment in a Swiss Franc functional currency subsidiary. Of the notional value, $300.0 matures in 2022 and $300.0 matures in 2025. These cross currency swaps maturing in 2022 and 2025 are included in other long-term assets as of December 31, 2019. Changes in the fair value of the cross-currency swaps are recorded as a component of the foreign currency translation adjustment in accumulated other comprehensive income in the Consolidated Balance Sheet until the hedged item is recognized in earnings. The cumulative amount of the fair value hedging adjustment included in the current value of the cross currency swaps is $6.0 for the year ended December 31, 2019, and was recognized as currency translation within the Consolidated Statement of

(Dollars and shares in millions, except per share data)

Comprehensive Earnings. There were no amounts reclassified from the Consolidated Statement of Comprehensive Earnings to the Consolidated Statement of Operations during the year ended December 31, 2019.

The table below presents the fair value of derivatives on a gross basis and the balance sheet classification of those instruments:

		December 31, 2019			December 31, 2018		
		Fair Value of Derivative			Fair Value of Derivative		
	Balance Sheet Caption	Asset	Liability	U.S. Dollar Notional	Asset	Liability	U.S. Dollar Notional
Derivatives Designated as Hedging Instruments							
Interest rate swap	Prepaid expenses and other/Other liabilities	1.5	—	300.0	—	(3.1)	600.0
Cross currency swaps	Other assets, net/Other liabilities	3.2	—	600.0	—	(2.8)	600.0

The table below provides information regarding the location and amount of pretax (gains) losses of derivatives designated in fair value hedging relationships:

	Amount of pre-tax gain/(loss) included in other comprehensive income			Amounts reclassified to the Statement of Operations		
	Year Ended December 31,			Year Ended December 31,		
	2019	2018	2017	2019	2018	2017
Interest rate swap contracts	$ 6.7	$ (7.2)	$ (10.5)	$ —	$ —	$ —
Cross currency swaps	$ 6.0	$ 21.6	$ —	$ —	$ —	$ —

The Company recognized a $1.6 gain on the exit one of these swap arrangements in December 2019 in connection with the redemption of $187.9 of the 4.625% Senior Notes due 2020. No gains or losses from derivative instruments classified as hedging instruments have been recognized into income for the years ended December 31, 2018 or 2017.

20. SUPPLEMENTAL CASH FLOW INFORMATION

	Years Ended December 31,		
	2019	2018	2017
Supplemental schedule of cash flow information:			
Cash paid during period for:			
Interest	$ 248.9	$ 296.2	$ 239.1
Income taxes, net of refunds	216.8	349.7	348.0
Disclosure of non-cash financing and investing activities:			
Conversion of zero-coupon convertible debt	8.4	0.3	35.0
Assets acquired under finance leases	48.7	0.6	7.3
Accrued property, plant and equipment	2.7	22.1	1.6
Floating rate secured note receivable due 2022 from the sale of CRP	110.0	—	—

21. BUSINESS SEGMENT INFORMATION

The following table is a summary of segment information for the years ended December 31, 2019, 2018, and 2017. The "management approach" has been used to present the following segment information. This approach is based upon the way the management of the Company organizes segments within an enterprise for making operating decisions and assessing performance. Financial information is reported on the basis that it is used internally by the chief operating decision maker (CODM) for evaluating segment performance and deciding how to allocate resources to segments. The Company's chief executive officer has been identified as the CODM.

Segment asset information is not presented because it is not used by the CODM at the segment level. Operating earnings (loss) of each segment represents revenues less directly identifiable expenses to arrive at operating income for the segment. General management and administrative corporate expenses are included in general corporate expenses below.

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

	2019	2018	2017
Revenues:			
LCD	$ 7,000.1	$ 7,030.8	$ 6,858.2
CDD	4,578.1	4,313.1	3,451.6
Intercompany eliminations	(23.4)	(10.5)	(1.8)
Total revenues	$ 11,554.8	$ 11,333.4	$ 10,308.0
Operating Earnings (Loss):			
LCD	$ 1,086.0	$ 1,166.7	$ 1,300.9
CDD	411.5	303.6	144.9
General corporate expenses	(167.3)	(144.6)	(140.6)
Total operating income	1,330.2	1,325.7	1,305.2
Non-operating expenses, net	(225.3)	(57.4)	(227.7)
Earnings before income taxes	1,104.9	1,268.3	1,077.5
Provision for income taxes	280.0	384.4	(155.4)
Net earnings	824.9	883.9	1,232.9
Less: Net income attributable to noncontrolling interests	(1.1)	(0.2)	(5.8)
Net income attributable to Laboratory Corporation of America Holdings	$ 823.8	$ 883.7	$ 1,227.1

	2019	2018	2017
Depreciation and Amortization			
LCD	$ 301.0	$ 293.3	$ 304.7
CDD	261.1	247.3	217.4
General corporate	2.6	2.6	1.2
Total depreciation and amortization	$ 564.7	$ 543.2	$ 523.3

	LCD	CDD	Intercompany Eliminations	Total
Geographic distribution of revenues				
US	$ 6,662.6	$ 2,341.8	$ (23.4)	$ 8,981.0
Canada	333.3	—	—	333.3
United Kingdom	—	507.9	—	507.9
Switzerland	—	532.9	—	532.9
Other	4.2	1,195.5	—	1,199.7
Total revenues	$ 7,000.1	$ 4,578.1	$ (23.4)	$ 11,554.8

	LCD	CDD	Total
Geographic distribution of property, plant and equipment, net			
U.S.	$ 1,385.1	$ 694.8	$ 2,079.9
Canada	94.9	—	94.9
U.K.	—	196.2	196.2
Switzerland	—	92.9	92.9
Other	—	172.7	172.7
Total property, plant and equipment, net	$ 1,480	$ 1,156.6	$ 2,636.6

LABORATORY CORPORATION OF AMERICA HOLDINGS AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars and shares in millions, except per share data)

22. QUARTERLY DATA (UNAUDITED)

The following is a summary of unaudited quarterly data:

	Year Ended December 31, 2019				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Full Year
Revenues	$ 2,791.2	$ 2,881.7	$ 2,928.5	$ 2,953.4	$ 11,554.8
Gross profit	789.7	824.8	817.3	820.7	3,252.5
Operating income	318.2	335.7	339.9	336.4	1,330.2
Net earnings attributable to Laboratory Corporation of America Holdings	185.6	190.4	220.7	227.1	823.8
Basic earnings per common share	1.88	1.94	2.26	2.34	8.42
Diluted earnings per common share	1.86	1.93	2.25	2.32	8.35

	Year Ended December 31, 2018				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Full Year
Revenues	$ 2,848.3	$ 2,866.3	$ 2,831.3	$ 2,787.5	$ 11,333.4
Gross profit	779.0	835.1	789.9	772.4	3,176.4
Operating income	305.4	369.2	343.4	307.7	1,325.7
Net earnings attributable to Laboratory Corporation of America Holdings	173.2	233.8	318.8	157.9	883.7
Basic earnings per common share	1.70	2.29	3.14	1.58	8.71
Diluted earnings per common share	1.67	2.27	3.10	1.56	8.61

AMENDED AND RESTATED BY-LAWS OF

LABORATORY CORPORATION OF AMERICA HOLDINGS

(hereinafter called the "Corporation")

(as amended as of February 5, 2020)

ARTICLE I

MEETINGS OF STOCKHOLDERS

Section 1. **Place of Meetings.** Meetings of the stockholders for the election of directors or for any other purpose shall be held at such time and place, either within or without the State of Delaware, as shall be designated from time to time by the Board of Directors (or the Chairman or Vice Chairman, if any of the Board of Directors in the absence of a designation by the Board of Directors) and stated in the notice of the meeting or in a duly executed waiver of notice thereof. **Annual Meetings.** The Annual Meetings of Stockholders shall be held on such date and at such time as shall be designated from time to time by the Board of Directors and stated in the notice of the meeting, at which meetings the stockholders shall elect by a majority vote a Board of Directors**,** as provided in Section 1 of Article II, and transact such other business as may properly be brought before the meeting. Except as otherwise permitted or required by applicable laws or regulations, notice of the Annual Meeting stating the place, date and hour of the meeting shall be given to each stockholder entitled to vote at such meeting not less than ten nor more than sixty days before the date of the meeting**.** Notice may be given in any manner permitted by applicable laws and regulations, as provided in Article V. **Special Meetings.** (a) Unless otherwise prescribed by law or by the Certificate of Incorporation, Special Meetings of Stockholders, for any purpose or purposes, may be called at any time by the Board of Directors. (b) Except as otherwise permitted or required by applicable laws or regulations, notice of a Special Meeting stating the place, if any, date and hour of the meeting and the purpose or purposes for which the meeting is called shall be given not less than ten nor more than sixty days before the date of the meeting to each stockholder entitled to vote at such meeting. Notice may be given in any manner permitted by applicable laws and regulations, as provided in Article V.

(c) Subject to the provisions of this Section 3(c), a Special Meeting of Stockholders shall be called by a majority of the entire Board of Directors following receipt by the Secretary of the Corporation of a written request for a special meeting (a "Special Meeting Request") from one stockholder who has, or a group of stockholders who have, owned at least 25% of the combined voting power of the then outstanding shares of all classes and series of capital stock of the Corporation entitled generally to vote in the election of directors of the Corporation, voting as a single class, continuously for at least one year as of both (i) a date within seven days prior to the date of the Special Meeting Request and (ii) the record date for determining stockholders entitled to vote at the Special Meeting (the "Requisite Holders"), if such Special Meeting Request complies with the requirements of this Section 3(c) and all other applicable sections of these By-Laws. For purposes of satisfying the foregoing ownership requirement under this Section 3(c), (i) the term "owned" shall have the same meaning as it has in Article I, Section 13(e) of these By-Laws, and (ii) the shares of the capital stock of the Corporation owned by one or more stockholders, or by the person or persons who own shares of the capital stock of the Corporation and on whose behalf any stockholder is acting, may be aggregated. For the avoidance of doubt, if a group of stockholders aggregates ownership of shares in order to meet the requirements under this Section 3(c), all shares held by each stockholder constituting their contribution to the foregoing 25% threshold must be held by that stockholder continuously for at least one year, and evidence of such continuous ownership shall be provided as specified in this Section 3(c). The Board of Directors shall determine whether all requirements set forth in this Section 3 and these By-Laws

have been satisfied and such determination shall be binding on the Corporation and its stockholders. If a Special Meeting Request is made that complies with this Section 3(c) and all other applicable sections of these By-Laws, the Board of Directors may (in lieu of calling the Special Meeting of Stockholders requested in such Special Meeting Request) present an identical or substantially similar item (a "Similar Item") for stockholder approval at any other meeting of stockholders that is held within ninety days after the Corporation receives such Special Meeting Request.

A Special Meeting Request must be delivered to the Secretary of the Corporation at the principal executive offices of the Corporation. A Special Meeting Request shall only be valid if it is signed and dated by each of the stockholders that is one of the Requisite Holders and include: (i) a statement of the specific purpose(s) of the Special Meeting of Stockholders, the matter(s) proposed to be acted on at the Special Meeting of Stockholders, and the reasons for conducting such business at the Special Meeting of Stockholders; (ii) the text of any proposed amendment to the By-Laws to be considered at the Special Meeting of Stockholders; (iii) the name and address of each stockholder of record signing such request, the date of each such stockholder's signature, and the name and address of any beneficial owner on whose behalf such request is made; (iv) the class or series and number of shares of the Corporation that are owned of record or beneficially by each such stockholder and any such beneficial owner and documentary evidence of such record or beneficial ownership; (v) any material interest of each stockholder or any such beneficial owner in any of the business proposed to be conducted at the Special Meeting of Stockholders and a description of all arrangements or understandings between any such stockholder and/or beneficial owner and any other person or persons (naming such person or persons) with respect to the business proposed to be conducted; (vi) a representation that one or more of the stockholders submitting the Special Meeting Request intend to appear in person or by proxy at the Special Meeting of Stockholders to present the proposal(s) or business to be brought before the Special Meeting of Stockholders; (vii) if any stockholder submitting such request intends to solicit proxies with respect to the stockholders' proposal(s) or business to be presented at the Special Meeting of Stockholders, a representation to that effect; (viii) all information relating to each stockholder signing the Special Meeting Request that must be disclosed in solicitations for proxies for election of directors in an election contest (even if an election contest is not involved), or is otherwise required, in each case pursuant to Regulation 14A under the 1934 Act (as defined below in Article II); and (ix) if the purpose of the Special Meeting of Stockholders includes the election of one or more directors, all the information such stockholder or stockholders would be required to include in a notice delivered to the Corporation pursuant to Article I, Section 9 of these By-Laws.

In addition, a Special Meeting Request shall not be valid if (i) the Special Meeting Request relates to an item of business that is not a proper subject for stockholder action under applicable law; (ii) the Special Meeting Request is received by the Corporation during the period commencing one hundred and twenty days prior to the first anniversary of the date of the immediately preceding annual meeting and ending on the date of the next annual meeting; (iii) a Similar Item was presented at any meeting of stockholders held within ninety days prior to receipt by the Corporation of such Special Meeting Request (and, for purposes of this clause (iii), the election of directors shall be deemed a "Similar Item" with respect to all items of business involving the election or removal of directors); (iv) a Similar Item is included in the Corporation's notice as an item of business to be brought before a stockholder meeting that has been called but not yet held; or (v) such Special Meeting Request was made in a manner that involved a violation of Regulation 14A under the 1934 Act, or other applicable law.

Stockholders included in the Requisite Holders and owning, as of the date of the revocation notice, a majority of the combined voting power of the shares owned by the Requisite Holders, may revoke a Special Meeting Request by written revocation delivered to the Corporation at any time prior to the Special Meeting

of Stockholders; provided, however, the Board of Directors shall have the discretion to determine whether or not to proceed with the Special Meeting of Stockholders.

If none of the stockholders included in the Requisite Holders appears or sends a qualified representative to present the proposal(s) or business submitted by the stockholders for consideration at the Special Meeting of Stockholders, the Corporation need not present such proposal(s) or business for a vote at such meeting.

Section 4. Quorum. Except as otherwise provided by law or by the Certificate of Incorporation, the holders of a majority of the capital stock issued and outstanding and entitled to vote thereat, present in person or represented by proxy, shall constitute a quorum at all meetings of the stockholders for the transaction of business. If, however, such quorum shall not be present or represented at any meeting of the stockholders, the stockholders entitled to vote thereat, present in person or represented by proxy, may adjourn the meeting from time to time, but no other business shall be transacted at the meeting. Any business may be transacted at the adjourned meeting which might have been transacted at the original meeting. The stockholders present at a duly called or convened meeting, at which a quorum is present, may continue to transact business until adjournment, notwithstanding the withdrawal of enough stockholders to leave less than a quorum. When a meeting is adjourned to another time or place, if any, notice need not be given of the adjourned meeting if the time and place, if any, thereof, by which stockholders and proxy holders may be deemed to be present in person and vote at such meeting, are announced at the meeting at which the adjournment is taken**.** If the adjournment is for more than thirty days, or, if after adjournment a new record date is fixed, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting. Once a share is represented for any purpose at a meeting (other than solely to object (1) to holding the meeting or transacting business at the meeting, or (2) (if it is a special meeting) to consideration of a particular matter at the meeting that is not within the purpose or purposes described in the meeting notice), it is deemed present for quorum purposes for the remainder of the meeting and or any adjournment of that meeting unless a new record date is set for the adjourned meeting. **Voting.** Unless otherwise required by law, the Certificate of Incorporation or these By-Laws, any question brought before any meeting of stockholders shall be decided by the vote of the holders of a majority of the stock represented and entitled to vote thereat. Each stockholder represented at a meeting of stockholders shall be entitled to cast one vote for each share of the capital stock entitled to vote thereat held by such stockholder. Such votes may be cast in person or by proxy but no proxy shall be voted on or after three years from its date, unless such proxy provides for a longer period. Unless required by statute, or determined to be advisable by the Board of Directors, in its discretion, or the officer of the Corporation presiding at a meeting of stockholders, in his discretion, the vote on any matter need not be by ballot. **Consent of Stockholders in Lieu of Meeting.** Unless otherwise provided in the Certificate of Incorporation, any action required or permitted to be taken at any Annual or Special Meeting of Stockholders of the Corporation, may be taken without a meeting, without prior notice and without a vote, if a consent in writing, setting forth the action so taken, shall be signed by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted. Prompt notice of the taking of the corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing. In the event that the action which is consented to is such as would have required the filing of a certificate under the General Corporation Law, if such action had been voted on by stockholders at a meeting thereof, the Certificate filed shall state, in lieu of any statement concerning any vote of stockholders, that written consent and written notice has been given as provided in this Section 6. In order that the Corporation may determine the stockholders entitled to consent to corporate action in writing without a meeting, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall not be more than 10 days after the date upon which the resolution fixing the record date is adopted by the

Board of Directors. Any stockholder of record seeking to have the stockholders authorize or take corporate action by written consent shall, by written notice to the Secretary, request the Board of Directors to fix a record date. The Board of Directors shall promptly, but in all events within 10 days after the date on which such a request is received, adopt a resolution fixing the record date. If no record date has been fixed by the Board of Directors within 10 days after the date on which such a request is received, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting, when no prior action by the Board of Directors is required by applicable law, shall be the first date on which a signed written consent setting forth the action taken or proposed to be taken is delivered to the Corporation by delivery to its registered office in Delaware, its principal place of business, or an officer or agent of the Corporation having custody of the book in which proceedings of meetings of stockholders are recorded. Delivery to the Corporation's registered office shall be by hand or by certified or registered mail, return receipt requested. If no record date has been fixed by the Board of Directors and prior action by the Board of Directors is required by applicable law, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting shall be at the close of business on the date on which the Board of Directors adopts the resolution taking such prior action.

Section 7. List of Stockholders Entitled to Vote. The officer of the Corporation who has charge of the stock ledger of the Corporation shall prepare and make, at least ten days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, during ordinary business hours, for a period of at least ten days prior to the meeting, in any manner permitted by statute. The list shall also be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder of the Corporation who is present. **Stock Ledger.** The stock ledger of the Corporation shall be the only evidence as to who are the stockholders entitled to examine the stock ledger, the list required by Section 7 of this Article I or the books of the Corporation, or to vote in person or by proxy at any meeting of stockholders, or to consent in writing to any action pursuant to Section 6 of this Article I. **Notice of Stockholder Business other than Director Nominations.** In order for business to be properly brought before an Annual Meeting by a stockholder, the stockholder must have given timely notice thereof in writing to the Secretary of the Corporation. To be timely, a stockholder's notice with respect to an Annual Meeting, other than with respect to nominations of persons for election to the Board of Directors of the Corporation pursuant to Article II, Sections 1 or 13, of these By-Laws, must be delivered to or mailed and received at the principal executive offices of the Corporation not less than sixty nor more than one hundred twenty days prior to the anniversary date of the preceding year's Annual Meeting; provided, however, that in the event no Annual Meeting was held in the previous year or the date of the Annual Meeting has been changed by more than thirty days, notice by the stockholder to be timely must be so received not later than the close of business on the later of one hundred and twenty days in advance of such Annual Meeting or ten days following the date on which public announcement of the date of the meeting is first made. In no event shall the public announcement of an adjournment or postponement of an Annual Meeting commence a new time period (or extend any time period) for the giving of a notice as described above. For all business other than director nominations, a stockholder's notice to the secretary of the Corporation shall set forth as to each matter the stockholder proposes to bring before the Annual Meeting: (i) a brief description of the business desired to be brought before the Annual Meeting and the reasons for conducting such business at the Annual Meeting, (ii) any other information relating to such stockholder and beneficial owner, if any, on whose behalf the proposal is being made, required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for the proposal and pursuant to and in accordance with Section 14(a) of the Exchange Act and the rules and regulations promulgated thereunder and (iii) as to the stockholder: (A) the name and address of the stockholder as they appear on the Corporation's books and of the beneficial owner, if any, on whose behalf the proposal is being

made, (B) the class and number of shares of the Corporation which are owned by the stockholder (beneficially and of record) and owned by the beneficial owner, if any, on whose behalf the proposal is being made, as of the date of the stockholder's notice, (C) a description of any agreement, arrangement or understanding with respect to such proposal between or among the stockholder and any of its affiliates or associates, and any others (including their names) acting in concert with any of the foregoing, (D) a description of any agreement, arrangement or understanding (including any derivative or short positions, profit interests, options, hedging transactions, and borrowed or loaned shares) that has been entered into as of the date of the stockholder's notice by, or on behalf of, the stockholder or any of its affiliates or associates, the effect or intent of which is to mitigate loss to, manage risk or benefit of share price changes for, or increase or decrease the voting power of the stockholder or any of its affiliates or associates with respect to shares of stock of the Corporation, (E) a representation that the stockholder is a holder of record of shares of the Corporation entitled to vote at the meeting and intends to appear in person or by proxy at the meeting to present the proposal specified in the notice, and (F) a representation whether the stockholder intends to solicit proxies from stockholders in support of the proposal. The foregoing notice requirements of Section 9 shall be deemed satisfied by a stockholder with respect to business other than a nomination if the stockholder has notified the Corporation of his, her or its intention to present a proposal at an annual meeting in compliance with the applicable rules and regulations promulgated under Section 14(a) of the Exchange Act and such stockholder's proposal has been included in a proxy statement that has been prepared by the Corporation to solicit proxies for such annual meeting. No business shall be conducted at any annual meeting except in accordance with the procedures set forth in this Section 9 and Article II, Sections 1 and 13 of these By-Laws, and unless otherwise required by law, if a stockholder intending to propose business at an annual meeting pursuant to this Section 9 does not provide the information required under this Section 9 to the Corporation promptly following the later of the record date or the date notice of the record date is first publicly disclosed, or the stockholder (or a qualified representative of the stockholder) does not appear at the meeting to present the proposed business, such business shall not be considered, notwithstanding that proxies in respect of such business may have been received by the Corporation. The requirements of this Section 9 shall apply to any business to be brought before an annual meeting by a stockholder whether such business is to be included in the Corporation's proxy statement pursuant to Rule 14a-8 of the Exchange Act or presented to stockholders by means of an independently financed proxy solicitation. The requirements of this Section 9 are included to provide the Corporation notice of a stockholder's intention to bring business before an annual meeting and shall in no event be construed as imposing upon any stockholder the requirement to seek approval from the Corporation as a condition precedent to bringing any such business before an annual meeting.

ARTICLE II

DIRECTORS

Section 1. Number and Election of Directors. The Board of Directors shall consist of not less than one nor more than fifteen members, the exact number of which shall be fixed from time to time by the Board of Directors. Except as otherwise required by these By-Laws, by law or by the Certificate of Incorporation, directors shall be elected by a majority of the votes cast at an Annual Meeting of Stockholders at which a quorum is present, provided that directors shall be elected by the vote of a plurality at a meeting at which a quorum is present if (i) the Secretary receives notice that a stockholder has nominated a person for election to the Board of Directors in accordance with the advance notice requirements for stockholder nominations set forth in this Section 1 and (ii) such nomination has not been withdrawn by such stockholder on or prior to the day next preceding the date the Corporation first mails notice of meeting for such meeting to the stockholders. Each director so elected shall hold office until the next Annual Meeting and until his successor is duly elected and qualified, or until his earlier death, resignation or removal, in the manner hereinafter provided. Any director may resign at any time upon notice to the Corporation. Directors need not be stockholders. For purposes of this Section, a majority of the votes cast means that the number of shares voted “for” a director must exceed 50% of the votes cast with respect to that director. Nominations for election to

the Board of Directors at an annual or special meeting of the stockholders may be made by the Board of Directors or on behalf of the Board of Directors by a nominating committee duly appointed by the Board of Directors, or by a stockholder of the Corporation entitled to vote for the election of directors. Except as set forth in Article II, Section 13, all nominations, other than those made by or on behalf of the Board of Directors, shall be made by notice in writing delivered or mailed by first class United States mail, postage prepaid, to the Secretary and received by the Secretary not less than sixty nor more than one hundred twenty days prior to the anniversary date of the preceding year's Annual Meeting, in the case of nominations for election at an Annual Meeting, and not more than ten days after the date of the Corporation's notice of a special meeting, in the case of nominations for election at a special meeting; provided, however, that in the event that the Annual Meeting is called for a date that is more than thirty days before or after the anniversary of the preceding year's Annual Meeting, in order to be timely the notice must be so received not later than the close of business on the later of one hundred and twenty days in advance of such Annual Meeting or ten days following the day on which public disclosure of the date of the Annual Meeting was made. In no event shall the public announcement of an adjournment or postponement of an Annual Meeting commence a new time period (or extend any time period) for the giving of a notice as described above. Such stockholder's notice shall set forth as to each proposed nominee who is not an incumbent director, (a)the name, age, business address and, if known, residence address of such nominee, (b)the principal occupation or employment of such nominee during the preceding five years, (c)the number of shares of stock of the Corporation which are beneficially owned by such nominee, (d)any other information relating to such nominee that would be required to be set forth in a definitive proxy statement filed in connection with a proxy solicitation pursuant to Section 14 of the Securities Exchange Act of 1934 ("the 1934 Act"), (e) the written consent of such nominee to being named in the Corporation's proxy statement as a nominee and to serving as a director of the Corporation, if elected; and such stockholder's notice shall set forth as to such stockholder the name and address, as they appear on the Corporation's books, of such stockholder, the number of shares of stock of the Corporation which are beneficially owned by such stockholder, and all other information relating to such stockholder that would be required to be filed with the Securities and Exchange Commission if such stockholder were a participant in a proxy solicitation pursuant to said Section 14. A nomination made otherwise than as provided in this Section 1 or in Article II, Section 13 shall be null and void and shall not be submitted to a vote of stockholders.

Section 2. Vacancies. Vacancies and newly created directorships resulting from any increase in the authorized number of directors may be filled by a majority of the directors then in office, though less than a quorum, or by a sole remaining director, and the directors so chosen shall hold office until the next annual election and until their successors are duly elected and qualified, or until their earlier resignation or removal. **Duties and Powers.** The business of the Corporation shall be managed by or under the direction of the Board of Directors which may exercise all such powers of the Corporation and do all such lawful acts and things as are not by statute or by the Certificate of Incorporation or by these By-Laws directed or required to be exercised or done by the stockholders. **Meetings.** The Board of Directors of the Corporation may hold meetings, both regular and special, either within or without the State of Delaware. Regular meetings of the Board of Directors may be held without notice at such time and at such place as may from time to time be determined by the Board of Directors. Special meetings of the Board of Directors may be called by the Chairman, if there be one, the Vice Chairman, if there be one, the President, or any three or more directors. Notice thereof stating the place, date and hour of the meeting shall be given to each director in any manner permitted by statute. Unless otherwise required by these By-Laws, the notice need not state the purpose or purposes of the meeting. Notice need not be given to any director who, either before or after the meeting, signs and submits a written waiver of notice, submits a waiver of notice by electronic transmission, or attends the meeting (except when he attends for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened). **Quorum.** Except as may be otherwise specifically provided by law, the Certificate of Incorporation or these By-Laws, at all

meetings of the Board of Directors, a majority of the entire Board of Directors shall constitute a quorum for the transaction of business and the act of a majority of the entire Board of Directors at any meeting at which there is a quorum shall be the act of the Board of Directors. If a quorum shall not be present at any meeting of the Board of Directors, the directors present thereat may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present. **Actions of Board.** Unless otherwise provided by the Certificate of Incorporation or these By-Laws, any action required or permitted to be taken at any meeting of the Board of Directors or of any committee thereof may be taken without a meeting, if all the members of the Board of Directors or committee, as the case may be, consent thereto in writing or by electronic transmission, and the writings or writing or electronic transmission or transmissions are filed with the minutes of proceedings of the Board of Directors or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form. **Meetings by Means of Conference Telephone.** Unless otherwise provided by the Certificate of Incorporation or these By-Laws, members of the Board of Directors of the Corporation, or any committee designated by the Board of Directors, may participate in a meeting of the Board of Directors or such committee by means of a conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and participation in a meeting pursuant to this Section 7 shall constitute presence in person at such meeting.

Section 8. Committees. The Board of Directors may, by resolution passed by a majority of the entire Board of Directors, designate one or more committees, each committee to consist of one or more of the directors of the Corporation. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of any such committee. In the absence or disqualification of a member of a committee, and in the absence of a designation by the Board of Directors of an alternate member to replace the absent or disqualified member, the member or members thereof present at any meeting and not disqualified from voting, whether or not he or they constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any absent or disqualified member. Any committee, to the extent allowed by law and provided in the resolution establishing such committee, shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the Corporation. Each committee shall keep regular minutes and report to the Board of Directors when required. Unless otherwise provided in the resolution of the Board of Directors designating a committee, a committee may create one or more subcommittees, each subcommittee to consist of one or more members of the committee, and may delegate to a subcommittee such powers and authority as the committee deems appropriate. **Compensation.** The directors may be paid their expenses, if any, of attendance at each meeting of the Board of Directors and may be paid a sum, in cash, securities or a combination thereof for attendance at each meeting of the Board of Directors or a stated salary as director. No such payment shall preclude any director from serving the Corporation in any other capacity and receiving compensation therefor. Members of special or standing committees may be allowed like compensation for attending committee meetings. Compensation of directors shall be as determined by the Board of Directors. **Interested Directors.** No contract or transaction between the Corporation and one or more of its directors or officers, or between the Corporation and any other corporation, partnership, association or other organization in which one or more of its directors or officers are directors or officers, or have a financial interest, shall be void or voidable solely for this reason, or solely because the director or officer is present at or participates in the meeting of the Board of Directors or committee thereof which authorizes the contract or transaction, or solely because his or their votes are counted for such purpose if (i) the material facts as to his or their relationship or interest and as to the contract or transaction are disclosed or are known to the Board of Directors or the committee, and the Board of Directors or committee in good faith authorizes the contract or transaction by the affirmative votes of a majority of the disinterested directors, even though the disinterested directors be less than a quorum; or (ii) the material facts as to his or their relationship or interest and as to the contract or transactions are disclosed or are known to the stockholders

entitled to vote thereon, and the contract or transaction is specifically approved in good faith by vote of the stockholders; or (iii) the contract or transaction is fair as to the Corporation as of the time it is authorized, approved or ratified, by the Board of Directors, a committee thereof or the stockholders. Common or interested directors may be counted in determining the presence of a quorum at a meeting of the Board of Directors or of a committee which authorizes the contract or transaction. **Chairman of the Board of Directors.** The Chairman of the Board of Directors, if there be one, shall preside at all meetings of the stockholders and of the Board of Directors. The Chairman of the Board of Directors shall also perform such other duties and may exercise such other powers as from time to time may be assigned to him by these By-Laws or by the Board of Directors. **Vice Chairman.** The Vice Chairman of the Board of Directors, if there be one, or the Vice Chairmen, if there be more than one, shall perform such duties and may exercise such other powers as from time to time may be assigned by these By-Laws or the Board of Directors. In the absence or disability of the Chairman of the Board of Directors, or if there be none, the Vice Chairman shall preside at meetings of the stockholders and the Board of Directors. **Proxy Access**. (a) The Corporation shall include in its proxy statement for an Annual Meeting of stockholders the name, together with the Required Information (as defined below), of any person nominated for election (a "Stockholder Nominee") to the Board of Directors by a stockholder that satisfies, or by a group of no more than twenty stockholders that satisfy, the requirements of this Section 13 (an "Eligible Stockholder"), and that expressly elects at the time of providing the notice required by this Section 13 (the "Nomination Notice") to have its nominee included in the Corporation's proxy materials pursuant to this Section 13. To be timely, a stockholder's Nomination Notice must be delivered given, either by personal delivery or mailed by United States certified mail, postage prepaid, and received by the Secretary at the principal executive offices of the Corporation not earlier than the close of business on the one hundred fiftieth day prior to, nor later than the close of business on the one hundred twentieth day prior to, the first anniversary of the date of the Corporation's proxy statement released to stockholders in connection with the preceding year's Annual Meeting; provided, however, that in the event that the Annual Meeting is called for a date that is more than thirty days before or seventy days after the anniversary of the preceding year's Annual Meeting, in order to be timely the Nomination Notice must be so received not later than the close of business on the later of one hundred and twenty days in advance of such Annual Meeting or ten days following the day on which public disclosure of the date of the Annual Meeting was made. In no event shall the public announcement of an adjournment or postponement of an Annual Meeting commence a new time period (or extend any time period) for the giving of a Nomination Notice as described above.

(c) For purposes of this Section 13, the "Required Information" that the Corporation will include in its proxy statement is (i) the information concerning the Stockholder Nominee and the Eligible Stockholder that is required to be disclosed in the Corporation's proxy statement by the regulations promulgated under the 1934 Act; and (ii) if the Eligible Stockholder so elects, a Statement (as defined in Section 13(g)). To be timely, the Required Information must be delivered to or mailed to and received by the Secretary within the time period specified in this Section 13 for providing the Nomination Notice.

(d) The number of Stockholder Nominees (including Stockholder Nominees that were submitted by an Eligible Stockholder for inclusion in the Corporation's proxy materials pursuant to this Section 13 but either are subsequently withdrawn or that the Board of Directors decides to nominate as Board of Director nominees), together with any nominees who were previously elected to the Board of Directors as Stockholder Nominees at any of the preceding two Annual Meetings and who are re-nominated for election at such Annual Meeting by the Board of Directors, appearing in the Corporation's proxy materials with respect to an Annual Meeting of stockholders shall not exceed the greater of (i) two or (ii) twenty percent (20%) of the number of directors in office as of the last day on which a Nomination Notice may be delivered pursuant to this Section 13, or if such amount is not a whole number, the closest whole number below twenty percent (20%). In the event that the number of Stockholder Nominees submitted by Eligible Stockholders pursuant to this Section 13 exceeds this maximum number, each Eligible Stockholder will select one Stockholder Nominee

for inclusion in the Corporation's proxy materials until the maximum number is reached, going in order of the amount (largest to smallest) of shares of the capital stock of the Corporation each Eligible Stockholder disclosed as owned in its respective Nomination Notice submitted to the Corporation and confirmed by the Corporation. If the maximum number is not reached after each Eligible Stockholder has selected one Stockholder Nominee, this selection process will continue as many times as necessary, following the same order each time, until the maximum number is reached.

(e) For purposes of this Section 13, an Eligible Stockholder shall be deemed to "own" only those outstanding shares of the capital stock of the Corporation as to which the stockholder possesses both (i) the full voting and investment rights pertaining to the shares and (ii) the full economic interest in (including the opportunity for profit and risk of loss on) such shares; provided that the number of shares calculated in accordance with clauses (i) and (ii) shall not include any shares (x) sold by such stockholder or any of its affiliates in any transaction that has not been settled or closed, (y) borrowed by such stockholder or any of its affiliates for any purposes or purchased by such stockholder or any of its affiliates pursuant to an agreement to resell or (z) subject to any option, warrant, forward contract, swap, contract of sale, or other derivative or similar agreement entered into by such stockholder or any of its affiliates, whether any such instrument or agreement is to be settled with shares or with cash based on the notional amount or value of shares of outstanding capital stock of the Corporation, in any such case which instrument or agreement has, or is intended to have, the purpose or effect of (1) reducing in any manner, to any extent or at any time in the future, such stockholder's or its affiliates' full right to vote or direct the voting of any such shares, and/or (2) hedging, offsetting or altering to any degree gain or loss arising from the full economic ownership of such shares by such stockholder or affiliate. A stockholder shall "own" shares held in the name of a nominee or other intermediary so long as the stockholder retains the right to instruct how the shares are voted with respect to the election of directors and possesses the full economic interest in the shares. A person's ownership of shares shall be deemed to continue during any period in which (i) the person has loaned such shares, provided that the person has the power to recall such loaned shares on no more than five business days' notice; or (ii) the person has delegated any voting power by means of a proxy, power of attorney or other instrument or arrangement that is revocable at any time by the person. The terms "owned," "owning" and other variations of the word "own" shall have correlative meanings. Whether outstanding shares of the capital stock of the Corporation are "owned" for these purposes shall be determined by the Board of Directors, which determination shall be conclusive and binding on the Corporation and its stockholders.

(f) An Eligible Stockholder must have owned (as defined above) continuously for at least three years that number of shares of capital stock as shall constitute three percent (3%) or more of the outstanding capital stock of the Corporation (the "Required Shares") as of both (i) a date within seven days prior to the date of the Nomination Notice and (ii) the record date for determining stockholders entitled to vote at the Annual Meeting. For purposes of satisfying the foregoing ownership requirement under this Section 13, (i) the shares of the capital stock of the Corporation owned by one or more stockholders, or by the person or persons who own shares of the capital stock of the Corporation and on whose behalf any stockholder is acting, may be aggregated, provided that the number of stockholders and other persons whose ownership of shares of capital stock of the Corporation is aggregated for such purpose shall not exceed twenty, and (ii) a group of funds under common management and investment control shall be treated as one stockholder or person for this purpose. No person may be a member of more than one group of persons constituting an Eligible Stockholder under this Section 13. For the avoidance of doubt, if a group of stockholders aggregates ownership of shares in order to meet the requirements under this Section 13, all shares held by each stockholder constituting their contribution to the foregoing 3% threshold must be held by that stockholder continuously for at least three years, and evidence of such continuous ownership shall be provided as specified in this Section 13(f).

Within the time period specified in this Section 13 for providing the Nomination Notice, an Eligible Stockholder must provide the following information in writing to the Secretary of the Corporation:

(i) one or more written statements from the record holder of the shares (and from each intermediary through which the shares are or have been held during the requisite three-year holding period) verifying that, as of a date within seven days prior to the date of the Nomination Notice, the Eligible Stockholder owns, and has owned continuously for the preceding three years, the Required Shares, and the Eligible Stockholder's agreement to provide, within five business days after the record date for the Annual Meeting, written statements from the record holder and intermediaries verifying the Eligible Stockholder's continuous ownership of the Required Shares through the record date;

(ii) the written consent of each Stockholder Nominee to being named in the proxy statement as a nominee and to serving as a director if elected;

(iii) a copy of the Schedule 14N that has been filed with the Securities and Exchange Commission as required by Rule 14a-18 under the 1934 Act, as such rule may be amended;

(iv) a description of all direct and indirect compensation and other material monetary agreements, arrangements, and understandings during the past three years, and any other material relationships, between or among the Eligible Stockholder and its affiliates and associates, or others acting in concert therewith, on the one hand, and each Stockholder Nominee, and each Stockholder Nominee's respective affiliates and associates, or others acting in concert therewith, on the other hand, including, without limitation all information that would be required to be disclosed pursuant to Item 404 of Regulation S-K if the Eligible Stockholder making the nomination or on whose behalf the nomination is made, or any affiliate or associate thereof or person acting in concert therewith, were the "registrant" for purposes of Item 404 and the nominee were a director or executive officer of such registrant;

(v) a description of any agreement, arrangement or understanding (including any derivative or short positions, profit interests, options, warrants, stock appreciation or similar rights, hedging transactions, and borrowed or loaned shares) that has been entered into as of the date of the stockholder's notice by, or on behalf of, the Eligible Stockholder, the effect or intent of which is to mitigate loss, manage risk or benefit from share price change for, or maintain, increase or decrease the voting power of, such Eligible Stockholder with respect to shares of stock of the corporation, and a representation that the Eligible Stockholder will notify the corporation in writing of any such agreement, arrangement or understanding in effect as of the record date for the meeting promptly following the later of the record date or the date notice of the record date is first publicly disclosed;

(vi) a representation that the Eligible Stockholder (including each member of any group of stockholders that together is an Eligible Stockholder under this Section 13) (A) acquired the Required Shares in the ordinary course of business and not with the intent to change or influence control at the Corporation, and does not presently have such intent, (B) intends to appear in person or by proxy at the Annual Meeting to present the nomination, (C) has not nominated and will not nominate for election to the Board of Directors at the Annual Meeting any person other than the Stockholder Nominee(s) being nominated pursuant to this Section 13, (D) has not engaged and will not engage in, and has not and will not be a "participant" in another person's, "solicitation" within the meaning of Rule 14a-1(l) under the 1934 Act in support of the election of any individual as a director at the Annual Meeting other than its Stockholder Nominee or a nominee of the Board of Directors, (E) will not distribute to any stockholder any form of proxy for the Annual Meeting other than the form distributed by the Corporation and (F) in the case of a nomination by a group of stockholders that

together is an Eligible Stockholder, the designation by all group members of one group member that is authorized to act on behalf of all such members with respect to the nomination and matters related thereto, including any withdrawal of the nomination; and

(vii) an undertaking that the Eligible Stockholder agrees to (A) own the Required Shares through the date of the Annual Meeting, (B) assume all liability stemming from any legal or regulatory violation arising out of the Eligible Stockholder's communications with the stockholders of the Corporation or out of the information that the Eligible Stockholder provided to the Corporation, (C) indemnify and hold harmless the Corporation and each of its directors, officers and employees individually against any liability, loss or damages in connection with any threatened or pending action, suit or proceeding, whether legal, administrative or investigative, against the Corporation or any of its directors, officers or employees arising out of any nomination, solicitation or other activity by the Eligible Stockholder in connection with its efforts to elect the Stockholder Nominee pursuant to this Section 13, (D) comply with all other laws and regulations applicable to any solicitation in connection with the Annual Meeting and (E) provide to the Corporation prior to the Annual Meeting such additional information as necessary with respect thereto.

(g) The Eligible Stockholder may provide to the Secretary of the Corporation, at the time the information required by this Section 13 is provided, a written statement for inclusion in the Corporation's proxy statement for the Annual Meeting, not to exceed five hundred words, in support of the Stockholder Nominee's candidacy (the "Statement"). Notwithstanding anything to the contrary contained in this Section 13, the Corporation may omit from its proxy materials any information or Statement (or portion thereof) that it, in good faith, believes would violate any applicable law or regulation.

(h) Within the time period specified in this Section 13 for delivering the Nomination Notice, a Stockholder Nominee must deliver to the Secretary of the Corporation a written representation and agreement that the Stockholder Nominee (i) is not and will not become a party to any agreement, arrangement or understanding with, and has not given any commitment or assurance to, any person or entity as to how such person, if elected as a director of the Corporation, will act or vote on any issue or question (ii) is not and will not become a party to any agreement, arrangement or understanding with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement or indemnification in connection with service or action as a director, and (iii) will comply with all of the Corporation's corporate governance, conflict of interest, confidentiality and stock ownership and trading policies and guidelines, and any other Corporation policies and guidelines applicable to directors, as well as any applicable law, rule or regulation or listing requirement. At the request of the Corporation, the Stockholder Nominee must submit all completed and signed questionnaires required of the Corporation's directors and officers. The Corporation may request such additional information as necessary to permit the Board of Directors to determine if each Stockholder Nominee is independent under the listing standards of the principal U.S. exchange upon which the Corporation's capital stock is listed, any applicable rules of the Securities and Exchange Commission and any publicly disclosed standards used by the Board of Directors in determining and disclosing the independence of the Corporation's directors (the "Applicable Independence Standards").

(i) Any Stockholder Nominee who is included in the Corporation's proxy materials for a particular Annual Meeting of stockholders but either (i) withdraws from or becomes ineligible or unavailable for election at the Annual Meeting, or (ii) does not receive at least twenty-five percent (25%) of the votes cast "for" the Stockholder Nominee's election, will be ineligible to be a Stockholder Nominee pursuant to this Section 13 for the next two (2) Annual Meetings.

(j) The Corporation shall not be required to include, pursuant to this Section 13, any Stockholder Nominees in its proxy materials for any meeting of stockholders (i) for which the Secretary of Corporation receives a notice that a stockholder has nominated a person for election to the Board of Directors pursuant to the advance notice requirements for stockholder nominees for director set forth in Section 1 of this Article II and such stockholder does not expressly elect at the time of providing the notice to have its nominee included in the Corporation's proxy materials pursuant to this Section 13, (ii) if the Eligible Stockholder who has nominated such Stockholder Nominee has engaged in or is currently engaged in, or has been or is a "participant" in another person's, "solicitation" within the meaning of Rule 14a-1(l) under the 1934 Act in support of the election of any individual as a director at the meeting other than its Stockholder Nominee(s) or a nominee of the Board of Directors, (iii) who is not independent under the Applicable Independence Standards, as determined by the Board of Directors, (iv) whose election as a member of the Board of Directors would cause the Corporation to be in violation of these By-Laws, the Certificate of Incorporation, the listing standards of the principal exchange upon which the Corporation's capital stock is traded, or any applicable law, rule or regulation, (v) who is or has been, within the past three years, an officer or director of a competitor, as defined in Section 8 of the Clayton Antitrust Act of 1914, as determined by the Board of Directors, (vi) who is a named subject of a pending criminal proceeding (excluding traffic violations and other minor offenses) or has been convicted in such a criminal proceeding within the past ten years, (vii) who is subject to any order of the type specified in Rule 506(d) of Regulation D promulgated under the Securities Act of 1933, as amended, (viii) if such Stockholder Nominee or the applicable Eligible Stockholder shall have provided information to the Corporation in respect to such nomination that was untrue in any material respect or omitted to state a material fact necessary in order to make the statement made, in light of the circumstances under which it was made, not misleading, as determined by the Board of Directors, or (ix) if the Eligible Stockholder or applicable Stockholder Nominee otherwise contravenes any of the agreements or representations made by such Eligible Stockholder or Stockholder Nominee or fails to comply with its obligations pursuant to this Section 13.

(k) Notwithstanding anything to the contrary set forth herein, the Board of Directors or the person presiding at the meeting shall declare a nomination by an Eligible Stockholder to be invalid, and such nomination shall be disregarded notwithstanding that proxies in respect of such vote may have been received by the Corporation, if (i) the Stockholder Nominee(s) and/or the applicable Eligible Stockholder shall have breached its or their obligations, agreements or representations under this Section 13, as determined by the Board of Directors or the person presiding at the Annual Meeting of stockholders, or (ii) the Eligible Stockholder (or a qualified representative thereof) does not appear at the Annual Meeting of stockholders to present any nomination pursuant to this Section 13.

(l) The Eligible Stockholder (including any person who owns shares of capital stock of the Corporation that constitute part of the Eligible Stockholder's ownership for purposes of satisfying Section 13(f) hereof) shall file with the Securities and Exchange Commission any solicitation or other communication with the Corporation's stockholders relating to the meeting at which the Stockholder Nominee will be nominated, regardless of whether any such filing is required under Regulation 14A of the 1934 Act or whether any exemption from filing is available for such solicitation or other communication under Regulation 14A of the 1934 Act.

ARTICLE III

OFFICERS

Section 1. General. The officers of the Corporation shall be chosen by the Board of Directors and shall be a President and a Secretary. The Board of directors, in its discretion, may also choose a

Treasurer and one or more Executive Vice Presidents, Senior Vice Presidents, Vice Presidents, Assistant Secretaries, Assistant Treasurers and other officers. Any number of offices may be held by the same person, unless otherwise prohibited by law, the Certificate of Incorporation or these By-Laws. The officers of the Corporation need not be stockholders of the Corporation nor need such officers be directors of the Corporation. **Election.** The Board of Directors at its first meeting held after each Annual Meeting of Stockholders shall elect the officers of the Corporation who shall hold their offices for such terms and shall exercise such powers and perform such duties as shall be determined from time to time by the Board of Directors; and all officers of the Corporation shall hold office until their successors are chosen and qualified, or until their earlier resignation or removal. Any officer elected by the Board of Directors may be removed at any time by the affirmative vote of a majority of the entire Board of Directors. Any vacancy occurring in any office of the Corporation shall be filled by the Board of Directors. The salaries of all executive officers of the Corporation shall be fixed by the Board of Directors. **Voting Securities Owned by the Corporation.** Powers of attorney, proxies, waivers of notice of meeting, consents and other instruments relating to securities owned by the Corporation may be executed in the name and on behalf of the Corporation by any officer of the Corporation and any such officer may, in the name of and on behalf of the Corporation, take all such action as any such officer may deem advisable to vote in person or by proxy at any meeting of security holders of any corporation in which the Corporation may own securities and at any such meeting shall possess and may exercise any and all rights and power incident to the ownership of such securities and which, as the owner thereof, the Corporation might have exercised and possessed if present. The Board of Directors may, by resolution, from time to time confer like powers upon any other person or persons. **President.** The President shall, subject to the control of the Board of Directors, be the Chief Executive Officer of the Corporation and shall have general supervision of the business of the Corporation and shall see that all orders and resolutions of the Board of Directors are carried into effect. He shall execute all bonds, mortgages, contracts and other instruments of the Corporation requiring a seal, under the seal of the Corporation, except where required or permitted by law to be otherwise signed and executed and except that the other officers of the Corporation may sign and execute documents when so authorized by these By-Laws, the Board of Directors or the President. In the absence or disability of the Chairman and the Vice Chairman of the Board of Directors, or if there be none, the President shall preside at all meetings of the stockholders and the Board of Directors. The President shall also perform such other duties and may exercise such other powers as from time to time may be assigned to him by these By-Laws or by the Board of Directors. **Executive Vice Presidents/Senior Vice Presidents.** At the request of the President or in his absence or in the event of his inability or refusal to act (and if there be no Chairman of the Board of Directors or Vice Chairman of the Board of Directors), the Executive Vice President or Senior Vice Presidents if there is more than one (in the order designated by the Board of Directors) shall perform the duties of the President, and when so acting, shall have all the powers of and be subject to all the restrictions upon the President. Each Executive Vice President or Senior Vice President shall perform such other duties and have such other powers as the Board of Directors from time to time may prescribe. If there be no Chairman of the Board of Directors, no Vice Chairman of the Board and no Executive Vice President or Senior Vice President, the Board of Directors shall designate the officer of the Corporation who, in the absence of the President or in the event of the inability or refusal of the President to act, shall perform the duties of the President, and when so acting, shall have all the powers of and be subject to all the restrictions upon the President. **Secretary.** The Secretary shall attend all meetings of the Board of Directors and all meetings of stockholders and record all the proceedings thereat in a book or books to be kept for that purpose; the Secretary shall also perform like duties for the standing committees when required. The Secretary shall give, or cause to be given, notice of all meetings of the stockholders and special meetings of the Board of Directors, and shall perform such other duties as may be prescribed by the Board of Directors, the Chairman or Vice Chairman of the Board of Directors or

President, under whose supervision he shall be. If the Secretary shall be unable or shall refuse to cause to be given notice of all meetings of the stockholders and special meetings of the Board of Directors, and if there be no Assistant Secretary, then either the Board of Directors, the Chairman or Vice Chairman of the Board of Directors or the President may choose another officer to cause such notice to be given. The Secretary shall have custody of the seal of the Corporation and the Secretary or any Assistant Secretary, if there be one, shall have authority to affix the same to any instrument requiring it and when so affixed, it may be attested by the signature of the Secretary or by the signature of any such Assistant Secretary. The Board of Directors may give general authority to any other officer to affix the seal of the Corporation and to attest the affixing by his signature. The Secretary shall see that all books, reports, statements, certificates and other documents and records required by law to be kept or filed are properly kept or filed, as the case may be, in any manner permitted by statute and as directed by the Board of Directors. **Treasurer.** The Treasurer, if there be one, shall have the custody of the corporate funds and securities and shall keep full and accurate accounts of receipts and disbursements in books belonging to the Corporation and shall deposit all moneys and other valuable effects in the name and to the credit of the Corporation in such depositories as may be designated by the Board of Directors. The Treasurer shall disburse the funds of the Corporation as may be ordered by the Board of Directors, taking proper vouchers for such disbursements, and shall render to the Chairman or Vice Chairman of the Board of Directors or to the President and the Board of Directors, at its regular meetings, or when the Board of Directors so requires, an account of all his transactions as Treasurer and of the financial condition of the Corporation. If required by the Board of Directors, the Treasurer shall give the Corporation a bond in such sum and with such surety or sureties as shall be satisfactory to the Board of Directors for the faithful performance of the duties of his office and for the restoration to the Corporation, in case of his death, resignation, retirement or removal from office, of all books, papers, vouchers, money and other property of whatever kind in his possession or under his control belonging to the Corporation. **Assistant Secretaries.** Except as may be otherwise provided in these By-Laws, Assistant Secretaries, if there be any, shall perform such duties and have such powers as from time to time may be assigned to them by the Board of Directors, the Chairman or Vice Chairman of the Board of Directors, the President, any Vice President, if there be one, or the Secretary, and in the absence of the Secretary or in the event of his disability or refusal to act, shall perform the duties of the Secretary, and when so acting, shall have all the powers of and be subject to all the restrictions upon the Secretary. **Assistant Treasurers.** Assistant Treasurers, if there be any, shall perform such duties and have such powers as from time to time may be assigned to them by the Board of Directors, the Chairman or Vice Chairman of the Board of Directors, the President, any Vice President, if there be one, or the Treasurer, and in the absence of the Treasurer or in the event of his disability or refusal to act, shall perform the duties of the Treasurer, and when so acting, shall have all the powers of and be subject to all the restrictions upon the Treasurer. If required by the Board of Directors, an Assistant Treasurer shall give the Corporation a bond in such sum and with such surety or sureties as shall be satisfactory to the Board of Directors for the faithful performance of the duties of his office and for the restoration to the Corporation, in case of his death, resignation, retirement or removal from office, of all books, papers, vouchers, money and other property of whatever kind in his possession or under his control belonging to the Corporation. **Other Officers.** Such other officers as the Board of Directors may choose shall perform such duties and have such powers as from time to time may be assigned to them by the Board of Directors. The Board of Directors may delegate to any other officer of the Corporation the power to choose such other officers and to prescribe their respective duties and powers.

ARTICLE IV

STOCK

Section 1. Form of Certificates. The shares of the Corporation shall be represented by certificates, unless the Board of Directors provides by resolution or resolutions that some or all of any or all classes or series of the Corporation's stock shall be uncertificated shares. Any such resolution shall not apply to shares represented by a certificate until the certificate is surrendered to the Corporation. Every holder of stock in the Corporation represented by certificates shall be entitled to have a certificate signed, in the name of the Corporation (i) by the Chairman or the Vice Chairman of the Board of Directors, the President or a Vice President and (ii) by the Treasurer or an Assistant Treasurer, or the Secretary or an Assistant Secretary of the Corporation, representing the number of shares registered in certificate form. The Board of Directors may make such additional rules and regulations, not inconsistent with these By-Laws, as it may deem appropriate concerning the issue, transfer and registration of certificates for shares of stock or uncertificated shares of the Corporation. **Signatures.** Any or all of the signatures on certificate may be a facsimile. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if he were such officer, transfer agent or registrar at the date of issue. **Lost Certificates.** The Board of Directors may direct a new certificate to be issued in place of any certificate theretofore issued by the Corporation alleged to have been lost, stolen or destroyed, upon the making of an affidavit of that fact by the person claiming the certificate of stock to be lost, stolen or destroyed. When authorizing such issue of a new certificate, the Board of Directors may, in its discretion and as a condition precedent to the issuance thereof, require the owner of such alleged lost, stolen or destroyed certificate, or his legal representative, to advertise the same in such manner as the Board of Directors shall require and/or to give the Corporation a bond in such sum as it may direct as indemnity against any claim that may be made against the Corporation on account of the alleged lost, stolen or destroyed certificate or the issuance of the new certificate or uncertificated shares. The Corporation may adopt such other provisions and restrictions with reference to lost certificates, not inconsistent with applicable law, as it shall in its discretion deem appropriate. **Transfers.** Stock of the Corporation shall be transferable in the manner prescribed by law and in these By-Laws. Transfers of stock shall be made on the books of the Corporation only by the person named in the certificate or by his attorney lawfully constituted in writing and upon the surrender of the certificate therefor, which shall be canceled before a new certificate or uncertificated shares shall be issued.

Section 5. Record Date. In order that the Corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof, or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock, or for the purpose of any other lawful action, the Board of Directors may fix, in advance, a record date, which shall not be more than sixty days nor less than ten days before the date of such meeting, nor more than sixty days prior to any other action. A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting. The manner of fixing a record date for the determination of stockholders entitled to express consent to corporate action in writing without a meeting shall be as provided for in Article I, Section 6. **Beneficial Owners.** The Corporation shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends, and to vote as such owner, and to hold liable for calls and assessments a person registered on its books as the owner of shares, and shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of any other person, whether or not it shall have express or other notice thereof, except as otherwise provided by law.

NOTICES

Section 1. Notices. Whenever notice is required by law, the Certificate of Incorporation or these By-Laws, to be given to any director, member of a committee or stockholder, such notice may be given in any manner permitted by applicable laws and regulations, and shall be deemed given at the time prescribed by applicable laws and regulations for such manner of notice. Notice of any meeting shall not be required to be given to any person who attends the meeting, except when the person attends the meeting in person or by proxy for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. **Waivers of Notice.** Whenever any notice is required by law, the Certificate of Incorporation or these By-Laws, to be given to any director, member of a committee or stockholder, a waiver thereof in writing, signed by the person or persons entitled to said notice, or an electronically transmitted waiver of notice, whether before or after the time stated therein, shall be deemed equivalent thereto.

ARTICLE VI

GENERAL PROVISIONS

Section 1. Dividends. Dividends upon the capital stock of the Corporation, subject to the provisions of the Certificate of Incorporation, if any, may be declared by the Board of Directors at any regular or special meeting, and may be paid in cash, in property, or in shares of the capital stock. Before payment of any dividend, there may be set aside out of any funds of the Corporation available for dividends such sum or sums as the Board of Directors from time to time, in its absolute discretion, deems proper as a reserve or reserves to meet contingencies, or for equalizing dividends, or for repairing or maintaining any property of the Corporation, or for any proper purpose, and the Board of Directors may modify or abolish any such reserve. **Disbursements.** All checks or demands for money and notes of the Corporation shall be signed by such officer or officers or such other person or persons as the Board of Directors may from time to time designate. **Fiscal Year.** The fiscal year of the Corporation shall be fixed by resolution of the Board of Directors. **Corporate Seal.** The corporate seal shall have inscribed thereon the name of the Corporation, the year of its organization and the words "Corporate Seal, Delaware". The seal may be used by causing it or a facsimile thereof to be impressed or affixed or reproduced or otherwise. **Section 203 Election.** The Corporation hereby expressly elects not to be governed by Section 203 of the General Corporation Law of the State of Delaware. **Electronic Transmission.** When used in these By-Laws, "electronic transmission" means any form of communication, not directly involving the physical transmission of paper, that creates a record that may be retained, retrieved and reviewed by a recipient thereof, and that may be directly reproduced in paper form by such a recipient through an automated process, including without limitation any telegram, cablegram, facsimile transmission and communication by electronic mail. **Facsimile Signatures.** In addition to the provisions for use of facsimile signatures specifically authorized in these By-Laws, facsimile signatures of any officer or officers of the Corporation may be used whenever and as authorized by the Board of Directors or any committee thereof. **Form of Records.** Any records required by these By-Laws or otherwise maintained by the Corporation in the regular course of its business, including its stock ledger, books of account, and minute books, may be kept on, or be in the form of, magnetic tape, computer diskettes and discs, photographs, microphotographs, or any other information storage device, provided that the records so kept can be converted into clearly legible form within a reasonable time.

INDEMNIFICATION

Section 1. Power to Indemnify in Actions, Suits or Proceedings Other Than Those by or in the Right of the Corporation. Subject to Section 3 of this Article VII, the Corporation shall indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the Corporation) by reason of the fact that he is or was a director, officer, employee or agent of the Corporation, or is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise, against

expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection with such action, suit or proceeding if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the Corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which he reasonably believed to be in or not opposed to the best interests of the Corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that his conduct was unlawful. **Power to Indemnify in Actions, Suits or Proceedings by or in the Right of the Corporation.** Subject to Section 3 of this Article VII, the Corporation shall indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Corporation to procure a judgment in its favor by reason of the fact that he is or was a director, officer, employee or agent of the Corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by him in connection with the defense or settlement of such action or suit if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the Corporation; except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the Corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper. **Authorization of Indemnification.** Any indemnification under this Article VII (unless ordered by a court) shall be made by the Corporation only as authorized in the specific case upon a determination that indemnification of the director, officer, employee or agent is proper in the circumstances because he has met the applicable standard of conduct set forth in Section 1 or Section 2 of this Article VII, as the case may be. Such determination shall be made (i) by the Board of Directors by a majority vote of a quorum consisting of directors who were not parties to such action, suit or proceeding, or (ii) if such a quorum is not obtainable, or, even if obtainable a quorum of disinterested directors so directs, by independent legal counsel in a written opinion, or (iii) by the stockholders. To the extent, however, that a director, officer, employee or agent of the Corporation has been successful on the merits or otherwise in defense of any action, suit or proceeding described above, or in defense of any claim, issue or matter therein, he shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him in connection therewith, without the necessity of authorization in the specific case. **Good Faith Defined.** For purposes of any determination under Section 3 of this Article VII, a person shall be deemed to have acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the Corporation, or, with respect to any criminal action or proceeding, to have had no reasonable cause to believe his conduct was unlawful, if his action is based on the records or books of account of the Corporation or another enterprise, or on information supplied to him by the officers of the Corporation or another enterprise in the course of their duties, or on the advice of legal counsel for the Corporation or another enterprise or on information or records given or reports made to the Corporation or another enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the Corporation or another enterprise. The term "another enterprise" as used in this Section 4 shall mean any other corporation or any partnership, joint venture, trust, employee benefit plan or other enterprise of which such person is or was serving at the request of the Corporation as a director, officer, employee or agent. The provisions of this Section 4 shall not be deemed to be exclusive or to limit in any way the circumstances in which a person may be deemed to have met the applicable standard of conduct set forth in Section 1 or 2 of this Article VII, as the case may be. **Indemnification by a Court.** Notwithstanding any contrary determination in the specific case under Section 3 of this Article VII, and notwithstanding the absence of any determination thereunder, any director, officer,

employee or agent may apply to any court of competent jurisdiction in the State of Delaware for indemnification to the extent otherwise permissible under Sections 1 and 2 of this Article VII. The basis of such indemnification by a court shall be a determination by such court that indemnification of the director, officer, employee or agent is proper in the circumstances because he has met the applicable standards of conduct set forth in Section 1 or 2 of this Article VII, as the case may be. Neither a contrary determination in the specific case under Section 3 of this Article VII nor the absence of any determination thereunder shall be a defense to such application or create a presumption that the director, officer, employee or agent seeking indemnification has not met any applicable standard of conduct. Notice of any application for indemnification pursuant to this Section 5 shall be given to the Corporation promptly upon the filing of such application. If successful, in whole or in part, the director, officer, employee or agent seeking indemnification shall also be entitled to be paid the expense of prosecuting such application. **Expenses Payable in Advance.** Expenses incurred in defending or investigating a threatened or pending action, suit or proceeding shall be paid by the Corporation in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director, officer, employee or agent to repay such amount if it shall ultimately be determined that he is not entitled to be indemnified by the Corporation as authorized in this Article VII. **Nonexclusivity of Indemnification and Advancement of Expenses.** The indemnification and advancement of expenses provided by or granted pursuant to this Article VII shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any By-Law, agreement, contract, vote of stockholders or disinterested directors or pursuant to the direction (howsoever embodied) of any court of competent jurisdiction or otherwise, both as to action in his official capacity and as to action in another capacity while holding such office, it being the policy of the Corporation that indemnification of the persons specified in Sections 1 and 2 of this Article VII shall be made to the fullest extent permitted by law. The provisions of this Article VII shall not be deemed to preclude the indemnification of any person who is not specified in Section 1 or 2 of this Article VII but whom the Corporation has the power or obligation to indemnify under the provisions of the General Corporation Law of the State of Delaware, or otherwise. **Insurance.** The Corporation may purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the Corporation, or is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise against any liability asserted against him and incurred by him in any such capacity, or arising out of his status as such, whether or not the Corporation would have the power or the obligation to indemnify him against such liability under the provisions of this Article VII. **Certain Definitions.** For purposes of this Article VII, references to "the Corporation" shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had power and authority to indemnify its director, officers, employees or agents, so that any person who is or was a director, officer, employee or agent of such constituent corporation, or is or was serving at the request of such constituent corporation as a directors, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise, shall stand in the same position under the provisions of this Article VII with respect to the resulting or surviving corporation as he would have with respect to such constituent corporation if its separate existence had continued. For purposes of this Article VII, references to "fines" shall include any excise taxes assessed on a person with respect to an employee benefit plan; and references to "serving at the request of the Corporation" shall include any service as a director, officer, employee or agent of the Corporation which imposes duties on, or involves services by, such director, officer, employee or agent with respect to an employee benefit plan, its participants or beneficiaries; and a person who acted in good faith and in a manner he reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed to have acted in a manner "not opposed to the best interests of the Corporation" as referred to in this Article VII. **Survival of Indemnification and Advancement of Expenses.** The indemnification and advancement of expenses provided by, or granted pursuant to, this Article VII shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to

be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person. **Limitation on Indemnification.** Notwithstanding anything contained in this Article VII to the contrary, except for proceedings to enforce rights to indemnification (which shall be governed by Section 5 hereof), the Corporation shall not be obligated to indemnify any director, officer, employee or agent in connection with a proceeding (or part thereof) initiated by such person unless such proceeding (or part thereof) was authorized or consented to by the Board of Directors of the Corporation.

AMENDMENTS

Section 1. Amendments. These By-Laws may be altered, amended or repealed, in whole or in part, or new By-Laws may be adopted by the stockholders or by the Board of Directors, provided, however, that notice of such alteration, amendment, repeal or adoption of new By-Laws be contained in the notice of such meeting of stockholders or Board of Directors, as the case may be. All such amendments must be approved by either the holders of a majority of the outstanding capital stock entitled to vote thereon or by a majority of the entire Board of Directors then in office. **Entire Board of Directors.** As used in this Article VIII and in these By-Laws generally, the term "entire Board of Directors" means the total number of directors which the Corporation would have if there were no vacancies.

Exhibit 21 LIST OF SUBSIDIARIES

1957285 Ontario Inc. dba Quality Underwriting Services
2089729 Ontario, Inc.
2248848 Ontario Inc.
3065619 Nova Scotia Company
3257959 Nova Scotia Company
8165335 Canada Inc.
8348596 Canada Inc.
896988 Ontario Limited
9279-3280 Quebec Inc.
Accupath Diagnostic Laboratories, Inc.
Beacon Laboratory Benefit Solutions, Inc.
Beacon LBS IPA, Inc.
CannAmm GP Inc.
CannAmm Limited Partnership
Center for Disease Detection, LLC
Center for Disease Detection International
Centrex Clinical Laboratories, Inc.
Clearstone Central Laboratories (U.S.) Inc.
Clearstone Holdings (International) Ltd.
Clipper Holdings, Inc.
Colorado Coagulation Consultants, Inc.
Colorado Laboratory Services, LLC
Correlagen Diagnostics, Inc.
Covance Inc.
Curalab Inc.
Cytometry Associates, Inc.
Czura Thornton (Hong Kong) Limited
DCL Acquisition, Inc.
DCL Medical Laboratories, LLC
DCL Sub LLC
Decision Diagnostics, L.L.C. (aka DaVinici/Medicorp LLC)
Diagnostic Services, Inc.
DIANON Systems, Inc.
DL Holdings Limited Partnership
Dynacare - Gamma Laboratory Partnership
Dynacare Company
Dynacare G.P. Inc.
Dynacare Holdco LLC
Dynacare Laboratories Inc.
Dynacare Laboratories Limited Partnership
Dynacare Northwest Inc.
Dynacare Realty Inc.
DynaLifeDX
DynalifeDX Infrastructure Inc.
Endocrine Sciences, Inc.
Esoterix Genetic Counseling, LLC
Esoterix Genetic Laboratories, LLC
Esoterix, Inc.
Execmed Health Services Inc.
FirstSource Laboratory Solutions, Inc.
Gamma Dynacare Central Medical Laboratories GP Inc.
Gamma Dynacare Central Medical Laboratory Limited Partnership
GDML Medical Laboratories Inc
Health Testing Centers, Inc.
Health Trans Services Inc.

HHLA Lab-In-An-Envelope, LLC
Home Healthcare Laboratory of America, LLC
IDX Pathology, Inc.
Impact Genetics Corporation
Impact Genetics, Inc.
Kaleida LabCorp, LLC
Lab Delivery Service of New York City, Inc.
LabCorp Belgium Holdings, Inc.
LabCorp BVBA
LabCorp Central Laboratories (Canada) Inc.
LabCorp Central Laboratories (China) Inc.
LabCorp Colorado, Inc.
LabCorp Development Company
LabCorp Employer Services, Inc.
LabCorp Health System Diagnostics, LLC
LabCorp Indiana, Inc.
LabCorp Japan, G.K.
LabCorp Limited
LabCorp Michigan, Inc.
LabCorp Nebraska, Inc.
LabCorp Neon Ltd.
LabCorp Neon Switzerland S.à.r.l.
LabCorp Specialty Testing Billing Service, Inc.
LabCorp Specialty Testing Group, Inc.
LabCorp Staffing Solutions, Inc.
LabCorp Tennessee, LLC
LabCorp UK Holdings, Ltd.
Laboratoire Bio-Medic Inc.
Laboratory Corporation of America
LabWest, Inc.
Lifecodes Corporation
LipoScience, Inc.
Litholink Corporation
MedAxio Insurance Medical Services GP Inc.
MedAxio Insurance Medical Services LP
Medical Neurogenitics, LLC
Medtox Diagnostics, Inc.
Medtox Laboratories, Inc.
MEDTOX Scientific, Inc.
Monogram Biosciences UK Limited
Monogram Biosciences, Inc.
National Genetics Institute
New Brighton Business Center LLC
New Imaging Diagnostics, LLC
New Molecular Diagnostics Ventures LLC
NWT Inc.
Orchid Cellmark ULC
PA Labs, Inc.
Path Lab, Incorporated
Pathology Associates Medical Lab, LLC
Paclab LLC
Pee Dee Pathology Associates, Inc.
Persys Technology Inc.
Pixel by LabCorp
Princeton Diagnostic Laboratories of America, Inc.
Protedyne Corporation
Saint Josephs-PAML, LLC
Sequenom Biosciences (India) Pvt. Ltd.

Sequenom Center for Molecular Medicine, LLC
Sequenom, Inc.
SW/DL LLC
Tandem Labs Inc.
Tri-Cities Laboratory, LLC
Viro-Med Laboratories, Inc.
Yakima Medical Arts, Inc.

Covance Inc. Active Entities

CJB Inc.
Covance (Argentina) S.A.
Covance (Asia) Pte. Ltd.
Covance (Barbados) Holdings Ltd.
Covance (Barbados) Ltd.
Covance (Canada) Inc.
Covance (Polska) Sp.Zo.O
Covance Asia-Pacific Inc.
Covance Austria GmbH
Covance Bioanalytical Services LLC
Covance Brazil Pharmaceutical Services Limitada
Covance Central Laboratory Services Inc.
Covance Central Laboratory Services Limited Partnership
Covance Central Laboratory Services S.a r.l
Covance Chile Services Limitada
Covance Clinical and Periapproval Services AG
Covance Clinical and Periapproval Services BVBA
Covance Clinical and Periapproval Services Limited
Covance Clinical and Periapproval Services LLC
Covance Clinical Development GmbH
Covance Clinical Development Private Limited
Covance Clinical Development SA
Covance Clinical Development SARL
Covance Clinical Development S.R.L.
Covance Clinical Development SRL
Covance Clinical Product Developments Ltd.
Covance Clinical Research Unit Inc.
Covance Clinical Research Unit Limited
Covance Clinical Research, L.P.
Covance CLS Holdings Limited LLC
Covance CLS Holdings Partnership LP
Covance Colombia Services Limitada
Covance Consulting Limited
Covance CRS (Switzerland) GmbH
Covance CRS Analytics Ltd.
Covance CRS Developments Limited
Covance CRS International Limited
Covance CRS Laboratories, LLC
Covance CRS Limited
Covance CRS Research Limited
Covance CRU Inc.
Covance Denmark ApS
Covance Development Services (Pty) Ltd
Covance Hong Kong Holdings Limited
Covance Hong Kong Services Limited
Covance Hungaria Consultancy Limited Liability Company
Covance India Pharmaceutical Services Private Limited
Covance International Holdings B.V.
Covance Japan Co., Ltd.

Covance Korea Services Limited
Covance Laboratories Inc.
Covance Laboratories Korea Company Limited
Covance Laboratories Limited
Covance Latin America Inc.
Covance Limited
Covance Luxembourg S.a r.l.
Covance Market Access Services Inc.
Covance Mexico Services, S. DE R. L. De C.V.
Covance Neon Luxembourg S.a r.l.
Covance New Zealand Limited
Covance Periapproval Services Inc.
Covance Peru Services S.A.
Covance Pharma Consulting Limited
Covance Pharmaceutical Research and Development (Beijing) Co., Ltd.
Covance Pharmaceutical Research and Development (Shanghai) Co., Ltd.
Covance Preclinical Corporation
Covance Preclinical Services GmbH
Covance Pty Ltd
Covance Research Holdings, LLC
Covance Scientific Services & Solutions Private Limited
Covance Services (Thailand) Limited
Covance Services Malaysia Sdn. Bhd.
Covance Specialty Pharmacy LLC
Covance Taiwan Services Limited
Covance US Holdings Limited LLC
Covance US Holdings Partnership LP
Covance Virtual Central Laboratory B.V.
Fairfax Storage Limited
Global Specimen Solutions, Inc.
Hazpen Trustees Ltd.
LSR Pension Scheme Limited
Medaxial Limited
Sciformix Europe Limited
Sciformix Philippines, Inc.
Texas Covance GP, Inc.
The Covance Charitable Foundation

Covance Inc. Inactive Entities
Covance Classic Laboratory Services Inc.
Covance CRS Japan Co. Ltd
Covance CRS Co. Ltd
Covance Genomics Laboratory LLC
Covance Laboratory SAS
Covance NPA Inc.
Integrated Safe Foods Limited
Integrated Safe Foods Pte Ltd.
International Food Network Ltd
JSG R&D LLC
Nexigent Inc.
PMD Properties, LLC
REIM LLC
Safe Foods International Holdings LLC
SLJK LLC
SPHN LLC

Chiltern International Group Limited Operating Entities
Chiltern - Pesquisa Clinica Ltda

Chiltern Clinical Research Ukraine LLC
Chiltern International Group Ltd. (CIGL) HL
Chiltern International Holdings Limited
Chiltern Clinical Research Ukraine LLC
Chiltern Investigacion Clinica Limitada
Endpoint Clinical, Inc.
Endpoint Clinical India Private Limited
Endpoint Clinical (UK) Limited
Havenfern Limited
Ockham Development Group (Holdings) UK Limited
Ockham Europe Limited
Theorem Clinical Research Holdings B.V.
Theorem Clinical Research International B.V.
Theorem Clinical Research Latin America B.V.
Theorem Clinical Research Pte. Ltd.
Theorem Research Associates, Inc.

Chiltern International Inactive Entities

Chiltern Clinical Research (Philippines) Inc.
Chiltern Clinical Research KK
Chiltern International AB
Chiltern International EOOD
Chiltern International Limited
Chiltern International LLC
Chiltern International Ltd
Chiltern International Pty. Ltd
Chiltern Pharmaceutical and Technology Consulting (Shanghai) Co. Ltd.
Chiltern Research International (Pty) Ltd
Integrated Development Associates Philippines, Inc.
Theorem Clinical Research Co., Ltd.

Dynacare non-operating entities identified subsequent to the acquisition of Dynacare Inc. on July 25, 2002

1004679 Ontario Limited
563911 Ontario Limited
794475 Ontario Inc.
829318 Ontario Limited
854512 Ontario Limited
879606 Ontario Limited
900747 Ontario Ltd.
925893 Ontario Limited
942487 Ontario Ltd.
942489 Ontario Ltd.
942491 Ontario Limited
942492 Ontario Ltd.
947342 Ontario Ltd.
949235 Ontario Ltd.
958069 Ontario Inc.
977681 Ontario Inc.
978550 Ontario Ltd.
978551 Ontario Ltd.
Amherstview Medical Centre Developments Inc.
DHG Place Du Centre Clinique
Dynacare Canada Inc.
Dynacare International Inc.
Glen Davis Equities Ltd.
L.R.C. Management Service Inc.
Lawrence-Curlew Medical Centre Inc.
Roselat Developments Limited

St. Joseph's Health Centre
Stockwin Corporation Ltd.
Thistle Place Care Corp.
Toronto Argyro Medical Laboratories Ltd.
Woodstock Medical Arts Building Inc.

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-3 (No. 333-234633) and Form S-8 (No. 333-102602, No. 333-90764, No. 333-97745, No. 333-150704, No. 333-181107, No. 333-211324 and No. 333-211323) of Laboratory Corporation of America Holdings of our report dated February 28, 2020, relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Raleigh, North Carolina
February 28, 2020

Exhibit 24.1

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart her true and lawful attorney-in-fact and agent, with full power of substitution, for her and in her name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or she substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ KERRII B. ANDERSON
Kerrii B. Anderson

Exhibit 24.2

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ JEAN-LUC BÉLINGARD

Jean-Luc Bélingard

Exhibit 24.3

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ JEFFREY A. DAVIS

Jeffrey A. Davis

Exhibit 24.4

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ D. GARY GILLILAND, M.D., Ph.D

D. Gary Gilliland, M.D., Ph.D

Exhibit 24.5

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ DAVID P. KING

David P. King

Exhibit 24.6

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ GARHENG KONG, M.D., Ph.D.
Garheng Kong, M.D., Ph.D.

Exhibit 24.7

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ PETER M. NEUPERT

Peter M. Neupert

Exhibit 24.8

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart her true and lawful attorney-in-fact and agent, with full power of substitution, for her and in her name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2019, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ RICHELLE P. PARHAM

Richelle P. Parham

Exhibit 24.9

POWER OF ATTORNEY

KNOWN ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Sandra van der Vaart his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, in connection with the Laboratory Corporation of America Holdings (Corporation) Annual Report on Form 10-K for the year ended December 31, 2018, under the Securities Exchange Act of 1934, as amended, including, without limiting the generality of the foregoing, to sign the Form 10-K in the name and on behalf of the Corporation or on behalf of the undersigned as a director or officer of the Corporation, and any amendments to the Form 10-K and any instrument, contract, document or other writing, of or in connection with the Form 10-K or amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, including this power of attorney, with the Securities and Exchange Commission and any applicable securities exchange or securities self-regulatory body, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, the undersigned has signed these presents in this 28th day of February, 2020.

By: /s/ R. SANDERS WILLIAMS, M.D.

R. Sanders Williams, M.D.

Exhibit 31.1

Certification

I, Adam H. Schechter, certify that:

1. I have reviewed this annual report on Form 10-K of Laboratory Corporation of America Holdings;

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 Rule 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 the 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.

Date: February 28, 2020

By: /s/ ADAM H. SCHECHTER
Adam H. Schechter
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

Certification

I, Glenn A. Eisenberg, certify that:

1. I have reviewed this annual report on Form 10-K of Laboratory Corporation of America Holdings;

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 Rule 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 the 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.

Date: February 28, 2020

By: /s/ GLENN A. EISENBERG
Glenn A. Eisenberg
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32

Written Statement of
Chief Executive Officer and Chief Financial Officer
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. Section 1350)

The undersigned, the Chief Executive Officer and the Chief Financial Officer of Laboratory Corporation of America Holdings (Company), each hereby certifies that, to his knowledge on the date hereof:

(a) the Form 10-K of the Company for the Period Ended December 31, 2019, filed on the date hereof with the Securities and Exchange Commission (Report) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(b) information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

By: /s/ ADAM H. SCHECHTER
Adam H. Schechter
Chief Executive Officer
February 28, 2020

By: /s/ GLENN A. EISENBERG
Glenn A. Eisenberg
Chief Financial Officer
February 28, 2020

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Laboratory Corporation of America Holdings and will be retained by Laboratory Corporation of America Holdings and furnished to the Securities and Exchange Commission or its staff upon request.