BDO LIFE SCIENCES RISKFACTOR REPORT

Life Sciences Cites Familiar Business Risks as Regulatory Tailwinds Promise to Bolster Innovation

Life sciences companies are facing familiar business risks, according to their most recent 10-K filings. But revolutionary forces—driven by innovations in technology, regulatory bodies, consumers, legislators and healthcare providers—will require new ways of thinking about risk mitigation.

The top risks cited by the largest 100 U.S. publicly-traded life sciences companies have remained relatively consistent over the last several years, with competitive pressures, intellectual property (IP) challenges, and the ability to commercialize and market products all tying for first place this year. Nevertheless, new leadership steering the Food and Drug Administration (FDA), paired with political and regulatory uncertainty, could impact how those risks evolve.

"FDA Commissioner Scott Gottlieb has already unveiled proposals to streamline the approval of new drugs and medical devices. While the changes could require life sciences companies to rethink their compliance frameworks, they present exciting opportunities for growth. We will likely see advanced waves of both innovation and competition take hold."

David Friend, MD, MBA, chief transformation officer and managing director in The BDO Center for Healthcare Excellence & Innovation

Top 25 Risk Factors

for the 100 Largest U.S. Life Sciences Companies

2017 RANK*	RISK FACTORS (descending in order of frequency)	2017	2016	2015	2014	2013
#1t	Competition in industry and consolidation	100%	100%	100%	97%	100%
#1t	Corporate copyright, IP infringement and/or trade secrets, trademarks invalidations, violations or challenges	100%	100%	99%	98%	96%
#1t	Ability to commercialize and market current and future products	100%	98%	99%	97%	96%
#1t	Legal proceedings and litigation	100%	95%	92%	91%	84%
#5	Federal, state or local regulations, including tax rates and uncertainty	99%	100%	100%	98%	100%
#6t	FDA regulatory approvals, obligations and compliance, including limitations on approved products	98%	97%	100%	94%	94%
#6t	Ability to attract/retain/motivate key personnel and management	98%	95%	91%	94%	96%
#8t	Issues with suppliers, manufacturers, vendors, distributors and partners/alliances (product quality, shipping, imports, availability, costs, etc.); compliance with Good Manufacturing Practices	97%	97%	99%	100%	93%
#8t	Various liabilities, including product liability; insurance costs and potential losses due to uninsured liabilities	97%	96%	98%	95%	87%
#8t	Product complications, side effects, delays, recalls, safety issues, etc.	97%	96%	93%	88%	88%
#8t	Revenue, stock price, sales cycle and profitability vary or are volatile; financial results less predictable	97%	94%	90%	97%	92%
#12t	Changes to the availability of, or limitations to, reimbursement from third-party payers, including Medicare/Medicaid	95%	97%	96%	85%	87%
#12t	Risks related to collaborations/relationships with other companies, including breach of obligations, failure to perform, etc.	95%	91%	90%	89%	92%
#14	Inadequate liquidity or capital	94%	85%	84%	85%	79%
#15	Failure to properly execute corporate strategy and growth (i.e.: R&D not leading to successful drugs; inability to capitalize on product innovation or go further with research; inability to develop new products like biosimilars, gene therapy, etc.)	93%	84%	79%	66%	69%
#16t	Delays or unfavorable results from pre-clinical and clinical trials	90%	91%	92%	87%	80%
#16t	Threats to international operations and sales	90%	92%	88%	71%	79%
#18t	Changes in healthcare laws and regulations, including the Affordable Care Act	89%	86%	82%	77%	78%
#18t	Ability to maintain operational infrastructure, including IT and/or implement new systems; breaches of technology security, privacy, theft, etc.	89%	89%	70%	61%	46%
#20	Pressure on pricing and margins and cost cutting**	84%	89%	N/A	N/A	N/A
#21t	Maintaining adequacy/effectiveness of internal controls, financial reporting and SOX; accounting standards/regulations changes and compliance	81%	85%	87%	76%	68%
#21t	Natural disasters, war, conflicts and terrorist attacks	81%	77%	76%	56%	47%
#23	General economic and financial market conditions	79%	83%	91%	67%	84%
#24t	Anti-takeover or change of control provisions	78%	81%	79%	75%	66%
#24t	Labor concerns, including those related to pension, post-retirement costs, benefit plans (including rising healthcare costs), healthcare, union concerns, retention, immigration, outsourcing, managing geographically dispersed workforce, etc.	78%	76%	78%	40%	24%

** t indicates a tie in the risk factor ranking*
***Combined with "competition in industry, consolidation" in 2015. Split in 2016.*

RESPONDING TO REGULATIONS

Changes in healthcare laws and regulations, including the Affordable Care Act (ACA), have steadily increased since 2013. This year is no different, as uncertainty around further healthcare reforms reached an all-time high during the Republican effort to repeal and replace the ACA. More companies mention changes in healthcare laws and regulations this year (89 percent) than in all five prior years of the study.

Life sciences companies are also thinking more about risks relating to FDA regulatory approvals, obligations and compliance this year compared to previous years: Almost all (98 percent) cite it as a risk in their most recent 10-K filings. Components of the 21st Century Cures Act aimed at streamlining drug and medical device approvals, as well as the FDA's recently unveiled Digital Health Innovation Action Plan, among other forms of deregulation, will require organizations to reconsider their business strategies and risk frameworks.

89%
of life sciences companies say changes in **healthcare laws and regulations** are a risk

99%
cite **federal, state or local regulations**

98%
worry about **FDA regulatory approvals, obligations and compliance**

FCPA, FRAUD RISKS REMAIN TOP OF MIND

Despite reports that anti-corruption efforts might lag under the Trump administration, life sciences companies' concerns around compliance with the Foreign Corrupt Practices Act (FCPA) have not lessened. This year, 59 percent cite the FCPA and other anti-bribery and anti-corruption laws as risks, in line with 2015 levels (59 percent) and marking a 17 percentage-point increase from 2013 (42 percent).

Concerns around anti-fraud regulations, meanwhile, are elevated. Seventy-three percent of companies cite anti-kickback regulations as a risk. Seventy-two percent mention the False Claims Act (FCA) as a concern, up from last year (69 percent) and 2014 (43 percent). This followed the Department of Justice (DOJ)'s third-highest annual recovery in FCA history, recouping more than $4.7 billion from FCA cases in fiscal year 2016. Of that amount, $2.5 billion was from the healthcare industry, which included drug and medical device companies, hospitals, nursing homes, labs and physicians.

When it comes to maintaining adequate internal controls and keeping up with accounting and financial reporting regulations, concerns remained nearly flat this year, with 81 percent of companies citing it as a risk. This marks a significant increase from 2013 levels (68 percent), but only slightly below last year's level (85 percent).

At the same time, life sciences companies are preparing for a new revenue recognition standard, *ASC Topic 606 Revenue from Contracts with Customers*, which takes effect on Jan. 1. The standard aims to create comprehensive accounting guidance for revenue recognition and will substantially replace existing U.S. GAAP (Generally Accepted Accounting Principles) on this topic. For life sciences organizations, ASC 606 adoption will vary depending on the nature and stage of each business. For instance, transactions such as license transactions will face more significant changes than others and will require careful planning.

49%
cite risks related to the **new administration**

127
unique times **"Trump," "POTUS" or "president" was mentioned** across all reports analyzed

59%
mention risks around the **FCPA and other anti-bribery and anti-corruption regulations**

73%
say **anti-kickback laws** are a concern

72%
cite the **False Claims Act or Stark Law**

SPOTLIGHT

Navigating Tax Liabilities Ahead

With no immediate path forward for healthcare reform, the Trump administration has brought another hot button issue back into the spotlight: tax reform.

For the first time, BDO's analysis tracked the following tax risks this year: overall tax liabilities, the ability to use net operating loss (NOL) carryforwards to reduce future tax liability, differing tax laws in domestic and foreign jurisdictions, changes to the availability of tax credits or tax holidays, tax reform, repatriation earnings, and state and local tax issues.

Nearly three-fourths (71 percent) cite tax liabilities as a risk in their latest 10-K filings, including issues related to potential U.S. tax reform, differing tax laws in domestic and foreign jurisdictions, and state and local tax (SALT) issues. Specifically:

- 51% cite risks around the ability to use NOL carryforwards to reduce future tax liability
- 47% mention risks around differing tax laws in domestic and foreign jurisdictions
- 30% say changes to the availability of tax credits or tax holidays are a risk
- 22% are worried about tax reform
- 18% cite risks around repatriation earnings
- 15% mention state and local tax issues as risks

Though recent political rhetoric has focused on U.S. tax reform, for life sciences companies, a large proportion of which are historically multi-national, the bigger tax concerns might be changing **global tax laws and accounting rules**. These developments, which include Base Erosion and Profit Sharing (BEPS) guidelines from the Organisation for Economic Co-operation and Development (OECD), could force the modification of current IP holding structures and a new approach to global tax planning.

The **BEPS guidelines**, issued in late 2015, are a set of 15 actions concerning global tax rules related to transfer pricing, permanent establishments and aggressive tax planning including the use of IP holding structures. Many countries have begun implementing BEPS-compliant tax laws, with the U.S. recently implementing BEPS guidance related to country-by-country reporting. This will require the disclosure of certain critical information that can be accessed by taxing authorities of all OECD member states. At the same time, the European Union (EU) is pushing to get rid of certain tax benefits in its member countries that, under EU state aid law, are considered anti-competitive and unfair.

While global tax changes are taking shape, under ASC 606, companies will be required to fully recognize current and deferred income taxes from intercompany transfers of all property (except inventory) when transfers occur, even though the intercompany pre-tax profit would still be eliminated and recognized in future periods. The net tax effect is recognized when the asset is transferred, meaning entities will no longer be able to spread the tax consequence from intercompany transfers of IP and other assets over multiple reporting periods.

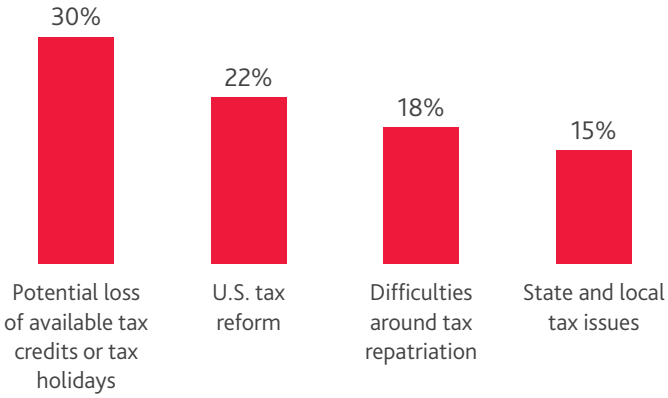
At the same time, life sciences companies need to keep abreast of evolving U.S. tax reform proposals, most of which are based on President Trump's tax framework released in April. The proposed changes include a reduction of the corporate tax rate from 35 percent to 15 percent for businesses. They also include a shift from a worldwide tax system to a territorial tax system, which would tax U.S. businesses only on what they earn within the U.S. rather than on profits earned around the world, as well as a one-time tax holiday (rate unspecified) on overseas profits.

The implications of tax reform on U.S. life sciences companies are not inconsequential. A lowering of the corporate tax rate, for example, may encourage U.S. multinationals to bring back some of their manufacturing operations to America, while a one-time tax holiday could be a boon for those looking to repatriate millions or billions of dollars from overseas.

Pharma companies could be one of the biggest beneficiaries of a tax holiday, say analysts at Bank of America Merrill Lynch. After all, pharma companies reaped the most benefits during the last U.S. tax holiday approved in **2004** when companies could repatriate their foreign earnings at a 5.25 percent corporate tax rate. The pharma and medicine industry made up **32 percent** of the total profits repatriated, with Pfizer bringing back the largest share, amounting to $37 billion in foreign earnings from 2005-06.

Every company will use their repatriation earnings differently, and the effect repatriation could have on each **company remains to be seen**. Ideas about what the excess money could fund include new or revived investments in manufacturing, and research and development (R&D) programs, as well as dividends to shareholders. The extra cash may also boost mergers and acquisitions (M&A) activity, as life sciences companies invest in strategic deals that can help them innovate and outpace the competition.

TOP U.S. TAX RISKS



Until companies are clear on how tax reform could affect asset values in corporate deals—or how the corporate tax rate could affect foreign companies interested in merging with American companies—many are instead choosing to adopt a "wait-and-see" approach. As with any pending policy, the exact implications of these changes will vary depending on where each company's global supply chain and customers are based.

GROWING FOCUS AROUND GLOBAL, SALT & R&D TAX ISSUES

While national tax reform is making many life sciences companies uneasy, so are tax issues abroad: Nearly half (47 percent) worry about maintaining compliance with differing tax laws in domestic and foreign jurisdictions. This comes as little surprise since these laws often introduce additional compliance costs, including regular audits under foreign tax authorities. Depending on the jurisdiction, economic and political pressures to increase tax revenue may also make favorably resolving tax disputes more difficult.

Tax issues at the local level spark concerns as well: 15 percent cite state and local tax (SALT) issues, with nearly one-third (30 percent) expressing concern over changes to the availability of tax credits or holidays offered to help encourage private companies' R&D efforts.

Many pharma and biotech companies find these R&D credits critical to funding innovative research, and as such, changes in their availability could deter progress. The orphan drug tax credit, while more limited in applicability than traditional R&D credits, is another incentive that has helped bring new products to market in the industry. Created under the Orphan Drug Act of 1983, the credit aims to financially incentivize pharmaceutical companies to develop drugs that treat diseases affecting less than 200,000 patients in the U.S. Makers of such drugs are eligible for a tax credit equal to 50 percent of qualifying costs that are incurred between the date the FDA grants them orphan status and the date the FDA approves their drug for patients.

Under **the program**, more than 400 drugs have come to market. To mention just one example, in 2012, **BioMarin** received $32.6 million from a combination of federal and California R&D tax credits, with the orphan drug credit making up most of the deferred tax benefit. In fact, the Treasury Department **estimates** that, because of the volume of orphan drugs under development, the U.S. could grant almost $50 billion in orphan drug tax credits from 2016-2025.

Thus, while the current U.S. tax reform proposal seeks to preserve R&D credits, companies are continuing to keep an eye out for any changes proposed at the federal, state and local levels.

worry about **maintaining compliance with differing tax laws in domestic and foreign jurisdictions**

cite changes to the **availability of tax credits or holidays**

As life sciences companies prepare for the future, balancing competing tax codes on the local, state, national and global levels will prove challenging as new tax statues and regulations unfurl. Life sciences companies must keep abreast of both current and future tax developments to ensure they are able to reduce their tax liabilities and maximize tax opportunities when the time comes.

"R&D spending has been critical to developing cutting-edge biotechnologies and breakthrough drugs in recent years. As such, drug manufacturers that work to develop or improve biotechnologies must ensure they are taking full advantage of the federal and state R&D tax credits available to them, which can increase cash flow as much as 9.1 percent of qualified spending for the former and up to 40 percent of qualified spending for the latter."

Chris Bard, leader of BDO's Specialized Tax Services R&D practice

SPOTLIGHT

Third-party Threats and Regulatory Uncertainty Push Operational Risks Higher

External risks—from cyber threats to regulatory uncertainty—are burdening life sciences companies this year, especially when it comes to operations. Healthcare and tax reform, as well as proposed changes to FDA approval processes and new third-party reimbursement risks, stand as real challenges to companies' financial, compliance and information systems.

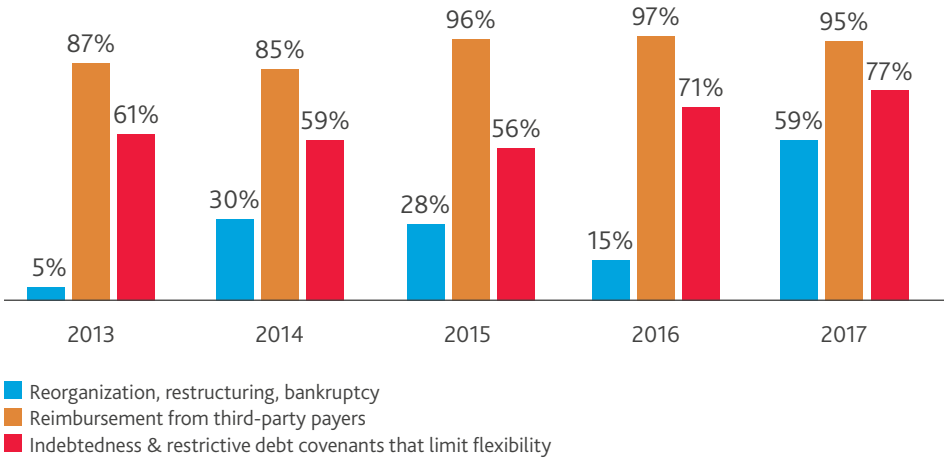
PRICING SHIFTS PROMPT FINANCIAL REEVALUATIONS

This year, reorganization, restructuring and bankruptcy risk continued to ascend life sciences companies' noted financial concerns. Fifty-nine percent cited the risk in their latest financial filings, compared to 15 percent in 2016, 30 percent in 2014 and 5 percent in 2013.

Worries around indebtedness, credit rating and restrictive debt covenants increased 6 percentage points, meanwhile, with 77 percent of life sciences organizations citing them as a risk.

Medicare and Medicaid's **Debt and insecure** future could be fueling many of these capital risks. A majority (95 percent) of life sciences companies are worried about reimbursement from third-party payers, including the availability of and limitations to Medicare and Medicaid. Healthcare's transition to value-based care is also adding stress to life sciences companies' revenue flow from these programs.

CAPITAL RISKS MOUNT



GLOBAL THREATS MAINTAIN FORCE

On a macro level, threats to international operations and sales continue to be frequently cited (90 percent), as well as risks related to natural disasters, war, conflicts and terrorist attacks (81 percent). As life sciences companies continue to expand their businesses around the world, their challenges expand accordingly. Risks related to trade restrictions or relationships were tracked for the first time this year, with 60 percent of companies mentioning them. The figure could underline uncertainty around the current administration's proposed tax reforms—which could have cross-border business implications.

At the same time, 34 percent mentioned challenges to their ability to expand abroad, potentially indicating that while the administration's proposed tax reform and trade policies might be cause for uneasiness now, concrete reactions have yet to occur.

34%
mention **impediments to international expansion**

60%
point to **trade relationships** or restrictions

81%
cite **natural disasters, war, conflicts or terrorist attacks**

"If data is the new oil, life sciences' business and research intelligence units are high value targets for all types of cyber adversaries and should be considered high risk operations for the enterprise. Hackers continue to find new ways to exploit scientific information for financial rewards. Protecting valuable corporate and patient data from internal and external threats should be a top priority for life sciences companies."

John Riggi, head of BDO's Cybersecurity and Financial Crimes practice

CYBER CONCERNS CONTINUE TO ASCEND

For the second year in a row, nearly nine in 10 (89 percent) of life sciences companies cited risks relating to their ability to maintain operational infrastructure, including breaches of technology security or theft of data.

Life sciences companies are tasked with protecting highly sensitive information, and remain uniquely at risk to cyber incidents, namely because of a lack of resources devoted to cybersecurity, their complexity of networks and a vast array of internet-connected devices. The WannaCry ransomware attacks on hospitals' information systems show that hackers understand the value of biomedical information, as well as patient records.

PRODUCT HURDLES MATERIALIZE

Life sciences companies depend heavily on research and development to create new products and keep up with competitors. They are highly reliant on the integrity of their raw materials as well as the efficiency of their operations. Underlining this, 67 percent cited the price and availability of raw materials as a challenge, marking an increase of 15 percentage points from last year. A weak U.S. dollar, international currency fluctuations and an uneasy energy market might be some of the reasons behind this heightened worry over raw materials.

The industry also relies heavily on third-parties to manufacture its products. Problems with the way products are made across the supply chain could leave companies vulnerable to product recalls or even enforcement action. Companies' financial filings reflected this concern, with the majority (97 percent) noting problems with their suppliers, manufacturers, vendors and distributors, and other partners as a risk.

75%
mention risks around **hazardous materials**

67%
point to the **price and availability of raw materials**

35%
cite excess **capacity or inventory management** challenges

SPOTLIGHT

Answering to Pricing Pressures

Drugmakers continue to face difficult questions about how they set their drug prices. New healthcare reimbursement models, which tie payments to patient outcomes and incentivize cost efficiencies, are forcing new conversations inside pharmaceutical and healthcare boardrooms alike.

Their financial filings echoed these sentiments: 84 percent of companies cited pricing and margin pressures as a risk this year, reflecting a steady increase from 2015 (79 percent), 2014 (68 percent) and 2013 (66 percent).

THE PRICE OF INNOVATION

Central to the pricing issue is the cost of research and development to bring new products to market, which continues to spiral higher. With only **one of every 10 products** making it to market, recouping this investment is challenging. Successful products often must drive profits until their patents expire. In 2015, 80 percent of the growth in profits among the 20 largest drug companies resulted from price increases, rather than from the addition of new products, according to **research by Robin Feldman**, director of the Institute for Innovation Law at UC Hastings College of Law.

BDO's risk factor analysis showed that life sciences companies have grown increasingly worried about their ability to properly execute corporate strategy and growth plans—stating concerns about developing and capitalizing on new products in a timely manner. In 2013, this concern showed up on 69 percent of 10-k filings; this year, 93 percent of companies referenced it. Also among the top 20 risks: delays and unfavorable results from pre-clinical and clinical trials (reported by 90 percent of companies, compared to 80 percent in 2013).

Patent exclusivity concerns, meanwhile, remain, with 55 percent worried about demand fading away.

RISKS REFERENCED IN ALL LIFE SCIENCES COMPANY FILINGS ANALYZED:

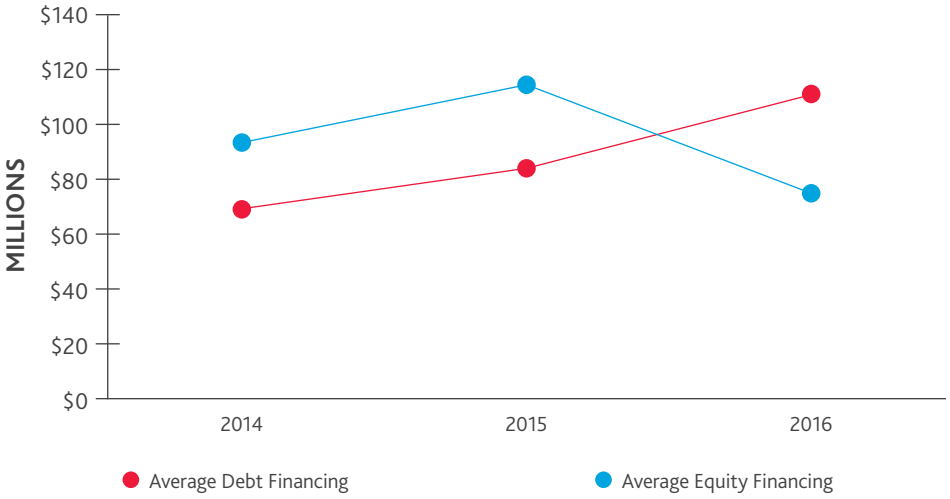
Competition in industry | IP/trademark challenges | Ability to commercialize and market products | Litigation

FUNDING FUTURE DEVELOPMENT

As external pressures mount, the volatility of revenue, stock price and profitability is a rising concern for life sciences companies. In 2015, 90 percent of companies expressed worries about volatility; this year, 97 percent of companies mentioned it, making it the 8th biggest risk.

Meanwhile, funding needs for R&D and product commercialization haven't abated. **The Tufts Center for the Study of Drug Development** estimates that it costs more than $2.5 billion to develop a new drug. References to capital and liquidity risks have steadily increased since 2013, when 79 percent of companies highlighted the concern in their 10-k filings. This year, 94 percent of companies expressed worries over having adequate capital and liquidity, up 9 percentage points from 2016. The challenging funding environment threatens research and product development efforts that are critical to keeping product pipelines active. BDO's risk analysis found that worries about having to reduce or eliminate product development programs rose 11 percentage points from 2016 (56 percent) to 2017 (67 percent).

FINANCING ACROSS BIOTECHS



"Notwithstanding the rigorous debate around drug pricing, demonstrable value is the goal. Value is determined through the equation of outcomes divided by cost. The better the outcomes, held at a steady cost, the greater the value created. Competition will increase and the ultimate differentiator of value will be achieved through the inclusion of new therapies, formularies and networks."

Patrick Pilch, national co-leader of The BDO Center for Healthcare Excellence & Innovation

DEFINING VALUE

One of the most vexing issues facing life sciences companies right now is demonstrating the value of their products.

A variety of new approaches for determining value are emerging. Health plans and the Centers for Medicare & Medicaid Services (CMS) are starting to consider quality-adjusted-life-years (QALY), which addresses the quality and quantity of lives saved, to better determine a drug's efficacy. New payment approaches are being implemented that place a heavy value on a drug's efficacy, such as the agreement Novartis signed with Cigna and Aetna, offering a money-back guarantee to patients using the heart failure drug Entresto. Physicians are also using new tools to help them determine the value of a drug. For example, the American Society of Clinical Oncology developed a framework that assesses the value of different cancer therapies based on cost, as well as the benefits and side effects.

Tracking and managing negative outcomes will remain a top risk, regardless of how value is defined. This year, 97 percent of companies referenced risks related to product complications, recalls and safety issues in their 10-k filings. The more patient-centric healthcare environment will emphasize patient safety above all else.

Value-based payments will soon become the norm in healthcare; as they take hold, life sciences companies will need to better define, and constantly refine, what value their products provide to the marketplace. Competitive and product development pressures will likely remain primary risks for the industry, but the emphasis on value will alter the game. In this new environment, innovation isn't limited to drugs, but extends to finding new ways to track outcomes and partner with healthcare providers to better manage costs.

Despite evolving compliance risks, the life sciences industry is poised for a period of unprecedented innovation, spurred on by welcome changes taking hold under the Cures Act and through FDA proposals to boost transformation. Life sciences companies should **keep abreast** of these developments and update their risk frameworks accordingly.

The ***2017 BDO Life Sciences RiskFactor Report*** examines the risk factors listed in the most recent annual shareholder (10-K) filings of the 100 largest publicly-traded U.S. life sciences companies listed on the NASDAQ Biotechnology Index by revenue. The risk factors were analyzed and ranked in order of frequency cited.

ABOUT BDO'S LIFE SCIENCE PRACTICE

BDO has been a valued business advisor to life sciences companies for over 100 years. The firm works with a wide variety of clients, ranging from multinational Fortune 500 corporations to more entrepreneurial businesses, on myriad accounting, tax and other financial issues.

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