

Front & Center

Big Data, Big Opportunity in Life Sciences

Big Data has become a buzzword in pharmaceuticals, biotechnology, medical devices, clinical trials and other segments of the life sciences world. The transformational power of billions of bits of data is already improving efficiency, effectiveness and financial results for the manufacturers, sellers, marketers and buyers of consumer products. That same transformation is poised to sweep through the life sciences universe, promising to eliminate hundreds of billions of dollars of annual costs in the U.S. biopharmaceuticals segment alone. That potential for transformation grows as increasing numbers of individual health care providers (HCPs) and provider organizations consolidate into ever-larger and ever-more complex integrated delivery networks (IDNs).

The evolution from individual HCPs to IDNs is forcing a similar shift in the traditional rep-to-provider sales model to an account-based, business-to-business (B2B) selling model. Big Data is the key to understanding and leveraging the B2B world. Some organizations may need to identify precise provider and patient targets and market segments. Other organizations may need broader solutions that cross multiple claims areas and multiple therapeutic categories while remaining accessible across the entire enterprise. Big Data can transform needs into opportunities for massive growth and unprecedented success.

LexisNexis®, perhaps best known for its deep data expertise in the legal field, is leading the way in the development of Big Data management tools and solu-



tions in life sciences through LexisNexis Health Care. Kelly Sborlini, Vertical Market Lead, Life Sciences, and Theresa Greco, VP, Life Sciences, recently discussed the core role of Big Data in assessing risk and market opportunities in the biopharmaceutical arena.

Big Data is one of the hottest business buzzwords of the decade. And like many buzzwords, the precise meaning can change depending on the situation. For LexisNexis Health Care, Big Data refers to the mushrooming volume of data pertaining to individuals, payers, providers, pharmacies, life sciences and government that is being collected at an ever-growing rate.

Some data types are familiar: medical claims, pharmacy claims, electronic health records, patient registries and the like.

Other data types have rarely or never

before been incorporated into the health care decision-making calculus: patient and population lifestyle and socioeconomic factors, recreational activity participation, physical activity and vital signs collected by smart wearables and other personal sensors, social media discussions, location and other information from the Internet of Things and far more.

Most biopharmaceutical and health care organizations recognize the significant commercial and intellectual benefits of Big Data. Fully 73% of organizations in the sector plan to expand or launch Big Data investments within the next five years, according to business intelligence firm GBI Research. But the fundamental properties of Big Data—its volume, velocity, variability and veracity—make it difficult for newcomers to understand and apply.

LexisNexis has one of the largest databases in the life sciences, more than six petabytes with billions of public and proprietary records. The reference Provider Data MasterFile™ includes 8.5 million HCPs, more than one million distinct organizations and tens of thousands of relationships among those entities that play an important role in life sciences decision making.

Identify Your Patient

One of the most vexing and persistent problems in health care data management and analytics is correctly identifying the patient who lies at the center of a vast web of data points, then de-identifying that data to maintain privacy. Is Jon Smith the same as John Smith? What about Jonathan Smith? Or Jon Smythe?

Business entities, including biopharmaceutical firms, traditionally use either deterministic or probabilistic matching to answer those questions. Deterministic matching requires a match that conforms to business rules. Jon Smith is not the same as John Smith, Jonathan Smith or Jon Smythe. Probabilistic matching allows for more flexibility: Jon Smith may be the same person as Jonathan Smith as other criteria and identifiers are considered.

Big Data offers the potential for stronger identification based on statistical power. If Jon Smith, Jonathan Smith and Jon Smythe are all associated with the same physical addresses during the same time periods, the odds increase that they are the same person and a statistical confidence score will determine the linkage across records.

LexisNexis applies that kind of statistical power to the limited data sets involved in health care. The result is more clarity and efficiency in delivering health care solutions to the right patient or practitioner at the right time.

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Know Your Customer

This rich trove of data also assists users in leveraging different combinations of medical claims, pharmacy claims, social data, social listening scores, socioeconomic factors, personal activities and more to predict behaviors and outcomes. These predictive analytics become increasingly important as the focus of life sciences sales and marketing shifts.

The traditional focus has been the individual HCP as the key prescriber, key decision maker and key customer. Those roles are increasingly dominated by IDNs and by patients themselves.

IDNs are focused on improving the effectiveness and efficiency of operations. As IDNs grow by consolidating independent practices and smaller provider organizations, they concentrate buying power with new internal structures and new touchpoints. Treatment choices and approvals may be based on third-party guidelines or critical pathways designed elsewhere in the organization, by third-party payers, by government regulation or by some combination of players.

Life sciences organizations are looking for new ways to identify the true decision makers as well as new vehicles to drive partnerships with ever-changing constellations of decision makers.

The patient role is also in flux. Today's patient is an active, informed participant in the care process. The patient may not decide which medication will be prescribed, but the patient

ultimately decides if that medication will actually be taken. In an era when half of all prescriptions are never filled and barely half of chronic prescriptions are maintained beyond 12 months, patient adherence and care management have become major areas of focus that may impact health outcomes.

Biopharma manufacturers must be able to identify which patients are more likely to let treatment lapse. In clinical practice, identifying patients likely to be non-adherent is an opportunity for intervention to improve outcomes. In clinical trials, improving adherence may be the difference between regulatory approval and a failed study.

Big Data allows biopharma manufacturers and clinical research organizations to maximize their knowledge of individual patients and improve projections of adherence. LexisNexis has identified more than 250 socioeconomic attributes that play a role in eight specific health care targets: total cost, hospitalization, emergency visits, pharmacy costs, medication adherence, stress index severity and percentile and motivation.

Elements such as an individual's FICO score, a license to own a firearm, a license to drive a motorcycle, residence location, vehicle ownership and similar factors are all predictive of particular attitudes or behaviors that can influence adherence and other health-related activities. The more a biopharma company knows about its patients and the more powerful the analytics deployed around that data, the more accurately the firm can predict which patients might benefit from adherence programs and which

Continues



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Continued from previous

specific adherence strategies might be most effective.

A patient who needs weekly infusions but does not own a car and lives in an area poorly served by public transportation is less likely to be able to make appointments. Simply providing transportation to appointments could make the difference between adherence and nonadherence, treatment failure and a good clinical outcome. Big Data forms the core of these predictive analyses. The more the enterprise knows about the patient and the more robust the analysis, the richer the opportunity to intervene to produce a positive outcome.

Reduce Risk

The same data-driven approach eases other concerns such as the risk of violating sunshine provisions. A variety of state and federal regulations require manufacturers to report transfers of value with significant penalties for even inadvertent omissions. Robust analy-

sis of Big Data helps manufacturers manage and mitigate the risk inherent in transfers that are a routine part of educational and other professional activities.

Transfers of value have two components, the profile of the individual who is receiving the transfer and the transaction that is the transfer itself. Robust analytics can help ensure that the individual proposed to receive the transfer has the appropriate credentials, licenses, National Provider Identifier, and other qualifications.

Similarly, the ability to authenticate electronic user credentials in real-time is growing in importance as cloud-based data repositories with global access become more common. Predictive analytics can significantly improve the rigor of security protocols that are too often based on passwords that can be less than ideally secure.

Leverage Partnerships

Biopharma has matured in its use of technology and data assets over recent decades. An important element in that

maturation is the growing appetite for developing partnerships. Just as biopharma has recognized the utility of partnering with contract research organizations to leverage clinical trials expertise, companies are recognizing the advantages of partnering with data specialists to leverage data management and analytics expertise.

Outside partners free up internal resources, allowing the enterprise to focus more fully on its own core business of developing and marketing medically meaningful new treatments. Outside partners also bring outside perspective, a unique value-add as the pace of evolution and change in the life sciences accelerates. As IDNs continue to drive efficiency and effectiveness through ever-larger organizations, Big Data and predictive analytics will drive the powerful insights that open opportunities for massive growth and unprecedented success in the biopharmaceutical world. Organizations that ignore the potential of Big Data risk falling behind their peers in an increasingly data-driven and data-intensive world.

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