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Understanding the real-world experiences of patients

An Optum™ eBook

Change – rapid and evolving – is no stranger to the life sciences industry.

In just the last few years alone, the business model for how companies develop, test and launch drugs has been turned upside down. Global markets have opened up to reveal diverse patient populations with unmet needs, while the health care operating dynamics in the U.S. market have changed and become more complex. Health care reform efforts are transforming how all participants across the ecosystem develop treatments for disease, practice medicine and pay for care.

Change in the industry is not new – it is a given.

What is new, however, is the availability of tools to finally document and understand the real-world experiences of patients.

Technologies at the point of care are enabling the collection and analysis of patient data on everything from **symptoms and diagnoses** to **treatments and side effects**. Such 'real-world data' allows life sciences organizations to incorporate insights into strategic research and planning. It provides everyone with new opportunities to develop more effective, targeted medicines to better serve specific patient populations, as well as to adjust the protocol, cost and value proposition of existing therapies.

As a result of the enormous potential of real-world data, life sciences organizations, from leading global pharmaceuticals to emerging biotechnology companies, are starting to build infrastructure and platforms, and invest in data assets. These investments will bring the industry closer to the patient, and for the first time, provide us all with a look at how the world really is, not how we thought it would be. From there, untapped sources of value can be realized.

Case Study: Real-world data improves tPA outcomes

To illustrate the kind of value derived from real-world data, consider one example. An Optum™ client, a global pharmaceutical company specializing in neurology, wanted to understand why patients were seemingly undertreated with tissue plasminogen activator (tPA), a protein involved in the breakdown of blood clots during acute ischemic stroke, even though improvements in outcomes have been documented.

The sponsor company used real-world data sets — a combination of claims, clinical and provider data — to examine the root cause of the underuse. Quickly, an important pattern emerged: Use of tPA was limited in large part due to a small treatment window. The label states that bleed risk can occur if the medicine is not administered within a 3-4.5 hour time window post-event.

Once the problem was identified, an analysis of patient and claims data was conducted to examine the relationship between tPA treatment frequency and hospital-level characteristics such as length of stay, critical care administered, rehospitalization and rehabilitation.

In just weeks, compelling 'real-world evidence' confirmed a clear association between the experience level of the facilities involved and tPA use and outcomes. Based on the evidence, the manufacturer committed to the capital and resources investment required to develop a protocol to adjust treatment frequency.

This new treatment protocol was identified and adjusted in a matter of weeks for well less than the many millions of dollars it would have cost the sponsor company to conduct a large, time-consuming outcomes study. Additional value and money saved will be added

to the health care delivery system overall, in the form of improved outcomes and increased efficiency at the point of care.

Industry forces driving real-world data forward

Therein lies the power of real-world data. It has the potential to affect change in treatments and delivery for patients. But what exactly is it? How, when and why did it appear in the life sciences lexicon?

Marc L. Berger, MD, Vice President, Real World Data and Analytics at Pfizer®, offered this definition at a recent Optum Life Sciences Forum:

"Real-world data is health care data used for decision-making that is not collected in conventional, randomized controlled clinical trials."

To elaborate further, real-world data consists of all the patient outcomes as well as administrative and payer data available across the continuum of care. Real-world data includes — but is not limited to — diagnoses, doctor notes and lab tests; treatments prescribed, filled and adhered to; the performance and safety of medicines once approved; and the cost, value and effectiveness of a drug vis-a-vis other products in the same category on the market.

While a large portion of real-world data is clinical in nature, it is different from the data that results from clinical trials. Long considered the 'gold standard' in pharmaceutical drug development, clinical trials are limited in scope. During patient selection, investigators restrict the type of patient that is included in clinical trials to those with uncomplicated profiles. In the real world, however, patients have comorbid conditions and a range of other issues that impact their reactions to the treatment and may manifest as adverse events.

When a wave of dangerous adverse events, such as heart attacks and death, hit the U.S. market years ago, regulators and the American public demanded manufacturers change how product safety and performance parameters were established. Taking its cue from the sweeping legislation on drug safety monitoring and risk management practices in Europe, the U.S. Food and Drug Administration (FDA) started to approve new drugs on a conditional basis by requiring that a sponsor company conduct post-approval safety surveillance of patients in real-world care settings.

At approximately the same time the FDA began requiring real-world data on drug safety, the payer community started asking sponsors for real-world data on value.

Tired of 'me too' drugs with little differentiated value across the product landscape, payers began asking manufacturers to demonstrate unmet clinical need and cost effectiveness. In addition to proof that a product has value over other products on the market, payers are increasingly looking for patient-reported outcomes on side effects, quality of life, health care behaviors specific to disease state, and medication adherence.

If branded medicines cannot provide solid real-world evidence of value, they are being passed over for reimbursement by payers.

For health care providers, real-world data has helped propel the shift in care delivery from fee-for-service to fee-for-value. Accountable care organizations and health care systems use real-world data from manufacturers and payers, based on which brands are performing best in the market in terms of outcomes so they can better segment and manage the patient populations at the greatest risk from disease.

"The availability of real-world data on drug treatments has changed the way we deliver care to patient populations at the frontlines," said Dr. Michael Sills, CMIO/Vice President of Informatics and Technology at the Baylor Quality Alliance. "We are asking for real-world data to develop interventions to improve cost-effectiveness by changing care and reducing the risk of a poor outcome and the resultant higher costs."

Operationalizing real-world data

So as the stakeholders — regulators, payers and providers — realize the value of real-world data, the central question for life sciences organizations developing medicines becomes how to best operationalize it in every phase of a drug's lifecycle, from pre-clinical and clinical development, to late-phase and commercialization.

Although client organizations are at the point of implementing real-world data tools and platforms, they need guidelines to help conduct real-world data research. At present, there are no industry standards underpinning observational real-world data research. By some estimates, only half of pharmaceutical companies have standard operating procedures dedicated to real-world data research design and conduct.

To get their programs off the ground, the majority of organizations that Optum has been helping are looking to develop capabilities to conduct real-world, observational research or to acquire data sets from health care technology providers.

"Because there are no real standards yet in using real-world data, how a program is structured really comes down to the research question being asked," explained Forum participant Brad Pennington, Merck Associate Director of Global Consumer Marketing. "Sometimes observational or retrospective research needs to be conducted to collect your own real-world data and track patient populations. Other times data assets can be acquired from providers to conduct the analysis needed to either prove or dispute the research question."

To collect and analyze real-world data, some life sciences companies are designing observational studies on a product, disease state and/or patient population. Observational studies can benefit a compound in any phase of lifecycle and can take on many formats. These studies are non-interventional and can be designed without the strict inclusion/exclusion protocols of a Phase III randomized clinical trial.

Observational studies to gather and analyze real-world data include:

- Disease or patient registries
  Designed for very specific research purposes, disease registries are the tracking over time of subpopulations of patients with chronic medical conditions. Patients can be within a medical practice, geographic location or across multiple provider organizations. Secondary data, such as clinical endpoints or medication adherence, is collected from patients and medical devices and stored in databases. The research goal is to collect real-world data on chronic disease to better prevent and manage it.

- Comparative effectiveness research
  To improve the quality and value of drug treatments in a disease state, patient population or region, comparative effectiveness studies are the direct and scientific comparison of existing drug treatments to determine which work best for which patients. These studies often include a research trial (designed much like a clinical trial) to measure effectiveness, not efficacy. Comparative effectiveness research is often asked for by payers to help in determining reimbursement. Different comparative effectiveness research ratios are used by federal agencies and industry researchers in determining and tracking cost versus outcomes.
- Post-approval safety studies
  As mentioned earlier, post-approval safety studies are required by the FDA and the European Medicines Agency (EMA) in approving new drugs. It is up to the manufacturer to design the study, and many set up surveillance programs to monitor red flags and safety triggers based on patient feedback and electronic health care information. The FDA's pilot Mini-Sentinel database has been implemented with the help of life sciences and data partners to monitor new drugs for safety data once they reach the American public.
- Longitudinal studies
  Longitudinal studies are the tracking and observation of individual patients over a long period of time, typically many years. These studies are designed to represent a larger sample size than the patients in the limited sample used in clinical trials. Longitudinal studies are conducted to gather real-world patient level data from all episodes of care throughout the duration of the study. Data can be used to understand risks and effects of new medicines on individual patients in real-world care settings.

Clinical and claims together create a novel class of real-world data

While observational research is being conducted, the proliferation of technology applications at the point of care — electronic medical records (EMRs), computer-assisted coding, health insurance exchanges, natural language processing and documentation systems — makes it possible to access structured and unstructured data on treatments directly from caregivers.

That clinical-level data combined with another real-world data source — claims data from payers — is bringing life sciences organizations to new heights in terms of insights, and may circumvent the need to implement large observational studies.

"Capturing disparate data sources of information across patient episodes of care and integrating with payer data will create a new class of real-world data to drive the movement towards value-based care," explained Steve Davis, Vice President and General Manager of Life Sciences for Humedica, an Optum company. "This type of real-world data provides complete visibility into the entire patient experience and is literally the 'holy grail' for pharmas, payers and providers."

The Optum acquisition of Humedica provides an example of this new class of real-world data. By integrating Humedica's clinical data from electronic medical records of 30 million patients with Optum best-of-breed claims and administrative data from 130 million patients, industry stakeholders for the first time can access longitudinal data across the entire patient episode, including:

- Patient demographics; geography
- Prescribing physician; specialty; geography
- Patient symptoms, vital signs, lab results
- Disease state; diagnoses

- Treatments, medications prescribed
- Medications switched
- Unstructured data; e.g., physician notes extracted through natural language processing
- Cost/coverage of medicine
- Prescribing pharmacy; payment types
- Patient behaviors; medication adherence
- Clinical outcomes

In addition to drug development and commercialization, real-world data from EMRs and claims can provide insight into the pre-clinical phase to help sponsors understand the burden of disease and the exact clinical need not being met among patients. Real-world data in the early phase of drug development evaluates compounds in the pipeline for viability and commercial value before moving forward to costly clinical trials.

Vision for the future

As the burden of disease across all populations worldwide is increasing, the goal of life sciences organizations is to develop targeted, safer and more affordable medicines with better outcomes. To that end, real-world data is the tool, and therefore the key enabler, to transforming life sciences and the overall health care landscape.

By collecting, analyzing and comparing patient data locally, nationally and from across the globe, health trends and problems can be identified so that decision-makers can ask the right questions in order to develop the right research and drive stronger strategic and tactical planning.

And when information turns into intelligence and then becomes actionable, the entire system will work better for all, especially patients.

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