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Healthcare must climb the analytics maturity ladder

Using electronic health records and analytics-derived insights to improve short-term outcomes

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Most healthcare organizations are only halfway up the data and analytics maturity ladder.[i] Heeding Affordable Care Act (ACA) mandates,[ii] they are instituting electronic health records (EHRs) and using analytics-derived insights to improve short-term outcomes, such as decreased hospital admissions and complications.

However, in order to meet the Centers for Medicare- & Medicaid Services' (CMS) directive to tie 30 percent of all Medicare payments to value-based payments by 2016 (and 50 percent by 2018), providers need to start using data and analytics (D&A) on a higher level. Reaching the top of the maturity ladder will eventually mean harnessing predictive and prescriptive analytics to practice personalized medicine. In the meantime, however, healthcare organizations should be striving to use D&A to coordinate patient care and tailor interventions based on population health measures.

As illustrated in the scenario at right, all care starts with the individual.

One patient's "un"-coordinated care

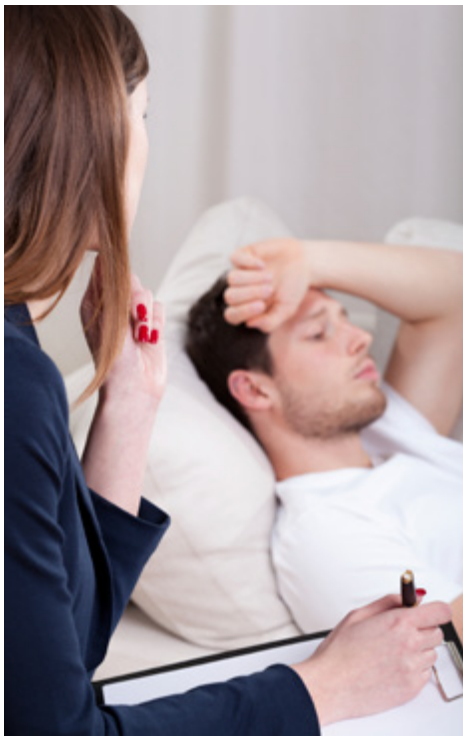
Tim, a high school soccer player, is known for his aggressive style on the field. During one particularly daring play, he dove through the air, hit the ball with his head and landed hard on his right side. A few days later, his legs were weak and his back was in spasm. After having an x-ray at the emergency room, he was told that nothing was broken and that he should go home and rest. However, after a week on the couch, the pain remained.

Tim then went to see an orthopedist who performed an MRI and informed him that he had a vertebral anomaly, a relatively rare condition among adolescents. Tim learned that a collapse in his spine was actually the cause of the fall, not a result of it. The orthopedist prescribed an expensive back brace, which Tim had fitted at a specialty medical supply store. And he gave Tim a prescription for a narcotic pain medication, which was filled at a large chain pharmacy. During his recuperation, he missed several weeks of school and his mother had to take all of her allotted vacation days to care for him.

For Tim, the worst parts of being injured were having to sit out the rest of the season and the fact that his condition would have to be assessed over time to determine the possible cause, which ranged from idiopathic to cancer. As he recuperated, he became depressed about missing the rest of the season and anxious about whether he could have a serious underlying illness. Noticing his increasing withdrawal, Tim's mother took him to see a psychiatrist, who prescribed a low dose of an anti-depressant and referred Tim to a therapist, who he now sees once a week. While cancer was eventually ruled out, Tim had become so fearful about re-injury that he gave up playing soccer.

In the above scenario, the patient has a total of six care encounters with different, unaffiliated providers and organizations. All of them were "one-off" episodes, with each entity collecting a fee for service and certainly no continuity of care.

By contrast, if the patient had the same experience under a value-based model – with a patient-centered medical home providing care alerts and streamlining care team workflow – there would have been data sharing between the patient's providers and coordinated treatment of his physical symptoms and psychological distress. As a result, Tim might have healed faster and been more satisfied with his healthcare experience. When it comes to the human costs, better coordinated care might have minimized lost school and work days, and, most important, ensured that Tim would continue to play the sport he loved.



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Data in a value-based payment model

Continuity of Care

For patients like Tim, not to mention the majority of the population, the initial healthcare touch point starts at birth and continues throughout the lifespan. Data collection and recording of events begin with the first encounter and accumulate over time. As the populace matures, so must the data and analytics process, so that both can keep pace with the evolving healthcare environment.

Traditional fee-for-service care is beginning to phase out, and the movement to fee-for-quality is taking hold. Currently, each time an individual sees a doctor one data point is generated, which can be analyzed in and of itself. By contrast, in the new era of value-based payment, an entire episode will be evaluated and paid as one encounter, and funds will then be distributed to the various touch points. An episode can range from a broken leg, to a bout of diverticulitis, to ongoing treatment for diabetes. Failures can arise when there is a breakdown along the way, or the complexities of the encounter amount to a puzzle that is hard to solve without D&A.

With a strong D&A foundation, data from an individual's encounters with the healthcare system could be collated and shared with proper care teams, providing a 360-degree view of the patient's care journey. As we move into patient-centered care, D&A will be the key to creating this holistic view, which provides much more insight than just an image of a spine or a patient's response to pain medication.

Healthcare organizations are making great strides in this direction. However, there are still some constraints related to data access, consent and sharing, as well as true interoperability across affiliated and non-affiliated organizations. With the right infrastructures and open data warehouse components, visual layers of information can be customized for care teams, and selective information can be disseminated to patients to help them play more active roles in their own health and well-being.

Population Health Management

Understanding population health patterns requires aggregating not just EHR data, but clinical data, claims data, quality data, cost assessments, and patient quality-of-life metrics. However, all this data is not worth much without analysis. Organizations must apply advanced analytics tools in order to use population-based outcomes to help cohorts of patients and to apply insights derived from populations to ongoing best practices.

Impacting population health starts with the right level of data from both clinical and claims-based entries. Claims-level data can include diagnosis information, location of services, primary physician's name, and claim description, all of which contributes to the picture of the patient journey. When it comes to actual outcomes or value, however, clinical data is required. For example, providers will be able to use this data to clarify that lab test claims have actual meaning, perhaps by recognizing the need for immediate intervention in response to a high LDL or off-the-charts HgA1C. Demographic and socioeconomic data also come into play, e.g., for patients who may not have the necessary transportation to get to their care appointments.

It is important to note that, before contracting with a population health software vendor, a great deal of work is required to get clean, normalized data into a well-structured data warehouse. Integrating both structured and unstructured data (such as physician notes, emails, and social media posts) takes robust extract, transform, and load (ETL) tools, which can be the most demanding part of a data warehousing and analytics effort.

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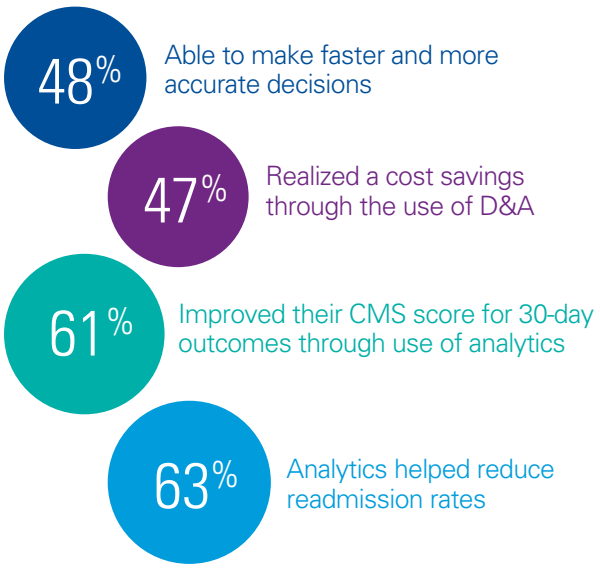
Climbing the rungs, step by step

Despite the knowledge that D&A is central to their future viability, healthcare organizations are climbing the D&A maturity ladder slowly, as evidenced by some recent surveys. According to a recent Health Leaders Media study, while a full 69 percent of study participants were "fully committed" to using D&A for population health management, many of them had not advanced beyond the early stages of strategy formulation and infrastructure/technology investment.[iii] Further, according to a recent KPMG study, 21 percent of respondents were still in the planning phase of their journeys. Toward the other end of the spectrum, 10 percent had progressed to using advanced tools for data collection and predictive analytics, but this is a relatively small percentage. Many respondents were scattered along the middle of the maturity curve: 16 percent applying data to strategic decision making, 28 percent employing data warehouses to track key performance indicators, and 24 percent using data marts.[iv]

Those that serve as the paradigm for the rest of the industry are using D&A to achieve transparency into clinical processes and operational tasks and, thereby, reducing average lengths of stay, minimizing complications and increasing patient satisfaction. In a recent HIMSS Analytics survey, 48 percent of respondents said that they were able to make faster and more accurate decisions using analytics platforms, and 47 percent said they were realizing cost savings through strategic use of D&A.[v] Finally, on the CMS Hospital Compare Score, 61 percent of hospitals said their score for 30-day outcomes had improved through the use of analytics, and 63 percent said analytics had helped reduce readmission rates.[vi]



Barriers to surmount

One of the largest barriers to moving up the D&A maturity ladder is siloed data. Data that is neither aggregated nor integrated makes it impossible to conduct longitudinal studies of individuals, patient cohorts, or populations – all critical components of value-based medicine. Currently, data is not normalized, standardized or shared across providers within individual organizations, let alone outside of organizations' four walls.[vii] According to a recent report from IDC Health Insights, data should be culled from such varying sources as EHRs, medical and pharmacy claims, lab and pathology reports, images, medical devices, and patient-reported outcomes,[viii] as well as cost assessments, quality scores, community health statistics, HEDIS results, and more.

In some cases, being territorial about data stems from limited end-user buy-in to a new model, according to the HIMSS Analytics survey. More often, however, organizations report that they are stymied by technology challenges related to substandard data quality (41 percent), clinical workflow integration (29 percent), aggregating disparate data sources (27 percent), unsophisticated dashboards (27 percent), and solution integration (20 percent), as reported by HIMSS.[ix] These are all problems that could benefit from a comprehensive healthcare analytics platform that spans the enterprise.

An emerging obstacle to effective use of D&A is finding an effective platform to facilitate interoperability between EHRs and legacy systems. This is a tall order, as these systems must be brought into alignment with today's value-driven demands for data liquidity, health information exchange and insight at the point of care, while at the same time continuing to protect patient privacy and HIPAA compliance.[x]

Finally, according to new research from KPMG, many healthcare organizations continue to suffer from a lack of trust in the integrity and accuracy of their data.[xi] Organizations need to work with their partners to determine what data can be leveraged, codify methods of exchange that allow better patient management, and ensure that episodic views are effectively tracked.

Moving up the ladder

Moving up the D&A maturity ladder in this new era of payment reform requires organizations to become data-driven cultures and use data to gain a holistic picture of patients' healthcare touch points. This process begins with a commitment from an organization to invest in the necessary tools and data integration techniques to be successful. Although this can be a significant investment for most organizations, effective strategic planning can support turning an organization's vision into reality.

First and foremost, organizations need tools for gathering and analyzing data for given patient cases to ensure that care plans are carried to completion in the most efficient manner. Then they will need to focus on building intuitive, interoperable, highly usable interfaces that integrate disparate streams of data into levers that can be used for population health management, effective chronic disease care, and eventually precision medicine.[xii]

Next, IT infrastructure planning must be conducted in order to accommodate ever-changing technologies, both those created organically by health IT manufacturers and those mandated by the ACA. Companies are heeding this call, as 36 percent of respondents to the *HIMSS Analytics* survey said they would invest in integrating business intelligence and analytics solutions with existing applications and systems during the next 12-24 months.[xiii]

Finally, cloud technologies can be accelerators to organizations' D&A journeys, as they allow for more cost-effective enterprise-wide data scaling, as well as the ability to leverage data from disparate systems into business intelligence dashboards that meet unique user needs. The resulting analytics platforms can help organizations cull through clinical data and stratify patients based on chronic conditions and risk profiles, which will lead to more effective care management and, ultimately, better outcomes and lower costs.

What is next?

With so much riding on healthcare analytics, it is perhaps surprising that so few healthcare organizations boast sophisticated analytics capabilities. On the other hand, most provider organizations are already running full steam just to meet day-to-day responsibilities and comply with increasing regulatory and reporting requirements. Most significant, provider organizations are struggling with the scale of the challenge, which comprises cleaning up and centralizing data, integrating systems and processes, developing data governance frameworks, and implementing new technologies.

With the launch of enterprise healthcare analytics (EHA) platforms, many of those challenges can be more easily met. More than data warehouses, such solutions operate on clinically built, research-focused data models. As such, they can integrate data from many different subject areas, such as administration, finance, inventory, supplies, clinical encounters, treatments, procedures, and even translational research. Rather than requiring immense teams of data scientists, these solutions offer easy-to-use interfaces and tools that deliver sophisticated analytics capabilities to managers and executives across an organization.

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How KPMG can help

KPMG has a partnership with Oracle to offer healthcare clients D&A solutions based on Oracle's Healthcare Foundation platform. For those with an existing Oracle footprint, implementing the solution should be fairly straightforward, leveraging many of the capabilities that are already in house. As a cloud-based solution, upgrades are automatically pushed to the system, thereby relieving the need for ongoing maintenance. Much of the required infrastructure is also held in the cloud or managed by Oracle. The system can even integrate genomics data into the analytics mix. And, as new precision medicine technologies are introduced, they too will be added to the system.

Such an approach to data and analytics will allow healthcare organization executives to stop worrying about technology, infrastructure and implementation issues and start focusing their attention on the insights that data can provide. Healthcare executives may feel like they are playing catch up to such data-driven industries as retail and finance. However, no matter how much progress they have made to date, they need to start climbing the D&A maturity ladder now.

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