Improve Decision Making Through the Use of Analytics

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About the author:

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Abstract:

The ever-changing and complex healthcare landscape drives progressive healthcare leaders to utilize different methods of improving quality and outcomes. One challenge facing leaders is assuring efficient management of patients, particularly those utilizing the majority of resources due to chronic medical conditions which can be ameliorated by using analytics. Analytics is defined as the use of data to drive factual decision-making by using applied statistical methods. More and more healthcare organizations are finding ways to use analytics to address readmissions, manage high-risk populations, control infections, and promise smoother transitions for their populations. In doing so, healthcare providers are able to realize further efficiencies in care delivery, advance quality initiatives to the next level, improve workforce productivity, and keep patients safe.

Predictive Analytics

There are a number of applied analytics that can be used, however for this treatise, the discussion will focus on the most commonly used methodology in healthcare. The use of predictive analytic techniques, albeit basic statistical regression or refined processes, can assist healthcare organizations in realizing reduced costs, eliminating deep-rooted inefficiencies, and improving quality. Many healthcare organizations throughout the country have focused on developing algorithms that predict recidivists within the 30 day window that hospitals have been tasked with decreasing. Once the algorithm is developed, patients can be risk-categorized for readmission which provides valuable data for Care Managers, Primary Care Physicians, and hospitalists.

The International Institute of Analytics has forecasted that healthcare will "see the greatest increase in the use of analytics" (*Analytics*. March 2012). This is exciting since such growth of analytics can assist providers in meeting evidence-based triggers to keep patients safe, such as ordering hemoglobin A1c within the recommended timeframes or counseling those who may be at risk for substance abuse.

Another potential advantage is the use of predictive analytics to maximize patient flow; for example, using analytics to address the perpetual dilemma of overcrowding in the Emergency Department. If this long-lived problem can be resolved or even improved through analytics, there is a two-fold benefit; one to the patient who does not have a long wait-time, and a secondary benefit that overcrowding is minimized.

Asking the Right Question

There are mounds of data that healthcare organizations collect; some required by regulatory agencies, others due to someone questioning results, and perhaps a question from an inquiring mind. The inquiring mind is probably the basis for asking the right question. So what is the right question or questions? One thought is to look at work processes, and determine which one is causing the greatest angst. It could be an operations problem or a clinical concern. Narrowing down the scope of the inquiry is analogous to defining a dissertation question. As always, having the right people in the room to

define the right question is the right strategy. Clearly, a physician champion is essential. The physician may be the best person to lead the charge.

Data Already Collected

The amazing adjunct to performing analytics is that those data already collected contribute to performing the necessary function of developing a meaningful algorithm. For example, most nursing assessments consist of a systems review that congregates volumes of information about a patient. Once collected, a plan of care is developed to meet the needs of the patient while hospitalized. These assessments are therefore a valuable source of data for each patient that can be used to predict further behaviors.

If an organization is using the hospitalist model, information gathered by the hospitalist provides further valuable clinical data for the Primary Care Physician. When reports are generated through the use of predictive analytics, care coordination can be achieved during and after a hospital admission more efficiently. Overall, the electronic health record (EHR) makes it much easier to collect and analyze data to predict future performance.

These data can help healthcare leaders in determining what resources they may want to shift or increase as a means of focusing on those patients where the second curve is beneficial to all stakeholders. It is perhaps about offering a Care Manager to a patient so they do not fall into the healthcare abyss, and end up bouncing between care providers and Emergency Departments. Appropriate interventions are likely to take place before a crisis occurs when using data as the basic framework for sound decision-making.

Variables for Consideration

Regardless of the organization size, predictive modeling and analytics are possible. There is generally someone in the organization who is statistically savvy, even if one only has a basic knowledge. Clearly, there are some considerations when electing to explore a predictive model for a respective organization. Due to the acceleration of the field of analytics and how it can be used in healthcare, the inevitable explosion of vendors trying to sell their product is occurring. A key question when investigating an appropriate model is data storage. This may be a moot point for some, however it is an overall consideration. How are data being stored? Who is the data manager? How accessible is data for end-users? How easily can data be extrapolated for meaningful information? These are just some of the important questions that should be asked. The second variable is that it is essential to use clean data if one is going to use predictive modeling correctly in order to obtain meaningful information. Interpretation of instructions relative to data entry can be as numerous as those entering the data; therefore, the third variable is assuring, as best one can, that data entry is consistently the same for each person providing an entry. Finally, no system is perfect, but a model that works for the organization is better than nothing if it improves performance, reduces inefficiencies, assures appropriate resource utilization, improves outcomes, and reduces costs.

Clinical Improvement

There is an imperative that leaders and providers improve outcomes of care. It seems that predictive analytics can assist in meeting this requirement by reducing errors through the use of data analysis. Clinicians will have facts based on the data which allows for the identification of actions to minimize or eliminate errors and improve performance and assure patient safety. Additionally, value-based purchasing requires patient satisfaction be optimal. Improvements in work processes and a focus on patient-centered care and patient involvement in their care can be applied using predictive analytics.

Enterprises that include physicians in all aspects of decision-making around clinical practice can only benefit using analytics since physicians tend to critically examine data, and implement practice patterns based on facts, thus driving improvements.

Financial Impact

Pressures to eliminate inefficiencies, reduce costs, improve outcomes, and emphasize patient-centered care are the mandates healthcare organizations are challenged with in order to maintain viability. One example is reducing readmissions. The financial reality is obvious; however connecting this with an emphasis on patient-centered care makes the argument even stronger. Patients do not want to be hospitalized. The vast majority of patients are more satisfied if they can remain in their home which is a winning strategy for all parties.

Through-put analysis aligned with revenue generation can benefit a variety of stakeholders. One assumption is that the Emergency Department (ED) is often the "feeder" for hospital admissions. The conundrum faced by many organizations today is ED overcrowding, thus analyzing Against Medical Advice (AMA) departures and reducing the wait times for initial assessment, physician intervention, and disposition to an inpatient bed would likely improve revenue along with patient satisfaction.

A secondary financial return-on-investment is effective resource utilization. Simply put, assuring that the right people using the right processes to take care of the right patient who is ultimately transitioned to the right place can streamline an inpatient stay and oftentimes eliminate an admission. This can be translated to potential savings as a result of unnecessary testing or an increase in a length-of-stay based on exacerbation or treatment of comorbidities during a hospital stay.

The third financial impact is the right place for the patient to receive care. An example of this is the patient with a chronic medical condition who may experience an event which causes a visit to the ED, testing is done and the patient is admitted. Could that admission have been prevented? Today, that scenario might be circumvented by using analytics to discover whether there is a pattern for this patient's crises. A leader may make decisions based on these data, and decide that an admission could be averted if the patient had a Care Manager/Navigator assigned. The acute exacerbation may never occur if symptoms were addressed prior to a crisis, and the patient could be seen by the Primary Care Physician and treated early. Another possibility in less urban settings is the use of technology, namely

telemedicine, where the physician along with other providers, can monitor and treat a patient before an event. Preempting an admission definitely has quantifiable financial benefits.

Overall, organizations can improve their financial position through the use of predictive analytics as it relates to their demographic. The benefits of preventative care render considerable returns in the complex healthcare environment.

Final Thoughts

Predictive analytics is an invaluable tool for healthcare. Think about the advantages of predicting the future using data that can be used to:

1. Develop scenarios as an adjunct to developing a strategic plan
2. Improve revenue
3. Guide decision-making based on facts
4. Enhance and target marketing capabilities
5. Build a high-performing organization that meets constituent needs and higher expectations
6. Create a competitive edge through improved branding
7. Assist in facilitating clinical integration
8. Reduce risk

Large, urban organizations, particularly multi-hospital systems, may seem to have an advantage due to their sophisticated infrastructure and abundant resources. That may be true, however small community hospitals and critical access hospitals have an opportunity to flourish through the use of analytics. One recommendation is to partner with a local college or university that may have a faculty member who is a statistician who would be willing to assist.

The analytics journey is in its infancy, yet it is a beginning of using volumes of data to make sound decisions that can improve quality and patient safety. Predictive analytics will permit organizations to forecast the future instead of focusing on the past. The world is moving quickly, and healthcare is catching up. Use of predictive analytics is one way to accelerate the process as technology becomes more advanced. Become a high-performing decision-maker by using analytics.