The Best Approach to Healthcare Analytics

By Tom Burton

Have you ever noticed the advertisements for "The Best Doctors in America" when reading the magazines in the seat back pocket while you're flying? I got to thinking. Why don't we ever see advertisements for "The Best Pilots in America?" when your thumbing through the magazines in your doctor's office. Don't we care about the qualifications of the person responsible for taking us 40,000 feet off the ground at 600 miles per hour? Pilots, after all, are likely to hold our life in their hands more often than our physician.

Perhaps the answer lies in the fact that, unlike healthcare, the airline industry has continually refined its systematic approach to travel delivery. Individuals in charge of transporting some 1.73 million people a day in the U.S. alone are following standardized routines, with the aid of useful information available at their fingertips and well-understood procedures, such as check lists. While healthcare is still largely at the "craftsman" stage, the airline industry has evolved to a "system of production." Consider that pilot training involves hundreds of hours with increasingly sophisticated flight simulators while medical school and residency continues to be based on the apprentice-master relationship, dating back to at least the 17th century.

Healthcare has remained entrenched in its cottage industry-style of operation, even within huge medical centers and significant medical innovation. Most hospitals, for example, still organize their staff around departments – surgery, nursing, etc. – rather than care processes and how care is delivered to individual patients. Physicians are pretty much left on their own to sift through and digest the ever-expanding universe of medical information and data. What's more, medicine often embraces traditional ways of doing things, even when they are outmoded or unproven. The result, as documented by Dr. John Wennberg's Dartmouth Atlas of Health Care project, is unwarranted variation in the practice of medicine and in the use of medical resources including underuse of effective care, misuse of care, and overuse of care provided to specific patient populations.

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Over and over, Wennberg has found that the quality of your care depends on where you get it. Geography is destiny. At a time when more evidence is available than ever before on what actually works and doesn't work in medicine, that is a sad state of affairs. The root of the problem, Wennberg concludes, is that there is no healthcare "system."

At Health Catalyst®, we agree. Healthcare needs to be systematized and standardized. Any organization can improve clinical effectiveness, reduce waste, and improve patient safety by adopting a systemic approach in three key areas:

1. healthcare analytics or measurement,

2. adoption or how teams and work are organized, and

3. best practices or how evidence/knowledge is gathered, evaluated, and disseminated for adoption.

How systematic is your organization in these areas? The following provides an overview of how to tell if you have problems and suggested ways to solve them.

A Systematic Approach to Healthcare Analytics

If analysts are spending most of their time as "hunter-gatherers," looking for data in various places, retyping it into spreadsheets and then creating reports, rather than interpreting data in a way that provides essential information to decision-makers, then you need an upgrade to your analytics system.

We recommend first unlocking the data, putting it in a healthcare enterprise data warehouse (EDW), which enables an organization to eliminate the manual gathering process and automate data distribution. Then analysts can devote the vast majority of their time to discovering patterns in the data that can be used to understand where changes need to be made.

For example, at one hospital using the Health Catalyst EDW, analysts found a pattern of a sub-set of patients undergoing a certain procedure being held in the hospital for almost 2 days when evidence showed that they could be released after a 12-hour stay since they were simple cases with no co-morbidities or complications. Before implementing the new standard, they used Health Catalyst to predict the impact on readmissions and patient satisfaction, among other measures, and confirmed the lower length of stay would have no downside. They predicted the annual

savings for just one hospital that made the length-of-stay change would be well over $150,000 per year.

This kind of systematic approach to measurement can ignite changes in how clinicians practice. The EDW is just the first foundational step on a road of increasing analytic utility as described in the Healthcare Analytic Adoption Model (Source: Electronic Healthcare 2012). This model follows the incremental steps levels learned from the HIMSS EHR Adoption Model and provides a systematic roadmap to increasing analytics capabilities and derived results that will engage clinicians in deeper ways than many failed past initiatives.

Unless your healthcare analytics drive actual behavior change, they haven't done their job.

A Systematic Adoption Approach

Does your organization send it a swat team of quality improvement experts to solve the latest crisis caused by a bad score on your last Joint Commission review? A major sign of a weak adoption system is team churn. While quality improvement teams can be effective at finding solutions, unfortunately, what often happens is that once the team moves on to the next crisis in another department, staff revert back to their default mode of behavior. Without ongoing attention, old habits return.

A better approach is to organize permanent cross-functional teams of both clinicians and technical folks, organized for scalable, iterative improvement. They own improvement for all aspects of care delivery one particular care process family over the long-term and can make a real difference in standardizing care delivery work processes.

"Sustaining the gain" happens when you integrate data with the work of permanent teams managing multiple care process families so members are able to quickly identify the root causes of a problem and then easily monitor compliance to standards they design to care delivery over the long haul.

A Systematic Approach to Clinical Content

Is it taking years – rather than weeks – to put the latest medical evidence into practice? Today for most organizations the time between medical knowledge discovery and broad adoption by the majority of clinicians is often measured in years. With patients' health and welfare are on the line, everyone that timeframes must charge.

A weak clinical content system hinders rapid adoption of new clinical approaches. From a clinical perspective, a clinical content system should consist of standardized knowledge assets which include evidence-based practice (EBP) guidelines, treatment cascade models, indications for intervention, indications for referral and standing order sets and protocols. The goal is to systematize how providers decide, for example, when to do surgery and when to order physical therapy.

From the operational or departmental side, the content system should include standard work, operational checklists and standardized process flows. As teams develop systematic methods of accomplishing specific tasks, each key process step can be measured using the analytic system to improve efficiency and measure variation from the standard.

We recommend using the permanent, cross-functional teams to continuously understand what standards already exist, refine the standard and systematize its practice. Measuring its adoption and results will ensure that change happens and that it is sustainable.

Technology's Role in Creating a Systematic Approach to Healthcare Delivery

It all starts with the data warehouse. At Health Catalyst, we've focused much of our work on how our Late-Binding Data Warehouse™ (EDW) contributes to integrating best practices with clinical processes.

Consider the example of acute appendicitis. Certain tests should be ordered every time, others should be considered under certain patient conditions, and still others are wasteful and should never be ordered. Health Catalyst's analytic tools have evidence-based information built right into the application; you can see what percent of time various tests were ordered and you can understand from the metrics the validity of ordering or not ordering certain tests based on the evidence. The technology provides insights into potentially wasteful activities. It enables clinicians to start looking at why a certain test was ordered so often, and whether unnecessary diagnostic tests, procedures, and referrals can be eliminated.

An example from one of our clients illustrates how the healthcare EDW contributes to improvement. The hospital's team studied appendectomy and saw that the evidence-based recommended initial antibiotic was being given to only one in four patients, or 25

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percent of the time. The EMR order set was changed to reflect the best practice and MD leaders met with physicians to review the evidence. Consensus was reached on a standardized initial antibiotic for the typical patient, noting that if a patient with a unique set of circumstances arrived, the MD could and should deviate from the standard. This is often referred to as a "Shared Baseline" care plan. Following this discussion with providers, the compliance with the evidence-based antibiotic shared baseline jumped to 95 percent. The EDW technology made it possible to collect and analyze the data quickly and track progress after instituting a new practice standard.

Although technology alone is not a magic bullet, a strong healthcare analytic system built on an EDW platform is an essential element in enabling an organization to create a true healthcare "system." Combined with strong adoption and best practice systems, clinicians can transform the way they drive outcomes and improvements for the betterment of patient care. When you look at other industries, like the airlines, it is clear that systems help people do the right thing.

How do quality improvement teams in your organization operate? Are they effective in driving long-term, sustainable change? How systematic is your organization's approach to analytics, adoption, and best practices?

About the Author

Mr. Burton is a co-founder and Executive Vice President of Health Catalyst. His leadership and decades of experience in business intelligence, analytics, and process improvement have helped many care delivery systems significantly improve clinical, operational, and financial outcomes. Mr. Burton was a member of the team that led Intermountain Healthcare's nationally recognized improvements in quality of care delivery and reductions in cost. He has taught courses on the Toyota Production System, Agile Software Development, value-based care, and data system design at various institutes including Intermountain Healthcare's Institute for Health Care Delivery Research and Stanford's Clinical Effectiveness Leadership Training. He has also given presentations at the Healthcare Analytics Summit™ and HIMSS. Mr. Burton holds an MBA and a BS in Computer Science from BYU.