SPECIAL REPORT

Top Five Healthcare Analytics Myths that Prevent Effective Adoption and Reduce Return on Data

Presented by: HealthcareAnalytics.info

Introduction

What is "Healthcare Analytics"

Analytics has been described as the "data, statistical, and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions" (1). As the volume and availability of healthcare data continues to grow, and as internal and external forces continue to pressure healthcare systems, healthcare organizations (HCOs) will need to increasingly rely on business intelligence (BI) and analytics as strategic competencies to understand and improve their operations and to provide the highest quality of care to patients.

Analytics for healthcare improvement

Analytics for healthcare improvement should result in actionable information that helps process and quality improvement teams assess and achieve specific improvement goals. Typically, the questions that analytics can help answer are:

- What do we need to do to improve our quality and/or performance?
- Are we achieving our performance and quality improvement goals?

Ultimately, the goal of analytics is to identify what the key quality and process issues are, and to drive decisions about what needs to be done to address them.

Beyond merely reporting, analytics can "thin-slice" the information needed to address specific quality and performance issues such as bottlenecks in patient flow. Ultimately, the goal of analytics is to identify what the key quality and process issues are, and to drive decisions about what needs to be done to address them.

Because healthcare analytics is still an emerging field, there are many misconceptions and myths surrounding healthcare quality improvement and tactical analytics. This document will address some of these myths, discuss how they might be barriers to applying analytics to healthcare improvement, and suggest how HCOs can overcome these barriers.

MYTH #1: We don't need analytics to monitor our healthcare improvement progress – our existing reports work just fine.

If it's important, then measure it

"The fact is that without a robust system in place to evaluate the impact of changes to processes, the true effect of such changes can never be known."

One reason that healthcare improvement initiatives fail is lack of initial baselining and ongoing evaluation and follow-up. There is a tendency to *assume* that changes introduced into healthcare processes, workflows, and systems will have the desired effect. Interestingly, many front-line staff and management insist that they will be able to "tell" if things are improving (i.e., "things are so bad now, we'll just know when they get better"). Or, that changes in quality or performance can be monitored with the same high-level metrics (i.e., length of stay, etc) that allowed performance to deteriorate in the first place.

It is a basic tenant of quality improvement that you can't improve what you don't measure. However, it was by *not* monitoring any (or at least the appropriate) metrics which caused performance and quality to deteriorate.

The three impacts of change

In fact, the result of changes to a complex system (such as healthcare) can be positive (i.e., an improvement in performance), neutral (no effect), and negative (the performance actually gets worse, or some other process was negatively impacted).

Any successful healthcare quality improvement initiative requires, at minimum:

- Well-defined performance indicators (PIs) that accurately reflect the processes, procedures, policies, or treatments being changed,
- Baseline data to document current performance and/or quality measures and against which to compare future performance, and
- Accurate, timely, and ongoing evaluation and reporting of performance indicators to quantify the actual impact of implemented changes and to identify if further revisions to processes or policies are required.

Analytics provides deeper insights than simple reports or dashboards

One of the benefits offered by analytics approaches over other tools is the capability to provide deeper insight into past, current, and future performance than simple reports or basic management dashboards. Some of the insight available from analytics tools include determining if processes are in control or not (from a statistical process control perspective), determining if changes over a period are random variation or statistically significant, and helping to predict what future performance might be.

If it isn't working, then correct it

As mentioned, an essential component of any healthcare quality improvement initiative is ongoing monitoring and evaluation. Analytics, then, is an essential part of ongoing evaluation efforts. Analytics can help

determine if changes detected in performance indicators are merely due to chance, or represent actual (and sustained) change.

Changes in performance indictors (both negative and positive) need to be communicated to leaders, quality facilitators, and font-line staff in a timely manner. This timely intelligence is important so that mid-course corrections to workflows can be implemented (if necessary), or to confirm that changes are having the desired effect.

Without the relevant and rapid analysis and feedback that is possible with analytics tools, evaluations are often performed too late to allow for effective mid-course corrections. If poor performance is not detected in time, it is possible for additional poorly-designed processes to become engrained in the operations of a unit, department, program, or entire enterprise.

MYTH #2: We can't do meaningful analytics work because we don't have a "big" business intelligence or analytics platform.

The number of healthcare analytics options are increasing

Some HCOs have the benefit of a large Business Intelligence (BI) or analytics platform. These stand-alone BI systems are somewhat general-purpose in nature, and operate in many industries other than healthcare. Many of these platforms are powerful indeed, with many analytics functions and features available.

In addition to the traditional BI platforms, there are some special-purpose healthcare analytics tools; these boutique tools tend to combine standard BI and analytics functionality with healthcare-specific context built-in.

Finally, there is a growing trend for Healthcare Information Technology (HIT) vendors to offer a set of analytics tools as part of, or in addition to, their "main-stream" clinical systems such as electronic patient record (EPR) systems.

Success factors for healthcare improvement analytics

"The ability to do meaningful analytics work that can truly impact healthcare improvement does not necessarily depend on having extensive (and expensive) analytic and business intelligence platforms."

Despite what vender literature might claim, the ability to do meaningful analytics work that can truly impact healthcare improvement does not necessarily depend on having extensive (and expensive) analytic and business intelligence platforms.

The critical factors for successfully applying analytics to healthcare improvement projects are

- well defined and relevant performance indicators,
- timely performance data,
- appropriate analysis, and
- dissemination of results to pertinent stakeholders.

Note that these success factors do not depend on having large BI/analytics platforms available. A common phrase in Lean Transformation initiatives is "creativity over capital". Healthcare improvement initiatives with the benefit of extensive technology support (i.e., big BI, flashy dashboards, etc) can still fail whereas initiatives with more "modest" but innovative analytics approaches and tools can be likely to succeed. The difference, of course, is not *which* analytic tools where utilized (and how expensive they were), but *how* they were utilized, *how well* analytics were integrated into the initiative, and *whether* the results were acted upon.

MYTH #3: Analytics is only for executives and management.

Executives and management are traditional users of business intelligence / analytics

It is true that business intelligence systems have roots in financial and business operations reporting systems, and analytics has roots in statistics and research. Business intelligence applications have long been the domain of specialists (such from IT services) who would build special-purpose strategic dashboards and predictive models for executives in the "corporate office".

The information gleaned from these executive-level tools and reports would then trickle-down through means such as annual reports, corporate strategy update presentations, or "imposed" quality improvement initiatives dreamed up by executives and managers.

More clinical data available means more information relevant to the front-line

Recently, however, there has been rapid growth in the deployment of clinical information systems with which front-line staff interact as part of their everyday clinical work. These include clinical systems such as electronic patient records and ancillary systems such as lab and diagnostic information systems. In fact, very few aspects of healthcare have not been impacted by computerization.

"Clinical staff contribute an ever-increasing volume of data that can be made available to analytics tools for real insight into healthcare operations and real benefit to healthcare transformation initiatives."

Clinical staff contribute an ever-increasing volume of data that can be made available to analytics tools for real insight into healthcare operations and real benefit to healthcare transformation initiatives. In addition to healthcare transformation applications, there is enormous potential for this data to be analyzed and made available to front-line staff for learning opportunities.

Effective communication is key for any quality improvement initiative

Effective communication is paramount to the success of any quality improvement initiative. Information that is "locked up" in obscure reports and complex tables or presented in ways that does not engage front-line staff is essentially a wasted resource. BI and analytic tools can help to promote improvement goals and objectives of a quality improvement project (by highlighting new processes and identifying performance targets), and showcase the progress made towards achieving the goals. Taking the time to engage front-line staff in meaningful ways via analytics can help encourage buy-in to and more active participation in improvement initiatives when they can monitor the progress that is being made.

Engaging staff with analytics doesn't mean that all front-line staff need to access to the HCO's analytics portal and sift through dozens of reports (if not more). Many HCOs with successful healthcare transformation initiatives promote the posting of progress results in locations highly-visible to staff. These "quality boards" typically will contain print-outs of visualizations of key performance indicators so that staff can see, at a glance, what the performance targets are, and what progress is being made towards those targets.

MYTH #4: Front-line staff don't understand statistics and aren't interested in data.

The job of front-line staff is to be clinical, not statistical

It is true that nobody working as a clinical professional on the front-lines of healthcare signed up to become a statistician. Even though the specialty of most front-line staff is *not* statistics, that does not mean that they're not interested in the results of healthcare improvement initiatives or wouldn't appreciate the intent to communicate and share information within the HCO.

Clinical staff are meant to be doing *clinical* work, and they can sometimes take exception to being "data-entry clerks" due to the growing number of systems and data entry points with which they must interact. Especially in busy departments, continuous data entry and staring at volumes of seemingly irrelevant and complex quality charts can very much take a back seat.

Healthcare is becoming more evidence-based

In fact, medicine is becoming more "evidence-based" every day. Legions of researchers around the world are researching the best ways to care for patients, be it with pharmaceutical therapies, diagnostic tests, or surgical interventions. Guidelines are being developed on when (or if) to use therapies on which patients and to which extent to ensure maximum effectiveness and quality of patient care. And every new therapy or intervention is thoroughly investigated and validated prior to being considered for use in a clinical setting.

Clinical evidence now includes performance data

"Despite the growth of evidenced-based medicine and research supporting best practices, many (if not most) workflows and other processes in healthcare are decidedly not evidence based."

Performance indicators must be considered as part of modern clinical evidence. Ineffective processes and workflows can negatively impact patient outcomes just as applying the wrong medication can. Despite the growth of evidenced-based medicine and research supporting best practices, many (if not most) workflows and other processes in healthcare are decidedly *not* evidence based.

Many policies and processes within an HCO which influence the way front-line staff do their work have "always been that way". Ironically, some ingrained workflows and policies are treated as sacrosanct while complaints about workload and patient flow abound. It is not unheard-of that workarounds introduced a decade ago to address a temporary issue somehow became ingrained in the practices of today, and are exercised almost without question.

Analytics make the connection between data, performance, and quality

Analytics can help provide the "best evidence" for everyday workflows within an HCO. By highlighting bottlenecks in care, expected performance metrics, and progress towards meeting performance goals, analytics can provide the front-line staff the evidence they need to know what they're doing is indeed best for the patient.

Analysts must ensure that the information made available to front-line staff is meaningful and relevant. Pages of complex tables and exotic statistical calculations with no meaningful narrative (or "take-home message") will only serve to turn staff off to the message. Liberal use of effective visualizations, summaries, and well-written narrative will help ensure that the proper message is being communicated, and more importantly, is being understood.

MYTH #5: Analytics is too much like "Big Brother"

Some fear that analytics is like "Big Brother" and meant to spy on staff

It is true that some people in the healthcare profession have a mistrust of computers and feel that, somehow, the data entered into clinical computer systems will be used for punitive measures and to spy on staff. Discussion of performance indicators and performance targets seem to conjure up images of "Big Brother" from George Orwell's classic novel "1984".

It is also true, however, that a growing number of healthcare workers are members of the "Facebook Age" who actually *expect* healthcare to be heavily computerized and are comfortable with and see the value of information systems. (Ironically, many of the "Facebook Generation" my never have read "1984" or be familiar with the concept of "Big Brother"!)

Management must address staff privacy concerns

"There is a legitimate need to balance the need for privacy with the need to have enough detailed information for meaningful analysis."

The majority of staff concerns relate to what kinds of information is being collected from clinical systems, who can access the "raw" data, how the data is being analyzed, and how it will be disseminated. There is a legitimate need to balance the need for privacy with the need to have enough detailed information for meaningful analysis. For example, if restrictions on use of data are unnecessarily tight, it is possible that valuable performance-related data may not be available for use for healthcare improvement analytics tools. Data can loose some of its value if it is too abstracted.

Demonstrate transparency and openness with how data and why data is being used

Concerns of how performance-related information will be used are entirely legitimate. To alleviate as many staff concerns as possible, it is of utmost importance to share will all clinical staff what data is going to be used, how it is going to be used, and how it is going to be reported. This is an important dialogue between staff, management, quality analysts, and analytic developers, to ensure that as much information *as needed* to complete the work is obtained while gaining the trust and confidence of the staff whose performance data will be under the spotlight. It is also important to remind staff that staff-performance data is only a small picture of all the data that is required for effective healthcare transformation analytics.

About HealthCareAnalytics.info

HealthCareAnalytics.info (http://HealthCareAnalytics.info) is a website and blog dedicated to advancing the use of analytics to achieve healthcare operations excellence and to meet healthcare quality and process improvement goals. The site contains news from the field of healthcare analytics, reviews of pertinent books, websites, and products, and views on how best to employ analytics for healthcare transformation.

About the Author

Trevor L Strome MSc, PMP

Trevor is a trained Epidemiologist and software developer who has been building, implementing, and consulting about healthcare informatics and analytics systems for fifteen years (in both the private and public sectors). He has successfully launched companies by developing and successfully commercializing healthcare-related software systems. In addition, Trevor has implemented electronic health record systems, and built business intelligence and analytics portals for major healthcare organizations. Certified in Project Management, Lean, and Six Sigma, Trevor's passion is applying healthcare analytics to enable highly successful healthcare transformation initiatives.

Trevor is the founder and editor of HealthCareAnalytics.info.

Trevor is also the author of the book "Healthcare Analytics for Quality and Performance Improvement", published by John Wiley & Sons Inc. You can visit the book's website http://HealthcareAnalyticsBook.com for more information or purchase the book on Amazon.com.

You can contact Trevor by email at trevor@HealthcareAnalytics.info and follow him on Twitter at http://twitter.com/tstrome.

References

(1) Davenport TH and Harris JG. 2007. Competing on Analytics. Boston: Harvard Business School Press

