Data analytics: More promise than performance?
We live in an era of unprecedented data access.

But how can you leverage data to benefit your patients and populations?

Healthcare leaders have never had more access to data than they do today. This data can potentially provide a better understanding of their organizations and empower well-informed decisions in this new environment.

But healthcare data is complex. When you begin to map out all the potential interconnections, it reveals a very intricate decision-making environment.

Where are the problems and opportunities?

What drives a winning strategy?

Data and analytics are the #1 concern currently facing healthcare executives in the United States.

(According to the Healthcare Executive Group’s 2018 “Top Ten” study.)
Most healthcare analytics solutions strike out.

Why?
Too many solutions look backward in an industry that needs to look forward.

A strong analytics approach is essential to draw needed insights from data. But for most organizations, today’s solutions offer more promise than performance. And since the data under analysis is retrospective, the solutions offer only a look backward, not forward.

But the promise of predictive, prescriptive data—data that tells you what actions to take before you need to take them—is a grand slam.

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**Retrospective**
- How well has your organization performed in the past? (Easy)

**Real time**
- How is your organization performing now at the point of care? (Challenging)

**Predictive**
- Who is likely to develop Disease A or progress to Disease B? Can the progression be slowed? (Difficult)

**Prescriptive**
- What action plan can produce real results? (Most difficult and beneficial)

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Most organizations are here. But they need to be here.
Relying on statistical models is not enough.

Analytic solutions must be clinically credible.

A strictly statistical approach to healthcare analytics risks identifying correlation without causation. Proven methodologies combined with clinical expertise are essential.

Pure machine-learning models are “black boxes.” The machine cannot explain how it comes to its recommendations. When pure machine models deal with human lives, mistakes may be made without explanation or intervention. Consider the self-driving car that struck and killed a pedestrian. Or the drivers of those cars who stop watching the road because they have too much faith in the vehicle’s algorithms.

A better model for health care begins with teaching the machine algorithms based on proven methodologies and then having subject matter experts review the machine output. With this approach, you can pursue opportunities consistent with your organization’s professional and ethical standards and knowledge.

While new vendors and technologies promise tremendous value, clinical expertise and experience are must-haves for creating meaningful insights.

The right analytic solution reveals complex interdependencies that you believe exist, but you haven’t been able to demonstrate or measure.

For example:

- Are hospital readmissions increased when the length-of-stay is shortened for people with inadequate family support?
- Are post-operative infection rates increased by using lower-cost sterilization techniques?
- Do people with complex, chronic conditions experience fewer unnecessary hospitalizations when team-based ambulatory appointment scheduling is used?
Calling clinical analytics up to bat.

What is the foundation of a winning analytics approach?

- Extensive baseline data
- Clinically defensible risk adjustment
- Clinically relevant performance measures
- Risk-adjusted patient and performance benchmarks

Data integration

Machine learning and artificial intelligence (AI) require large data sets so that the machines can learn and then test algorithms. This requires the ability to combine very large data sets.

People are not all alike, so account for differences when reporting benchmarks and performance rates. A patient group with complex, severe heart problems and other complications has a different hospitalization rate than a group with low-severity heart problems and no complications. The opportunities lie in the gaps between the risk-adjusted, expected rate and the observed rate.

The aim: Improve outcomes and the patient experience and reduce the cost of health care. This means healthcare professionals must change the way they work, so get them on board with the program through clinically relevant, important measures. For example, it’s good to count how many people had flu shots, but it’s more clinically relevant to determine if the flu shot program reduced ED visits and hospitalizations.

To be clinically credible, results must be risk-adjusted using proven and transparent methodologies.

With this foundation, next think about how to augment your understanding by expanding the information sources. Consider how much more you can improve outcomes by integrating information from smart watches, gym participation tracking, healthy eating programs and more.
It’s time for robust analytics to step up to the plate.

With a strong foundation, advanced technology can apply clinical methodologies at scale.

Natural language processing (NLP):
Eighty percent of health information in medical records is unstructured notes, such as physician and nursing notes, and unusable. (Source) NLP is a technology that can read unstructured notes and turn them into structured information. NLP automates and augments the work of those spending time searching through medical records.

Automation:
People trying to understand data spend considerable time thinking about and acting on hunches to determine the best way to slice and dice that data. With the advancements of information technologies, much more of this work can be automated and the information even augmented. Cutting edge technology, properly programmed and trained with clinical models, can reduce the time spent in manual search and analysis.
The diagram above clearly demonstrates how improvements in efficiency can be achieved through advanced technologies. In the past, a long LOS for a particular orthopedic procedure might mean working with all of the surgeons who perform that procedure. Instead, AI can provide more specificity more quickly and identify the areas to focus on. In this example, the analysis indicates there are only two surgeons whose performance needs review.

Example: Drilling down to the root cause of a length-of-stay (LOS) issue within a theoretical health system.

Hospital #1 accounts for 32% of total excess LOS

Of that 32%, excess LOS as a result of orthopedic surgery accounts for 23%

Within that 23%, potentially preventable complications are 46% higher than expected

Of those potentially preventable complications, 68% occurred in patients with preexisting conditions

Of those patients, 22% were treated by “Doctor A” and “Doctor B”

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How do you address persistent industry challenges with analytics?

For each challenge, there is a potential solution.

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
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</thead>
<tbody>
<tr>
<td>No industry-standard risk-adjustment method exists</td>
<td>All baseline data should be risk-adjusted with a clinically defensible model</td>
</tr>
<tr>
<td>True “apples-to-apples” comparison is difficult</td>
<td>Benchmarks and norms should be risk-adjusted with the same risk-adjustment model</td>
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<tr>
<td>More time is spent researching problems instead of responding to them</td>
<td>Analysis should prioritize problems based on clinical and financial best practices</td>
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<tr>
<td>Resolutions are made in silos and focus on short-term results</td>
<td>Improvement plans should address long-term, system-wide enhancements</td>
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<tr>
<td>Vertical issue analysis</td>
<td>Analysis should evaluate interdependent issues</td>
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<tr>
<td>Incorrect problem attribution</td>
<td>Causal attribution should be correctly identified at a granular level</td>
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3M and Verily are beginning to show the transformative value of new analytics technology.

Healthcare organizations are all pulled in too many directions. The analytic solutions that will win in today’s market should serve up the information you need for detailed, data-driven decision making. Deploying resources to specific, actionable, risk-adjusted opportunities provides a better chance of improving performance and outcomes. This is what brought 3M Health Information Systems and Verily Life Sciences together to develop the 3M™ Performance Matrix Platform.

The 3M Performance Matrix is a performance analytics solution that identifies, quantifies and prioritizes a health system’s most pressing issues to help providers convert challenges to opportunities.

Together with Verily, 3M Health Information Systems analyzed Medicare data from hundreds of health systems with the 3M Performance Matrix. From a sample of just 10 of those health systems, we discovered over $1 billion in cost-saving opportunities.

The statistics speak for themselves.

Call today
For more information on how the 3M Performance Matrix Platform can help your organization better manage performance, contact your 3M sales representative, call us toll-free at 800-367-2447, or visit us online at www.3m.com/his.