White Paper

Toward a Single Source of Patient Truth:
Predictive Analytics for Accountable Care

Integrating and leveraging data to create a single patient truth for clinical, business and financial success

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Toward a Single Source of Patient Truth: Predictive Analytics for Accountable Care

Driven by new and emerging models of accountable care, health care organizations must determine how to use data to address routine clinical, business and financial issues—from readmissions, patient safety and quality outcomes, to efficiency, rapid reimbursement, and population health management. Health care organizations have the opportunity to semantically harmonize and integrate data across the continuum of care and examine it at both micro and macro levels. It's not an easy task.

Defined by the Center for American Progress as "groups of health care providers that are held jointly accountable for quality and that share in savings for treating their patients at a lower cost," accountable care organizations (ACOs) are still evolving.

Risk within ACOs resides with both payers and providers, including hospitals, ambulatory care facilities and physician practices. And risk isn't likely to disappear. As ACOs become more sophisticated, providers will carry the burden of reporting on patients and managing a population's health, according to the Department of Health and Human Services (DHHS).

To achieve success, risk-bearing organizations like ACOs must contain costs and ensure quality. Cost containment challenges include authentic patient-level cost accounting, cost center monitoring and tracking of risk-adjusted claims against payer benchmark and by service line and clinician, according to the National Conference on State Legislators.

Just as critical is quality management, which will ultimately reduce costs. To that end, ACOs must identify gaps in care, engage in point-of-care, real-time surveillance, develop internal metrics and benchmarks, and monitor the performance of physicians, care teams and facilities, says DHHS.

ACOs must also take charge of reporting. Reporting to payers typically involves outcomes, process and payer mandated metrics, as well as physician performance and reimbursement claims. Now, however, regulators are putting increased pressure on providers to apply metrics for outcomes, guidelines, efficiency and clinical

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processes, observes the Health Information Management Systems Society (HIMSS) in a quality metrics overview: http://www.himss.org/content/files/QualityMetricsOverview.pdf.

Some tools are already in place. Claims data delivers process metrics, identifying whether or not a hospital or physician has filed a claim for a test, when the provider performed the test and whether or not the test complies with evidence-based guidelines. What's missing, however, is the ACO's ability to determine if a given test is within range.

To achieve success, ACOs must rely on clinical outcomes metrics. That, in turn, involves combining clinical data with longitudinal claims data, which offers a patient history complete with inpatient and outpatient visits and participating physicians. The result: a comprehensive data source ACOs can easily access and manage.

"The collaborative nature of ACOs is an important step in the evolution of our nation's health care system," says Clayton Ramsey, COO and Interim President of MEDai. "Predictive analytics and health care expertise help health care organizations ensure that they have the necessary resources to make quality, efficient patient-care decisions based on accurate information."

Following are multiple steps ACOs must take in implementing analytics solutions:

ACO Action Step: Ensure Investment in an Analytics Solution That Provides Both Macro and Micro Analytics

Successful ACOs need to simultaneously work on two levels of clinical decision support and analytics. On the macro level, ACOs need to understand these issues:

Population risk: What is the population's level of risk?

Origin of risk: Where does the risk reside —within a service line, or within an individual physician or hospital?

Current versus future risk: How does current risk compare and contrast with forecasted risk?

Strategy: What strategy should an ACO pursue to close care gaps and overcome weaknesses?

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Equally important for ACOs is coming to grips with micro or patient-specific analytics and developing a highly flexible macro-micro mindset. Among the elements of this new way of thinking:

While viewing quality systemically (macro), ACOs must also examine quality on an individual, case-by-case basis (micro).

While zeroing in on processes and organizational level data (macro), ACOs must also focus on applying analytics to patient-specific data for patient-specific improvements (micro).

While tapping health IT tools such as orders sets, computerized physician order entry (CPOE) and portals for regulatory reporting (macro), ACOs must also embrace near real time surveillance, predictive analytics and real-time alerting (micro).

The optimum strategy for ACOs is clear:

Run patient level data through evidence-based guidelines to get a handle on risk and gaps in care by individual patient. Share data from across the continuum of care with providers at the point of care to increase the likelihood of timely, accurate, evidence-based care decisions.

"Following this formula allows ACOs to influence care at the physician practice level at the exact time a clinician is conducting an encounter with a patient," says Ramsey. "But it also opens the door for ACOs to deliver high levels of quality care at a lower cost across the care continuum."

ACO Action Step: Focus on Risk Assessment

Hospitals, physicians and ambulatory care facilities that participate in ACOs must join forces to manage risk. ACOs need to know each patient's current and predicted risk and level of compliance with evidence-based guidelines.

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By reviewing this information on a macro level, ACOs can answer these questions:

Number of patients: How many ACO patients are at the highest level of risk—typically risk five?

Physicians: Which physicians tend to treat extremely high-risk patients? Why?

Hospitals Which hospitals are chosen and used by high-risk patients and their physicians? Why?

Ambulatory care providers: Which physician practices and ambulatory care centers treat higher numbers of high-risk patients? Why?

Diseases and conditions: Which diseases and conditions are most prevalent? Diabetes? Asthma? COPD? Heart failure? How well does the ACO diagnose and treat these conditions?

Also critical to ACOs is evaluating evidence-based guidelines compliance for chronic care management based on programs launched by the National Committee on Quality Assurance (http://www.ncqa.org), Physician Consortium for Performance Improvement (PCPI) (http://www.ama-assn.org/ama/pub/physician-resources/clinical-practice-improvement/clinical-quality/physician-consortium-performance-improvement.page), and National Quality Foundation (http://www.nqf.org).

ACO Action Step: Invest in Predictive Analytics

"ACOs need solutions that allow them to reliably forecast health care costs, identify and stratify risk in patient populations, identify which patients would be positively impacted by case and disease management programs, and enhance the patient/provider experience," says John Cruickshank, M.D., Chief Medical Officer, Lovelace Health Plan. "Effective predictive analytics solutions allow ACOs to focus on patient, member and clinician engagement, enhance communication, continually measure and improve quality of care, and manage costs."

That, in turn, requires ACOs to use actionable predictions within three categories:

• Cost and risk drivers
• Utilization in the form of inpatient days and ED visits
• Patient motivation

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Consider the case of Nancy. Even though providers define Nancy's current risk severity as a three, predictive analytics will help providers predict if Nancy is likely to become a risk five or remain at the same risk level. If Nancy's risk is high, providers can take steps to prevent her condition from worsening, which could lead to a costly readmission, providers also need to know why Nancy could become a risk five. For example:

- How likely is it that Nancy will be hospitalized? If so, when and for how many days?

- How many times is Nancy likely to make visits to the emergency department?

- Will Nancy's condition worsen because of her lack of motivation or unwillingness to comply with guidelines or physicians' instructions? Or are other factors at play?

- How can providers—hospitals, physicians and ambulatory care providers— mitigate Nancy's risk level? By using predictive analytics to identify gaps in care, ACOs can determine if the diabetics within their patient panel comply with guidelines for foot and eye exams, whether they're likely to be hospitalized with a forecasted risk of five or whether they previously spent three days in the hospital and are now forecast to be hospitalized for another six. ACOs can also identify physicians and hospitals treating highest risk patients.

The ideal predictive analytics solutions offer providers single screen views of data covering multiple variables. Among them:

Risk management: Ideally, physicians identify risk levels for each patient within their panel with information on patient issues such as drug management, diseases or conditions (CAD, COPD, CVA, depression, diabetes, HIV, heart failure) and color-coded patient compliance levels (low, medium, high). By reviewing this information, physicians realize that even though they may be performing well on drug management, they fall short in managing patients' diabetes. They can also identify and call in high-risk patients who are non-compliant across multiple diseases or conditions.

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Care History: As physicians gaze at an individual patient profile that features both claims and clinical data, they're able to identify a patient's primary conditions, co-morbidities, most recent outpatient visits, and level of medication compliance.

Gaps in Care: By reviewing a screen devoted to guideline compliance, physicians can spot gaps in care in multiple areas, including, for example, diabetes, drug management, hyperlipidemia, hypertension and preventive care. Once physicians take note of a patient's non- compliance on factors like influenza immunization, eye exams or use of a lipid-lowering medication, they can call in the patient to discuss how to achieve guideline compliance.

Physician Performance Management: By accessing a disease registry screen, physicians can identify conditions, total number of patients with each condition, number of patients with no gaps in care, average compliance percentage, and the number of patients with chronic and acute impact. By drilling down into specific condition guidelines, physicians can uncover strategies to improve quality and reduce costs.

Executive Reporting: Physicians aren't the only health care professionals who stand to benefit from analytics data. By reviewing system-level cost savings reports, health care executives and medical directors can identify conditions, numbers of patients, average severity and outcomes, including average length of stay, readmissions, mortality, complication rates and cost savings.

For example, after identifying an acute MI mortality rate of nine percent, executives can drill down into quality measures related to outcomes, medication and patient safety. By reviewing evidence-based measures specific to acute MI, executives can pinpoint the possible causes of high mortality.

After discovering that the hospital uses beta blockers in 84 percent of acute MI cases, executives can choose from among several action steps: adjust existing order sets, create new order sets or pinpoint physicians with possible coding or prescribing issues.

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ACO Action Step: Zero in on Physician Communication and Performance Management

Physicians want to know which patients they should prioritize first by accessing accurate, real-time data on severity of illness, care history, patient motivation and compliance with an evidence-based medicine care plan across the care continuum. Among physicians' most pressing issues:

Micro: What can and should the individual physician do for the patient at the point of care?

Macro: How well does the physician practice manage the outcomes and risk levels of its patient population? How well will the practice achieve its clinical, business and financial goals? If it's unlikely that the practice will achieve its goals, how could it change course or take corrective actions? How could the practice bring in patients who show non-compliance with care guidelines?

Following are several actions ACOs should consider in communicating with physicians:

- Data sharing: Alert providers with data indicating, for example, that even though half of a panel of 200,000 patients has diabetes, the compliance rate is just 20 percent.

- Performance measurement/management: Evaluate hospital and physician performance and then coach, mentor and educate providers who would benefit from guidance and behavioral coaching.

- Hospital interactions: Address hospitals' micro and macro needs for data. Among the issues:

  - In which departments or specialties has the hospital generated the most significant positive or negative outcomes? Why?

  - What are some likely sources of care gaps and problems— individual physicians, care processes or order sets?

  - Which processes and practices should the hospital sustain? Which should be curtailed or eliminated?

  - How can the hospital deliver real-time, patient-specific data and insights to clinicians so they can influence care while a patient is still hospitalized?

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As important as creating and using analytic solutions within ACOs is asking physicians and ambulatory care facilities to use point-of-care tools. While clinicians can easily access and retrieve a patient's data from an electronic health record or patient chart, they often have no idea what happens to a patient along the care continuum. For example, was a patient ever seen by a specialist? Did the patient show up at another facility with a previously unknown condition? Physicians simply don't know or aren't sure.

ACOs committed to managing risk and physician performance will benefit from following these steps:

- Aggregate data across the continuum of care.

- Tie harmonized integrated data to evidence-based guidelines.

- Advise physicians of patients within their patient panel, including compliance levels and gaps in care.

- Invite clinicians to devise strategies and tactics to improve compliance and reduce gaps in care.

- Invest in macro analytics while supporting the micro data and information needs of hospitals, ambulatory care providers, and physicians.

ACO Action Step: Engage in Real-Time Clinical Surveillance and Forecasting

"Hospitals can have an impact on patient care if they identify opportunities to improve outcomes, engage in external reporting, and conduct real-time clinical surveillance," advises Ramsey.

Once executives identify poor outcomes, access information on the potential causes of poor outcomes, and create a plan for corrective action, they can concentrate on moving the dial on hospital and physician performance through a multi-step process:

Identify at risk patients. Hospitals are facing a new reality. The federal government refuses to reimburse hospitals for readmissions within 30 days of discharge or for complications acquired within the

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hospital. In response, health care leaders must access probability scores to identify high-risk patients, pinpoint patients with changes in risk and review risk drivers to define innovative approaches to prevention. Among the risks to monitor: risk of transfer of ICU, risk of mortality and risk of readmission within 30 days.

Deliver near real-time clinical surveillance. ACOs should perform clinical surveillance on the level of the individual patient, allowing them to identify, for example, a patient with a creatine change of .5 or three blood sugars in a row out of range. Equally important are intelligent alerts with customized delivery options, transmission of data to clinicians, rapid response teams or casemanagers, and reporting by hospital, admitting physician and unit or nursing station.

Use integrated and aggregated data from disparate systems. To fully participate in accountable care ACOs need to pull aggregated data from disparate, diverse systems—from vital signs, pharmacy and central supply to lab results and procedures.

"Patients generate information at multiple community settings, including clinics, physicians practices and hospitals," says Ramsey. "Even though cross-enterprise information exchange is relatively new to health care, providers, payers, government and vendors must join forces to develop strategies that link every provider that delivers patient care."

"Physicians and other stakeholders need a seamless platform for leveraging information across systems and care settings," says Bruce Taffel, M.D., Vice President and Chief Medical Officer of Shared Health, Tennessee's largest public/private HIE. "Combined with superior analytics, such a platform offers communities the insight they need to drive quality and improve patient satisfaction."

Move forward with accountable care. "We can only be accountable for the information we know," says Joel Diamond, M.D., Chief Medical Officer, db Motion. "The only way we can provide the highest quality of care and improve the nation's health is to gain access to a full data set and develop an effective means for analyzing it."

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Dr. Diamond is convinced that health care has evolved beyond its traditional bricks and mortar confines to longitudinal care, which carries serious implications for reimbursement and cost management. His advice to ACOs looking to participate in accountable care:

- Create a platform for accountable care using IT.

- Invest in EMR, interoperability, semantics and analytics.

- Develop a strategy that focuses on how EMR, interoperability, semantics and analytics will work together.

- Realize that ACO success is impossible without three elements: aggregated data, semantic harmonization and predictive analytics.

Dr. Diamond can speak from experience. A payer informed him that he hasn't fulfilled the asthma care metric related to prescribing a rescue inhaler. Unfortunately, the payer was looking at data that was six months to a year old.

"The payer's problem was also my problem: the data was as good as it could be," says Dr. Diamond. "If we want data to improve care, the data must be relevant, timely, accurate and complete."
"An authentic accountable care organization will refuse to game the system and instead focus on analytics and payer and clinical data to deliver quality care at a lower cost," adds Diamond.

Accountable care is a journey, not a destination, according to Anne Docimo, M.D., Chief Medical Officer, UPMC (University of Pittsburgh Medical Center) Health Plan and Medical Director, UPMC Corporate Care Management. "Performance accountability will expand across the care continuum," she says. "And accountability will translate into higher payments."

ACOs that use pay-for-performance already participate in a form of accountable care, says Dr. Docimo. They can cross the care continuum and expand the degree of shared risk by moving from pay-for-performance to hospital physician bundling to episodic billing to capitation and shared savings models.

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Closing the Loop

Developing and managing a successful ACO calls for information analysis that reaches beyond individual patients and episodes of care to the health status of populations and the life of payer contracts.

ACOs must integrate data from varied sources and systems, including clinical transactions from EHRs, lab and imaging, and information from pharmacies and medical group management systems. Then, they must apply business intelligence and analytics to data that features clinical and financial information about an assigned population.

The goal: Create insights and strategies to better manage patient care, ensure quality health outcomes and realize top clinical, financial and operational performance. Predictive analytics has the power to build a single source of truth, improve processes across the continuum of care, monitor care patterns to evaluate compliance with best practices and forecast patient needs.

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Appendix

Resources on Predictive Analytics and Modeling Predictive Modeling and Team Care For High-Need Patients at HealthCare Partners
http://content.healthaffairs.org/content/30/3/416.short

Peering into the Future: Predictive Healthcare Analytics
http://healthcareanalytics.info/2010/03/peering-into-the-future-predictive-healthcare-analytics/

Moving to Predictive Analytics in Healthcare
http://healthcareanalytics.info/2011/02/moving-to-predictive-analytics-in-healthcare/

Predictive Analytics and the New World of Retail Healthcare
http://www.healthmgttech.com/index.php/solutions/payers/predictive-analytics-and-the-new-world-of-retail-healthcare.html

Predictive Modeling Web Summit
http://www.healthwebsummit.com/pm2011.htm

National Predictive Modeling Summit
http://www.predictivemodelingsummit.com/

Predictive Modeling News
http://www.predictivemodelingnews.com

Resources on Accountable Care

Accountable Care: Improving Care Coordination for People with Medicare (DHHS)
http://www.healthcare.gov/news/factsheets/accountablecare03312011a.html

Summary of Proposed Rule provisions for Accountable Care Organizations under the Medicare Shared Savings Program
http://www.raconline.org/news/news_details.php?news_id=15558

What Providers Need to Know: Accountable Care Organizations
https://www.cms.gov/apps/media/press/factsheet.asp?Counter=3914&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date

Federal Agencies Address Legal Issues Regarding Accountable Care Organizations Participating in the Medicare Shared Savings Program
https://www.cms.gov/apps/media/press/factsheet.asp?Counter=3912&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date

Improving Quality of Care for Medicare Patients
https://www.cms.gov/apps/media/press/factsheet.asp?Counter=3911&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date

ACO Digest
http://www.acodigest.com

Proposed ACO Rule
http://edocket.access.gpo.gov/2011/pdf/2011-7880.pdf

Accountable Care News
http://www.accountablecarenews.com/index.html

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