HDM Announces 2015 Analytics All-Stars

Health Data Management is announcing recipients of its 2nd annual Analytics All-Stars program, which recognizes organizations and individuals implementing analytics in innovative ways to improve the health of their patients and the financial performance of their organizations.

Analytics All-Stars showcases those that are providing pioneering leadership, spurring innovation and driving improvement across their organizations. The recognition program reviewed projects and achievements from calendar year 2014 and is built upon the themes of HDM’s Healthcare Analytics Symposium, being held July 13-15 in Chicago.

The individuals and organizations honored this year will be profiled in-depth online and in the July print edition of Health Data Management.

This year’s recipients are:

**Clinical Visionary: John Showalter, M.D., chief health information officer at University of Mississippi Medical Center, Jackson, Miss.**

Showalter is a force behind UMMC’s effort to address heart disease in Mississippi using clinical predictive analytics—heart disease is the leading cause of death in Mississippi, according to statistics provided by the Mississippi State Department of Health. To better identify individuals specifically at risk of acute myocardial infarction, Showalter and his team engaged Jvion, a predictive analytics company, for its RevEgis clinical predictive solution. RevEgis delivers real-time predictions at the point-of-care to help reduce patient suffering and target interventions. Using the predictive insights, UMMC is able to identify high-risk patients and to provide interventions in a tactical, efficient, and effective way. Using predictive analytics, Showalter’s team was able to take the entire population of patients and narrow it to a target group of only 1.5 percent of all patients. Within that 1.5 percent, 75 out of each 100 patients are predicted to have a heart attack. UMMC expects to monitor more than 25,000 patients in the larger population and track the outcomes of interventions on high-risk individuals.

**CIO Visionary: A. Thomas McGill, M.D, CIO and vice president of quality and safety, Butler Health System, Butler, Penn.**

Under McGill's guidance, Butler Health revamped its business intelligence efforts with Information Builders' WebFOCUS, to enable Butler's providers to see where they stand one
week versus another on various metrics, such as the number of electronic prescriptions they filled or the number of times they ordered appropriate care. This automated measurement and feedback and information access was instrumental in improving efficiency and ultimately patient care. Butler recently participated in a program to improve patient throughput in the emergency department. To measure the progress, McGill's team developed a reporting portal to connect information about patients at an aggregate level, featuring milestones and times by month. The system could even drill down into the details of week, shift and hospital unit. After one year of using the new analytic environment in the emergency department, Butler was able to reduce its arrival to admission times by 15 percent and arrival to discharge times by 10 percent, while increasing in-patient throughput volumes by 7 percent—all without increasing staff or rooms.

**Project of the Year, Accountable Care: Integrated ACO, Austin, Tex.**

Integrated ACO, an accountable care organization serving medically underserved populations in west Texas, developed psychographic analytical tools to customize care approaches to the personality profiles of patients. The technology innovation created includes not only the key elements essential for population management and generally available, but also disruptive technology and innovative components that drive quality improvement and cost reduction.

Through clinical analytics, the ACO has been able to determine whether clinical practice is in compliance with nationally accepted clinical guidelines or deviates significantly from it. Performance report cards developed as a result of such analyses are effective tools to drive behavioral changes in clinical practice to drive cost reduction and quality improvement. The ACO also developed predictive algorithms in order to identify patients at risk of becoming hospitalized in the next six months. The predictive models target conditions such as congestive heart failure, pneumonia, and acute and chronic diseases for which good ambulatory care can prevent expensive hospitalizations. The prediction model for CHF admissions was evaluated using the area under the curve (AUC) of the model's Receiving Operating Characteristics (ROC) and the lift for the model at 1 percent, 5 percent and 10 percent of the cases labeled. Close to 90 percent of true positive predictions were observed while accepting only 10 percent of false positive predictions, a very high level of specificity. The lift, the ability of the model to sort admissions compared to random selection (i.e. no model), was 18 for first 1 percent of predictions.

**Project of the Year, Population Health: Blue Cross Blue Shield of Tennessee, Chattanooga**

The insurer developed an analytics platform (Custom 360) that provides end users with data to analyze financial trends, review healthcare utilization statistics, attend to population health risks, and monitor health care outcomes throughout the member population. It develops insights for health intervention and for marketing campaigns that are effective, measurable and deliver
results. This strategic platform delivers key capabilities including quality analytics, consumer analytics, provider engagement analytics, provider reimbursement analytics, internal analytics and employer group reporting.

A clinician/provider dashboard displays quality ratings, Medicare dollars distributed, spending on specific diseases, and all accompanying tests, procedures, and preventive efforts associated with those diseases. This dashboard supports health quality initiatives at BCBST such as identifying and reducing gaps in care and aligns it with financial incentives to the participating clinicians/providers.

The platform also utilizes an enterprise data warehouse and integrated marketing software for creating marketing, health, and wellness campaigns for members, and applications for stakeholders including provider groups, employers and internal constituents. The platform analyzes patients' records for gaps in care resulting in 40 percent more members identified for clinical outreach. The insurer has closed more than 422,000 gaps in care and generated approximately $3 million in savings. Overall, 1.3 million, or 52 percent, of members have received clinical engagement material generated through the platform.

**Project of the Year, Patient Safety: UnityPoint Health, Waterloo, Iowa**

Recent medical research suggests traditional blood transfusion practices among physicians are excessive, resulting in not only financial waste, but more critically, harm to patients. Historically, the most common patient risk associated with blood transfusion was infection, but new studies indicate that eliminating unnecessary transfusions are associated with lower patient mortality, decreased length of stay, and a reduction in 30-day readmissions.

UnityPoint Health developed an analytics solution that allows for the observation of system-wide trends, as well as the risk adjustment of every transfusing physician's patient case mix. The solution is “trained” using random forests on all inpatients based on their demographics, diagnosis information, and hemoglobin levels retrieved from the patient's electronic health record (from Epic). Models are applied to each patient receiving a transfusion, and both the conditional expected number of units given transfusion and expected transfusion probability are computed using R statistical programming. Using software from Tableau, UnityPoint is able to aggregate the expected transfusion rates and units conditioned on patient attributes for all of a physician's patients, providing the total number of expected units based on enterprise behavior and a risk adjustment for every physician's case mix in the system.

Excessive transfusion practices can then be ascertained by comparing expected transfusion behavior and actual behavior. By maintaining patient level detail in the underlying data UnityPoint can instantly risk-adjust the case mix of any group, from specific physicians to service lines to hospitals to geographic regions, and identify excessive transfusion behavior based on the practices of the entire organization.
Project of the Year, Revenue Cycle Management: Mercy Health, St. Louis, Mo.

Mercy is using analytics to transform medical documentation workflow and improve the accuracy of provider documentation through the automated selection of patient charts for secondary review. The Mercy analytics team partnered with medical documentation specialists to produce a secondary diagnosis report to integrate business intelligence and clinical workflow processes to transform and simplify the accurate coding of specific inpatient health conditions by allowing information within the report to be embedded in the workflow to enable frontline caregivers to turn insight from the report into immediate action.

Mercy identified over 18 secondary diagnoses conditions including sepsis, anemia, acute kidney injury and hypertensive emergency, targeted conditions are frequently missed opportunities that affect the overall clinical picture of SOI (Severity of Illness) and ROM (Risk of Mortality) in addition to providing high value from a revenue perspective.

Traditionally, the work to identify and address documentation deficiencies had been difficult and time-consuming. The new process embeds a custom report that automates the identification of charts with documentation deficiencies within the Epic EHR system, allowing medical documentation specialists to perform all aspects of their work without leaving the EHR. Through a combination of data warehouse tables, ETL logic, a reporting universe, and Epic's reporting interface, Mercy automated the identification of patient charts containing evidence indicating probable documentation deficiencies for one or more of these diagnoses. This automation converts a 20-40 minute medical documentation specialist chart review process to an instantaneous detection of an opportunity.

Medical documentation specialists now have the ability to click on hyperlinks within the report that will take them to specific areas in the Epic chart for a more detailed review, as well as to submit a query to the physician about the possibility of a missed documentation of a diagnosis. In tandem with this, the method of communication between the documentation specialists and physicians has transformed, encouraging more face-to-face communication.