

Data & Analytics Council
March 21, 2014
Analytics and the Health IT Workforce

The Data & Analytics Council webinar on March 21, 2014 explored a framework for evaluating the analytical maturity of healthcare organizations, as well as the core competencies required of and strategies for building a health IT workforce for using analytics to drive actionable insights. Speakers included:

- **Jack Phillips**, Co-Founder and CEO, International Institute of Analytics
- **Nancy Garrett**, Chief Analytics Officer, Hennepin County Medical Center
- **Pamela Peele**, Chief Analytics Officer, UPMC Insurance Services

Jack Phillips

Jack Phillips and Tom Davenport co-founded the International Institute for Analytics (IIA) to advise enterprises in how to build-out, advance, and mature their analytics data programs. Recently, IIA and HIMSS Analytics created the DELTA model framework for assessing the analytical maturity of an organization.

Under the framework, organizations can receive a score across five domains, Data, Enterprise, Leadership, Targets, and Analysts. Each domain includes specific competencies. For example, competencies under 'data' include data capture, data quality, and data integration. Organizations are benchmarked with others to help leaders identify areas of strength and improve areas of weakness. DELTA scores range from 1-analytically impaired to 5-analytical competitor.

In building the model Jack and his team identified five key traits of high-performing analytical organizations, including:

- constantly searching for new and interesting data sources and measurements
- centralizing analytical resources in a community of practice or center of excellence
- strong leadership and use of data-driven decision-making
- analytics inform a distinctive capability/strategy within the organization
- employs high-level professional analysts and provides training and tools for analytical amateurs

Moreover, analytics maturity is an integrated effort across users of analytics, providers of analytics, and enablers of analytics. It is not simply a function of single division, such as IT.

Nancy Garrett

Nancy is Chief Analytics Officer at Hennepin County Medical Center (HCMC), a safety-net health system serving Minneapolis and the surrounding region. HCMC has used EHRs for 8 years to capture clinical data, but is just embarking on its analytics journey. Nancy's team has already encountered a number of challenges, such as integrating EHR data with the many and diverse data sources across the organization. Many of HCMC's existing information systems use different definitions to store data, and different practice areas independently track their own specific metrics. Together, HCMC has 150 applications in addition to the EHR, and more 2,000 separately tracked measures. For analytics to work, these various data sources must be streamlined, standardized, and integrated.

To overcome analytics challenges, HCMC is working to identify key measures, centralize data and reporting functions, and work with other local efforts to share tools and best practices. Creating a Chief Analytics Officer position was a key first step in the process. As Chief Analytics Officer, Nancy is working to more clearly define the role and incorporate an analytical mindset across the organization.

For its workforce, HCMC has a small centralized team which leverages relationships with decentralized analysts. HCMC's analytics team also works closely with the EHR team to develop data capture workflows which simplify the process of extracting data from the EHR for reporting and analytics purposes. Analysts are viewed as "bridges" between clinical and business areas, and therefore must develop skills for both. In fact, HCMC has created "clinical internships" to embed analysts in clinical environments to build knowledge of the processes and needs of providers. By bridging both worlds, analysts are poised to identify the right questions to target with analytics and prioritize the needs of competing interests when choosing where to apply analytic resources.

Pamela Peele

Pamela is Chief Analytics Officer at the University of Pittsburgh Medical Center (UPMC). Over time, UPMC has centralized its analytics workforce to create a "hub and spoke" model with a small team of centralized analysts and reporting analysts at different parts of the organization. Pamela recommends that analytics teams hire staff in pairs, particularly in early phases of analytics maturity. Hiring in pairs creates a peer group for these workers, who would otherwise be the only staff in the organization with their particular skillsets.

Key to UPMC's analytical development has been the creation of a single point of truth (SPOT) for data. SPOT is a groomed layer of information, data that has been aggregated and normalized, which has the same meaning regardless of which departments are using it. Likewise, UPMC has undertaken efforts to streamline data measures and metrics. To avoid "measure madness" as described by Nancy, UPMC has a centralized methodology for specific measures, such as readmissions, which is applied across settings.

Finally, Pamela warned that the wealth of new information generated by analytics can be paralyzing if not properly integrated into daily practice. Information overload will lead to inattention, so analytics results must be woven into a comprehensive picture with a specific message, rather than individual reports that may go unread.

Questions

Q: In building an analytics workforce, how do you balance the market demand for people with analytics skills with the fact that these individuals often lack domain knowledge around healthcare?

A: (Pamela) Healthcare often competes with other industries, such as retail and finance, which demand similar skillsets and can offer higher salaries. UPMC has had success in targeting academics like economists or physicists who may be tired of chasing grants/publications and want to apply their skills to other issues.

A: (Nancy) – HCMC has identified internal staff in clinical areas with an aptitude for working with data. These staff can be trained to move into analytical roles and have the advantage of coming into the position with strong knowledge of healthcare practices. Likewise, technical experts can be immersed in clinical or business areas to develop their skillsets.

Q: What kind of HIPAA challenges have you dealt with, especially as you move from the transaction level to aggregate datasets?

A: (Nancy) – HCMC is not so much challenged by internal HIPAA issues as it is by external conflicts. Internally, there are healthy debates about how much data should be acquired/shared with regards to the "minimum necessary" rule. More difficult to solve has been external data sharing agreements with other organizations or ACOs. Some of the existing laws were not designed for this kind of work.

A: (Jack) – Data ethics is a critical issue for organizations doing analytics. IIA has been working on developing a code of ethics for tactical data scientists with the understanding

that the federal government has moved faster in this area than industry. Anyone who uses data will eventually need to be trained on ethics issues, such as maintaining privacy, whether the organization can profit from the data, etc. All members of a robust analytics team should stay within clear boundaries regarding the acceptable use of data.

A: (Pamela) – In light of the data ethics issue, UPMC insists that its high-level analysts be formally trained in data sciences. Analysts without formal training can lack knowledge of different techniques and may not handle data appropriately. UPMC has partnered with Carnegie Mellon University to offer a rigorous yearlong training program to people within the organization that have been identified as analytically talented.

Q: How would you handle an analytics workforce candidate that has enough practical experience but lacks formal training? A parallel would be a paramedic or military medic who is allowed to pass nursing boards in some states without formal nursing education. Do you have such a route to accreditation?

A: (Nancy) – HCMC views analytics as a broad spectrum of work. There are technical components, like data warehouse development or data modeling. There are simple analytical skills like extracting data, creating datasets, and answering basic questions. There are subject area consultants who advise on what issues should be targeted with analytics. And then there are the focused analysts who work with datasets for a particular area. The level of formal training required for each of these positions varies. For the pure analysts, HCMC wants staff with formal training, but for business liaisons or some of the more basic data extraction work, we would consider people without extensive training that we could put through a certification program.

A: (Pamela) – At UPMC, we stand up analytics as a separate function with its own budget and funding within the organization. Work like oversight of the data warehouse, database development, and data governance falls under the IT department. Analytics is viewed specifically as the creation of new knowledge and for that UPMC wants people who are formally trained.

Q: Have you had to determine an ROI for your analytics team to justify ongoing support?

A: (Pamela) – Absolutely. We've determined ROI in a number of ways. For example, we have a team of highly-paid physicists working on unsupervised machine learning and we strive to articulate the value of their work. Using a conditional readmission model they created, UPMC predicts the probability of readmission for every member of our health plan if they were to be admitted today. This information is used by care managers to develop care/discharge plans for patients that we can probabilistically impact. We can monetize this work in terms of how many readmissions we likely avoided.

Q: Have you measured ROI in terms of the salaries of the analytics staff?

A: (Pamela) – Yes. Before we developed our SPOT, analysts spent too much time extracting data through manual processes. With SPOT, we freed up time for these staff to focus on actual analysis and ultimately decreased the number of hours required to produce the same volume of work.

A: (Nancy) – At HCMC we also try to demonstrate the value of analytics. For individual projects, such as a project aimed at reducing inpatient costs, if we meet specified goals we can attribute part of it to our investment in analytics. The tricky part is that these are all collaborative efforts, so analytics is an important part but not the whole picture.

Q: Can you speak to how you're planning to grow your analytics maturity in the future?

A: (Nancy) – As we've developed our team, iteration has been essential. We've increased the level of sophistication over time and added new functions. For example, we now apply analytics to our budget process. The analytics team evaluates clinical programs to determine their efficacy and time to efficacy. We can then budget based on how we want to scale those programs. We also create dynamic models to allow leaders to test assumptions

and impact clinical decision-making. Finally, we're building new tools to help the clinical staff use the information our analytics team generates.

A: (Nancy) – Our growth efforts are less focus on hiring more staff and more on centralizing the resources that we have. We're working to standardize data and prioritize demands for analytics resources. We're focusing on data governance and consolidating our systems and approach so that we can better manage the large number of applications that we use.