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Dr. Kevin Larsen
Medical Director, Meaningful Use
Office of the National Coordinator for Health Information Technology
U.S. Department of Health & Human Services
Room 445-G, Hubert H. Humphrey Building
200 Independence Avenue, SW
Washington, DC 20201

Re: Clinical Quality Public Hearing

Dear Dr. Larsen:

On behalf of Atrius Health, thank you for the opportunity to participate in the Clinical Quality Hearing of the Health Information Technology Policy and Standards Committee.

Atrius Health is a not-for-profit 501 (c) (3) tax-exempt organizations and the largest independent (not hospital-based) alliance of six community-based physician groups (Dedham Medical Associates, Granite Medical Group, Harvard Vanguard Medical Associates, South Shore Medical Center, Southboro Medical Group and Reliant Medical Group) in Massachusetts. Atrius Health provides comprehensive primary and specialty care from 50 locations across the state to over a million patients with 3.7 million office visits each year. More than 1000 physicians and their medical teams are dedicated to delivering a broad range of patient-centered, integrated services to our communities while collaborating on new and better health care delivery models.

These comments reflect my current role in healthcare analytics and business intelligence systems, but draw significantly from my past experience working to design, implement, and evaluate frontline primary care quality and delivery system process improvements. This perspective makes me a passionate advocate for examining the entire data lifecycle from the capture, integration, and analysis of data, to the display and reporting of information, to the user understanding of reports, and finally to the effective translation of this understanding into real delivery system improvements.

1. Data Capture: Collection of data in structured and unstructured formats
2. Data Integration: Integration of disparate data types and sources to facilitate analytic breadth
3. Data Analysis: Analysis of data to transform raw data into information
4. Data Reporting: Reporting information to achieve timely and accurate understanding
5. Data Use: Translation of understanding into timely and effective improvement actions

Atrius Health is committed to become an adaptive learning organization utilizing data-driven operations management and applied health services research methods to direct improvement in the cost, quality, and experience of care for our patients and community. The appropriate adoption of relevant, effective, and useable Health IT innovations will continue to play a critical part in defining the vector of delivery system quality improvement.

1) What factors limit Health IT's ability to support quality measurement/improvement?

- a. Utilization of Unstructured Data - A large proportion of clinically meaningful information is largely inaccessible as unstructured data. This blind spot creates design limitations on quality metrics that can be used without manual chart reviews and stymies more meaningful analytics and reporting. Rather than providing the **right** information to the right user at the right time, only the **available** information is presented to users. While providers are comfortable making decisions with incomplete information, garnering buy-in for investing time to improve new quality metrics is challenging when isolated metrics are reported without commonly expected contextual information. This resistance is especially true when providing individual physician feedback.
- b. Integration of Heterogeneous Data – At Atrius Health, our risk contracted insurers each provide our data warehouse team with access to monthly claims files. However, each data file is uniquely structured and many data elements use non-standardized definitions despite sharing common labels. As a result, our implementation of third party cloud-based claims analytic software tool requires extra effort to ensure accurate report outputs. On the EHR side, the addition of Reliant Medical Group to Atrius Health creates challenges despite sharing a common EHR system. System-wide quality reporting is difficult as the EMR clinical databases remain two distinct instances not easily merged. Data integration issues and gaps are particularly problematic for clinical quality analytics and reporting since accurate, timely, and actionable performance measurement in an ambulatory non-integrated delivery system like Atrius Health requires leverages integrated EMR and claims data.
- c. No Blueprint for Ideal Future State - One big challenge for improving the quality is the lack of a concrete blueprint for our ideal future system. The Institute of Medicine articulated the broad quality objectives of providing safe, effective, patient centered, timely, efficient and equitable care. Organizations like NQF, NCQA, and TJC have endorsed process and outcome metrics to help examine performance across a limited set of clinical domains. Conceptual models like the ICIC Chronic Care Model have helped define the range and scope of delivery system elements required to move the needle.

Within this latticework of goals, metrics, and models, individual delivery systems operating in unique local competitive and regulatory environments try to innovate and optimize systems and processes to measurably improve quality outcomes. Not unexpectedly, each system operationalizes quality improvement in a unique way to best leverage its internal resources and capabilities. There is no one optimal way to increase the number of diabetics with LDL<100 mg/dl.

2) How can Health IT better support quality measurement/improvement?

- a. Develop Natural Language Processing Methods for Unstructured Data - The technology to sift through unstructured data is now available, but validated and standardized query methods are needed to reliably capture major healthcare concepts with acceptable sensitivity and specificity. Without such methods, it is difficult to leverage NLP for mining unstructured and structured data together for analysis. Ad hoc or unproven query definitions will further muddy quality measurement and performance reports that integrate unstructured data with financial claims data and discrete EMR data.
- b. Focus on Usability Design and Information Complexity - The explosion of data in healthcare has created a new challenge of helping users manage this flood of data and information. The overwhelming volume of data is apparent when reading a patient's EMR chart, scanning a diabetes population management registry report, and being mesmerized by an array of radial dials, thermometers, and spark-lines littering an organizational performance dashboard. While tool functionality is clearly improving, the usability of these tools is lagging as the complexity increases. Just like medical devices and exam room spaces, human factors and usability design and testing are critical design steps for these tools. In the business intelligence space, I look for tools that feel like a Japanese Rock Garden rather than the Vegas Strip.

- c. Provider/Care Team Level Analytics – The action is happening at the microsystem level so business intelligence and analytic systems need to support work at the care team/individual physician level. BI systems need to easily and seamlessly telescope metrics up and down all levels of the organization and align metrics across cost to quality to patient experience domains. Robust physician level analytics will require new analytic methods since methods developed for large populations can be glaringly problematic. For example, episode groupers offer significant conceptual appeal when aiming to understand clinician practice pattern variation driving expense differences for similar quality outcomes. However, at the individual PCP or specialist level, the methodological problems are magnified and limits validity and provider acceptance.

3) How can the quality lifecycle be accelerated?

The hard work of improving the quality involves the critical review and optimization of frontline workflows. Augmenting workflow reliability, efficiency and effectiveness requires iterative data driven improvement cycles utilizing detailed operational data. Cycle times are in hours, days, and weeks rather than months, quarters, or years.

Many off-the-shelf reporting tools are limited to high-level clinical process and outcome metrics serving motivational purposes but not actionable process metrics. For example, 25% of your diabetics have HgA1c levels greater than 8%. Actionable process metrics used in frontline workflow innovation and improvement require granular detail illuminated after mapping current state processes. Operational process metrics assess the performance reliability of critical workflow steps. One example is a percentage of total encounters an individual medical assistant takes a repeat blood pressure after an elevated initial reading. Another example is the percentage of CDS activated encounters where a physician uses an order set suggested by the high blood pressure alert.

The ability to regularly monitor Health IT tool usage helps optimize adoption in local workflows. Easy audit functionality for operational QI should be a standard feature of any Health IT tool. Typically, there are a plethora of tools being deployed in any given microsystem so audit data outputs should export into generic formats to facilitate aggregate reporting. Standalone proprietary reporting tools are suboptimal and add unnecessarily to frontline reporting complexity.

4) What is the role of Clinical Decision Support (CDS) in the quality lifecycle? How does CDS relate to quality measurement?

Real time, point-of-care clinical decision support represents an underdeveloped opportunity to improve quality and safety. CDS provides an opportunity to systematically impact individual clinician (care team) decision making, individual patient (family) decision making, and even clinician-patient shared decision making. In each scenario, CDS can help a user make an appropriate clinical decision and then facilitate subsequent action steps.

Effectively supporting appropriate decisions is an analytic and reporting challenge. Building meaningful and actionable decision support can require complex logic to integrate real time patient and provider contextual data with pre-designed decision support guidelines. When limited to simplistic logic, CDS tools can only support highly generic or very narrow domains that do not recognize the potential impact of the tool. The technical challenges noted earlier around the facility of mining structured and unstructured data also limits the design and capabilities of meaningful decision support. Lastly, real-time CDS is can lead to better decision making but also disrupts workflow. Slow response time due to complex analytics will submarine CDS adoption efforts.

CDS would optimally facilitate the appropriate next action step. From ordering a test (or cancelling the test), pulling relevant health education materials into an after visit summary, or scheduling a follow up visit, these tools should robustly integrate with COPE and the transactional systems within a practice.

In 2001, Phillips hypothesized in the *Annals of Internal Medicine* that clinical inertia is a major contributor to the large clinical quality gaps in medicine. Inertia could come from the physician, the patient, or both and can lead to delays in treatment or suboptimal clinical management. Real-time point of care CDS may help overcome this inertia by bridging the knowledge gap, providing a timely reminder, and facilitating the necessary next steps.

On a final note, the introduction of IBM's Watson conjures fantastic new possibilities for point of care CDS – particularly around the creation of a robust differential diagnosis. Failure to diagnosis and delay in diagnosis are two top drivers of medical malpractice suits. Understandably, the time pressure in a busy outpatient practice makes it challenging to routinely create and analyze a broad differential diagnosis. Furthermore, as genetic and proteomic information gains clinically utility, there is a low probability that individual clinicians will be able to integrate all of the necessary data and reliably generating robust differentials without substantial health IT help.

5) What is the Health IT vendor role in quality improvement programs?

Health IT vendors should strive to conduct and provide more robust product evaluations that include adoption and effectiveness metrics. Many products offer limited studies complicated by selection bias that show ROI extrapolated from very small numbers. These studies are not generalize-able and add little value to organizational decision making. Moreover, the lack of good evaluation data forces individual delivery systems to waste time and resources to 'pilot' tools for internal validation. Robust product evaluations would help delivery systems make better decisions, waste less time, and lower opportunity costs for trying new technologies. In the absence of such information, it is often difficult to understand if the lack of improvement was due to suboptimal implementation versus truly limited effectiveness of an optimally deployed HIT tool.

6) Are there viable business models in which vendors can/should share risk/reward with providers?

Sharing financial risk with vendors may incentivize HIT vendors to explicitly articulate recommended "best" practices and quantify expected cost-benefits. Using the de Brantes' framework of probability risk versus technical risk, I expect Health IT vendors to share the technical risk that would align vendor motivation to optimize tool adoption/usability. Global risk sharing for population outcomes would require disciplined performance measurement system with clear and accepted driver metrics demonstrated to associate with Health IT tool use.

Thank you again for this opportunity to share my thoughts with the committee. Should you have additional questions or the need for clarification, please feel free to contact me.

Respectfully,

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