

# Data for Systematic Improvement: Summarizing an NQF Meeting on the Data Needed for Sustainably Improving Healthcare

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## Key Themes

- Multiple examples exist where healthcare has improved in quality and value, but such improvements have not been spread broadly enough.
- While new data sources hold great promise, multiple actions need to be taken to improve its availability and usability.
- Raw data alone cannot lead to systematic improvement—it has to be turned into meaningful information, institutional leadership and culture have to support improvement efforts, and clinicians and healthcare staff need the skills to analyze and apply data in their efforts.

Systems improvement tools hold great promise for healthcare, but the lack of a robust data infrastructure limits the widespread use of these tools. To encourage action in this area, NQF convened leaders and experts from the private and public sectors to identify the data and analytics necessary for systems approaches to improving care. This project, supported by contributions from the Peter G. Peterson Foundation and the Gordon & Betty Moore Foundation, reviewed the challenges limiting widespread, large-scale systematic improvement, identified the data and data infrastructure necessary for spreading successful care models, and developed an action agenda for moving the field forward. This document summarizes discussions with stakeholders, surveys of field leaders, and a one-day in-person meeting, with a focus on specific actions that can be taken by healthcare organizations, technical leaders, and policymakers. With targeted efforts to improve data, real change will become possible in improving people's health at lower cost.

## Healthcare needs to improve—and it can.

The rising costs of healthcare are stressing the budgets of the federal government, state and local governments, businesses, and families. Furthermore, the healthcare system is not meeting its potential in terms of safety, overall quality, and patient health outcomes. At the same time, there are examples where healthcare providers have made dramatic improvements and provide consistently high quality care.<sup>1</sup> These examples are too rare, and the lessons learned are not spread widely. Sustained improvement requires a systems approach that takes into account the fact that multiple clinicians and healthcare workers are involved in a patient's care, the complexity of modern diagnostics and treatments, the different settings that healthcare is delivered (such as hospitals, out-patient clinics, skilled nursing facilities, home health, and other settings), and the different determinants of a person's health. There are multiple examples where these systems methods and techniques have led to improvements in healthcare safety, reliability, and effectiveness.<sup>2</sup>

### **Better Care through Systems Approaches: Virginia Mason Medical Center**

Virginia Mason Health System in Seattle, Washington has adopted the “Virginia Mason Production System,” adapted from the well-known Toyota Production System, to systematically improve their care processes. This has been implemented across the health system, and each unit undertakes projects to improve care and clinical operations in their area. For example, their sterile processing facility implemented intensive monitoring to identify defects in sterile instrument processing, from missing chemical indicators to mislabeled sets. The defects are tracked and reviewed regularly, with daily defect status reports and a monthly “visibility board” that shows the total number of different types of defects each month. These tools are used to discover the causes of defects and then institute protocols to avoid future issues. For example, the team developed a checklist that guides the final review of every instrument set before it is sterilized. After the checklist’s introduction, the defect rate declined from 3% to 0.12%.<sup>3</sup>

### **Data plays a critical role in systems improvement**

For systems improvement tools to achieve their potential, they require multiple types of data, which can identify opportunities, gauge progress, and help users understand what works. Meeting participants highlighted multiple examples where data supported improvement in different healthcare settings and at different scales of magnitude or complexity. These ranged from compliance with care bundles, such as for ventilator acquired pneumonia, predictive analytics of patients at risk, rapidly learning the most effective protocols to reduce MRSA infections, and ensuring care is consistent with patients’ preferences and values.

One important finding was that simply providing data feedback can drive improvement as long as the data is timely and clinically relevant. The project participants and surveyed leaders recalled multiple cases where clinicians improved their care practices once presented with trusted, accurate, and meaningfully synthesized data. This occurred because feedback leverages clinicians’ intrinsic motivation as professionals to deliver high quality care. Furthermore, data are required for the success of other incentives for better care, such as payment programs, as clinicians and healthcare organizations need timely data to understand where to improve and track their progress.

### **Improvements needed to provide actionable and meaningful data**

When surveyed, field leaders outlined multiple challenges that reduce the usefulness of data, including both technical and broader issues:

- Interoperability and linking disparate data sources, such as community or individual level data or data from different levels of the healthcare system.
- Leveraging data for internal improvement in broader benchmarking, and leveraging high level performance indicator data for process improvement
- Providing feedback in a timely fashion

- Trust in the data
- Ability to gather data directly from patients (patient surveys and patient-generated data)
- Deidentification for generating knowledge

In terms of data availability, there has been limited digital information in healthcare until recently, as electronic health records (EHRs) have only gained traction over the past five years. While greater adoption of EHRs is positive, they do not contain all of the data needed for improvement. For example, systems approaches to improvement often rely on operational data that may not be captured in an EHR, such as the time it takes a patient to go from surgery to a post-operative recovery unit to a hospital room or the time it takes a nurse to complete a particular task. As a result, the healthcare industry needs to utilize other data sources, such as administrative records, population health information, and patient surveys to understand and make needed changes.

Another challenge is interoperability between EHRs and clinical data sources recording patients' experiences and outcomes. There have been multiple policy initiatives in recent years to drive interoperability, with the Office of the National Coordinator for Health Information Technology (ONC) playing an important role. Beyond linking healthcare data, there is a need to learn from data spanning healthcare and other determinants of health, as the most significant and sustained individual and population health improvements occur when healthcare organizations collaborate with community organizations or public health.

### **Scaling up and Spreading Improvement across Healthcare Organizations**

One of the challenges in healthcare has been spreading successful improvement practices—many initiatives stop at the pilot stage. One approach for driving improvement at scale is through collaboratives, which can provide data, give feedback on relative performance, and share best practices on what is working. One organization that has successfully used the collaborative model is Premier, which has sponsored collaboratives on population health, data sharing, bundled payments, supply chain efficiency, and overall performance. Through this work, Premier found that data can serve as a strong incentive for change, and that data does not have to have perfect quality to be useful. However, the collaboratives have also been limited by technical barriers to accessing clinical data from different EHR systems and by lag times in obtaining claims data. Finally, Premier representatives stressed that organizational factors affect the success of an organization's improvement initiatives, including leadership, staff engagement, and involvement in learning communities.

### **Current improvement capabilities are less than current data capabilities**

One of the common themes throughout the meeting discussions was that the availability of data was less of a constraint than the ability to use and apply the data toward improvement. In many cases, the technological issues were relatively straightforward, albeit still difficult, while an organization's capability to use data depended on multiple factors, ranging from workforce skills to organizational culture.

Several participants noted that improvement is a journey—when they started using systems approaches and techniques, data quality was comparatively poor and the clinical teams were unclear how to use it effectively. At this stage, data that is quite basic or granular, sometimes even manually collected, could be helpful for process improvement. For example, the Virginia Mason case study earlier in this paper highlighted one type of manual data collected for improvement, with individuals marking up paper boards and white boards to track progress. Manual data can allow teams to improve their abilities to analyze and apply data, and also help them to understand the strengths and limitations of this data source. Such straightforward efforts have the added benefit of allowing organizations to learn exactly what data are needed before investing in more technically advanced data infrastructure.

## **Substantial effort required for organizations to use data more extensively**

Changing the situation—and increasing clinicians’ and healthcare organizations’ capabilities to apply data—requires significant effort. Workforce training is required in how to apply process improvement tools, understanding the potential and limitations of data, and analyzing data. But training is not enough. The project participants outlined the multiple factors that affect whether individuals or organizations adopt improvement methods, which have been described as change management, sociology of change, or simply the process of scaling up and spreading new ideas. These factors included the organization’s culture, the business case, a leadership commitment to using data for improvement, and communication channels that share what works.<sup>4</sup> In addition, several participants also noted that successful initiatives depend on clear priorities, and that clinicians and healthcare professionals feel pulled in too many directions to make significant improvement in any one area. One speaker noted that a barrier is the “not invented here” phenomenon, where individuals may be resistant to a concept from other organizations or areas of the country. This emphasizes the importance of getting local buy-in, such as by engaging clinicians and front line staff in data generation and use to build trust in the data.<sup>5</sup>

## **Patients, consumers, and the public play a critical role.**

People play an important role in improvement—whether as patients or consumers in the health system or as people in the community. People provide valuable perspectives on the healthcare experience, their function, and how healthcare addressed their concerns or goals. Beyond providing data, people can encourage improvement by using data to select high quality providers, by collaborating with providers on improvement initiatives (such as through patient and family advisory councils), and by participating in community and regional collaboratives.

There is untapped potential in learning directly from people—today, there are few opportunities to directly collect patient reported information. However, this is changing rapidly, and new technologies are being piloted that are easy to use, allow people to quickly provide feedback, and are timely compared to their healthcare encounter. These technologies need to evolve, and further work is required to develop valid and reliable patient reported outcome measures.

One speaker described the opportunities to learn from everyday data that people generate—such as the so-called “small data” from digital interactions in daily life or from apps that work in the background of smartphones. These technological tools could help a person with Parkinson’s disease or multiple

sclerosis track their fine motor control through how they type on a smart phone, or help a person with Rheumatoid Arthritis let their provider know their current functioning. The challenges are making the information clinically actionable and analyzing the raw data to generate alerts that the person could use.

To help people take on a greater role, the huge volumes of “big data” must be turned into meaningful information that is available at the fingertips, or at least arms reach, of consumers and purchasers.<sup>6</sup>

### **Strategies for Moving Forward**

The project identified several opportunities to improve data and make it more useful for systematic improvement. The following list outlines several opportunities for specific stakeholder action.

#### **Medicare**

- Make data more broadly available in a timely manner

#### **States**

- Build analytic platform for Medicaid
- Use the levers at Governor’s disposal to access the different sources of healthcare data across the state and use if to improve data.

#### **Private Payers**

- Open data and facilitate public reporting

#### **EHR vendors and Health IT policy makers**

- Promote true interoperability between different electronic clinical data systems
- Serve as collaborative catalyst for how data are used to manage populations
- Improve healthcare delivery system’s ability to retrieve and act on data, such as by preventing high, recurring fees for data access

#### **Healthcare Organizations**

- Develop culture, mindset, skills, and tools to effectively use data

#### **All stakeholders**

- Focus on common metrics and improve the efficiency of measurement
- For open data, provide analyzed data sets (not just raw data)
- Broaden technical agreements on standards, data use, and data practices
- Promote greater linkage of EHR data to claims data and patient-derived data
- Establish standards on common data elements to collect, exchange, and report; alternatively, standardize the core set of data points for interoperability

## References

- <sup>1</sup> Selberg, J. and A. Milstein. Lessons from ‘Main Street’ doctor practices. *Modern Healthcare*. 2015. Available at: <http://www.modernhealthcare.com/article/20150214/MAGAZINE/302169978>. Last accessed May 2015.
- <sup>2</sup> Kaplan G, Bo-Linn G, Carayon P, et al. *Bringing a systems approach to health*. Discussion Paper. Washington, DC;Institute of Medicine and National Academy of Engineering;2013. Available at <http://www.iom.edu/systemsapproaches>. Last accessed May 2015.
- <sup>3</sup> [http://www.ormanager.com/wp-content/uploads/2013/04/0413\\_ORM\\_08\\_Cockpit\\_Checklist.pdf](http://www.ormanager.com/wp-content/uploads/2013/04/0413_ORM_08_Cockpit_Checklist.pdf);  
<http://www.ingentaconnect.com/content/jcaho/jcjq/2013/00000039/00000003/art00001>
- <sup>4</sup> Hussey P, Bankowitz R, Dinneen M, et al. *From Pilots to Practice: Speeding the Movement of Successful Pilots to Effective Practice*. Discussion Paper. Washington, DC;Institute of Medicine;2013.. Available at <http://www.iom.edu/pilotstopractice>. Last accessed May 2015.
- <sup>5</sup> Needleman J, Hassmiller S. The role of nurses in improving hospital quality and efficiency: real-world results. *Health Aff (Millwood)*. 2009; 28( 4):w625-w633. Available at <http://content.healthaffairs.org/content/28/4/w625.full>. Last accessed May, 2015.
- <sup>6</sup> Robert Wood Johnson Foundation. 2015. *Data for Health: Learning What Works*. Available at: <http://www.rwjf.org/en/library/research/2015/04/data-for-health-initiative.html>