



**GE HEALTHCARE  
SPECIAL SUPPLEMENT**

Cover Story:

# The Future is Digital

102 **Prof. Boris Brkljačić:** ECR 2020: Leadership and Collaboration

107 **John Nosta:** The Convergence of Technology and Health

112 **Prof. Daniel Drucker:** Advancing the Understanding and Treatment of Type 2 Diabetes

126 **COVID-19:** What Can Healthcare Learn?

162 **Leontios Hadjileontiadis:** Novel Interventions for Early Parkinson Detection

171 **Paul Timmers:** Hotspot: AI and Ethics in Health Innovation

182 **Wilfried & Maximilian von Eiff:** Digitalisation in Healthcare

188 **Peter Dierickx:** The Inner Workings of a 'Smart' Hospital



# Get Data on Board: Incorporating Health Information Technology in Care Delivery

Summary: How can healthcare practitioners at all levels contribute for optimal integration and use of data and HIT for best care delivery?

If you were to poll clinicians from every practice across the United States about the state of their electronic health record system (EHR), we would wager \$100 that you would find at least one dissatisfied person from every practice. “Cumbersome,” “difficult,” “time-suck,” “aggravating,” are all common descriptors that we’ve heard from clinicians across a variety of settings when talking about notes or orders or even logging in. Yet, in the same breath, we’ve heard these same clinicians wax poetic about a new integrated tracking system or health exchange that helps them better care for their patients, whether it’s notifications of hospital visits or insights from medication adherence technology. The irony,

same thing. Here are the three main lessons we learned about integrating data, technology, and decisions.

## **Audience: The Right Data for the Right People**

Not everyone was looking at all the data all the time, and in fact, we learned that different subsets of people were looking at different subsets of data; we call these different subsets “data audiences.” Across all of the organisations we visited, big or small, we identified four common data audiences, each with their own datasets.

The first was the clinician audience, which required data that was useful and actionable for practicing clinicians, such

---

## We consistently heard that data and technology formed the backbone for decision-making at all levels within the organisation

---

of course, is that the data that fuels these helpful technologies largely stems from (or funnels through) clinician entries into the EHR.

In our work researching exemplary healthcare organisations, we have talked to a lot of people. We’ve talked to C-suite executives about tough leadership decisions and financial growth opportunities, we’ve talked to mid-level clinical managers about department performance and accountability, and we’ve talked to frontline clinicians about their patient panels and challenges. Across all of these groups, across all of these topics, we consistently heard that data and technology formed the backbone for decision-making at all levels within the organisation, from the C-suite to the exam room.

“But, how?” In other words, given the volume of data, extensive analyses, and complexity of healthcare organisations, how did data and technology get so integrated into all of these levels of care delivery? Well, we wondered the

as the percentage of total patient panel vaccinated against the flu, reminders for patients overdue for preventative care screenings, or simply time-to-last hospital visit. This data is useful for care delivery, and valuable in guiding clinical care.

The second audience was the managerial audience, who needed data to support administrative and operational decisions within specific units or departments. This data might include clinician performance metrics, equipment use (such as percentage of patients requiring x-rays or MRIs), or department performance relative to benchmarks and internal goals. This audience wanted data to guide mid-level decision-making and as evidence to create accountability across clinical teams and departments.

In the same vein, the third audience was the C-suite, or executive group. Their data focused on costs and utilisation aggregated at the highest level. This data, too, guided overall organisational trajectories and decisions – to build another ambulatory clinic, to expand services to a new

region, to switch electronic health systems. The data for this audience was largely current performance data and informed high-level forecasting specifically curated to speak to the organisation's stated goals.

The final common audience was the data team audience, the folks that made all of the data systems "speak" to each other. We think of this audience as the data tailors, the ones who sew the data sets, who pry open the EHR to extract the data and format it for the needs of each audience. Yet they, too, had their own data needs, if slightly more operational: workflow, resource management, and research protocol adherence.

But it's not just audience; having the right audience sitting in front of the right data was not what drove investment in EHRs, health information technology (HIT) or, ultimately, data-based decisions. There was another piece of the puzzle: purpose.

### Purpose: Make Your Point

What was truly striking, especially from a research perspective, about the 130+ interviews we conducted was the frequency with which people were able to articulate the purpose of the data being presented to them. At every level (frontline to C-suite) it was clear that "this graph indicates this and that number means we need to do better at that." Everyone knew what they were looking at, where that data came from, and, more importantly, why they needed to look at it.

At one organisation we visited, the patient population was particularly high-need, high-cost, and high-risk. To manage their population, this organisation's care model depended on regular (weekly) contact with patients to mitigate avoidable emergency room visits and hospitalisations. A key tool for the frontline staff (clinician audience) was a specific data visual (box and whisker plots) that displayed time-since-last-contact for all patients. Every frontline huddle area we visited had a screen with the most recent iteration of this visual for daily review, specifically displayed to help maintain a cadence of regular patient contact.

At another organisation, department heads (managerial audience) had charts for each physician in their department, and tracked each one individually in terms of department and national benchmarks for preventative care measures achieved in their patient panel. While the department head was the only individual with data for the entire department, each physician could access their own scoring and identify actionable steps (and patients) that may benefit from more preventative care.

These data (and – dare we say it – data mechanisms) were integrated into the fabric of the organisations, into their culture. Data use was both encouraged and expected, but not without guidance. The purpose of the data was always made clear. It was as if someone was saying, "Here, take this data, collected just for you, and read it this way.

Now what will you do with it?" And the results were, well, exemplary.

### Building an Integration Loop

Will electronic health systems remain difficult, cumbersome, aggravating and time-sucking for the foreseeable future? All signs point to yes. However, building a feedback loop may go a long way in achieving more of the amazing stories of data and technology integration, and less of the aggravating sort. Like it or not, clinicians are the source of much of the data that makes all of the fancy wheels whir, the charts fly, and the decisions data-driven. At some point, patients themselves will likely also become data enterers, especially with the rise of companies like Fitbit, Withings, and Apple Health, but not yet, or at least, not reliably yet. So, the task falls on our clinician scientists and their EHRs. But, if we can draw a circle from data entry, to useful data and back again; if we can show the integral nature of EHRs and clinician autonomy in all levels of care delivery; if we can loop data to audience to purpose and in so doing inspire action and understanding -- then we can make strides in integrating data and HIT into care delivery. ■

#### Author: Sophia Arabadjis

PhD Student in Health and Medical Geography  
University of California Santa Barbara | Santa Barbara, USA  
sarabadjis@ucsb.edu | ucsb.edu | @SArabadjis

#### Author: Erin E. Sullivan

Research & Curriculum Director, Centre for Primary Care  
Lecturer | Department of Global Health and Social Medicine | Harvard Medical School,  
Boston, USA  
Erin\_Sullivan@hms.harvard.edu | harvard.edu | @HMSPPrimaryCare

### Key Points

- Generally, physicians are dissatisfied with the amount of time and focus EHRs consume.
- When healthcare staff are clear about how to interpret data and how to use it, data-driven decisions permeate all levels of care delivery.
- Clear audience and purpose support the integration of data in care delivery.
- Data is increasingly the lifeblood of modern healthcare and its potential will grow as patients begin to contribute more personal data in the future.