Necessity – The Mother of Invention and *Interoperability*

COVID-19 and the acceleration of healthcare IT

One of the early lessons from the COVID-19 pandemic was that necessity is a potent force for accelerating the pace of change. Throughout the lifecycle of the global crisis, hospitals and healthcare systems have had to continually transform care delivery – making a massive move to virtual care in the pandemic's early days, setting up hospital hallways and field hospitals to manage patient surges and creating mass clinics and online registries to safely administer the vaccination process.

Such large-scale improvisations couldn't have occurred without three enablers:

- Changes in reimbursement and revenue
- Changes in government regulations regarding data sharing and business agreements among providers
- Rapid deployment of cloud-based technology to extend care beyond the traditional walls of hospitals and clinics

And, according to a roundtable of health IT leaders assembled by HIMSS and technology provider Hyland, it was precisely these changes that accelerated interoperability efforts worldwide.

"Distilling just one piece of wisdom from the discussion," said moderator Charles Alessi, MD, Chief Clinical Officer, HIMSS, "it's that, suddenly, digital technology and the digital transformation of healthcare systems have come of age and joined the mainstream. It's an extraordinary development because of the speed at which it's happened."

Roundtable background

This group of health IT leaders from around the globe met virtually in January to discuss the ways in which clinical data is managed and can advance interoperability to deliver an improved connected care experience. Participants representing organizations that ranged from large physician groups to multi-hospital systems evaluated the progress healthcare is making toward interoperability and analyzed how to best leverage technology to achieve digital transformation.

The conversation was informed by three research studies on the state of connected care and interoperability conducted by HIMSS Market Intelligence and sponsored by Hyland.[1] Beginning in January 2019, these annual studies showed hospitals and health systems making slow, steady progress at advancing interoperability and delivering a more connected care experience. The survey results also identified key obstacles respondents face, including integrating new solutions with legacy systems, managing data from multiple electronic medical records (EMRs), managing unstructured data and employee resistance to adopting new solutions.

Among the panelists were the Chief of Digital Health and Strategy for a clinical research institute, several U.S. Department of Defense (DOD) and/or Department of

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Veterans Affairs (VA) executives, a Director of Clinical Information Systems and representation of nearly the entire C-suite: CIOs, a CFO, a CTO, a COO and two CMIOs.

The impact of the pandemic

"It would be completely illogical to ignore what's going on around us," Alessi began, addressing the elephant in the room. "So how has the COVID-19 pandemic affected your interoperability efforts and digital transformation?"

Several of the attendees described breakthrough projects that were implemented in a matter of weeks or months. Others described adapting existing software for new and unanticipated uses. A CMIO described how his organization – one of Maryland's largest healthcare providers – accepted a leadership role in vaccinating the state's entire population and not just its own patients. Rather than partnering with a vendor for a new vaccination registry that would need interfaces for each healthcare system, they chose to repurpose an existing childhood vaccination application that already connected to all providers in the state.

A CIO from the U.K. described how his organization needed to figure out a way to automate sending COVID-19 test results to patients, many of whom might not be in the system's EMR. They ingeniously interfaced the lab application with Microsoft Teams. "It's breaking out of the traditional medical records based on need," he said.

The panel identified three levels of interoperability:

- Machine-to-machine communications
- Intra-system interoperability (i.e., data is shared within an organization)
- Anyone-to-anyone interoperability

Pre-pandemic, health system leaders regarded implementation as an incremental process beginning with machine-to-machine connectivity, then moving to intra-system interoperability and finally arriving at anyone-to-anyone data exchange. But, the pandemic immediately reversed the priorities, panelists observed.

"The thought of breaking out of a regional EMR or HIE [health information exchange] model was something nobody would even contemplate a few years ago," Alessi said, "and suddenly it's all just happening. People are actually talking about Microsoft Teams being part of a process of connecting systems and people! This is pretty big stuff!"

One panelist – a CIO from a Massachusetts healthcare provider – said COVID-19 had accelerated all three levels of interoperability.

"If you think about all the things in the critical care units – IV pumps, ventilators, etc. – we have all those things chatting," he said. "To get an order from the EMR to populate directly and take feedback from devices like IV pumps reduces the tremendous charting load on nursing. It may not seem like a big deal until you're at 120% of your license in terms of ICU, and we can only imagine how much worse off we'd be if machine-to-machine interoperability wasn't happening."

Patient portals lead the way

Across the board, panelists credited that most modest of healthcare IT apps – the patient portal – with advancing interoperability and patient-centered care during the pandemic. When practices and clinics closed, and hospitals paused elective procedures, patient portals became the place where care could be delivered safely and effectively. But, oftentimes, delivering care via a patient portal required creating new integrations – merging appointment booking, video and EMR into a single workflow, for instance.

Some panelists expressed concern about the accessibility of technology-based care. But the early patient accessibility experience upended expectations. A trust in the U.K. found that mobile phones were an effective link to serve homeless patients. A CMIO reported a fourfold increase in unique users of their portal over the past year, while a Chief Technology Officer at an East Coast healthcare system described registering 46,000 vaccine appointments via their patient portal in 34 hours. He observed that the bookings could only be made by people over the age of 65 due to the vaccine distribution process.

A California-based Chief Nursing Informatics Officer commented, "Portal access is critical to our current operations, especially the last year, and is truly the way forward in many respects. We see gaps in our more mature population with utilization, but I do believe that barrier will dissipate as we prove value and focus on the needs of our populations."

Priorities and obstacles

The panel also identified priorities for interoperability. These include:

- Using interoperability to feed disparate data to machine-learning and artificial intelligence algorithms that predict risk and recommend interventions. The VA, for example, is combining nontraditional sources of data with standard EMR data to identify patients at risk of substance abuse or with mental health issues.

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CIO from a Massachusetts healthcare provider

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Colleen Sirhal, RN, BSN | Chief Clinical Officer | Hyland Healthcare

- Deploying new EMRs that can replace multiple instances of an application with a single source of truth, or identifying specific trusted sources of data to enable free-flowing data among organizations. "We're able to bring in new data sources without having to review everything and have full confidence in it," said a Clinical IS Director at an Indiana health system. She also said new Fast Healthcare Interoperability Resources (FHIR)-based integrations were making it easier to exchange data with other providers.
- Developing solutions to overcome proprietary applications and silos. One panelist, describing a system that manages 100-plus clinical trials annually and provides expert second and third opinions, said they were having difficulties sharing data with patients' primary providers. They developed an application that allows patient data to travel with patients, no matter what provider they're seeing. "Let's think beyond just enterprise solutions," the system's Chief of Digital Health and Strategy urged. "Real care requires that patient data should stay with patients and move with them wherever they go. They have options. They have choices."

Despite the optimism among the panel, concerns remained. For instance, once the pandemic is brought under control, will some of the accelerators of change – relaxed regulations and reimbursement parity – revert to pre-COVID-19 rules?

Standards are another perennial obstacle. The panelists concurred that interoperability is more than getting the APIs right. Governance and data standards are absolutely essential to the process.

One attendee described working with a nephrology group that took a single blood sample from a patient, divided it into five samples and sent it to different labs. "Depending on the lab it went to, the patient either had a normal parathyroid blood test, was undertreated or overtreated," he reported. "And doctors exchanging information between hospitals, if they weren't careful enough, could easily come to an incorrect conclusion. We don't have the standards and yet we operate in circumstances where we're all taking implicit risks. ..."

Other obstacles cited by the participants included restrictive data ownership rules among third-party vendors that are enabling interoperability. Several noted concerns about the return of siloed systems developed for very narrow use cases when more general, interoperable solutions were readily available.

"There are a few people who seem to snatch defeat from the jaws of victory and go in the wrong direction," one panelist noted. "And I think it's an obligation on all of us to keep reminding them that we need to keep going forward, not backwards."

Hyland's Chief Clinical Officer, Colleen Sirhal, agreed with her colleagues' assessments: "Unless we get standards, everything is a workaround or an ad hoc solution. We're going to live in a world of workarounds and that needs to change. Globally, we've seen people looking for data in different ways than they did even two years ago. Because of COVID, there is an external force that is helping us all get to interoperability and data clarity in a way that didn't previously exist."

Interoperability results from many moving parts. To learn more, see www.hyland.com/interoperability.

Reference

1. HIMSS Market Intelligence. The state of interoperability and connected care. January 2019, January 2020 and January 2021. Chicago.