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Interoperability in healthcare: Breaking down silos to improve care

February 28, 2025

Interoperability in healthcare is essential to delivering high-quality, patient-centered care, especially as healthcare systems become increasingly complex. To explore this critical topic, Stratford Group recently hosted a roundtable discussion with six industry experts:

- Dr. Chandi Chandrasena, chief medical officer at OntarioMD
- Ann Chapman, director of spending and primary care at the Canadian Institute for Health Information (CIHI)
- Rana Chreyh, vice president, and practice leader of digital at Stratford Management Consulting
- Dr. Geetha Mukerji, staff endocrinologist, Department of Medicine, and corporate medical information officer at Women's College Hospital
- Steve Sagodi, chief technology officer at Mustimuhw Information Solutions (MIS)
- Shafique Shamji, president and chief executive officer of OCINet

Their diverse perspectives provided valuable insights into interoperability's meaning, its challenges, and the successes that can inform future efforts.

"Interoperability is key to transforming healthcare delivery into a more cohesive, efficient, and innovative system. Breaking down silos and ensuring information flows seamlessly, securely, and efficiently across touch points is the only way we can move toward achieving better outcomes and delivering high quality care in a more personalized and accessible way," said Dr. Geetha Mukerji.

Defining interoperability: Interoperability bridges gaps between systems, technologies, and platforms, ensuring critical patient information is accessible to the right people at the right time. Whether for a primary care provider, specialist, First Nations Community Health Nurse, or hospital interdisciplinary team, interoperability enables effective communication across settings, empowering clinicians to make informed decisions, ensuring physicians and other clinicians can focus on patient care and not administrative tasks.

By breaking down data silos, interoperability creates a complete picture of a patient's history, reducing inefficiencies, redundancies, unnecessary tests, and medication errors, while improving care quality and collaboration.

Interoperability operates at multiple levels, each representing a step forward in the ability to integrate and utilize healthcare data. At a foundational level, it may be as simple as accessing a PDF of a patient's record from another organization.

Structural interoperability relies on standardized formats like FHIR to align and integrate data across systems effectively. The next step, semantic interoperability, will allow us to infer meaning from unstructured or diverse data formats, making it actionable.

“The technology to achieve interoperability already exists. The real barriers aren’t technical; they’re the fragmented systems and other challenges we’ve discussed – it’s now about addressing the systemic and structural obstacles standing in the way,” said Rana Chreyh.

Empowering patients through interoperability: From a patient perspective, interoperability ensures continuity of care and empowers individuals to take an active role in managing their health. With improved access to personal health information, patients can better understand their treatments and engage in informed discussions with clinicians.

This ability to connect the pieces of a fragmented healthcare system places patients at the centre of their own care, often becoming a “puzzle maker,” tasked with assembling the complete picture of their health. With interoperability, this burden is reduced, as information flows more freely between primary care health professionals, creating a unified view of the patient’s medical history. This not only improves outcomes but also fosters a more person-centered approach to care.

“Interoperability is more than connecting systems – it’s about connecting people to their own health. By giving patients access to their own health data, we empower them to actively participate in their care. This is a fundamental shift that delivers immense value to every Canadian,” said Ann Chapman.

Challenges to overcome: Canada faces significant hurdles in achieving healthcare interoperability, including a lack of standardized health data and fragmented digital health systems. Health data remains siloed within EMR systems that were not designed to support modern interoperability requirements. As a result, data is often difficult to extract and share. Adding to that is Canada’s decentralized healthcare model, where provinces and territories have developed their own solutions without a coordinated national approach.

While these jurisdiction-specific systems may meet local needs, they lack the compatibility for seamless care across the country, creating barriers for patients who move between regions or require care in multiple locations. Additionally, they force EMR vendors to develop unique interfaces for each province to address the same fundamental needs, adding complexity and inefficiency to the system.

Beyond technical challenges, governance, policy, and resource issues persist. Historically, Canada has operated under a custodial model of data ownership, where data resides with institutions, limiting access and use. Privacy concerns further complicate efforts to balance security with accessibility.

“Putting data into the right context – identifying the ‘signal’ amidst the ‘noise’ – is one of the greatest challenges to interoperability. Yet, what seems like noise today might become valuable for a future visit, adding complexity to the process. This is where AI could play a pivotal role in sifting through vast amounts of data to extract what’s relevant,” said Shafique Shamji.

Keys to success: Successful interoperability in healthcare requires more than just the ability to exchange information between systems; it demands that the data be meaningful, actionable, and seamlessly integrated into workflows. Bidirectional interoperability is essential, enabling data to flow both ways, from primary care to specialists and back.

Another critical component is managing the sheer volume of data. To avoid information overload, interoperability must promote the exchange of relevant information that enhances care delivery. Additionally, data should be curated for both clinicians and patients in an understandable and empowering way.

“It’s important to recognize the multifactorial nature of interoperability. At the end of the day, it is about patient care and safety. That’s our common goal. If we say the focus is on people/patients, I think everyone can agree to that,” said Dr. Chandi Chandrasena.

Learning from success: The successes we’ve seen so far in interoperability demonstrate that progress is not only possible but scalable. The Sequoia Project in the U.S. has shown how vendors and healthcare organizations can collaborate to share a billion records monthly across diverse systems.

This is interoperability at scale, operating with varying technologies and standards. Closer to home, initiatives in Canada have also yielded promising results. Legislation such as the former Bill C-72 – The Connected Care for Canadians Act and pan-Canadian initiatives led by CIHI and Canada Health Infoway will define core data and profile specifications, leveraging international standards. OCINet in Ontario collects 1.5 million exams every month and shares over 2.5 million exams across hospitals and clinics every month, seamlessly and in context.

“PrescribeIT has been a major achievement – using the same interface and code base in two provinces without any changes. Being able to turn it on, connect with different pharmacies, and send e-prescriptions seamlessly is, to me, one of the biggest successes I’ve seen in my career,” said Steve Sagodi.

A call to action: In moving forward with interoperability in healthcare, collaboration across technical, clinical, governmental, and regulatory spheres is essential – strong, accountable leadership must guide these efforts to ensure progress is unified and impactful.

Leadership must work together with robust regulation, legislation, and policy to create the framework for interoperability. Equally important is funding – adequate resources tied to clear, outcome-driven goals will be key to scaling solutions effectively and ensuring they deliver meaningful results.

By adopting the new interoperability data and technical standards developed by CIHI and Infoway that leverages international standards, we can accelerate implementation and achieve a cohesive, interoperable system more efficiently.

Contributors



Dr. Chandhi Chandrasena is OntarioMD's Chief Medical Officer, providing the clinical perspective to inform digital health products and services for physicians. Dr. Chandrasena was an OntarioMD peer leader for six years mentoring her colleagues on implementing technology into workflows. She has held various roles at the Ontario Medical Association as a former District 8 Chair and a member of several Boards and Executive Committees. Dr. Chandrasena has specialized in family medicine for over 20 years and understands the challenges of community practice. She graduated from University of Ottawa Medicine and completed her Residency with NOFM in Northern Ontario. She is the clinical lead for OMD's HRM Task Force and also for AI Scribe.



Ann Chapman is the Director of Health Spending and Primary Care at the Canadian Institute for Health Information (CIHI). She leads strategy development for CIHI's health spending and primary care data within the Data Strategies and Statistics division, with a strong focus on advancing digital health and data interoperability in Canada. With over 20 years of progressive leadership at CIHI, Ms. Chapman has played a key role in driving innovation and spearheading the development of strategic initiatives aimed at enhancing data interoperability across the healthcare ecosystem. She holds a Master of Health Administration from the University of Ottawa.



Rana Chreyh is vice President and Practice Leader of Digital for Management Consulting at Stratford Group, bringing over 25 years of experience in technology and business strategy. A professional engineer with an executive MBA from an Ivy League institution, she has led large-scale solution delivery for global Fortune 500 companies, technology startups, and the not-for-profit sector. Ms. Chreyh is recognized for her ability to bridge business and IT strategy, with expertise spanning medical devices, HealthTech, and healthcare innovation. She specializes in strategy development, digital transformation, and driving technological solutions that create impact. At Stratford, she leverages her expertise to support clients in navigating complex digital landscapes and implementing solutions that drive meaningful change.



Dr. Geetha Mukerji is a staff endocrinologist at Women's College Hospital and a clinician in Quality and Innovation and associate professor at the University of Toronto and Women's College Hospital Institute of Health Systems and Virtual Care (WIHV). Dr. Mukerji is also the Corporate Medical Information officer at WCH. She has led the development and is the co-chair of the Digital Quality Committee that aims to improve quality of care through digital optimization. Her work includes supporting developing and evaluating innovative ambulatory care models that leverage virtual and digital pathways to improve access, promote high-value care, and facilitate care coordination. She also provides clinical oversight, leading technological integration of e-consultations within Hospital Information Systems to support spread and scale. In 2024, she was named Clinical Innovator of the Year by Digital Health Canada.



Steve Sagodi is an experienced Information Technology leader with a proven track record in designing and building complex healthcare information systems. He has provided technical leadership in the use of the Mustimuhw cEMR to First Nation health teams across Canada in his capacity as Chief Technology Officer. A recognized expert in eHealth solutions for First Nations, Mr. Sagodi has worked with various system development methodologies and technologies to deliver successful, technically complex projects. His expertise in healthcare system integration includes leveraging clinical terminologies and standards such as FHIR and HL7v3 to enable seamless data exchange. With a deep understanding of interoperability and digital health infrastructure, Mr. Sagodi continues to drive innovation in healthcare technology for Indigenous communities.



Shafique Shamji is the president & CEO of the Ontario Clinical Imaging Network (OCINet), a not-for-profit organization funded by Ontario Health that secures millions of medical images across three repositories, improving access for hospitals and clinicians while reducing patient wait times. With over 25 years of experience in technology, healthcare, and business leadership, he has held key roles including EVP and CIO at The Ottawa Hospital, COO at Macadamian Technologies, and President of Privasoft. His expertise spans digital health transformation, system integration, and enterprise IT strategy. Mr. Shamji is also an Associate Professor at the Telfer School of Business, a Board member at the Royal College of Physicians and Surgeons of Canada, and an active member of the Aga Khan Volunteer Corps in Ottawa. He holds a degree in Computer Engineering from McMaster University and earned his Professional Engineering designation in 1991.

Moderator



Shelagh Maloney is the Chief Executive Officer of Digital Health Canada, stepping into the role on January 27, 2025. A seasoned healthcare executive, she has a proven track record in business development, stakeholder engagement, governance, and digital health innovation. Previously, she served as Executive Vice-President at Canada Health Infoway, where she led performance analytics, clinical and patient engagement, and communications. Shelagh is a recognized leader in the digital health sector, earning the inaugural Women Leaders in Digital Health Award in 2017 and becoming a Digital Health Canada Fellow in 2022. She has held leadership and advisory roles with multiple organizations, including Vice Chair of SNOMED International and Vision Loss Rehab Canada. She holds a B.Sc. in Applied Health Sciences from the University of Waterloo and is a Certified Professional in Health Information & Management Systems (CPHIMS-CA).

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