

WHITE PAPER

# Achieving interoperability in Healthcare

Interoperability is essential for the future of healthcare and better patient outcomes, yet it remains a challenge faced every day by health teams worldwide. However, recent advances in healthcare technology make it possible to move patient clinical data from one care setting to the next efficiently, securely and with HIPAA compliance. This paper examines how technology can enable the transition to full interoperability.



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## Interoperability: So near and yet so far away

Digitization of healthcare information has advanced at pace. Almost every care setting now has modern electronic medical records (EMRs), Laboratory Information Systems (LISes), Radiology Information Systems (RISes) and other systems to manage core clinical operations. The challenge is to connect those systems so information can be shared between care settings—the data is there, but sharing it remains an elusive goal.

Interoperability defines the ability of health information systems to work together within and across organizational boundaries to help improve patient outcomes. The goal is for information to flow securely between care settings to provide a holistic view of patients that can be accessed by clinicians, labs, hospitals, pharmacies or the patients themselves.

Everyone wants interoperability: Healthcare professionals understand the importance, governments are proactively legislating to drive it and healthcare vendors are fully committed to making it happen. But even after decades of work on standards refinement, meaningful use directives and customer demand, progress toward full interoperability remains almost glacial. A briefing from the U.S. Office of the National Coordinator of Health Information (ONC) revealed that less than 40% of physician groups are able to electronically send or receive health information to and from other care settings.<sup>1</sup>

In fact, the ONC has gone further, suggesting that interoperability has recently stagnated in the U.S. healthcare sector. “Physicians’ engagement in electronically sending, receiving, and integrating information received from outside sources did not change between 2015 and 2017,” it said.<sup>2</sup>

<sup>1</sup> Interoperability among Office-Based Physicians in 2015 and 2017

<sup>2</sup> Interoperability Improvements Stagnated Between 2015 and 2017



Interoperability has made great advances for some transitions of care, and not much progress for others.

## The challenge of interoperability

With all the advances in digitization, the healthcare sector is still underpinned by manual and paper-based processes. Paper fax is still in use every day because it is ubiquitous and embedded in many healthcare processes. Yet it presents significant risks to security and HIPAA compliance—it's far too common for patient data in one care provider's EMR to be printed out and faxed to another care setting where it is manually re-entered.

This interoperability problem has become more pronounced during the COVID-19 crisis, revealing gaps in the way national healthcare systems share clinical content between care settings. According to a recent Fortune article, when asked by the U.S. Center for Disease Control (CDC) to provide lab results through a password-protected, encrypted file, one local public health department asked if they could "... just fax them over."<sup>3</sup>

The pandemic also highlights the difficulty of pulling together data from different sources. According to reports, in 75% of COVID-19 cases compiled in the U.S. through April, data on the race and ethnicity of victims was missing. In another study, the CDC only had data on pre-existing conditions—risk factors such as diabetes, heart and respiratory disease—for 6% of reported cases.<sup>4</sup> Missing data has to be manually searched for and entered into the correct systems, adding time, cost and delay. One doctor noted that it was taking 14 days to get test results, which made them of little use for either the patient or contact tracers.<sup>5</sup>

Even after 'Meaningful Use' mandated that certified EMRs would exchange health information<sup>6</sup> and the billions of dollars already spent on interoperability initiatives, low-cost, low-barrier solutions such as fax are still widely used to move clinical data between settings.

It's clear that a major contributor to this state of affairs in the incredible complexity of health information. Today, patient chart data includes tens of thousands of terms that can be used to profile a patient's medical condition and care plan; terms such as ICD, Snowmed, CPT, LOINC, NCPDP and many others.

On top of that, clinical data sets continue to grow. For example, patients are requesting new genomic tests that didn't exist three years ago to determine their propensity for cancer later in life. The Internet-of-Medical-Things (IoMT) explosion contributes vital signs to patients' charts, and new analytics systems are needed to distill those volumes of data into something meaningful that clinical assessments can be derived from. And patients are taking control of their own health and wellbeing by demanding access to their health data in a format that they can use.

In truth, interoperability has made great advances for some transitions of care, and not much progress in others. For example, advances in diagnostic test ordering allow an EMR to send orders to a lab or imaging department with full structured order information in an HL7 ORM message.<sup>7</sup> And test results are returned fully structured and codified so that lab results can be trended in the EMR. However, referrals for that same patient are not easily transitioned from the primary care physician's EMR to the specialist's EMR in fully structured form. These documents are the ones that are frequently faxed and data manually re-entered.

<sup>3</sup> Faxes and email: Old technology slows COVID-19 response

<sup>4</sup> Faxes and email: Old technology slows COVID-19 response

<sup>5</sup> Bottleneck for U.S. Coronavirus Response: The Fax Machine

<sup>6</sup> Public Health and Promoting Interoperability Programs

<sup>7</sup> HL7-Definition V2



The need for clear communication between parties in the transition of care is essential as 80% of serious medical errors happen because of miscommunication at the point of transition.<sup>9</sup>

Healthcare providers are also challenged to bring together data from multiple sources to provide a single view of the patient when and where it's needed. And the sharing of health information is also a significant barrier; so much so that a survey from the Center for Connected Medicine (CCM) found that providers felt they could share information within their health system but struggled to share data with payers, patients or other health systems or partners.<sup>8</sup>

## Healthcare has unique complexities in information management



<sup>8</sup> 3 Ways to Enhance Healthcare Interoperability with Health IT

<sup>9</sup> Joint Commission Center for Transforming Healthcare Releases Targeted Solutions Tool for Hand-Off Communications



## The benefits of interoperability

More than most, healthcare is a data-driven industry. As the sector moves towards value-based and patient-centric healthcare models, the ability to capture, manage, analyze and share health information will determine the success of these initiatives. With more and more sources of data and more sophisticated data sets to manage, interoperability offers a range of benefits to healthcare providers, patients and payers.

### Quality of care

Most patients receive care from a series of healthcare providers—clinics, specialists, hospitals, etc. At each point, medical information is produced, creating a medical history of that patient. Today, that data is often siloed in a number of different systems across many care providers. Without interoperability, it's extremely difficult to gain access to all those data points in a timely manner, leading to poor patient outcomes. Full visibility of consolidated patient data for both the healthcare institution and the patient is the primary benefit of interoperability.

### Patient centricity

Recent ONC rule changes have emphasized making health information available to individual patients. The onus is on healthcare vendors—such as EMR vendors—to ensure the information is available on the patient's chosen device. "In today's digital world, patients' right to control their health must include the right to access and control of their health information," said the U.S. Department of Health and Human Services (HHS).<sup>10</sup> As the population ages and the pressure on healthcare budgets becomes more intense, the ability to give patients more control and have input into proactive health and wellbeing will be essential if the healthcare sector is to meet the growing demand.

### Operational efficiency

Put simply, if you don't have the right information you can't make informed decisions or advance treatment plans. By having real-time results at their fingertips, medical professionals can cut down on repetitive tasks to drastically increase margins by treating more patients, and improve quality of care and outcomes. Giving patients more control over their own data also removes a significant amount of administrative burden from care providers. Applying analytics to this data further streamlines and optimizes administrative and clinical functions for wider patient populations.

### Financial performance

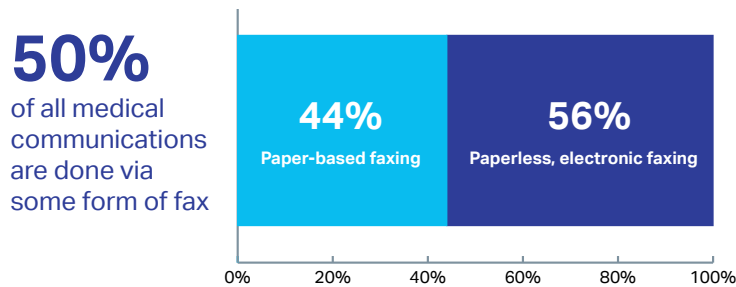
Meaningful Use set out incentives for practices that adopt Electronic Health Records (EHR), putting in place the foundation for alignment between interoperability and financial incentives. This will continue to play a major role in future developments in value-based care, such as MIPS/MACRA, and place more focus on the relationship between patient outcomes and financial performance.

**Taking a hybrid approach to interoperability**

As governments and healthcare vendors further embrace interoperability, many of the current barriers to health-information sharing will be overcome. However, this will not happen overnight. Healthcare providers need solutions today that enable the free, efficient flow of information between care settings. As interoperability starts to trickle into healthcare operations and clinical management, the move to the latest technologies and coding standards is leading to some unique approaches using integration platforms and hybrid deployment.

The role of fax remains pivotal, but its composition is changing. Paper-based fax is rapidly being replaced with digital and Cloud-based faxing. The trend towards paper-less fax is driven by security and HIPAA compliance but is underpinned by the technology’s seamless integration with multiple EMR and clinical systems as well as other non-clinical business systems.

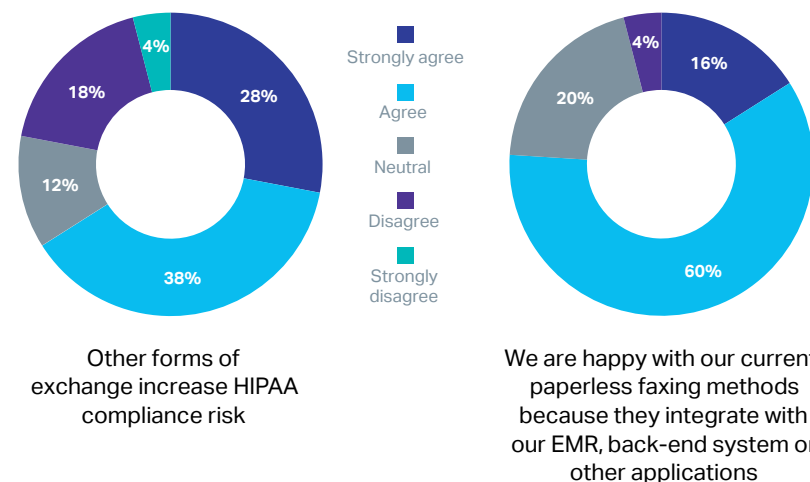
**Paperless faxing surpasses paper-based in terms of medical communications volume**



Source: IDG Research 2019

Research from IDG showed that 76% of the healthcare providers surveyed stated they were happy with their current paperless fax solution because it was fully integrated with their EMR, back-end systems and other applications.11 This integration of digital fax with document management and clinical applications provides a conduit for interoperability that facilitates the secure exchange of patient information, reduces costs and increases productivity.

**Three-quarters of healthcare organizations say they are happy with their current paperless faxing**



Source: IDG Research 2019

## Use case: Hybrid integration drives patient engagement

A simple example of where interoperability benefits engaged patients is a lab test. When ordering tests, patients with high copays benefit from knowing a test's cost, whether that test is covered by their insurance or if there are lower-cost alternatives.

That test order information is different for every lab and can be made available to the EMR through APIs (like FHIR), web services or embedded ordering portals. All EMRs are able to order tests digitally, but not all EMRs can effectively send an electronic order (via HL7 ORM) to the lab. A competitive clinical lab must be able to support all the ordering scenarios; API, HL7, paper or digital fax for incoming orders.

Using a hybrid integration platform provides the ability to continue handling legacy data transmission such as paper fax or even scan and upload orders while ensuring that hospitals can interface with diagnostic partners that have moved to structured HL7 ORM orders.

These hybrid platforms use digitized cloud-based faxing and artificial intelligence technology to convert the faxed order into structured order data to automatically feed the ordering system for authorization checks and order processing.

When lab results are ready to distribute to the ordering physician, most EMRs can receive structured clinical content where they trend results or trigger healthcare protocols. And there is commonly a need to courtesy copy another care provider. In that courtesy copy case, digital faxing is effective as there isn't justification to build a full HL7 results interface.

"Meaningful connectivity and interoperability are within the reach of those who simply leverage the most integrated and connected means to patient information exchange—a paperless fax solution—to optimize the exchange to achieve connectivity, improve processes and workflows and increase care coordination," reads the IDG report.<sup>12</sup>

By applying AI-driven Intelligent Capture<sup>13</sup>, data can be automatically extracted from digital faxes and entered into EMR systems to deliver an end-to-end process, and healthcare providers can access the information from their chosen device.

As more common datasets for health information are defined and adopted and healthcare vendors develop solutions to meet the evolving interoperability requirements and regulations, digital fax provides a cost-effective means to deliver interoperability today that can be easily transitioned and accelerate the speed at which new technologies can be adopted. In this way, healthcare providers can establish hybrid integration platforms that deliver security, scalability, cloud-hosted accessibility and PHI measures to ensure full HIPAA compliance.

## Exploiting AI

AI has become a major focus for healthcare CIOs<sup>14</sup> and plays important roles in enhancing interoperability. First, AI can intelligently extract clinical content from an incoming digitized fax and immediately populate the relevant clinical and non-clinical systems. Automating these steps alleviates the errors and inefficiencies of manually entering that data, therefore improving patient care, the patient experience and the efficiency of care teams.

Natural Language Processing—a form of AI—is used to extract the words, phrases and codes that are key components of the order, creating a structured order that can then be imported to an ordering system or CDC reporting system. Not only does this free up skilled staff for other critical tasks, it adds security and auditability to the movement of critical patient data and guards against data loss and PHI breaches.

Second, with interoperability, AI can be applied to the data held within various clinical and non-clinical systems to facilitate advanced analysis to drive insight that will improve front-line decision-making and create better patient outcomes. The hybrid integration platform can bring all patient data together to enable predictive and prescriptive analytics to identify potential problems and improve treatments. Over half of the healthcare leaders surveyed by CCM believed that advanced technologies—such as AI—were critical to produce the type of interoperability that would progress digital health initiatives and enable new ways of serving patients.<sup>15</sup>

<sup>12</sup> The future of paperless fax solutions in healthcare

<sup>13</sup> Extract data and uncover insight with intelligent capture software

<sup>14</sup> Healthcare CIOs in 2020: 3 key priorities & how the role is evolving

<sup>15</sup> 3 Ways to Enhance Healthcare Interoperability with Health IT





## Improving data management and security

Healthcare data must be managed securely with appropriate levels of user access and with full auditability, scalability and reliability. That's true whether the data is fully structured within an EMR database or unstructured as images within a digital fax system. It must be secure when at rest within the clinical products and when in transit between systems.

Digital faxing, in particular, has proven to be an intuitive, automated method for the effective exchange of patient information, while providing the security and auditability needed for a HIPAA-compliant environment. In a recent IDG survey, more than 60% of respondents named security and compliance as the key benefits of digital fax<sup>16</sup> which goes some way to explaining why the CDC were asked if they'd accept fax during the COVID-19 pandemic.

In fact, COVID-19 has driven Cloud-based fax adoption in healthcare. The pandemic heightened stresses on healthcare organizations, mandating that they exchange documents securely to and from remote locations as employees increasingly work from home. Cloud-based fax delivers the security and compliance while ensuring faxed data could be sent and received from anywhere and from any device.

## Conclusion: Towards full interoperability

Interoperability between clinical systems comes in many forms, including HL7 messaging, FHIR, APIs, digital faxes and intelligent capture. The goal of interoperability is for patient care systems to communicate efficiently and completely. The reality is that some care settings in an organization are likely to have fully interoperable systems, while many others will require fax or paper exchanges.

Forward-looking organizations are moving towards hybrid integration platforms to help them support both, scaling up and down the technology curve, since different care settings have different ways of providing care and require different methods of communicating. Until the industry has solved the problem of efficiently sharing fully structured clinical content, a hybrid approach that adjusts to an organization's unique needs offers the best way to optimize interoperability and secure information sharing.

## OpenText Healthcare solutions

Learn more about OpenText products that can help interoperability for Healthcare today.

### Security and compliance

Enable integrated, paperless and secure faxing for key health documentation	<a href="#">OpenText™ RightFax™</a>
Support interoperable electronic exchanges for digital care coordination	<a href="#">OpenText™ RightFax™ Healthcare Direct</a>
Exchange patient information quickly and easily from the desktop	<a href="#">OpenText™ Fax2Mail™</a>
Increase the speed, security and traceability of lab report distribution	<a href="#">OpenText™ MedNX</a>

### Data management

Improve data integration and management across the care continuum	<a href="#">OpenText™ Alloy™ for Healthcare</a>
Enable electronic lab and imaging orders and results integration and outreach	<a href="#">OpenText™ EMR-Link™</a>

### Records and content management

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Streamline document-driven workflows for rapid ROI	<a href="#">OpenText™ TeleForm™</a>
Drive costs savings with effective information collection and routing	<a href="#">OpenText™ LiquidOffice™</a>
Reduce IT complexity, optimize infrastructure, ensure regulatory compliance	<a href="#">OpenText™ InfoArchive</a>
Manage access and control of information assets	<a href="#">OpenText™ Documentum™</a>
Leverage a qualified registry for MIPS reporting	<a href="#">OpenText™ Covisint Merit-based Incentive Payment System (MIPS)</a>
Extract data and uncover patient and organizational insight	<a href="#">OpenText™ Intelligent Capture</a>

### Analytics and reporting

Leverage AI to improve decision making and automation	<a href="#">OpenText™ Magellan™</a>
Analyze billions of records in a unified view for fast insight	<a href="#">OpenText™ Magellan™ Analytics suite</a>
Share interactive dashboards and reports across teams	<a href="#">OpenText™ Magellan™ BI &amp; Reporting</a>

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