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HEALTHCARE AND BIOMEDICAL SERVICES

Data interoperability in healthcare:
How we can achieve it now

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Despite bipartisan support for patient ownership of their own healthcare data, a number of colliding forces still constrain standardized healthcare data interoperability. In this white paper, we explore some of those barriers and recommend ways forward.

Leveraging industry examples, a data-driven approach and our expertise, we recommend focusing on the end goal: enabling individuals to use their health data in the way they decide is best for their health. This may mean that you cannot achieve all your organization's legacy intraoperability or interoperability objectives immediately. However, focusing on the regulated data and compliance with the requirements from the Office of the National Coordinator for Health Information Technology (ONC) and the Centers for Medicare & Medicaid Services (CMS) is a solid start to create patient-centric solutions.

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No business can operate successfully as an island.

Yet the healthcare industry continues to perpetuate roadblocks that make it difficult — if not impossible — to easily share patient data in a semantically normalized manner between care providers, payers and other stakeholders in the ecosystem.

While other sectors like banking, finance and retail have proactively sought ways to share data to create more consumer-friendly experiences with their products and services, healthcare has approached data **interoperability** 🖱 in fits and starts. The urge to hold onto patient data as a competitive advantage and fragmented reimbursement systems have had a chilling effect on interoperability efforts spearheaded by industry organizations and the U.S. government.

As a result, patients who are increasingly used to the conveniences of mobile apps and online services in most areas of their lives are still filling out medical history forms any time they seek care from a new provider. Their information is not machine consumable in a way that allows them to leverage newer innovative tools that can help them to manage illness, wellness or chronic diseases. This adds to the waste of healthcare dollars, which are better used in ways to prevent illness and treat a patient when necessary.

While patient data could be driving better-overall holistic care, current limitations are dragging down providers' and payers' digital front door and programmatic usability scores, which is bad for the bottom line. What is standing in the way of implementing data interoperability to foster patient-friendly healthcare experiences, and how have other industries overcome these barriers?

Why is healthcare interoperability important?

Simply stated, patients/consumers should own the healthcare information that is a product of their direct and indirect payments for healthcare.

No other industries in the world block access to the product a consumer has purchased. The data captured from visits with a care provider, tests, diagnostics and procedural outcomes form the baseline for other clinicians to understand the unique nature of someone's past, current and future health journey. To deny access to the complete picture of patients' health by making health data difficult to share is to deny patients what they paid for.

In addition, other stakeholders need access to this care information, as individual records shared with consent or de-identified datasets are based on defined populations. These entities use the data to inform reimbursements, study and improve treatment protocols, conduct research and population health studies, identify outbreaks of infections and examine other public health activities at the regional, national and international levels.

Recent mandates prohibit companies, organizations and clinicians from refusing access to the very product a consumer has purchased from them. A person's results, outcomes, disease analysis, care and treatment plans, progress and care delivery notes, orders, costs and projected costs should be readily available for individuals to leverage in a consumable standard electronic format.

Without transparency and accessibility of the information in siloed or comprehensive datasets, other industries like healthcare tech are not able to innovate — limiting their development of new ways for patients to understand, schedule, pay for and manage their health, illnesses and chronic conditions.

How fintech made data interoperability happen

The banking and finance sector has proven to consumers that the ability to interchange data to enable business transactions is a valuable capability. Something as simple as withdrawing $40 from an ATM that is managed by a bank that is different than the account holder's financial institution is possible only because of a standard method of sharing data.

In 1970, the fintech sector developed the Society for Worldwide Interbank Financial Telecommunication (SWIFT) system. Today, more than 11,000 financial institutions rely on the system to exchange information quickly and securely. Participation is voluntary.

Participants understand that sharing data is crucial to their ability to innovate, provide consumers with convenient services and to effectively compete in the market.

Healthcare organizations, payers, providers, pharmaceutical companies and other influencers invest big dollars in lobbying and political efforts to protect their financial interests, which include data blocking as a differentiating strategy. This issue is at the heart of why patients do not have access to their health information.

Lack of interoperability propels healthcare costs

The cost to deliver healthcare is skyrocketing because of the waste in healthcare — which is mainly attributable to a lack of data interoperability and transparency.

Let's set the stage for the financial impact of a lack of interoperable and transparent data in healthcare. The cost to deliver healthcare is rising at an accelerated pace with no end in sight. The U.S. spends 17.1% of the gross domestic product (GDP) on funding tremendous waste and fraud in healthcare (Centers for Medicare & Medicaid Services) .

The growth of U.S. GDP and the proportion spent on healthcare reflect changes in how organizations deliver healthcare.

In addition, the introduction of prospective payment plans based on diagnostic-related groups led to marked changes in hospitalization, as the **key figures** below illustrate. From 1975 to 1995:

- THE NUMBER OF HOSPITALS **DECREASED 12%,** FROM 7,126 TO 6,291

- THE NUMBER OF HOSPITAL BEDS **DECREASED 27%,** FROM 1.47 MILLION TO 1.08 MILLION

- THE NUMBER OF PATIENT ADMISSIONS **DECREASED BY 5%**

- THE NUMBER OF HOSPITAL STAYS **DECREASED BY 36%**

- THE AVERAGE LENGTH OF A PATIENT STAY **DECREASED BY 33%**

- THE NUMBER OF INPATIENT SURGICAL PROCEDURES **DECREASED BY 27%**

These trends led to a decrease in the number of smaller hospitals, an increase in the number of large intensive care units and greater severity of illness in the hospitalized population.

One of the largest, most avoidable costs in healthcare is administration costs — the costs of

From 1960 to 2000, the GDP grew about 52%, from approximately **$526B** to nearly **$800B**. At the same time, the proportion of GDP spent on healthcare **increased 41%**.

(GDP by Industry, U.S. Bureau of Economic Analysis [BEA]).

In 2019, the GDP expended on healthcare in the U.S. increased to 17.7% for approximately 329.1 million residents (not including the five unincorporated territories). Compare that with India, which spent 3.6% GDP on healthcare (last reported in 2018) with 1.38 billion residents. China, with 1.41 billion residents, spent 5.1% of GDP on healthcare (last reported in 2018). (GDP by Industry, U.S. Bureau of Economic Analysis [BEA].

gathering, keeping, leveraging and sharing information across the ecosystem. Almost all healthcare organizations deal in scanned, faxed, printed paper; one-off media; and other inefficient and noninteroperable ways of sharing a patient's information.

Adoption of interoperable data sharing could both reduce costs and increase the popularity of care facilities. Providers can reduce the effort to collect

and analyze population and patient data. Patients may be more inclined to choose a provider that they know has ready access to their complete health records.

Current administrative practices may produce market advantages that are contrary to the good of the patient. Organizations sometimes use policies, procedures and shared administrative burdens to increase turnaround times for claims processing, sharing of patient information or care delivery — all for the sake of managing cash flow, capacity issues and profitability.

Another potential barrier: an inability or a failure in compliance when leveraging or investing in newer systems. Also, healthcare organizations may unwittingly purchase applications and systems where the vendor builds its business strategies on customer/market closed-loop benefits that, for example, that give the vendor a market advantage but cause issues with interoperability, sharing of patient/consumer information and innovation.

Administrative costs in healthcare mount every day. While there are no definitive studies because of the complexity of measuring the impact.

In 2020, the Brookings Institute ⬉ estimated that **25 to 33 cents of every dollar** spent on healthcare pays for back-office complexity.

Dana Miller Ervin, an award-winning journalist and healthcare reporting fellow at WFAE in Charlotte, North Carolina, **stated in 2021,** ⬉ "That means as a country we spend about $1 trillion a year on administration, based on government estimates of total healthcare spending — more than we spend on Medicare."

Data and interoperability seem complex. However, when you take a data-driven approach and upskill your resources in the most modern technologies and standards, it is possible to remove human-intensive paper processes such as faxing (which is still remarkably prevalent), scanning, and entire workflows and technologies that you support for the purpose of scanning and reading scanned records.

The *Journal of the American Medical Association (JAMA)* quantified waste in the U.S. healthcare system and estimated costs and potential areas for savings. **Their calculations** ⬉ estimated the ranges of total annual cost of waste, along with the associated potential savings.

Overall, the **estimated cost of waste** 🔦 in the U.S. healthcare system accounted for about a quarter of total healthcare spending, ranging from $760B to $935B. *JAMA* estimated that reducing waste **could potentially save** 🔦 25% of that waste (excluding savings from administrative complexity, which was not estimated).

We could identify and remove much of that waste from the system with increased transparency and interoperability. Slowly, the industry is making progress. Due to a shift to increased revenue incentives from CMS and ONC associated with value-based reimbursement, many healthcare organizations are realizing that interoperability is a better strategy for patients and their bottom line.

Patients' expectations have risen; they expect to navigate healthcare within their preferred digital-lifestyle patterns.

Add the opportunities of increased data availability and more cost-effective ways of storing, processing, orchestrating and analyzing data, and we are beginning to see the tipping point — one where everyone aligns on the imperative of an interoperable state in healthcare.

Cost is a critical issue for our nation, yet it is not the only reason to achieve interoperability. A closely related issue is the inhibiting factor of a lack of healthcare information for entrepreneurs. Companies that offer new ways of delivering or managing healthcare are not able to show the benefits and continue to innovate if legacy organizations are blocking all the data. This data lockdown keeps the U.S. from testing and moving forward with new solutions that improve ways to engage patients and manage healthcare. Patients are also then blocked from improved ways to interact more effectively with their clinicians, care plans and treatment options that would be available to them if we had semantically normalized interoperable data in healthcare.

We can learn from information-exchange history

The healthcare industry has tried many different models of exchanging information regionally and nationally, but competitive zero-sum thinking continues to prevail.

In recent history, during several phases of our budding maturity in health information, we tried regional information hubs, health information exchanges and other methods that address the hyperregionalization of healthcare. But the conflicting business strategies and competitive barriers continued.

Healthcare businesses, including the more traditional independent software vendors (ISVs), generate a lot of revenue from creating advantages for their customers and their overall ecosystems to use their software exclusively.

Their customers, primarily large hospital systems or payers, are generally not interoperable with their regional competition — which creates an environment of hardship for patients who want to use services outside of that vendor's customer base.

We've seen phases in the effort to define healthcare interoperability and its various manifestations (e.g., the Nationwide Health Information Network [NHIN], regional health information organiziations [RHIOs], health markets or patient-centric networks). These efforts required carefully balanced governance and modeling of balanced incentives to ensure that the entire ecosystem benefits.

The healthcare industry has also shown a proclivity for proprietary standards, closed-loop systems and ways of keeping other corporations or industries from innovating against healthcare data in general.

For many decades, through voluntary organizations like Health Level Seven (HL7®), SNOMED and SNOMED International (previously IHTSDO), and others, the industry worked to come up with its own version of data interchange and use standards. The federal government and the administrative branch through DHHS (now DHS), and soon after ONCHIT

(now ONC), worked to create mandates that align the interest of healthcare organizations with the interests of the patient.

Interoperability became an important concept as far back as the early 2000s, but prior to that, everyone focused on one-off, custom, point-to-point integration to enable "intraoperability" within a single organization or billing and invoice automation that was still very paper- and intermediary-dependent in nature. Only when the Center for Information Technology Language (CITL) and other informaticians pointed out the criticality of semantically normalized information to reduce the cost of healthcare administration across the ecosystem and the study of outcomes to improve care did CMS and other standards begin to focus on semantics as a key characteristic to achieving broad industry interoperability.

It took many years for the return on investment and architectural approach to be fully understood for two reasons. First, the requirements for interoperability did not include detailed datasets with the capability for semantic normalization between disparate organizations. Also, they were not included in legislation until 2009 — seven years later — with the American Recovery and Reinvestment Act (ARRA).

Most recently, the **21st Century Cures Act** ⚲ and its downstream mandates in the form of ONC's **Cures Act Final Rule** ⚲ have worked to coordinate data-sharing rules between varying types of healthcare organizations, transparency in pricing and contracting, and transparency in drug pricing.

None to date have been successful in aligning the industry absent federal mandates. The consensus is that patients have healthcare choices that they exercise routinely, and when disruptors begin to break in, their presence will create additional motivation for an interoperable environment.

Nefarious intent isn't necessarily the reason. Many healthcare organizations and ISVs believe that they are protecting patients and communities from large corporations — which are not invested in or knowledgeable about the healthcare market — in regard to harming patients, taking advantage of them or disrupting the fair share that seems to be the status quo in the zero-sum game of healthcare.

What we don't seem to understand is that approximately 70% of GDP is consumer spending, and therefore, innovation outside of the traditionally HIPAA-mandated ecosystem of actors in healthcare is a new share of wallet for organizations that take a patient-centric perspective, making it easy for people to get care and stay healthy. The practice of blocking data — and driving up the price of healthcare in the U.S. as a result — is not sustainable.

How can we move forward?

Key shifts in how we think about healthcare strategy can enable healthcare leaders to move forward with data interoperability.

Without transparency and accessibility of the information in either siloed or comprehensive datasets, the technology industry and others cannot create new, innovative ways for patients to understand, schedule and access care for, pay for, identify and manage their health or illnesses.

Instead of blocking this innovation, consider harnessing it in the form of a vetted marketplace that brings value to your patients and increases your share of wallet at the same time.

These market influences motivate movement toward an interoperable state in healthcare:

- Recent legislative mandates that include discretely defined, exact data elements and methods of integration and provide steep penalties for not complying — up to and including loss of CMS contracts

- Additional legislation that requires transparency in healthcare pricing and contracting

- Drug costs and price capping

- Data-blocking mandates that prohibit organizations from blocking patient data

- Innovation teams that require interoperable data to continue engaging in new care delivery models which make the patient central

- Modern digital and cloud technologies that enable interoperability

Eight ways for healthcare organizations to work together to achieve interoperability

| 1 |

Don't view data interoperability as a technical challenge.

- Look to your internal talent pool, and invest in resources and upskilling that will help you generate strategies that align the financial health of your organization with the positive outcomes of the patient, community and nation.

- Leverage technologies that enable an interoperable state. APIs and microservices are typically ubiquitous within any organization.

- New strategies cannot rely on data blocking or a lack of interoperability in order to protect market share. Instead, partnerships among care teams, clinicians, patient advocates and IT services firms will foster easy-to-use, financially transparent experiences that encourage patients to invest in their health and entice federal agencies to fund initiatives.

| 2 |

Evolve terminology services.

- Semantic interoperability is the goal.

- Achieving it requires an understanding of newer federal mandates for data, clinical-coded vocabularies and any other defined set of codes or values that systems can mutually understand.

- Semantic interoperability also requires careful mapping of business rules.

| 3 |

Stop resisting and learn beyond the mandates.

- The technology and data standards we are adopting now, either via mandate or common sense, are leading us to the healthcare ecosystem of the future. Public health, gaps in care, longitudinal records are all **Fast Healthcare Interoperability Resources (FHIR®)** now.

- Adopt the standards, or risk solutions with built-in tech debt, slowed rates of implementation and adoption, and limitations on the ability to leverage innovations that patients expect.

- Learn from other influential organizations and firms. HL7 Accelerators (e.g., Da Vinci, Gravity, FAST and Vulcan) will move the industry beyond mandates by defining common use cases; ONC will then, at the least, recommend their usage. This is already happening with formulary, provider directories, gaps in care and more.

- Take note of what organizations like HL7 and consumer-centric multinational firms from other industries are doing to launch and maintain interoperable solutions.

- Let go of tech debt by leveraging headless technologies and moving away from vendors that do not support friendly and comprehensive versions of interoperability (with orchestration of appropriate and clear consent by patients).

- Meet with fintech, banking and finance leaders to learn from their wins and losses. Interact with and incorporate entrepreneurs and innovative thinkers, and invest in user and consumer experience efforts.

- Don't follow a traditional subject matter expert methodology with design. Instead, hire a firm that specializes in interviewing and eliciting insight regarding what defines a good user experience, both technically and through physical services.

| 4 |

Get educated on technical standards.

- APIs are the norm, so go a little further and make sure standards for vendors and internal resources are FHIR compliant and meet ONC/CMS mandates, such as USCDI and CPDCS for claims and ONC standards.

- Ensure your teams have the needed skills. Most IT services firms have plenty of skilled staff to help you get through the learning curve and even maintain your interoperable state.

- Most major EHR vendors have these standards in place, and healthcare organizations are not leveraging that advantage.

| 5 |

Develop data-exchange relationships with major healthcare organizations to test and drive interoperability strategies.

- Pivoting to focus on creating differentiated, cutting-edge digital and physical experiences makes it easier to align business interests with those of your patients.

- Move your budget previously dedicated to lobbying against new mandates to support the creation of a seamless patient experience.

| 6 |

Take charge of interoperability to transform healthcare.

- With any new way of doing things, you'll encounter adjustments, mistakes and risks. But the benefits are immense for organizations and patients. Care delivery, research, treatments and patient-focused care will accelerate and improve rapidly once organizations achieve an interoperable state.

- Be ready to respond to old thinking. Vendors and finance, legal, strategic and lobbying staff may continue to try to make the case that blocking transparency in pricing/negotiations or blocking data actually protects patients' interests.

- Loyalty or continued investment in vendors or others who cannot pivot their tech debt fast enough to keep up with innovation is not an advantage. As in any industry with an innovation curve acceleration, the field will leave some players behind.

- The important things to focus on are how data interoperability supports strategic business decision-making and partnering with capable IT services partners will allow you to be able to differentiate on quality, advanced services and care, safety and convenience.

- Offer easy access to application developers through development portals that use the ONC-required SMART App Launch Framework for security. It defines the actual workflow through FHIR API, OAuth 2 and OpenID Connect (OIDC). These development portals enable the ability to provide data in agreed-upon security architectures, dataset structures and time frames.

| 7 |

Count on a suite of technologies and a carefully planned architecture to provide a seamless patient experience.

- Allowing vendors that own most of the market to be the digital front door of your organization's patient experience means you are reducing your strategic advantage to a common denominator.

- Employ a headless architecture to provide an optimized solution for experience creators to produce and manage features and functions, content and marketing of omnichannel services — while ensuring a seamless experience across all technical and physical services channels.

| 8 |

Believe that data interoperability is possible.

- We need data interoperability in the healthcare ecosystem to improve patient care, reduce rising healthcare costs and spur innovation. The right technical partners can take you from concept to executed reality and are willing to challenge your team's assumptions about best practices.

- Begin to set expectations with your executive and leadership teams about the change in focus on differentiating on quality, safety, and patient experience and satisfaction — and bringing an end to wasting time and money fighting to protect old strategies dependent on data blocking.

- A lack of transparency and lack of interoperability of the patient data will only hurt your organization or company in the long run. Get ahead of the wave of disintermediation that is inevitable if you don't aim for semantically interoperable digital solutions.

For further information on how SenecaGlobal can assist you with interoperability, contact Shawna Koch Mishael at **shawna.kochmishael@senecaglobal.com**.

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About SenecaGlobal
Founded in 2007, SenecaGlobal is a global leader in software development and management. Services include software product development, application software development, enterprise cloud and managed services, quality assurance and testing, security, operations, help desk, technology advisory services and more. The company's agile team consists of world-class information technologists and business executives across industries, ensuring that we provide clients with a strong competitive advantage.

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