POINT OF VIEW

Flipping the Script on Patient Care with Data, Education and Action

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Patient care is the cornerstone of a healthy society with a utopian goal of creating a disease-free world by deploying approaches based on prevention, treatment and management of the disease. However, achieving this vision is a complex and daunting task that requires the collaboration of various stakeholder industries to devise end-to-end solutions: a departure from the current approach of point solutions where life sciences and related industries drive the discovery of care and healthcare providers and payors focus on quality and cost of care.

LEVERAGING BIG DATA IN PATIENT CARE: UNLOCKING THE POWER OF DIGITAL TRANSFORMATION FOR A HOLISTIC HEALTHCARE EXPERIENCE

The last few decades have witnessed massive digital transformations in every industry. According to the IDC,

> **We are generating more data per hour than what was being generated in 1 year just two decades ago.**

A similar proliferation of data has also been seen in patient care industries.

- The World Economic Forum estimates that global healthcare providers may have generated **50 petabytes** of data in 2021 alone.
- U.S. payors are processing billions of payment claim transactions yearly for over **200 million** customers.
- R&D in pharmaceutical companies are producing **10-100 terabytes** of data daily through scientific experiments.
- Covid has created new digitally native processes like telehealth, device-based remote monitoring and at-home clinical trials that are generating unprecedented digital data.

Digital adoption in patient care processes has led to massive data generation, presenting a significant opportunity to reimagine patient care holistically by taming the challenges posed by the data explosion.

DATA STANDARDS LANDSCAPE IN PATIENT CARE: PRESENT AND FUTURE

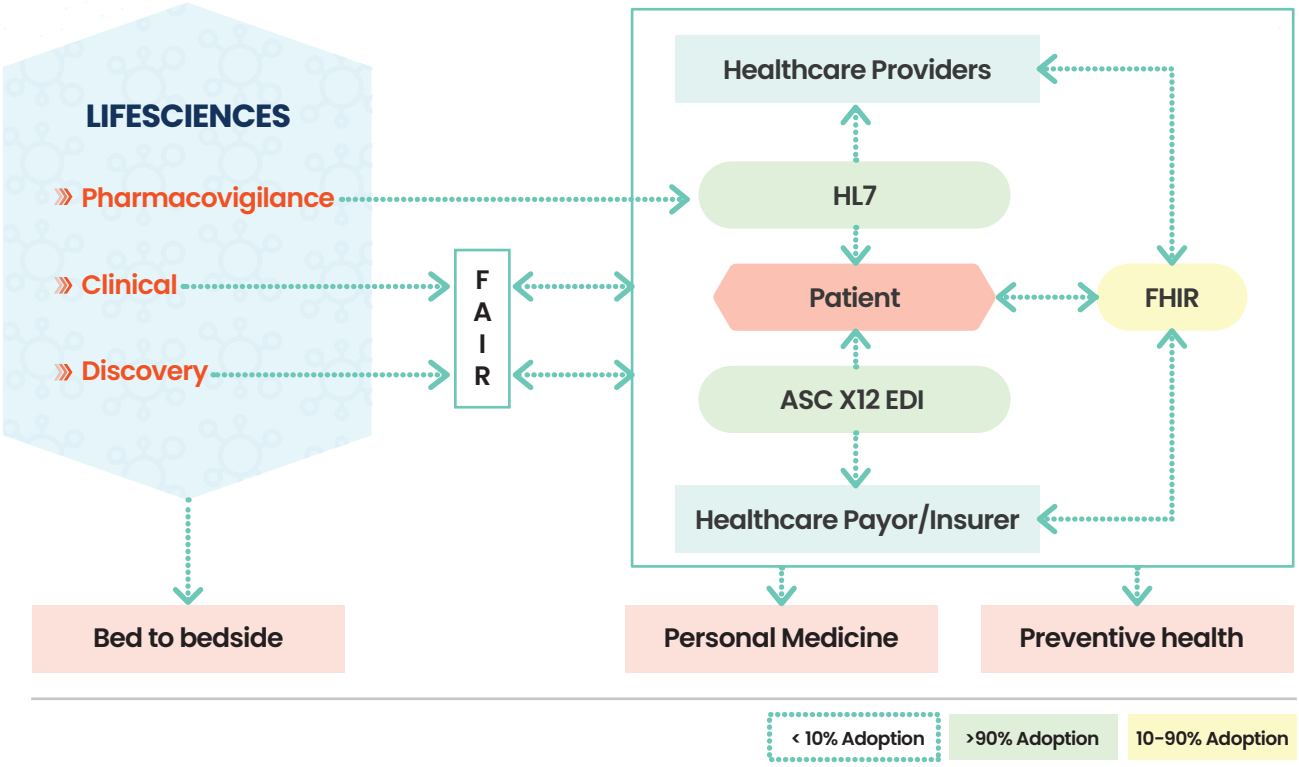

Figure 1. A schematic view of major data standards and their adoption and interaction in the patient care value chain

Figure 1 depicts a simplified view of the current and future landscape of data standards across the patient care value chain. Clearly, there has been significant progress in defining content and communication standards, which are currently at different levels of maturity and adoption, with an aim to remain responsive and drive integration across business processes.

The healthcare ecosystem is in the most advanced stage, with high adoption rates of over 90% for HL7 and EDI by the healthcare provider and payor organizations. With the introduction of FHIR (Fast Healthcare Interoperability Resources) communication standards, currently at very low adoption, payors and providers are establishing a backbone for interoperability, allowing for seamless and context-driven data exchange among healthcare providers, payors and patients. Interoperability using FHIR is leveraging technological advancements to enable stakeholders to establish secure communications, easy and independent cross-platform exchange of data, and enhanced customer-centricity via access and the ability to share medical records.

While progress has been made in the healthcare industry, life sciences R&D is lagging in establishing similar data frameworks.

Recently, a Dutch consortium proposed the FAIR data principles to address the challenges of digital research data resources. These principles will drive the Findability, Accessibility, Interoperability and Reuse of research data to establish consistent language and approaches to data sharing, storage and interpretation among stakeholders. For example, FAIR can potentially advance the maturity of R&D (by directly adopting API technology as standards), so it can be part of the interoperability journey to complete the positive feedback loop across the patient care value chain.

VALUE OF DATA STANDARDS FOR PATIENT CARE

Data standards provide a secure, consistent and efficient way of transmitting data between healthcare stakeholders using established messaging standards and protocols. Healthcare providers are using HL7 content and messaging data standards to deliver medical record exchanges and other administrative processes for patient care across multiple stakeholders.

Similarly, EDI is being used by payors to send information to various stakeholders to electronically exchange data for supporting critical processes such as claims payments, enrollments, eligibility and benefits, pre-authorization, and others.

These two data standards have transformed the healthcare experience for customers by delivering multifold improvements to both quality and cost of care, as seen from some of the following outcomes:

1

Better coordination of care

Healthcare providers can exchange patient health records with community care facilities and third-party medical centers to help them make informed treatment decisions and reduce medical errors due to the timely availability of patient history, speeding up the treatment process.

2

Lower total cost

The integration of EDI lowers administrative expenses for payors by up to $1.49 per claim over digital transactions. In 2021 alone, U.S. healthcare has saved over $10 billion by processing billions of claims, remittances, enrollment, pre-authorizations, eligibility and other transactions.

3

Improved process efficiency

The exchange of data electronically eliminates the manual time and costs of medical billing, storing medical records for compliance and analytics, greatly reducing administrative errors and synchronizing data from different sources, which allows healthcare providers/payors to improve internal processes.

Similarly, life science has an opportunity to adopt FAIR data principles and unlock the benefits of digitalization to overcome two major business challenges: a) time to market and b) cost to develop new drugs. Reports estimate it takes anywhere from 6 to 12 years and a prohibitive cost of discovery of up to $2 billion to bring a drug to market.

Although the industry has witnessed rapid adoption of digitization and benefited from new digital technologies like genomics, proteomics and microarray, this has not delivered any significant impact on the above challenges and pharma still suffers from EROOM's law.

FAIR-driven data standardization can solve long-standing problems in drug discovery process:

1 Siloed research

Emerging technologies produce various data at exceeding velocity and volume, far exceeding the minimal data requirements to meet publication guidelines. A vast amount of data is unpublished, and other associated metadata is not even accessible beyond research labs. Even the limited published data has low reuse and suffers from the challenge of findability by machine techniques.

2 Insufficient context

In the absence of standard and sufficient context, it is not easy to manage and make sense of data points. Data reuse without computer data processing needs substantial manual work. In effect, a large amount of data, although accessible, is not being used to harness its potential.

Embracing the FAIR data principles in the R&D phase will help pharma break free from the limitations of data silos. Not only will this encourage the reuse and mining of existing data, but it will also result in tremendous cost savings, which will drive down the cost of healthcare.

A 2018 study by PwC shows that adopting FAIR data principles could save an estimated €10.2 billion per year in R&D and an additional €16 billion on inestimable parameters for European countries alone.

Moreover, standardization driven by the FAIR data principles will unlock the full potential of innovative new offerings from bench-to-bedside research, personalized medicine and preventive healthcare, thus further reducing the time and cost of discovery.

By embracing FAIR data principles, we can drive cost savings and improve the overall cost of care for patients.

NEW POSSIBILITIES FROM INTEROPERABILITY IN PATIENT CARE

Implementing FAIR standards is critical to bridging the gap between life sciences R&D and the healthcare ecosystem. Figure 1 highlights the benefits of integrating these two processes, including breaking down the barriers posed by data silos and improving data sharing.

The impact of this integration will be felt through the discovery phase as healthcare data, like medical records, patient demographics and claims data, becomes more readily available to drive analytics and AI/ML-based approaches.

This valuable data will save precious time and help streamline the R&D process.

01

Bench-to-bedside approach

Integration of data from patients and healthcare providers can improve insights gained during R&D.

By analyzing data points such as participants' demographic and historical data, patient monitoring data and clinical trials, and pharmacovigilance events data, the pharma industry can speed up drug discovery and reduce R&D costs.

02

Precision (personalized) medicine

Certain drugs may be effective for people with certain genetic traits or from distinct geographic regions. With the FAIR approach, it is possible to reuse data and achieve more targeted development of drugs while boosting their market value.

Predictive analytics can support early warnings and personalized treatments. Biometric data, lab tests, family health history and patient-generated health data, including data from health tracking apps, can help providers understand a patient's entire health picture and provide lifestyle, wellness and medical updates to support long-term health.

03

Preventive care

Lifestyle diseases such as diabetes and high cholesterol require preventive care, made possible by identifying the main factors linked to the disease. By making data easily accessible, it becomes easier to understand what is behind the disease.

Predictive analytics and machine learning models can evaluate historical and current data to find meaningful patterns and insights. Predictive analytics enhance chronic disease management and improve the efficiency of pharmaceutical logistics and supply chains, also playing a crucial role in forecasting future medical issues.

PARTNER WITH TREDENCE TO MAXIMIZE THE POWER OF HEALTHCARE DATA WITH DATA GOVERNANCE AND ANALYTICS EXPERTISE

Together, we can harness the power of data and create a collaborative framework by integrating processes across the patient value chain. With Tredence's expertise in cloud and big data technologies, data governance and analytics, and data science, you can move from a siloed view of data to a unified stance by leveraging rapid advancements in data management technology. In addition, we bring our expertise and experience across industries to employ advanced reporting, analytical and data science tools that solve problems and provide answers.

Here are some of the ways Tredence can provide your organization with a data-driven competitive advantage:

01

Data in cloud

According to McKinsey, it took Moderna only 42 days to deliver a viable vaccine to the U.S. government after the initial sequencing of the virus, thanks to cloud technology. In addition, the scalability offered by cloud and edge computing can speed up patient data and provide cost-effective solutions.

02

Smart data

Big Data that has been filtered, cleaned and contextualized for analytics is Smart Data. This helps downstream data analytics teams make better sense of it. In addition, smart data can be analyzed at the collection point to speed up drug discovery, clinical decisions, patient enrollment, and other processes.

03

Data governance

By agreeing upon a set of policies and standards, patient care industries can achieve their goals through a curated and single source of truth. It describes who can perform what actions on what data under what circumstances. This enables companies to derive accurate insights at any moment. Additionally, Tredence employs the FHIR and FAIR frameworks for more accurate results.

04

Data analytics

We can monitor drugs with potentially adverse reactions by analyzing data, allowing research teams to sensitize physicians. Additionally, data analytics facilitates the development of hyper-personalized medicine that is more effective for the population it serves. Furthermore, machine learning models help predict trends that optimize production and bring down the cost of a drug and time to market.

BOTTOMLINE: START REVOLUTIONIZING PHARMA WITH DATA GOVERNANCE AND ANALYTICS THROUGH STANDARDIZATION

Making sense of data with proper data governance and analytics could be a game-changer for pharma. It begins with data standards. There is a need to hasten the adoption of standards in health care. However, since this domain still depends on older standards, healthcare providers, payers and pharma companies can flip the script through education and action.

Gautam Aggarwal
Delivery Leader

Gautam loves the challenges of scale and complexity to deliver solutions across the business and technology mix. He is a self-driven professional with over 20+ years of experience in IT value chain (consulting, new product development, large-scale delivery, operations), blending his scientific expertise, driving innovation, and employing management practices to serve clients in life sciences, pharmaceuticals, biotechnology, retail, financial, and other industries.

Gautam has worked in the life sciences and healthcare industries for over 10+ years. He spent the early part of his career in the R&D process, working on Whole Genome Sequencing projects for Trypanosomatids and using Computational Biology techniques to identify genes and used omics technologies like Genomics, Microarray, and Proteomics to develop System Biology understanding. As part of a Fortune 500 consulting group, he led strategic consulting assignments across the Pharma value chain for top pharmaceutical companies like J&J, Genzyme, and Sanofi. He has also managed large-scale delivery for payor and provider healthcare organizations to drive digital transformation and enhance the core business processes for health plan management, member enrollment, claims, and benefits administration.

Gautam has an MBA from ISB, Hyderabad (CO 08) in Finance and Strategy and a Doctorate in Physics from Jawaharlal Nehru University, New Delhi. He did his Post-doctoral biomedical research in Seattle, USA, and has coauthored over 15 research publications, including 3 in the highly visible and prestigious journal 'Science.'

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