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Issue Brief

Implementing HL7 FHIR Technology: A Provider Perspective

BACKGROUND

Healthcare providers struggle to access and exchange accurate and timely patient data. The advent of the HL7® (Health Level Seven) FHIR® (Fast Healthcare Interoperability Resources) standard has revolutionized the way providers integrate this information into their clinical workflows. With the increasing demand for seamless information sharing between different healthcare systems and applications, FHIR adoption is alluring to many providers.

Since 2020, the Centers of Medicare & Medicaid Services (CMS) has repeatedly leveraged its regulatory authority to advance interoperability and patient access to health information by mandating the use of HL7 FHIR-based application programming interfaces (APIs) for select healthcare organizations. This includes landmark regulatory actions, such as the Interoperability and Prior Authorization Final Rule, better known as CMS 0057.[1] In May 2023, DataSpring held a focus group with provider representatives to better understand providers' challenges in achieving interoperability and adopting HL7 FHIR. The participants, all of whom play a significant role in their organization related to interoperability information exchange, discussed their perspectives and experiences.

1. https://www.federalregister.gov/documents/2024/02/08/2024-00895/medicare-and-medicaid-programs-patient-protection-and-affordable-care-act-advancing-interoperability

FOCUS GROUP FINDINGS

Provider and user understanding of HL7 FHIR

Overall, most providers do not fully understand the details and intricacies of HL7 FHIR. They do, however, appreciate many of its features. For example, backend FHIR implementation allows provider access to needed patient information in a quick and efficient manner. They no longer need to log into multiple programs to see patients' clinical notes and supplementary information. Additionally, FHIR-based applications are intuitive for many and thus reduce the need for extensive trainings and education on how to use new features. One focus group participant commented, "The technology is instinctual. Providers can teach themselves how to use it in a relatively short time."

Provider representatives also indicated that the majority of patients are not familiar with HL7 FHIR, but are grateful for the information HL7 FHIR allows patients to access. Through the Patient Access API, they are able to request their health information and view it on their phones or through apps.

The Patient Access Application Programming Interface (API), first required beginning in 2021, is an HL7 FHIR-based API that enables patients to access their electronic health information and share it with third-party apps. Recent federal policy, including the CMS Interoperability and Prior Authorization Final Rule (CMS-0057-F), expands this framework by introducing additional APIs for prior authorization and provider access to payer data.

Provider benefits of implementing HL7 FHIR

Focus group participants all agreed that FHIR is important to the future of healthcare interoperability. FHIR's ability to present data in a useful and actionable manner is transforming providers work by enhancing clinical workflows, increasing productivity with real-time responses and improving holistic care.

Enhanced clinical workflows

HL7 FHIR and the Substitutable Medical Applications and Reusable Technologies (SMART) on FHIR technologies help standardize fragmented data and makes it more accessible and shareable among providers. FHIR apps and SMART on FHIR easily integrate into provider clinical workflows and allow provider access to up-to-date patient information. Focus group participants praised FHIR for the "one button concept" that allows provider to stay inside an electronic health record (EHR) application while accessing additional patient information. This gives providers immediate access to a patient's full history and avoid duplicative and improper care.

As more functionalities are developed, providers will not only be able to access more relevant patient information, they will also be able to implement clinical decision support initiatives. The HL7 International Clinical Decision Support Work Group develops standards to support knowledge sharing among providers.[2] Additionally, HL7 initiatives such as the Da Vinci Project are developing FHIR-based implementation guides that support standardized data exchange between providers and health plans.[3]

Emerging information published by vendors, hospitals, institutions, medical societies and associations, and quality agencies will be shared among providers via HL7 FHIR. This feature

2. https://build.fhir.org/clinicalreasoning-knowledge-artifact-distribution.html
3. https://build.fhir.org/ig/HL7/davinci-crd/en/

shortens the timeframe of knowing when new clinical information related to patients and population health is dispersed, which helps providers improve point of care delivery.

Increased productivity with real-time responses

HL7 FHIR integrations allow provider access to information in real-time, reducing the time needed to manually search and gather patient information from various sources. Focus group participants welcome the time and cost savings they have witnessed through FHIR adoption and interoperability techniques. One organization experienced productivity gains of over 200% after implementing prior authorization features via FHIR, while another organization improved patient matching rates, from 80% to 98%, after implementing the Da Vinci Member Attribution List Standard Implementation Guide. Focus group participations indicated that these features not only increased staff productivity, but also created savings for the industry by providing more efficient and timelier care.

> The use of HL7 FHIR results in productivity gains for providers and the effect is that patients get better and faster care. Providers can navigate care more efficiently because they are getting immediate feedback on the patient's needs."

Improved holistic care

Provider representatives indicated that implementation of FHIR benefits patient care and the healthcare ecosystem. The goal of connecting systems through FHIR supports important system developments and builds a more resilient public health structure. FHIR helps organizations connect with public health entities, including community-based organizations, to better understand patients' social identity and environment. This understanding provides a holistic view of the patient allowing for targeted diagnoses and treatment. One focus group member indicated that, "The quality of care that results from this (community based) information is immeasurable.

CHALLENGES IMPLEMENTING HL7 FHIR TECHNOLOGIES

Implementing new technology can be challenging, especially in the early phases as users become acquainted with systems and features, work through issues, and identify best practices. While provider representatives highlighted benefits associated with FHIR and interoperability, they acknowledged that challenges exist.

Lack of industry standards for consistent implementation

Focus group participants note inconsistencies among system usage and implementation approaches as challenges associated with FHIR adoption. While Implementation Guides (IGs) contain rules and specifications, not all organizations use the same version of the guides, which creates disparities and connectivity issues among workflows. Variations in workflows complicate effective use of the standards and the exchange of information, especially among multiple health plans. Systems need a universal way to speak to each other, as one participant noted, "Implementers must use the same language and alphabet."

Lack of mapping

In order to successfully exchange electronic information, provider organizations need to properly map APIs. High integrity mapping between proprietary data models and FHIR resources is crucial to enabling meaningful connections with external organizations. Focus group participants indicated that these mappings are not consistent, which leads to problems with accuracy; many organizations are not prioritizing mapping efforts due to budget constraints. They noted a gap between what is available via the United States Core Data for Interoperability (USCDI) and what vendors are using to create API mappings. This gap results in difficulty connecting entities and exchanging information. The lack of uniformity and consistency among implementations leads to proprietary approaches that are not conducive to interoperability.

The United States Core Data for Interoperability (USCDI) sets a foundation for sharing electronic health information to support patient care by providing a standardized set of health data classes and data elements. Multiple versions of the USCDI exist, and entities may certify their use of the ever-expanding data sets through certification criteria established by the Assistant Secretary for Technology Policy Office of the National Coordinator (ASTP/ONC).

Varied HL7 FHIR adoption

Although CMS previously required certain FHIR-based APIs through earlier interoperability rules, more recent federal policy, including CMS-0057-F, expand these requirements by introducing additional interfaces[4,5]. However adoption continues to be inconsistent and not widespread. Focus group participants indicated that payers are not eager to directly connect with provider practices through FHIR APIs. This hasresulted in a largely “one-sided” integration approach.

Findings from DataSpring’s FHIR focus group with health plans in November 2022[6] indicated that many health plans do not have well defined interoperability strategies and are reluctant to develop interoperability workflows apart from those required by CMS or for required certification. The lack of strategy and development has made it difficult for provider organizations to create meaningful HL7 FHIR connections with their health plan counterparts.

Differing provider priorities and resources

When considering HL7 FHIR implementation, provider representatives agreed that funding and priorities play a critical role. Managed care systems and large group practices have in-house technical competencies and funding to embed HL7 FHIR into their systems while smaller, independent practices lack knowledge and resources. Embracing a new infrastructure and building a team capable of implementing HL7 FHIR is costly and time-consuming and not feasible for many providers. One participant indicated that smaller practices are “more focused on running their practices and keeping their lights on” than investing in APIs.

Incomplete privacy and data control protections

Keeping patients’ health data safe and secure is a primary concern in the healthcare industry. Organizations must learn how to best control access to data and maintain privacy. This is especially critical when dealing with marginalized and vulnerable populations. Data

4. https://www.cms.gov/regulations-and-guidance/guidance/interoperability/index
5. https://www.federalregister.gov/documents/2024/02/08/2024-00895/medicare-and-medicaid-programs-patient-protection-and-affordable-care-act-advancing-interoperability
6. https://www.caqh.org/sites/default/files/2023-03/FINAL%20Insights%20-%20FHIR%20PLAN%20Focus%20Group%20Brief_v5.pdf

exchanged with non-healthcare entities within a community, such as those in transportation or housing, needs to be protected; people need to feel "safe" exchanging data. Participants indicated that the industry needs to further specify and support the Trusted Exchange Framework and Common Agreement (TEFCA) to enable an environment that is safe to exchange data and adoption occurs.

The Trusted Exchange Framework and Common Agreement (TEFCA) establishes a nationwide governance framework and infrastructure model for organizations to securely share clinical information through Qualified Health Information Networks (QHINs).

Industry needs for successful HL7 FHIR implementation and interoperability

Regardless of the provider organization's approach to implementing FHIR technologies, focus group participants note consistent challenges and offer suggestions to encourage meaningful application and adoption of FHIR.

1. HL7 FHIR ROI

FHIR implementation and interoperability strategies are helping to improve the quality of care patients receive through faster, more integrated data exchanges. Providers are better able to determine a patient's medical history in real-time allowing for quicker diagnoses and treatment. And while there is some information to support these benefits, overall, there is a lack of data and measurement on the return on investment (ROI) associated with FHIR use.

Without a clear understanding of the return on investment of FHIR, organizations have difficulty justifying and prioritizing resources for system updates. The healthcare industry needs to work together to measure ROI associated with interoperability to foster greater adoption. FHIR ROI should evaluate overall accrued benefits across the entire healthcare system, patient benefits, and improved health equality.

2. FHIR accessibility

Providers see value when FHIR is integrated into their practice workflows. Given the associated benefits, the healthcare industry should determine how to make FHIR more accessible to providers regardless of their practice size or available resources. Understanding the barriers can help target and address pain points. By creating and sharing best practices, stakeholders can work together to identify consistent, successful approaches to integrating FHIR.

3. Endpoint directory

The healthcare industry needs an encompassing FHIR endpoint directory to aid organizations in finding and establishing trusted FHIR server connections with external partners. Identifying "trusted" connections is crucial in fostering "handshakes" between stakeholders to exchange data. Focus group participants urged large payers to maintain discoverable, secure and accessible public endpoints for provider-facing APIs to request and submit information.

4. Patient identity detection

In addition to establishing trusted FHIR endpoints, the healthcare industry needs to establish methods to detect patient identity and share vetted identities among independent organizations. The current landscape does not encourage providers and payers to share established patient identities with each other, which not only creates redundant work but also may result in organizations mismatching patients and establishing incorrect identities.

5. Consistent digitized rules

Vendors often implement FHIR and other interoperability strategies within providers' and payers' workflows. With the variety of vendors in this space, there are often different approaches to interpretation and implementations. This results in entities negotiating and using various approaches for a standard transaction, which causes confusion and added burden.

Participants indicated that the healthcare industry would benefit from a federated rule set that allows the implementation of FHIR to be consistent across the industry. Additionally, focus group participants encourage the development of digitized rule requirements for common data exchange encounters between providers and health plans. For example, providers want to know what standard information is required to obtain prior authorizations for various services. Each health plan has a unique set of requirements and to have them digitized assists vendors in building automated and interoperable solutions.