Moving Integrated Care Delivery Forward with FHIR®

Why, how, and yes, it’s a big deal

Patrick Murta – Chief Interoperability Architect and Fellow
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Up to $935B in U.S. healthcare spending wasted, says study from Humana, University of Pittsburgh

by Tina Reed | Oct 7, 2019 11:00am

The authors also found estimates of the potential to cut waste—for instance, through insurer-clinician collaboration and data interoperability—ranged from $191 billion to $282 billion, or 25% of the total cost of waste.
Data exchange is the process of taking data from a source and making it available to a target. Reusability and standards are not inherent characteristics and the exchange may be single purpose use.
Interoperability

“Ability of different information systems, devices, and applications to access, exchange, integrate and cooperatively use data in a coordinated manner across organizational boundaries. This ability is predicated on and enabled by re-usuable industry adopted standards.”

Drivers

- Common interoperability framework (FHIR®)
- Value-based care models
- Need for integrated care delivery
- Industry cooperation and consortia setting standards
- Increasingly empowered consumers
- Regulatory mandates around data sharing

Health Information Exchange (HIE) Powered by FHIR® Standards
Exchange vs Interoperability
Striving for Seamless Data Exchange and Connections

**API**

*Application Programming Interface*

- A **software intermediary** that allows applications to seamlessly access another application's capabilities or data, regardless of underlying technologies.
- Enables developers to simply “plug in” their apps and data.

**FHIR**

*Fast Healthcare Interoperability Resources*

- Contemporary industry standard API and data model that supports common exchange methods (e.g., mobile phone apps, EHR-based data sharing, institutional solutions).
- Ensures standardization and reusability.

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**DEVELOPERS**
Access assets through API to build Mobile Apps and Web Apps based on the data and software shared.

**END USERS**
Access apps that provide richer experiences by leveraging the data and services of other apps.

**THE API**
Provides universal access to shared assets. Developers can “plug in” apps and data.

**ASSETS**
Data and software become more valuable by being leveraged by partners, developers, and third-party services.

**HL7 FHIR**

- Provider
- Healthcare Directory
- Patient Medical Record
- Referral / Consult
- Social Determinants of Health
- Public Health
- Research

**Clinical Decision Support**
FHIR® & the Healthcare Ecosystem

**Technical Connectivity**
- Payers
- CDS
- Services (e.g., DME, Imaging)
- Public Health
- Research
- Referral/Consult
- Patient Medical Record
- Healthcare Directory
- Provider

**Community Connectivity**
- Payers
- Health Systems
- Patients
- Research
- Providers
- Public Health
- Humana
Tying to Reality and Making Practical via CMS & ONC Rules

Mandating FHIR and consumer mediation as foundations of an integrated, competitive, and innovation friendly ecosystem.

**CMS Rule (CMS-9115-F)**
- Patient access through standards based FHIR APIs
- Information exchange and care coordination across payers
- API based provider directories
- Care coordination through trusted exchange networks

**ONC Rule (RIN 0955-AA01)**
- Implements information blocking provision of Cures Act (and 7 exceptions)
- Standards based APIs
- Certification criteria
- Content specifications

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CMS/ONC rules align with market forces and reflect industry trends. They provide yet another dimension to the interoperability inflection point.
CMS INTEROPERABILITY & PATIENT ACCESS FINAL RULE

2019
- Draft 2 TEFCA released
- CMS publishes Interoperability and Patient Access Proposed Rule
- ONC publishes 21st Century Cures Act Proposed Rule

2018
- Draft TEFCA released
- White House Executive Forum on Interoperability
- CMS made data available to researchers through the Virtual Research Data Center

JAN 2019
Providers are required to use 2015 Edition Certified EHR Technology
Promoting Interoperability program requirements take effect for all providers

FALL 2020
Hospitals send event notifications regarding admission, discharge, and transfer to other providers

LATE 2020
Public reporting of clinician or hospital data blocking and providers without digital contact info in NPPES

JAN 1 2021
Patient Access API
Patient health care claims and clinical info made available through standards-based APIs for Medicare Advantage, Medicaid and CHIP FFS, Medicaid and CHIP managed care, and QHPs on the FFEs

Provider Directory API
Payer Provider Directories made available through standards-based APIs

JAN 1 2022
Payer-to-Payer data exchange
Payers required to exchange patient USCDI data upon request

APRIL 2022
Improved benefits coordination for dually eligible individuals

March 2018
MyHealthEData and Blue Button 2.0 launched
PRACTICAL EXAMPLES – INTEROPERABILITY IN ACTION
Example: Utilization Management | Industry Challenges

Varying rules and disjointed workflows have created broken steps in the process leading to inefficiencies and longer than needed processing time.
Tomorrow | Vision of Simplified Experiences enabled by FHIR

Improve Transparency | Reduce Effort for Prior Authorization | Leverage Available Clinical Content and Increase Automation

EHR automatically does ‘is auth required” when the order is created.

Requests for additional information is enabled directly in the EHR interactively.

The auth is submitted directly from the EHR and decision returned.

Coverage Requirements Discovery (Is Auth Required)

Complete DTR Questionnaire
Prior Authorization is Required
Source: Humana
Medical Necessity Documentation

Accept | Cancel

Documentation Template & Rules (Auth Questionnaires)

Prior Authorization Response

Coverage Requirements Discovery

Documentation Templates and Coverage Rules

Prior Authorization Support

CDS Hooks

CQL / Questionnaire

Transformation Layer

X12 278

X12 275

Transformation Layer (optional)

Prior Authorization Support

Payer

Coverage Requirements Discovery

Documentation Templates and Coverage Rules

Payer Coverage Requirements Discovery

Documentation Templates and Coverage Rules

Prior Authorization Support

Transformation Layer

X12 278

X12 275

Transformation Layer (optional)

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Documentation Templates and Coverage Rules

Prior Authorization Support

Transformation Layer

X12 278

X12 275

Transformation Layer (optional)

Prior Authorization Support

Payer
Humana’s Da Vinci SMART App

SMART on FHIR

Medicare Sockets

Please select the option that most represents this request: *
- A. New request for test (diagnostic) sockets
- B. New request for socket inserts
- C. Replacement of sockets
- D. Replacement of socket inserts
- E. Other type(s) of socket(s)

Will the test sockets be used for an immediate prosthesis? *
- Yes  ☐ No

Is this request for more than two test (diagnostic) sockets? *
- Yes  ☐ No

Please confirm below entered information:

Medicare Sockets

Please select the option that most represents this request: A. New request for test (diagnostic) sockets

Will the test sockets be used for an immediate prosthesis? Yes

Is this request for more than two test (diagnostic) sockets? No
Da Vinci Membership

**PROVIDERS**
- YAMA Medical Group
- CSM
- Cedars-Sinai
- RUSH
- Sutter Health
- MultiCare Connected Care
- Providence St. Joseph Health
- Texas Health Resources
- Weill Cornell Medicine

**EHRs**
- Pulse8
- athenahealth
- Cerner
- Epic
- healow | Insights

**PAYERS**
- Anthem
- Blue Cross Blue Shield of Michigan
- Blue Cross Blue Shield of Tennessee
- Blue Cross of Idaho
- Cigna
- CVS Health
- Centene Corporation
- GuideWell
- Humana
- Independence Blue Cross
- UnitedHealthcare

**INDUSTRY PARTNERS**
- HIMSS
- HL7 International
- NCQA

**VENDORS**
- casenet
- cognosante
- edifecs
- infor
- InterSystems
- juxly
- mcg
- OPTUM
- surescripts
- ZeOmega

**DEPLOYMENT**
- Availity
- MIT-HIN
Da Vinci Use Cases

### Quality Improvement
- Data Exchange for Quality Measures
- Gaps in Care & Information

### Coverage/Burden Reduction
- Coverage Requirements Discovery
- Documentation Templates and Rules
- Prior-Authorization Support

### Member Access
- Clinical Data Exchange
- Payer Data Exchange
- Directory
- Formulary
- Coverage Decision Exchange
- Price Cost Transparency

### Clinical Data Exchange
- Payer Data Exchange
- Clinical Data Exchange
- Notifications
- Patient Data Exchange

### Process Improvement
- Risk Based Contract
- Member Identification
- Risk Adjustment for Chronic Illness Documentation

### Standard Phase
<table>
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<td>5+</td>
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<tr>
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<td>1-3</td>
<td>&gt;4</td>
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<tr>
<td>Progress</td>
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Aligned with specific ONC or CMS rule
Practical Example: Payer-to-Payer Care Coordination

Member Switch & Onboarding

Old Payer

New Payer

Humana. Massachusetts Health Data Consortium
Complementary FHIR Implementations

- **Medication Profile**
  Using CDS hooks and FHIR medication resources, provided 830,000 curated medication lists to clinicians visiting our members.

- **Member Task Profile**
  Using FHIR, impacted 182,000 inpatient members to ensure appropriate post-discharge assessments.

- **Remote Monitoring and Virtual Care**
  Receive remote monitoring and virtual care encounter data via FHIR.
Emerging Opportunities

- Patient Access API
- Quality Reporting
- Burden Reduction
- Remote Monitoring and Virtual Care
- Social Determinants of Health
- Payer to Payer Exchange
- Cost Transparency
- Integrated Care Plan
- In Home care
Running FHIR® at Scale

The FHIR® at Scale Taskforce (FAST), convened by the Office of the National Coordinator for Health IT (ONC), brings together a highly representative group of motivated healthcare industry stakeholders and health information technology experts.

The group is set to identify HL7® Fast Healthcare Interoperability Resources (FHIR®) scalability gaps and possible solutions, analysis that will address current barriers and will accelerate FHIR adoption at scale.
FHIR® at Scale Taskforce (FAST)

**HL7® FHIR® ACCELERATOR / COMMUNITY**

- **Payers/Providers**: DA VINCI
- **Provider/Provider**: ARGONAUT PROJECT
- **Social Determinants of Health**: gravity PROJECT
- **Cancer Care and Research**: CodeX
- **Consumers**: VULCAN
- **Clinical Research**: carin

**ARCHITECTURE**

- **TBD**: Sandbox, Testing, Feedback
- **TBD**: Pilots & Certification
- **TBD**: HL7 Working Groups

**STAKEHOLDERS**

- Other FHIR Initiatives

**ADOPTION AND FEEDBACK**

- PACIO Project
- The sequoia project
- IHE
- carequality
- commonwell

**STAKEHOLDERS**

- And More…

**Common Scalability Approaches & Enablers**


**Functional Use Cases**

- **Payers/Providers**
- **Provider/Provider**
- **Social Determinants of Health**
- **Cancer Care and Research**
- **Consumers**
- **Clinical Research**

**Standards**

**HL7 Governance Structure**
Information Sharing with TLC through:
- Website
- Periodic Webinars
- Newsletters
- TLC Meetings
- LinkedIn Group

SEVEN TIGER TEAMS
- Ecosystem Use Cases
- Identity
- Security
- Directory, Versioning and Scale
- Exchange
- Certification and Testing
- Pilots

TECHNICAL LEARNING COMMUNITY (TLC)

SUBJECT MATTER EXPERTS (SME) Panels
Proposed FAST Solutions

- A Healthcare Directory
- A Methodology for Supporting Multiple Production Versions of FHIR
- Scaling Requirements for FHIR RESTful Exchange Intermediaries
- Standards Based Approaches for Individual Identity Management
  - Mediated Patient Matching
  - Collaborative Patient Matching
  - Networked Identity Management
  - Distributed Identity Management
- FAST Proposed Infrastructure Solutions
- An HL7 FHIR Standard Based Solution for Hybrid Intermediary Exchange
  - Reliable Routing with Metadata Across Intermediaries
- FAST Security for Registration, Authentication, and Authorization
  - UDAP Trusted Dynamic Client Registration
  - UDAP Tiered OAuth for User Authentication
  - UDAP JWT-Based Client Authentication
  - UDAP JWT-Based Authorization Assertions
- FHIR Testing & Certification Platform

FHIR® Transaction Journey

**REQUESTING SYSTEM**

1. **Formulates FHIR Request**
2. **Looks Up the FHIR Endpoint for Recipient**
3. **Transaction Information (e.g., Header) Appropriately Configured**
4. **Receives Transaction, Validates Requestor, Validates Version**
5a. **Performs Patient Matching and Sends Back Not Found If Unable To Do So**
5b. **Authenticates FHIR User’s Role**
6. **Filters Out Data That Does Not Have Consent**
7. **PCP views patient information**

**RECEIVING SYSTEM**

1. **REQUESTING SYSTEM**
2. **REQUESTING SYSTEM**
3. **REQUESTING SYSTEM**
4. **REQUESTING SYSTEM**
5a. **REQUESTING SYSTEM**
5b. **REQUESTING SYSTEM**
6. **REQUESTING SYSTEM**

**DIRECTORY**

**EXCHANGE**

**IDENTITY**

**VERSIONING**

**CONFORMANCE & CERTIFICATION**

**SECURITY**

**PILOTS**
FAST Capabilities & Conceptual Architecture

Security (Authenticate/Authorize)
- UDAP Trusted Dynamic Client Registration - UDAP Tiered OAuth User Authentication - UDAP JWT-Based Client Authentication - UDAP JWT-Based Authorization Assertions

Exchange Routing
- RESTful Headers – FHIR Meta Tags

Identity
- Collaborative/Mediated Patient Matching – Collaborative/Mediated Identity Management

National Directory
- Endpoints – Profiles – Versioning – Trust - Conformance

CONFORMANCE & CERTIFICATION (Testing & Certification Program)

PILOTS (FAST Capability Vetting with Existing HL7 Accelerators)
Thank you!