

# Connectathon 40 Track Report

**Rev 9/29/25**

Please contact Sandy Vance if you are a track lead who needs to make final edits.

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## AI Topics Forum

- What was the track trying to achieve?

- o Exploration of various aspects of AI-related technologies
- o Discussion around standardization / homing of best practices (if there are things we want and what those projects would look like)
- List of participants (with logos if you have time and energy)
  - o
- Discussions
  - o Details on the track page: <https://confluence.hl7.org/spaces/FHIR/pages/358263631/2025+-+09+AI+Topics+Forum>
  - o
- Now what?
  - o Several action items for individuals and HL7 WGs
  - o Start a community project for general guidance
  - o Post components and tooling to Zulip

## AI Transparency on FHIR

- **What was the track trying to achieve?**
  - o [AI Transparency on FHIR](#) enables participants to implement transparent labeling and documentation of AI usage in healthcare data exchanges, ensuring clinicians and patients can make informed decisions about AI-influenced information.
  - o This track advances the integration and alignment of AI with existing HL7 data interoperability standards, starting with FHIR with learnings that may apply to other HL7 data products, HL7v2 and CDA.
- **List of participants**

VANTI 

 CHAI

**HL7** 台灣健康資訊交換第七層協定(HL7)協會  
Health Level Seven Taiwan  
Affiliate | Taiwan 

**NIST**  
National Institute of  
Standards and Technology

**MITRE**

**clarity**  
solutions 

**GenServe.AI**

**firely**

**BCG** BOSTON  
CONSULTING  
GROUP

*And more!*

- **Notable achievements**
  - o At least 9 attendees from Government, Non-profit, commercial
  - o Community interest:
    - At least 40 attended the AI Joint breakout session
    - At least 25 people attended AIToF Breakout sessions
  - o Performed a walkthrough of the [AI Transparency on FHIR Implementation Guide](#) currently in early draft status. We gathered feedback and community interest in contributing to the IG content. We intend to ballot this IG in January 2026.
  - o Demonstrated multi-system connectivity between a sending system that tagged AI-manipulated FHIR data, and a receiving system which identified the resources that were tagged (see screenshots below).

- Screenshots and/or links to further information

The screenshot displays the Anything2FHIR web application interface. At the top, there is a navigation bar with links for Home, Convert, Dashboard, Profile, and Logout. The main heading is "Anything2FHIR" with the tagline "Discover why healthcare organizations trust Clairity Solutions for their most critical data transformation needs." Below this is a large upload area with a dashed border and a central upload icon. The text reads: "Drag & drop a file here, or click to select. Supports various formats including PDF, DOCX, images, and more. Please do NOT upload documents containing PHI/PII. If you have accidentally done so, then please notify us immediately." A file named "JM-disorder-clinicNote.png" is shown in the upload area, and a blue "Convert to FHIR" button is visible.

Below the upload area, the application shows the results of the conversion. The "Original Document" is a scanned PDF of a clinic note from "Merrimack Disorders Clinic". The "FHIR Bundle" is a JSON representation of the document's content, including text and structured data like blood pressure measurements. The FHIR Bundle JSON is as follows:

```
{
  "resourceType": "Bundle",
  "type": "collection",
  "entry": [
    {
      "resource": {
        "resourceType": "Text",
        "text": "Blood pressure systolic & diastolic"
      }
    },
    {
      "resource": {
        "resourceType": "CodeableConcept",
        "code": {
          "coding": [
            {
              "system": "http://loinc.org",
              "code": "8488-6",
              "display": "Systolic blood pressure"
            }
          ]
        },
        "valueQuantity": {
          "value": 138,
          "unit": "mmHg",
          "system": "http://unitsofmeasure.org",
          "code": "mm[Hg]"
        }
      }
    }
  ]
}
```

At the bottom of the interface, there is a status bar with the HL7 FHIR logo and indicators for "Backend: healthy", "Database: connected", and "Anything2FHIR: burning". The version number is "Version: v0.6.0-34-g05766fb (dev)".

FHIR Bundle Visualizer Home

## FHIR Bundle Visualization:.fhir\_patient\_patientJMTest20VantiqLocal\_20250914\_134520.json Upload Another File

Reference Graph **Table View** Timeline View

Layout Controls [Legend](#) Diagram Focus 75/25 67/33 56/42 50/50 42/58 Details Focus

FHIR Resource JSON [AI-generated FHIR Resource Summary](#) [Summarize Bundle](#) [Documents](#) [AI Analysis](#)

**Condition: Condition** Export JSON

```

{
  "category": [
    {
      "coding": [
        {
          "code": "problem-list-item",
          "display": "Problem List Item",
          "system": "http://terminology.hl7.org/CodeSystem/condition-category"
        }
      ]
    },
    {
      "clinicalStatus": {
        "coding": [
          {
            "code": "active",
            "display": "Active",
            "system": "http://terminology.hl7.org/CodeSystem/condition-clinical"
          }
        ]
      }
    }
  ]
}

```

FHIR Bundle Visualization:.fhir\_patient\_patientJMTest20VantiqLocal\_20250914\_134520.json Upload Another File

Reference Graph **Table View** Timeline View

Table Layout Controls [Refresh](#) Resources: 52 Table Focus 75/25 67/33 56/42 50/50 42/58 Details Focus

Resource Reference Table (Grouped by Type)

|                          |         |                         |
|--------------------------|---------|-------------------------|
| CarePlan                 | 1 AI:1  | Out: 2 In: 1 Total: 3   |
| Composition              | 1 AI:1  | Out: 2 In: 1 Total: 3   |
| Condition                | 0 AI:3  | Out: 9 In: 12 Total: 21 |
| Device                   | 1       | Out: 0 In: 2 Total: 2   |
| DocumentReference        | 3       | Out: 3 In: 0 Total: 3   |
| Encounter                | 1 AI:1  | Out: 2 In: 19 Total: 21 |
| FamilyMemberHistory      | 3       | Out: 3 In: 0 Total: 3   |
| MedicationAdministration | 5       | Out: 7 In: 0 Total: 7   |
| MedicationRequest        | 11 AI:6 | Out: 22 In: 7 Total: 29 |

| Resource ID | Display Name                    | AI Content | Ref Out | Ref In | Total |
|-------------|---------------------------------|------------|---------|--------|-------|
| 131438      | pacitaxel 100 MG Injection      | -          | 2       | 0      | 2     |
| 131478      | MedicationRequest               | AI:1       | 2       | 1      | 3     |
| 131480      | MedicationRequest               | AI:1       | 2       | 1      | 3     |
| 131445      | doxorubicin hydrochloride 10 MG | -          | 2       | 1      | 3     |

FHIR Resource JSON [AI-generated FHIR Resource Summary](#) [Summarize Bundle](#) [Documents](#) [AI Analysis](#)

**MedicationRequest: MedicationRequest** Export JSON

```

{
  "encounter": {
    "reference": "Encounter/131464"
  },
  "id": "131478",
  "intent": "order",
  "medicationCodeableConcept": {
    "text": "Syndopa CR 256 mg"
  },
  "meta": {
    "lastUpdated": "2025-09-13T18:57:12.000+00:00",
    "security": [
      {
        "code": "AIAS1",
        "display": "Artificial Intelligence asserted",
        "system": "http://terminology.hl7.org/CodeSystem/v3-ObservationValue"
      }
    ]
  },
  "source": "#DxPde0EUkgnalFjg",
  "versionId": "1",
  "resourceType": "MedicationRequest",
  "status": "active",
  "subject": {
    "reference": "Patient/patientJMTest20VantiqLocal"
  }
}

```

- Discovered issues / questions

- o IG Changes

- Remove the logical model for AI model card
- Revisit review possible extension of Provenance value set with additional codes.

- Alternate representation for model cards
  - Extension around linking to Device, Provenance, or URL
- Model Card
  - what is the minimal set for the model card
- Process matters
  - better understanding human-in-the-loop
  - consider accountability
- **Now what?**
  - Ready IG for Ballot in January 2026 (NIB on Nov 9)
  - Incorporating IG Feedback changes
  - Clearer guidance with example scenarios and step-wise approaches to representing tagging and provenance

## CARIN Blue Button IG - Patient Access API

- What was the track trying to achieve?
    - Real-world testing of the CARIN Consumer Directed Payer Data Exchange (CARIN IG For Blue Button®), which provides a set of resources that payers can display to consumers via a FHIR API, including Oral and Vision Profiles. This track will focus on testing updates made to the STU 2.1.0 version of the IG to meet the CMS Interoperability and Prior Authorization Final Rule CMS-0057-F. This will be a **joint Track with Da Vinci PDex** which will focus on Payer-to-Payer Bulk Exchange and Provider Access Bulk API.
  - List of participants (with logos if you have time and energy)
    - Health Gorilla:
      - Software Engineering: Ilya Ladnev, Tomas Helesic
      - Product Management: Carly Panchura
- The logo for Health Gorilla, featuring a stylized gorilla silhouette in a dark blue square on the left, and the text "HEALTH GORILLA" in white, with "HEALTH" above "GORILLA", on a dark blue rectangular background to the right.
- Onyx
  - Smile
  - Deloitte
  - Aetna/CVS
  - Lantana
  - CMS
  - Washington State
- Notable achievements
    - Health Gorilla:
      - Explanation of Benefits (EOB) data falls within TEFCA's scope

under the "Payment" exchange purpose. To meet the Blue Button goal of consumer-directed exchange, a patient might use an Individual Access Service (IAS) to pull their own EOBs. As a QHIN/QHIO, Health Gorilla delivers real time access to structured health data for EHR vendors, value-based care organizations and digital health vendors. During Connectathon 40, we tested our ability to launch the EOB workflow (retrieve data from multiple patients) from a Health Gorilla SMART App.

- Health Gorilla was able to retrieve EOBs from participating vendors/payers including: Deloitte State Medicaid Agency, CMS, SMILE Digital Health.
- o Washington State:
  - Tested the Washington Health Summary app with six servers, and were able to retrieve CARIN Blue Button data from three of them. Having tested Blue Button at prior connectathons, connecting to the more established Blue Button servers was very straightforward. We had some learnings around request scope formats.
  - They were able to retrieve data from: Aetna, CPCDS/Lantana, Blue Button 2.0 Sandbox.
  - Blue Button 2.0 Sandbox
    - Was able to SMART on FHIR launch and retrieve Patient, Coverage, ExplanationOfBenefits resources.
  - ONYX
    - Was able to do the SMART on FHIR launch, but after patient authentication was not able to retrieve resources. Appeared to be due to scope issues.
  - Smile
    - Was able to do the SMART on FHIR launch, but after patient authentication was not able to retrieve resources due to CORS issues.
  - Deloitte's State Medicaid Agency
    - On SoF launch from our app, when attempting to fetch Deloitte's metadata endpoint their server blocked the request due to CORS policies.
  - Aetna
    - Was able to SMART on FHIR launch and retrieve Patient, Coverage, ExplanationOfBenefits resources.
  - CPCDS/Lantana
    - Was able to SMART on FHIR launch and retrieve Patient, Coverage, ExplanationOfBenefits, Organization, and Practitioner resources.
- Screenshots and/or links to further information

## Health Gorilla:

### ExplanationOfBenefit (patient -206068516)

[← back](#)

| ID             | Type  | Billable Period         | Total         | Actions                                       |
|----------------|---|-------------------------|---------------|---|
| -9150317589363 | MEDICARE PART D ADJUSTED CLAIM                                  | 2020-09-18 → 2020-09-28 | USD 419069.11 | <a href="#">Print</a><br><a href="#">JSON</a> |
| -7348054315893 | MEDICARE HHA CLAIM  | 2020-11-28 → 2020-12-01 | USD 179905.68 | <a href="#">Print</a><br><a href="#">JSON</a> |
| -6830228535905 | MEDICARE PART D DELETED CLAIM                                   | 2018-12-23 → 2019-01-05 | USD 207387.86 | <a href="#">Print</a><br><a href="#">JSON</a> |
| -6582888166635 | MEDICARE PART D RESUBMITTED CLAIM                               | 2020-10-11 → 2020-11-06 | USD 782152.56 | <a href="#">Print</a><br><a href="#">JSON</a> |
| -6285808780887 | MEDICARE PART B DME REGIONAL CARRIER (DMERC) CLAIM (NON-DMEPOS) | 2023-10-31 → 2023-11-29 | USD 74242.43  | <a href="#">Print</a><br><a href="#">JSON</a> |
| -5881919468637 | MEDICARE PART B DME REGIONAL CARRIER (DMERC) CLAIM (NON-DMEPOS) | 2024-10-17 → 2024-10-30 | USD 178684.56 | <a href="#">Print</a><br><a href="#">JSON</a> |

### EOB 999PPP1010

Type: pharmacy

Patient Patient/99999999103  
Provider 999AAA109  
Insurer http://healthinteractive.com/product/medicaidid  
Billable Period  
Total USD 100  
Diagnoses  
Procedures

### Raw FHIR JSON

```
{
  "resourceType": "ExplanationOfBenefit",
  "id": "999PPP1010",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2025-09-11T14:00:00.459948880Z"
  },
  "identifier": [ {
    "type": {
      "coding": [ {
        "system": "http://hl7.org/fhir/us/caribb/CodeSystem/C48BIdentifierType",
        "code": "uc",
        "display": "Unique Claim ID"
      } ]
    },
    "value": "999PPP1010"
  } ],
  "status": "active",
```

Washington State:

The screenshot displays the Washington State Department of Health's HL7 Standards-Based Patient Summary interface. The left sidebar contains a 'Retrieve Your Health Information' section with a 'Fetch Data' button. The main content area shows the 'ExplanationOfBenefits' details for a claim, including a generated narrative, metadata, and a table of payees.

**Generated Narrative: ExplanationOfBenefit BB-EOBProfessional2-nonfinancial**

Last updated: 2020-10-20 14:46:05-0400  
 Information Source: [Organization/Payer/OrganizationExample1](#)  
 Profile: [C48B ExplanationOfBenefit Professional NonClinician Basisversion: null2.1.0](#)

**identifier:** Indicates that the claim identifier is that assigned by a payer for a claim received from a provider or subscriber/ProfessionalEOBExample1

**status:** Active

**type:** Professional

**use:** Claim

**patient:** [Johnny Example1 Male, DoB: 1986-01-01 \( Member Number\)](#)

**billablePeriod:** 2020-08-04 --> 2020-08-04

**created:** 2020-08-24 00:00:00-0400

**insurer:** [UPMC Health Plan](#)

**provider:** [Organization Orange Medical Group](#)

**Payees**

| Type  | Party   |
|---|---|
| Any benefit payable will be paid to the provider (Assignment of Benefit). | <a href="#">Organization Orange Medical Group</a> |

**outcome:** Processing Complete

## Deloitte:

Brought a FHIR server to the CARIN BB track on behalf of State Medicaid clients. Their objective was to successfully connect to and exchange data that can be appropriately rendered with third-party apps / clients.

They shared environment details with 6 FHIR clients:

- **Health Gorilla:** Successfully connected their client to our server, navigated the SMART auth flow, and rendered data!
- **Oraq's Dental Referral Solution:** This organization was looking for a Provider Access use case, we provided client credentials with system scopes permitted to attempt a test.
- Discovered issues / questions (if there are any)
  - Health Gorilla:
    - Integration testing is ongoing with CVS/Aetra (not supporting localhost)
  - Washington State:
    - On SoF launch from our app, when attempting to fetch Deloitte's metadata endpoint their server blocked the request due to CORS policies.
  - Deloitte:
    - Encountered a CORS error with University of Washington that we attempted to fix on our side by enabling the



- o Some testing occurred, but the main focus was to discuss updates to the IG for version 2.0.0, which are contained here:  
<https://confluence.hl7.org/spaces/CAR/pages/358891976/091225+CARIN+HL7+Digital+Insurance+Card+Working+Session?preview=/358891976/358895883/CARIN%20Digital%20Insurance%20Card%202.0.0%20Considerations%20.pdf>
- Now what?
  - o - Addition of *narrative only* use cases to the guide that cover ways in which C4DIC integrates into other IGs / how it can be used
  - o - The adoption of new data elements with first priority given to identifiers for Medicare & Medicaid.
  - o - Reconciliation of Coverage / the IG generally with US Core 7.0.0, other recommendations, and unresolved Jira tickets.

## CARIN Consumer Real-Time Pharmacy Benefit Check (RTPBC)

- What was the track trying to achieve?
  - o Test and gather feedback on the current STU1 Implementation Guide
  - o Evaluate potential updates for an STU2 IG
- List of participants (with logos if you have time and energy)









- o SyncMD
- o Aetna / CVS / Caremark
- o Sandwych
- o DoseSpot
- o Leavitt Partners
- o NCPDP
- Notable achievements
  - o Successfully exchanged RTPBC requests and responses between a client app role and the Aetna Real-time Pharmacy Benefit Check service (based on the STU1 IG)

- o Discussed current IG implementation learnings including need for additional guidance related to authentication/authorization and additional context for use in particular scenarios
  - o Discussed IG update opportunities: Additional support for discount cards requiring additional information for the pharmacy (e.g., BIN/PCN, discount code); expectations for using CARIN Digital Insurance Card as a source for member ID and plan details; opportunities for incorporating digital identity, support for information enabling the patient to begin enrollment into patient support and funding assistance for specialty medications.
- Discovered issues / questions (if there are any)
  - o Identified gaps / opportunities to provide more concrete guidance and expectations for SMART / OAuth authentication/authorization process.
  - o Identified additional data elements needed in the IG to fully describe discount cards / coupons
- Now what?
  - o The group identified topics for upcoming CARIN RTPBC working group discussions and takeaways for research into technical aspects raised during the track
  - o Work on updates to an STU2 IG for ballot in May 2026
  - o Hold a track in the January 2026 Connectathon for testing of IG updates
  - o Tentative: Additional CARIN-sponsored testing event in November

## CDS Hooks

- What was the track trying to achieve?
  - o Mainly focused on advanced prefetch resolution strategies with simpler FHIRPath including
    - Date arithmetic
    - Graph traversal through context draftOrders resources
- List of participants (with logos if you have time and energy)
  - o Andreas Csarman
  - o Matthew Wieler
  - o Kseniya Valazhynskaya
  - o Isaac Vetter
  - o Christopher Schuler
- Notable achievements
  - o Got date arithmetic working in the sandbox for prefetch resolution
  - o Implemented an editable request in the sandbox to allow users to resend requests with custom draft order resources that the interface cannot accommodate
  - o Implemented a BiliRubin CDS Service with a pediatrician (Matthew Wieler) from scratch and tested in the sandbox
- Screenshots and/or links to further information

Patient View

Super Nintendo Chalmers

ID: test-infant-38wk Birthdate: 2025-01-14

This is the CDS Hooks card summary

This is the CDS Hooks card detail

Now seeing: Super

Source: Patient greeting service

Dismiss

Now seeing: Super

CDS Developer Panel

CDS Developer Panel

Select a Service

https://opioid-sandbox.cqframework.org/cdc/opioid-cds-r4/cds-service/cds-services/br-guidance

Request

Response

```
{
  "cards": [
    {
      "summary": "This is the CDS Hooks card summary",
      "detail": "This is the CDS Hooks card detail",
      "indicator": "warning",
      "links": []
    }
  ]
}
```

Messages

Patient View

Super Nintendo Chalmers

ID: test-infant-38wk Birthdate: 2025-01-14

phototherapy recommended

phototherapy recommended

Now seeing: Super

Now seeing: Super

Source: Patient greeting service

Dismiss

CDS Developer Panel

CDS Developer Panel

Select a Service

https://opioid-sandbox.cqframework.org/cdc/opioid-cds-r4/cds-service/cds-services/br-guidance

Request

Response

```
{
  "cards": [
    {
      "summary": "phototherapy recommended",
      "detail": "phototherapy recommended",
      "indicator": "warning",
      "links": []
    }
  ]
}
```

Messages

```

{
  "id": "a8e87367-a373-4599-a1c4-0fbc575b9c38-patient-prefetch-time",
  "hook": "patient-view",
  "description": "Mirrors a Patient resource to test fully integrated MLM execution of this HL7 CDS compliant service",
  "title": "Mirror Patient Resource",
  "prefetch": {
    "encounters": "Encounter?date=gt{{today() - 30 days}}",
    "oneSideOfTheMirror": "Patient/{{context.patientId}}"
  },
  "enabled": true
}

```

### Prefetched: Encounters in Bundle/4fd4e146-7ae7-4994-b8d4-395309fccfe0 (count 2.0); Patient in Patient/example-opioidcdfs

Source: [MLM \(acknowledgeCdsRequestPrefetch, Medexter Healthcare, 0.1\)](#)

Relevant Encouter/58 with status 'entered-in-error' started at 2025-08-03T12:00:00Z

Irrelevant Encouter/59 with status 'cancelled' started at 2025-09-11T12:00:00Z

Cancel Resend

### Request (editable)

```

{
  "hookInstance": "f45f5b26-1c49-49d7-9f51-24544e563385",
  "hook": "patient-view",
  "fhirServer": "https://opioid-sandbox.cqframework.org/cdc/opioid-cds-r4/ehr/fhir",
  "context": {
    "patientId": "example-opioidcdfs",
    "userId": "Practitioner/COREPRACTITIONER1"
  },
  "prefetch": {
    "oneSideOfTheMirror": {
      "resourceType": "Patient",
      "id": "example-opioidcdfs",

```

- Discovered issues / questions (if there are any)
  - JS FHIRPath engine may not support our use case - will need to conduct more testing
- Now what?
  - Continue working with Andreas to fully realize the FHIRPath context resource graph traversal use case
  - Continue engaging with Matthew to enhance the BiliRubin service

### Clinical Order Workflows – COW

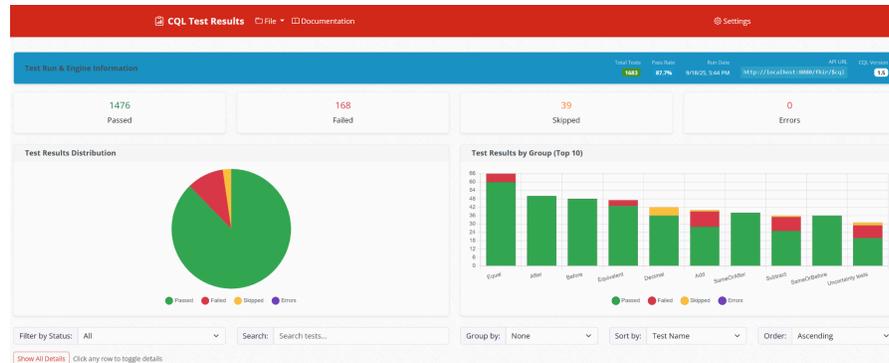
- What was the track trying to achieve?
  - Goal 1: Work through specific use cases based on the COW IG, exercising the primary purpose of the Implementation Guide, to serve as a base for use-case-specific IGs

- o Goal 2: Test various scenarios using prototype implementations of upcoming use-case specific IGs and validate that the COW IG does not impose any restrictions
- List of participants (with logos if you have time and energy)
  - o Joanne Zhou, Hospital for Special Surgery, zhouj@hss.edu
  - o Denis Casaubon, AMA
  - o Epic
  - o HL7 Australia Sparked Server
- Notable achievements
  - o We created detailed breakdown for the steps for a Potassium Blood Serum lab order
  - o We created detailed breakdown for the steps for a Colonoscopy Procedural referral
- Screenshots and/or links to further information
  - o The template used for the use case analysis is at [COW\\_Design\\_Template](#)
  - o The Potassium order analysis is at [COW\\_Design\\_Lab\\_Order](#)
  - o The Colonoscopy referral analysis is at [COW\\_Design\\_Referral](#)
  - o Screenshots:
- Discovered issues / questions (if there are any)
- Now what?

## Clinical Reasoning

- What was the track trying to achieve?
  - o Measures
    - Test measure specifications exported from MADiE in other environments to demonstrate parity (specifically vs-code and participant servers)
  - o DQIC
    - Run CQL engine test suite on participant engines to demonstrate CQL behavior parity
    - Gather baseline performance data for environments based on different types of load (small, medium, and large patient records)
  - o PIQI
    - Run at least one focus measure against PIQI data
    - Review results of PIQI data assessment of measure data
  - o Terminology
    - Run terminology service test suite on participant servers
    - Test manifest UI editing capability
    - Validate AU measure manifest package
  - o MITRE
    - Test DEQM STU5 \$evaluate updates to clinical-reasoning with Inferno test kit
      - Discuss implementation of subjectGroup parameter

- Discuss DEQM STU5 \$submit-data
- List of participants (with logos if you have time and energy)
  - o American Institutes for Research (AIR)
  - o Apelon
  - o Bellese
  - o CDC
  - o Cozeva
  - o CMS
  - o Enable Data
  - o Fhir Iq
  - o Firely
  - o HealthAll Inc
  - o Hospital for Special Surgery
  - o Lantana Consulting
  - o Lazy Labs
  - o Leavitt Partners
  - o Mathematica
  - o MD Partners
  - o NCQA
  - o NHSN
  - o NLM
  - o Optum
  - o Oracle
  - o Reason Healthcare
  - o Smile Digital Health
  - o The Joint Commission
  - o The MITRE Corporation
- Notable achievements
  - o CQL engine parity results for 3 different engines:
    - Java open source - passing 1298
    - Cozeva engine results - passing 1025
    - Firely engine results - passing 1470
    - Results available here:
      - <https://github.com/cqframework/cql-tests-results>
  - o Got expected and actual results for all test cases for all 73 measures
    - <https://docs.google.com/spreadsheets/d/1lj7XeUWpIZ7rRi0qtCoVXQM9T8qYwCNjbM-Uh93hRk0/edit?gid=1531398793#gid=1531398793>
    - Currently passing 10470 of 15691 (counting each population as a separate test)
  - o Managed the lifecycle of a manifest completely through the VSAC U/I
- Screenshots and/or links to further information



- 
- Discovered issues / questions (if there are any)
  - Using CQL IG Issues Logged as a result of testing:
    - <https://jira.hl7.org/browse/FHIR-52862>
    - <https://jira.hl7.org/browse/FHIR-52863>
  - Need a \$submit-data return type to provide the ability to report operation outcomes for any particular bundle: <https://jira.hl7.org/browse/FHIR-51401>
  - CRMI documentation:
    - <https://jira.hl7.org/browse/FHIR-52881>
    - <https://jira.hl7.org/browse/FHIR-52882>
  - Measure testing issues
    - [https://github.com/cqframework/clinical\\_quality\\_language/issues/1604](https://github.com/cqframework/clinical_quality_language/issues/1604)
    - <https://github.com/cqframework/dqm-content-qicore-2025/issues/12>
    - <https://github.com/cqframework/dqm-content-qicore-2025/issues/13>
    - <https://github.com/cqframework/dqm-content-qicore-2025/issues/14>
    - <https://github.com/cqframework/dqm-content-qicore-2025/issues/15>
    - <https://github.com/cqframework/dqm-content-qicore-2025/issues/17>
    - <https://github.com/cqframework/dqm-content-qicore-2025/issues/18>
- 
- Now what?
  - Followup items
    - Investigate measure test case failures, notify measure developers when measure and/or test case content needs to be updated
    - Continue discussions on submit-data at the WGM
    - Continue discussions w/ public health on subscription use cases at the WGM
    - Address Test engine test case issues identified

## Da Vinci Burden Reduction

- What was the track trying to achieve?
- List of participants (with logos if you have time and energy)
- Notable achievements
- Screenshots and/or links to further information
- Discovered issues / questions (if there are any)

- Now what?

## Da Vinci Patient Cost Transparency (PCT)

- What was the track trying to achieve?
  - **Test the workflows defined in the Da Vinci Patient Cost Transparency (PCT) IG by exchange between implementations from different organizations**
    - Multi-Provider GFE Coordination via Coordination Platform.
    - Create Good Faith Estimate (individually or through coordination) and make it available by API (patient or co-provider)
    - Submit a Good Faith Estimate via gfe-submit operation
    - Accept the GFE via \$gfe-submit operation and generate an AEOB
    - Make an AEOB available via API (Provider or Patient) and display
    - Search for an estimate (GFE or AEOB) and display
  - **Generate feedback on the IG**
  - **Test recent changes made through ballot reconciliation**
    - Document Bundle “Packets”
    - Using DocumentReference (incl. Searching and Subscription)
    - Estimate Totals
- List of participants (with logos if you have time and energy)



A E G I S

- Aetna, A CVS Health Company
- careviso

- o Kyruus Health
- o Nucural
- o Aegis
- o Lantana Consulting Company
- Notable achievements
  - o Kyruus Health - Acting as a payer vendor, provided the ability for the Lantana provider client RI to submit a GFE Packet and provided an AEOB Packet. Demonstrated the ability to search, retrieve, and display the AEOB from the Aetna system. Also ran some tests on Aegis Touchstone.
  - o Aetna - Acting as a payer, provided searching capabilities for the AEOB and provided an AEOB to client systems. Also ran some tests on Aegis Touchstone.
  - o careviso - Acting as a provider organization was able to submit GFE and retrieve and AEOB from both the Kyruus Health system and Lantana payer server RI
  - o Nucural - Able to act as a GFE Requester and Contributor using the Lantana RI Coordination Platform, retrieve the GFE Packet, submit to the Lantana Payer RI, and retrieve the resulting AEOB Packet.
  - o Lantana RIs were able to demonstrate both IG workflows with the RIs working with all other track participants.
- Screenshots and/or links to further information careviso showing AEOB from Kyruus Health

**Advanced Explanation of Benefits**

Physician: DENISE KIMBROUGH  
 careviso case id: 25ws0syc2tw  
 created on: 09/14/2025

**Patient Information**  
 Patient ID:  
 Patient Name: Mickey Mouse  
 Date of Birth: 01/01/1940

**Insurance Information**  
 Insurance: United Healthcare  
 Member ID: 1234567890  
 Benefit Period: 2025-09-13 - 2025-09-13

**Totals**  
 Eligible Amount: \$190.00  
 Member liability: \$20.00  
 Submitted Amount: \$200.00

**Balances**  
 Medical Care - Inpatient Annual Deductible: \$0.00  
 Allowed: \$0.00  
 User: \$0.00  
 Out-Of-Pocket Maximum

**Services**  
 Date of Service: 2019-05-04  
 71046: 71046-0000  
 quantity 0 x unit price \$0.00 x factor 0 = net \$0.00  
 Benefit Amount: \$0.00  
 Copay: \$0.00  
 Deductible: \$0.00  
 Eligible Amount: \$0.00  
 Member liability: \$0.00  
 Submitted Amount: \$0.00

**Notes**  
 This is an estimate based on available information. Actual costs may vary.

**careviso**  
 800-978-3305 301-576-6888 info@careviso.com  
 7600 Leesburg Pike, East 8th Suite 220 Falls Church, VA 22043

---

**Advanced Explanation of Benefits**

Physician:  
 careviso case id: 25zgt0rnf3h  
 created on: 09/14/2025

**Patient Information**  
 Patient ID:  
 Patient Name: Mickey Mouse  
 Date of Birth: 01/01/1940

**Insurance Information**  
 Insurance: United Healthcare  
 Member ID: 1234567890  
 Benefit Period: 2022-01-01 - 2023-01-01

**Totals**  
 Eligible Amount: \$190.00  
 Member liability: \$20.00  
 Submitted Amount: \$200.00

**Balances**  
 Medical Care - - allowed  
 Allowed: \$1.00  
 Used: \$1.00

**Services**  
 Date of Service: 2022-01-01  
 70551: Magnetic resonance (eg, proton) imaging, brain (including brain stem); without contrast material  
 quantity 0 x unit price \$0.00 x factor 0 = net \$200.00  
 Medical Management: \$0.00

**Notes**  
 processNote disclaimer text  
<http://example.org/out-of-network.html>

Lantana RI showing AEOB from Aetna and Kyruus

**AEOB Details**

ID: PCT-AEOB-Packet-1  
Identifier: 5968475-2324-3242-123456

**Patient Information**

**Demographics:**  
Name: Eve Betherhalf  
Birthdate: 1955-07-23  
Gender: female  
Telephone: 781-949-4949 (mobile phone)  
Address: 222 Burlington Road, Bedford MA 01730

**Insurance:**  
Payer: Aetna  
Subscriber: FFP123456000 (Self)  
Member ID: coverage1001  
Plan: Premier Family Plus Plan  
Coverage Period: 2021-01-01 to 2022-01-01

**GFE Submitter**  
Submitting Provider: (Unknown Provider ID)

**Advanced Explanation of Benefits**

AEOB Summary: PCT-AEOB-Summary-1 Outcome: complete ●

THIS IS NOT A BILL

ID: PCT-AEOB-Summary-1  
Created: Sep 14, 2025 11:21 AM

**Totals:**  
Submitted Amount: \$200.00  
Member Liability: \$20.00  
Eligible Amount: \$180.00

AEOB: PCT-AEOB-1 Outcome: complete ●

**Patient Information**

**Demographics:**  
Name: Eve Betherhalf  
Birthdate: 1955-07-23  
Gender: female  
Telephone: 781-949-4949 (mobile phone)  
Address: 222 Burlington Road, Bedford MA 01730

**Insurance:**  
Payer: Umbrella Insurance Company  
Subscriber: FFP123456000 (Self)  
Member ID: coverage1001  
Plan: Premier Family Plus Plan  
Coverage Period: 2021-01-01 to 2022-01-01

**GFE Submitter**  
Submitting Provider: (Unknown Provider ID)

**Advanced Explanation of Benefits**

AEOB Summary: PCT-AEOB-Combined-Summary-202a5318 Outcome: complete ●

THIS IS NOT A BILL

ID: PCT-AEOB-Combined-Summary-202a5318  
Created: Sep 14, 2025 10:14 AM

**Totals:**  
Member Liability: \$268.00  
Submitted Amount: \$268.00  
Eligible Amount: \$268.00  
Deductible: \$191.00  
CoPay: \$75.00  
Co-Insurance: \$0.00

## Aetna testing with Aegis Touchstone

**Test Execution**

Exec ID: 202509131652049293247824  
Start Time: 09:13/2025 02:52:29PM  
End Time: 09:13/2025 02:52:30PM  
Status: passed  
Duration: 0.979s  
Test Scripts: 1

**Test Setup:** FHRSandbox-02-PCT-MRI-Scenario-AEOB-Inq-NotComplete.json  
**Executed By:** Joel Harsten  
**Organization:** Aetna CVS Health  
**Origin:** TouchstoneFHR  
**Destination:** Aetna CVS Health - Joel Aegis New <https://viteapf1.aetna.com/thirdemov2/patientaccess>  
**Validator:** FHR 4.0.1

1 tests: 1 passes, 0 failures, 0 warnings, 0 skipped, 0 running, 0 waiting, 0 not started. **100% successful**

| Test Script Execution   | Version | Latest | Description   | Origin        | Destination   | Status |
|---|---------|--------|---|---------------|---|--------|
| /FHRSandbox/DaVinciFHR4-0-1-PCT/STU/01-AEOB-MRU/02-PCT/MRI-Scenario-AEOB-Inq-NotComplete.json | 1       | 1      | Patient Cost Transparency - MRI Scenario - AEOB Inquiry Outcome Not Complete. System inquires on the AEOB with the expectation that the Outcome value is equal to any value of 'complete', 'error', 'partial', or 'queued'.<br>PreCondition: A GFE \$submit operation has been completed and a Bundle has been returned with a uuid that is used in the AEOB inquiry. | TouchstoneFHR | Aetna CVS Health - Joel Aegis New <a href="https://viteapf1.aetna.com/thirdemov2/patientaccess">https://viteapf1.aetna.com/thirdemov2/patientaccess</a> | Passed |

## Kyruus Health testing with Aegis Touchstone

**Test Execution - /FHRSandbox/DaVinciFHR4-0-1-PCT/STU/01-AEOB-MRU/01-PCT/MRI-Scenario-GFE-InstR-Request.json**

Exec ID: 20250914114748117654871  
Start Time: 09:14/2025 11:47:49AM  
End Time: 09:14/2025 11:47:50AM  
Status: failed  
Duration: 6.888s  
Version: 4  
Validator: FHR 4.0.1 DaVinci

**Description:** Patient Cost Transparency - MRI Scenario - GFE \$submit operation is POSTed with a GFE Packet containing a single or multiple GFEs of type Institution (provided as Claim resources (aka referenced resources). Expected response is a Content-Location Header for later use in AEOB inquiry. This test has a static fixture provided from the Example from the PCT IG.

**Test Setup:** FHRSandbox-01-PCT-MRI-Scenario-GFE-InstR-Request.json  
**Executed By:** Ryan Davley  
**Organization:** Kyruus Health  
**Origin:** TouchstoneFHR  
**Destination:** Kyruus Health - KHL Test <https://api-gateway.dev2.healthpartners.com/cool-opioid-service/hr>

**Test Script:** /FHRSandbox/DaVinciFHR4-0-1-PCT/STU/01-AEOB-MRU/01-PCT/MRI-Scenario-GFE-InstR-Request.json

2 tests: 1 passes, 1 failures, 0 warnings, 0 skipped, 0 running, 0 waiting, 0 not started. **50% successful**

**Interactions:**

| Summary            | Passed | Fail | Warn | Other | Total |
|--------------------|--------|------|------|-------|-------|
| Summary            | 1      | 1    | 0    | 0     | 2     |
| Method-Body_Bundle | 1      | 0    | 0    | 0     | 1     |
| create_Clam        | 0      | 1    | 0    | 0     | 1     |

**Warning:** Capability statement could not be retrieved from <https://api-gateway.dev2.healthpartners.com/cool-opioid-service/hr/metadata> using Accept headers: [{"application/vnd.himss.challenge3+json;charset=utf-8"}, {"application/vnd.himss.challenge3+json;charset=utf-8"}, {"application/vnd.himss.challenge3+json;charset=utf-8"}, {"application/vnd.himss.challenge3+json;charset=utf-8"}]. Reason: GET on URL: <https://api-gateway.dev2.healthpartners.com/cool-opioid-service/hr/metadata> returned all status. Please download the capability statement from the test system screen. Test execution will continue if Touchstone has downloaded the capability statement successfully for the test system.

- Discovered issues / questions (if there are any)
  - The IG requires the ability to communicate information from the payer server to the client using HTTP Headers that are not CORS safelisted headers. If the client is a script based client, these headers will not be visible to the app unless they are added to the Access-Control-Expose-Headers. Also it should be noted that API Gateways may modify these sort of headers.
  - The AEOB includes a benefit balance that assumes the expected items/services have been applied. It may be useful for the patient to also see current amounts.
  - Adding guidance for Claim and EOB for linking careteam, procedure, diagnosis, and supportingInfo to line items could be useful for implementers.

- Now what?
  - Publish STU2
  - Consider findings for a future version of the IG
  - Continue testing to move the Coordination Workflow guidance and artifacts out of draft status.

## Da Vinci Payer Data Exchange / Formulary (PDex)

- What was the track trying to achieve?
  - Combined Patient Access API testing with CARIN Blue Button
  - Bulk Member Match Testing
  - Provider Access API
  - Payer-to-Payer API
- List of participants (with logos if you have time and energy)



Drummond Group, Onyx, Smile Digital Health, Deloitte, Health Gorilla, xyramsoft, Washington State Dept of Health, InteropX

- Notable achievements
  - **Onyx<->Smile:** Smile tested its P2P client against Onyx's \$bulk-member-match and \$davinci-data-export.
    - After a few adjustments, Smile successfully retrieved Match and No Match Groups and then used the Match Group ID to query \$davinci-data-export. Smile worked through a few adjustments on P2P implementation based on applying the asynchronous request pattern specification to the \$bulk-member-match transaction flow:
      - After a successful kickoff request, a polling location in the form of an absolute URL will be in the Content-Location header.
      - Upon completion of the async job, the operation will return a link to an ndjson file containing the Parameters resource defined by the PDex Multi-Member Match Response profile. In our view, the completed response should not contain the Parameters resource itself. This will align the transaction flow to match all the other async operations, such as \$export and \$davinci-data-export. We discussed whether the IG can provide further guidance on this for implementers.
      - Also, \$davinci-data-export shall support GET and POST operations.
  - **Smile<->Xyramsoft:** Tested \$member-match and \$davinci-data-export.
  - **Onyx and Smile** acted as server for Patient Access API

- **Onyx** was able to load dental coverage, providers and plans into the FHIR Store for access via Patient Access API, following coordination with the **Dental Data Exchange** track.
  - **Washington State Department of Health** tested with: Aetna, CPCDS/Lantana, Blue Button 2.0 Sandbox. Other connections included: ONYX, Smile, Deloitte's State Medicaid Agency.
  - **Onyx<->Drummond**: Tested the Drummond Proxy Server for \$member-match and \$davinci-data-export - using Postman.
  - **Onyx<->InteropX**: Successfully tested \$member-match, Provider Access and \$Davinci-data-export.
  - **Deloitte**: Tested with multiple clients:
    - **Health Gorilla**: Successfully connected their client to our server, navigated the SMART auth flow, and rendered data!
    - **University of Washington**: Encountered a CORS error that we attempted to fix on our side by enabling the "Access-Control-Allow-Origin" header, but unfortunately the issue did not successfully resolve.
    - **App Developer**: Provided our server information, but they did not have resources available to attempt to connect during the Connectathon. We will connect offline if possible.
    - **Lantana**: Attempted to use the Lantana client available on the Connectathon website, but encountered an error ("No template for interactive request") which other servers confirmed as well. Notified the Lantana team for their awareness.
    - **Oraq's Dental Referral Solution**: This organization was looking for a Provider Access use case, we provided client credentials with system scopes permitted to attempt a test.
    - **Monarch Innovation Partners Dental Solution**: Provided our server information, but we did not receive feedback during the Connectathon of success, failure, or issues.
- Screenshots and/or links to further information
  - Discovered issues / questions (if there are any)
    - Alignment between FHIR Async protocol and Bulk Member Match as an Async operation. This can be addressed with best practice documentation in the Implementer Support Pages to encourage consistent implementation practices.
    - Single Member Match should be refined to provide an interactive response but not necessarily have a custom follow on download. Could information used in Single Member Match be submitted as part of bulk Member Match and use of Patient.
    - Proxy Server connection to Drummond worked via Postman. Onyx and Drummond need to coordinate to accomplish testing using regular clients.
  - Now what?
    - Document best practices in Confluence Implementer Support Page for PDex to help Implementers use consistent methods and reduce variations in operation across endpoints.

## Da Vinci Risk Adjustment

- What was the track trying to achieve?
- List of participants (with logos if you have time and energy)
- Notable achievements
- Screenshots and/or links to further information
- Discovered issues / questions (if there are any)
- Now what?

## Dental Data Exchange

- What was the track trying to achieve?
  - Test vendor implementations of referral workflows to support medical to dental referral and consults. Scenario 1: Receive patient history from EMR system to Dental system and submit dental preauthorization requests for dental sleep appliance fabrication. Scenario 2: Support Head and Neck Cancer Dental Clearance from Medical to Dental and close loop.
- List of participants (with logos if you have time and energy)

- American Dental Association



- FERHM



- CareQuest Innovation Partners



- OraQ



- ToothApps



- Monarch Innovation Partners



- Epic

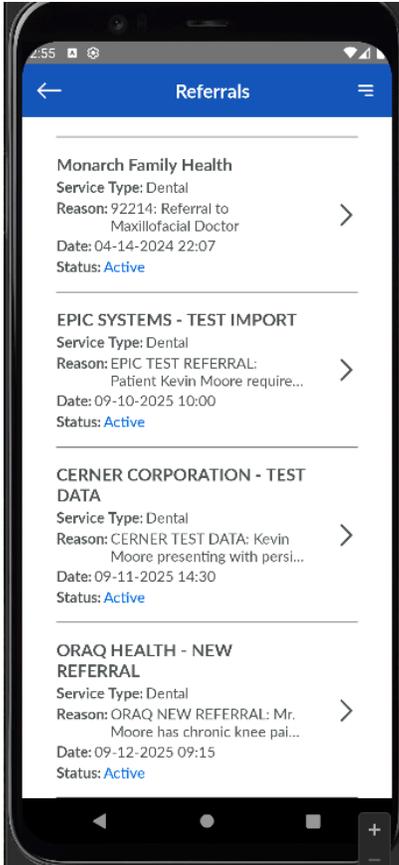


- Notable achievements

- Monarch

- Epic - Send and receive referrals with no issues as a client and server

- Cerner - Receive referral information as a client
  - OraQ - Receive referral as a client
- OralQ
  - Epic - Pulled and mapped to the Dental Patient in the OraQ and PMS based on -First Name -Last Name -DOB
  - -If duplicates – additional fields are used for mapping the IDs between Medical and Dental.
  - Additional Fields added for Profession e.g. Military Service
- ToothApps
  - Completed exchange using CDS hooks to exchange between all participant partners.
- Screenshots and/or links to further information



Wellness Score 2.4   **Start Exam**   Patient Review   Copy Clinical Note   Sync

Patient Information   Imaging   Soft Tissue   Hard Tissue   Odontogram   Perio Chart

Chief Concerns   Patient Preferences   Personal Notes

**Toothache**  
Last Updated: Yesterday   Reported On: Yesterday

**Toothache**  
Last Updated: 3 days ago   Reported On: 3 days ago

**Medical Alerts**   Update Health History   Download  
Last Updated on 11 Sep 2025, 10:05 AM   1 Critical   0 Medium   2 Low

**Critical Conditions Requiring Attention**

**Serious Illnesses Or Operations**   HIGH  
Medical History  
Hip Replacement 2014, Mild Stroke 2019

2 additional conditions  
View All Conditions

**Risk Assessment**   Show Gauge View   Patient Review

|   |  |   |   |  |
|---|--|---|---|--|
| <b>2.2</b><br>Risk Score<br><b>Medical</b><br>Confidence score: 72% | <b>4.2</b><br>Risk Score<br><b>Sleep Disorder</b><br>Confidence score: 75% | <b>1.3</b><br>Risk Score<br><b>Biomechanical</b><br>Confidence score: 38% | <b>1.7</b><br>Risk Score<br><b>Occlusion/TMJ/Orthodontic</b><br>Confidence score: 31% | <b>3.2</b><br>Risk Score<br><b>Caries</b><br>Confidence score: 62% |
|---|--|---|---|--|

The screenshot shows a web browser at `cdshooks-sandbox.org` with tabs for 'Patient View', 'Rx View', and 'Rx Sign'. The main content area displays a card titled 'Referral to Dentist' with the source 'Referral Processor' and instructions to click a 'Toothapps Referral App' button. A red arrow points to this button. On the right, the 'CDS Developer Panel' shows the selected service URL and a JSON response under the 'Response' section:

```

{
  "cards": [
    {
      "summary": "Referral to Dentist",
      "detail": "Click below to process referral and select dental office",
      "indicator": "info",
      "source": {
        "label": "Referral Processor"
      },
      "links": [
        {
          "label": "Toothapps Referral App",
          "url": "https://smart-dev.toothapps.com/launch?sessionId=ae472b",
          "type": "absolute"
        }
      ]
    }
  ]
}

```

Below the response is a 'Messages' section.

- Discovered issues / questions (if there are any)
  - Identified opportunity to support military/veteran status in future testing
  - Workflow refinement and orchestration may be needed to determine “triggers” to generate the referral.
- Now what?
  - Expand testing with new partners
  - Continue refining 2.0 IG and constraints

## Devices Track - Device Reporting & Alerting

- *What was the track trying to achieve?*
  - Primarily, testing of the **DeviceMetric** resource. Secondly, testing the **PHD FHIR IG**, with focus on **DeviceMetric** and the **PhdDeviceMetric** profile.
  - In addition, further development of the Gemini (HL7 /IHE) Service-oriented Device Point-of-care Interoperability (**SDPi**) specification
- *List of participants* (with logos if you have time and energy)
  - Participants (4) were Philips, Aidbox, OR.NET, Cal2Cal



- o Thanks to Health Samurai for providing their Aidbox server with R4 and PHD IG support.
- *Notable achievements*
  - o **Completed the planned DeviceMetric testing, with 3 systems implementing at least 80% of elements exercised**
    - 1 system with 90% of elements exercised at this Connectathon #40
    - 2 systems with 80% of elements exercised in May (Connectathon #39)
  - o Tested PHD FHIR IG for first time
  - o Advanced the SDPi specification (specifically Pull Requests #454 and #465)
- *Screenshots and/or links to further information*
  - o Detailed notes captured on: [2025-09-13 to 14 FHIR CAT - DEV Track](#)
- *Discovered issues / questions* (if there are any)
  - o An issue was found in the the [PhdDeviceMetric](#) profile: the DeviceMetric.source element should not be optional ([FHIR-52861](#))
- *Now what?*
  - o DeviceAlert testing with Device and DeviceMetric "activation state" extensions (in January 2026)
  - o Need to complete testing of the PoCD FHIR IG (in January 2026)
  - o Test SDPi (SDC-to-FHIR) Gateway using PoCD FHIR IG (in January / May 2026)

## EBMonFHIR-Study Registry-EU CTIS

- What was the track trying to achieve?
  - o 1. Demonstrate conversion of EU CTIS study record to StudyRegistryRecord Profile with mappings of translations of titles and medical conditions
  - o 2. Demonstrate compatibility of a study record using both the M11ResearchStudy and StudyRegistryRecord Profiles
- Notable achievements
  - o 1. EU CTIS-to-FEViR Converter successfully adapted to handle translations of titles and medical conditions – Example demonstrated at <https://fevir.net/resources/ResearchStudy/399843>
  - o 2. Combined example derived from Vulcan UDP IG and [ClinicalTrials.gov](#)-to-FEViR Converter created at <https://fevir.net/resources/ResearchStudy/399864> – successfully built in EBMonFHIR IG and errors/warnings relate mainly to not listing Vulcan UDP IG in the EBMonFHIR IG
  - o 3. Feature releases to related software resulting from the Connectathon Track:

FEvIR®: Resource Viewer Release 1.1.0 (September 14, 2025) displays translated content values for Coding datatype values with translation extensions in the text element.

FEvIR®: ResearchStudy Viewer Release 1.1.0 (September 14, 2025) simplifies the display of title types for ResearchStudy.label values and displays the language for ResearchStudy.label values with language data.

FEvIR®: ResearchStudy Builder Release 1.1.0 (September 14, 2025) improves the editing of ResearchStudy.label values by placing the Label Value data entry before the Label Type data entry and by adding Label Language data entry.

Computable Publishing®: EU CTIS-to-FEvIR Converter Release 0.7.0 (September 14, 2025) adjusts the mapping of 'shortTitle' to ResearchStudy.label of type "Protocol code", adjusts the mapping of 'publicTitle' to ResearchStudy.label of type "plain language", adjusts the mapping of title translations to use the ResearchStudy.label.language element, and adds medical condition translations with translation extensions in ResearchStudy.condition.coding.text.

Computable Publishing®: ClinicalTrials.gov-to-FEvIR Converter Release 4.35.0 (September 13, 2025) corrects the creation of Location.contact.name element data to provide arrays of name values, used in contained resources for the ResearchStudy to represent study sites.

## FAST Consent Management

- What was the track trying to achieve?

Test the implementations of our IG to see what we were missing and what we got right

- List of participants (with logos if you have time and energy)



- Notable achievements

Tested the various implementations to understand that the IG as we have it works

- Discovered issues / questions (if there are any)

UpdateConsent has to go away - no implementation supports it and it does not make sense

RecordDisclosure - the value-add to patients is to answer the question “where was my consent used to disclose or not disclose health data?”

- Now what?

We are going to go forward with balloting our IG and publishing v1

## FAST National Directory of Healthcare Provider & Services (NDH)

- What was the track trying to achieve?
  - Test and review the V2 Guide that has a reduced set of requirements and enhanced capabilities
  - Review data model to ensure fitness for purpose
  - Gain feedback on current and possible expanded use cases
- List of participants (with logos if you have time and energy)



- Notable achievements
  - Successful test of all aspects including bulk upload/download
  - New use cases and several new Jira tickets for enhancing the guide
- Screenshots and/or links to further information
  - Link to Reference Implementation:  
<https://foundry.hl7.org/products/47175e86-c95c-4ea1-943b-3e684f9ce77a>



**National Healthcare Directory (NHD) Server STU2**

A queryable server reference implementation for the FAST National Directory of Healthcare Providers & Services (NDH) Implementation Guide STU2. Loaded NPPES seed data is from Helena, MT.

- Discovered issues / questions (if there are any)
  - Needed slices on specialty elements in PractitionerRole and OrganizationAffinity,
  - use cases for identifying multiple network affiliations for PractitionerRole
- Now what?
  - Back to Work! We have lots of refinements to continue on the way to the V2 publication and ballot.

## FAST Infrastructure (Security & Identity)

- What was the track trying to achieve?
- Test end-to-end FAST solutions (Security and Identity)

- Verify that FAST Infrastructure supports requirements in the CMS rules for Interoperability and Patient Access as well as Reducing Provider and Patient Burden
- Integrate AEGIS Touchstone monitoring of data exchange as a steppingstone to broader future testing capability
- Socialize and test updates made to the FAST Security and Identity Implementation Guides
- List of participants (with logos if you have time and energy)



Lantana Consulting Group

- Aaron Nusstein
- Brandon Stewart

AEGIS

- Joe Lamy

Sequoia Project

- Matt Blackmon

Epic

- Rashid Kolaghassi
- Aaron Mahr

SureScripts

- Joe Shook

InterSystems

- Elijah Cotterrell
- Jaideep Majumdar

Konza Health

- Robert Nelson

EMR Direct

- Julie Maas
- Luis Maas

- Notable achievements

- InterSystems successfully set up an authorization server and used a clone of the Uduped tool to test the server against the steps in the Scenario 2 (FAST Security

- B2B). We set up the InterSystems with the Touchstone application for additional testing.
  - SureScripts fully registered with EMR Direct, and successfully demoed \$idi-match functionality with SureScripts client and server
  - Presented on FAST Security and Identity IG Overview and STU2 updates during breakout session
  - Reviewed and drafted updated guidance in the FAST Identity around \$idi-match operation and patient matching criteria
  - Epic successfully tested their UDAP client and authentication server via testing through Touchstone
- Screenshots and/or links to further information
  - Discovered issues / questions (if there are any)

Discovered several issues in the FAST Identity IG through testing of the \$idi-match operation:

- A bug in the scoring of Patient L0 and Patient L1, where high confidence identifiers are present (DL, PPN, etc.)
- Discovered a malformation of the \$idi-match operationDefinition

People aren't respecting expired CRLs

- Now what?

## Helios Query & Response Track Report-Out (Draft)

### Participants and Use Cases

- OSPHL - Query for Provider information based on initial paper-based lab orders
- NYC - Query for Supplemental STI data, resource reference chasing
- eHealth Exchange & Query Connector - Fan-Out & Task Based Query
- JMC - MIMIC data load
- Washington DOH - RESP-NET & Newborn Screening query for supplemental data, Fan-Out & Task Based Query
- University of Washington - RESP-NET & Newborn Screening (with WADOH), Fan-Out & Task Based Query
- NAACCR - Education on FHIR Connectathon Testing

## What were you trying to achieve?

### Oregon / JMC - Missing Provider Use Case

The Oregon Public Health Laboratory (OPHL) often receives paper test requests that are missing the **ordering provider**. Since the ordering provider must be entered in the Laboratory

Information System (LIS) before results can be released, staff currently have to call the submitting organization to obtain this information.

To reduce this manual step, our goal is to **query a FHIR server** using the information provided on the paper requisition to locate the corresponding lab order and retrieve the ordering provider.

---

### Minimum Required Data on Paper Requisition

To successfully perform the query, the following data elements must be present:

- **Submitting Organization** (mapped to the appropriate server endpoint)
- **Patient first and last name**
- **Date of Birth (DOB)**
- **Patient Medical Record Number (MRN) or full address**
- **Specimen collection date** (if not provided, the query will search within a 30-day window from the query date, since specimens are typically received within ~3 days of collection)
- **Test ordered** (from the Oregon test catalog, which will be provided)

The test requisition forms are located here: [Oregon Health Authority : Test Request Forms and Collection Kits : Communicable Disease Testing : State of Oregon](#)

---

### Expected FHIR Server Resources Returned

- **Patient resource** with a FHIR ID
- **ServiceRequest resource** meeting the following criteria:
  - *Authored date* within 30 days of the query date
  - *ServiceRequest.code* included in the Oregon test catalog
- **Practitioner resource** referenced in *ServiceRequest.requester*
- **Specimen resource** referenced in *ServiceRequest.specimen*

### ServiceRequest exploration (Oregon/JMC)

We want to explore the ServiceRequest resource from other Sandboxes (Epic)

### JMC - MIMIC resource exploration

The MIMIC-IV (Medical Information Mart for Intensive Care IV) database is a large, publicly available resource containing real, de-identified clinical data from patients admitted to the Beth Israel Deaconess Medical Center (BIDMC) in Boston.

While most existing FHIR datasets are synthetic and limited in scope, real-world FHIR datasets can significantly accelerate the development and validation of FHIR projects. To help fill this gap, the MIMIC-IV Demo Clinical Database has been formatted into FHIR and made available at the following website:

[MIMIC-IV Clinical Database Demo on FHIR v2.1.0](#)

We downloaded the MIMIC demo on FHIR dataset. If possible, we want to import these resources into a sandbox environment for query purposes.

## Helios Q&R Track List of participants:

Altarum - Forrest White (track lead)  
CDC/Skylight - Dan Paseltiner, Maya Mascarenhas, and Bob Zhao  
eHealth Exchange - Keith Brick, Tiffany Hickman  
Epic - Isaac  
HLN - Krisit Eckerson  
JMC - Tina Hardin, Jyothi Kondamuri, Craig Newman  
Lantana - Rick Geimer, Shanai Thornton, Sarah Gaunt  
NAACCR - Ashley Knealing  
New York City - Shivakiran Reddy Thatikonda  
Oracle - Hans Buitendijk  
Oregon State Public Health Labs - Paul Sochacki, Cody McNeese  
University of Washington - Ivan Cvitkovic, Justin McReynolds, Bill Lober  
Veradigm - Danny Wise  
Washington DOH - Maggie Dorr, Carlos Perez, Ravi Kafle



## Notable achievements

### eHealth Exchange and CDC DIBBs Skylight

Successful testing of task based queries and fan-out patient discovery between CDC DIBBs Query Connector and eHealthExchange.

Successfully tested queries for a public health laboratory to lookup ordering provider information for test orders received missing these data elements.

### New York City

- Successfully tested Chlamydia STI use case
- Updated zip code to existing CDC Chlamydia test patient and imported in MELD platform
- Fixed Encoding issue for special characters in the queries
- Reviewed capability statements for MELD platform to build chained references queries
- Successfully build a chained reference queries to get Encounter, Facility and Provider data and tested using POSTMAN

[https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://hl7.org/fhir/sid/icd-10-cm%7CA55&\\_include=Condition:encounter&\\_include:iterate=Encounter:service-provider&\\_include:iterate=Encounter:practitioner](https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://hl7.org/fhir/sid/icd-10-cm%7CA55&_include=Condition:encounter&_include:iterate=Encounter:service-provider&_include:iterate=Encounter:practitioner)

- Build complete of set of queries to get pregnancy data and tested using POSTMAN

[https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://snomed.info/sct%7C77386006,http://snomed.info/sct%7C60001007&\\_include=Condition:encounter&\\_count=50](https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://snomed.info/sct%7C77386006,http://snomed.info/sct%7C60001007&_include=Condition:encounter&_count=50)

[https://gw.interop.community/CDCSepHL7Connectatho/open/Observation?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://loinc.org%7C82810-3,http://loinc.org%7C82809-5&\\_include=Observation:encounter&\\_count=50](https://gw.interop.community/CDCSepHL7Connectatho/open/Observation?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://loinc.org%7C82810-3,http://loinc.org%7C82809-5&_include=Observation:encounter&_count=50)

[https://gw.interop.community/CDCSepHL7Connectatho/open/Procedure?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://snomed.info/sct%7C10509002&\\_include=Procedure:encounter&\\_count=50](https://gw.interop.community/CDCSepHL7Connectatho/open/Procedure?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://snomed.info/sct%7C10509002&_include=Procedure:encounter&_count=50)

# Screenshots and/or links to further information

## Fan-Out Patient Discovery and Task Based Query

Query Connector Run a query

Enter patient info **Select patient** Select query View patient record

[← Return to Enter patient info](#)

### 2 of 4 Select a patient

The following record(s) match.

| NAME               | DOB        | CONTACT  | ADDRESS   | MRN | ACTIONS                        |
|--------------------|------------|--|---|-----|--------------------------------|
| Camila Maria Lopez | 1987-09-12 | work: +1 469-888-8888<br>mobile: +1 469-469-4321<br>knixontestemail@epic.com | 3268 West Johnson St.<br>Apt 117<br>GARLAND, TX 75043   |     | <a href="#">Select patient</a> |
| Camila Maria Lopez | 1987-09-12 | work: +1 469-888-8888<br>mobile: +1 469-469-4321<br>knixontestemail@epic.com | 3268 West Johnson St.<br>Apt 117<br>CAMBRIDGE, MA 02114 |     | <a href="#">Select patient</a> |

Centers for Disease Control and Prevention  
For more information about this solution, send us an email at [dibbs@cdc.gov](mailto:dibbs@cdc.gov)  
<https://queryconnector.dev/query#>

Use Case: Given patient demographics, run a patient discovery query through an intermediary (e.g. TEFCA QHIN).

### Testing Scenario:

1. STLT using a FHIR client submits a CDex Task to an intermediary.
2. The intermediary makes a patient discovery request to each of their members within a given region
3. Members of the intermediary each respond with a single high-confidence match
  - a. Under TEFCA, Patient Discovery via XCPD behaves similarly to the \$match operation
  - b. Intermediaries can support multiple patient discovery functions. Participants of eHealth Exchange can perform patient discovery using FHIR.
4. STLT queries each Responder for clinical data by initiating a Task with the intermediary
  - a. Learn more about the Da Vinci [Task Based Approach](#)
5. STLT collects the results of each child task, which produces a bundle of the requested clinical data

### New York city

GET [https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://hl7.org/fhir/sid/icd-10-cm%7CA55&\\_include=Condition:encounter&\\_include:iterate=Encounter:service-provider&\\_include:iterate=Encounter:practitioner](https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://hl7.org/fhir/sid/icd-10-cm%7CA55&_include=Condition:encounter&_include:iterate=Encounter:service-provider&_include:iterate=Encounter:practitioner) Send

Params Auth Cookies

200 OK 597 ms 6.41 KB Save Response

Pretty Raw Preview Visualize JSON

```

1  {
2    "resourceType": "Bundle",
3    "id": "c14f542a-e8cd-4d21-9981-5273685a07ba",
4    "meta": {
5      "lastUpdated": "2025-09-14T14:01:30.432+00:00"
6    },
7    "type": "searchset",
8    "total": 1,
9    "link": [
10   {
11     "relation": "self",
12     "url": "https://gw.interop.community/CDCSepHL7Connectatho/open/Condition?_include=Condition%3Aencounter&_include%3Aiterate=Encounter%3Aservice-provider&_include%3Aiterate=Encounter%3Apractitioner&code=http%3A%2F%2Fhl7.org%2Ffhir%2Fsid%2Ficd-10-cm%7CA55&patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0"
13   }
14 ],
15 "entry": [
16 ]

```

HTTP [https://gw.interop.community/CDCSepHL7Connectatho/open/Observation?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://loinc.org%7C82810-3,http://loinc.org%7C82809-5&\\_include=Observation:encounter&\\_count=50](https://gw.interop.community/CDCSepHL7Connectatho/open/Observation?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://loinc.org%7C82810-3,http://loinc.org%7C82809-5&_include=Observation:encounter&_count=50) Save

GET [https://gw.interop.community/CDCSepHL7Connectatho/open/Observation?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://loinc.org%7C82810-3,http://loinc.org%7C82809-5&\\_include=Observation:encounter&\\_count=50](https://gw.interop.community/CDCSepHL7Connectatho/open/Observation?patient=9433c2c7-e0d9-48ec-82cb-6bc2296132b0&code=http://loinc.org%7C82810-3,http://loinc.org%7C82809-5&_include=Observation:encounter&_count=50) Send

Params Auth Cookies

| Key  | Value   |
|--|---|
| <input checked="" type="checkbox"/> patient  | 9433c2c7-e0d9-48ec-82cb-6bc2296132b0                  |
| <input checked="" type="checkbox"/> code     | http://loinc.org%7C82810-3,http://loinc.org%7C82809-5 |
| <input checked="" type="checkbox"/> _include | Observation:encounter                                 |
| <input checked="" type="checkbox"/> _count   | 50  |
| Key  | Value   |

200 OK 382 ms 2.72 KB Save Response

Body Cookies Headers (19) Test Results

Pretty Raw Preview Visualize JSON

```

41  {
42    "code": {
43      "coding": [
44        {
45          "system": "http://loinc.org",
46          "code": "82810-3",
47          "display": "Pregnancy status"
48        }
49      ]
50    }
51  }

```

Oregon/JMC

## Missing Provider Use Case (Oregon)

Skylight was able to add ServiceRequest and the accompanying referenced resources for Practitioner and Specimen to the dev instance of Query Connector tool for purposes of this use case. Jyothi was able to utilize the API of the Query connector to automate this functionality.

**Potential workflow:**

When Oregon lab ordering system (Copia) commits an order from a paper lab requisition, a corresponding HL7 message is sent to the Oregon LIS system (Harvest). Rhapsody intercepts the message and identifies a “missing” or “unknown” ordering provider:

```
MSH|^~\&|PN|PHGMH^42D0665869^CLIA|OE|SCDHEC|20200615090111|201|ORM^001^ORM_001|1|T|2.4\r
PID|1||JMC-1111^^^GHS||Oregon^Lab Req||19821031|F||555 TEST LN^^BOCA RATON^FL^33481||913-555-2222||||1000056038615||||NON\r
PV1||||||||||||1000056038615\r
ORC|NW|45490565^EPC||||||||1306896543^STAFFORD^JESSE|| (864)295-3482\r
OBR|1|45490565^EPC|COVIDPCR^SCDHEC COVID PCR^L||20200615085812||||||258500001&Nasopharyngeal swab&SCT||||1002664204\r
OBX|1|ST|COVAOE1^First Test?^L||No\r
OBX|2|ST|COVAOE2^Employed in Healthcare?^L||No\r
OBX|3|ST|COVAOE3^Symptomatic as defined by CDC?^L||No\r
OBX|4|DT|COVAOE4^Date of Onset^L||20200615\r
OBX|5|ST|COVAOE5^Hospitalized?^L||No\r
```

Using the data in the ORM message, Rhapsody will create parameters that will be used in the query request send to the Query Connector:

|                  |                    |
|------------------|--------------------|
| dob              | 1982-10-31         |
| family           | Oregon             |
| fhir_server      | JMC Meld: Direct   |
| FileCreationTime | 1757858323967      |
| FullFilename     | PrismaOrderMsg.txt |
| getProviderInfo  | true               |
| given            | Lab Req            |

|          |                                      |
|----------|--------------------------------------|
| mrn      | JMC-1111                             |
| phone    | 913-555-2222                         |
| queryId  | ea205e59-d359-431d-9521-3a5bbe12fd24 |
| queryURL | https://queryconnector.dev/api/query |

Rhapsody receives the response from Query Connector that includes the Missing Practitioner that is needed by the LIS:

**Flat Wire** ▾

JSON ▾ Encoding: windows-1252

```
      "lastUpdated": "2022-01-06T05:10:23.000+00:00",
      "source": "#4ef325db2d00e746"
    },
    "identifier": [
      {
        "system": "http://hl7.org/fhir/sid/us-npi",
        "value": "12058757132a0dc72b839e03df42f13f"
      }
    ],
    "active": true.
```

**Tree View** ▶

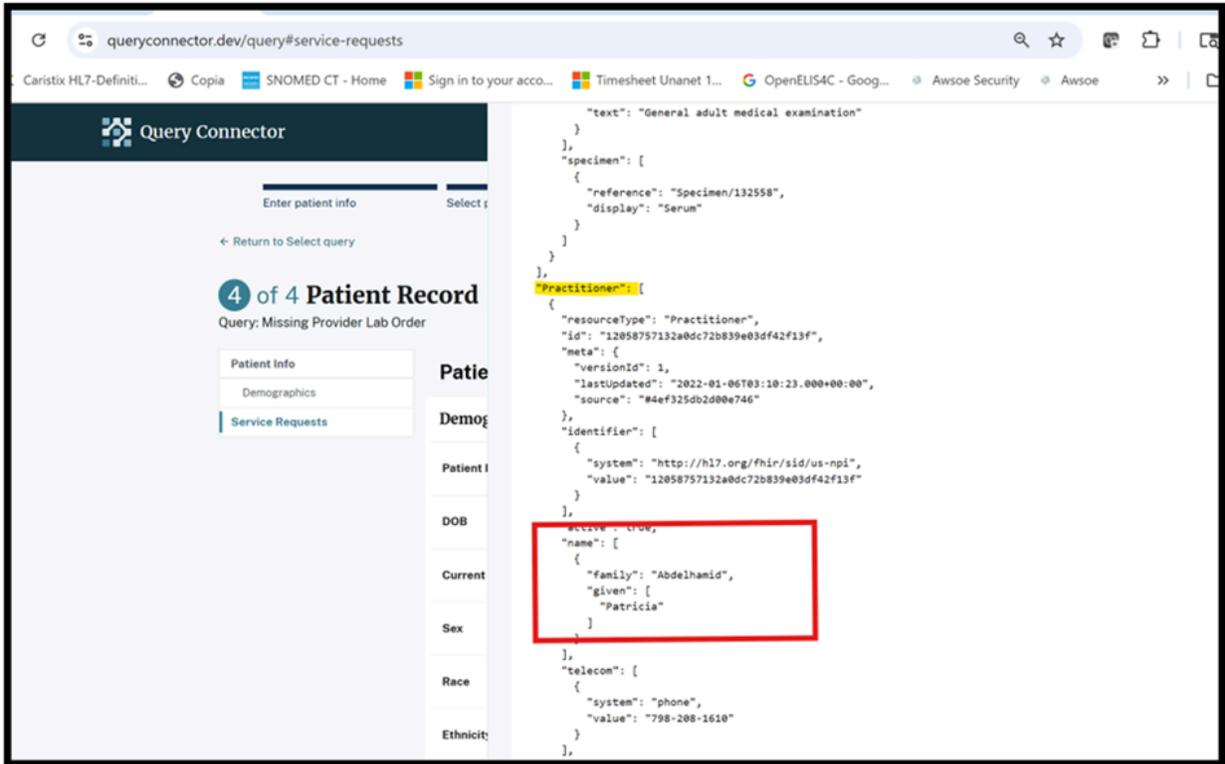
**Flat Wire** ▾

JSON ▾ Encoding: windows-1252

```
    ],
    "active": true,
    "name": [
      {
        "family": "Abdelhamid",
        "given": [
          "Patricia"
        ]
      }
    ]
  }
}
```

[Download](#)

Screenshot from Query Connector UI:



Rhapsody uses the data received from Query Connector to populate the ORM with the ordering provider details that were initially missing. It will then send the ORM to the Harvest system:



## ServiceRequest exploration

We were also able to query the Epic sandbox server endpoint for a patient with a ServiceRequest:

Endpoint:

<https://connectathon.epic.com/Interconnect-Fhir-Unsecure/api/FHIR/R4>

Required HTTP header:

Epic-Client-ID: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF00

Service request query using the `_include` parameter to retrieve the corresponding requester, specimen, and encounter resource references:

[https://connectathon.epic.com/Interconnect-Fhir-Unsecure/api/FHIR/R4/ServiceRequest?subject=e7ygrvs82TZbruRDzG1UpQ3&\\_include=ServiceRequest:specimen&\\_include=ServiceRequest:requester&\\_include=ServiceRequest:encounter](https://connectathon.epic.com/Interconnect-Fhir-Unsecure/api/FHIR/R4/ServiceRequest?subject=e7ygrvs82TZbruRDzG1UpQ3&_include=ServiceRequest:specimen&_include=ServiceRequest:requester&_include=ServiceRequest:encounter)

## Discovered issues / questions

Need more realistic data on realistic servers. Start now to investigate Oracle, Epic, or other EHR sandboxes for use in January HL7 FHIR connectathon.

### **New York City**

- Limitation on MELD platform to view complete list of resources in the UI
- Limitation on test data to try different scenarios

Contracting and Access Agreements: It's often hard to get Provider Organizations to authorize a FHIR Client using Backend Services

- Veradigm and Epic both support the G10 APIs and SMART on FHIR launches
  - We may be able to use the individual access that Provider Organizations grant to epidemiologists and case investigators to authorize per-user access to clinical data, when those Provider Organizations are unwilling to authorize Backend Systems connectivity.

### **Oregon/JMC**

Missing Provider Use Case (Oregon)

It may be challenging for the Oregon Lab to obtain 3 points of Patient Demographic information to kick off patient discovery. Patient Name and DOB should always be on the paper requisition, however the address and MRN are not marked as required and therefore may not be populated on the form. Patient phone number and/or email address is not a field to populate on the form, so will not be provided.

ServiceRequest exploration

Note the importance of request headers: Querying the Epic Sandbox server in Postman yielded a response in XML format, which was not the json format that we typical experience. Jyothi noticed the header in Postman for Accept was set to /\*/ which basically accepted every format. Our assumption is that the Epic sandbox server must be defaulted to send FHIR responses in XML format. We adjusted the headers to accept json messages and Epic sent back in json format as we expected.

## **JMC**

MIMIC resource exploration

When Jyothi went to import the debatched patient resources, the patient resources failed to load due to the reference to the Organization resource that was not yet loaded into MELD.

Once the Organization resource was loaded, the patients were able to be imported. However, because a POST was used, the MELD created new FHIR IDs for the patients. This impacted future imports for the encounters which were referencing the original patient IDs and not the new IDs that MELD created.

To remedy this issue, Jyothi will re-import the Patient resources again using a PUT request so that the original IDs will be created in the MELD server.

## **Breakout Discussion Pilot Implementations:**

### **Washington Department of Health**

- What's your FHIR Server?
  - HAPI FHIR for and Aidbox
  - Case Investigators have multiple tools / UIs that pull data from Aidbox
- What's the PHA's relationship with responding organization?
- What has been your experience testing the available tools for your use cases?
  - Successfully used Patient Query
  - Wants to use \$match
- Use Cases:
  - RespNET for Respiratory disease surveillance
  - Newborn Screening
  - Individual Access Use Case: International Patient Summary / Vaccine Smart Cards
  - Infectious Disease Case Investigations: Collecting data about STI follow-ups and treatment
  - Cancer Registry: Collecting longitudinal data
  - Vital Records Integration: Both query/response and subscription/notifications
  - Mutli-server response for FHIR Fan-Out requests
- What did you gain from Participating in the Accelerator?
  - Learning about actors and flows

### **Oregon**

- Don't have a FHIR Server yet
- BAAs with provider organizations and HIEs (Including OCHIN)

- Getting familiar with the tools and approaches used by other PHAs using FHIR, learning from other participants.
- Bob with Skylight helped set up a use case
- Have a Meld server used for testing
  - Use Case: Paper orders arrive at the PHA without information about the ordering provider. Using the specimen collection date, lab type, and patient demographics, query the network to find patient records, request their labs, and interrogate the ServiceRequest resource to find the ordering provider.
  - Acute Communicable Disease gets results directly from the lab, today has to reach out directly to the hospitals that are likely to order.
  - Have identified St. Charles as a potential testing and pilot partner.
  - OHSU is often a cutting edge developer
  - OCHIN is an eHX member
- JMC has provided Project Management and technical staff to create and implement the Public Health Lab's FHIR roadmap.
  - Helping to define specific use cases
  - Developing in Rhapsody the interfaces and automation for OSPHL and incoming TA Requests

#### **New York City and Healthix (HIE)**

- Building a FHIR Client to support FHIR data retrieval
- Implementing specific use cases for Surveillance

#### **NAACCR**

- Cancer Registries have many use cases where they need cross-jurisdiction data retrieval. Observing how Helios Query & Response may provide solutions.

#### **CDC / DIBBS / Skylight**

- Supporting and building technical resources and open source code that PHAs can use to implement their FHIR use cases

## **Now what?**

HLN: Explore the applicability for the Q&R pattern to be appropriate for other disease/conditions

#### **New York City**

- Need to access performance metrics of chained references queries vs. Individual queries and map references in FHIR client
- Need to come up with the resources for Medication use that can fetch complete medication data

#### **Oregon/JMC -**

- Missing Provider Use Case - Cody plans to use her new knowledge to explore FHIR Q&R with the Active Bacterial Core Surveillance (ABCS) use case. This use case includes 5 conditions that require chart review by the case investigators.
- ServiceRequest exploration - Continue to explore resources from other various sandbox systems and refresh memory on headers to better understand how the basic functionalities work.

## JMC

- MIMIC resource exploration - Continue to explore MIMIC dataset and load into MELD for query purposes.

Need more realistic data on realistic servers. Start now to investigate Oracle, Epic, or other EHR sandboxes for use in January HL7 FHIR connectathon.

## International Patient Summary

- What was the track trying to achieve?
  - Narrative linking in IPS – test use of the textLink extension
  - Testing (including exchanging instances) of FHIR IPS 2.0 release (candidate)
  - Interoperable (including cross-border) use of national IPS adaptations/derivatives
    - Profiles and terminology
    - Validation
  - Other topics TBD
- List of participants (with logos if you have time and energy)
  - Saturday – initial session - IPS update breakout
    - 9 participants, 4 countries (US, Canada, Netherlands, Italy)
  - Sunday morning – IPS Vendor and Implementation Registries breakout
    - 17 attendees, 8 countries (US, Canada, Netherlands, Italy, Australia, South Korea, Austria, Germany)
  - Vendor participation – Epic, Meditech
- 
- Screenshots and/or links to further information
- Discovered issues / questions (if there are any)
- Now what?

- Continue discussions on weekly IPS calls (adjust times/days if needed to better accommodate in disparate time zones - e.g., US west coast, Australia)
- Further planning for testing (potentially certification?) once FHIR IPS IG 2.0 is officially released
- Begin planning for updates and alignment of the other IPS specifications - e.g., CDA IPS IG, IHE IPS profile, ISO 27269
- Explore the nature and scope and plans for developing an IPS “Companion Guide”

# Conversational Interoperability (Formerly Language First Interoperability)

## HL7 FHIR Connectathon

### Language-First (Conversational) Interoperability Track Outbrief

Josh Mandel, SMART / Microsoft  
Mark Kramer, MITRE

Sept 14, 2025

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## Track Description

<https://confluence.hl7.org/spaces/FHIR/pages/358260686/2025+-+09+Language+First+Interoperability>

The goal of this track is to test whether AI agents can conversationally determine the parameters of information exchange, for example, what data is needed, what formats are acceptable, and what workflow must be followed.

The goal is not to replace the careful, consensus-driven process that has produced robust healthcare standards, but to provide a dynamic layer that makes those standards more accessible and immediately useful.



## Track Goals

- **Demonstrate a data exchange environment that involves:**
  - Two Agents
  - Communication
  - Negotiation
  - Data Exchange (in plain text, FHIR or otherwise)



## Current Track Participants / Observers



## Standards Tested

- Model Context Protocol (MCP)
  - Allows an agent to select and call tools
- Agent2Agent (A2A)
  - Allows asynchronous, resumable conversations
  - "Agent Card" JSON describing each agent and its skills



## Reference Stack: Banterop

<https://banterop.fhir.me>

**Scenario Tool** Scenarios / Knee MRI Prior Auth / Run

Step 1: Choose Your Role  
Tests prior auth negotiation for knee MRI with conservative therapy and network constraints.  
Which agent will you provide?

**patient-agent**  
Jordan Alvarez • individual  
A 38-year-old amateur soccer player with an acute right knee injury.  
Tools: search\_ehr\_clinical\_notes, retrieve\_imaging\_reports, get\_therapy\_documentation, request\_additional\_ehr\_details

**insurance-auth-specialist**  
HealthFirst Insurance • organization  
A national health insurance provider.  
Tools: lookup\_beneficiary, check\_insurance\_coverage, lookup\_medical\_policy, check\_provider\_network, create\_case\_notes, mri\_authorization\_approval, mri\_authorization\_denial

I won't provide an agent; I just want to run a simulation.

Step 2: Choose Your Connection Pattern

**I have a Client**  
Platform provides a server endpoint for your client.

**I have a Server**  
Platform launches a client to connect to you.

Step 3: Choose Protocol

**Use A2A Protocol**  
JSON-RPC with optional SSE streaming; aligns with A2A.

**Use MCP Protocol**  
Model Context Protocol with tool-based interactions.



# Scenarios Tested

|  |   |  |
|--|---|--|
| <p>View <a href="#">Run</a> Edit</p> <p><b>Clinical Trial Eligibility Screening for T2DM</b><br/>Dr. Anya Sharma -- Innovate Clinical Research Unit</p> <p>An agent for a clinician works with an agent for a clinical trial manager to determine if a patient with Type 2 Diabetes is eligible for an ongoing study. This scenario includes a clarification loop where...</p> | <p>View <a href="#">Run</a> Edit</p> <p><b>Knee MRI Auth</b><br/>Alex Ray -- HealthFirst Insurance</p> <p>Tests prior auth negotiation for knee MRI with conservative therapy and network constraints.</p>  | <p>View <a href="#">Run</a> Edit</p> <p><b>Pediatric Vision Screening</b><br/>Sarah Mitchell, RN -- Dr. James Roberts, MD</p> <p>Tests coordination between school nurse and pediatrician for vision screening referral and follow-up.</p>   |
| <p>View <a href="#">Run</a> Edit</p> <p><b>Lumbar Spine MRI Prior Authorization</b><br/>Dr. Maya Patel -- Acme Health Plan</p> <p>Provider requests prior authorization for an MRI of the lumbar spine following conservative therapy with persistent symptoms.</p>  | <p>View <a href="#">Run</a> Edit</p> <p><b>Psychotherapy Session Prior Authorization Inquiry</b><br/>Dr. Emily Rivera -- State Medicaid &amp; Commercial Health Plans</p> <p>A mental health provider inquires about prior authorization requirements for a 60-minute psychotherapy session for a patient covered by Medicaid and commercial insurance plans.</p> | <p>View <a href="#">Run</a> Edit</p> <p><b>Transplant Referral Evaluation with Cross-Institution Data Normalization</b><br/>City General Transplant Center -- Regional General Hospital</p> <p>Transplant center agent evaluates a referral by collaborating with an outside hospital EHR agent to collect labs, imaging, and normalize HLA data formats through conversation.</p> |
| <p>View <a href="#">Run</a> Edit</p> <p><b>Agent-to-Agent Rare Disease Registry Reporting Demo</b><br/>Unknown -- Unknown</p> <p>This prototype demonstrates how Google's Agent-to-Agent (A2A) protocol can be used to automate reporting of rare disease cases to condition-specific registries, using a Language-First Interoperability...</p>                               | <p>View <a href="#">Run</a> Edit</p> <p><b>Rare Disease Registry Patient Submission</b><br/>Dr. Emily Rodriguez -- National Rare Disease Registry</p> <p>A clinical agent attempts to submit a patient's necessary information to a rare disease registry for enrollment and tracking.</p>  | <p>View <a href="#">Run</a> Edit</p> <p><b>Guidelines-Based Clinical Recommendations</b><br/>Dr. Emily Carter -- Clinical Guidelines Service</p> <p>A provider-facing agent requests guideline-based recommendations for a specific patient. The clinical-guidelines agent queries its knowledge base of guidelines, asks for missing patient information,...</p>                  |



# Scenarios, continued

|  |  |   |
|--|--|---|
| <p>View <a href="#">Run</a> Edit</p> <p><b>Clinical Trial Cohort Creation Collaboration</b><br/>InnoTrials Research -- Regional Health Network</p> <p>A clinical trial creator collaborates with a provider organization to access analytics and identify suitable patient cohorts for a research study.</p>   | <p>View <a href="#">Run</a> Edit</p> <p><b>Guideline Recommendation for Catheterization Procedures</b><br/>Dr. Pieter Vos -- American Heart Association (AHA)</p> <p>A cardiologist consults with a guideline expert to obtain evidence-based recommendations for cardiac catheterization based on patient clinical presentation.</p>                  | <p>View <a href="#">Run</a> Edit</p> <p><b>Hospital Bed Capacity Query</b><br/>Sarah Ramirez -- Dr. Michael Patel</p> <p>A care coordinator from one hospital queries bed availability at another hospital for patient transfer, involving verification of patient details and bed status checks.</p>   |
| <p>View <a href="#">Run</a> Edit</p> <p><b>Dr. Walter Reed Cardiology Clinic Referral Processing</b><br/>Dr. Maria Santos -- Dr. Walter Reed Cardiology Clinic</p> <p>A referring provider seeks to schedule a cardiology consultation with Dr. Walter Reed's clinic for a patient with chest pain and abnormal stress test results.</p>   | <p>View <a href="#">Run</a> Edit</p> <p><b>Guideline Recommendation for Catheterization Procedures</b><br/>Dr. Emily Rivera -- Cardiological Catheterization Guidelines Expert</p> <p>A cardiologist consults with a guideline expert to obtain evidence-based recommendations for cardiac catheterization based on patient clinical presentation.</p> | <p>View <a href="#">Run</a> Edit</p> <p><b>Patient-Doctor Collaboration to Complete FMLA Certification Form</b><br/>Jordan Lee -- Dr. Sarah Chen</p> <p>A patient collaborates with their doctor to complete the Prudential Certification of Health Care Provider form for FMLA leave due to a serious health condition. The doctor starts with full access to EHR...</p> |
| <p>View <a href="#">Run</a> Edit</p> <p><b>Vyepti Injection Approval for Migraine</b><br/>City General Hospital EHR System -- Blue Horizon Insurance -- CoC Reviewer -- Medical Policy Reviewer</p> <p>Multi-agent scenario for approving Vyepti injection for migraine treatment by reconciling patient's medication history from EHR with payer's personal and medical policies.</p> | <p>View <a href="#">Run</a> Edit</p> <p><b>Discharge Planning - Long Term Care Facility Bed Search</b><br/>City General Hospital -- Regional LTC Network</p> <p>Hospital discharge planner collaborates with long term care network to find an available bed in a facility within the patient's zip code for post-discharge transfer.</p>              | <p>View <a href="#">Run</a> Edit</p> <p><b>Identifying Patients with Incomplete Chart Notes</b><br/>Alex Rivera -- MediTech EHR System</p> <p>A clinic quality assurance agent collaborates with an EHR system agent to identify patients whose chart notes remain incomplete, enabling follow-up on documentation compliance.</p>  |



## Example Output

 Banterop Client

A2A Task init:insurance-auth-specialist-Agent-29949#1 Other side working

Alex Ray (Us)  
Hello, I'm an agent representing Alex Ray. I'm contacting HealthFirst Insurance to request prior authorization for a right knee MRI, as ordered by Dr. Priya Mehta. Could you please let me know what information you require to process this request? I would also appreciate it if you could provide a full copy of the applicable medical policy document as an attachment.

HealthFirst Insurance (Remote Agent)  
Thank you for your request on behalf of Alex Ray (Member ID: HF123456789) for prior authorization of a right knee MRI ordered by Dr. Priya Mehta. I have reviewed the applicable medical policy for Knee MRI (effective 2024-01-01). To process this request, all criteria must be met, including ≥ 14 days of conservative therapy, documentation of persistent symptoms, physical exam findings suggestive of internal derangement, and negative plain radiographs. Please provide the following documentation: 1. Clinical notes from initial injury; 2. Physical therapy records with exact dates of service (confirming at least 16 days as mentioned); 3. Detailed physical exam findings; 4. X-ray reports. Additionally, please confirm if Dr. Priya Mehta and the imaging facility are in-network for expedited review. I am attaching the full policy document for your reference.

 HF-MRI-KNEE-2024.json (application/json)

HL7  
International



## Outcomes

- Demonstrated feasibility of two agents conversing and achieving goal that involves information exchange
- Different interpretations of A2A protocol resolved
- Multiple implementations interacted successfully

HL7  
International

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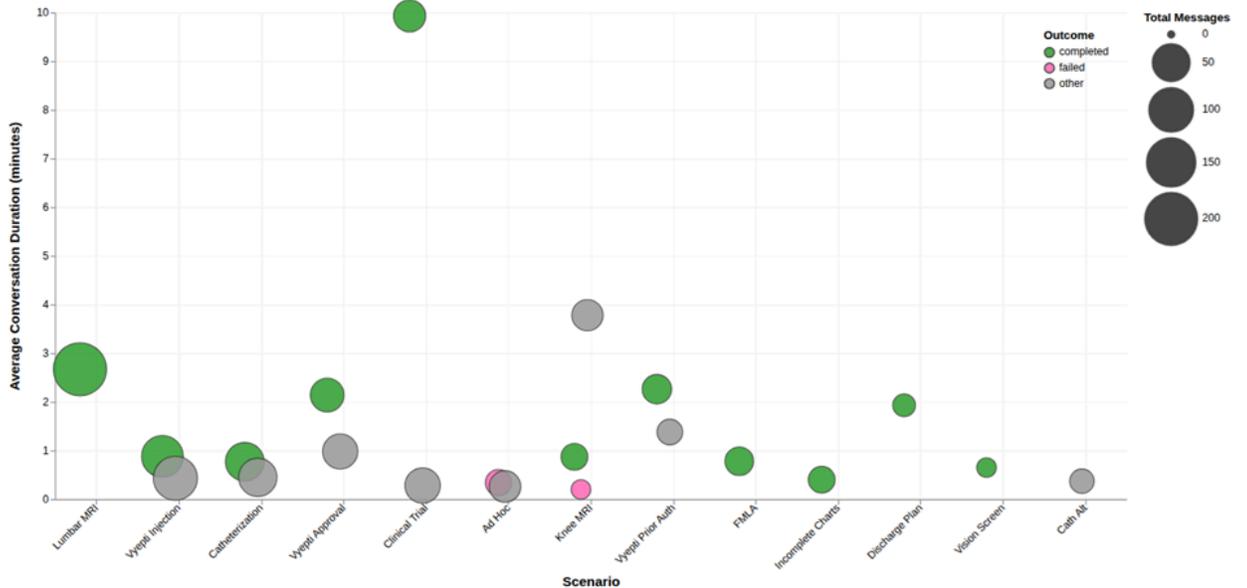
10



# Statistics

Connectathon Testing: 40 of 130 Conversations Completed (30.8%)

Green = completed | Pink = failed | Grey = working/other | Size = total messages



## Innovations

Founded a new field: "Conversational Interoperability"

- Agents exchanging FHIR Questionnaire/Response
- Testing with adversarial agents
- Human in the loop
- Extracting scenarios out of existing IGs



## Future Directions

- Explore patterns of deployment (workflows)
- HL7 Linkages
  - Agents and scenarios from existing IGs
  - Make FHIR data LLM-ready (bidirectional)
  - FHIR MCP that is highly reliable and complete
  - Establish new workgroup?
- AI Assurance
  - Failure modes
  - Conversational monitoring



Thank You!



## Oral Health Interoperability Alliance

- What was the track trying to achieve?
  - The Oral Health Interoperability Alliance worked with the Dental Data Exchange project to test exporting clinical data from the EHR using CDS Hooks and SMART on FHIR to create a dental clearance request.

- List of participants (with logos if you have time and energy)



- 
- Notable achievements
  - Two applications were able to connect data from CDS Hooks Sandbox, Epic CDS and Oracle CDS hooks and create information in their systems to load into Dental Practice Management Systems.
- Screenshots and/or links to further information

The screenshot shows a web browser window with a dark theme. On the left, there is a form titled "Referral to Dental" with a sub-header "About Patient/Provider". Below the header is a text field and a blue button labeled "Outpatient Referral Form" with a red arrow pointing to it. On the right, there is a "COS Developer Panel" with a "Select a Service" dropdown, a "Request" section, and a "Response" section containing a JSON object. The JSON object includes fields like "name", "category", "description", "provider", "location", "status", "appointment", "appointmentLink", "appointmentText", "appointmentText2", "appointmentText3", "appointmentText4", "appointmentText5", "appointmentText6", "appointmentText7", "appointmentText8", "appointmentText9", "appointmentText10", "appointmentText11", "appointmentText12", "appointmentText13", "appointmentText14", "appointmentText15", "appointmentText16", "appointmentText17", "appointmentText18", "appointmentText19", "appointmentText20", "appointmentText21", "appointmentText22", "appointmentText23", "appointmentText24", "appointmentText25", "appointmentText26", "appointmentText27", "appointmentText28", "appointmentText29", "appointmentText30", "appointmentText31", "appointmentText32", "appointmentText33", "appointmentText34", "appointmentText35", "appointmentText36", "appointmentText37", "appointmentText38", "appointmentText39", "appointmentText40", "appointmentText41", "appointmentText42", "appointmentText43", "appointmentText44", "appointmentText45", "appointmentText46", "appointmentText47", "appointmentText48", "appointmentText49", "appointmentText50", "appointmentText51", "appointmentText52", "appointmentText53", "appointmentText54", "appointmentText55", "appointmentText56", "appointmentText57", "appointmentText58", "appointmentText59", "appointmentText60", "appointmentText61", "appointmentText62", "appointmentText63", "appointmentText64", "appointmentText65", "appointmentText66", "appointmentText67", "appointmentText68", "appointmentText69", "appointmentText70", "appointmentText71", "appointmentText72", "appointmentText73", "appointmentText74", "appointmentText75", "appointmentText76", "appointmentText77", "appointmentText78", "appointmentText79", "appointmentText80", "appointmentText81", "appointmentText82", "appointmentText83", "appointmentText84", "appointmentText85", "appointmentText86", "appointmentText87", "appointmentText88", "appointmentText89", "appointmentText90", "appointmentText91", "appointmentText92", "appointmentText93", "appointmentText94", "appointmentText95", "appointmentText96", "appointmentText97", "appointmentText98", "appointmentText99", "appointmentText100".

The screenshot shows a mobile app interface with a dark theme. At the top, there is a "Send New Form" button. Below it is a navigation menu with options: "Inbox", "Starred", "Trash", "ACH Form", "Book Appointment", "Cair Consent Form - Provider", "Cair Consent Form - Toothapps", "Contact Us", and "Cosmetic Questionnaire". The main content area displays a "Dental Oncology Clearance Request - Kate Johnson" with a "Link" icon. Below the title is the date "2025-09-14T14:23:24.498Z". The "Patient Information" section includes fields for "First Name" (Kate), "Last Name" (Johnson), "Gender" (Female), "Date of Birth" (06/01/1965), "Cell Phone" (+1 555-101-2020), and "Email" (kate.johnson@example.com). There are also fields for "Address", "ZIP", "City", and "State".



## Essential Smiles Dental

3234 Average Build 1

Los Angeles, CA 10050

aleksandr.avtushko+EssentialSmile@imbuesystems.com

+1 213-522-3545

# Dental Oncology Clearance Request

---

## Patient Information

---

|                           |                              |                    |
|---------------------------|------------------------------|--------------------|
| Kate                      | Johnson                      |                    |
| <small>First Name</small> | <small>Last Name</small>     |                    |
| Female                    | 06/01/1965                   |                    |
| <small>Gender</small>     | <small>Date of Birth</small> |                    |
| 555-101-2020              | kate.johnson@example.com     |                    |
| <small>Cell Phone</small> | <small>Email</small>         |                    |
| <small>Address</small>    |                              |                    |
| <small>City</small>       | <small>State</small>         | <small>ZIP</small> |

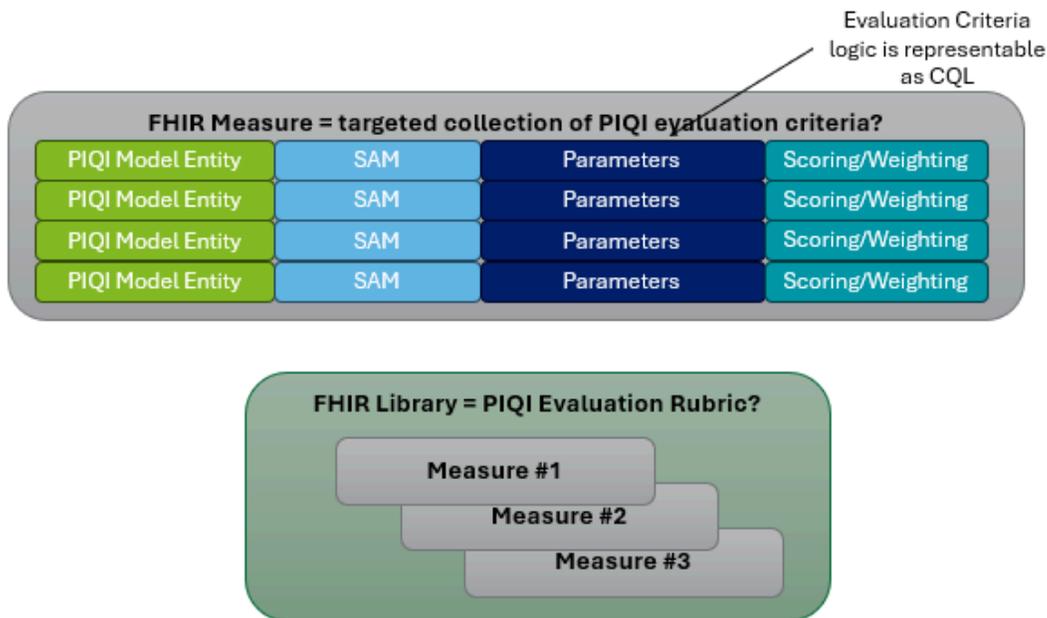
- Discovered issues / questions (if there are any)
- Now what?
  - Team will continue to collaborate and test and gain agreement from Dental Practice Management systems to implement standards-based implementation to import data

## Patient Information Quality Improvement (PIQI) Framework

- What was the track trying to achieve?
  - This track tested the Patient Information Quality Improvement (PIQI) Framework, an open, format-agnostic methodology for evaluating the quality and usability of patient-centric data messages. Participants will explore how to apply PIQI's scoring rubrics, assessment logic, and taxonomy to real-world

FHIR-based data exchanges, with the goal of improving data quality transparency and trust across the healthcare ecosystem.

- List of participants (with logos if you have time and energy)
  - Health Gorilla
  - Deloitte
  - NCQA
  - Availity
  - Clinical Architecture
  - Leavitt Partners
  - CVS/Aetna
- Notable achievements
  - Tested the reference implementation
  - Tested assessing different message types
  - Explored assessment of advanced knowledge
  - Agreed to a path forward on representing exchangeable artifacts using FHIR
    - Decided to use MeasureReport, Measure and Library resources
- Screenshots and/or links to further information
- Discovered issues / questions (if there are any)
  - How do you represent cross terminology semantic relationships?
    - How do you say if you have a lab test code that the SNOMED specimen is the right one to use for the test as part of an assessment.
  - How is what PIQI is trying to do different from what the FHIR validator is supposed to do?
- Now what?
  - Perhaps explore assertion resource
  - Model PIQI framework using the FHIR resources



## Patient Scheduling

- What was the track trying to achieve?
  - There is a need for smarter scheduling approaches to transform patient healthcare access, designed to revolutionize how patients book medical appointments. By leveraging previous work on SMART scheduling links we seek to expand this framework to patient scheduling.
  - The goal is to eliminate traditional booking barriers, reduce administrative friction, and provide patients with an intuitive, efficient, and user-friendly appointment scheduling experience that prioritizes convenience and accessibility.
  - Review and test the specification for SMART Scheduling Links
- List of participants (with logos if you have time and energy)
  - Adam Culbertson (b.well) 
  - Ron Urwongse (Defacto Health) 
  - Julie Hubschman (Zocdoc) 
  - Brandon LaRue (Zocdoc) 
  - Cooper Thompson (Epic) 
  - Reinhard Gelkraust (HL7 Austria)
  - Isaiah Nyambuka (Casedok)

- o Sandeep Alapatt (Leap Orbit) 
- o Evan Machusak (Optum) 
- o Maximilian Nussabumet (Firely) 
- o Eugene Vestel (FHIR IQ) 
- o Chad Albert (CVS Health) 
- o Amy Dalmas (US Dept of Veterans Affairs) 
- o Ashley Blankette (CAQH) 
- Notable achievements
  - o 1 implementation of a reference server
  - o 5 organizations built and tested client to query slots, book appts
  - o Cross-IG use case using Provider Directory API + Smart Scheduling Links
  - o Data from appointment server used in MCP implementation
- Screenshots and/or links to further information
  - o Zocdoc Server

<https://zocdoc-smartscheduling-api.netlify.app/>

## SMART Scheduling Links Publisher

This server hosts FHIR resources for SMART Scheduling Links integration.

### Available Endpoints

#### Bulk Publish Manifest:

GET /\$bulk-publish

#### Health Check:

GET /health

#### FHIR Resources:

GET /locations.ndjson

GET /schedules.ndjson

GET /practitionerroles.ndjson

GET /slots-2025-W40.ndjson

GET /slots-2025-W41.ndjson

GET /slots-2025-W42.ndjson

- o FHIR IQ client  
<https://smart-schedule-aks129.replit.app/>

The screenshot shows a web application interface for finding healthcare providers. At the top, there is a search bar with a magnifying glass icon and the text "Search". Below the search bar, there is a section titled "Available Providers" with a sub-header "Showing 10 providers". The main content area displays the profile of "Dr. Daniel Michael Peraza", a Dermatologist. His profile includes contact information (SMART Primary Care Boston, 555-123-4567), insurance details (NPI: 1234567890), accepted insurances (Medicare, Medicaid, Blue Cross Blue Shield, Aetna, +3 more), languages (English, Spanish), and education/certifications (MD - Doctor of Medicine - Harvard Medical School, BS - Biochemistry - MIT, Board Certified in Dermatology - American Board of Dermatology, FAAD - Fellow American Academy of Dermatology - AAD). There are buttons for "View Profile" and "Book Now". To the right, there is a "Provider Locations" section with a "Fullscreen" button and a map placeholder that says "Map temporarily unavailable". Below that is a "Quick Availability" calendar for September 2025, showing slots for Sun, Mon, Tue, Wed, Thu, Fri, and Sat.

- o Defacto Health client

**SMART Scheduling Links Slot Search + UHC Insurance**

Specialty:

City:

State:

Start Date:

End Date:

**Dr. Daniel Michael Peraza (NPI: 1073635355)**  
**Dermatology**  
**SMART Primary Care Boston – 123 Summer St, Boston, MA 02114**

Insurance Plans: AARP Medicare Advantage Patriot No Rx MA-MA01 (PPO), AARP Medicare Advantage from UHC MA-0003 (HMO-POS), AARP Medicare Advantage from UHC MA-0006 (PPO), United Advantage (HMO), UnitedHealthcare Group Medicare Advantage (PPO)

| Sun, Oct 19                             | Mon, Oct 20                             | Tue, Oct 21                             | Wed, Oct 22                             | Thu, Oct 23                             | Fri, Oct 24                             | Sat, Oct 25                             |
|---|---|---|---|---|---|---|
| <input type="button" value="9:00 AM"/>  |
| <input type="button" value="9:30 AM"/>  |
| <input type="button" value="9:45 AM"/>  |
| <input type="button" value="10:00 AM"/> |
| <input type="button" value="10:30 AM"/> |

- Discovered issues / questions (if there are any)
  - o Need for available healthcare service information
  - o Need for insurances information (network ID, coverage resource)
  - o Some discussion on what types of appointments are going to be discoverable, and how providers make decisions on what to publish
  - o Taxonomy of visit types/reasons v. healthcare service + specialties

- o Add HTTPs parameterized queries examples to the specification
- Now what?
  - o Project Scope Statement
  - o Profiling work for additional resources (e.g., HealthcareService, Organization, OrganizationAffiliation, etc.)
  - o Find pilot organizations (provider orgs, maybe payers)

## Questionnaires

- What was the track trying to achieve?
  - o To continue testing implementation of the Structured Data Capture (SDC) implementation guide (and associated specifications) which provide guidance on how to define and complete questionnaires in healthcare, including the ability to automatically populate forms and the ability to extract resource information from completed forms.
  - o Discuss advances
- List of participants (with logos if you have time and energy)
  - o Lloyd McKenzie
  - o Brian Postlethwaite (Microsoft Research)
  - o Paul Lynch
  - o Olim Saidov
  - o Ye Wang
- Notable achievements
  - o Breakout session with demos of NLM's Questionnaire tools, Aidbox's work on building Questionnaires by chatting with an AI, and Brian's FHIRPath Lab with its AI tool and new debugging feature.
  - o Discussion among implementers of Questionnaire renderers and builders.
  - o Further work on the debugging support in [fhirpath.js](#).
  - o Further work on template support in LHC-Forms.
  - o Work on adding the capability of launching the LHC-Forms Questionnaire Viewer tool from an IG.
- Screenshots and/or links to further information
- Discovered issues / questions (if there are any)
- Now what?

## Symptoms Data Exchange

- What was the track trying to achieve?

Answer the following questions:

1. Terminology Requirements
2. Timing Elements
3. Relationship between Symptoms and Diagnoses
4. Exchange Patterns

View existing Symptom implementations (Washington Department of Health, Apple, DHIT) to ensure that the Symptom model and profile match what is being collected.

- List of participants (with logos if you have time and energy)



Sarah Gaunt - Lantana  
 Russ Leftwich - Intersystems

- Notable achievements

We had all of our questions answered.

Apple was able to connect to Dynamic Health IT's app to query Observations, import the Symptoms into Apple Health

Washington State Department of Health was able to query DHIT's app

Smile was able to create Symptoms for their Pain use case

- Now what?

Update the IG based on the findings, including updating the profile. Ensure we have narrative that explains how to use the Symptoms models and what the relationship between Symptoms and Diagnoses is

## Testing - Best Practices & US Core 6.1.0 Readiness

- What was the track trying to achieve?

The Testing Track continues to have three primary objectives:

1. Educate newer implementation teams about FHIR testing best practices.
2. Advance a topic of focus, which for this Connectathon is US Core 6.1.0 conformance preparation, with two sub-objectives:
  - a. Allow participants to validate their conformance to US Core 6.1.0
  - b. Gather feedback about the tests as input to tuning and refinements.
3. Serve as a hub for assisting all tracks with resolving testing blockers and issues.

- List of participants (with logos if you have time and energy)



The KeyOn, Inc. team brought their new SMART on FHIR app to retrieve US Core 6.1.0 resources and verify that their system correctly ingests those payloads.

- Notable achievements

We had productive sessions with the KeyOn team to orient them to FHIR testing with Touchstone, and that exercise resulted in the discovery of a few TestScript tuning opportunities.

Unfortunately, the KeyOn team hit a blocker that prevented their application backend from making connections to any reference implementations (our WildFHIR RI, HAPI FHIR servers, etc.). Due to time zone differences and weekend schedules, KeyOn developers in Korea were unable to be reached in time to resolve that issue before the end of Sunday's sessions.

- Screenshots and/or links to further information

[US Core 6.1.0 tests in Touchstone.](#)

- Discovered issues / questions (if there are any)

We uncovered an opportunity to clarify (throughout the US Core 6.1.0 testing suite) FHIRPath syntax inspecting FHIR bundles to produce a better testing experience.

- Now what?

The KeyOn team will resume their testing efforts in the next few days, and the AEGIS team will continue our support of those efforts.

## Vulcan/Gravitate Health - ePI and GIDWG/IDMP

- What was the track trying to achieve?
- List of participants (with logos if you have time and energy)
- Notable achievements
- Screenshots and/or links to further information
- Discovered issues / questions (if there are any)
- Now what?

## What was the track trying to achieve?

The goal of this track is to progress the development and maturity of two topics:

1. FHIR workflow for requesting ISO's Identification of Medicinal Product Pharmaceutical Product Identifiers (PhPID)

## 2. FHIR Electronic Medicinal Product Information (ePI)

### List of participants (with logos if you have time and energy)

Georgio Cagnoli (HL7 Europe)

Diego Kamiker (HL7)

Daisuke Koide (University of Tokyo, Japan)

Philippe Michiels (Datapharm)

Rik Smithies (HL7 UK)

Magnus Wallberg (UMC)

Charles Yagmour (Samvit Solutions LLC)

Craig Anderson (Pfizer)

### Notable achievements

#### Day 1: IDMP PhPID

Abbreviations used:

SD - SubstanceDefinition

APD - AdministrableProductDefinition

PhPID - Pharmaceutical Product Identifier

GSID - Global Substance Identifier

Walkthrough of IDMP request and publish API for new participants.

Review of physical URLs and canonical URL

A domain to host the IDMP API has been acquired and implemented: [umcterminologies.org](http://umcterminologies.org)

The domain will be divided into three subdomains according to: [umcterminologies.org](http://umcterminologies.org)

Will be used by CodeSystems, ValueSets and StructureDefinitions. CodeSystems and ValueSets may be (but do not have to be) resolvable by redirecting to data or api (below).

Examples of the usage are:

<http://umcterminologies.org/phpid>

<http://umcterminologies.org/gsid>

<http://umcterminologies.org/level{n}-php> (n in [1, 2, 3, 4])

<http://umcterminologies.org/task-input-type>

<http://umcterminologies.org/pdfCharacteristics>

<http://umcterminologies.org/php-level>

<http://umcterminologies.org/edqmDoseFormAttributes>

We agreed that http should be used and not http(s): [api.umcterminologies.org](http://api.umcterminologies.org)

The api subdomain will be used for the FHIR API used to request and search for PhPIDs and GSIDs. It is foreseen that future APIs might be added to this sub domain so the FHIR API will be on the URL: <https://api.umcterminologies.org/fhir>.

The FHIR API has the expected endpoints like:

<https://api.umcterminologies.org/fhir/Task> for requesting PhPIDs

<https://api.umcterminologies.org/fhir/Subscription> used to subscribe to events like when a PhPID is becoming deprecated or a Task is completed or rejected.

<https://api.umcterminologies.org/fhir/AdministrableProductDefinition> for searching PhPIDs represented by the APD resource and retrieving PhPIDs as the result of a request using a Task.

<https://api.umcterminologies.org/fhir/SubstanceDefinition> for searching and retrieving GSIDs represented as SubstanceDefinition resources.

<https://api.umcterminologies.org/fhir/SubscriptionTopic>, SubscriptionStatus, SearchParameter, CapabilityStatement, MetaData

[data.umcterminologies.org](http://data.umcterminologies.org)

The data sub domain is used to connect the published FHIR resources

PhPIDs and GSIDs in ePI

The PhP identifiers are added to the classification element of the MedicinalProductDefinition. All four levels of the PhPID are provided to allow for:

Searching on any PhP level for products

PhPID Level 1 - Substance(s) Term

PhPID Level 2 - Substance(s) Term(s) + Strength

PhPID Level 3 - Substance(s) Term(s) + Administrable Dose Form

PhPID Level 4 - Substance(s) Term(s) + Strength + Administrable Dose Form

The system and code from the classification can be used to create a physical URL to retrieve the PhPID information. The url would be:

<http://umcterminologies.org/level4-phpid/C31D33E67BD210B909179ADF9AEA6376>

The following example shows the GSID (Global Substance Identifier) being added to the identifier element of the SubstanceDefinition. It is a canonical URL to the GSID and must be converted to a physical URL although it may resolve via an http link.

## Day 2: ePI

Agreed on an approach to define and deliver ePI Type 4. ePI Type 1 to 3 are FHIR documents. However, ePI Type 4 will be a complete departure from the current paradigm and will not be a document. Instead, ePI Type 4 will be a Collection Bundle with maximally structured content that can be transformed into different output formats to serve different use cases. In some cases that could be a document, in other cases only individual resources or multiple resources would be combined to facilitate a given use case.

For example, rather than using Composition to capture indications, ClinicalUseDefinitions (CUD) would be used to encode the indication (e.g., using SNOMED, MedDRA, ICD) and it would include the narrative text. As a result, the Indication section for a drug label could be generated by combining the relevant CUD resources.

Benefits of this more granular / Collection Bundle approach:

1. Easier to personalize content. E.g., build a full drug label from individual resources using a style sheet. Or build a personalized label for a specific person by taking only the indication, contraindication, strengths, and warnings applicable to this person.
2. Easier to implement. Easier to create granular components at the resource level (e.g., one CUD per indication) rather than trying to add more markup to the existing composition.text
3. Easier to integrate with MCP agent solutions. E.g., agents can first target the metadata in the resources (e.g., CUD indication, contraindication) and then target the text in the CUD element if needed.

At the upcoming Global IDMP Working Group (GIDWG), the team agree that the following use case scenario would make for a good demonstration:

1. Search for all PhPID levels for drug with Name X [Example drug to be selected later] and Jurisdiction Y [Jurisdiction to be chosen later].
2. The UMC's FHIR system returns PhPID Level 1, 2, 3 and 4 for that requested drug
3. Those PhPIDs will in turn be used to search for all ePIs matching the returned PhPID Level 1, 2, 3 and 4 (those PhPIDs will be incorporated into all sample ePIs).

The following will be needed to run the scenario at the GIDWG meeting:

- Product with both PhPID and ePI
- PhPID level 1 ,2, 3 and 4 for that product
- Local development servers
  - Model Context Protocol (MCP) server for ePI
  - MCP server for PhPID
  - References
    - [MCP Explained: The New Standard Connecting AI to Everything | by Edwin Lisowski | Medium](#)
    - [Announcing the Agent2Agent Protocol \(A2A\) - Google Developers Blog](#)

The team set up a FHIR server and MCP server to conduct testing where agents conducted intelligent searches of ePI content.

- Set up FHIR ePI server via AidBox
- Uploaded an ePI to an AidBox FHIR server using a Transaction Bundle
- Add Azure MCP server extension to VS Code
- Enable local MCP server in VS code/Github Copilot. Add other servers as needed
- Create prompts in VS code, E.g., What MPDs are available

## Screenshots and/or links to further information

The following screen captures show our MCP server engaging with an ePI on a FHIR server

What FHIR resources are referenced in the Ibrance bundle.

mcp.json:3-7

> Used 1 reference

The Ibrance bundle (ID: 9a229bc5-01fa-419c-b435-cda165ede0b4) references the following FHIR resources:

- Composition
- MedicinalProductDefinition
- ManufacturedItemDefinition
- AdministrableProductDefinition
- PackagedProductDefinition
- RegulatedAuthorization
- ClinicalUseDefinition (for interactions, indications, warnings, undesirable effects)
- Organization (manufacturer and related entities)

These resources collectively describe the product, packaging, regulatory status, clinical uses, and manufacturer details for IBRANCE® (palbociclib) tablets.

List all CUDs

mcp.json:3-7

> Used 1 reference

Here are all the ClinicalUseDefinition (CUD) resources referenced in the Ibrance bundle:

1. Interaction: Strong CYP3A Inhibitors (e.g., clarithromycin, indinavir, itraconazole, etc.)
2. Interaction: Strong CYP3A Inducers (e.g., phenytoin, rifampin, carbamazepine, etc.)
3. Interaction: Midazolam
4. Indication: Malignant tumor of breast (HR-positive, HER2-negative advanced or metastatic breast cancer)
5. Warning: Neutropenia
6. Warning: Interstitial lung disease (ILD) and/or pneumonitis
7. Warning: Embryo-Fetal Toxicity
8. Undesirable Effect: Anemia
9. Undesirable Effect: Thrombocytopenia
10. Undesirable Effect: Leukopenia

These CUDs describe important interactions, indications, warnings, and side effects for IBRANCE® (palbociclib) tablets.

Given a 22 week pregnant patient, can this drug be used?

mcp,json:3-7

> Used 1 reference

No, IBRANCE® (palbociclib) should not be used in a 22-week pregnant patient. The ClinicalUseDefinition (CUD) for "Embryo-Fetal Toxicity" warns that IBRANCE can cause fetal harm when administered to a pregnant woman, based on animal studies and its mechanism of action. Effective contraception is advised during treatment and for at least 3 weeks after the last dose. Use in pregnancy is contraindicated due to the risk of harm to the fetus.

What are the different packages available for this drug and what are the FHIR resources called

mcp,json:3-7

> Used 1 reference

For IBRANCE® (palbociclib), the different packages available are:

- IBRANCE 75 mg Tablet Bottle – 21 Tablets
- IBRANCE 100 mg Tablet Bottle – 21 Tablets
- IBRANCE 125 mg Tablet Bottle – 21 Tablets

The FHIR resources that describe these packages are called PackagedProductDefinition. Each package variant (75 mg, 100 mg, 125 mg) is represented by a separate PackagedProductDefinition resource.

Can this be taken by someone who has trouble swallowing. Why

mcp,json:3-7

> Used 1 reference

IBRANCE® (palbociclib) tablets should not be taken by someone who has trouble swallowing. The product information specifies that the tablets should be swallowed whole and should not be chewed, crushed, or split. Tablets that are broken, cracked, or not intact should not be ingested. This is important to ensure correct dosing and safety.



Which FHIR resources were used for that result.

mcp,json:3-7

> Used 1 reference

The answer about swallowing IBRANCE® (palbociclib) tablets is based on information from the following FHIR resources in the bundle:

- PackagedProductDefinition (describes the tablet form and packaging)
- AdministrableProductDefinition (specifies the route of administration and instructions, including that tablets should be swallowed whole and not chewed, crushed, or split)

These resources provide the details about the physical form and administration requirements of the drug.

## Discovered issues / questions (if there are any)

No serious issues or questions

## Now what?

- Finalize the ePI Type 4 profile
- Create a new page in the ePI IG for technical recommendations (e.g., FHIR server setup, API capability statements, MCP and A2A setup plus use cases)
- Prepare PhPID/ePI demo for GIDWG meeting in October
- Engage stakeholders (e.g., developers and other implementers) to determine how best to increase the ePI adoption rate and reach critical mass for implementation.

## Vulcan Utilizing the Digital Protocol (UDP)

- What was the track trying to achieve?

Testing of the IG in Aug-Sep for exchange of clinical trial protocols aligned to ICH M11 (Clinical electronic Structured Harmonized Protocols) between sponsors and regulators. UDP is an umbrella project to accelerate exchange protocols through collaboration and integration of work products across Vulcan, CDISC and TransCelerate enabling interoperability and regulatory compliance..

Standards development is supported by the HL7 BR&R working group.

Track to further test the IG by exploring alignment with EBMonFHIR-Study Registry-European Union Clinical Trial Information System (EU CTIS), and provide an opportunity for stakeholders to apply the UDP FHIR specifications to a sample, M11-formatted protocol of their own choosing.

Test scenarios:

### **1 - Creation System: Create a Digital Protocol in Narrative Form**

### **2 - Creation System: Create a Digital Protocol in Structured Form**

### **3 - Display System: Render a Digital Protocol from a FHIR format into human readable format:**

- Retrieve a valid message from the backing store
- Present the content on screen as a recognisable protocol

Success Criteria:

- The necessary instances can be created, saved to a backing store, retrieved and rendered and are seen to match the original source.
- This must be true for both Narrative form and Structured form
- The protocol source used must not previously have been converted into FHIR.

### **4 - Demonstrate compatibility between the UDP M11ResearchStudy and EBM StudyRegistryRecord Profiles.**

Action: A Resource instance will be created and assigned the UDP M11ResearchStudy Profile and the EBM StudyRegistryRecord Profile. This Resource instance will be added to the EBM IG Build (and to the Vulcan UDP IG Build) and the QA report will be checked for errors and warnings.

- List of participants (with logos if you have time and energy)

Stacy Tegan, TransCelerate – **Track Lead**  
 Hugh Glover, Vulcan – **Track Lead (Remote)**  
 Shani Sampson, TransCelerate – **Project Manager**  
 Brian Alper, Computable Publishing  
 Smita Hastak, Samvit Solutions LLC  
 Dave Ibersen-Hurst, CDISC  
 Samit Jana, Lilly  
 Don Jennings, Lilly  
 Mark Kramer, Mitre  
 Jame McDermott, Vulcan  
 Filippo Napoli, Vulcan  
 Khalid Shanin, Computable Publishing  
 Rik Smithies, NProgram  
 Chi Vo, Lilly



**Breakout/Engagement with**

Symptoms Data Exchange Track, Language First Interoperability Track, eHealth Exchange, et al.

- Notable achievements
  - Successfully demonstrated testing scenarios 1-4, some minimal errors experienced which were determined to be related to the reference system rather than M11 or the IG.
  - Created a digital protocol in FHIR demonstrating narrative and structured content.
  - Rendered a digital protocol from FHIR to recognizable human-readable protocol. Upon review, minor formatting errors were discovered in the creation system that could inform guidance to developers.
  - Demonstrated compatibility between the UDP M11ResearchStudy and EBM StudyRegistryRecord Profiles through planned and additional ad hoc testing.
  - Gathered input on future use cases for digital protocols in FHIR and explored potential synergies with Symptoms Data Exchange Track, Language First Interoperability Track, and others during well-attended break-out session (22 people). Of note: Patient/Trial matching identified as a strong mutual interest.
- Screenshots and/or links to further information
  - IG tested: [Clinical Trial Protocol \(Vulcan UDP\) v1.0.0-ballot](#)

\*\*Original .docx protocol

Connectathon 40 Track Report.doc x ICH\_M11\_Template\_IGBJ\_Example x FHIR Resource VHEWER x | +

https://hl7vulcan.sharepoint.com/w:/r/sites/UDP/\_layouts/15/Doc2.aspx?action=edit&sourcedoc=%7Bdb1bd549-ea1f-47c0-ae31-617915e4b444...

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ICH M11 Template

**Full Title:** A Phase 3 Study of Nasal Glucagon (LY900018) Compared to Intramuscular Glucagon for Treatment of Insulin-induced Hypoglycemia in Japanese Patients with Diabetes Mellitus

**Sponsor Protocol Identifier:** I8R-JE-IGBJ

**Original Protocol:** No

**Version Number:** (a)

**Version Date:** 05-Dec-2017

**Amendment Identifier:** I8R-JE-IGBJ(a)

**Amendment Scope:** Global

Connectathon 40 Track Report.doc x ICH\_M11\_Template\_IGBJ\_Example x FHIR Resource VHEWER x | +

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TCB Sharepoint Vulcan HL7 Conflue... HL7 FHIR ACCELE... FHIR Accelerator Ho... ZOOM Doodle - Dashboard Index of HL7 IGs Connectathons - FH...

ICH\_M11\_Template\_IGBJ\_Example Search for tools, help, and more (Alt + Q)

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Overall Rationale for the Amendment:

*The overall rationale (one primary driver) for the changes implemented in the protocol amendment should be provided. In addition, provide a high-level description of the change(s) and a brief scientific rationale for specific items outlined in the table provided (eg, changes to individual inclusion/exclusion criteria). See Appendix 9, Protocol Amendment History for examples of format and green text for sample content.*

*Updates to address safety concern & align with product guidelines.*

The table below describes the current amendment.

|   |  |               |
|---|--|---------------|
| <b>Approximate ???% Enrolled at time of Sponsor Approval:</b> | Approximate ??% enrolled Globally. (not known for creating sample protocol)  |               |
| <b>Reason(s) for Amendment:</b>                               | Primary: Safety  | Secondary: NA |
| <b>Amendment Summary:</b>                                     | Protocol I8R-JE-IGBJ A Phase 3 Study of Nasal Glucagon (LY900018) Compared to Intramuscular Glucagon for Treatment of Insulin-induced Hypoglycemia in Japanese Patients with Diabetes Mellitus has been amended. The new protocol is indicated by Amendment (a) and will be used to conduct the study in place of any preceding version of the protocol. The overall changes and rationale for the changes made to this protocol are as follows: <ul style="list-style-type: none"> <li>An exclusion criterion for patients with retinopathy or maculopathy was added due to the potential risk of fundal</li> </ul> |               |

\*\*Vhewer - received and human readable



- o Deeper exploration of additional use cases and potential synergies - groups met with onsite, consider reach out to Patient Scheduling, CodeX.