**Title slide**

Health Information Technology Council Meeting

Nov 2, 2020

**Slide title: Agenda**

Welcome

Undersecretary Lauren Peters

-Approval of the Feb. 3, 2020 minutes (vote)

Updates from last meeting

Bert Ng

Clinical Gateway nodes

David Whitham

HIway strategic plan

Undersecretary Lauren Peters & Bert Ng

HIway budget

Bert Ng & David Whitham

HIway connection requirement & 2020 attestation

Chris Stuck-Girard

Conclusion

Undersecretary Lauren Peters

**Slide title: Welcome**

*Undersecretary Lauren Peters*

**Slide title: Vote: Approve minutes**

MOTION: That the Health Information Technology Council hereby approves the minutes of the council meeting held on August 3, 2020 as presented/amended

**Slide Title: HIway connection requirement & 2020 attestation**

Chris Stuck-Girard

**Slide title: HIway attestation: HIway connection requirement overview**

The HIway connection requirement requires providers to engage in HIE via the Mass HIway as set forth in M.G.L. Chapter 118I, Section 7, and as detailed in the Mass HIway Regulations (101 CMR 20.00).

ACUTE CARE HOSPITALS

First year requirement applied: 2017

Submit in 2020: Year 4 attestation form

LARGE AND MEDIUM MEDICAL AMBULATORY PRACTICES & LARGE COMMUNITY HEALTH CENTERS

First year requirement applied: 2018

Submit in 2020: Year 3 attestation form

SMALL COMMUNITY HEALTH CENTERS

First year requirement applied: 2019

Submit in 2020: Year 2 attestation form

HIway annual connection requirement

Year 1: Send or receive HIway Direct messages for at least one use case

Year 2: Send or receive HIway Direct messages for at least one provider-to provider (P2P) use case

Year 3: Send HIway Direct messages for at least one P2P use case, and Receive HIway Direct messages for at least one P2P use case

Year 4: Meet Year 3 requirement or be subject to penalties if requirement is not met

**Slide title: HIway attestation: 2019 statistics**

Graphic shows statistical breakdown of 2019 HIway attestation submissions.

Total attestations 599

Broken down:

512 Medium and Large Ambulatory Practices

41 Acute Care Hospitals

44 Large Community Health Centers

2 Small Community Health Centers

70.62% used HER to connect directly to HIway for use case attestation

28.55% Used HER via HISP other than Mass HIway for use case attestation

176 Use Cases involved sending but not receiving, 311 Use Cases involved both sending and receiving, 112 Use cases involved receiving but not sending

2 Providers are in year one of Attestations, 556 Providers are in year 2 of Attestations, 41 Providers are in year 3 of Attestations

61% of Providers sent greater than 100 messages per month as part of their Use Case

**Slide title: Attestation: 2020 timeline**

Top box: The HIway started planning for the 2020 attestation cycle last fall. Early this spring, outreach and education ramped up. After delaying the attestation deadline to account for COVID-19, as of Aug. 1, the HIway is accepting attestation/exception forms.

Attestation timeline:

Dec. 31, 2019: Deadline to implement use cases for 2020 attestation cycle

May 2020:

-HIway extends attestation/ADT deadlines

-First attestation webinar

-PDF version of attestation/exception forms online (publicly available for submitters to prepare answers in advance)

August 1: Attestation/exception webforms go live and start accepting submissions

Dec. 31, 2020: Deadline for attestation/exception submissions

Jan. 1, 2021: Deadline for Acute Care Hospitals to submit ADTs to the Statewide   
ENS Framework

January 2021: HIway reaches out to POs that have not submitted

Winter 2021: When it seems that submissions have stopped, HIway   
closes webform

**Slide title: Attestation: Improvements to process**

Top box: For the 2020 attestation cycle, the HIway made improvements to streamline the process for providers and collect data regarding new program requirements.

New this year:

-HIway unique ID (HID): Each provider organization/sub-organization has been assigned a HID. Submitters will use HIDs on their forms (instead of the full name/location of each sub-org). This should streamline the process, especially for practices with many sub-organizations.

-New section to record ADT submission by Acute Care Hospitals

-Clarified language in use case transmission methods section

-New questions on attestation/exception forms, including taking a deeper dive into details of use cases

**Slide title: HIway attestation: 2020 statistics so far**

Due to COVID-19 and the deferral of the submission deadline, HIway attestation submissions are low so far this year.

Left column:

As of Oct. 26:

31 forms submitted

Year 3/4 forms: 16

Exception forms: 15

Right column:

Acute Care Hospitals (n=66)

7 attestations submitted

0 exception forms submitted

11% attested

Community Health Centers (n=38)

3 attestations submitted

2 exception forms submitted

8% attested

5% exception forms

Medium/Large Medical

Ambulatory Practices (n=528)

Attestations submitted for 9 practices

Exception forms submitted for 22 practices

2% attested

4% exception forms

**Slide title: HIway attestation: 2020 outreach**

The HIway is encouraging POs to submit attestation forms ASAP and will continue to reach out to POs after the Dec. 31 deadline

Though the HIway recognizes the unique challenges of this year, we are proceeding with attestation (deadline extended to Dec. 31)

Via webinars, mass emails, and 1-1 emails, the HIway is encouraging POs to submit attestation/exception forms ASAP

We have partnered with the Massachusetts Health & Hospital Association and the Massachusetts League of Community Health Centers, which have sent advisories to members on our behalf

We are planning how to encourage attestation submissions after Dec. 31 (snail mail, phone calls)

**Slide Title: Consolidated Clinical Gateway**

David Whitham

**Slide title: Recap: Consolidated Clinical Gateway (CCG) Project Overview**

This project will migrate the current suite of Clinical Gateway nodes to the AWS cloud.

* Key project objectives include
  + - Migrate to AWS to reduce infrastructure costs and address scalability
    - Provide future alternatives to Direct messaging for public health reporting
    - Support Query & Retrieve functionality to align with TEFCA
  + Implement a FHIR interface to support enhanced the business functionality

Diagram shows the high-level architecture of the Consolidated Clinical Gateway

Web service and Direct Messaging connections to the CCG will process messages to backend applications.

Currently there are seven (7) applications:

-Massachusetts Cancer Registry (MCR)

-Childhood Lead Poison Prevention Program (CLPPP)

-Children’s Behavioral Health Initiative (CBHI)

-Electronic Lab Reporting (ELR)

-Immunization (MIIS)

-Intake Enrolment Assessment and Transfer Service (OTP&TB)

-Syndromic Surveillance (SYNDROMIC)

**Slide Title: Consolidated Clinical Gateway (CCG) – AWS migration timeline**

Timeline graphic shows target Go-Live dates for 4 categories of applications

* Internal Apps – Live Q3/Q4 2020
* CCG Phase 1 – Live Q1 CY 2021
* CCG Phase 2 – Live Q2 CY 2021
* FHIR & Others – Live Q3 CY 2021

Migration notes:

* CG nodes in current VG4 environment are retained until the AWS system is stabilized. In case of any issues this allows for a quick rollback to the VG4 environment
* Migrations will be done on weekend nights to make sure the message flow is not interrupted during peak processing hours
* For CCG Phase 1, the lower volume nodes will be cutover to PROD first and Syndromic will be last
* For CCG Phase 2, the lower volume nodes will be cutover to PROD first and MIIS will be last
* Each production cutover will have in-depth pre-production cutover activities

**Slide Title: Query HIE and FHIR update**

Julie Creamer & Kevin Mullen

**Slide Title: Query HIE and FHIR Research**

Support HIE Outreach Program through technical engagement with providers, vendors, and consortia to determine Query HIE and FHIR business and technical requirements, develop program knowledge base, and communicate capabilities to the community

2020-Q1: Stakeholder Engagement & Requirements

2020-Q2: Research & Analysis; Market-Capability Assessments

2020-Q3: Training Sessions & Content Development

2020-Q4: Education, Web Toolkit Updates, & Outreach

Query HIE Research Process:

* + Develop expertise in the Query HIE space and with the vendors, CommonWell, and Carequality
  + Facilitate meetings with stakeholders, CommonWell, Carequality, major EHR vendors, and their customers to understand requirements and workflow
  + Gather and document the key processes and business and technical requirements to connect and utilize Query HIE

Query HIE Work Product

* + Priority-Setting Framework
  + Query HIE Landscape Assessment
  + Business-Technical Requirements Index
  + EHR-Query HIE Process Workbooks
  + Training Guides

FHIR Research Process

* + Develop expertise in Fast Healthcare Interoperability Resources (FHIR) and its applicability to the Mass HIway
  + Facilitate meetings with vendors, providers, and other stakeholders with FHIR implementation experience
  + Gather and document technical and business requirements related to the application of FHIR to the Mass HIway

FHIR Work Product

* + FHIR Capability Assessment
  + FHIR Market Assessment
  + Business-Technical Requirements Index
  + Training Guides
  + FHIR Design-Approach Options

**Slide Title: HIE Use Cases map to ONC 2020 ISA**

Use case prioritization and technical requirement map:

* Limited focus, internal exercise to establish a composite rank of use cases and HIE services and supports
* Use cases were mapped to specific interoperability needs, standards, and implementation specifications outlined in the 2020 Interoperability Standards Advisory (ISA)

Key Observations:

* Adoption estimates indicate that stakeholders are utilizing standards and specifications to support the top priority use cases
* Emerging FHIR standards and specifications are enabling top use cases and a large share of specialized use cases and services
* Query HIE related components are concentrated to a smaller group of use cases, services, and scenarios
* There are current and new federal requirement elements supporting a majority of the top identified use cases
* Indicators reflect increasing opportunities and likelihood for improved interoperability

**Slide Title: Query HIE: MA Interoperability Network Market**

Graph:

EHR Network Identified: 1028 / 66%

EHR Not Identified: 520 / 34%

Combined Mass HIway CRM & Attestation Data Set with Interoperability Network (Carequality & CommonWell) Active Participant Directories:

* 1548 unique hospital-provider organizations in Massachusetts
* 1028 have an identified EHR-Network (breakdown table below)
* 520 do not have an EHR-Network identified
  + *350 have no EHR-Network or parent organization identified*
  + *170 list a parent organization with an EHR capable of connecting to an interoperability network*

Table

Interoperability Network

Carequality & Commonwell:

* Active: 87 / 17%
* Potential: 181 / 46%
* Unknown: 0 / 0%
* Total: 268 / 26%

Carequality\*:

* Active: 386 / 73%
* Potential: 144 / 37%
* Unknown: 0 / 0%
* Total: 530 / 52%

Commonwell

* Active: 53 / 10%
* Potential: 66 / 17%
* Unknown: 0 / 0%
* Total: 119 / 12%

No identified network

* Active: 0 / 0%
* Potential: 0 / 0%
* Unknown: 111 / 100%
* Total: 111 / 11%
* Includes Care Everywhere

Actively Using Query HIE:

~ 51% (526) identified organizations listed as “active” on interoperability network

Provider Engagement Opportunity:

~ 38% (391) organizations with *potential capability* of connecting to an interop network

~ 11% (111) organizations with no identified connection capability

**Slide Title: Content development with MeHI**

* In collaboration with MeHI, prioritized areas from the Interoperability research and data sets for focused review
* Focus group reviews identify and develop content updates for web, toolkits, and education materials

Transition arrow towards > Initial Focus Areas for Consumer Education – Content Development Status:

* HIE Services & Use Cases – In Process
* Query HIE - Completed
* Privacy & Consent – In Process
* Improving C-CDA Exchange – In Process
* FHIR-APIs – In Process
* CMS-ONC Regulatory Compliance – In Process

Transition arrow towards > MeHI: MeHI Query HIE Toolkit

**Slide Title: Query HIE: Next steps**

* Promote the Query HIE toolkit on the Mass HIway website via newsletter articles and reminders
* Launch series of educational webinars in February 2021 targeting information technology professionals, providers and other clinical staff, and larger associations such as the Massachusetts Medical Society
* Identify opportunities for specific practices to benefit from Query HIE and advise providers on the activation and onboarding process
* Gather and consolidate feedback related to Query HIE from providers and use this information to guide future educational and promotional efforts

**Slide Title: FHIR API: HIE survey scan**

Primary review of HIE information sources were combined with secondary HIE surveys to give an approximation of FHIR capabilities in the HIE market

Graph-1: HIE Capability:

Secure Web Services:

* All HIEs: 35/55, 64%
* State HIEs: 24/38, 60%

FHIR Capability:

* All HIEs: 35/55, 64%
* State HIEs: 26/38, 68%

FHIR-API Development:

* All HIEs: 18/55, 33%
* State HIEs: 14/38, 35%

Carequality Framework:

* All HIEs: 22/55, 40%
* State HIEs: 17/38, 43%

Table-1 Data Source:

HIE Survey

* All HIEs: 39
* State HIEs: 25

Primary Review

* All HIEs: 31
* State HIEs: 27

Number of HIEs in Assessment

* All HIEs: 55
* State HIEs: 38

Transition arrow from FHIR Capability 35/55, 64% towards > Confirmed FHIR capability = 21/35 HIEs

Transition arrow from Confirmed FHIR capability = 21/35 HIEs towards > Graph-2: FHIR Enabled HIE Services

Graph-2: FHIR Enabled HIE Services - Instances of HIE Services

* HL7-FHIR Transformation & HISP – 6
* FHIR API Access to Clinical Resources – 5
* Query HIE – 3
* SMART on FHIR API Access to Clinical – 3
* FHIR API Access to Public Health Data – 3
* Consolidated Clinical Summary – 3
* Unspecified FHIR Capability – 3
* FHIR API Access to PDMP Data – 2
* Provider Directory – 2
* FHIR Based Consent Management – 1
* eCQM & Quality Reporting – 1
* FHIR Based Event Notification Services – 1
* Provider to Payer Exchange (Da Vinci) – 1
* Patient Access via Mobile Apps – 1

Table-2

* Total HIE Service Instances – 35
* Unique HIE Services – 14
* Number of HIEs - 21

**Slide Title: FHIR API: Example of FHIR API use case**

Provider Directory (Oregon)

The Oregon Health Authority (OHA) is implementing a shared resource for accurate, trusted provider data called the Oregon Provider Directory (OPD)

* Directory Users
  + Providers
  + Hospitals
  + Payers
  + Medicaid Coordinated Care Organizations
  + Other health care entities
  + It is not currently accessible by consumers
* Data Sources
  + Participating Organization and Provider data
  + National Plan and Provider Enumeration System (NPPES)
  + PECOS (Medicare Providers)
  + MMIS (Oregon Medicaid providers)
  + Other trusted data sources (CCO network tables, EHR Incentive Programs, Patient Centered Primary Care Home)
* Master Record
  + Source data is cleaned, matched, and merged to create a single master record
* Data Types
  + Provider Demographics
  + Organization Demographics
  + Provider Contact Info
  + Address & Location(s)
  + HIE Endpoints – including Direct secure messaging addresses
  + EHR Info
  + Affiliations
* Data Access and Use
  + APIs (FHIR, RESTful, SOAP)
  + Web Portal
  + DirectTrust Flat File
  + Secure File Transport Protocol (SFTP)

**Slide Title: FHIR API: Mass HIway initiatives**

FHIR API initiative:

FHIR API to Consolidated Clinical Gateway:

* Moderate Value & Moderate Complexity / Effort
* FHIR API is component of new CCG gateway architecture
* Message transformation to/from back-end registry systems

Technical components (ex. Amazon Web Services, Rhapsody engine) of the Consolidated Clinical Gateway Nodes could be leveraged for other FHIR API initiatives

Potential FHIR API options for Mass HIway to explore:

FHIR API to Provider Directory:

* Higher Value & Lower Complexity / Effort
* Potential alignment-support for CMS-ONC requirements
* Development of API capability is a component Mass HIway - Orion contract

FHIR Exchange / Routing Services

* Undefined Value & Higher Complexity / Effort
* Potential alignment with ONC FAST initiative and efforts
* Assess Mass HIway technology capability gaps

HL7-FHIR Broker / Message Transformation:

* Undefined Value & Higher Complexity / Effort
* Potentially leverage new technical capabilities gained from CCG FHIR transformation services
* Need to identify interested organizations and use cases

**Slide Title: FHIR API – Next Steps**

* Gather and consolidate stakeholder feedback related to FHIR API services and use cases
* Identify interested providers and organizations and use cases for;
  1. FHIR API access to Consolidated Clinical Gateway (CCG)
  2. FHIR API access to Provider Directory
* Complete FHIR API solution scoping and scaling options and assess Mass HIway technology and capability gaps. Determine implications to Orion contract and identify add/change areas necessary to support development
* Develop framework of options and opportunities to align proposed FHIR API solution(s) with the CMS & ONC requirements on regulated entities

**Slide Title: eMolst Initiative**

*Bert Ng*

**Slide Title: eMolst Overview**

eMOLST initiative goal:

* Supporting patient preferences for end-of-life care through technology that improves care coordination

Project objectives:

* Update MOLST – Update the state’s MOLST form to better align with the POLST national paradigm
* Create eMOLST Repository – Create an electronic single source of truth for eMOLST forms
* Develop Integration Strategy – Develop an integration and implementation strategy to gain efficiency

Historical timeline:

* Feb 2020 – Joint letter issued by EOHHS, EOEA, and DPH to explore eMOLST
* Oct 2020 – CMS approved project for federal matching funds

**Slide Title: eMolst Two-year estimated timeline**

2020 Q4 Design: Project Manager

2021 Q1-Q4 Design: Conduct Outreach, Procurement, Design RFR, Contracting

1. Q1 Develop: Vendor creates repositiory

2022 Q2-Q4Implement: Go live, Provider Implementation

**Slide Title: e Molst: Project manager tasks**

EOHHS and EOEA will bring on an eMOLST project manager who will be responsible for design tasks through stakeholder engagement

Stakeholders

Coalition for Serious Illness Care

MA MOLST Subcommittee

Trade organizations

Providers

EOHHS/Mass HIway

DPH

MeHI

Tasks

1. Assess the current state of MOLST
2. Define the desired future state of an ePOLST
3. Perform gap analysis and define ePOLST operating model
4. Determine design of ePOLST registry
5. Create RFR and support the procurement process
6. Develop implementation strategy

**Slide Title: Conclusion**

Undersecretary Lauren Peters

**Slide title: Next HITC meeting**

Winter HITC meeting

February 1st, 2020

3:30 – 5 p.m.

**Slide title: Appendix A: HIE use cases map to ONC 2020 ISA**

**Slide Title: HIE Use Cases map to ONC 2020 ISA**

HIE Use Cases > ISA Content / Structure Standards & Specifications:

Transitions of Care:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 5
* Adoption of Query HIE Components – 1
* Adoption of FHIR Components – 1
* Federal Requirements – Yes

Referral Management:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 4
* Adoption of Query HIE Components – 1
* Adoption of FHIR Components – 3
* Federal Requirements – Yes

Care Plan Exchange:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1.92
* Adoption of Query HIE Components – 2
* Adoption of FHIR Components – 1.25
* Federal Requirements – Yes

Event Notifications and Alerts:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 3.67
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1
* Federal Requirements – Yes

Opioid Monitoring and Support Services:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 3.18
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 3
* Federal Requirements –

Immunization Information-Submit & Query HIE:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 5
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 0
* Federal Requirements – No

Lab Orders-Results:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1.38
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1
* Federal Requirements – Yes

Emergency Department High-Utilizers:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Social Determinants of Health:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1.44
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 0
* Federal Requirements – No

Public Health Reporting:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1.8
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1
* Federal Requirements – Yes

Medication Reconciliation:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

MOLST – Advance Directives:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 2
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1
* Federal Requirements – Yes

Population Health Analytics:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1.75
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 2
* Federal Requirements – No

Telehealth:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Longitudinal Health Records:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

eCQM:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 3.4
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1
* Federal Requirements – Yes

Image Exchange:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 3.44
* Adoption of Query HIE Components – 3.5
* Adoption of FHIR Components – 0
* Federal Requirements – No

VA Integration:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Emergency Medical Services (EMS):

* Map to ISA – Yes
* Adoption of Standards & Specifications – 0
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 0
* Federal Requirements – No

eConsult:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Disability Determination:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Genomics:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1
* Federal Requirements – No

mHealth:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 2.78
* Adoption of Query HIE Components – 3
* Adoption of FHIR Components – 1.67
* Federal Requirements – Yes

Insurance Underwriting:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Research-Clinical Trials:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 2.62
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 3
* Federal Requirements – Yes

HIE Services & Support > ISA Services / Transport / Exchange Standards & Specifications

HIway Adoption and Utilization Support (HAUS)\*:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Query-Based Exchange:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 3.47
* Adoption of Query HIE Components – 2.75
* Adoption of FHIR Components – 2.0
* Federal Requirements – No

Event Notification Services (ENS) Certification Framework\*:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

MIIS – Immunization Information-Submit & Query HIE\*:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – 1.0
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Healthcare Directory – Provider Directory\*:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1.33
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1.5
* Federal Requirements – Yes

Directed Exchange (Push):

* Map to ISA – Yes
* Adoption of Standards & Specifications – 5
* Adoption of Query HIE Components – 3.67
* Adoption of FHIR Components – 0
* Federal Requirements – Yes

Consolidated Clinical Gateway – Public Health Reporting\*:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Blank

Patient Identification Management:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 5
* Adoption of Query HIE Components – 3.67
* Adoption of FHIR Components – 0
* Federal Requirements – No

Clinical Decision Support Services:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 2.13
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 1.8
* Federal Requirements – Yes

Consumer Mediated Exchange:

* Map to ISA – No
* Adoption of Standards & Specifications – Blank
* Adoption of Query HIE Components – Blank
* Adoption of FHIR Components – Blank
* Federal Requirements – Yes

Care Service Discovery:

* Map to ISA – Yes
* Adoption of Standards & Specifications – 1
* Adoption of Query HIE Components – 0
* Adoption of FHIR Components – 0
* Federal Requirements – No

\* Existing Mass HIway Service

Scale Table:

1 – Low Adoption

2 – Low-Med Adoption

3 – Medium Adoption

4 – Med-High Adoption

5 – High Adoption

**Slide title: Current CCG Design with FHIR Services**

CCG: High Level Architecture

Far left box (arrows pointing to and from upper and lower middle left boxes): Providers

Upper middle left box (arrows pointing to/from center box): Web Service (New)

* Synchronous
* SOAP / REST API  
  HL7 / FHIR / Other Payload

Lower middle left box (arrows pointing to/from center box): Direct (Orion Communicate)

* Asynchronous
* XDR / SMIME
* HL7 / Other Payload

Center box (arrows pointing to/from right box): AWS Consolidated Clinical Gateway

* Gateway
* Processing & Routing
* CCG1
  + CBHI
  + CLPPP
  + Syndromic
  + MCR
* CCG2
  + IEATS
  + ELR
  + MIIS
* Standardized enhanced format FHIR /HL7 / Other

Right box: Application backend

MCR

CLPPP

CDC BioSense

MIIS

ELR

CBHI

EIM/ESM

**Slide Title: Example FHIR Diagrams**

The following slides are example diagrams for the hypothetical FHIR service options

These were developed by and adapted from other sources, identified on each slide

These are included for illustration and discussion purposes only and should not be interpreted as a proposed or vetted design

**Slide Title: Hypothetical Provider Directory**

CHALLENGE: There are multiple places to find addresses/endpoints. Is there a place I can go to find all of them?

SOLUTION: Directory services approach for endpoint discovery

Web Sequence Diagram

Requestor Actor: Requesting systems needs endpoint

1. Endpoint address request sent to Mass HIway

Mass HIway:

2. Authenticate/Authorize

3. Endpoint Discovery

4. Endpoint address and characteristics response sent back to Requestor Actor

Requestor Actor:

5. Requestor sends request to responder endpoint (FHIR Transaction)

Responder Actor: Responder endpoint responds to FHIR request

6. Authenticate / Authorize

7. Process Query

Requestor Actor:

8. Requestor receives FHIR information from Responder

Adapted diagram from ONC FHIR at Scale Taskforce (FAST) Proposed Directory Solution

**Slide Title: Hypothetical Provider Directory**

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4. Endpoint address and characteristics response sent back to Requestor Actor

Requestor Actor:

5. Requestor sends request to responder endpoint (FHIR Transaction)

Responder Actor: Responder endpoint responds to FHIR request

6. Authenticate / Authorize

7. Process Query

Requestor Actor:

8. Requestor receives FHIR information from Responder

Adapted diagram from ONC FHIR at Scale Taskforce (FAST) Proposed Directory Solution

**Slide Title: Hypothetical FHIR Exchange-Routing**

Hybrid Model to support Point to Point and Intermediary Exchange

Diagram

Provider EMR/EHR-1 connects to Payer-1 & Payer-2

Payer-1 connects to Provider EMR/EHR-1 & Provider EMR/EHR-2

Payer-2 connects to center Mass HIway intermediary w/ connection options to Provider EMR/EHR-2 & Provider EMR/EHR-3 & Payer-3

Payer-3 connects to center Mass HIway intermediary w/ connection options to Provider EMR/EHR-2 & Provider EMR/EHR-3 & Payer-2

Provider EMR/EHR-3 connects to center Mass HIway intermediary w/ connection options to Provider EMR/EHR-2 & Payer-2 & Payer-3

Provider EMR/EHR-2 connects to center Mass HIway intermediary w/ connection options to Provider EMR/EHR-3 & Payer-2 & Payer-3

Adapted diagram from ONC FHIR at Scale Taskforce (FAST) Proposed Exchange Solution

**Slide Title: Hypothetical Exchange-Routing (1)**

CHALLENGE:  How do we consistently and reliably exchange clinical data across a hybrid system where partners may use one or more intermediaries for technical and business operations?

SOLUTION: Reliable Routing with Metadata Across Intermediaries

Requestor Actor:

1. Request with routing meta-data using base resource definition to Mass HIway

Mass HIway

2. Messaging forwarded to endpoint based upon routing meta-data

Responding Actor

3. Request processed and returned with routing meta-data to Mass HIway

Mass HIway

4. Response routed to Requestor Actor

Description Box - Example Metadata Structure - Resource Name-Flags-Cardinality-Type-Description & Constraints

Adapted diagram from ONC FHIR at Scale Taskforce (FAST) Proposed Exchange Solution

**Slide Title: Hypothetical Exchange-Routing (2)**

Requestor Actor:

1. Using FAST directory service, request is sent to a destination specific endpoint that is ‘hosted’ at the intermediary (Mass HIway)

Mass HIway

2. Messaging forwarded to endpoint

Responding Actor

3. Request processed and returned to Mass HIway

Mass HIway

4. Response routed to Requestor Actor

Description Box – In this model, endpoints are destination specific but hosted/managed by intermediaries.

Adapted diagram from ONC FHIR at Scale Taskforce (FAST) Proposed Exchange Solution

**Slide Title: Hypothetical FHIR Broker-Message Transformation**

EHR System sends CDA or C-CDA to Mass HIway

HL7 v2 Legacy Data Source sends HL7 v2 to Mass HIway

Mass HIway completes HL7 and CDA to FHIR and FHIR to HL7 and CDA Transformation

Mass HIway sends out HL7 V2, FHIR, CDA or C-CDA messages based on recipient capability-preference

**Slide Title: Hypothetical FHIR API Broker**

Mass HIway has bi-directional FHIR APIs with:

* Provider / Endpoint Directory
* Consolidated Clinical Gateway
* EOHHS IT / State API Platform / Management

EOHHS IT / State API Platform / Management has bi-directional FHIR APIs with:

* Mass HIway
* EVS-POSC
* FHIR Server Environment for back-end systems

FHIR Server Environment for back-end systems supports:

* MMIS
* Data Warehouse
* Pharmacy

**Slide Title: Appendix B: HIway operations update**

**Slide title: HIway participation July 21, 2020 – October 20, 2020**

New participation agreements: 2

* CHADIS / Total Child Health, LLC
* Disability Evaluation Services (DES) / UMass

**Slide title: HIway participation July 21, 2020 – October 20, 2020**

New connections: 9

* Berkshire Health System
* Cape Cod Healthcare
* CHADIS / Total Child Health, LLC\*
* Cornerstone Healthcare System
* Harrington Hospital
* Heywood Hospital
* Holyoke Medical Center
* Reliant Medical Group
* South End Community Health Center

**Slide title: HIway transactions**

HIway transaction volume update

* The Mass HIway processed a total of 17.6 million production transactions during the October reporting period, from September 21 through October 20, 2020. From November 2019 through October 2020 the average was 15.5 million production transactions/month for a total of 186 million over the past year.
* Public Health Reporting in October accounted for 16.9 million transactions, or 96% of the total production volume. This included 8.7 million Syndromic Surveillance transactions.
* September through November are peak volume times for immunizations, as demonstrated by the 8.1 million Immunization transactions in October when compared to the average 5.2 million over the past year.
* Provider to Provider transactions totaled 351,355 for October, a high for the past year that increased the average to 202,687 per month.

The Mass HIway team continuously monitors transaction levels, both to support operations and to identify data that provide additional insight into HIway trends and progress.

**Slide Title: HIway availability review**

Graph show HIway availability at 100% every month from November 2019 through October 2020.

* Target: Total monthly availability – no lower than 99.9% (downtime no more than about 44 minutes/month)

**Slide title:** Thank you!