CurrentCare Upgrade and Opportunities for Data Integration: 
FHIRing things up!

Neil Sarkar, PhD, MLIS, FACMI
HealthShare Upgrade

- “HealthShare” is the underlying technology for RIQI’s HIE services, including CurrentCare
- After nearly two years of planning, upgrade formally started in fall 2021
- Base system upgraded in September – Six full versions! (2015 >> 2020)
- Total full downtime < 72 hours
Why Upgrade?

• Performance enhancements, including newer data architecture
• Refreshed application aesthetics and functionality (search!)
• Reduction in maintenance costs and need for customizations
• Updated security and reduced technical vulnerabilities

• Enable contemporary technologies for supporting healthcare data interoperability -- FHIR!
Health Care as a Learning System

21st Century Cures Act

Goals of the Legislation

Research
- Remove barriers to research collaboration
- Invest in STEM education
- Provide new incentives for the development of rare disease drugs

Getting Treatments to Patients More Quickly
- Foster coordination to find cures more quickly
- Modernize clinical trials to increase access to drugs and treatments
- Incorporate patient feedback in drug development and review process

Keeping Jobs Here at Home
- Ensure U.S. remains a global leader in medical innovation, protecting and creating jobs at home
- Encourage development of new medical apps to save lives and create jobs

#CURESatOne
World Wide Web

The World Wide Web (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents. Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists, Policy, November's W3 news, Frequently Asked Questions.

What's out there?
Pointers to the world's online information, subjects, W3 servers, etc.

Help
on the browser you are using

Software Products
A list of W3 project components and their current state. (e.g. Line Mode, X11, Viola, NoXTS, Servers, Tools, Mail robot, Library)

Technical
Details of protocols, formats, program internals etc

Bibliography
Paper documentation on W3 and references.

People
A list of some people involved in the project.

History
A summary of the history of the project.

How can I help?
If you would like to support the web...

Getting code
Getting the code by anonymous FTP, etc.
https://visual.ly/community/infographic/computers/api
Interoperable Interfaces and Demonstration Testbeds Drive Innovation and Economic Growth

The impact of NIT on key national priorities, including healthcare, energy, and transportation, will be magnified and accelerated through the use of well-defined and interoperable interfaces, and demonstration testbeds. These are mechanisms that breed unfiltered innovation.

An interface enables one NIT component to connect to and work with others, whether through a network, by exchanging data, or by executing programs. Examples of widely used interfaces include the Internet communication protocols, the HTML document format, and the Microsoft Windows and Apple iPhone software platforms. These interfaces have all been essential to the development of multi-billion dollar NIT industries: the Internet, the World Wide Web, the personal computer, and smart phones.

Interoperable interfaces allow equipment or software from different vendors to work together or communicate. They allow new, innovative creations to work with older, established services. For example, innovation in Web browsers has been possible in part because new browsers use the established HTML document format and HTTP network protocol, and thus are able to access all existing Web content. Innovation has also proceeded on the other side of the interfaces – in Web servers – and in similar fashion a new server implementation works with old browsers because of the standardized interfaces.
The future of efficient health services requires an interface definition for electronic health data and for mechanisms to allow providers and patients to share data. The system must work as well for individual self-employed physicians as it does for regional healthcare organizations. An interoperable specification will spur diversity and innovation in the creation of software that lets doctors and patients make best use of healthcare data.
A Robust Health Data Infrastructure

Contact: Dan McMorrow — dmcmorrow@mitre.org

November 2013

JSR-13-700

Approved for publication 4/09/2014. Distribution only by sponsor: Director, Health IT Agency for Healthcare Research and Quality

JASON
The MITRE Corporation
7515 Colshire Drive
McLean, Virginia 22102-7508
(703) 983-6967
JASON recommends that healthcare interoperability be reoriented away from "silod legacy systems" toward a centrally orchestrated interoperability architecture based on open APIs and advanced intermediary applications and services. In particular, the report recommends an urgent focus on creating a "unifying software architecture" to "migrate" data from these legacy systems to a new centrally orchestrated architecture to better serve clinical care, research, and patient uses. This architecture would be based on the use of "public" APIs for access to clinical documents and discrete data from EHRs, coupled with enablement of increased consumer control of how data is used.
# USCDI v1

## Assessment and Plan of Treatment
- Goals
  - Patient Goals

## Care Team Members
- Clinical Notes *NEW
  - Consultation Note
  - Discharge Summary Note
  - History & Physical
  - Imaging Narrative
  - Laboratory Report Narrative
  - Pathology Report Narrative
  - Procedure Note
  - Progress Note

## Laboratory
- Tests
- Values/Results

## Medications
- Medications
- Medication Allergies

## Patient Demographics
- First Name
- Last Name
- Previous Name
- Middle Name (including middle initial)
- Suffix
- Birth Sex
- Date of Birth
- Race
- Ethnicity
- Preferred Language
- Address *NEW
- Phone Number *NEW

## Problems
- Procedures

## Provenance *NEW
- Author
- Author Time Stamp
- Author Organization

## Smoking Status

## Unique Device Identifier(s) for a Patient’s Implantable Device(s)

## Vital Signs
- Pulse oximetry
- Inhaled oxygen concentration
- Pediatric Vital Signs *NEW
  - BMI percentile per age and sex for youth 2-20
  - Weight for age per length and sex
  - Occipital-frontal circumference for children >3 years old
Technology Vendors

Accenture
Apple
athenahealth
Cerner
Epic
Change Healthcare
MEDITECH
Surescripts
The Advisory Board Company/Optum

Provider Organizations

Beth Israel Deaconess Medical Center
Intermountain Health
Mayo Clinic
Partners Healthcare
SMART at Boston Children’s Hospital

Staff (current and past)
Prime contractor: HL7
FHIR initiatives: Grahame Grieve, Josh Mandel, Brett Marquard, Eric Haas
OAuth initiatives: Dixie Baker, Josh Mandel
Project Management: Micky Tripathi, Jennifer Monahan
Leveraging FHIR: **beta** Pain Management tab
What is the Pain Management Summary?

An Off-the-Shelf App that:

1. Leverages contemporary HIT approaches for integration
   • Open-source “CDS Connect” app inside Viewer
   • SMART-on-FHIR

2. Summarizes relevant CurrentCare data for pain management

3. Facilitates shared decision making for chronic pain

For more info, visit: RIQI.org/PainSummary
Sample 1: Patient does not match criteria
Sample 2: Patient matches criteria

Factors to Consider in Managing Chronic Pain

**TAKE NOTICE**: This summary is not intended for patients who are undergoing end-of-life care (hospice or palliative) or active cancer treatment.
Sample 2: continued

## Historical Pain-related Treatments (2)

<table>
<thead>
<tr>
<th>Opioid Medications</th>
<th>Type</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxycodone-Acetaminophen 5 Mg-325 Mg Tablet</td>
<td>Request</td>
<td>2022-Feb-14</td>
<td></td>
</tr>
<tr>
<td>12 HR Oxycodone Hydrochloride 60 MG Extended Release Oral Tablet</td>
<td>Request</td>
<td>2022-Jan-27</td>
<td></td>
</tr>
</tbody>
</table>

## Non-Opioid Medications

- no entries found

## Non-Pharmacologic Treatments

- no entries found

## Stool Softeners and Laxatives

- no entries found
## What information is currently included?

### Factors to Consider in Managing Chronic Pain

<table>
<thead>
<tr>
<th>Section</th>
<th>In Pain Summary in CurrentCare Viewer</th>
<th>In Other Tabs in CurrentCare Viewer</th>
<th>Not Available in CurrentCare Viewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pertinent Medical History</td>
<td>• Risk Factor: Age &gt; 65</td>
<td>• Conditions Associated with Chronic Pain • Other Risk Factors</td>
<td></td>
</tr>
<tr>
<td>Pain Assessments</td>
<td></td>
<td></td>
<td>• Pain Assessments</td>
</tr>
<tr>
<td>Historical Pain-Related Treatments</td>
<td>• Active Opioid &amp; Non- Opioid Pain-Related Meds &amp; Laxatives</td>
<td>• Historic Opioid &amp; Non- Opioid Pain-Related Meds &amp; Laxatives</td>
<td>• Non-Pharmacologic Treatments</td>
</tr>
<tr>
<td>Risk Considerations</td>
<td>• Urine Drug Screens • Active Benzodiazepine &amp; Naloxone Meds</td>
<td>• Historic Benzodiazepine &amp; Naloxone Meds</td>
<td>• Most Recent MME</td>
</tr>
</tbody>
</table>

For more info, visit: [RIQI.org/PainSummary](RIQI.org/PainSummary)
Counts, Flags & Tooltips

**Counts & Flags**
- **Total Entries**: 5
- **Total Flags**: 4

**Flags**
*Hover for Explanations*

**Benzodiazepine Medications**
- Name: Lorazepam (ATIVAN) 0.5 MG tablet

**Urine Drug Screens**
- No entries found

**Tooltips**
- **Name**: Benzodiazepine medication statements and orders
- **Status**: any
- **Lookback**: 2 years
1. RESEARCH, PAYER & PUBLIC HEALTH SURVEILLANCE
   What is ACTUALLY happening and why?

2. GUIDELINES
   (Professional Societies, CDC, etc.)
   What SHOULD happen. What do we want to happen?

3. CLINICAL DECISION SUPPORT
   MAKING it happen within local workflow.

4. CLINICAL CARE
   Clinician and Patient Workflow.

5. MEASUREMENT ANALYTICS
   What DID happen? What processes and outcomes have been achieved?

6. REPORTING
   • Public Health
   • Quality
   • Safety

CDS Hooks

EBM

CPG IG

CQL

QI Core

CR

Patient, provider, population, public

eCR

DEQM

QM IG

RHODE ISLAND QUALITY INSTITUTE
THANK YOU

HTTPS://WWW.RIQI.ORG

Neil Sarkar, PhD, MLIS, FACMI
@insarkar
nsarkar@riqi.org