DYNAMIC HEALTH IT

Real World Testing Results

DynamicHealthIT.com

General Information

Developer Name	**Dynamic Health IT Inc.**
Product Name	**ConnectEHR +BulkFHIR**
RWT Plan Report ID Number	**20231102dyn02**
Version Number	**FHIR4-B**
Product List (CHPL) ID	**15.02.05.2713.DY4B.04.03.0.211221**
Real World Testing Public URL	**https://www.dynamichealthit.com/real-world-testing**

Changes to Original Plan

Summary of Change	Reason	Impact
Utilized NIST tool for testing f1 and f3 as opposed to a production environment	Production testing partner was not available to test transmission to public health agencies in the time frame we needed	Unable to test with a live registry, but able to still confirm transmission and validity of messages
Portal error logs and system logs were reviewed to gather statistics on usage	Patients did not respond to the survey within our time frame	Users seem to continue to have issues recalling their passwords for login. Doesn't seem to be a platform issue. Reset username and password link proved to support patient's successful login. We do not see any adjustments needed at this point
ONC CCDA Scorecard usage was removed as a method of validation	A lack of updates to the Scorecard software caused the results to be inaccurate.	Rather than using ONC Scorecard, the SITE test tools were used. This provided a similar level of validation, without the inaccuracies from the outdated software.

Summary of Testing Methods and Key Findings

Accurate and secure transmission of patient health information is paramount to ensuring interoperability between different health IT solutions. We chose to demonstrate this capability as follows in ConnectEHR and Dynamic FHIR:

1) Collaborating with an ambulatory trading partner to monitor transitions-of-care for a number of patients directly from internal provider to external provider and vice versa
2) Verifying that C-CDAs are able to be exported from the ConnectEHR application by administrative users in bulk on demand and on a scheduled basis
3) Accessing live patient data by onboarding Dynamic FHIR to a PHR
4) Accessing live patient data by logging into the ConnectEHR Patient Portal website and viewing, downloading, and transmitting the CCDAs
5) Incorporation of CCDs received via Direct protocol, aiding in Closing the Referral Loop

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In each scenario, we confirmed that the data transmitted was accurate, up to date, and in conformance to ONC standards. We abandoned the use of the ONC Scorecard due to lack of updates to the application by the government. Without the updates, results were inaccurate. Feedback was provided to ONC with several support tickets to help identify issues causing the Scorecard to not evaluate correctly. All testing was performed utilizing the SITE test tools. Minor adjustments were made during the measurement year to ensure compliance with changes in the HL7 Implementation Guide when made available. All C-CCDs were found to comply.

We used the ConnectEHR Document Center for HIE, DIRECT and Notifications concerning incoming C-CDA documents and ADT messages. We worked closely with EHRs to aid in management of the information received in the Document Center. In 2025, we are planning to separate the ADT messages from the C-CDA documents to allow for more concise tracking.

Realtime export and nightly batch export of CCDs to the HIEs has enabled interoperability and provided for patients to be registered seamlessly with the HIE. DHIT works directly with HIEs to ensure the latest CCD format is accepted. This functionality has enabled providers to query the HIEs for patient data.

In the past year ConnectEHR has been utilized by EHR vendors for ONC Certification and Real World Use of Immunizations for more than 22 State Registries. Most recently, with the bidirectional Immunization workflow, many EHRs that plan to utilize ConnectEHR for Public Health Reporting have signed up and are on a waiting list to be onboarded for Immunization testing with the States. Many of DHIT's clients are Specialty EHRs and do not perform immunizations. ConnectEHR's Immunization functionality is bidirectional and environment agnostic. To ensure ConnectEHR remains compliant and all functionality is working as expected, ConnectEHR is regularly tested against the NIST test tool. All NIST test cases passed for the 2024 measurement period as expected.

As FHIR becomes a standard that is more embraced and incorporated into common EHR workflows, DHIT has worked with industry leaders during FHIR Connect-a-thons to test out the eCR Now FHIR App and its capabilities. We were able to supply the required FHIR JSON Resource which allowed the track lead to successfully report to the AIMS platform for a specific trigger code. While utilization of the App is still dependent on public health agency readiness as well as EHR implementation and adoption, exploring this alternative option to perform electronic case reporting can help increase reporting for organizations that need multiple ways to meet the same end goal.

Our next milestone is to set up a local instance of the eCR Now FHIR App so we can perform end to end testing, help clients set up a local instance in their environment, or to help host a local instance of the App for them in a DHIT Cloud Environment.

In addition, continuing to meet the ever changing criteria, requirements and conformance for the FHIR API specific criteria has allowed DHIT to adapt to enforcement of secure technologies such as OAuth2.0, TLS 1.2 restrictions, and other cryptographically secure technology to help facilitate fast but secure interoperable data. These standards were applied as each launch - Standalone Patient, Standalone Provider, EHR Practitioner and EHR Patient - was executed using 3rd party apps like ONC’s Inferno Test Tool, Postman, Apple, One Record, Mylinks, and our Dynamic FHIR Client Test Tool. The same standards are applied when using System Apps to perform both Single Patient API queries as well as Bulk Data queries for exporting data by groups of Patients.

By continuing to support the Standalone Patient Launch, we enable an EHR system to provide patients the ability to access their data as FHIR Resources across 3rd party apps of their choice while being able to revoke that same access conveniently and at their discretion. For EHR systems that want to extend the ability for their Providers this same opportunity to utilize FHIR, the EHR Practitioner Launch has been demonstrated and discussed so that further use cases can be utilized at the Provider level.

There was an increased push to bring the EHR Launch workflow into production to connect DSI Apps to aid in the b11 ONC requirement for DSI. All Production clients moved aggressively to ensure the Service Base URL was updated to include Organization Resources for Production Clients. Revocation functionality tested and implemented for all Dynamic FHIR servers.

We have several implementations in production of MultiPatient API or Bulk Data, which allows for population-level data to be requested and returned for groups of patients, from EHR systems as they work with large projects like data sharing with the County and HIE's. Some systems are leveraging use of this data exchange to integrate data into their own internal workflows.

DHIT collaborated with a hospital trading partner to collect statistics on using ConnectEHR to transmit syndromic surveillance data. In 2024, just under 1 million messages were de-identified and successfully transported to the HIE.

Care Setting(s) that were tested for Real World Interoperability

Ambulatory, Inpatient

Standards and Implementation Specifications (SVAP)

No standards were updated.

Metrics and Outcomes

Measurement/Metric	Associated Criteria	Outcomes
75% of C-CDAs flagged as restricted were received in restricted status based on confirmed receipt from trading partner	(b)(1) Transition of Care (b)(7) Security tags - summary of care - send (b)(8) Security tags - summary of care - receive (h)(1) Direct Project	100% confirmed
100% of outbound TOC's successfully received by HISP	(b)(1) Transition of Care (h)(1) Direct Project	100% confirmed
All C-CDAs are evaluated through the SITE C-CDA Validator Tool and are conformant	(b)(1) Transition of Care (h)(1) Direct Project	All C-CDAs were conformant
75% of trading partner's TOC C-CDAs successfully received by ConnectEHR	(b)(1) Transition of Care (h)(1) Direct Project	100% confirmed
C-CDA count matches actual patient count for requested date range	(b)(10) Electronic Health Information export	Confirmed patients who did not have encounters in the selected time range were not exported
50% of spot-checked C-CDAs are evaluated as conformant by the SITE C-CDA Validator Tool	(b)(10) Electronic Health Information export	All C-CDAs were conformant
90% of unique patients with encounters in the review period are provided timely access (within 24 hours of their encounter) to health information to view online, download, and transmit to a third party	(e)(1) View, Download, and Transmit to 3rd Party	Hospitals utilizing the portal and participating in Promoting Interoperability achieved Timely Access on average 95% of the time
Successful transmission to test tool will be reviewed for ACK & NAK to ensure 100% successful transmission	(f)(1) Transmission to immunization registries	100% confirmed
100% correct immunization history records successfully received in ConnectEHR confirmed by visual validation	(f)(1) Transmission to immunization registries	100% confirmed

Measurement/Metric	Associated Criteria	Outcomes
100% correct immunization records successfully posted to test tool confirmed by visual validation	(f)(1) Transmission to immunization registries	100% confirmed
100% of HL7 Syndromic Surveillance messages successfully sent and acknowledged (via HL7 ACK) by public health agency	(f)(2) Transmission to public health agencies — syndromic surveillance	100% confirmed
100% of syndromic surveillance messages successfully received and processed by public health agency based on either: • Logging into agency web site and validating, or • Using a report provided by agency	(f)(2) Transmission to public health agencies — syndromic surveillance	100% confirmed
100% of HL7 Reportable lab messages successfully sent and acknowledged (via HL7 ACK) by public health agency	(f)(3) Transmission to public health agencies — reportable laboratory tests and value/results	100% confirmed
100% of HL7 Reportable lab messages successfully received and processed by public health agency based on either: • Logging into agency web site and validating, or • Using a report provided by agency	(f)(3) Transmission to public health agencies — reportable laboratory tests and value/results	100% confirmed
100% of eCR messages successfully received and processed by public health agency based on either: • Logging into agency website and validating, or • Using a report provided by agency	(f)(5) Transmission to public health agencies — electronic case reporting	100% confirmed
100% of encounters where the Patient is able to retrieve FHIR API data from the PHR app	(g)(7) Application access— patient selection (g)(9) Application access— all data request (g)(10) Standardized API for patient and population services	100% confirmed

Measurement/Metric	Associated Criteria	Outcomes
100% of encounters from Step #1 where Patient's PHR data matches data from the EHR. This will be done by visual validation of the following FHIR resources: • Demographics • Problems • Medications • Allergies	(g)(7) Application access— patient selection (g)(9) Application access— all data request (g)(10) Standardized API for patient and population services	100% confirmed
100% of encounters where the Provider is able to retrieve FHIR API data from app	(g)(7) Application access— patient selection (g)(9) Application access— all data request (g)(10) Standardized API for patient and population services	100% confirmed
100% of encounters from Step #3 where data for randomly-selected patients as presented in the app matches data from EHR. This will be done by visual validation of the following FHIR resources: • Demographics • Problems • Medications • Allergies	(g)(7) Application access— patient selection (g)(9) Application access— all data request (g)(10) Standardized API for patient and population services	100% confirmed

Key Milestones

Key Milestone	Care Setting	Date / Time Frame
Identified trading partner that met either of the following: • Had a state immunization registry that is enabled for bi-directional send/receive of immunization data • Already had a functional bi-directional immunization interface or would like to implement one to their registry	Ambulatory / Inpatient	May 2024
Validated that immunization interface is functioning as expected	Ambulatory / Inpatient	June 2024
Verified immunization data was received in registry for patient A	Ambulatory / Inpatient	July 2024
Verified immunization data was received in EHR for patient B	Ambulatory / Inpatient	July 2024
Confirmed Trading Partner	Ambulatory	May 2024
Confirmed ability to send and receive clinical documents		
Confirmed with TP that production data will be used, whether in an actual live environment or a copy of a live environment		
Care provider selected recipient from directory of Direct addresses and initiated sending of Clinical Document. The user was able to create a C-CDA Release 2.1 that also included the reason for referral, and the referring or transitioning provider's name and office contact information	Ambulatory	June 2024
C-CDA Care Referral or Referral Note was triggered to send via Direct Protocol		
Care provider reviewed the Direct Status screen (under Direct Outgoing menu choice) to ensure Clinical Document was successfully transmitted		

Key Milestone	Care Setting	Date / Time Frame
Care provider selected recipient from directory of Direct addresses and initiated sending of Clinical Document that also includes the discharge instructions	Ambulatory	June 2024
Care provider created a C-CDA Release 2.1 Discharge Summary Document		
Care provider reviewed the Direct Status screen (under Direct Outgoing menu choice) to ensure Clinical Document was successfully transmitted via Direct Protocol		
Recipient used SITE Validator Tools to evaluate C-CDA conformance	Ambulatory	June 2024
Tester used Document Center to locate Clinical Document	Ambulatory	July 2024
Care provider reviewed the Direct Status screen (under Direct Outgoing menu choice)		
Recipient validated that Social History section of C-CDA is flagged as restricted		
Date and time ranges were able to be configurable via the UI	Ambulatory / Inpatient	May 2024
Targeted Practices were able to be configurable via the UI		
Patients exported were able to be configurable via the UI		
Used the Edge Test Tool to check validity of output file	Ambulatory / Inpatient	June 2024
Export summary was created and completed successfully	Ambulatory / Inpatient	July 2024
Patient demographics were captured in the EHR	Inpatient	May 2024

Key Milestone	Care Setting	Date / Time Frame
Ensured patient received activation email, or Provided patient with Username and Password	Inpatient	June 2024
Recorded validation in the audit log that patient had transmitted the C-CDA via DIRECT or email	Inpatient	July 2024
Ran Timely Access report in ConnectEHR and compared to patient visit report from EHR to determine percentage of patients who had access within 24 hours	Inpatient	August 2024
Syndromic surveillance messages were successfully received and processed by public health agency	Inpatient	May 2024
Confirmed functioning HL7 2.5.1 interface to public health agency	Inpatient	June 2024
Client test partner selected	Ambulatory / Inpatient	May 2024
Lab interface was functioning as expected	Ambulatory / Inpatient	June 2024
Confirmed data received	Ambulatory / Inpatient	September 2024
eCR messages were successfully received and processed by public health agency	Ambulatory / Inpatient	May 2024
Confirmed functioning eCR interface to public health agency	Ambulatory / Inpatient	June 2024
Partnered with PHR that can receive patient clinical data as described in this RWT plan	Ambulatory / Inpatient	May 2024
Ensured that PHR had functionality to access the Dynamic FHIR API, as described here		
Partnered with EHR that is integrated with the Dynamic FHIR API and Patient Portal modules of ConnectEHR		

Key Milestone	Care Setting	Date / Time Frame
Encounter was created and visually confirmed	Ambulatory / Inpatient	June 2024
Dynamic FHIR API transformed C-CDA into FHIR resources	Ambulatory / Inpatient	July 2024
PHR app consumed FHIR resources to populate EHR data		
Partnered with a provider-centric app for improved patient care	Ambulatory / Inpatient	May 2024
Ensured that app has functionality to access the Dynamic FHIR API		
Partnered with EHR and confirmed that they are integrated with the Dynamic FHIR API module of ConnectEHR		
Data is rendered correctly: Provider compares patient data in app to patient data in EHR and notes any discrepancies	Ambulatory / Inpatient	June 2024
Partnered with a provider-centric app that required periodic bulk data downloads	Ambulatory / Inpatient	May 2024
Ensured that app has functionality to access the Dynamic FHIR API		
Partnered with EHR and confirmed that they are integrated with the Dynamic FHIR API module of ConnectEHR		
Data rendered correctly: Provider compared patient data in app to patient data in EHR and no discrepancies were found	Ambulatory / Inpatient	June 2024