General Information

Plan Report ID Number	20231016PARA22
Developer Name	QRS, Inc.
Product Name	PARADIGM®
Version Number	22
Certified Health IT Product List CHPL ID	15.04.04.2838.PARA.22.01.1.221227
Developer Real World Testing Page URL	http://www.qrshs.info

Summary of Testing Methods and Key Findings

Methodologies utilized during testing included data log files, polling, various scenario tests, and visual inspection as laid out in our Real World Testing Plan.

Significant challenges encountered are credited to client sites' ongoing low adoption of some of our EHR capabilities. Discovery during the polling methodology continue to reveal clients who forget about a feature/function/capability or are unaware of same due to key personnel changes/attrition.

Regarding the API criteria 170.315(g)(7), 170.315(g)(9) and 170.315(g)(10), we employed our in-house virtualized environment.

Standards Updates (Including Standards Version Advancement Process (SVAP) and United States Core Data for Interoperability (USCDII)

170.315(g)(10) utilizes HL7® FHIR® Bulk Data Access (Flat FHIR®) (v2.0.0:STU 2)

Care Setting(s)

PARADIGM® EHR is principally marketed to healthcare providers in ambulatory care settings. Accordingly, our testing occurred in the ambulatory setting only.

We tested a minimum of three client practices. The number of client testing participants included varied for each criterion/measure as not all have the same usage needs or perform the same activities in their respective specialty settings.

In settings where functionality was not widely used, we utilized our sandbox environment for testing solely when needed, or in addition to client sites.

Applicable Certification Criteria

This results report includes real world testing measurements/metrics for the following criteria:
- 170.315(b)(1) - Transitions of Care
- 170.315(b)(2) - Clinical information reconciliation and incorporation
- 170.315(b)(6) - Data Export
- 170.315(b)(7) - Security Tags – Summary of Care Send
- 170.315(b)(8) - Security Tags – Summary of Care Receive
- 170.315(c)(1) - Clinical quality measures (CQMs) – record and export
- 170.315(c)(2) - Clinical quality measures (CQMs) – import and calculate
- 170.315(c)(3) - Clinical quality measures (CQMs) – report
- 170.315(e)(1) - View, download, and transmit to 3rd party
- 170.315(f)(1) - Transmission to immunization registries
- 170.315(f)(2) - Transmission to public health agencies – syndromic surveillance
- 170.315(g)(7) - Application access – patient selection
- 170.315(g)(9) - Application access – all data request
- 170.315(g)(10) - Standardized API for patient and population services
- 170.315(h)(1) - Direct Project

Metrics and Outcomes noted for each criterion:
- Associated Certification Criteria
- Measurement/Metric
- Relied Upon Software
- Expected Outcomes
- Actual Outcomes

Metrics and Outcomes

C-CDA exchange via Direct Messaging

Associated Certification Criteria	170.315(b)(1) Transitions of Care
Measurement/Metric	Track send and receive transmissions errors • Number of CCDs created • Number of CCDs successfully sent • Rate of errors when CCDs are received • Rate of errors when CCDs are viewed
Testing Method(s)/Methodology(ies)	Log Files / Reports; Use-case
Relied Upon Software	Micromedex Clinical Knowledge
Expected Outcomes	Maximum of 2% error rate for each send/receive transmission type over a three-month period.
Actual Outcomes	Utilization rate of client test sites examined = 11% One out of nine client test practices utilized the functionality during the test period. Send success rate = 100% Receive error rate = 0% Sending: Total % of successful sends = $\dfrac{\text{Number of total sends (69)} - \text{Number of errors (0)}}{\text{Total number of sends}}$ (69 – 0 / 69) x 100 = 100% Receiving: Total % of successful receives = $\dfrac{\text{Number of total receives (70)} + \text{Number of errors (0)}}{\text{Total number of receives (0)}}$ (70 + 0 / 70) x 100 = 0%

Incorporate reconciled Patient Health Information received via Direct Messaging

Associated Certification Criteria	170.315(b)(2) - Clinical information reconciliation and incorporation
Measurement/Metric	Incorporating Patient Health Information received via Direct Messaging • Number of successful patient identifications • Number of errors during incorporation
Testing Method(s)/Methodology(ies)	Polling; Use-case; Visual Inspection
Relied Upon Software	MDToolbox
Expected Outcomes	Rate of successful identification of patient(s) and subsequent incorporation of Patient Health Information will be greater 95%.
Actual Outcomes	Utilization rate of client test sites examined = 67% Six out of nine client test practices utilized the functionality during the testing period. Successful patient identification = 100% Incorporation error rate = 0% Patient Identification: Total % of successful matches = $$\frac{\text{Number of total receives (315)} - \text{Number of errors (0)}}{\text{Total number of receives}}$$ $(315 - 0 / 315) \times 100 = 100\%$ Incorporation: Total % of incorporation errors = $$\frac{\text{Number of total incorporation attempts (315)}}{\text{Total number of incorporation attempts (315)} - \text{Number of incorporation/reconciliation errors (0)}}$$ $(315 / 315 - 0) \times 100 = 0\%$

Configure and Create Data Export Summary

Associated Certification Criteria	170.315(b)(6) - Data Export
Measurement/Metric	Configure and Create data export summary • Number of records extracted from the EHR • Number of records exported out of the EHR • Rate of successful validations
Testing Method(s)/Methodology(ies)	Polling; Use-case; Role-based testing; Visual Inspection
Relied Upon Software	N/A
Expected Outcomes	End-user is able to configure an export summary at any time without subsequent developer assistance. Exported CCDs will successfully validate. Number of records extracted from the EHR will match the number of exported CCDs. Successful validation rate is expected to be greater than 95%.
Actual Outcomes	Utilization rate of client test sites examined = 67% Six out of nine client test practices utilized the functionality during the testing period. Rate of successful validations = 100% $$\frac{\text{Total number of exported (13682)} - \text{Number of export records (0)}}{\text{Total number of exports (13682)}}$$ $(13682 - 0\ /\ 13682) \times 100 = 100\%$

Generate and Export Clinical Data Summary

Associated Certification Criteria	170.315(b)(7) - Security Tags – Summary of Care Send
Measurement/Metric	Generate and Export Clinical Data Summary • Number of C-CDAs successfully validated • Number of C-CDAs with validation errors • Rate of successful validations
Testing Method(s)/Methodology(ies)	Visual Inspection; Use-case; Sandbox
Relied Upon Software	N/A
Expected Outcomes	Summary record will successfully validate via C-CDA validator. CCDs with errors will not pass C-CDA validation. Rates for both will be reported. Successful validation rate is expected to be greater than 95%.
Actual Outcomes	Utilization rate of client test sites examined = 11% One out of nine client test practices utilized the functionality during the testing period. Successful validation rate = 100% Number of successful validations (138) + Number of validation errors (0) ------------------------------ Total number of generated C-CDAs (138) (138 + 0 / 138) x 100 = 100%

2024 REAL WORLD TESTING RESULTS

Receive and Import Clinical Data Summary

Associated Certification Criteria	170.315(b)(8) - Security Tags – Summary of Care Receive
Measurement/Metric	Receive and Import Clinical Data Summary • Number of C-CDAs successfully validated • Number of C-CDAs with validation errors • Rate of successful validations
Testing Method(s)/Methodology(ies)	Visual Inspection; Use-case; Role-based testing
Relied Upon Software	N/A
Expected Outcomes	A received summary of care record passes validation and can only be manipulated by an authorized user. CCDs with errors will not pass C-CDA validation. Rates for both will be reported. Successful validation rate is expected to be greater than 95%.
Actual Outcomes	Utilization rate of client test sites examined = 11% One out of nine client test practices utilized the functionality during the testing period. Successful validation rate = 100% Number of successful C-CDA validations (140) + Number of validation errors (0) ------------------------------ Total number of generated C-CDAs (140) (140 + 0 / 140) x 100 = 100%

Collection and Reporting of individual CQMs

Associated Certification Criteria	Clinical quality measures (CQMs) 170.315(c)(1) - record and export 170.315(c)(2) - import and calculate 170.315(c)(3) – report
Measurement/Metric	Collection and Reporting of Individual CQMs • Number of successful calculations • Number of calculations with errors • Rate of calculation errors • Number of successful validations • Number of validations with errors • Rate of validation errors
Testing Method(s)/Methodology(ies)	Log Files / Reports; Polling; Visual Inspection
Relied Upon Software	N/A
Expected Outcomes	Successful CQM calculation and export of a validated QRDA III file. Error rate for calculations and validations will not exceed 1%.
Actual Outcomes	Successful calculation rate = 100% Validation error rate = 0% Calculation: Total % of successful calculations = $$\frac{\text{Number of successful calculations (130)}}{\text{Total number of calculations (600) + number of calculation errors (0)}}$$ $(130 / 130 + 0) \times 100 = 100\%$ Validation Error: Total % of errors = $$\frac{\text{Number of validations errors (0)}}{\text{Number of successful validations (475)}}$$ $(0 / 130) \times 100 = 0\%$

Provide patients access to Patient Health Information sent to the Portal

Associated Certification Criteria	170.315(e)(1) - View, download, and transmit to 3rd party
Measurement/Metric	Provide patients access to Patient Health Information sent to the Portal • Number of patients who access their portal account
Testing Method(s)/Methodology(ies)	Log Files / Reports; Visual Inspection; Polling; Use-case
Relied Upon Software	MDToolbox
Expected Outcomes	End-user will log into the patient portal and is able to view, download and/or transmit files made available to them. Number of patients who accessed their portal account over a three-month period.
Actual Outcomes	Utilization rate of client test sites examined = 100% Nine out of nine client test practices utilized the functionality during the testing period. Number of patients with portal accounts (11647) Number of patients provided access (5772) Number of patients who accessed their portal account (156)

Export Immunization Records

Associated Certification Criteria	170.315(f)(1) - Transmission to immunization registries
Measurement/Metric	Export Immunization Records • Number of generated HL7 messages • Number of successfully transmitted HL7 messages • Rate of successful transmissions
Testing Method(s)/Methodology(ies)	Log Files / Reports; Use-case; Sandbox
Relied Upon Software	N/A
Expected Outcomes	HL7 messages meeting standard specifications are subsequently created and successfully sent to a public health agency. Total number of messages sent match registry records. Successful transmission rate is expected to be greater than 95%.
Actual Outcomes	Utilization rate of client test sites examined = 56% Five out of nine client test practices utilized the functionality during the testing period. Successful validation rate = 100% Number of generated HL7 messages to Immunization Registries (4985) ----------------------------- Total number of successfully transmitted HL7 messages (4985) + Number of HL7 transmission errors (0) (4985 / 4985 + 0) = 100%

Export Syndromic Surveillance Records

Associated Certification Criteria	170.315(f)(2) - Transmission to public health agencies — syndromic surveillance
Measurement/Metric	Export Syndromic Surveillance Records • Number of generated HL7 messages • Number of successfully transmitted HL7 messages • Rate of successful transmissions
Testing Method(s)/Methodology(ies)	Log Files / Reports; Use-case; Sandbox
Relied Upon Software	N/A
Expected Outcomes	HL7 messages meeting standard specifications are subsequently created and successfully sent to a public health agency. Total number of messages sent match registry records. Successful transmission rate is expected to be greater than 95%.
Actual Outcomes	Utilization rate of client test sites examined = 56% Five out of nine client test practices utilized the functionality during the testing period. Successful validation rate = 100% Number of generated HL7 syndromic surveillance messages (1771) ------------------------------ Total number of successfully transmitted HL7 messages (1771) + Number of HL7 transmission errors (0) (1771 / 1771 + 0) = 100%

2024 REAL WORLD TESTING RESULTS

Correctly identify a Patient based on query parameters

Associated Certification Criteria	170.315(g)(7) - Application access — patient selection
Measurement/Metric	Correctly identify a Patient based on query parameters • Number of successful API requests • Number of API request errors • Rate of API request errors
Testing Method(s)/Methodology(ies)	Sandbox - Virtualized environment
Relied Upon Software	N/A
Expected Outcomes	The API request will return a C-CDA R2.1 Validated CCD containing requests for patient data for specified dates and/or within specified date range(s). Maximum of 4% error rate for API requests over a three-month period.
Actual Outcomes	Tested in virtualized environment with a fixed number of requests (10). There were no error messages encountered in the controlled environment, therefore, the reported success rate was 100%.

Respond to requests for Patient Data for all data categories

Associated Certification Criteria	170.315(g)(9) - Application access – all data request
Measurement/Metric	Respond to requests for Patient Data – all data categories • Number of successful API requests • Number of API request errors • Rate of API request errors
Testing Method(s)/Methodology(ies)	Sandbox - Virtualized environment
Relied Upon Software	N/A
Expected Outcomes	The API request will return a C-CDA R2.1 Validated CCD containing patient data for all data categories requested. Maximum of 4% error rate for API requests over a three-month period.
Actual Outcomes	Tested in virtualized environment with a fixed number of requests (10). There were no error messages encountered in the controlled environment, therefore, the reported success rate was 100%.

Respond to requests for Patient Data for specific parameters

Associated Certification Criteria	170.315(g)(10) – Standardized API for Patient and Population Services *Note: 170.315(g)(10) replaced 170.315(g)(8) after submission of Real World Testing Plan*
Measurement/Metric	Returning correct and complete data upon receiving a request (API call) • Number of successful API requests • Number of API request errors • Rate of API request errors
Testing Method(s)/Methodology(ies)	Sandbox - Virtualized environment
Relied Upon Software	N/A
Expected Outcomes	The API request will return a C-CDA R2.1 Validated CCD containing requests for patient data for specified dates and/or within specified date range(s). Maximum of 4% error rate for API requests over a three-month period.
Actual Outcomes	Tested in virtualized environment with a fixed number of requests (10). There were no error messages encountered in the controlled environment, therefore, the reported success rate was 100%.

Send and Receive Secure Health Information

Associated Certification Criteria	170.315(h)(1) - Direct Project
Measurement/Metric	Send and Receive Secure Health Information • Number of successful wrapped transmissions • Number of transmissions with error(s)
Testing Method(s)/Methodology(ies)	Logs Files / Reports; Visual Inspection
Relied Upon Software	MDToolbox
Expected Outcomes	Functionality supports interoperability and exchange for sending and receiving messages consistent with the Direct Project standards and protocols. We expect a maximum of 4% transmission error rate over a three-month period.
Actual Outcomes	Utilization rate of client test sites examined = 11% One out of nine client test practices utilized the functionality during the testing period. Successful validation rate = 100% Number of successful validations (138) + Number of validation errors (0) ------------------------------ Total number of generated C-CDAs (138 + 0 / 138) x 100 = 100%

Key Milestones

Key Milestones	Date/Timeframe
• Data collection as blueprinted in the plan	January 2024 – September, 2024
• Noted many client practices did not regularly utilize Direct Messaging or the API features	February 2024 – May 2024
• Aggregate collected test data	October 2024 – December 2024
• Analyze test results and initiate report creation	October 2024 – December 2024
• Finalize Real World Testing Results Report	January 2025
• Submit Real World Testing Results Report to Drummond Group	January 31, 2025

Attestation

This Real World Testing Results Report is complete with all required elements, including measures that address all certification criteria and care settings. All information in this document is up to date and fully addresses the health IT developer's Real World Testing and Real World Test Results Reporting requirements.

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Date: 01.30.25