Cerner Corporation Certified Health IT 2024 Real World Testing Results

Cerner Corporation, a wholly-owned subsidiary of Oracle, is proud to offer software that is certified under the Office of the National Coordinator (ONC) for Health Information Technology (HIT) Health IT Certification Program. Contained within is Cerner's Real World Testing results for calendar year 2024. These results reflect the outcomes of executing our 2024 Real World Testing plans for all certification criteria subject to the Real World Testing Condition & Maintenance of Certification requirements at 45 CFR 170.405 that were certified as of August 31, 2023.

Individual Real World Testing results are organized by certification criterion with identification of each Certified Health IT Module under which the criteria are certified on the ONC's Certified Health IT Product List (CHPL). In some instances, testing plans were combined for efficiency to account for multiple Certified Health IT Modules or certification criteria and the results are structured accordingly.

Some Certified Health IT Modules or versions of modules that were part of an original 2024 Real World Testing plan were also withdrawn during the calendar year after publication of the Real World Testing plan, or new ones were certified. Where relevant, a *Withdrawn or Added Products* section is included in each set of results with the details of such changes. Other Real World Testing plans were modified from their original methodologies during the execution phase. Any such changes are explained with a *Changes to Original Real World Testing Plan* section in each set of results.

Please note, several Real World Testing results were generated via monitoring of production activity data from real world use of Cerner's Certified Health IT Modules. This production activity data was aggregated across customers and no protected health information (as defined under HIPAA) or customer-specific identifiable information was used or contained in the information provided for Real World Testing results.

Cerner affirms that these Real World Testing results are complete with all required elements. All information in these results is up to date and fully addresses Cerner's Real World Testing requirements.

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170.315(b)(1) Transitions of Care

Certified Health IT Module(s): **Millennium (Clinical)**

CHPL Product Numbers: 15.04.04.1221.Mill.18.06.1.221107; 15.04.04.1221.Mill.24.07.1.240920

Relied Upon Software: N/A

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Clinical)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.24.07.1.240920
- Certification date: September 20, 2024

Real World Testing Methodologies Summary

For Real World Testing of the certified capabilities for the Transition of Care criterion, we tracked and reported on the real world production activity of the below three distinct components of capabilities supported under the Transitions of Care criterion across our customer base. This real world production activity tracking was achieved via the use of a Cerner cross-database analytics tool which provides near real-time activity tracking of active production environment use.

1. The number of C-CDA documents of each required document template (CCD, Referral Note, Discharge Summary) that were created and transmitted outbound in production environments for real world care transitions and referrals using either Direct Messaging or IHE document exchange technologies.
2. The use of the C-CDA viewer capabilities by end-users in production environments, which allow users to view a human-readable rendering of C-CDAs and customize display of the data.
3. The use of C-CDA document validation capabilities, which provide users with visibility to conformance errors in C-CDA documents they receive and view.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Ambulatory
- Behavioral Health
- Emergency Department
- Pediatrics

Real World Testing Milestones

1. Completed Real World Testing activities execution (execution of monthly report) at the end of Q3 2024.
2. Completed assessment of Real World Testing data for results and outcomes compilation at the end of 2024.

Real World Testing Expected Outcomes

We observed high volumes of successful document generation, which reached well over tens of millions on a monthly basis throughout 2024. This outcome is due to the broad customer base actively utilizing these certified capabilities in production environments and reflects the overall success of our certified capabilities in the real world.

The outcome for the C-CDA display component was consistent usage from month-to-month, which indicates successful utilization of the certified capabilities. We did not see a drop-off in volume. Although the results were somewhat scattered, we observed higher results than past years for the C-CDA validation component due to an uplift in our validator service to comply with the Cures Update. This still reflects our experience where the value of the conformance validation error visibility to end-users is limited as their focus is the content of the documents they are viewing and the ability to effectively reconcile data into the local record (a capability that is part of the 170.315(b)(2) Clinical Information Reconciliation and Incorporation criterion).

Real World Testing Metrics

- Number of standards-conformant C-CDA documents created per month by C-CDA document template (CCD, Referral Note, Discharge Summary):
    - Average number of standards-conformant C-CDA documents created per month = **38,862,782**
- Number of times per month a C-CDA document was opened and viewed utilizing the certified C-CDA viewer capability:
    - Average number of times a C-CDA document was opened and viewed per month = **489,315,049**
- Number of times per month the C-CDA validator capability was leveraged to assess the standards conformance of a C-CDA being viewed:
    - Average number of times the C-CDA validator capability was leveraged per month = **33,908**

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170.315(b)(1) - Transitions of Care

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: First Data Bank (FDB) Interoperability Module

Real World Testing Methodologies Summary

Real World Testing of the Transitions of Care certified capabilities for Soarian Clinicals tracked customer use for sending a conformant Consolidated Clinical Document Architecture (C-CDA) document upon patient discharge from inpatient or emergency department encounters. The Continuity of Care Document (CCD), Referral Note, and Discharge Summary documents created in Soarian Clinicals are transmitted through Cerner's Document Management product. The data was collected through a file in Document Management per customer and sent to Cerner's Healthcare Intelligence analytics product for cross-customer production reporting. For this measure, we pulled a Cerner Healthcare Intelligence analytics report to provide the results data.

Additionally, we captured metrics on invalid C-CDA documents that were received inbound and demonstrated real world counts of C-CDAs that did not meet the minimum required specifications as defined by the Office of the National Coordinator for Health IT (ONC). We utilized a report to capture those metrics. Lastly, we demonstrated real world value of allowing the quantity and order of C-CDA sections displayed via reporting on a system setting that users can apply to establish viewing preferences. A report was used for the production customer systems and will continue to be used to collect metrics for this demonstration.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Completed identification of target customer participants: end of January 2024
2. Completed readiness for customer query execution: end of Q2 2024
3. Completed the execution of the actual Real World Testing activities: end of Q2 2024
4. Completed assessment of Real World Testing data to compile results and outcomes: end of year 2024

Real World Testing Expected Outcomes

The Real World Testing outcomes for sending and receiving C-CDA documents were measured using a report derived from Cerner's Healthcare Intelligence analytics product and provided successful active engagement in the sample of customer production environments. The testing outcomes met the target as expected with high compliance of C-CDA sending and receiving in real world customer production environments.

For the validation criteria, the outcomes were measured by a unique report that reflects across the customer base showing the count of C-CDAs that are validated. This report is available to customers; however, the use is varied. For customers who utilized the document validation capabilities for their incoming/received C-CDA documents from exchange partners, there were a higher than expected amount of document errors. We believe this reflects the industry maturity and not a reflection on specific product or customer usage. Despite the validation errors, the exchange of C-CDA data utilization remained high and the customers remained focused on the content of the C-CDA documents, and the reconciliation of data rather than terminology and code sets being used. As the industry matures, we anticipate seeing less validation errors in subsequent Real World Testing plans.

Real World Testing Metrics

- For the sending and receiving of C-CDA documents, the number of patient visits for which a C-CDA document was either received or sent (target 50%+): **55.23%** (3,388 / 6,134)
- For the validation of C-CDA document, the rate of C-CDA documents received inbound with any error (target less than 25%): **92.96%** (873,076 / 939,243)
    - Note that this is not an indication of non-conformity of the certified capabilities as the errors observed are in documents received inbound from other systems.
- For the validation capabilities system settings, the number of customers who have changed their display settings (target less than 5%): 0% (**0 customers)**

ORACLE Health

170.315(b)(2) Clinical Information Reconciliation and Incorporation

Certified Health IT Module(s): **Millennium (Clinical)**

CHPL Product Numbers: 15.04.04.1221.Mill.18.06.1.221107; 15.04.04.1221.Mill.24.07.1.240920

Relied Upon Software: N/A

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Clinical)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.24.07.1.240920
- Certification date: September 20, 2024

Real World Testing Methodologies Summary

For Real World Testing of the certified Clinical Information Reconciliation and Incorporation capabilities, we utilized reporting derived from a cross-database analytics tool to provide near real-time activity tracking of active production environment use of the relevant certified capabilities. With these reports, we were able to measure and report real world adoption of these certified capabilities by tracking discrete actions taken on the data extracted from Consolidated Clinical Document Architecture (C-CDA) documents received inbound from external sources. Specific actions tracked and reported on were:

- Problems added
- Problems rejected
- Allergies added
- Allergies rejected
- Home Medications added
- Home Medications rejected

These measurements provided supporting evidence that clinical data reconciliation was being actively utilized by Cerner customers at the point of care. Reconciled data was received from either manually matched C-CDAs that were received inbound from Direct Messaging exchange, or automated patient matching from Integrating the Healthcare Enterprise (IHE) query-based exchange.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Ambulatory
- Behavioral Health
- Emergency Department
- Pediatrics

Real World Testing Milestones

1. Retrieved customer production activity tracking data reports the first week of Q4 2024.
2. Completed assessment of production activity tracking data reports mid-Q4 2024.
3. Completed compilation of Real World Testing results from production activity tracking data reports assessment at the end of 2024.

Real World Testing Expected Outcomes

In executing the identified Real World Testing plan, we observed general consistency across months throughout the year for overall reconciliation actions (including both add and reject actions). We also observed higher volumes of

reconciliation actions for Problems and Home Medications than for Allergies reflecting a priority on those items for care providers and a higher rate of reliable codified data.

Real World Testing Metrics
The Real World Testing metrics for Clinical Information Reconciliation and Incorporation were as follows (all reconciliation actions tracked were taken on external data parsed from C-CDA documents received inbound):
• Number of Problems added and rejected per month:
  ○ Average # Problems added per month: **485,927**
  ○ Average # of Problems rejected per month: **1,015,112**
• Number of Allergies added and rejected per month:
  ○ Average # Allergies added per month: **59,035**
  ○ Average # of Allergies rejected per month: **330,973**
• Number of Home Medications added and rejected per month:
  ○ Average # Home Medications added per month: **491,435**
  ○ Average # of Home Medications rejected per month: **2,692,949**

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170.315(b)(2) - Clinical Information Reconciliation and Incorporation

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: First Data Bank (FDB) Interoperability Module

Real World Testing Methodologies Summary

Real World Testing of Clinical Information Reconciliation and Incorporation certified capabilities was conducted by tracking actual customer use of the Soarian Clinicals workflows in which a C-CDA document that was received was matched to a patient and reconciled into the local record. This shows correct patient matching and incorporation of data provided by the externally sourced C-CDA document. A report was generated specifically for Real World Testing to demonstrate incorporation with C-CDA documents.

The data provided by the C-CDA documents are accessed by clinicians through three clinical information reconciliation workflows: Allergy Reconciliation, Problem Reconciliation, and Medication Reconciliation. Our testing methodology leveraged customer production environment tracking via our Healthcare Intelligence analytics product with a report which counts when each and any of the reconciliation actions occurs with a C-CDA document for the pertinent workflows. This report was generated specifically for Real World Testing to demonstrate incorporation with C-CDA documents. It provided more specific details of the customer usage of C-CDA data for medication, problem, and allergy reconciliation.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Completed identification of target client participants: end of January 2024
2. Completed technical readiness for client query execution: end of Q2 2024
3. Completed actual RWT activities execution: end of Q2 2024
4. Completed assessment of RWT data for results and outcomes compilation: end of year 2024

Real World Testing Expected Outcomes

Review of customer configuration identified two customers who had implemented all three clinical information reconciliation workflows (Allergy Reconciliation, Problem Reconciliation, and Medication Reconciliation). Of this customer subset, both had the Healthcare Intelligence reconciliation report necessary for the Real World Testing. Accordingly, the reconciliation report was successfully executed for the two customers who had the report implemented.

The reconciliation report was successfully executed for the two target customers and, upon review of the reconciliation report data, it was confirmed that the customers had implemented and actively utilized the three clinical information reconciliation workflows with incorporated of data from C-CDA documents. The testing outcomes met the target as expected for compliance of clinical information reconciliation in the customer production environment.

Overall, the Real World Testing outcome for clinical information reconciliation of C-CDA documents demonstrated that the customers had low adoption of clinical information reconciliation with C-CDA documents.

Real World Testing Metrics

- Percentage of patient visits during the measurement period where at least one reconciliation workflow was performed (target = 50%+): **26.65%** (631/ 2,368)

Note – the target results for this measure were not met, however, this does not indicate that customers are not fulfilling the Clinical Information Reconciliation and Incorporation requirements. With this report, the data specifically looked at only reconciliation and incorporation of data from a C-CDA document. Customers are maintaining and using their medication, problem and allergy workflows through other means in Soarian Clinicals and some customers have not leveraged all of the capabilities with C-CDA reconciliation. Additionally, the external data on C-CDAs can, at times, create

noise with extraneous data. As the amount of data continues to grow it can be a negative in attempting to incorporate the data for a patient visit and into the clinician's workflows.

170.315(b)(3) Electronic Prescribing

Certified Health IT Module(s): **PowerChart Touch; Millennium (Clinical)**

CHPL Product Numbers: 15.04.04.1221.Powe.03.02.1.210308; 15.04.04.1221.Mill.18.06.1.221107; 15.04.04.1221.Mill.24.07.1.240920

Relied Upon Software: Cerner Millennium (PowerChart Touch v4)

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Clinical)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.24.07.1.240920
- Certification date: September 20, 2024

Changes to Original Real World Testing Plan

- Summary of change: Measurement period was shortened from 30 days to 1 business week and metric was amended to focus on random representative sampling of each eRx transaction type from within the measurement period.
- Reason for the change: With thousands of transactions generated every hour for most message types across our large customer base, tracking for larger time periods without employing sampling proved challenging from a scaling perspective without notable benefit for the testing.
- Impact to RWT execution: No impact. Significant amounts of data including 10K transactions for most types were able to be reviewed for the shortened measurement period to draw appropriate conclusions that transactions were continually reliable across applicable areas and message types.

Real World Testing Methodologies Summary

To conduct Real World Testing for the Electronic Prescribing certified capabilities, a subset of live transactions were reviewed across all clients over the course of 5 days spanning primary working hours for all applicable care venues. Both successful and failed transactions were evaluated and tracked to validate that the required standard is being leveraged correctly and show successful real-world use of the certified capabilities. Although some transactions have higher failure rates than expected, those failures are not related to our system's conformance to cited standards and are explained as applicable in the results. Minimal conformance items were found related to the system and all were related to client changes in standard configurations.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Ambulatory
- Behavioral Health
- Emergency Department
- Pediatrics

Some of the capabilities covered under the ePrescribing criterion apply to all care settings while others are specifically targeted at a subset of care settings. Those associations are outlined below by specific capability.

- Create new prescriptions (NewRx): All care settings
- Request and respond to change prescriptions (RxChangeRequest, RxChangeResponse): All care settings
- Request and respond to cancel prescriptions (CancelRx, CancelRxResponse): All care settings
- Request and respond to renew prescriptions (RxRenewalRequest, RxRenewalResponse). Ambulatory care setting
- Receive fill status notifications (RxFill). All care settings
- Request and receive medication history (RxHistoryRequest, RxHistoryResponse): All care settings
- Relay acceptance of a transaction back to the sender (Status): All care settings
- Respond that there was a problem with the transaction (Error): All care settings

Real World Testing Milestones

1. Complete identification of target customer participants: end of January 2024
2. Complete review and updates to reports used for tracking real world use of the applicable certified capabilities: end of Q2 2024
3. Complete actual RWT activities execution: end of Q4 2024
4. Complete assessment of RWT data for results and outcomes compilation: end of Q4 2024

Real World Testing Expected Outcomes

- Create new prescriptions (NewRx): All care settings
  - Expected result returned with no system failures due to standard non-conformance
- Request and respond to change prescriptions (RxChangeRequest, RxChangeResponse): Ambulatory care setting
  - Expected result returned with no system failures due to standard non-conformance
- Request and respond to cancel prescriptions (CancelRx, CancelRxResponse): All care settings
  - Expected result returned with no system failures due to standard non-conformance
- Request and respond to renew prescriptions (RxRenewalRequest, RxRenewalResponse): Ambulatory care setting
  - Expected result returned with one system failure due to standard non-conformance related to client configuration and one additional error was due to variability of a medication's status across states
- Receive fill status notifications (RxFill): Current adoption is still low for most pharmacies, but traffic was available to track in our results at an acceptable level
  - Expected result returned with no system failures due to standard non-conformance
- Request and receive medication history (RxHistoryRequest, RxHistoryResponse): All care settings
  - Expected result returned with no system failures due to standard non-conformance
- Relay acceptance of a transaction back to the sender (Status): All care settings
  - Expected result returned with no system failures due to standard non-conformance
- Respond that there was a problem with the transaction (Error): All care settings
  - Expected result returned with no system failures due to standard non-conformance

Real World Testing Metrics

- Success rate across representative randomized sample of prescription transactions routed electronically for the measured testing period of December 2nd - December 6th (target = 90%+): **97.78%** (67,565/69,100)
  - Med History Requests: 6 errors, in 10,000 total transactions reviewed
  - Cancel Requests: 23 errors in 10,000 total transactions reviewed
  - Change Responses: 730 errors in 6,100 total transactions reviewed
  - NewRx: 13 errors in 13,000 total transactions reviewed
  - Refill Responses: 132 errors in 10,000 total transactions reviewed
  - Status: 1 error in 10,000 total transactions reviewed
  - Error: 640 errors in 10,000 total transactions reviewed

Additional tracking details:

- Create new prescriptions (NewRx): All care settings
  - Extremely large volume for each customer over 1,000 transactions per hour process through our partners at peak times
  - All failures were related to issues unrelated to conformance
    - 5 rejected by sender after passing validation for unknown reasons
    - 2 failed due to using an unsupported unit of measure code incorrectly configured by the client
    - 1 could not be delivered to the recipient due to pharmacy connectivity
    - 2 contains provider configuration issues
    - 1 rejected on review for a provider who entered an invalid SIG
    - 1 rejected by pharmacy due to not being able to fill
- Request and respond to change prescriptions (RxChangeRequest, RxChangeResponse): Ambulatory care setting
  - Extremely large volume for each customer over 1,000 transactions per hour process through our partners at peak times

    - Large volume of failures related to pharmacies attempting to send Change Requests (5,800 attempts failed out of 10,000 reviewed); this volume primarily consisted of pharmacies missing data in their request or attempting to send the request to providers who do not support the message
    - Higher than expected volume of failures when responding to Change Requests unrelated to conforming to the NCPDP standard:
        - Many instances of providers responding to requests who are not setup through business processes to transmit that response
        - Many instances of pharmacies rejecting the response as they consider the prescription expired
        - Change adoption for providers has increased and they are yet to adopt processes to respond quickly as they have with long-standing transactions such as Renewals
        - Updates in the next standard help address this through pharmacy identified expiration dates and message retraction options
- Request and respond to cancel prescriptions (CancelRx, CancelRxResponse): All care settings
    - Extremely large volume for each customer over 1,000 transactions per hour process through our partners at peak times
    - All failures were related to issues unrelated to conformance
        - 19 errors related to prescriber configurations
        - 3 errors returned by pharmacies with no specific cause listed
        - 1 error related to system-to-system connectivity
- Request and respond to renew prescriptions (RxRenewalRequest, RxRenewalResponse): Ambulatory care setting
    - 747 errors were seen in requests from pharmacies unrelated to conformance or our system which fell into 3 primary buckets:
        - Sending to inactive providers
        - System-to-system connectivity issues
        - Pharmacy conformance issues
    - Errors identified on responses from our system were primarily caused by pharmacy rejections for non-conformance reasons such as the request no longer being valid; updates in the next standard help address this through pharmacy identified expiration dates and message retraction options
    - 2 specific messages had errors to review:
        - One message failed conformance due to an invalid denial reason cause by client configuration
        - One message failed due to state variations related to the specific medication
- Receive fill status notifications (RxFill)
    - Tracking this measurement across a large variety of clients allowed a better measurable result to review
    - No failures identified from our system accepting responses
    - Large number of failures identified on the part of sending pharmacies due to non-conformance with the standard or responses identifying the pharmacy does not support the message type
- Request and receive medication history (RxHistoryRequest, RxHistoryResponse): All care settings
    - Extremely large volume for each customer over 1,000 transactions per hour process through our partners
    - 6 errors were found all of which were related to an invalid NPI provided in the request due to client configuration being incorrect
- Relay acceptance of a transaction back to the sender (Status): All care settings
    - Extremely large volume for each customer over 1,000 transactions per hour process through our partners
    - 1 error identified related to a provider configuration issue by the client unrelated to conformance
- Respond that there was a problem with the transaction (Error): All care settings
    - Processing of stand-alone errors had only one reason for failure
    - 640 errors identified due to pharmacies sending invalid information in fields to our system

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170.315(b)(3) Electronic Prescribing

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: N/A

Real World Testing Methodologies Summary
In order to demonstrate successful Real World Testing (RWT), the live ePrescribing transactions within customer environments were queried to show that all services in use are functional across various care settings. Transactions were reviewed based on the applicable care settings for at least 30 days to demonstrate continued successful uses over time while ensuring applicable transaction data is still available.

Some components were exempt as there is no real world use today. Additional tracking for those components will be included as the industry adopts those use cases. Cerner leveraged customer production environment tracking via existing processes which involve retrieval of summarized, non-PHI volume statistics from the system via process monitoring operations. Reports were compiled using this production activity monitoring data and volumes were subtotaled by success/failure status (where applicable), and by visit type of Inpatient (IP) and Emergency Department (EOP).

Regarding methodology for the leading/trailing zeros and oral liquid metric dosing requirements, mandating inclusion of functional requirements as part of implementation testing processes when enabling ePrescribing at customer sites guaranteed that we test real world use of these capabilities.

Standards Updates
No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested
- Acute
- Emergency Department

Some of the capabilities covered under the ePrescribing criterion apply to all care settings while others are specifically targeted at a subset of care settings. Those associations are outlined below by specific capability. In addition, the RxFill transaction has no adoption at this time and cannot be tracked as part of the Real World Testing plan. Additional tracking for RxFill will be added when applicable in future Real World Testing plans.
- Create new prescriptions (NewRx): All care settings
- Request and respond to change prescriptions (RxChangeRequest, RxChangeResponse): All care settings
- Request and respond to cancel prescriptions (CancelRx, CancelRxResponse): All care settings
- Request and respond to renew prescriptions (RxRenewalRequest, RxRenewalResponse). Not applicable to Soarian Clinicals's supported care settings
- Receive fill status notifications (RxFill). Current adoption too low to track (not industry supported until release on 2017071 and pharmacy adoption has not increased since release)
- Request and receive medication history (RxHistoryRequest, RxHistoryResponse): All care settings
- Relay acceptance of a transaction back to the sender (Status): All care settings
- Respond that there was a problem with the transaction (Error): All care settings

Real World Testing Milestones
1. Completed identification of target customer participants: end of Q2 2024
2. Completed actual RWT activities execution: end of Q3 2024
3. Completed assessment of RWT data for results and outcomes compilation: end of year 2024

Real World Testing Expected Outcomes
The outcomes observed in the Real World Testing execution included the ability to show a large volume of each transaction across the supported care settings with a high rate of success. We observed a success rate above the target 90% success rate across all electronic transactions. This has demonstrated that all certified capabilities are working as expected in all care settings where they are intended to be used.

Real World Testing Metrics
- Success rate across all prescription transactions (including renewal and change requests) routed electronically for the measured 30-day testing period of May 1 – 31 (target = 90%+): **99.88%** (25,773/25,802)

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170.315(c)(1)-(3) Clinical Quality Measures (CQMs)

Certified Health IT Module(s): **Millennium (CQMs)**

CHPL Product Numbers: 15.04.04.1221.Mill.18.04.1.220101

Relied Upon Software: Cerner Quality Reporting (all criteria)

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (CQMs)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.24.05.1.240814
- Certification date: August 14, 2024

Real World Testing Methodologies Summary

In order to demonstrate successful Real World Testing (RWT) for the CQM – record and export and CQM – report criteria, we tracked data submissions to Centers for Medicare and Medicaid Services (CMS) and The Joint Commission (TJC) for a sample of Millennium EHR customers that have used Cerner's Millennium (CQMs) certified capabilities to record and process the eCQM data through the Cerner Quality Clearinghouse portal for their CMS and TJC submissions. The measures listed below were used for the testing activities. Measures 1-4 in the list are applicable to Acute and Emergency Department care settings, while measures 5 and 6 are applicable to the Ambulatory Care setting.

1. ED-2
2. VTE-1
3. STK-2
4. Safe Use of Opioids
5. CMS-165
6. CMS-122

For the CQM – import and calculate criterion, we demonstrated successful real world use by coordinating with a customer that required the import of QRDA data files from an external third-party source system to Millennium EHR system and observed the successful use of our certified capabilities to import the data.

Standards Updates

CMS Implementation Guide for Quality Reporting Document Architecture Category I Hospital Quality Reporting: Implementation Guide for 2024 (Updated August 2023)

- Method used for standard update: SVAP
- Date notification sent to ONC-ACB: October 14, 2024
- Date notification sent to customers: September 13, 2024
- Measure used to demonstrate conformance with updated standard: Metric #3 from this RWT plan demonstrates conformance to the new standard via tracking of successful submission for CMS and TJC reporting using the new standard

CMS Implementation Guide for Quality Reporting Document Architecture Category III Eligible Clinicians Programs: Implementation Guide for 2024 (Updated November 2023)

- Method used for standard update: SVAP
- Date notification sent to ONC-ACB: October 14, 2024
- Date notification sent to customers: September 13, 2024
- Measure used to demonstrate conformance with updated standard: Metric #3 from this RWT plan demonstrates conformance to the new standard via tracking of successful submission for CMS and TJC reporting using the new standard

Care Settings Tested

- Acute
- Ambulatory
- Emergency Department

Real World Testing Milestones

1. Completed identification of target clients (EH and EC): end of Q1 2024
2. Completed execution of RWT activities: start of Q2 2024
3. Completed assessment of RWT data for results and outcomes compilation: May 2024

Real World Testing Expected Outcomes

RWT outcomes for the Millennium (CQMs) certified HIT module consisted of successful QRDA file submission to CMS and TJC across the tracked customers. More specifically, for Eligible Hospitals, Cerner reports displayed the measure outcomes for each qualifying encounter and the aggregated outcome count for the quarter. The encounter could have an outcome assigned of Initial Population, Denominator, Denominator Exclusion, Numerator, or Exception. The aggregated count included a total for each of the outcomes. These counts matched CMS/TJC submission reports.

For Eligible Clinician measures, the QRDA III Cerner audit report matched the submission detail report generated by the Cerner Quality Clearinghouse. The following outcomes were evaluated: Patient population, Denominator, Denominator Exclusion, Numerator, Exception, Performance rate, Medicare Population (Denominator), and Tax Identification Number (TIN) counts. The validation of the expected outcome correlated to successful real-world use of the certified capabilities.

Real World Testing Metrics

- CQM – record and export criterion: percentage of selected patients for whom QRDA files are successfully generated (target = 100%). **Actual result = 100%**
- CQM – import and calculate the percentage of patient data successfully imported (target = 90%). **Actual result = 100%**
- CQM – report criterion: percentage of successful QRDA file submissions to CMS/TJC with less than 10% outcome mismatches against Cerner reporting (target = 95%). **Actual result = 100%**

ORACLE Health

170.315(c)(1)-(3) Clinical Quality Measures (CQMs)

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: Health Services Analytics (all criteria)

Real World Testing Methodologies Summary

The methodology for Real World Testing (RWT) of the Soarian Clinicals CQM certified capabilities under the CQM - record and export (170.315(c)(1)) and CQM - report (170.315 (c)(3) criteria made use of the real world generation of certified Quality Reporting Architecture (QRDA) files by customers and their subsequent successful submission of that data to the Centers for Medicare and Medicaid Services (CMS) and The Joint Commission (TJC) for eCQM reporting programs. We utilized a client pool that represents an appropriate sampling of different hospital settings, workflows, and processes that are used in the real world for the certified capabilities. As part of the methodology, reports were validated in a systemic way by utilizing various queries and Soarian Clinicals eCQM reporting data. These reports were compared with the reports provided by the regulatory agencies (CMS/TJC) after submission to determine the success rate of these criteria. The following Eligible Hospital measures were used during the testing:

1. Admit Decision Time to ED Departure for Admitted ED Patients (eED-2)
2. Venous Thromboembolism Prophylaxis(eVTE-1)
3. Discharged on Antithrombotic Therapy (STK-2)
4. Safe Use of Opioids

For the CQM - Import and calculate criterion (170.315 (c)(2)), the methodology utilized test scripts and actual mock testing scenario execution on the testing EHR environment that appropriately mirrors real world use and conditions. A set of mock data was imported into Cerner's Healthcare Intelligence eMeasure application and used to generate the QRDA file.

Standards Updates

CMS Implementation Guide for Quality Reporting Document Architecture Category I Hospital Quality Reporting: Implementation Guide for 2024 (Updated August 2023)

- Method used for standard update: SVAP
- Date notification sent to ONC-ACB: October 14, 2024
- Date notification sent to customers: September 13, 2024
- Measure used to demonstrate conformance with updated standard: Metric #3 from this RWT plan demonstrates conformance to the new standard via tracking of successful submission for CMS and TJC reporting using the new standard

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Complete identification of target customers (EH) for CQM – record and export and CQM – report criteria: end of Q1 2024
2. Complete set up of testing EHR environment that replicates CQM – import and calculate criterion usage in the real world: end of Q1 2024
3. Complete actual RWT activities for CQM – record and export and CQM – report criteria: end of Q1 2024
4. Complete actual RWT activities for CQM – import and calculate criterion: end of Q2 2024
5. Complete assessment of RWT data for results and outcomes compilation: end of year 2024

Real World Testing Expected Outcomes

Real World Testing outcomes for the Soarian Clinicals CQM certified capabilities comprise the metrics of the client's successful QRDA file submission and the accuracy metrics from the CMS Submission Portal provides the comparative count of submitted QRDA1 files and accepted QRDA1 files to CMS. For Eligible Hospitals, CMS reports display the measure outcomes for each qualifying encounter and the aggregated outcome count for the quarter. The encounter could have an outcome assigned of Initial Population, Denominator, Denominator Exclusion, Numerator, or Exception. The aggregated count includes a total for each of the outcomes.

For Eligible Hospital measures (c2) criterion, import and calculate functionality in the testing EHR environment that mirrors real world conditions, and the imported aggregated count is matched with the outcome received after the execution. The validation of the expected outcome correlates to successful real-world use of the certified capabilities. For Eligible Hospital measures (c2) criterion, import and calculate functionality was tested in the mock EHR environment that mirrors real world conditions and the imported aggregated count was matched with the outcome received after the execution. The validation of the expected outcome correlates to successful real world use of the certified capabilities.
Real World Testing Metrics 1. CQM – record and export criterion: percentage of selected patients for whom QRDA files are successfully generated (target = 100%). **Actual result = 100%** 2. CQM – import and calculate: percentage of patient data successfully imported (target = 90%). **Actual result = 100%** 3. CQM – report criterion: percentage of successful QRDA file submissions to CMS/TJC with less than 10% outcome mismatches against Cerner reporting (target = 95%). **Actual result = 100%**

ORACLE
Health

170.315(e)(1) View, Download, and Transmit to 3rd Party

Certified Health IT Module(s): **Patient Portal**

CHPL Product Numbers: 15.04.04.1221.Pati.23.07.1.240101; 15.04.04.1221.Pati.01.08.1.240801

Relied Upon Software: Cerner Millennium

Withdrawn or Added Products

The following versions of the applicable certified HIT modules that were included with the original 2023 Real World Testing plan were withdrawn prior to submission of the corresponding Real World Testing results.

- Module name: HealtheLife
- Version: 2023
- CHPL product number: 15.04.04.1221.Hlif.23.06.1.230331
- Withdrawal date: March 17, 2024
- Results data captured for withdrawn listing (Y/N)? No – while the certified HIT module version was not withdrawn until March 2024, it was out of circulation and superseded by the newer Patient Portal product prior to test execution commencing.

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Patient Portal
- Version: 2024
- CHPL product number: 15.04.04.1221.Pati.23.07.1.240101
- Certification date: January 1, 2024

- Module name: Patient Portal
- Version: 1
- CHPL product number: 15.04.04.1221.Pati.01.08.1.240801
- Certification date: August 1, 2024

Changes to Original Real World Testing Plan

- Summary of change: The metric under the plan tracking the volume of patients access the activity history log in their portal was amended to use a shorter timeframe.
- Reason for the change: Data purging in the analytics tools leveraged for the reporting prevented the ability to
- Impact to Real World Testing execution: No impact. The shortened measurement timeframe for the final metric was still able to produce the data necessary to (1) verify successful operation of the certified capability in the real world and (2) demonstrate alignment with expected outcomes.

Real World Testing Methodologies Summary

To execute real world testing for the View, Download, and Transmit to 3rd Party certified capabilities as part of the Patient Portal certified health IT module, events from the product audit logs tracking relevant activity by patients and their authorized represenatives in the applications were aggregated from a subset of representative sample customers.

The customers were strategically selected to represent different sizes of markets covering all of the applicable care settings for the product. The targeted customers represent a mix of large conglomerate health systems that span multiple metropolitan service areas (1), regional health centers serving one broad metropolitan service area (2), small physician practices clinics (1), critical access (1) and community hospitals (1).

Standards Updates

No new adopted standard for the criterion have been voluntarily certified.

Care Settings Tested

- Acute
- Ambulatory
- Emergency Department

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Health

Real World Testing Milestones

1. Completed identification of target client participants: end of October 2024
2. Completed validation of audit report used for tracking real world use of the applicable certified capabilities: end of November 2024
3. Completed collection of audit events representing RWT activities: mid-December 2024
4. Completed assessment of RWT data for results and outcomes compilation: end of year 2024

Real World Testing Expected Outcomes

The outcomes from the Real World Testing plan met the expectations. The metrics show that the viewing capabilities continue to be the most used certified capabilities within the product. Volume for the events of viewing was greater than the events for downloading and transmitting health records as view actions are considered primary use of Patient Portal and more user-friendly. Download and transmit features in Patient Portal are accessed less frequently and thus will have a lower volume of events.

Real World Testing Metrics

- Number of unique Patient Portal users that viewed an element of the health record during the measurement period: **204,491** (*27 unique users come from the new beta version of Patient Portal certified as version 1)
    - July 2024 – 111,400
    - August 2024 – 114,769
    - September 2024 – 114,875 (27 used the new beta version of Patient Portal certified as version 1)
- Number of total combined viewing events of the health record during the measurement period: **4,241,427** (*111,246 viewing events were from the new beta version of Patient Portal certified as version 1)
    - July 2024 – 1,340,854
    - August 2024 – 1,400,398
    - September 2024 – 1,500,175 (111,246 used the new beta version of Patient Portal certified as version 1)
- Number of unique Patient Portal users that downloaded a CCD during the measurement period: **62,462** (*6 used the new beta version of Patient Portal certified as version 1)
    - July 2024 – 25,618
    - August 2024 – 26,432
    - September 2024 – 26,553 (6 used the new beta version of Patient Portal certified as version 1)
- Number of unique Patient Portal users that transmitted a CCD during the measurement period: **9,645** (*4 used the new beta version of Patient Portal certified as version 1)
    - July 2024 – 4,999
    - August 2024 – 5115
    - September 2024 – 4866 (4 used the new beta version of Patient Portal certified as version 1)
- *Number of total viewing events of Access Logs during the measurement period: **1,303**

*Note – measurement period for this metric was shortened to December 1 – 31, 2024

ORACLE Health

170.315(e)(1) View, Download, and Transmit to 3rd Party

Certified Health IT Module(s): **Patient Portal – MMD**

CHPL Product Numbers: 15.07.04.1221.Pati.MM.01.0.180720

Relied Upon Software: N/A

Real World Testing Methodologies Summary

Cerner's elected methodology for the Real World Testing (RWT) of the View, Download, and Transmit to 3rd Party (VDT) criterion for the Patient Portal – MMD certified HIT module consisted of specialized reports that capture data on both the reportable usage of the VDT capabilities in specific care settings, as well as gauging items such as a patients' or authorized representatives' experience accessing their healthcare information. This includes, among other items, accessibility and ease of searching for their information to ensure that the full scope of the certified capabilities are accounted for.

A report was generated from Patient Portal – MMD customers' production environments twice during the calendar year that shows the usage of the following VDT capabilities per care setting and selected date range:

- Discharged patients had access to the Patient Portal on time
- Discharged patients had access to their C-CDA on time
- New patients being provisioned to the Patient Portal (in addition to counting new user account creations per quarter, also count how many of those discharged in the quarter already had access prior to the visit, verses new patients without a prior portal account)
- Patients or their proxies logging in to the Patient Portal
- Patients or proxies viewed their C-CDA's
- Patients or proxies downloaded their C-CDA's
- Patients or proxies transmitted their C-CDA's (both securely and via unsecured email)
- Patients accessed their audit log

An additional Patient Portal – MMD user report was generated from the customers' production environments twice during the calendar year showing the usage of the following VDT capabilities per de-identified user and selected date range:

- Number of logins
- Number of total documents viewed
- Number of total C-CDA's viewed
- Number of dashboard (parsed C-CDA aggregated) views
- Number of Acute visits
- Number of Ambulatory visits
- Number of Emergency visits

Activity tracking in these reports was designed to account for various available methods of access provision, including manual (a system component), rapid ADT (an integration), Experian (an integration), and validation code entry (a system component).

Standards Updates

No new adopted standard for the criterion have been voluntarily certified.

Care Settings Tested

- Acute
- Ambulatory
- Emergency Department

Real World Testing Milestones

1. Completed actual RWT activities execution: mid-Q4 2024
2. Assessed data and compiled RWT results: end of Q2 and Q4 204

Real World Testing Expected Outcomes

2024 RWT observed outcomes provided a baseline for expected outcomes for 2025. We anticipated active participation especially among the Inpatient population of the VDT criteria. Some of the VDT events were expected to have little

activity across all Care Centers, but viewing health information was expected to be a popular event. We also expected new patients to continually gain access to the Patient Portal throughout the observed measurement periods.

- Metric #3: Success rate for Consolidated Clinical Document Architecture (C-CDA) documents received on time in the patient portal (target = 98%): Most customers' Inpatient settings achieved 90-99% success. There were a few outliers in the Ambulatory Care Setting who achieved <= 20% success. As in year 2023, the Ambulatory Care population brought down the success rate to overall 34% success rate.
- Metric #4: This metric provides more detail as to why new user creations did not achieve as high of a success rate as anticipated. Metric 4 identifies the # of patients who already had a username created from a prior visit and would therefore not need to create a new username for portal access.

Overall, the inpatient population achieved the highest scores for engagement. The 'view' and 'download' functions were utilized most frequently with minimal 'transmit' activity.

Outcome Challenges:

- Customers who offer self-provisioning had a reduced amount of proxy (authorized representative) engagement. Self-provisioning only allows the patient to be provisioned as a user.
- Customers who utilized manual provisioning only did not achieve the desired 90% success rate for providing access.
- An overall lower level of patient engagement across all customers than expected.

Real World Testing Metrics

- Success rate for patients being provided access to their health information during the measurement periods (target = 90%): **87.80%** (1,303,551/1,484,524)
    - Customers who offer self-provisioning achieved 100% success. Most other customers achieved 80% success who use manual provisioning. There were a few outliers who achieved less than 50% success leading to the metric result slightly under the target rate of 90%.

- Percentage of patients or proxies who have created a username when offered to exercise ability to access their health information on the patient portal during the measurement periods (target = 60%): **0.30%** (4,498/1,484,524)
    - 9% of discharged patients seen during the year already had access to the portal. New patients in the Inpatient setting were the highest population who took the step to create their account once given access. Emergency patients achieved the least success of username creation.

- Success rate for HL7® CDA® Consolidated Clinical Document Architecure (C-CDA) documents received on time in the patient portal during the measurement periods (target = 98%): **33.64%** (499,510/1,484,524)
    - Most customers' Inpatient settings achieved 90-99% success. There were a few outliers in the Ambulatory Care Setting who achieved <= 20% success. As in year 2023, the Ambulatory Care population brought down the success rate to overall 33.64%%.

- Percentage of patients or proxies who had previously created a username when offered to exercise the ability to access their health information on the patient portal prior to the 2024 measurement period, which would carry forward. (target = 20%): **8.81%** (130,822/1,484,524)

ORACLE
Health

170.315(f)(1) Transmission to Immunization Registries

Certified Health IT Module(s): **Millennium (Immunizations)**

CHPL Product Numbers: 15.04.04.1221.Mill.I8.03.1.220101; 15.04.04.1221.Mill.I4.04.1.241009

Relied Upon Software: Cerner Hub - Immunizations OR Vaccinations Outgoing Interface

Withdrawn or Added Products
The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Immunizations)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.I4.04.1.241009
- Certification date: October 9, 2024

Real World Testing Methodologies Summary
For the Transmission to Immunization Registries criterion as certified under the Millennium (Immunizations) certified HIT module, Cerner's RWT methodology consisted of monitoring real world production use of the certified capabilities over a 30-day measurement period (the Month of October 2024). The specific system activities tracked included the following:

- User or system-initiated queries to Immunization Information Systems (IIS) for patient immunization history
- Reconciliation of immunization history data to update the local patient record and EHR immunization forecast
- Administration of vaccines (whether via automated scanning or manual entry, or historical documentation where applicable) to initiate submission of the vaccination records to an IIS

Cerner accomplished this production activity tracking via the use of a cross-database analytics tool which provides near real-time activity tracking of active production environment use. Additionally, Cerner's certified capability for immunizations reporting under the certified HIT module enables monitoring of deeper details for immunization history query and reconciliation, such as failure reasons and discrete data volumes accepted or rejected into the local patient record.

Standards Updates
No new adopted standard for the criterion have been voluntarily certified.

Care Settings Tested

- Acute
- Ambulatory
- Emergency Department
- Pediatrics

Real World Testing Milestones

1. Completed compilation of plan for specific data to measure: end of 2023
2. Executed data reporting of RWT activities for identified timeframe: end of Q3 2024
3. Completed assessment of RWT data for results and outcomes compilation: end of year 2024

Real World Testing Expected Outcomes
In conducting the Real World Testing activities, we observed that we fell just below our target metric of 90% rate of successful transmissions of VXUs (2,604,959 sent/replayed) at 87.83% success rate based on the data we've retrieved from the month of October 2024. This was for 332 customers actively using this capability during the data capture period.

We also fell just below our target metric of 90% rate of successful QBP transaction (queries) to IIS systems (1,768160 sent/replayed) at 89.76% success rate based on the data we've retrieved for the same reporting period of October 2024. This was for 405 customers actively using this capability during the data capture period.

This reduction in successful communication for both VXU (submissions) and QBP (query) transactions is primarily attributed to one of our highest volume immunization registries being disconnected from a number of Millennium EHR customers for a 5-day period during the 30-day reporting period.

Real World Testing Metrics

- Total transactions from internal customer transaction data across the measurement period: **4,373,119** (2,604,959 submissions and 1,768,160 queries)
- Number of successful messages from internal customer transaction data across the measurement period: **3,874,913** (2,287,885 submissions and 1,587,028 queries)
- Number of failure messages from internal client transaction data across the measurement period: **298,151** (317,019 submissions and 181,132 queries)
- Success rate for submissions and queries from internal client transaction data across the measurement period (target = 90%+): **88.61%** (3,874,913 / 4,373,119)
    - Submissions: 87.83% (2,287,885 / 2,604,959)
    - Queries: 89.76% (1,587,028 / 1,768,160)

Note: failure rate for the third metric accounts for intermittent failures beyond the system's control, such as:

- Registration staff did not accurately capture patient demographics, or patient was unwilling/unable to provide information necessary to successfully match a patient during query (e.g., mother's maiden name)
- Clinician mis-documents vaccine details during administration (e.g., incorrect lot number)
- Network connectivity issues or failures on the endpoint's end resulting in inability to accept valid requests (this issue was particularly prevalent due to a high-volume immunization registry being disconnected for a 5-day period during the reporting)

ORACLE Health

170.315(f)(1) Transmission to Immunization Registries

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: N/A

Real World Testing Methodologies Summary
Soarian Clinicals Transmission to Immunization Registries certified capabilities consisted of a combination of production activity tracking via transaction results from connected state Immunization Information Systems (IIS) where available, along with a compilation of internal transaction results compiled from our customer base.

This compiled data was reviewed and assessed to produce metrics that provide an objective indication of the overall success customers have achieved in using the certified HIT module for its intended functions.

Standards Updates
No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested
- Acute
- Emergency Department

Real World Testing Milestones
1. Completion of actual Real World Testing activities execution for the target customers: end of Q3 2024.
2. Complete assessment of Real World Testing data for results and outcomes compilation: end of year .

Real World Testing Expected Outcomes
This year the Soarian Clinicals aggregate transaction numbers are lower than the prior year. This is due to the exclusion of some customers as they are in the process of transitioning off Soarian Clinicals. However, the testing we were able to perform with the available customers demonstrated high rates of successful data submissions reflecting successful use of the certified capabilities in the real world.

Overall, the testing we were able to perform with the available customers demonstrated high rates of successful data submissions reflecting successful use of the certified capabilities in the real world.

Real World Testing Metrics
- Total QBP (query) query transaction success rate across the July – Sept 2024 measurement period (target = 90%+): **99.59%** (314,980 / 316,262)
- Total VXU (submission) transaction success rate across the July – Sept 2024 measurement period (target = 90%+): **99.63%** (823 / 826)

ORACLE Health

170.315(f)(2) Transmission to Public Health Agencies — Syndromic Surveillance

Certified Health IT Module(s): **HealthSentry; Syndromic Surveillance and eLab Results**

CHPL Product Numbers:15.04.04.1221.Heal.23.06.1.230331; 15.04.04.1221.SyeL.01.00.0.240101

Relied Upon Software: N/A

Withdrawn or Added Products

The following versions of the applicable certified HIT modules that were included with the original 2023 Real World Testing plan were withdrawn prior to submission of the corresponding Real World Testing results.

- Module name: Syndromic Surveillance
- Version: 2023
- CHPL product number: 15.04.04.1221.Synd.23.06.0.230331
- Withdrawal date: March 17, 2024
- Results data captured for withdrawn listing (Y/N)? No – while the certified HIT module version was not withdrawn until March 2024, it was out of circulation and superseded by the newer Syndromic Surveillance and eLab Results product prior to test execution commencing.

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Syndromic Surveillance and eLab Results
- Version: 1
- CHPL product number: 15.04.04.1221.SyeL.01.00.0.240101
- Certification date: January 1, 2024

Real World Testing Methodologies Summary

Real World Testing methology for the Syndromic Surveillance certified capabilities consisted of producing evidence of successful creation and transmission of the required PHIN Messaging Guide for Syndromic Surveillance, Release 2.0 specification transactions for Emergency Department (ED) encounters to target public health agencies (PHA) via engagement with a representative sample of customers.

The target customers were actively transmitting syndromic surveillance information to their respective PHA and submission logs were captured for an appropriate 30-day period to show evidence of ongoing transmission of the following Admission, Discharge, and Transfer (ADT) HL7® transactions:

- A01 – Admissions
- A04 – Emergency Department (ED)
- A03 – Discharge
- A08 – Revise Patient Information

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Established target customers for test sample: end of Q1 2024
2. Gathered sample customer submission logs: end of Q1 2024
3. Prepared summary RWT results report: end of Q2 2024

Real World Testing Expected Outcomes

The results of the Real World Testing indicated successful ongoing transmission of the HL7® transactions to the target PHA. The success rates showed unequivocally that the test sample customers actively and successfully submitted required information for their ED patients during the measurement period, including admissions (A01), discharges (A03), and ED registrations (A04), as well as any update transactions (A08) specific to data reported for

syndromic surveillance for the patients included in the reporting test period. Ultimately, this shows that the certified capabilities are enabling our customers to successfully satisfy "active engagement' expectations with public health registries as required as part of measurement under the Centers' for Medicare and Medicaid Services' (CMS) Promoting Interoperability programs.

Real World Testing Metrics
• Percentage of successful daily syndromic surveillance transactions (A01, A04 – ED, A03, A08) for sample clients across the 30-day selected measurement period (target = 85%+):
  ○ HealthSentry = **100%** (505,677 / 505,677)
  ○ Syndromic Surveillance and eLab Results = **100%** (503,296 / 503,296)

170.315(f)(2) - Transmission to Public Health Agencies – Syndromic Surveillance

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: Cerner OPENLink

Real World Testing Methodologies Summary

The objective of this Real World Testing plan was to provide evidence of ongoing (near real-time), successful reporting of syndromic surveillance information to target public health agencies (PHA). The Real World Testing methodology consisted of two components as summarized below:

1. Collect audit data from the Production database of a representative sample of 2 customers actively transmitting syndromic surveillance information to their respective public health agency (PHA). The auditing showed evidence of ongoing (near real-time) events that generate the following ADT HL7® transactions for syndromic surveillance reporting of Acute (Inpatient), Emergency Department (ED) and any customer designated Urgent Care encounters: A01 – Inpatient Admissions, A04 – Emergency Department (ED)/Urgent Care Registrations, A03 – Discharge (Inpatient/ED/UrgentCare), A08 – Revise Patient Information (Inpatient/ED/Urgent Care). Audit data was collected for a 2-week testing period within the reporting year and the total (aggregate) number of ADT message events (A01, A04, A03, A08) was provided for each 2-week sample of audit data. The numbers provide totals for the 2-week test period.
2. Monitor Soarian Clinicals issue reporting and tracking tools for any issues specific to the syndromic surveillance certified capabilities to support that they are functioning as expected and customers submitting data to their respective PHA are not encountering issues with the successful transmission/receipt of the supported HL7® ADT transactions.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Monitored for reported issues: initiated Q1 2024 and continued through Q4 2024
2. Identified representative test customer sample and test period for audit data collection: end of Q2 2024
3. Gathered audit data from sample customers production data for test period: end of Q3 2024
4. Prepared summary report: end of year 2024

Real World Testing Expected Outcomes

The results of the Real World Testing demonstrated the ongoing and successful creation of the supported syndromic surveillance ADT HL7® transactions. It substantiated that the representative sample customers generated and sent information for their acute inpatient, ED and designated urgent care patients during the measurement period. This included A01, A03, A04, and A08 transactions specific to syndromic surveillance for qualifying patients/encounters included in the reporting test period. These results coupled with no reported issues specific to syndromic surveillance reporting shows successful "active engagement" with public health registries (as defined for CMS Promoting Interoperability programs) by Soarian Clinicals customers.

Real World Testing Metrics

Result – Successful Submission Volume

Both sampled customers showed ongoing outbound events for the supported ADT HL7® transactions throughout the test period. Below are aggregate numbers per customer for the 2-week test period:

- Customer 1:
  - HL7_A01- 143
  - HL7_A03 – 2,523
  - HL7_A04 – 2,384
  - HL7_A08 – 33,808

- **Total = 38,858**
- Customer 2:
  - HL7_A01- 137
  - HL7_A03 – 2,429
  - HL7_A04 – 2,272
  - HL7_A08 – 32,140
  - **Total = 36,978**

The volume of A08 transactions generated will vary based on a customer's system configuration, charting practices, patient volume and acuity as well as Patient Registration practices. Even though the numbers vary, each of the test customers showed active transaction activity.

Result – Monitor of Reported Issues
Internal reporting and tracking tools were monitored throughout the 2023 reporting year for reported issues specific to the syndromic surveillance certified capabilities. No issues have been opened in 2023 regarding syndromic surveillance indicating that the feature is functioning as expected and customers submitting data to their respective DOH jurisdiction are not encountering issues with the successful transmission/receipt of the supported HL7® ADT transactions.

Result – Successful Submission Volume
Both sampled customers showed ongoing outbound events for the supported ADT HL7® transactions throughout the test period. Below are aggregate numbers per customer for the 2-week test period:

Customer 1:
- HL7_A01- 223
- HL7_A03 – 1,804
- HL7_A04 – 1,577
- HL7_A08 – 38,791
- Total = **42,395**

Customer 2:
- HL7_A01- 459
- HL7_A03 – 2,105
- HL7_A04 – 3,220
- HL7_A08 – 54,776
- Total = **60,560**

The volume of A08 transactions generated will vary based on a customer's system configuration, charting practices, patient volume and acuity as well as patient registration practices. Although the numbers vary, each of the test customers showed frequent transaction activity.

Result – Monitor of Reported Issues
Internal reporting and tracking tools were monitored throughout the 2024 reporting year for reported issues specific to the syndromic surveillance certified capabilities. No issues have been opened in 2024 regarding syndromic surveillance indicating that the feature is functioning as expected and customers submitting data to their respective DOH jurisdiction are not encountering issues with the successful transmission/receipt of the supported HL7® ADT transactions.

ORACLE
Health

170.315(f)(3) Transmission to Public Health Agencies — Reportable Laboratory Tests and Value/Results

Certified Health IT Module(s): **HealthSentry; Syndromic Surveillance and eLab Results**

CHPL Product Numbers: 15.04.04.1221.Heal.23.06.1.230331; 15.04.04.1221.SyeL.01.00.0.240101

Relied Upon Software: N/A

Withdrawn or Added Products

The following versions of the applicable certified HIT modules that were included with the original 2023 Real World Testing plan were withdrawn prior to submission of the corresponding Real World Testing results.

- Module name: Electronic Lab Results
- Version: 2023
- CHPL product number: 15.04.04.1221.Elec.23.06.0.230331
- Withdrawal date: March 17, 2024
- Results data captured for withdrawn listing (Y/N)? No – while the certified HIT module version was not withdrawn until March 2024, it was out of circulation and superseded by the newer Syndromic Surveillance and eLab Results product prior to test execution commencing.

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Syndromic Surveillance and eLab Results
- Version: 1
- CHPL product number: 15.04.04.1221.SyeL.01.00.0.240101
- Certification date: January 1, 2024

Real World Testing Methodologies Summary

The Real World Testing methodology for the Reportable Laboratory Tests and Value/Results certified capabilities consisted of providing evidence of successful creation and transmission of the required HL7® 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 transactions for reportable laboratory results to target public health agencies (PHA). This was accomplished via engagement wiith a representative sample of customers actively transmitting reportable lab information to their respective PHA and capturing submission logs for a 30-day period during the calendar year.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute

Real World Testing Milestones

1. Established target customers for test sample: end of Q1 2024
2. Gathered sample customer submission logs: end of Q1 2024
3. Prepared summary report: end of Q2 2024

Real World Testing Expected Outcomes

The outcomes observed for the Real World Testing plan included sample customers generating and transmitting information for their reportable laboratory results successfully on a daily-basis during the test period. This provided objective evidence that the certified capabilities are enabling customers to meet “active engagement’ expectations with public health registries as required as part of measurement under the Centers’ for Medicare and Medicaid Services’ (CMS) Promoting Interoperability programs.

Real World Testing Metrics

- Percentage of successful daily reportable laboratory results transactions for sample clients across the 30-
- day selected measurement period (target = 85%+):
    - HealthSentry = **100%** (2,253/ 2,253)
    - Syndromic Surveillance and eLab Results = **100%** (20,351 / 20,351)

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170.315(f)(3) Transmission to Public Health Agencies - Reportable Laboratory Tests and Value/Results

Certified Health IT Module(s): **NOVIUS Lab**

CHPL Product Numbers: 15.07.04.1221.NOVI.NO.01.0.180720

Relied Upon Software: N/A

Changes to Original Real World Testing Plan

- Summary of change: The period used to evaluate real world customer transactions was decreased from a full calendar quarter (3 months) to four weeks. Data was collected April 1 – April 26 for two customers.
- Reason for change: The number of transactions being sent to the public health departments by both customers remained constant over the four-week period. It is unlikely that the number of transactions sent to the public health departments per day would have significantly changed if surveillance were continued for the original period of three months.
- Impact to RWT execution: No impact. The desired transaction examples were still obtained as expected in a shorter amount of testing time.

Real World Testing Methodologies Summary

The Real World Testing methodology utilized a combination of customer production databases and outbound transaction queries. The unique public health transactions generated by two customers and who are actively engaged with their public health agencies for laboratory tests/results reporting were evaluated. The evaluation period lasted for a total period of four weeks. An inquiry was also submitted to the customers' public health agency (one client represented by the state of California and another client represented by the state of Mississippi) asking for a response indicating if the customers were in fact actively engaged and reporting laboratory tests/results.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Completed the Identification of target NOVIUS Lab clients (those clients who have their systems configured to electronically send results to their public health department) and their reportable result transactions to public health: end of Q1 2024
2. Executed the reports/queries on identified client production databases.
3. Attempted to work with identified state DOHs and obtain a report showing clients are actively sending results and in active engagement (if engaging the DOHs is not successful by this time, we will generate and include the surveillance report for the test period as an alternative to the partnership with the DOHs): end of Q2 2023
4. Generated final RWT result report: end of Q3 2024

Real World Testing Expected Outcomes

During the reporting period there were transactions sent to the public health agency from each customer. As expected, the number of transactions fluctuated throughout the weeks. One customer sent transactions each day during the evaluation period. There were a few days during the evaluation period that the other customer did not have reportable results to report and, therefore, no transactions were sent to their DOH.

Each customer's Department of Health (DOH) was also contacted to obtain a record of the "active engagement" as part of Centers' for Medicare and Medicaid Services' (CMS) Promoting Interoperability programs. As a response to our request, the representative from one DOH indicated that they no longer provide vendors with confirmation that a customer is in active engagement and successfully transmitting laboratory tests and results to their satisfaction. We did not receive a response from the other DOH. However, having no active issues reported during the measurement period related to NOVIUS Lab's Reportable Laboratory Testing and Values/Results certified capabilities provides supplemental assurances that both clients are achieving "active engagement" as expected and that submissions are conformant and received by the respective DOHs.

Real World Testing Metrics
The original target metric published in the RWT plan was to obtain at least 10 successful transactions sent to a respective public health agency. During the four-week evaluation period the sample customers transmitted significantly more transactions. On average, one customer sent **38 unique transactions per day** (representing the Acute and ED care settings) to their state DOH and the other sent an average of **5 unique transactions per day** representing both care settings.

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170.315(f)(5) Transmission to Public Health Agencies — Electronic Case Reporting

Certified Health IT Module(s): **Electronic Case Reporting**

CHPL Product Numbers: 15.04.04.1221.Case.01.00.1.211229

Relied Upon Software: Cerner Millennium; eCR Now FHIR App

Changes to Real World Testing Plan

- Summary of Change: The RWT plan metric was altered from calculating the total number of distinct patients in the reporting period compared to the total eICRs to the total number of eICRs generated within the companion Millennium EHR and the request response numbers from the Association of Public Health Laboratories (APHL) Informatics Messaging Services (AIMS) platform.
- Reason for Change: The altered metric better aligns with tracking the actual success of the eCR to the receipt from the State/Government systems it is designed to report to.
- Impact to the Real Testing Execution: No Impact. The altered metric provided a better overall view of the real world success of the certified HIT module.

Real World Testing Methodologies Summary

The Real World Testing methodology for the certified Electronic Case Reporting capabilities consisted of executing a comparison of our processed Electronic Initial Case Report (eICR) documents for three randomized customers that have fully implemented our product for active use in their production environments to the number of request responses received from the AIMS platform. This comparison yielded results that provided an indication of the success rate of eICR transmissions in real world use.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Ambulatory

Real World Testing Milestones

1. Identified target customer subset on which to perform RWT activities: 2023 clients with 2 additional random for larger sampling
2. Contacted customers and AIMS for assistance: N/A (not needed)
3. Completed comparison of successfully transmitted eICRs to records of cases that should have been triggered: 11/12/24-12/12/24
4. Completed analysis and documentation of RWT findings and outcomes: end of Q4 2024

Real World Testing Expected Outcomes

The outcomes of eCR are better aligned with the measurement of the successful transmission of cases with included conditions to AIMS and the Public Health Agencies. In previous years, the annual reporting focused on cases submitted per person compared to the need to measure the successful transmission of cases that contain a condition outlined within the scope of the product. This resulted in a lower numerator as we are expecting a one to one success for a reportability response received per submitted case. Collectively, the results observed align to the expectation of demonstrating a highly functioning product for the real world purpose of its certification.

Real World Testing Metrics

- Success rate of eICR submissions based on number of reportability responses received from the AIMS platform compared to the number of total eICRs generated (target 95%+): **94.22%** (60,231 / 63,929)
    - Sample customer #1: 93.74 % (45,506 eICRs submitted compared to 42,659 responses received from AIMS)
    - Sample customer #2: 97.01% (14,252 eICRs submitted compared to 13,827 responses received from AIMS)
    - Sample customer #3: 89.79% (4,171 I eICRs submitted compared to 3,745 eICRs responses received from AIMS)

170.315(f)(5) Transmission to Public Health Agencies — Electronic Case Reporting

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: N/A

Changes to Original Real World Testing Plan

- Summary of change: The original milestone for test execution in a Production-like environment was Q3 2024
- Reason for change: Staffing availability allowed for the execution to occur earlier in Q2 2024
- Impact to RWT execution: No impact. Testing was executed a quarter earlier in the Production-like environment.

Real World Testing Methodologies Summary

The Real World Testing (RWT) methodology employed for the Soarian Clinicals Electronic Case Reporting (eCR) certified capabilities involved production-like activity testing and tracking for verification of use of the capabilities in the real world. Cerner specifically tracked client-like data to verify reporting activity of sending an HL7® CDA® Electronic Initial Case Report (eICR) document.

To execute the methodology, testing was executed in production-like environment with Advanced Interoperability Services (AIS) to test the eCR workflow with sending of the eICR document. We did not be use client production environments for this testing as there were no Soarian Clinicals clients live in production for real world testing. To note, at this time Soarian Clinicals clients have not implemented primarily due to the fact that Public Health Agencies are partnering with the Association of Public Health Laboratories (APHL) Informatics Messaging Services (AIMS) platform to accept the eICR documents with additional triggering requirements that extend beyond the scope of certification requirements. Soarian Clinicals does not currently support those additional triggering requirements.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Complete production-like environment for testing with end-to-end connections, including AIS: end of Q2 2024
2. *Complete actual RWT activities execution: end of Q2 2024
3. Complete assessment of RWT activities and outcomes: end of year 2024

*Note – milestone was changed from Q3 2024 in original RWT plan to Q2 2024

Real World Testing Expected Outcomes

Although there is no specific content exchange standard for eCR, the eICR document is the standard being adopted across the industry. Accordingly, we observed the RWT activities demonstrate that the certified capabilities enable successful Electronic Case Reporting in alignment with real world industry best practices.

Testing was executed in production-like environment with Advanced Interoperability Services (AIS) to demonstrate the eCR workflow with sending of the eICR document. Various patient scenarios were successfully executed to appropriately trigger the sending of an eICR document to AIS. Each document was subsequently retrieved from a repository and viewed online. The eICR document was also validated successfully using the AIMS validator.

Real World Testing Metrics

- Success rate of eICR document test transmissions processed via AIS (target = 100%) **100%** (10 / 10)

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170.315(f)(6) Transmission to Public Health Agencies — Antimicrobial Use and Resistance Reporting

Certified Health IT Module(s): **Antimicrobial Usage and Resistance Reporting**

CHPL Product Numbers: 15.04.04.1221.Anti.02.08.1.240319

Relied Upon Software: Cerner Millennium

Withdrawn or Added Products

The following versions of the applicable certified HIT modules that were included with the original 2023 Real World Testing plan were withdrawn prior to submission of the corresponding Real World Testing results.

- Module name: Antimicrobial Usage and Resistance Reporting
- Version: 2023
- CHPL product number: 15.04.04.1221.Anti.23.07.1.230331
- Withdrawal date: April 16, 2024
- Results data captured for withdrawn listing (Y/N)? No – while the certified HIT module version was not withdrawn until April 2024, it was out of circulation and superseded by the newer version 2 before testing execution commenced.

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Antimicrobial Usage and Resistance Reporting
- Version: 2
- CHPL product number: 15.04.04.1221.Anti.02.08.1.240319
- Certification date: March 19, 2024

Real World Testing Methodologies Summary

Real World Testing for the certified AUR capabilities consisted of two components. First, direct real-world use of our certified AUR reports was tracked via cross-database analytics tooling to confirm successful utilization. Second, relevant customers actively participating in the National Health Safety Network's (NHSN) registry for AUR were engaged via a survey in an attempt to confirm successful participation. Direct customer engagement was necessary as NHSN is unable to provide a usable report for this information.

For the second component of the methodology, a report was first executed to positively identify the set of customers who had adopted the latest round of updates for the AUR reports. However, for internal quality improvement, the survey was supplied to all customers who have used the AUR capabilities, regardless of whether or not they implemented the lastest updates. The survey was shared with customers via existing customer engagement channels.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Identified target customers actively using AUR Reporting in production for the 2024 reporting year: end of Q3 2024
2. Completed execution of reports for production activity tracking data and retrieval of NHSN submission evidence from partner customers: end of Q3 2024
3. Compiled data for RWT results submission: end of Q4 2024

Real World Testing Expected Outcomes

Related to direct confirmation that customers were able to successfully upload reports to NHSN, the following outcomes were observed:

- 51 customers were identified as having taken the latest updates for the AUR reports.

- A high volume of overall report generation of AU and AR reports were observed during the January - June 2024 measurement period. The AU volume was significantly higher than the AR volume. This matches expectations as many customers do not have discrete microbiology results and, therefore, claim an exemption for AR reporting.
- No customers, regardless of which package was installed, responded to the survey regarding the ability to successfully upload to NHSN.

In summary, we were unable to explicitly confirm that customers were able to successfully upload AUR data to NHSN without issues related to the certified functionality. However, the high volumes of successfully generated reports without any indications from customers or NHSN of submission issues provides assurances that the certified capabilities are being used successfully in the real world.

Real World Testing Metrics

- Total number of successfully generated Antimicrobial Use (AU) reports over the January - June 2024 measurement period: **5,601**
- Total number of successfully generated Antimicrobial Resistance (AR) reports over the January - June 2024 measurement period: **3,475**

Note – these numbers include any customer who has implemented and executed the AU and AR reports in a production environment, regardless of which AUR package was adopted.

170.315(f)(6) - Transmission to Public Health Agencies – Antimicrobial Use and Resistance Reporting

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: N/A

Real World Testing Methodologies Summary
The methodology employed for the Soarian Clinicals Antimicrobial Use (AU) and Resistance (AR) Reporting certified capabilities involved production activity tracking for use of the capabilities in the real world. Cerner support tracked customer monthly file generation to be uploaded to NHSN.

Standards Updates
No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested
- Acute
- Emergency Department

Real World Testing Milestones
1. Completion of actual monthly files generated by our targeted customer base: end of Q3 2024
    - Three customers were identified as actively utilizing AU reporting.
    - Two customers were identified as actively utilizing AR reporting.
2. Completed assessment of Real World Testing data for results and outcomes compilation: end of year 2024
    - Three customers successfully generated AU files monthly (Aug-Sept) and confirmed successful upload to NHSN.
    - Two customers successfully generated AR files monthly (Aug-Sept) and confirmed successful upload to NHSN.

Real World Testing Expected Outcomes
We have observed for the customers that have implemented Antimicrobial Usage and Resistance Reporting, that AU and AR reports were successfully generated and uploaded monthly to NHSN demonstrating successful use for the real world purpose of the certified capabilities. This is an improvement from previous years' real world testing in which no active production use for the AU report was observed, which we view as a positive outcome and indication of the quality of the certified capabilities.

Real World Testing Metrics
- Total number of successfully generated Antimicrobial Use (AU) reports over July – Sept 2024 measuring period: 3 customers successfully generated and uploaded **144** reports to NHSN.
- Total number of successfully generated Antimicrobial Resistance (AR) reports over July – Sept 2024 measuring period: 2 customers successfully generated and uploaded **244** reports to NHSN.

170.315(f)(7) Transmission to Public Health Agencies — Health Care Surveys

Certified Health IT Module(s): **Millennium (Health Care Surveys)**

CHPL Product Numbers: 15.04.04.1221.Mill.HC.03.1.220101; 15.04.04.1221.Mill.HC.04.0.241009

Relied Upon Software: N/A

Changes to Original Real World Testing Plan

- Summary of change: The original milestones for quarterly checkpoints with NHCS were amended to have a single touchpoint in Q4.
- Reason for change: Quarterly touchpoints were deemed unnecessary to ahcieve the intended results.
- Impact to RWT execution: No impact. Identical results were able to be achieved as if quarterly touchpoints had been executed.

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Health Care Surveys)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.HC.04.0.241009
- Certification date: October 9, 2024

Real World Testing Methodologies Summary

Cerner's Real World Testing methodology for the Millennium (Health Care Surveys) certified HIT module consisted of working in unison with the National Health Care Surveys (NHCS) registry representatives on a quarterly basis to track Cerner customer surveyed participants' submission status. This included confirmation that the certified capabilities being utilized by these participants are fulfilling the submission requirements in accordance with the mandatory HL7® CDA® R2 Implementation Guide: National Health Care Surveys (NHCS), R1 DSTU Release 1.2 - US Realm standard.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Ambulatory
- Emergency Department

Real World Testing Milestones

1. Touchpoint with NHCS: mid-Q4 2024
2. Compiled data for RWT results from NHCS status reports during CY 2024: end of Q4 2024

Real World Testing Expected Outcomes

Observations from the Real World Testing activities provided positive affirmation from the NHCS registry representatives that all sampled providers/facilities utilizing Cerner's certified capabilities were able to successfully participate to their satisfaction and submit conformant data.

Real World Testing Metrics

Success rate of compliance with NHCS reporting submission for sampled Cerner customers (target = 100%): **100% (11/11)**

Note – as provided by NHCS representatives, the CY 2024 started with 16 customer participants. As of July 1, 2024, 6 of those customers withdrew their participation leaving 11 active participants for the 2024 program year, all of which submitted successfully using the Millennium (Health Care Surveys) certified HIT module.

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Application Access and Standardized API – 170.315(g)(7), (9), (10)

Certified Health IT Module(s): **Millennium (Clinical)**

CHPL Product Numbers: 15.04.04.1221.Mill.18.06.1.221107; 15.04.04.1221.Mill.24.07.1.240920

Relied Upon Software: N/A

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Clinical)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.24.07.1.240920
- Certification date: September 20, 2024

Real World Testing Methodologies Summary

The Real World Testing (RWT) methodology for Millennium (Clinical) Application Access and Standardized API certified capabilities consisted of tracking the following live production activity for each aligned certification criterion:

- HL7® FHIR® API requests and responses from registered consumer applications (g10)
- Applications utilizing HL7 FHIR Bulk Data extracts (g10)
- Live production HL7 FHIR API requests for patients' data in an HL7 CDA C-CDA Continuity of Care Document (CCD) format (g9)
- Cumulative access events utilizing an access token for the patient persona (g7)

These items were tracked through transaction logging in a cross-database analytics tool which provides near real-time activity tracking of active production environment use for analytics purposes.

Care Settings Tested

- Acute
- Ambulatory
- Behavioral Health
- Emergency Department
- Pediatrics

Real World Testing Milestones

1. Determined no code changes were needed to capture real world testing data in Q1 2024
2. Reviewed current production activity tracking dashboard in-depth to identify any data gaps or issues to be addressed in Q1 2024
3. Began data retrieval in Q3 2024
4. Completed all RWT execution and results compilation for CY 2024: end of Q4 2024

Real World Testing Expected Outcomes

Millennium (Clinical) certified APIs RWT execution included high volumes of successful API transactions across all of the live production endpoints, and C-CDA retrievals, as well as a high volume of patient tokens granted. The fairly low volume of unique applications which successfully completed a bulk extract during the measurement period reflects the gradual adoption of this capability by the consumer base and the general lack of real world use-cases for the functionality today.

Collectively, these observation from 2024 align with expectations and reflect a high quality real world experience with our certified APIs for both customers and third-party developers.

Real World Testing Metrics

1. (g10) Single Patient – Success rate of HL7 FHIR API transations observed across all customer production activity for the 2024 calendar year (target = 98%+): **99.71%** (22,751,838,845 / 22,817,414,382)
2. (g10) Bulk Data – Count of customers completing an HL7 FHIR Bulk Data extraction during the 2024 calendar year: **17**

3. (g9) C-CDA – Success rate of events returning a C-CDA document in a HL7 FHIR API response: **96.59%** (30,225,218 / 31,292,459)
4. 4. (g7) – Count of successful access events for access token being granted to a patient during the 2024 calendar year: **2.05M** Patient access tokens granted

ORACLE Health

Application Access and Standardized API – 170.315(g)(7), (9), (10)

Certified Health IT Module(s): **Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: Ignite Soarian API

Changes to Original Real World Testing Plan

- Summary of change: The original test plan methodology specified two options: (1) Testing in a production customer environment and (2) Testing in an Oracle environment that closely resembles a production customer environment. The second option was included because the Soarian Clinicals EHR is nearing its end of life, with fewer customers remaining each year. In 2024, it was necessary to exercise the second option. The Oracle environment used for testing was an actual customer environment at one time. When this former customer ceased operation, Oracle kept this environment operational (after deleting all customer, patient, and other sensitive data) specifically for "real world" testing. Thus, as specified in the plan, the same EHR software version, authorization server, and network connectivity was used as with an active, live, production customer, with one exception:
- Reason for change: Lack of available real world data for all FHIR resources due to low activity resulting from a decline in Soarian Clinicals customers as the product nears end of life.
- Impact to Real World Testing: The change to a mock environment testing approach meant that testing results would not be truly "real world" testing. However, the mock testing plan closely mimicked real world conditions and provided satisfactory results for the intent of the test plan.

Real World Testing Methodologies Summary

The methodology involved the collection of API usage statistics from the test environment. Each time a HL7® FHIR® resource is retrieved by an app, the Soarian Clinicals EHR inserts a record in an API activity log that includes the type of resource (Patient, AllergyIntolerance, etc.), patient, and success/failure indicator. Our methodology is to query this log to ensure a positive count of successful retrievals across all resources required for the Application Access and Standardized API criteria.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Emergency Department

Real World Testing Milestones

1. Identified production customer environments for which API usage statistics will be gathered: end of Q1 2024
2. Assessed need for fallback test method, based on customer API usage and set up EHR environment that mirrors real world to implement fallback test method: end of Q2 2024
3. Executed RWT activities (primary or secondary methodology): end of Q3 2024
4. Completed assessment of RWT data for results and outcomes compilation (primary or secondary methodology): end of Q4 2024

Real World Testing Expected Outcomes

The API activity log reflects the usage of a test client app successfully exercising all the required API functions in the environment that mirrors a hospital customer's production environment in EHR software and network configuration.

Real World Testing Metrics

Number of successful API reads for each FHIR API resource for the USCDI V1 data scope across the testing year (target = at least 1 successful access event for each resource):

- AllergyIntolerance – 1
- Binary – 1
- CarePlan – 1
- CareTeam – 1
- Condition – 1
- Device – 1

- DiagnosticReport – 1
- DocumentReference – 1
- Encounter – 1
- Goal – 1
- Immunization – 1
- MedicationRequest – 1
- Observation – 3
- Patient – 2
- Procedure – 1

170.315(h)(1) Direct Project

Certified Health IT Module(s): **Millennium (Clinical); Soarian Clinicals**

CHPL Product Numbers: 15.04.04.1221.Mill.24.07.1.240920; 15.04.04.1221.Soar.15.01.1.210331

Relied Upon Software: Cerner Direct HISP (Soarian Clinicals v2015)

Withdrawn or Added Products

The following versions of the applicable certified HIT modules were certified after the submission of the Real World Testing plan and were used in production of the data contained in these Real World Testing results.

- Module name: Millennium (Clinical)
- Version: 2024
- CHPL product number: 15.04.04.1221.Mill.24.07.1.240920
- Certification date: September 20, 2024

Real World Testing Methodologies Summary

The Real World Testing methodologies for Cerner's Direct Project certified capabilities, which are shared across the Millennium (Clinical) and Soarian Clinicals certified HIT modules, consisted of collecting data on Direct messages that were sent and received through the Cerner Direct Health Information Service Provider (HISP). This reporting included measures for the % of inbound and outbound messages that were processed by the HISP in less than 1 hour and a measure of system uptime using our 27 microservices health check data.

Standards Updates

No new adopted standard for the criterion was included in this testing plan.

Care Settings Tested

- Acute
- Ambulatory
- Behavioral Health
- Emergency Department
- Pediatrics

Real World Testing Milestones

1. Developed reporting queries to initiate data capture for all Real World Testing metrics: end of CY 2023
2. Completed assessment of Real World Testing data for results and outcomes compilation: end of CY 2024

Real World Testing Expected Outcomes

From January 2024-November 2024, nearly all messaging activity was processed within an hour and system downtime % was consistently low, which indicated high system reliability. From January 2024 to November 2024, nearly all messaging activity was processed within an hour, and system downtime percentage remained consistently low, indicating high system reliability.

Real World Testing Metrics

- Percentage of inbound and outbound messages processed in less than 1 hour over the Q1-Q3 2024 measurement period (target >=99.9%):
  - Outbound = **100%** (18,756,773 / 18,756,773)
  - Inbound = **99.99%** (12,977,852 / 12,978,043)
    - Note – this collective metric was achieved for all months individually except for outbound messages processed in July (99.67%) and August (99.58%).

- Overall system uptime over the Q1-Q3 2024 (November 2024) measurement period (target >=99.9%): **99.72%**
  - Note – This metric was achieved for all months individually except for February (97.42%).

