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athenaFlow v19 & v20 2022 Real World Test Results

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General Information

Plan Report ID Number: [For ONC-Authorized Certification Body use only]
Developer Name: Virence Health Technologies
Product Name(s): athenaFlow
Version Number(s): v19; v20
Certified Health IT: 2015 Edition
Product List (CHPL) ID(s): 15.04.04.2902.Cent.19.03.1.201105; 15.04.04.2902.athe.20.04.1.201221
Developer Real World Testing Page URL: https://www.athenahealth.com/terms-and-conditions

Withdrawn Products

Product Name	athenaFlow
Version Number	19
CHPL Product Number	15.04.04.2902.Cent.19.03.1.201105
Date Withdrawn	9/8/2022
Inclusion of Data in Results Report	No data was captured from customers using this product

Summary of Testing Methods and Key Findings

Thousands of Direct messages successfully sent and received from providers and patients, and all but one eRx transaction type and all API measures near a 99% or better success rate, are but a few of the examples of how this report reflects the successful use of the athenaFlow product in the real world.

The athenaFlow EHR is an "on-premises" product and athenahealth has varied ability to access data for the purposes of Real World Testing. Data obtained for 2022 was retrieved via one of three methods: 1) Through direct engagement with a subset of customers that ran data base queries, 2) Through telemetry configured in a way that athenahealth can remotely access data, and 3) Through third-party vendors for which some criteria have Relied Upon Software.

The results in this report demonstrate the successful utilization of certified features in the real world, however there were a few challenges and lessons learned from the above approach:

- Securing customer engagement to run on-premises queries for the relevant product and version is difficult and expensive for all involved
- Telemetry is not configured for all measures and in some cases requires customer engagement
- Varied sources of data lead to variability in the surveillance period from measure to measure and practice to practice
- More due diligence was necessary to validate availability of all data outlined in the 2022 plans

That said, the above challenges informed both the 2023 Real World Test Plan as well as an initiative to build efficiencies in how data can be collected in the future.

Standards Updates (SVAP and USCDI)

Standard (and version)	§170.205(h)(3) CMS Implementation Guide for Quality Reporting Document Architecture: Category III; Eligible Clinicians and Eligible Professionals Programs; Implementation Guide for 2021
Updated certification criteria and associated product	§170.315(c)(3) – CQMs – Report
CHPL Product Number	15.04.04.2902.athe.20.04.1.201221
USCDI-updated criteria	Use Case 5, Measure 2, Sub-Measure 2

Care Setting(s)

At this time, athenaFlow v20 is a Certified electronic health record (EHR) that is sold to primary care, specialty, and multi-specialty ambulatory groups. Functionality within the EHR greatly overlaps regardless of care setting, but the Real World Testing plan aimed to incorporate data from as diverse a set of these settings as is possible.

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Metrics and Outcomes

Use Case 1 – During the course of ambulatory care, providers share patient records (CCDAs) with each other and where appropriate, reconcile key clinical data elements into the chart.

Certification Criteria	Requirement
§ 170.315 (b)(1) Transition of care	(i) Send and receive via edge protocol…
	(ii) Validate and display…
	(iii) Create…
§ 170.315 (b)(2) Clinical information reconciliation and incorporation	(i) General requirements…
	(iii) Reconciliation…
§ 170.315 (b)(9) Care plan	Enable a user to record, change, access, create, and receive care plan information in accordance with the Care Plan document template…
§ 170.315 (g)(6) Consolidated CDA creation performance	(i) Reference C-CDA match..
	(ii) Document-template conformance…
	(iii) Vocabulary conformance…
	(iv) Completeness verification…
§ 170.315 (h)(1) Direct project	(i) Applicability Statement for Secure Health Transport…
	(ii) Delivery Notification in Direct

Measure 1: Create a valid CCDA – This measure will demonstrate EHR ability to create and send a CCDA that is conformant to the standards outlined in § 170.315 (b)(1) Transition of care and § 170.315 (g)(6) Consolidated CDA creation performance

- Justification: Other EHRs will expect to successfully receive a CCDA formatted to Release 2.1 with all required data elements from athenaFlow
- Test Methodology: A CCDA of each type (Referral Note, CCD, Care Plan) will be created in athenaFlow and sent to another EHR via each certified workflow (if applicable). athenaFlow and the other EHR will be using a production-grade environment configured in a way typical of the marketed care settings. System logs will be reviewed to identify possible errors in transport. A user in the receiving EHR will demonstrate successful display of all required elements
- Expected Outcomes: Success is when a different EHR receives and recognizes each type of CCDA as conformant

Measure 2: Create and send a CCDA: This measure will evaluate the creation and sending of required CCDAs (Referral Note, CCD) at scale across many providers using athenaFlow in a live production environment

- Justification: A statistically significant sample size of CCDAs generated and sent by athenaFlow spanning multiple organizations with expected errors will validate successful use in the real world
- Test Methodology: System logs will be evaluated for each required type of CCDA that was created and sent
- Expected Outcomes: Success is defined as CCDAs of each required type successfully being created and sent via Direct with expected errors (e.g. invalid direct address, no response from receiver, etc.)

Measure 3: Receive and display a CCDA – This measure will demonstrate EHR ability to receive and display a CCDA of each required type (Referral Note, CCD, Care Plan) in a live production environment

- Justification: Two sub-measures will be evaluated: 1) A manual evaluation of several production examples of each required type of CCDA (Referral Note, CCD and Care Plan) will show that athenaFlow can successfully receive and display CCDAs. 2) An evaluation of a statistically significant number of CCDAs received and displayed by providers using athenaFlow spanning multiple organizations will validate successful use in the real world
- Test Methodology: 1) Examples of CCDAs of each type will be randomly selected for manual review spanning various care settings in the athenaFlow network. 2) System logs will be evaluated to identify the proportion of each type of CCDA that were successfully received.
- Expected Outcomes: Success is defined as:
  1) Chosen examples are successfully received and displayed
  2) CCDAs successfully received via Direct with expected errors (e.g. incorrect CCDA format)

Measure 4: Receive and reconcile a CCDA – This measure will demonstrate EHR ability to receive and reconcile a CCDA of each required type (Referral Note, CCD) in a live production environment

- Justification: An evaluation of reconciliation use spanning a statistically significant number of active users spanning multiple organizations will validate successful use in the real world
- Test Methodology: System logs will be evaluated to determine the number of users that successfully reconcile at least one CCDA using CEHRT
- Expected Outcomes: A high number of users successfully use CEHRT to receive and reconcile data into patient charts

Use Case 1 Outcomes

Changes from plan: In some cases data was unavailable to break out measures by the CCDA document type. We will evaluate possible enhancements for future test plans.

Measure	Relied Upon Software	Outcomes	Challenges
1: Create a valid CCDA	N/A	Test samples of a CCD and Referral Note were successfully sent via Direct from athenaFlow and received by the athenaClinicals EHR. Receipt and conformance to standards was verified by displaying the documents in athenaClinicals.	N/A
2: Create and send a CCDA	-MedAllies HISP -Qvera -Surescripts HISP	Review of audit logs of Direct transactions via the following HISP's yielded these results: • **MedAllies**: 1560 total messages and 478 failures for one customer during the period of 10/1/22 - 10/31/22. Most failures are due to users attempting to send to an invalid Direct address. • **Surescripts:** 44 successful messages across two customers during the period of 8/1/22 - 11/11/22.	-Unable to break data out by CCDA document type -Missing detailed failure reasons for Surescripts

3: Receive and display a CCDA		**Sub-measure 1:** An example Referral Note and CCD sent from the athenaClinicals EHR was successfully received and displayed in athenaFlow. **Sub-measure 2:** Review of audit logs of Direct transactions via the following HISP's yielded these results: • **MedAllies:** 1409 total messages and 511 failures across two customers during a period of 10/31/22 - 11/29/22. Most failures are due to firewall, Direct certificate, or non-response at receiver API. • **Surescripts:** 284 successful messages across two customers during the period of 8/1/22 - 11/11/22.	-Unable to break data out by CCDA document type - Missing detailed failure reasons for Surescripts (which will be sunset in 2023)
4: Receive and reconcile a CCDA		Review of audit logs for 1/1/22 – 11/22/22 for 11 customers yielded validation that 233 unique providers reconciled at least one item from a CCDA.	N/A

Use Case 2 – During the course of ambulatory care, patients access a copy of their record (CCDs) for viewing, downloading and/or transmitting.

Certification Criteria	Requirement
§ 170.315 (e)(1) View, download, and transmit to 3rd party	(i) (A) View…
	(i)(B) Download…
	(i)(C) Transmit to third party…
§ 170.315 (h)(1) Direct project	(i) Applicability Statement for Secure Health Transport…
	(ii) Delivery Notification in Direct

Measure 1: Validate user behavior around view actions – This measure will demonstrate the ability for a patient to preview a CCD document template in a live production environment of their patient portal

- Justification: The CCD document template contains all required data elements in § 170.315 (e)(1)(i)(A)
- Test Methodology: System logs will be evaluated to identify patients with a successful CCD document view in the patient portal
- Expected Outcomes: Success is defined by the number of patients with successful CCD document previews

Measure 2: Validate user behavior around download actions – This measure will demonstrate the ability for a patient to download a CCD document template in a live production environment of their patient portal

- Justification: An evaluation of a statistically significant number of CCD document downloads spanning multiple organizations will demonstrate the successful real world use of the download feature
- Test Methodology: System logs will be evaluated to identify patients with a successful CCD document download in the patient portal
- Expected Outcomes: Success is defined by the number of patients that can successfully download CCD documents

Measure 3: Validate user behavior around transmit actions – This measure will demonstrate the ability for a patient to transmit a CCD document template to a third party in a live production environment of their patient portal

- Justification: An evaluation of a statistically significant number of CCD document transmissions spanning multiple organizations will demonstrate the successful real world use of the transmit feature
- Test Methodology: System logs will be evaluated to identify the volume of successful CCD document transmits in the portal. The analysis will break out use of transmission via either Direct or email
- Expected Outcomes: Success is defined as:
    - CCD documents successfully sent via Direct with expected errors (e.g. invalid Direct address, lack of response, etc.)
    - CCD documents successfully sent via email with expected errors (e.g. invalid email address, etc.)

Use Case 2 Outcomes

Changes from plan: Data related to the Surescripts Patient Portal was not able to inform transmit actions via unencrypted email vs Direct. This portal will be sunset in 2023.

Measure	Relied Upon Software	Outcomes	Challenges
1: Validate user behavior around view actions	-MedAllies -ezAccess -Qvera -Surescripts Patient Portal	Review of audit logs of patient views via the following patient portals yielded the following results: • **ezAccess Portal:** 1587 views across two customers during a period of 8/1/22 – 11/11/22. • **Surescripts Portal:** 394 views across five customers during a period of 09/22/2022-11/09/2022	N/A
2: Validate user behavior around download actions		Review of audit logs of patient downloads via the following patient portals yielded the following results: • **ezAccess Portal:** 47 downloads across two customers during a period of 8/1/22 – 11/11/22. • **Surescripts Portal:** 18 downloads across five customers during a period of 09/22/2022-11/09/2022	N/A

3: Validate user behavior around transmit actions		Review of audit logs of patient transmits via the following patient portals yielded the following results:
		• **ezAccess Portal:**
		  ○ Email: 39 transmits across two customers during a period of 8/1/22 – 11/11/22.
		  ○ Direct: Two transmits across two customers during a period of 8/1/22 – 11/11/22
		• **Surescripts Portal:** Three transmits across five customers during a period of 09/22/2022-11/09/2022
			-Unable to break out Surescripts data by transmission method (product to be sunset in 2023)

Use Case 3 – EHR users export CCDAs for one or many patients for the purpose of sharing with providers, patients or other third-parties under the purview of HIPAA

Certification Criteria	Requirement
§ 170.315 (b)(6) Data export	(i) General requirements for export summary configuration…
	(ii) Creation…
	(iii) Timeframe configuration…
	(iv) Location configuration…

Measure 1: Single/Multi patient export – This measure will assess functionality used to export EHI for a single patient and multiple patients in a production environment.

- Justification: The evaluation of statistically significant number of exports by users spanning multiple organizations using athenaFlow will demonstrate the real world utility of the data export
- Test Methodology: System logs will be reviewed to determine the volume of exports generated in various configurations (e.g. single-patient, multi-patient, etc.) and only by authorized users
- Expected Outcomes: Only authorized users will be able to successfully create export summaries and there will be evidence of successful exports using various configurations (e.g. single-patient, multi-patient, etc.)

Use Case 3 Outcomes

Changes from plan: Data was not available to break down the various configurations (e.g. single-patient, multi-patient, etc.) We will evaluate possible enhancements for future test plans.

Measure	Relied Upon Software	Outcomes	Challenges
1: Single/Multi patient export	N/A	Review of audit logs of five athenaFlow customers during a period of 09/22/2022-11/09/2022 yielded validation of 1935 successful exports and 0 failures.	-Unable to break out by configuration

Use Case 4 – Clinicians electronically prescribe medications

Certification Criteria	Requirement
§ 170.315 (b)(3) Electronic prescribing	(i)(A) Enable a user to perform the following prescription-related electronic transactions…
	(i)(C) For the following transactions, the technology must be able to receive and transmit the reason for the prescription…

Measure 1: Transaction success rates – This measure will evaluate successful use of required eRx transaction types in a production environment

- Justification: A statistically significant sample size of electronic prescriptions spanning multiple organizations using athenaFlow will demonstrate the real world utility of the feature
- Test Methodology: System logs will be reviewed to determine frequency of errors for each transaction type
- Expected Outcomes: Transactions are successfully delivered with expected errors (e.g. pharmacy does not support electronic transactions). Data validation errors are prevented, or end user is notified of errors when appropriate:
    - NewRx
    - RxChange
    - CancelRx
    - RxRenewal
    - RxFill
    - Medication History

Use Case 4 Outcomes

No changes from plan.

Measure	Relied Upon Software	Outcomes	Challenges

1: Transaction success rates	-Dr. First Rcopia	Review of audit logs of all athenaFlow customers yielded the following results:
		• Range: 4/1/22 – 8/31/22
		  ○ **NewRx:** 99.78% success rate
		  ○ **RxChange:** 90.63% success rate
		  ○ **CancelRx:** 99.09% success rate
		  ○ **RxRenewal:** 98.29% success rate
		  ○ **Medication History:** 99.92% success rate
		• Range: 10/25/22 – 11/8/22
		  ○ **RxFill:** 100% success rate
		
		Notes on analysis:
		• Prescriber responses to a **RxChange** request from the pharmacy with a response of "prescription no longer active," "prescription cancelled," or where RxChange transaction is not supported are considered numerator compliant
			N/A

Use Case 5 – EHR users generate QRDA files that comply with the latest specifications for submission to CMS and other quality reporting needs

Certification Criteria	Requirement
§ 170.315 (c)(1) CQMs – record and export	(i) Record…
	(ii) Export…
§ 170.315 (c)(2) CQMs – import and calculate	(i) Import…
	(ii) Calculate each and every clinical quality measure…

§ 170.315 (c)(3) – report	Enable a user to electronically create a data file for transmission…

Measure 1: eCQM calculation success rates – This measure will validate the correct calculation of implemented eCQMs relative to measure specifications

- Justification: Using live customer data to validate the accurate calculation of eCQMs is difficult due to the variability of data inputs. A better approach is to have a controlled production-grade environment with known eCQM data inputs that can be regularly run to evaluate the accurate calculation of the eCQMs over time
- Test Methodology: A comprehensive test tool previously developed by the EHR vendor for the same purpose will be leveraged to assure the accurate calculation of eCQMs. We will leverage the end to end testing framework for eCQMs using production test cases for each scenario (namely IPP, Denominator, Numerator, Exclusions and Exceptions) and the various workflows which satisfy in EHR
- Expected Outcomes: Test cases pass with expected errors (e.g. due to known specification gap, etc.)

Measure 2: QRDA file export conformance – This measure will validate 1) that a QRDA I file generated by athenaFlow can be successfully imported by a different EHR and 2) that a QRDA III file generated by athenaFlow visually conforms to the standard

- Justification: 1) The ability for a different EHR to recognize and successfully import a QRDA I file generated by athenaFlow will demonstrate file conformance. 2) A visual inspection of a file generated in production will validate conformance to what is implemented in the real world
- Test Methodology: 1) A QRDA I file using synthetic test data will be generated by athenaFlow and imported into a different EHR. Manual review of system logs and eCQM reports in the other EHR will validate conformance to specifications. 2) Visual inspection of a sample QRDA III files generated in production using currently implemented QRDA III standard
- Expected Outcomes: 1) Files conform to required specifications and all data for the eCQMs in the file are present in the other EHR. 2) File samples conform to currently implemented QRDA III standard

Measure 3: QRDA file import conformance – This measure will assess the use of the athenaFlow QRDA I import feature using a QRDA I file created in a different EHR

- Justification: The ability for athenaFlow to successfully import a QRDA I file generated by a different EHR that is also certified to the CQM criteria will demonstrate the real world utility of the QRDA I import feature
- Test Methodology: A QRDA I file will be generated in a different EHR using synthetic test data and then imported into athenaFlow. Manual review of system logs and eCQM reports will validate the successful import and calculation of eCQMs based on imported data
- Expected Outcomes: Files import, with any import errors (file or formatting related) flagged to users, and imported data is used to calculate eCQMs results correctly

Use Case 5 Outcomes

No changes from plan.

Measure	Relied Upon Software	Outcomes	Challenges

1: eCQM calculation success rates	N/A	100% of 614 automated tests returned successfully	N/A
2: QRDA file export conformance	N/A	**Sub-measure 1:** QRDA I file was successfully exported from the athenaFlow "Clinical Quality Reporting" tool and then successfully imported into athenaClinicals. The number of patient files, as well as counts of initial population, exclusions, exceptions, denominator, etc. were all as expected. **Sub-measure 2:** A production QRDA III sample file was viewed and key elements including the template ID and date were compared to the associated CMS 2022 Implementation Guide to validate conformance.	N/A
3: QRDA file import conformance	N/A	QRDA 1 file was successfully exported from athenaClinicals and then successfully imported into the athenaFlow "Clinical Quality Reporting" tool. The number of patient files, as well as counts of initial population, exclusions, exceptions, denominator, etc. were all as expected.	N/A

Use Case 6 – Data is appropriately triggered and submitted to relevant public health agencies

Certification Criteria	Requirement
§ 170.315 (f)(1) Transmission to immunization registries	(i) Create immunization information for electronic transmission…
	(ii) Enable a user to request, access, and display…
§ 170.315 (f)(2) Transmission to public health agencies – syndromic surveillance	Create syndrome-based public health surveillance information…

Measure 1: Immunization message success – This measure will evaluate the ability for athenaFlow to submit conformant immunization messages

- Justification: The evaluation of a statistically significant number of immunization messages spanning multiple organizations using athenaFlow will demonstrate the real world utility of the capability
- Test Methodology: System logs will be evaluated for different message types including administered, historical and forecast query
- Expected Outcomes: Success is defined as (with expected errors including no response from registry, formatting error beyond the scope of CEHRT specification requirements, etc.):
    - Administered vaccines successfully sent to immunization registry
    - Historical vaccines recorded are successfully sent to immunizations registry
    - Forecast query requests successfully sent with historical immunizations and forecast returned

Measure 2: Syndromic surveillance message success – This measure will evaluate the ability for athenaFlow to submit conformant syndromic surveillance messages in the urgent care setting

- Justification: The evaluation of a statistically significant number of syndromic surveillance messages spanning multiple organizations using athenaFlow will demonstrate the real world utility of the capability. Although these messages apply to urgent care, emergency department and inpatient settings, athenaFlow only serves the urgent care setting

- Test Methodology: System logs will be evaluated for all applicable messages sent to registries
- Expected Outcomes: Success is defined as the successful message submission to and receipt by all actively engaged registries, with expected errors (e.g. no response from registry, formatting error beyond scope of CEHRT specification requirement, etc.)

Use Case 6 Outcomes

Changes from plan: Data was not available to break down by administered, historical or forecasting queries. We will evaluate possible enhancements for future test plans.

Measure	Relied Upon Software	Outcomes	Challenges
1: Immunization message success	-Qvera	Review of audit logs of five athenaFlow customers during a period of 09/22/2022-11/09/2022 yielded validation of 15,053 messages successfully queued for transmission.	-Unable to break out by transaction type
2: Syndromic surveillance message success		No customers have a live interface.	-No customers have a live interface

Use Case 7 – Independent vendors, as well as athenahealth customers use certified APIs for both patient and provider-oriented use cases

Certification Criteria	Requirement
§ 170.315 (g)(7) Application access – patient selection	(i) Functional requirement…
§ 170.315 (g)(8) Application access – data category request	(i) Functional requirements…
§ 170.315 (g)(9) Application access – all data request	(i) Functional requirements…

Measure 1: Request success rate for certified APIs – This measure will evaluate the successful use of all certified APIs (https://mydata.athenahealth.com/fhirapidoc) through the lens of individual transaction requests by request, API Information Source and API Users

- Justification: The evaluation of a statistically significant sample size of API requests spanning a broad spectrum of API Information Sources will demonstrate the real world utility of the APIs
- Test Methodology: System logs will be reviewed to determine the success rates for the following:
    - Requests Served
        - Denominator: Total requests of certified API(s)
        - Numerator: # of successful responses
    - API Information Sources with at least one successful response – Validates successful API use spanning current API Information Sources

- Denominator: Total API Information Sources with at least one request
- Numerator: Total API Information Sources with at least one successful response

- API Users with at least one successful response – Validates successful API use spanning current API Users
  - Denominator: Total API Users with at least one request
  - Numerator: Total API Users with at least one successful response

Expected Outcomes: We expect to see a high rate of success in the above sub-measures, with expected errors included (e.g. failure in authorization/authentication, incorrectly formatted requests, etc.)

Use Case 7 Outcomes

No changes from plan

Measure	Relied Upon Software	Outcomes	Challenges
1: Request success rate for certified APIs	N/A	Review of audit logs of five athenaFlow customers during a period of 09/22/2022-11/09/2022 yielded validation of the following results: • **Requests Served:** 99.99% success • **API Information Sources:** 100% success • **API Users:** 100% success	N/A

Schedule of key milestones

Key Milestones	Date/Timeframe
Recruitment of organizations that will participate in de-identified data collection	Summer 2022
Start of collection of necessary data as laid out by plan (will vary by measure)	Summer 2022
End of collection of necessary data as laid out by plan (will vary by measure)	December 2022
Analysis of data (will vary by measure)	Q3-Q4 2022
Submit Real World Testing report to ACB	January 2023

Attestation

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

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Date: 1/23/2023