Real World Testing Results

Astronaut LLC
7505 Fannin St. Suite 170
Houston TX 77054
(O) 713-750-9045
(F) 832-667-8162
(e) info@astronautehr.com
(w) www.astronautehr.com

TABLE OF CONTENTS

General Information

Plan Report ID#: 20221208ast
Developer Name: Astronaut LLC
Product Name: Astronaut
Version Number: 1709
Product List (CHPL) ID 15.02.05.3099.ASTR.01.00.1.220201
Certified Health IT: 170.315 (a)(1), 170.315 (a)(2), 170.315 (a)(3), 170.315 (a)(4), 170.315 (a)(5), 170.315 (a)(9), 170.315 (a)(12), 170.315 (a)(14), 170.315 (b)(1), 170.315 (b)(3), 170.315 (b)(6) [now (b)(10)], 170.315 (c)(1), 170.315 (d)(1), 170.315 (d)(2), 170.315 (d)(3), 170.315 (d)(4), 170.315 (d)(5), 170.315 (d)(6), 170.315 (d)(7), 170.315 (d)(8), 170.315 (d)(9), 170.315 (d)(12), 170.315 (d)(13), 170.315 (e)(3), 170.315 (g)(3), 170.315 (g)(4), 170.315 (g)(5), 170.315 (g)(6), 170.315 (g)(7), 170.315 (g)(8) [now (g)(10)], 170.315 (g)(9), 170.315 (h)(1)
Developer Real World Test Plan Page URL: https://astronautehr.com/index.php/real-world-test-plan/
Developer Real World Test Results Page URL: https://astronautehr.com/index.php/real-world-test-results/

Background

As stated in the Real World Testing Results Template, under the ONC Health IT Certification Program (Certification Program), health IT developers are required to conduct Real World Testing of their certified health IT (45 CFR 170.405). The Office of the National Coordinator for Health Information Technology (ONC) issues Real World Testing resources to clarify health IT developers' responsibilities for conducting Real World Testing, to identify topics and specific elements of Real World Testing that ONC considers a priority, and to assist health IT developers in developing their Real World Testing plans and results reports.

The Real World Testing Results template was used to assist us in writing this report. The goal is to provide a cohesive and informative document that addresses the goals identified in our initial test plan while also outlining our findings within the relevant context. Our data was aggregated through the utilization of our database which our software, Astronaut, is based upon/connected to; please note that all data gathered is metric-based and will not contain any Protected Health Information (PHI) data. Because we have several facilities using Astronaut, we have been able to effectively demonstrate the use of the software in a "real world" setting, predominantly in the psychiatric field but also in general medicine. The test results of each criterion will be expanded below upon within the document.

Changes to Original Plan

Summary of Change	Reason	Impact
Our testing timeline was lengthened, expanding our testing time frame to August 2023 as opposed to the date listed in our Real World Test Plan (June 2023).	We believe that the added months helped provide us with a greater quantity of high-quality testing information. Because we are consistently seeking and acquiring new customers, including new users as well as old users in our testing efforts.	Our test results have a greater range due to the increased data as well as the varied care settings based upon the activities of our various customers. We believe this enhances the quality and validity of our findings.
We expanded the timeframe to aggregate and report our test result findings to early 2024 as opposed to the date listed in our Real World Test Plan (October 2023).	Due to the expanded time frame of our testing, analyzing and reporting the results of our tests needed to be postponed.	Giving ourselves more time to analyze and report the data has resulted in a higher quality testing report and a greater variety of data.

Withdrawn Products

Product Name(s):	**N/A**
Version Number(s):	
CHPL Product Number(s):	
Date(s) Withdrawn:	
Inclusion of Data in Results Report:	

Summary of Testing Methods and Key Findings

Our testing was focused on various metrics, but most specifically the reliability of our system and the use of our interoperability features that have been implemented due to the regulations set by the ONC governing body. We implemented several different testing methods; the method used for a specific criterion was chosen based on the nature of the metric being analyzed.

Some of these test methods include:

- **System Testing:** This is a functional testing method that involves evaluating the system as a whole to ensure that all components work together seamlessly.
- **Unit Testing:** This is a functional testing method that involves assessing individual components to ensure they function as intended.
- **Load Testing:** This is a performance testing method that involves assessing how the system performs under normal and peak loads.
- **Usability Testing:** This testing method focuses on assessing the overall user experience as well as analyzing how the system is most commonly used.
- **Interoperability Testing:** This testing method focuses on our system's interoperability, ensuring that data is being transferred successfully and in the proper format to adhere with the standards set by the certification entities.

Multiple facilities and practitioners have been using our software, ensuring that we have a holistic perspective on how different users interact with our system. Although most of our users practice in independent psychiatry (outpatient or IOP), we also have a few users who use the software as independent family practitioners/general medicine providers. Because our software also has inpatient capabilities, we have commenced testing for inpatient admission/discharge in a way that closely mirrors what a user would do in a real-world setting. In conclusion, our testing encompasses activities carried out by real-world users, and any features not commonly used have been tested separately in a context that closely matches how a practitioner would use the feature in the real-world.

In terms of reliability/usability, our results have allowed us to determine that Astronaut as a system is highly reliable. To summarize, our system's perceived errors are generally due to a user's lack of training and/or are easily identifiable and remedied by Astronaut's IT staff. All in all, we see the testing successful in proving Astronaut's reliability as a Computerized Patient Record System solution. Any suggestions on usability by our users have been noted and may or may not be incorporated in future updates.

Since interoperability is a major focus of our testing, we have also monitored its use among real-world users and the value it brings into our EHR space. Despite a few minor setbacks that were quickly remedied, the interoperability functions of our system work as intended and are in line with the requirements of the criterion we are certified for. However, in a real-world setting, we found that our users do not tend to use these interoperability features despite their availability. In most cases, authorized users prefer to export charts as downloadable individual PDF files as opposed to the schemas required by the certification entities, such as QRDA or C-CDA. We have determined that the use of QRDA and C-CDA is a niche that is rarely encountered among the facilities that use Astronaut.

Despite educating our users on the new features of interoperability, the displayed tendency is that the transfer of data can oftentimes be simplified by using the proprietary export features of our software. Consequently, we believe that the idea of fully interoperable healthcare systems currently have little demand in a real-world setting as the focus of our users is predominantly based on patient care as opposed to the transfer of data. This lack of adoption may be attributed to multiple factors: the needs of the users that use our system, the lack of understanding of the benefits of the features, and/or the lack of precedence in the usage of the schemas involved. It may also speak to the type of users that use our software; our providers are generally independent practitioners and don't require transferring mass amounts of data that might be more common within hospitals/larger organizations. Our analyses lead us to the conclusion that the host of interoperability features may not be adopted by our users voluntarily for quite some time, or may only be adopted when the need arises.

Standards Updates (Including Standards Version Advancement Process (Svap) And United States Core Data For Interoperability (USCDI))

Indicate as to whether optional standards, via SVAP and/or USCDI, are leveraged as part of the certification of your health IT product(s).

[ ] Yes, I have products certified with voluntary SVAP or USCDI standards.

[**X**] No, none of my products include these voluntary standards.

Care Setting(s)

Real World Testing was conducted within the following care settings:
Outpatient (Psychiatric, General Medicine), Intensive Outpatient (Psychiatric), Small-Scale and Independent Practices/Facilities, Inpatient Admission/Discharge

Metrics and Outcomes

Associated Criterion	Measurement /Metric	Relied Upon Software	Outcomes	Challenges Encountered (if applicable)
170.315 (b)(1) - Transitions of Care	The features are present within the system and follow the relevant certification protocols. Summaries are consistently produced with a <1% error rate.	N/A	In most cases, the C-CDA files were created and uploaded to our FHIR server successfully. However, with certain patients, errors would arise upon C-CDA creation. The error rate was approximately 6.7%. When the errors would arise, Astronaut IT staff would identify the location of the error and adjust the C-CDA software code so that the C-CDA could successfully be generated. Because of this, we do not anticipate the same errors to arise again in the future.	Because of our system's 10+ years of use, certain patient data presents itself differently within the system. Our challenge involved addressing the errors and finding the source within the code. Thankfully, our IT staff uses a debugger to identify these anomalies within the system, and was/is able to fix each one independently in a timely manner.
170.315 (b)(3) -	Prescriptions are sent through	Newcrop E-Prescribing	Although some user accounts required	

Electronic Prescribing (Cures Update)	Newcrop and are pulled back into Astronaut for easy viewing. Prescriptions display accurately and update properly when changes are made in Newcrop's E-Prescribing system with a <1% error rate.		reconfiguring at times, the aspect of sending medications and pulling the said medications into our software was executed flawlessly every time. We had a 0% error rate system-side, and Newcrop's E-Prescribing system has remained effective after its many years of use.	
170.315 (b)(6) - Data Export	Export functionality is present and contains the data specified in the criterion. The file is configured for interoperability and is accessible based on the authorized user's needs. The exporting functionality is aimed to have an error rate of <1%.	Putty	Our export functionality had an error rate of >4%. The reason behind the errors was due to some of the patient charts having a mass amount of data due to being in the system for many years and having a large quantity of notes. The errors were remedied by updating our export server to be able to handle a greater quantity of data.	Our challenge was ensuring that our server was/is capable of handling the appropriate amounts of data that a patient's chart may have.
170.315 (c)(1) - Clinical Quality Measures - Record and Export	Astronaut can export relevant data reliably in a format that fits with the criterion for certification. Exporting the data should be reliable and will have an error rate of <1%.	N/A	Exporting patient data into QRDA format can be done successfully with a 0% rate of error. This is due to our certification activities including using the Cypress Test Deck and validator. This helps us ensure that our	

			QRDA format is sufficient regarding the requirements in question.	
170.315 (g)(7) - Application Access - Patient Selection	Every patient created has a unique ID that can be identified in their demographics file. Because of the way the system is configured, the error rate for this should be less than or extremely close to 0.00001%. Any anomalies will be immediately identified and corrected by IT staff.	N/A	As suspected, our rate of error for this criterion was 0%. This is due to the way our system logs new patients. Because the IDs are created sequentially, our system inherently ensures that no two patients have the same Patient ID.	
170.315 (g)(9) - Application Access - All Data Requests	The API responds to requests for patient data for all of the data categories specified in the USCDI at one time in a summary record formatted according to the C-CDA template. Patient data requests should have an error rate of <1%.	N/A	Because our users do not actively seek the C-CDA template specifically, we did most of our testing using requests that would closely mirror a real-world situation. In this context, our tests resulted in an error rate of 0%.	
170.315 (h)(1) - Direct Project	The health IT can electronically transmit (send and receive) health information to a 3rd party in the proper format and following the criteria required for certification. Transmitting this data is aimed to have an error rate	Newcrop E-Prescribing	Our software was successfully able to transmit health information when asked by a 3rd party in the proper format without any errors, resulting in a 0% error rate.	

	of <1%.			

Key Milestones

Key Milestone	Care Setting	Date/Timeframe
Gather data regarding testing activities through the use of collected metrics, reporting tools, and user feedback	Outpatient, IOP, Small-Scale and Independent Practices/Facilities, Inpatient Admission/Discharge	April 2023 - August 2023
Review collected data, ensuring our metrics cover the criteria in question	Outpatient, IOP, Small-Scale and Independent Practices/Facilities, Inpatient Admission/Discharge	August 2023 - October 2023
Analyze data and write the Real World Testing Results Report for submission	Outpatient, IOP, Small-Scale and Independent Practices/Facilities, Inpatient Admission/Discharge	November 2023 - January 2024