EHR Usability Test Report of Office Practicum, V 20

Report based on NISTIR 7742 Customized Common Industry Format Template for Electronic Health Record Usability Testing

Date of Usability Test: July 2019 - August 2019
Date of Report: August 23, 2019
Report Prepared By: Office Practicum

Sean Menne, User Experience Architect
(800) 218-9916
smenne@officepracticum
602 W Office Center Dr Suite 350, Fort Washington, PA 19034

TABLE OF CONTENTS

EXECUTIVE SUMMARY

A usability test of Office Practicum, V 20 was conducted from July 23, 2019 to August 23, 2019 remotely by the Office Practicum user experience architect. The purpose of this test was to test and validate the usability of the current user interface, and provide evidence of usability in the EHR Under Test (EHRUT).

During the usability test, 19 healthcare providers matching the target demographic criteria served as participants and used the EHRUT in simulated, but representative tasks.

This study collected performance data on 33 tasks typically conducted on an EHR:

Criteria	Task
170.315(a)(4) Drug-drug, drug-allergy interaction checks for CPOE	1. Using CPOE, trigger a drug-drug interaction by entering a new medication order 2. Using CPOE, trigger a drug-allergy interaction by entering a new medication order 3. Adjust the severity level of a displayed drug-drug interaction
170.315(a)(5) Demographics	1. Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity 2. Change and display a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
170.315(a)(9) Clinical decision support	1. Add a CDS intervention and/or reference resource for problem list 2. Add a CDS intervention and/or reference resource for medication list 3. Add a CDS intervention and/or reference resource for medication allergy list 4. Add a CDS intervention and/or reference resource for demographics 5. Add a CDS intervention and/or reference resource for laboratory test 6. Add a CDS intervention and/or reference resource for vital signs

	7. Add a CDS intervention and/or reference resource for a combination of two elements above (vital signs and problems) 8. Trigger a CDS intervention/resources added using the applicable data elements for problem list 9. Trigger a CDS intervention/resources added using the applicable data elements for medication list 10. Trigger a CDS intervention/resources added using the applicable data elements for medication allergy list 11. Trigger a CDS intervention/resources added using the applicable data elements for demographics 12. Trigger a CDS intervention/resources added using the applicable data elements for laboratory test 13. Trigger a CDS intervention/resources added using the applicable data elements for vitals signs 14. Trigger a CDS intervention/resources added using the applicable data elements for a combination of at least two elements above (vital signs and problems) 15. View the intervention/resource information using the infobutton standard for data elements in the problem list, medication list, and demographics 16. Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary 17. Access the following attributes for one of the triggered CDS interventions/resources: bibliographics citation, developer, funding source, release/revision date
170.315(a)(14) Implantable Device List	1. Record UDI 2. Change UDI Status

	3. Access UDI, device description, identifiers, and attributes
170.315(b)(2) Clinical Information Reconciliation and Incorporation	1. Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's chart 2. Generate a new CCDA with reconciled data
170.315(b)(3) e-Prescribing	1. Create new prescription 2. Change prescription (dosage or duration) 3. Cancel prescription 4. Refill prescription 5. Receive fill status notification 6. Request and receive medication history information

During the 30 to 60 minute one-on-one usability test, each participant was greeted by the administrator, and data logger. They were instructed that they could withdraw at any time. Participants had prior experience with a previous version of Office Practicum. The administrator introduced the test, and instructed participants to complete a series of tasks (given one at a time) using the EHRUT. During the testing, the administrator timed the test and, along with the data logger who recorded user performance data on paper and electronically. The administrator did not give the participant assistance in how to complete the task.

Participant screens, and audio were recorded for subsequent analysis.

The following types of data were collected for each participant:

- Number of tasks successfully completed within the allotted time without assistance
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participant's verbalizations
- Participant's satisfaction ratings of the system

All participant data was de-identified – no correspondence could be made from the identity of the participant to the data collected. Following the conclusion of the testing, participants were asked to complete a post-test questionnaire and were compensated with a $25 gift card. Various recommended metrics, in accordance with the examples set forth in the *NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records*, were used to

evaluate the usability of the EHRUT. Following is a summary of the performance and rating data collected on the EHRUT.
The results from the System Usability Scale scored the subjective satisfaction with the system based on performance with these tasks to be: **78.41**.

Scores under 60 represent systems with poor usability; scores over 80 would be considered above average.

In addition to the performance data, the following qualitative observations were made:

Major findings

- Participants did not interact with the med/med allergy interaction setting very often
- Many participants mentioned they would set up the med/med allergy interaction setting once and never return to change it
- Many participants expected the med/med allergy interaction setting to be under the “clinical” tab instead of the “admin” tab
- Participants mentioned they would need to use the knowledge center to change the med/med allergy interaction setting
- Participants were confused on how to save the med/med allergy interaction setting
- Participants had a hard time entering a new patients phone number due to the forced phone number formatting
- Many participants rely on tabbing through forms, and sometimes pressing tab on the keyboard didn’t work
- There’s a “New” button inside the demographics section of a patient's chart, and some participants were confused if that would create and brand new patient or create another chart for the patient they already have active
- Overall participants felt overwhelmed when creating care plans
- Many participants were confused when to add single quotes around trigger values inside care plans and this was due to the “condition” statement before the trigger value
- Most participants mentioned they would make errors setting up care plans and then would have to investigate why the care plans would not trigger
- On the care plans form the “Triggers” and “Actions” sections have a save button next to them, but the “Definition” section has a save button that is far way from its settings, so once a participant would fill in the Definition section they would have to hunt for the save button which felt disconnected from the area they were working in
- A majority of the participants mentioned they did some care plan training at the OP User Conference, but were not able to set up their care plans afterwards or just simply didn’t have the time
- Participants had difficulty manually entering the large UDI string.
- Some participants entered the UDI string, but didn’t search for the UDI causing an error message when they tried to save

- The error message received when you don't search for the UDI proved to be helpful and participants were able to easily complete the task
- There was an overwhelming request to implement a scanning feature in the future so the long UDI string would not have to be manually typed in
- Participants wanted to view more information on the implantable device, but were confused when the had to click "Edit" to see more since they didn't want to change any information
- Participants expected the status change setting to be inside the edit modal and within the data table
- About half of our participants mentioned they didn't import CDA's frequently
- Many participants were confused on how to import a CDA using the "New Document" button
- While merging data into the patient's chart the participants generally understood what data was already in the patient chart and what data they were merging into the chart
- Participants questioned why "Ignore" was the default reason when trying to merge patient data into their chart
- Participants mentioned that there were too many options and buttons on the clinical information reconciliation form which made everything seem flat with little visual hierarchy
- The flow for clinical information reconciliation has a lot of steps and confirmations, and many participants claimed it was to "Clicky"
- Many participants were confused about why the "Search" button was above the search filters when they were trying to create their CDA
- Almost all participants struggled to find the "Save" when they wanted to generate their CDA report
- Participants were overall very comfortable performing e-Prescribing tasks
- While prescribing a medication, all participants struggled to enter the "Days Supply", "Disp #", and "Refills" due to the fact that when you click inside the input fields the software adds a "0", and the user has to go in and manually delete that number which causes them to slow down
- While searching for a medication the "Generic Name" column was too wide causing the other important information about the medication to be off screen, and the user would have to scroll to the right to see more
- Many participants mentioned that they used the "Medication History Information" feature, but that it wasn't always reliable and it would take a long time to load the information

Areas for improvement

- Move the med/med allergy interaction setting under the "clinical" tab, so it's easier to discover
- Add a "Save" button inside the med/med allergy interaction setting form so users don't have to click the red "X" and then click "Yes" to save

- Make the tab option on the keyboard more reliable when filling out the demographics form
- Clear up the confusion around the “New” button inside a patient's demographic section
- Increase the visual contrast of the “Save” button next to all other buttons so it doesn’t blend into the interface
- Make the “Triggers” and “Actions” user interface easier for users to create care plans without knowing SQL
- Add a “Save” button into the actual “Definition” section of the care plan
- Provide help from the care plan form on how to set up triggers and actions, so users don’t have to hunt for that information
- Implement a scanning features so participants don’t have to enter a long UDI string
- Add a status setting inside the implantable devices edit modal
- Add a clearer button label for “Import CDA”
- Make the buttons that step a user through the clinical information reconciliation process more prominent so they stand out from other options in the form
- Research why “Ignore” is our default action when bringing in medications, medication allergies, and problems into a patient's chart from a CDA
- Reduce the amount of overall clicks and warnings the user needs to address while performing clinical information reconciliation
- Move the “Search” button below the search filters on the Medical Records form
- Change the button label “CDA” to “Save” to make it more obvious to the user what action that button will perform
- Fix the input fields for “Days Supply”, “Disp #”, and “Refills” so when a user clicks inside the field the software does not add a “0”
- Research a new way to let our users know they can change the width of the data table columns and then save their preference
- Research into how we can make our “Medication History Information” button more reliable, and faster

INTRODUCTION

The EHRUT tested for this study was Office Practicum, V 20. Designed to present medical information to physicians in pediatric offices, the EHRUT consists of a comprehensive electronic health system used to create, store, and retrieve patient data. The usability testing attempted to represent realistic exercises and conditions.

The purpose of this study was to test and validate the usability of the current user interface, and provide evidence of usability in the EHR Under Test (EHRUT). To this end, measures of effectiveness, efficiency and user satisfaction, such as task success, time on task, and task errors were captured during the usability testing.

METHOD

Participants

A total of 19 participants were tested on Office Practicum, V 20. Participants in the test were pediatricians, physicians, and practice administrators . Participants were recruited by the user experience architect Sean Menne. In addition, participants had no direct connection to the development of or organization producing Office Practicum, V 20. Participants were not from the testing or supplier organization. Participants were given the opportunity to have the same orientation and level of training as the actual end users would have received.

For the test purposes, end-user characteristics were identified and translated into a recruitment screener used to solicit potential participants; an example of a screener is provided in **Appendix 1**.

Recruited participants had a mix of backgrounds and demographic characteristics conforming to the recruitment screener. The following is a table of participants by characteristics, including demographics, professional experience, computing experience and user needs for assistive technology. Participant names were replaced with Participant IDs so that an individual's data cannot be tied back to individual identities.

Part ID	Gender	Age	Education	Occupation/ Role	Professional Experience (Months)	Computer Experience (Months)	Product Experience (Months)	Assistive Technology Needs
01	Female	40-49	Master's Degree	PNP	288	360	144	No
02	Male	40-49	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	240	432	30	No
03	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	300	240	120	No
04	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	288	240	48	No
05	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	252	96	96	No
06	Female	40-49	Master's Degree	PNP	216	120	120	No
07	Female	40-49	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	192	252	120	No
08	Male	60-69	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	408	300	36	No
09	Male	60-69	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	300	360	108	No
10	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Doctor	360	240	84	No
11	Male	40-49	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician, Practice Manager	180	504	108	No
12	Male	50-59	Doctorate degree (eg., MD, DNP,	Physician	312	360	228	No

			DMD, PhD)					
13	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	MD	192	300	72	No
14	Male	60-69	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	444	360	48	No
15	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	300	300	300	No
16	Female	50-59	Master's Degree	CPNP	180	420	24	No
17	Female	40-49	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	156	240	30	No
18	Male	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	264	420	156	No
19	Female	40-49	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	180	300	60	No
20	Male	60-69	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	300	360	108	No
21	Male	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	240	240	60	No
22	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	252	96	96	No
23	Male	60-69	Doctorate degree (eg., MD, DNP, DMD, PhD)	MD	444	420	96	No
24	Female	40-49	Doctorate degree (eg., MD, DNP,	Pediatrician	192	252	120	No

			DMD, PhD)					
25	Male	30-39	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	96	360	24	No
26	Male	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Pediatrician	252	456	60	No
27	Male	60-69	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician	408	300	36	No
08	Male	40-49	Doctorate degree (eg., MD, DNP, DMD, PhD)	Physician, Practice Manager	180	504	108	No
29	Female	50-59	Doctorate degree (eg., MD, DNP, DMD, PhD)	Doctor	336	240	24	No

29 participants (matching the demographics in the section on Participants) were recruited and 29 participated in the usability test. 0 participants failed to show for the study. See **Appendix 2** for more patient demographics.

Participants were scheduled for 30 to 60 minute sessions. After each session the administrator would reset the system. A spreadsheet was used to keep track of the participant schedule, and included each participant's demographic characteristics as provided by the recruiting questionnaire.

Study Design

Overall, the objective of this test was to uncover areas where the application performed well – that is, effectively, efficiently, and with satisfaction – and areas where the application failed to meet the needs of the participants. The data from this test may serve as a baseline for future tests with an updated version of the same EHR and/or comparison with other EHRs provided the same tasks are used. In short, this testing serves as both a means to record or benchmark current usability, but also to identify areas where improvements must be made.

During the usability test, participants interacted with the same version of Office Practicum, V 20. Each participant used the system from their computer, and was provided with the same

instructions. The system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

- Number of tasks successfully completed within the allotted time without assistance
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participant's verbalizations (comments)
- Participant's satisfaction ratings of the system

Additional information about the various measures can be found in the Data Scoring date table.

Tasks

A number of tasks were constructed that would be realistic and representative of the kinds of activities a user might do with this EHR, including:

Tasks	Safety Risk Score (1-Least Risky, 5-Most Risky)
Using CPOE, trigger a drug-drug interaction by entering a new medication order	5
Using CPOE, trigger a drug-allergy interaction by entering a new medication order	5
Adjust the severity level of a displayed drug-drug interaction	3
Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity	1
Change and display a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity	1
Add a CDS intervention and/or reference resource for problem list	4
Add a CDS intervention and/or reference resource for medication list	4
Add a CDS intervention and/or reference resource for medication allergy list	4

Add a CDS intervention and/or reference resource for demographics	3
Add a CDS intervention and/or reference resource for laboratory test	4
Add a CDS intervention and/or reference resource for vital signs	4
Add a CDS intervention and/or reference resource for a combination of two elements above (vital signs and problems)	5
Trigger a CDS intervention/resources added using the applicable data elements for problem list	5
Trigger a CDS intervention/resources added using the applicable data elements for medication list	5
Trigger a CDS intervention/resources added using the applicable data elements for medication allergy list	5
Trigger a CDS intervention/resources added using the applicable data elements for demographics	4
Trigger a CDS intervention/resources added using the applicable data elements for laboratory test	5
Trigger a CDS intervention/resources added using the applicable data elements for vitals signs	5
Trigger a CDS intervention/resources added using the applicable data elements for a combination of at least two elements above (vital signs and problems)	5
View the intervention/resource information using the infobutton standard for data elements in the problem list, medication list, and demographics	3
Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary	5

Access the following attributes for one of the triggered CDS interventions/resources: bibliographics citation, developer, funding source, release/revision date	1
Record UDI	2
Change UDI Status	2
Access UDI, device description, identifiers, and attributes	2
Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's chart	5
Generate a new CCDA with reconciled data	4
Create new prescription	5
Change prescription (dosage or duration)	5
Cancel prescription	4
Refill prescription	4
Receive fill status notification	4
Request and receive medication history information	4

Tasks were selected based on their frequency of use, criticality of function, and those that may be most troublesome for users. Tasks should always be constructed in light of the study objectives.

Procedures

Upon arrival, participants were greeted; their identity was verified and matched with a name on the participant schedule. Participants were then assigned a participant ID. To ensure that the test ran smoothly, two staff members participated in this test, the usability administrator and the data logger. The administrator moderated the session including administering instructions and tasks. The administrator also obtained post-task rating data, and took notes on participant comments. A second person served as the data logger and took notes on task time, task success, path deviations, number and type of errors, and comments. Participants were instructed to perform the tasks (see specific instructions below):

- As quickly as possible while making as few errors and deviations as possible.
- Without assistance; administrators were allowed to give immaterial guidance and clarification on tasks, but not instructions on use.
- Without using a think aloud technique.

For each task, the participants were given a copy of the task. Task timing began once the administrator finished reading the question. The task time was stopped once the participant indicated they had successfully completed the task. Scoring is discussed below in the Data Scoring data table.

Following the session, the administrator emailed the participant the post-test questionnaire (System Usability Scale, see **Appendix 3**), and thanked each individual for their participation.

Participants' demographic information, task success rate, time on task, errors, deviations, verbal responses, and post-test questionnaire were recorded into a spreadsheet.

Test Location

The usability sessions for this study were all conducted remotely. The test administrator, data logger, and participants were all in different locations.

Test Environment

Office Practicum, V 20 would typically be used in a healthcare office or facility. In this instance, the testing was conducted using GoTo Meeting software. To ensure a realistic environment, participants were asked to interact with the system using their own computer. Participants were given an access code to dial into GoTo Meeting where the administrator would share their screen and give the participants keyboard and mouse control to perform their tasks.

Office Practicum, V 20 was running on a Windows computer using a test database. Technically, the system performance (i.e., response time) was representative of what actual users would experience in a field implementation.

Test Forms and Tools

During the usability test, various documents and instruments were used, including:

1. Moderator’s Guide - used to capture test data such task success, task errors, task time, task rating, and verbalizations.
2. Post-test Questionnaire - Emailed to the participant after the session concluded.

The participant's interaction with Office Practicum, V 20 were captured and recorded digitally with screen capture software running on the test machine, and verbal comments were recorded as well.

Participant Instructions

The administrator reads the following instructions aloud to each participant (also see the full moderator's guide in **Appendix 4**):

> *I want to thank you for participating in this study. Your input is very important.*
>
> *Our session today will last about 60 minutes. I'm going to use a test instance of OP, and I will ask you to complete a few tasks and answer some questions afterwards.*
>
> *Please try to complete the tasks on your own while following the participant guide. I'm able to answer any questions, but I won't be able to help with completing the tasks so if you can't complete it just say so. Please note that we are not testing you we are testing the system, therefore if you have difficulty all this means is that something needs to be improved in the system.*
>
> *Overall, we are interested in how easy (or difficult) this system is to use, and how we could improve it. All of the information that you provide will be kept confidential and your name will not be associated with our reporting.*
>
> *For each task, I will read the description to you and say "Begin." At that point, please perform the task and say "Done" once you believe you have successfully completed the task.*
>
> *I will ask you to rate the task and your impressions about the task once you are done.*

Following the procedural instructions, participants were shown the EHR and given keyboard and mouse control. Once each task was complete, the administrator gave the following instructions:

> *How would you rate this task on a scale of 1 to 5, with 1 being hard and 5 being easy. What were your overall impressions of this task?*

Usability Metrics

According to the *NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records*, EHRs should support a process that provides a high level of usability for all users. The goal is for users to interact with the system effectively, efficiently, and with an

acceptable level of satisfaction. To this end, metrics for effectiveness, efficiency and user satisfaction were captured during the usability testing. The goals of the test were to assess:

1. Effectiveness of OP20 by measuring participant success rates and errors
2. Efficiency of OP20 by measuring the average task time and path deviations
3. Satisfaction with OP20 by measuring ease of use ratings

Data Scoring

The following table details how tasks were scored, errors evaluated, and the time data analyzed.

Measures	Rationale and Scoring
Effectiveness: Task Success	A task was counted as a “Success” if the participant was able to achieve the correct outcome, without assistance, within the time allotted on a per task basis. The total number of successes were calculated for each task and then divided by the total number of times that task was attempted. The results are provided as a percentage. Task times were recorded for successes. Observed task times divided by the optimal time for each task is a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance under realistic conditions, is recorded when constructing tasks. Target task times used for task times in the Moderator’s Guide must be operationally defined by taking multiple measures of optimal performance and multiplying by some factor [e.g., 1.25] that allows some time buffer because the participants are presumably not trained to expert performance. Thus, if expert, optimal performance on a task was [x] seconds then allotted task time performance was [x * 1.25] seconds. This ratio should be aggregated across tasks and reported with mean and variance scores.
Effectiveness: Task Failuress	If the participant abandoned the task, did not reach the correct answer or performed it incorrectly, or reached the end of the allotted time before successful completion, the task was counted as an “Failures.” No task times were taken for errors. The total number of errors was calculated for each task and then divided by the total number of times that task was attempted. Not all deviations would be counted as errors.11 This should also be expressed as the mean number of failed tasks per participant.

	On a qualitative level, an enumeration of errors and error types should be collected.
Efficiency: Task Deviations	The participant's path (i.e., steps) through the application was recorded. Deviations occur if the participant, for example, went to a wrong screen, clicked on an incorrect menu item, followed an incorrect link, or interacted incorrectly with an on-screen control. This path was compared to the optimal path. The number of steps in the observed path is divided by the number of optimal steps to provide a ratio of path deviation. It is strongly recommended that task deviation be reports. Optimal paths (i.e., procedural steps) should be recorded when construction tasks.
Efficiency: Task Time	Each task was timed from when the administrator said "Begin" until the participant said, "Done." If he or she failed to say "Done," the time was stopped when the participant stopped performing the task. Only task times for tasks that were successfully completed were included in the average task time analysis. Average time per task was calculated for each task. Variance measures (standard deviation and standard error) were also calculated.
Satisfaction: Task Rating	Participant's subjective impression of the ease of use of the application was measured by administering both a simple post-task question as well as a post-session questionnaire. After each task, the participant was asked to rate "Overall, this task was:" on a scale of 1 (Very Difficult) to 5 (Very Easy). These data are averaged across participants. 12 Common convention is that average ratings for systems judged easy to use should be 3.3 or above. To measure participants' confidence in and likeability of the [EHRUT] overall, the testing team administered the System Usability Scale (SUS) post-test questionnaire. Questions included, "I think I would like to use this system frequently," "I thought the system was easy to use," and "I would imagine that most people would learn to use this system very quickly." See full System Usability Score questionnaire in Appendix 5.13

RESULTS

Data Analysis and Reporting

The results of the usability test were calculated according to the methods specified in the Usability Metrics section above. Participants who failed to follow session and task instructions had their data excluded from the analyses.

The usability testing results for Office Practicum, V 20 are detailed below. The data should yield actionable results that, if corrected, yield material, positive impact on user performance.

Criteria 170.315(a)(4) - Drug-drug, drug-allergy interaction checks for CPOE

Criteria 170.315(a)(4) - Drug-drug, Drug-allergy Interaction Checks							
Task 1: Using CPOE, trigger a drug-drug interaction by entering a new medication order							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
20	1	4	4	30	18	0	5
21	1	4	4	52	18	0	5
22	1	4	4	42	18	0	5
23	1	4	4	90	18	0	5
24	1	4	4	22	18	0	5
25	1	6	4	33	18	1	4
26	1	4	4	26	18	0	5
27	1	4	4	27	18	0	5
28	1	4	4	32	18	0	5
29	1	4	4	14	18	0	5
Total	10					1	
MEAN	100%	4.2		36.8		0.1	4.9
SD	0	0.6		20.3		0.3	0.3

Criteria 170.315(a)(4) - Drug-drug, Drug-allergy Interaction Checks							
Task 2: Using CPOE, trigger a drug-allergy interaction by entering a new medication order							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
20	1	4	4	22	15	0	5
21	1	4	4	17	15	0	5
22	1	4	4	36	15	0	5
23	1	4	4	122	15	0	5
24	1	4	4	40	15	0	5
25	1	4	4	18	15	0	5
26	1	4	4	23	15	0	5
27	1	4	4	22	15	0	5
28	1	4	4	14	15	0	5
29	1	4	4	17	15	0	5
Total	10					0	
MEAN	100%	4		33.1		0	5
SD	0	0		30.7		0	0

Criteria 170.315(a)(4) - Drug-drug, Drug-allergy Interaction Checks							
Task 3: Adjust the severity level of a displayed drug-drug interaction							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
1	0	24	8	93	13	1	1
2	0	12	8	103	13	1	5
3	1	12	8	130	13	0	3
4	0	12	8	159	13	1	2
5	0	8	8	54	13	1	1
6	0	8	8	153	13	1	3
7	1	9	8	80	13	0	3
8	0	11	8	78	13	1	2
9	0	9	8	122	13	1	1
10	0	18	8	133	13	1	1
Total	2					8	
MEAN	20%	12.3		110.5		1.5	2.2
SD	0.4	4.8		32.7		0.4	1.2

Discussion of Findings

Participants were given 3 tasks:

1. Using CPOE, trigger a drug-drug interaction by entering a new medication order
2. Using CPOE, trigger a drug-allergy interaction by entering a new medication order
3. Adjust the severity level of a displayed drug-drug interaction

Effectiveness

Using CPOE, trigger a drug-drug interaction by entering a new medication order
The success score for this task was 100%. Participants were easily able to trigger a drug-drug interaction.

Using CPOE, trigger a drug-allergy interaction by entering a new medication order
The success score for this task was 100%. Participants were easily able to trigger a drug-allergy interaction.

Adjust the severity level of a displayed drug-drug interaction
The success score for this task was 20%. Participants had a hard time locating this administrative setting. Many participants mentioned they would set up this setting and not change it, which would lead to them not remembering where it was located.

Efficiency

Using CPOE, trigger a drug-drug interaction by entering a new medication order
90% of the participants were able to complete the task using the optimal steps. The average task time was 36.8 seconds compared to the optimal task time of 18 seconds. Participant 6 added the wrong medication which didn't flag an interaction check. They quickly noticed the mistake and updated the medication to complete the task.

Using CPOE, trigger a drug-allergy interaction by entering a new medication order
100% of the participants were able to complete the task using the optimal steps. The average task time was 33.1 seconds compared to the optimal task time of 15 seconds. There were no task errors.

Adjust the severity level of a displayed drug-drug interaction
80% of participants could not complete this task. The average time to complete the task was 110.5 seconds compared to the optimal time of 13 seconds.

Satisfaction

Using CPOE, trigger a drug-drug interaction by entering a new medication order
The average satisfaction rating for this task was 4.9 out of 5 on the Likert scale.

Using CPOE, trigger a drug-allergy interaction by entering a new medication order
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Adjust the severity level of a displayed drug-drug interaction
The average satisfaction rating for this task was 2.2 out of 5 on the Likert scale.

Major Findings

- Participants mentioned that they liked documenting when they were either deleting or overriding items.
- Some participants mentioned that they would just like to either acknowledge the interaction or just cancel it. They wanted to go forward with some medications even though they had an interaction.
- Some participants mentioned that the interaction warning changes widths on them sometimes, which caused consistency issues.
- Participants did not interact with this setting very often
- Many participants mentioned they would set this up once and never return to change it
- Many participants expected this setting to be under the "clinical" tab instead of the "admin" tab
- Participants mentioned they would need to use the knowledge center to complete this task

- When participants were able to find the setting they were confused on how to save

Areas for Improvement

- Ensure that the modal widths are consistent each time a user receives an interaction warning modal.
- Move the setting under the “clinical” tab, so it’s easier to discover
- Currently this setting is under a tab called “Special” which doesn’t relate or describe this setting very well
- Add a “Save” button inside the settings form so users don't have to click the red “X” and then click “Yes” to save

Criteria 170.315(a)(5) - Demographics

Criteria 170.315(a)(5) - Demographics							
Task 1: Change and display the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity, preliminary cause of death (inpatient only), and preliminary date of death							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
1	1	8	8	138	90	0	5
2	1	8	8	149	90	0	5
3	1	8	8	124	90	0	5
4	1	8	8	152	90	0	5
5	1	8	8	92	90	0	5
6	1	8	8	144	90	0	5
7	1	8	8	208	90	0	5
8	1	8	8	121	90	0	5
9	1	8	8	153	90	0	5
10	1	8	8	154	90	0	5
Total	10					0	
MEAN	100%	8		143.5		0	5
SD	0	0		28.3		0	0.0

Criteria 170.315(a)(5) - Demographics							
Task 2: Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity, preliminary cause of death (inpatient only), and preliminary date of death (inpatient only)							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
1	1	17	17	159	152	0	5
2	1	17	17	243	152	0	4
3	1	17	17	165	152	0	5
4	1	17	17	165	152	0	5
5	1	17	17	206	152	0	5
6	1	17	17	357	152	0	4
7	1	17	17	167	152	0	5
8	1	17	17	203	152	0	5
9	1	17	17	209	152	0	4
10	1	17	17	244	152	0	2
Total	10					0	
MEAN	100%	17		211.8		0	4.4
SD	0	0		56.9		0	0.9

Discussion of Findings

Participants were given 2 tasks:

1. Change and display a patient’s preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity

2. Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity

Effectiveness

Change and display a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
The success score for this task was 100%. Participants had an easy time completing this task.

Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
The success score for this task was 100%. Participants had an easy time completing this task.

Efficiency

Change and display a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
The average time to complete the task was 143.5 seconds compared to the optimal time of 90 seconds. There were no errors during testing.

Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
The average time to complete the task was 211.8 seconds compared to the optimal time of 152 seconds. There were no errors during testing.

Satisfaction

Change and display a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation and gender idenity
The average satisfaction rating for this task was 4.4 out of 5 on the Likert scale.

Major Findings

- Participants had a hard time entering the new patients phone number due to the forced phone number formatting
- Many participants rely on tabbing through forms, and sometimes pressing tab on the keyboard didn't work

- There’s a “New” button inside the demographics section of a patient's chart, and some participants were confused if that would create and brand new patient or create another chart for the patient they already have active

Areas for Improvement

- Make the tab option on the keyboard more reliable when filling out the demographics form
- Clear up the confusion around the “New” button inside a patient's demographic section
- Increase the visual contrast of the “Save” button next to all other buttons so it doesn’t blend into the interface

Criteria 170.315(a)(9) - Clinical Decision Support

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 1: Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	2	2	15	2	0	5
11	1	2	2	22	2	0	5
12	1	2	2	10	2	0	5
13	1	4	2	76	2	0	4
14	1	2	2	82	2	0	4
15	1	2	2	53	2	0	5
16	1	2	2	16	2	0	5
17	1	9	2	64	2	1	4
18	1	12	2	82	2	1	4
19	1	2	2	22	2	0	5
Total	10					2	
MEAN	100%	3.9		44.2		0.4	4.6
SD	0	3.4		28.5		0.4	0.5

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 2: Add a CDS intervention and/or reference resource for Problem List							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	7	7	103	22	0	5
11	1	7	7	68	22	0	5
12	1	7	7	74	22	0	4
13	1	7	7	105	22	0	3
14	1	7	7	200	22	1	5
15	1	7	7	97	22	0	3
16	1	7	7	105	22	0	4
17	1	7	7	109	22	0	5
18	1	7	7	118	22	0	3
19	1	7	7	74	22	0	4
Total	10					1	
MEAN	100%	7		105.3		0.2	4.1
SD	0	0		35.5		0.3	0.8

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 3: Add a CDS intervention and/or reference resource for Medication List							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	9	9	48	19	0	5
11	1	9	9	55	19	0	5
12	1	9	9	52	19	0	5
13	1	9	9	93	19	0	4
14	1	9	9	250	19	0	4
15	1	9	9	58	19	0	4
16	1	9	9	52	19	0	5
17	1	9	9	72	19	0	5
18	1	9	9	73	19	0	5
19	1	9	9	45	19	0	4
Total	10					0	
MEAN	100%	9		79.8		0	4.6
SD	0	0		58.4		0	0.5

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 4: Add a CDS intervention and/or reference resource for Medication Allergy List							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	7	7	32	11	0	5
11	1	7	7	21	11	0	5
12	1	7	7	30	11	0	5
13	1	7	7	21	11	0	5
14	1	7	7	43	11	0	5
15	1	7	7	35	11	0	5
16	1	7	7	48	11	0	5
17	1	7	7	30	11	0	5
18	1	7	7	46	11	0	5
19	1	7	7	24	11	0	5
Total	10					0	
MEAN	100%	7		33		0	5
SD	0	0		9.4		0	0.0

Criteria 170.315(a)(9) - Clinical Decision Support

Task 5: Add a CDS intervention and/or reference resource for at least one Demographic

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	9	9	49	16	0	5
11	1	9	9	24	16	0	5
12	1	9	9	55	16	0	4
13	1	9	9	42	16	0	5
14	1	9	9	90	16	1	4
15	1	9	9	95	16	0	4
16	1	9	9	89	16	0	5
17	1	9	9	71	16	0	5
18	1	9	9	77	16	0	3
19	1	9	9	27	16	0	5
Total	10					1	
MEAN	100%	9		61.9		0.2	4.5
SD	0	0		24.9		0.3	0.7

Criteria 170.315(a)(9) - Clinical Decision Support

Task 6: Add a CDS intervention and/or reference resource for Laboratory Test

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	7	7	29	11	0	5
11	1	7	7	11	11	0	5
12	1	7	7	22	11	0	5
13	1	7	7	27	11	0	5
14	1	7	7	37	11	0	5
15	1	7	7	30	11	0	5
16	1	7	7	42	11	0	5
17	1	7	7	35	11	0	5
18	1	7	7	26	11	0	4
19	1	7	7	33	11	0	5
Total	10					0	
MEAN	100%	7		29.2		0	4.9
SD	0	0		8.2		0	0.3

Criteria 170.315(a)(9) - Clinical Decision Support

Task 7: Add a CDS intervention and/or reference resource for Vital Signs

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	7	7	32	12	0	5
11	1	7	7	38	12	0	5
12	1	7	7	26	12	0	5
13	1	7	7	27	12	0	5
14	1	7	7	48	12	0	5
15	1	7	7	24	12	0	5
16	1	7	7	28	12	0	5
17	1	7	7	27	12	0	5
18	1	7	7	31	12	0	5
19	1	7	7	23	12	0	5
Total	10					0	
MEAN	100%	7		30.4		0	5
SD	0	0		7.2		0	0.0

Criteria 170.315(a)(9) - Clinical Decision Support

Task 8: Add a CDS intervention and/or reference resource for a combination of 2 elements (Vital Signs and Problem List)

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	8	8	42	13	0	4
11	1	8	8	38	13	0	5
12	1	8	8	40	13	0	5
13	1	8	8	45	13	0	5
14	1	8	8	113	13	0	4
15	1	8	8	48	13	0	5
16	1	8	8	83	13	0	5
17	1	8	8	63	13	0	5
18	1	8	8	72	13	0	3
19	1	9	8	32	13	0	5
Total	10					0	
MEAN	100%	8.1		57.6		0	4.6
SD	0	0.3		24.1		0	0.7

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 9: Trigger the CDS interventions/resources added using the applicable data elements for at least one Demographic							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	4	4	43	10	0	4
11	1	4	4	33	10	0	5
12	1	4	4	44	10	0	5
13	1	4	4	80	10	0	3
14	1	23	4	127	10	1	3
15	1	4	4	81	10	0	4
16	1	4	4	64	10	0	5
17	1	4	4	54	10	0	5
18	1	12	4	52	10	1	5
19	1	4	4	34	10	0	5
Total	10					2	
MEAN	100%	6.7		61.2		0.4	4.4
SD	0	5.9		27.2		0.4	0.8

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 10: Trigger the CDS interventions/resources added using the applicable data elements for Problem List							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	7	7	74	16	0	4
11	1	7	7	27	16	0	5
12	1	7	7	30	16	0	5
13	1	7	7	48	16	0	5
14	1	18	7	151	16	1	3
15	1	7	7	36	16	0	4
16	1	7	7	32	16	0	5
17	1	7	7	52	16	0	5
18	1	7	7	54	16	0	5
19	1	7	7	42	16	0	5
Total	10					1	
MEAN	100%	8.1		54.6		0.2	4.6
SD	0	3.3		34.8		0.3	0.7

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 11: Trigger the CDS interventions/resources added using the applicable data elements for Medication List							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	17	17	169	41	0	4
11	1	17	17	136	41	0	5
12	1	28	17	135	41	1	5
13	1	17	17	106	41	0	5
14	1	17	17	186	41	0	3
15	1	17	17	102	41	0	4
16	1	42	17	228	41	1	5
17	1	17	17	95	41	0	5
18	1	17	17	114	41	0	5
19	1	17	17	127	41	0	4
Total	10					2	
MEAN	100%	20.6		139.8		0.4	4.5
SD	0	7.9		40.3		0.4	0.7

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 12: Trigger the CDS interventions/resources added using the applicable data elements for Medication Allergy List							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	8	8	64	24	0	5
11	1	8	8	146	24	0	5
12	1	8	8	76	24	0	5
13	1	8	8	57	24	0	5
14	1	8	8	146	24	0	4
15	1	8	8	97	24	0	5
16	1	8	8	54	24	0	4
17	1	8	8	62	24	0	5
18	1	8	8	84	24	0	5
19	1	8	8	71	24	0	5
Total	10					0	
MEAN	100%	8		85.7		0	4.8
SD	0	0		32.5		0	0.4

Criteria 170.315(a)(9) - Clinical Decision Support

Task 13: Trigger the CDS interventions/resources added using the applicable data elements for Laboratory Test

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	13	8	88	15	1	4
11	1	8	8	181	15	0	5
12	1	12	8	78	15	1	2
13	1	8	8	52	15	0	5
14	1	8	8	54	15	0	4
15	1	8	8	55	15	0	5
16	1	8	8	92	15	0	5
17	1	8	8	51	15	0	4
18	1	8	8	58	15	0	4
19	1	8	8	81	15	0	5
Total	10					2	
MEAN	100%	8.9		79		0.4	4.3
SD	0	1.8		37.2		0.4	0.9

Criteria 170.315(a)(9) - Clinical Decision Support

Task 14: Trigger the CDS interventions/resources added using the applicable data elements for Vital Signs

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	8	8	36	10	0	5
11	1	8	8	25	10	0	5
12	1	8	8	36	10	0	5
13	1	8	8	43	10	0	5
14	1	8	8	68	10	0	5
15	1	8	8	65	10	0	4
16	1	8	8	47	10	0	5
17	1	8	8	29	10	0	5
18	1	8	8	34	10	0	5
19	1	8	8	31	10	0	5
Total	10					0	
MEAN	100%	8		41.4		0	4.9
SD	0	0		13.9		0	0.3

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 15: Trigger the CDS interventions/resources added using the applicable data elements for a combination of 2 elements (Vitals Signs and Problem List)							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	8	8	34	9	0	5
11	1	8	8	24	9	0	5
12	1	31	8	217	9	1	5
13	1	8	8	53	9	0	5
14	1	8	8	33	9	0	5
15	1	15	8	95	9	1	4
16	1	8	8	33	9	0	5
17	1	8	8	31	9	0	5
18	1	8	8	42	9	0	5
19	1	8	8	31	9	0	5
Total	10					2	
MEAN	100%	11		59.3		0.4	4.9
SD	0	7.0		56.0		0.4	0.3

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 16: View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	7	7	68	11	0	5
11	1	7	7	56	11	0	5
12	1	7	7	52	11	0	5
13	1	7	7	48	11	0	5
14	1	7	7	109	11	0	5
15	1	7	7	37	11	0	4
16	1	7	7	56	11	0	5
17	1	7	7	40	11	0	5
18	1	7	7	50	11	0	5
19	1	7	7	43	11	0	5
Total	10					0	
MEAN	100%	7		55.9		0	4.9
SD	0	0		19.6		0	0.3

Criteria 170.315(a)(9) - Clinical Decision Support							
Task 17: Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	40	40	289	61	1	4
11	1	40	40	224	61	0	5
12	1	43	40	349	61	1	5
13	1	40	40	346	61	0	4
14	1	40	40	322	61	0	4
15	1	40	40	260	61	0	4
16	1	40	40	293	61	0	4
17	1	40	40	274	61	0	3
18	1	40	40	301	61	0	4
19	1	40	40	223	61	0	3
Total	10					2	
MEAN	100%	40.3		288.1		0.4	4
SD	0	0.9		42.1		0.4	0.6

Discussion of Findings

Participants were given 17 tasks:

1. Access the following attributes for one of the triggered CDS interventions/resources bibliographic citation, developer, funding source, release/revision date
2. Add a CDS intervention and/or reference resource for Problem List
3. Add a CDS intervention and/or reference resource for Medication List
4. Add a CDS intervention and/or reference resource for Medication Allergy List
5. Add a CDS intervention and/or reference resource for at least one Demographic
6. Add a CDS intervention and/or reference resource for Laboratory Test
7. Add a CDS intervention and/or reference resource for Vital Signs
8. Add a CDS intervention and/or reference resource for a combination of 2 elements (Vital Signs and Problem List)
9. Trigger the CDS interventions/resources added using the applicable data elements for Medication List
10. Trigger the CDS interventions/resources added using the applicable data elements for at least one Demographic
11. Trigger the CDS interventions/resources added using the applicable data elements for Problem List
12. Trigger the CDS interventions/resources added using the applicable data elements for Medication Allergy List
13. Trigger the CDS interventions/resources added using the applicable data elements for Laboratory Test

14. Trigger the CDS interventions/resources added using the applicable data elements for Vital Signs
15. Trigger the CDS interventions/resources added using the applicable data elements for a combination of 2 elements (Vitals Signs and Problem List)
16. View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics
17. Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary

Effectiveness

Access the following attributes for one of the triggered CDS interventions/resources:bibliographic citation, developer, funding source, release/revision date
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for Problem List
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for Medication List
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for Medication Allergy List
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for at least one Demographic
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for Laboratory Test
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for Vital Signs
The success score for this task was 100%.

Add a CDS intervention and/or reference resource for a combination of 2 elements (Vital Signs and Problem List)
The success score for this task was 100%.

Trigger the CDS interventions/resources added using the applicable data elements for Medication List
The success score for this task was 100%.

Trigger the CDS interventions/resources added using the applicable data elements for at least one Demographic
The success score for this task was 100%.

Trigger the CDS interventions/resources added using the applicable data elements for Problem List
The success score for this task was 100%.
Trigger the CDS interventions/resources added using the applicable data elements for Medication Allergy List
The success score for this task was 100%.

Trigger the CDS interventions/resources added using the applicable data elements for Laboratory Test
The success score for this task was 100%.

Trigger the CDS interventions/resources added using the applicable data elements for Vital Signs
The success score for this task was 100%.

Trigger the CDS interventions/resources added using the applicable data elements for a combination of 2 elements (Vitals Signs and Problem List)
The success score for this task was 100%.

View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics
The success score for this task was 100%.

Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary
The success score for this task was 100%.

Efficiency

Access the following attributes for one of the triggered CDS interventions/resources:bibliographic citation, developer, funding source, release/revision date
The average time to complete the task was 44.2 seconds compared to the optimal time of 2 seconds. Participants often struggled to locate this information.

Add a CDS intervention and/or reference resource for Problem List

The average time to complete the task was 105.3 seconds compared to the optimal time of 22 seconds. There was 1 error during testing.

Add a CDS intervention and/or reference resource for Medication List
The average time to complete the task was 79.8 seconds compared to the optimal time of 19 seconds. There were no errors during testing.

Add a CDS intervention and/or reference resource for Medication Allergy List
The average time to complete the task was 33 seconds compared to the optimal time of 11 seconds. There were no errors during testing.

Add a CDS intervention and/or reference resource for at least one Demographic
The average time to complete the task was 61.9 seconds compared to the optimal time of 16 seconds. There were 1 error during testing.

Add a CDS intervention and/or reference resource for Laboratory Test
The average time to complete the task was 29.2 seconds compared to the optimal time of 11 seconds. There were no errors during testing.

Add a CDS intervention and/or reference resource for Vital Signs
The average time to complete the task was 30.4 seconds compared to the optimal time of 12 seconds. There were no errors during testing.

Add a CDS intervention and/or reference resource for a combination of 2 elements (Vital Signs and Problem List)
The average time to complete the task was 57.6 seconds compared to the optimal time of 13 seconds. There were no errors during testing.

Trigger the CDS interventions/resources added using the applicable data elements for Medication List
The average time to complete the task was 139.8 seconds compared to the optimal time of 41 seconds. There were 2 errors during testing.

Trigger the CDS interventions/resources added using the applicable data elements for at least one Demographic
The average time to complete the task was 61.2 seconds compared to the optimal time of 10 seconds. There were 2 errors during testing.

Trigger the CDS interventions/resources added using the applicable data elements for Problem List
The average time to complete the task was 54.6 seconds compared to the optimal time of 16 seconds. There were 1 error during testing.

Trigger the CDS interventions/resources added using the applicable data elements for Medication Allergy List
The average time to complete the task was 85.7 seconds compared to the optimal time of 24 seconds. There were no errors during testing.

Trigger the CDS interventions/resources added using the applicable data elements for Laboratory Test
The average time to complete the task was 79 seconds compared to the optimal time of 15 seconds. There were 2 errors during testing.

Trigger the CDS interventions/resources added using the applicable data elements for Vital Signs
The average time to complete the task was 41.4 seconds compared to the optimal time of 10 seconds. There were no errors during testing.

Trigger the CDS interventions/resources added using the applicable data elements for a combination of 2 elements (Vitals Signs and Problem List)
The average time to complete the task was 59.3 seconds compared to the optimal time of 9 seconds. There were 2 errors during testing.

View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics
The average time to complete the task was 55.9 seconds compared to the optimal time of 11 seconds. There were no errors during testing.

Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary
The average time to complete the task was 288.1 seconds compared to the optimal time of 61 seconds. There were 2 errors during testing.

Satisfaction

Access the following attributes for one of the triggered CDS interventions/resources:bibliographic citation, developer, funding source, release/revision date
The average satisfaction rating for this task was 4.6 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for Problem List
The average satisfaction rating for this task was 4.1 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for Medication List
The average satisfaction rating for this task was 4.6 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for Medication Allergy List
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for at least one Demographic
The average satisfaction rating for this task was 4.5 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for Laboratory Test
The average satisfaction rating for this task was 4.9 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for Vital Signs
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Add a CDS intervention and/or reference resource for a combination of 2 elements (Vital Signs and Problem List)
The average satisfaction rating for this task was 4.6 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for Medication List
The average satisfaction rating for this task was 4.5 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for at least one Demographic
The average satisfaction rating for this task was 4.4 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for Problem List
The average satisfaction rating for this task was 4.6 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for Medication Allergy List
The average satisfaction rating for this task was 4.8 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for Laboratory Test
The average satisfaction rating for this task was 4.3 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for Vital Signs
The average satisfaction rating for this task was 4.9 out of 5 on the Likert scale.

Trigger the CDS interventions/resources added using the applicable data elements for a combination of 2 elements (Vitals Signs and Problem List)
The average satisfaction rating for this task was 4.9 out of 5 on the Likert scale.

View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics
The average satisfaction rating for this task was 4.9 out of 5 on the Likert scale.

Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary
The average satisfaction rating for this task was 4 out of 5 on the Likert scale.

Major Findings

- Overall participants felt overwhelmed when creating care plans
- Many participants were confused when to add single quotes around trigger values inside care plans and this was due to the “condition” statement before the trigger value
- Most participants mentioned they would make errors setting these up and then would have to investigate why the care plans would not trigger
- The “Triggers” and “Actions” sections have a save button next to them, but the “Definition” section has a save button that is far way from its settings, so once a participant would fill in the Definition section they would have to hunt for the save button which felt disconnected from the area they were working in
- A majority of the participants mentioned they did some care plan training at the OP User Conference, but were not able to set up their care plans afterwards or just simply didn’t have the time

Areas for Improvement

- Make the “Triggers” and “Actions” user interface easier for users to create care plans without knowing SQL
- Add a “Save” button into the actual “Definition” section of the care plan
- Provide help from the care plan form on how to set up triggers and actions, so users don’t have to hunt for that information

Criteria 170.315(a)(14) - Implantable Device List

Criteria 170.315(a)(14) - Implantable Device List							
Task 1: Record UDI							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
1	1	6	6	118	105	0	5
2	1	6	6	103	105	0	5
3	1	6	6	150	105	0	5
4	1	22	6	294	105	1	1
5	1	6	6	145	105	0	5
6	1	6	6	175	105	0	2
7	1	6	6	148	105	0	5
8	1	6	6	125	105	0	4
9	1	6	6	205	105	0	4
10	1	6	6	191	105	0	3
Total	10					1	
MEAN	100%	7.6		165.4		0.2	3.9
SD	0	4.8		52.5		0.3	1.4

Criteria 170.315(a)(14) - Implantable Device List							
Task 2: Access UDI, device description, identifiers, and attributes							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
1	1	2	2	12	2	0	4
2	1	2	2	10	2	0	4
3	1	2	2	8	2	0	5
4	1	2	2	8	2	0	5
5	1	2	2	9	2	0	5
6	1	4	2	31	2	0	3
7	1	2	2	10	2	0	5
8	1	2	2	8	2	0	5
9	1	2	2	16	2	0	5
10	1	2	2	9	2	0	5
Total	10					0	
MEAN	100%	2.2		12.1		0	4.6
SD	0	0.6		6.7		0	0.7

Criteria 170.315(a)(14) - Implantable Device List							
Task 3: Change UDI Status							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
1	1	4	4	24	11	0	5
2	1	4	4	59	11	0	4
3	1	4	4	32	11	0	5
4	1	4	4	31	11	0	5
5	1	4	4	19	11	0	5
6	0	6	4	70	11	1	1
7	1	5	4	44	11	1	3
8	1	4	4	79	11	0	5
9	1	4	4	41	11	0	5
10	1	4	4	37	11	0	5
Total	9					2	
MEAN	90%	4.3		43.6		0.4	4.3
SD	0.3	0.6		18.8		0.4	1.3

Discussion of Findings

Participants were given 3 tasks:

1. Record a UDI
2. Access UDI, device description, identifiers, and attributes
3. Change UDI Status

Effectiveness

Record a UDI
The success score for this task was 100%. Participant 4 has difficulty locating the search feature to look up the implantable device

Access UDI, device description, identifiers, and attributes
The success score for this task was 100%. Participants had an easy time completing this task.

Change UDI Status
The success score for this task was 90%. Participant 6 had difficulty locating the status column within the implantable device data table.

Efficiency

Record a UDI

The average time to complete the task was 165.4 seconds compared to the optimal time of 105 seconds.

Access UDI, device description, identifiers, and attributes
The average time to complete the task was 12.1 seconds compared to the optimal time of 2 seconds. There were no errors during testing.

Change UDI Status
The average time to complete the task was 43.6 seconds compared to the optimal time of 11 seconds. There were 2 errors during testing. Participants expected the status change control to be in the “edit” view, but the control is located inside the implantable device data table.

Satisfaction

Record a UDI
The average satisfaction rating for this task was 3.9 out of 5 on the Likert scale.

Access UDI, device description, identifiers, and attributes
The average satisfaction rating for this task was 4.6 out of 5 on the Likert scale.

Change UDI Status
The average satisfaction rating for this task was 4.3 out of 5 on the Likert scale.

Major Findings

- Participants had difficulty manually entering the large UDI string.
- Some participants entered the UDI string, but didn’t search for the UDI causing an error message when they tried to save
- The error message received when you don’t search for the UDI proved to be helpful and participants were able to easily complete the task
- There was an overwhelming request to implement a scanning feature in the future so the long UDI string would not have to be manually typed in
- Participants wanted to view more information on the implantable device, but were confused when the had to click “Edit” to see more since they didn’t want to change any information
- Participants expected the status change setting to be inside the edit modal and within the data table

Areas for Improvement

- Implement a scanning features so participants don’t have to enter a long UDI string

- Add a status setting within the edit modal

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

Criteria 170.315(b)(2) - Clinical Information Reconciliation and Incorporation							
Task 1: Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	40	40	289	61	1	4
11	1	40	40	224	61	0	5
12	1	43	40	349	61	1	5
13	1	40	40	346	61	0	4
14	1	40	40	322	61	0	4
15	1	40	40	260	61	0	4
16	1	40	40	293	61	0	4
17	1	40	40	274	61	0	3
18	1	40	40	301	61	0	4
19	1	40	40	223	61	0	3
Total	10					2	
MEAN	100%	40.3		288.1		0.4	4
SD	0	0.9		42.1		0.4	0.6

Criteria 170.315(b)(2) - Clinical Information Reconciliation and Incorporation							
Task 2: Generate a new CCDA with reconciled data							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	23	12	171	21	1	4
11	1	12	12	130	21	0	5
12	1	37	12	151	21	1	3
13	1	12	12	169	21	0	2
14	1	28	12	178	21	1	3
15	1	31	12	130	21	1	3
16	1	12	12	159	21	0	3
17	1	24	12	134	21	1	3
18	1	12	12	138	21	0	4
19	1	12	12	97	21	0	2
Total	10					5	
MEAN	100%	20.3		145.7		0.9	3.2
SD	0	9.0		23.4		0.5	0.9

Discussion of Findings

Participants were given 2 tasks:

1. Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record.

2. Generate a new CCDA with reconciled data

Effectiveness

Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record.
The success score for this task was 100%.

Generate a new CCDA with reconciled data
The success score for this task was 100%.

Efficiency

Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record.
The average time to complete the task was 288.1 seconds compared to the optimal time of 61 seconds.

Generate a new CCDA with reconciled data
The average time to complete the task was 145.7 seconds compared to the optimal time of 105 seconds.

Satisfaction

Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record.
The average satisfaction rating for this task was 3.9 out of 5 on the Likert scale.

Generate a new CCDA with reconciled data
The average satisfaction rating for this task was 3.2 out of 5 on the Likert scale.

Major Findings

- About half of our participants didn’t utilize this feature frequently
- Many participants were confused on how to import a CDA using the “New Document” button
- Generally all the participants understood what data was already in the patient chart and what data they were merging into the chart
- Participants questioned why “Ignore” was the default reason when trying to merge patient data into their chart

- Participants mentioned that there were too many options and buttons on the clinical information reconciliation form which made everything seem flat with little visual hierarchy
- The flow for clinical information reconciliation has a lot of steps and confirmations, and many participants claimed it was to “Clicky”
- Many participants were confused about why the “Search” button was above the search filters when they were trying to create their CDA
- Almost all participants struggled to find the “Save” when they wanted to generate their CDA report

Areas for Improvement

- Add a clearer button label for “Import CDA”
- Make the buttons that step a user through the clinical information reconciliation process more prominent so they stand out from other options in the form
- Research why “Ignore” is our default action when bringing in medications, medication allergies, and problems into a patient's chart from a CDA
- Reduce the amount of overall clicks and warnings the user needs to address while performing clinical information reconciliation
- Move the “Search” button below the search filters on the Medical Records form
- Change the button label “CDA” to “Save” to make it more obvious to the user what action that button will perform

Criteria 170.315(b)(3) - Electronic Prescribing

Task 1: Create new prescription

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	11	11	133	41	0	5
11	1	11	11	122	41	0	5
12	1	11	11	109	41	0	5
13	1	11	11	101	41	0	5
14	1	11	11	132	41	0	5
15	1	11	11	99	41	0	4
16	1	11	11	138	41	0	4
17	1	11	11	122	41	0	5
18	1	16	11	113	41	1	5
19	1	11	11	105	41	0	5
Total	10					1	
MEAN	100%	11.5		117.4		0.2	4.8
SD	0	1.5		13.3		0.3	0.4

Task 2: Change prescription (dosage or duration)

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	8	4	23	8	0	5
11	1	4	4	22	8	0	5
12	1	4	4	29	8	0	5
13	1	4	4	8	8	0	5
14	1	4	4	38	8	0	5
15	1	4	4	8	8	0	5
16	1	4	4	20	8	0	5
17	1	4	4	12	8	0	5
18	1	4	4	22	8	0	5
19	1	4	4	9	8	0	5
Total	10					0	
MEAN	100%	4.4		19.1		0	5
SD	0	1.2		9.4		0	0.0

Task 3: Receive fill status notification

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	1	1	8	2	0	5
11	1	1	1	4	2	0	5
12	1	1	1	4	2	0	5
13	1	1	1	4	2	0	5
14	1	1	1	2	2	0	5
15	1	1	1	5	2	0	5
16	1	1	1	4	2	0	5
17	1	1	1	3	2	0	5
18	1	1	1	2	2	0	5
19	1	1	1	3	2	0	5
Total	10					0	
MEAN	100%	1		3.9		0	5
SD	0	0		1.6		0	0.0

Task 4: Cancel prescription

Participant ID	Task Success	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	Task Errors	Task Rating
3	1	5	5	15	4	0	5
11	1	5	5	5	4	0	5
12	1	21	5	68	4	1	5
13	1	5	5	19	4	0	5
14	1	5	5	11	4	0	5
15	1	5	5	18	4	0	5
16	1	5	5	12	4	0	5
17	1	5	5	22	4	0	5
18	1	5	5	12	4	0	5
19	1	5	5	16	4	0	5
Total	10					1	
MEAN	100%	6.6		19.8		0.2	5
SD	0	4.8		16.7		0.3	0.0

Task 5: Refill prescription							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	2	2	40	5	0	4
11	1	2	2	13	5	0	5
12	1	2	2	41	5	0	5
13	1	2	2	12	5	0	5
14	1	2	2	9	5	0	5
15	1	2	2	11	5	0	5
16	1	2	2	12	5	0	5
17	1	2	2	10	5	0	5
18	1	2	2	17	5	0	5
19	1	2	2	9	5	0	5
Total	10					0	
MEAN	100%	2		17.4		0	4.9
SD	0	0		11.8		0	0.3

Task 6: Request and receive medication history information							
Participant ID	**Task Success**	Task Path Deviation - **Observed Steps**	Task Path Deviation - **Optimal Steps**	Task Tme Deviations - **Observed**	Task Time Deviations - **Optimal**	**Task Errors**	**Task Rating**
3	1	4	4	45	4	0	5
11	1	4	4	12	4	0	5
12	1	4	4	28	4	0	5
13	1	4	4	18	4	0	5
14	1	4	4	42	4	0	5
15	1	4	4	9	4	0	5
16	1	4	4	23	4	0	5
17	1	4	4	36	4	0	5
18	1	4	4	22	4	0	5
19	1	4	4	33	4	0	5
Total	10					0	
MEAN	100%	4		26.8		0	5
SD	0	0		11.6		0	0.0

Discussion of Findings

Participants were given 6 tasks:

1. Create new prescription
2. Change prescription
3. Receive fill status notification
4. Cancel prescription
5. Refill prescription
6. Request and receive medication history information

Effectiveness

Create new prescription
The success score for this task was 100%. Participants had an easy time completing this task.

Change prescription
The success score for this task was 100%. Participants had an easy time completing this task.

Receive fill status notification
The success score for this task was 100%. Participants had an easy time completing this task.

Cancel prescription
The success score for this task was 100%. Participants had an easy time completing this task.

Refill prescription
The success score for this task was 100%. Participants had an easy time completing this task.

Request and receive medication history information
The success score for this task was 100%. Participants had an easy time completing this task.

Efficiency

Create new prescription
The average time to complete the task was 117.4 seconds compared to the optimal time of 41 seconds.

Change prescription
The average time to complete the task was 19.1 seconds compared to the optimal time of 105 seconds.

Receive fill status notification
The average time to complete the task was 3.9 seconds compared to the optimal time of 2 seconds.

Cancel prescription
The average time to complete the task was 19.8 seconds compared to the optimal time of 4 seconds.

Refill prescription
The average time to complete the task was 17.4 seconds compared to the optimal time of 5 seconds.

Request and receive medication history information
The average time to complete the task was 26.8 seconds compared to the optimal time of 4 seconds.

Satisfaction

Create new prescription
The average satisfaction rating for this task was 4.8 out of 5 on the Likert scale.

Change prescription
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Receive fill status notification
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Cancel prescription
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Refill prescription
The average satisfaction rating for this task was 4.9 out of 5 on the Likert scale.

Request and receive medication history information
The average satisfaction rating for this task was 5 out of 5 on the Likert scale.

Major Findings

- Participants were overall very comfortable performing all these tasks
- While prescribing a medication, all participants struggled to enter the “Days Supply”, “Disp #”, and “Refills” due to the fact that when you click inside the input fields the software adds a “0”, and the user has to go in and manually delete that number which causes them to slow down
- While searching for a medication the “Generic Name” column was too wide causing the other important information about the medication to be off screen, and the user would have to scroll to the right to see more
- Many participants mentioned that they used the “Medication History Information” feature, but that it wasn’t always reliable and it would take a long time to load the information

Areas for Improvement

- Fix the input fields for “Days Supply”, “Disp #”, and “Refills” so when a user clicks inside the field the software does not add a “0”

- Tighten up the columns inside the search box data table so medication information can be viewed without scrolling to the right
- Research into how we can make our “Medication History Information” button more reliable, and faster

APPENDICES

The following appendices include supplemental data for this usability test report. Following is a list of the appendices provided:

1. Sample recruiting emails
2. Participant demographics
3. Example moderator's guide
4. System usability scale questionnaire

Appendix 1: Sample Recruiting Emails

First Round

Group 1

We are recruiting clinicians (physicians, NPs, and PAs) to participate in a usability study. This is strictly for research purposes, and would only take around 60 minutes of your time. This study will take place via a online GoToMeeting, and will be recorded. You may schedule your participation at your convenience. We will be getting your feedback while you perform some basic tasks within the patients chart and demographics. Please fill out this quick questionnaire if you're interested in improving OP. If you have questions, please contact Sean Menne at smenne@officepracticum.com.

Group 2

We are actively recruiting clinicians (physicians, NPs, and PAs) to participate in a current usability study that will end on August 23. This is strictly for research purposes, and would only take around 60 minutes of your time. This study will take place via an online GoToMeeting, and will be recorded. We will be getting your feedback while you perform some tasks throughout OP. Tasks will be based around care plans, e-Prescribing, and clinical information reconciliation and incorporation. Please fill out this quick questionnaire if you're interested in improving OP. Once the questionnaire is completed we will reach out to schedule a date and time that is convenient for you. You will receive a $25 gift card(Walmart, Target or Starbucks) for your participation. If you have questions, please contact Sean Menne at smenne@officepracticum.com.

Second Round

My name is Sean, and I am the UX architect at Office Practicum. I want to thank you for filling out our usability questionnaire.

This usability session will be strictly for research purposes, and only take around 60 minutes of your time. This session will take place via GoTo Meeting, and will be recorded for later reference. I will attach a meeting link to our calendars once a date and time have been chosen.

I have attached a PDF (SED Participant Guide.pdf) to this email that has a list of tasks you will perform during the session. Please print out the PDF and have it with you during the session for reference.

To get this session started please click on the "RESERVE TIME" button below and choose a time slot that fits your schedule.

RESERVE TIME

Thanks again, and I look forward to meeting you soon.

Appendix 2: Participant Demographics

Gender

Men	14
Women	15
Total	29

Occupation/Role

CPNP	1
Doctor	2
MD	2
Pediatrician	9
Physician	11
Physician, Practice Manager	2
PNP	2

Age

30-39	1
40-49	13
50-59	13
60-69	6

Education

Doctorate degree (eg., MD, DNP, DMD, PhD)	26
Master's Degree	3

Experience

Years since completed professional training (Average)	22

Years of Computer experience (Average)	26
Years of Office Practicum Experience (Average)	8

Appendix 3: System Usability Scale Questionnaire

1. I think that I would like to use this system frequently

Strongly Disagree 1 2 3 4 5 Strongly Agree

2. I found the system unnecessarily complex

Strongly Disagree 1 2 3 4 5 Strongly Agree

3. I thought the system was easy to use

Strongly Disagree 1 2 3 4 5 Strongly Agree

4. I think that I would need the support of a technical person to be able to use this system

Strongly Disagree 1 2 3 4 5 Strongly Agree

5. I found the various functions in this system were well integrated

Strongly Disagree 1 2 3 4 5 Strongly Agree

6. I thought there was too much inconsistency in this system

Strongly Disagree 1 2 3 4 5 Strongly Agree

7. I would imagine that most people would learn to use this system very quickly

Strongly Disagree 1 2 3 4 5 Strongly Agree

8. I found the system very cumbersome to use

Strongly Disagree 1 2 3 4 5 Strongly Agree

9. I felt very confident using the system

Strongly Disagree 1 2 3 4 5 Strongly Agree

10. I needed to learn a lot of things before I could get going with this system

Strongly Disagree 1 2 3 4 5 Strongly Agree

Appendix 4: Example Moderator's Guide

MODERATORS GUIDE
EHRUT Usability Test
Administrator:
Data Logger:
Date:
Time:
Participant #:
Location:

Session 1: Drug-drug, drug-allergy interaction checks for CPOE

TASK 1: Adjust the severity of a displayed drug-drug interaction
Change the med/med e-prescribing interaction check from "All" to "Severe" and save the setting.

Optimal Path

1. Click "Admin" tab
2. Click "Global Preferences"
3. Click "Special" tab
4. Click "Prescribe" tab
5. Click med/med dropdown
6. Select "Severe"
7. Click "Close" on modal
8. Click "Yes" on save changes modal

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds
Clicks:_____

Observed Errors and Verbalizations:
Comments:

Rating:

Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Session 2: Demographics

Task 1: Change and display the patient's preferred language, date of birth, birth sex, race, ethnicity
Update Marilyn’s demographic information.

Optimal Path

1. Change date of birth to “5/17/1996”
2. Change sex to “Male”
3. Change gender identity to “Female-to-Male (FTM/Trans Man)”
4. Change orientation to “declined to specify”
5. Change language from “Greek” to “Spanish”
6. Change ethnicity to “declined to specify”
7. Change race to “White”

Click “Save” button
Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 2: Record a patient's preferred language, date of birth, birth sex, race, ethnicity
John Smith has just joined the practice, please add their information below:

Optimal Path

1. From Demographics click “New” button
2. Enter Last Name: Smith
3. Enter First Name: John
4. Enter Birthdate: January 30, 2016
5. Enter Sex: Male
6. Enter Gender Identity: Male
7. Enter Orientation: Straight or heterosexual
8. Enter Language: English
9. Enter Primary Address: 1234 Main Street
10. Enter City: Beverly Hills
11. Enter State: CA
12. Enter Zip: 90210
13. Enter Primary Phone: 818-212-1234
14. Enter Ethnicity: Not Hispanic or Latino
15. Enter Race: White
16. Enter Primary Provider: Doctor Kressly

Click “Save” button

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Session 3: Implantable Device List

TASK 1: Record a UDI

Add the Universal Device Identifier: (01)00827002005112(11)170505(17)180505(10)1234(21)8234.

Optimal Path

1. Click “New” button from implantable devices tab
2. Enter the UDI: (01)00827002005112(11)170505(17)180505(10)1234(21)8234
3. Click “Search” button
4. Enter Location (Body): Left Arm
5. Enter Date of Implant: July 4, 2019

Click “Save” button

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

TASK 2: Access UDI, device description, identifiers, and attributes

Access Peripheral Vascular Guidewire details.

Optimal Path

1. Click “peripheral Vascular Guidewire” row inside data table
2. Click “Edit” button

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 3: Change UDI Status
Change Peripheral Vascular Guidewire from “Active” to “Inactive” and enter inactive reason.

Optimal Path
1. Click “Active” under “Status” column
2. Click “Inactive”
3. Enter inactive reason
4. Click “Ok” button

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed

Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Session 4: Clinical Decision Support

Task 1: Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date

Access the "Definition" section of the "Bright Futures Preventive" care plan.

Optimal Path

1. Click "Care Plans" tab
2. Click on "Bright futures Preventive"

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 2: Add a CDS intervention and/or reference resource for Problem List

Add a care plan for children with ADHD.

Optimal Path

1. Click on “ADHD Hands On” care plan
2. Check “Active” checkbox
3. Click “Save”
4. Add “406506008” as an active SNOMED value
5. Click “Save”
6. Add the action type “Add” to “ADHD F/U” under actions section
7. Click “Save”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 3: Add a CDS intervention and/or reference resource for Medication List

Add a care plan for asthma.

Optimal Path

1. Click on “Sample - Med by name (albuterol)” care plan
2. Check “Active” checkbox
3. Click “Save”
4. Add the value “albuterol” in the “Triggers” section
5. Click “Save”
6. Click on “Click here to add a new action”
7. From “Item Name” Dropdown select “Asthma Action Plan”
8. From “Action Type” select “Add”
9. Click “Save”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 4: Add a CDS intervention and/or reference resource for Medication Allergy List

Add a care plan for children with a penicillin allergy.

Optimal Path

1. Click on “Sample - Allergy (Penicillin)” care plan

2. Check “Active” checkbox
3. Click “Save”
4. Add the value “cillin” to “Active med allergy”
5. Click “Save”
6. Add the action type “Add” to “Allergy action plan”
7. Click “Save”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 5: Add a CDS intervention and/or reference resource for at least one Demographic

Add a care plan for demographics.

Optimal Path

1. Click on “Sample - Demographics (preventive)” care plan Save Plan
2. Check “Active” checkbox
3. Click “Save”
4. Add the value “3” to “age in years”
5. Click “Save”
6. Click “Click here to add a new action”
7. Add the item name “Urine Screen”
8. Add the action type “Add”

9. Click “Save”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 6: Add a CDS intervention and/or reference resource for Laboratory Test

Add a care plan for children with high cholesterol.

Optimal Path

1. Click on “Sample - Lab Value (Hyperlipidemia)” care plan
2. Check “Active” care plan
3. Click “Save”
4. Add the value “180” to “total cholesterol” trigger
5. Click “Save”
6. Add the action type “Add” to “Lipid profile (annual)” under actions
7. Click “Save”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed

Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 7: Add a CDS intervention and/or reference resource for Vital Signs

Add a care plan for children with a high BMI%.

Optimal Path

1. Click on "Obesity Monitoring" care plan
2. Check "Active" checkbox
3. Click "Save"
4. Add the value "95" to the "Most Recent BMI%" trigger
5. Click "Save"
6. Add the action type "Supress" to "weight" under the actions section
7. Click "Save"

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 8: Add a CDS intervention and/or reference resource for a combination of 2 elements (Vital Signs and Problem List)

Add a care plan that utilizes vital signs and an active problem.

Optimal Path

1. Click on "Sample - Vital Sign (Failure to Thrive)" care plan
2. Check "Active" checkbox
3. Click "Save"
4. Add the value "10" to "weight %" under triggers section
5. Add the SNOMED code "54840006" to "active SNOMED" item under the triggers section
6. Click "Save"
7. Add the value "Add" to "Weight (monthly)" under the actions section
8. Click "Save"

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 9: Trigger the CDS interventions/resources added using the applicable data elements for at least one Demographic

Trigger a care plan using demographic data.

Optimal Path

1. Click on “Care Plans” tab inside Adrianas chart
2. Click “Yes” on enrollment notification
3. Click “Enroll” next to demographic care plan
4. Click “Done”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 10: Trigger the CDS interventions/resources added using the applicable data elements for Problem List

Trigger an ADHD care plan.

Optimal Path

1. Click on “Problem List” tab
2. Click “New”
3. Add the problem “ADHD”
4. Click “Save”
5. Click “Yes” on enrollment notification
6. Click “Enroll” next to ADHD Hands On care plan

7. Click “Done”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 11: Trigger the CDS interventions/resources added using the applicable data elements for Medication List

Trigger an Albuterol care plan.

Optimal Path

1. Click on “Medications” tab
2. Click “New”
3. Add “Albuterol”
4. Select “Albuterol Sulfate HFA Aerosol with Adapter - 90 mcg/acutation)
5. Action “Take”
6. Dose “2”
7. Units “Puffs”
8. Route “By Mouth”
9. Frequency “Twice a day”
10. Add days supply as “7”
11. Add Disp# as “1”
12. Change “Inhaler” to “Applicator”
13. Set refills to “0”

14. Click “Save”
15. Click “Yes” on enrollment notification
16. Click “Enroll” next to “Med by name (albuterol) care plan
17. Click “Done”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 12: Trigger the CDS interventions/resources added using the applicable data elements for Medication Allergy List

Trigger a Penicillin care plan.

Optimal Path

1. Click on “Allergies” tab
2. Click “New”
3. Add the medication “Penicillin V potassium 500 mg table”
4. Add the “Allergy Group” as “Penicillins”
5. Click “Save”
6. Click “Yes” on enrollment notification
7. Click “Enroll” next to Allergy (Penicillin) care plan
8. Click “Done”

Correct
Minor Deviations

Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 13: Trigger the CDS interventions/resources added using the applicable data elements for Laboratory Test

Trigger a high cholesterol care plan.

Optimal Path

1. Click on "Diagnostic Tests" tab
2. Click on "New In-House" button
3. Check the checkbox next to "Total Cholesterol" test
4. Add the results "200"
5. Click "Save"
6. Click "Yes" on enrollment notification
7. Click "Enroll" next to "Lab value (Hyperlipidemia) care plan
8. Click "Done"

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help

Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 14: Trigger the CDS interventions/resources added using the applicable data elements for Vital Signs

Trigger an Obscenity Monitoring care plan.

Optimal Path

1. Click on "Vitals/Growth" tab
2. Click "New" under "Growth Measurements"
3. Add stature as 60 inches
4. Add weight as 220 lb
5. Click "Save"
6. Click "Yes" on enrollment notification
7. Click "Enroll" next to obesity monitoring care plan
8. Click "Done"

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:

Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 15: Trigger the CDS interventions/resources added using the applicable data elements for a combination of 2 elements (Vitals Signs and Problem List)

Trigger a care plan using Vital Sign data and an Active SNOMED code.

Optimal Path

1. Click on "Problem List" tab
2. Click "New"
3. Add "failure to thrive" as a problem
4. Click "Save"
5. Click "Yes" on enrollment notification
6. Click "Enroll" next to failure to thrive care plan
7. Click "Done"

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 16: View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics

View resource information for the ADHD F/U care plan, Asthma Action care plan and Urine Screen care plan.

Optimal Path

1. Click on “Care Plans” tab
2. Click “Info” icon next to ADHD F/U care plan
3. Click on red “X” to close browser
4. Click “Info” icon next to Asthma Action Plan
5. Click on red “X” to close browser
6. Click “Info” icon next to Urine Screen care plan
7. Click on red “X” to close browser

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Session 5: Clinical Information Reconciliation and Incorporation

TASK 1: Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record. Also, Trigger the CDS interventions/resources based on data

elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary

Import a CDA, and reconcile the patients data.

Optimal Path

1. Click “Document Mgmt” in toolbar
2. Click “New Document”
3. Click “Import Documents” dropdown
4. Click “Import CDA”
5. Select “sample_drug”
6. Click “Open”
7. Click “Patient ID” field
8. Enter patient ID “6776”
9. Click “Search”
10. Select patient name
11. Click “Select”
12. Click “Save”
13. Click “Reconcile”
14. Click “Problem List” tab
15. Click “Merge”
16. Click “Add” from the dropdown next to “Attention deficit hyperactivity disorder”
17. Click “Review”
18. Click “Submit”
19. Click “Yes” to merge data
20. Click “Yes” on care plan notification modal
21. Click “Enroll” next to “ADHD Hands On” care plan
22. Click “Done”
23. Click “Allergies/Rxnx” tab
24. Click “Merge”
25. Click “Add” from the dropdown next to “penicillin V potassium”
26. Click “Review”
27. Click “Submit”
28. Click “Yes” to merge data
29. Click “Yes” on care plan notification modal
30. Click “Enroll” next to “Sample - Allergy (Penicillin)” care plan
31. Click “Done”
32. Click “Medications” tab
33. Click “Merge”
34. Click “Add” from the dropdown next to “Albuterol HFA Aerosol with Adapter”
35. Click “Review”
36. Click “Submit”
37. Click “Yes” to merge data

38. Click “Yes” on care plan modal notification
39. Click “Enroll” next to “Sample - Med by name (albuterol)” care plan
40. Click “Done”

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

TASK 2: Generate a new CCDA with reconciled data

Generate a new CDA with the patients reconciled data.

Optimal Path

1. Click “Medical Records” under “Reports” from Clinical Tab
2. Change report criteria from “Full Record Release” to “Event Chronology, ALL”
3. Change date to “Latest 24 Months”
4. Click “Search”
5. Select “Problem List” from 3 yrs. 7 mos. row
6. Select “Med Allergy” from 3 yrs. 7 mos. row
7. Select “Medications” from 3 yrs. 7 mos. Row
8. Click “CDA”
9. Click “Save”
10. Click “Desktop” as save location
11. Click “Select”
12. Click “OK” on download confirmation notification

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Session 6: e-Prescribing

Task 1: Create new prescription

Prescribe Advair.

Optimal Path

1. Click "New" button
2. Add the drug "Advair HFA 45/21"
3. Add Sig - Take, 1, Puffs, By Mouth, Twice a Day
4. Add Days Supply: 7
5. Disp# - 1
6. Change “Inhaler” to “Applicator”
7. Refills - 1
8. Click the SEND button
9. Select "Favorites Tab"
10. Select the location: “Albert”
11. Click the SEND button

Correct
Minor Deviations
Major Deviations

Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 2: Change prescription

Change the dose from 1 to 2 puffs before sending it to the pharmacy.

Optimal Path

1. Click on the EDIT button
2. Change dose from "1" to "2" puffs a day
3. Click the SEND button
4. Click the SEND button again

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:

Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 3: Receive fill status notification

View your fill status notifications.

Optimal Path

1. Locate a view status column inside medications tab

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 4: Cancel prescription

Cancel your Advair prescription.

Optimal Path

1. Click the checkbox next to “Advair HFA Aerosol 45-21 mcg/Actuation”

2. Click “Delete” button
3. Click “OK” on warning modal
4. Select “Cancelled” from dropdown reason field
5. Click “OK” button inside modal

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: “Very Difficult” (1) to “Very Easy” (5)

Administrator / Notetaker Comments:

Task 5: Refill prescription

Refill Josiah's Cholecalciferol Drops.

Optimal Path

1. Click the checkbox next to Cholecalciferol Drops
2. Click the “Refill” button

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments:

Task 6: Request and receive medication history information

Request and locate medical history for Kara Whiteside (Patient: 8091) from 3 months back.

Optimal Path

1. Click "Medications" tab
2. Click "Med History" button
3. Click "OK" to return records from 3 months back
4. Locate external medical list

Correct
Minor Deviations
Major Deviations
Comments:

Success:
Easily completed
Completed with difficulty or help
Not completed
Comments:

Task Time: _____ Seconds

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was:
Show participant written scale: "Very Difficult" (1) to "Very Easy" (5)

Administrator / Notetaker Comments: