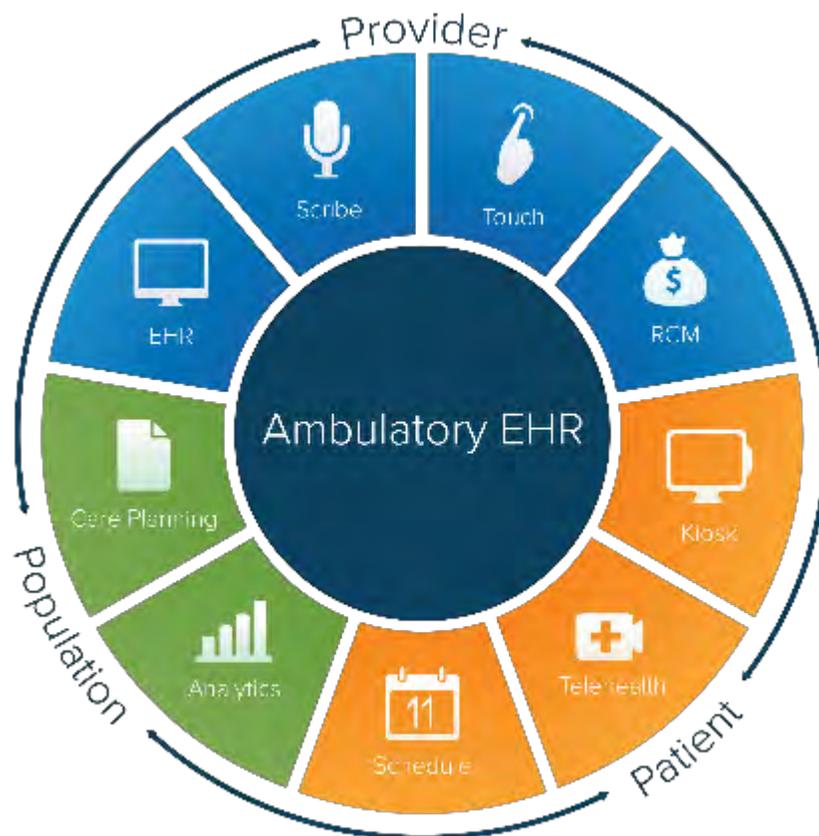


eClinicalWorks

EHR USABILITY REPORT FOR eCLINICALWORKS V11

Safety Enhanced Design 170.315 (g)(3)—January 2018

Report based on ISO/IEC 25062:2006 Common Industry Format for Usability Test Reports



DOCUMENT CHANGE LOG

Date	Author	Change
11/1/2017	Bryan Sequeira	Initial creation

eClinicalWorks Version 11

Date of Usability Test: 10/25/2017 - 11/7/2017

Date of Report: 11/8/2017

Report Prepared By: Bryan Sequeira: Product Manager, eClinicalWorks

eClinicalWorks Proctors

Bryan Sequeira: Product Manager, eClinicalWorks

Jordan Stagg-Parmenter: Product Analyst, eClinicalWorks

Toi Anderson: Product Analyst, eClinicalWorks

Anshuman Mishra: Business Development, eClinicalWorks

Elizabeth Corbett: Product Analyst, eClinicalWorks

Amol Pathak: Enterprise Implementation Specialist, eClinicalWorks

Dr Idris Dahod: Physician Relations, eClinicalWorks

Contact:

Bryan Sequeira: 508-475-0600 x 13501

bryan.sequeira@eclinicalworks.com

2 Technology Drive, Westborough, MA 01581

CONTENTS

1. EXECUTIVE SUMMARY	5
2. INTRODUCTION	6
3. METHOD	6
3.1 Participants	6
3.1.1 Physician Participants	7
3.1.2 Nurse Participants	8
3.2 Study Design	9
3.3 Tasks	10
3.4 Procedures	10
3.5 Test Location	11
3.6 Test Environment	11
3.7 Test Forms and Tools	11
3.8 Participant Instructions	12
3.9 Usability Metrics	12
Data Scoring	13
4. RESULTS	14
4.1 §170.315 (a)(1) Computerized Physician Order Entry – Medications	15
4.1.1 Data Analysis and Reporting	15
4.1.2 Discussion of Findings	15
4.2 §170.315 (a)(2) Computerized Physician Order Entry - Labs	16
4.2.1 Data Analysis and Reporting	16
4.2.2 Discussion of Findings	17
4.3 §170.315 (a)(3) Computerized Physician Order Entry – Diagnostic Imaging	17
4.3.1 Data Analysis and Reporting	17
4.3.2 Discussion of Findings	18
4.4 §170.315 (a)(4) Drug- Drug, Drug – Allergy Interaction Checks	19
4.4.1 Data Analysis and Reporting	19
4.4.2 Discussion of Findings	19
4.5 §170.315 (a)(5) Demographics	20
4.5.1 Data Analysis and Reporting	20

4.5.2 Discussion of Findings	21
4.6 §170.315 (a)(6) Problem List	22
4.6.1 Data Analysis and Reporting	22
4.6.2 Discussion of Findings	22
4.7 §170.315 (a)(7) Medication List	23
4.7.1 Data Analysis and Reporting	23
4.7.2 Discussion of Findings	24
4.8 §170.315 (a)(8) Medication Allergy List	24
4.8.1 Data Analysis and Reporting	24
4.8.2 Discussion of Findings	25
4.9 §170.315 (a)(9) Clinical Decision Support	26
4.9.1 Data Analysis and Reporting	26
4.9.2 Discussion of Findings	26
4.10 §170.315 (a)(14) Implantable Device List	27
4.10.1 Data Analysis and Reporting	27
4.10.2 Discussion of Findings	27
4.11 §170.315 (b)(2) Clinical Information Reconciliation and Incorporation	28
4.11.1 Data Analysis and Reporting	28
4.11.2 Discussion of Findings	29
4.12 §170.315 (b)(3) Electronic Prescribing	30
4.12.1 Data Analysis and Reporting	30
4.12.2 Discussion of Findings	30

APPENDIX A: NOTICES 31

Trademarks	31
Copyright	31

APPENDIX B: TASKS 32

Provider Tasks	32
Nurse Tasks	33

APPENDIX C: RISK ANALYSIS OF TASKS 35

1. Executive Summary

A usability test of eClinicalWorks, V11, Ambulatory EHR was conducted from October 25, 2017 to November 7, 2017 at various provider locations by eClinicalWorks proctors. The purpose of this test was to test and validate the usability of the current user interface and provide evidence of the usability of eClinicalWorks V11. During the usability test, 14 Healthcare Providers (Doctors/Nurse Practitioners) and 12 Nurses/MAs matching the target demographic criteria served as participants and used eClinicalWorks in simulated, but representative tasks. This study collected performance data on 16 tasks typically conducted in an EHR (details in section 3.3); 10 of the tasks applied to provider workflow and six of the tasks applied to the nurse workflow.

During the 90-minute one-on-one usability test, each participant was greeted by the administrator and educated on the contents of the safety enhanced design study. They were also informed they could withdraw at any time. Some participants had prior experience with the EHR and others did not. All participants were given the opportunity to complete training simulating what a real end-user would receive prior to participating in the usability test. Some users declined the training and opted to test the system directly, many of whom were seeing the software for the first time. The administrator introduced the test and instructed participants to complete a series of tasks (given one at a time) using eClinicalWorks. During the testing, the administrator timed the test and, along with the data logger(s) recorded user performance data electronically or on paper if the electronic form was not available. The administrator did not give the participant assistance in how to complete the task. Participant screens, head shots and audio were recorded for subsequent analysis.

The following types of data were collected for each participant:

- Number of tasks successfully completed without assistance
- Time to complete the tasks (in seconds)
- Number of erroneous steps outside the optimal path
- Participant's satisfaction ratings of the system using a Likert Scale
- Participant's verbalized feedback

All participant data was de-identified – no correspondence could be made from the identity of the participant to the data collected. During the testing, participants were asked to complete a questionnaire and were not compensated for their time.

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 eClinicalWorks. The following is a summary of the performance and rating data collected on eClinicalWorks.

2. Introduction

The EHRUT(s) tested for this study was eClinicalWorks, V11. Designed to present medical information to healthcare providers in outpatient and specialty settings, the eClinicalWorks application consists of comprehensive solutions for the next-generation healthcare IT, allowing practices to improve efficiency and enhance patient care. Using industry-leading technology, eClinicalWorks will help medical practice achieve its goal of delivering the best patient care possible. 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 eClinicalWorks. To this end, measures of effectiveness, efficiency, and user satisfaction, such as:

- Demographics
- Medication List
- Medication allergy list
- Clinical information reconciliation
- Implant List
- Problem List
- Clinical decision support
- Computerized provider order entry
- Drug-drug, drug-allergy interaction checks
- Electronic prescribing

3. Method

3.1 Participants

A total of 26 participant were tested on eClinicalWorks. Participants in the test included 14 Physicians/ Nurse Practitioners and 12 Nurses/Medical Assistants. Participants were recruited by eClinicalWorks and not compensated for their time. Participants were given the opportunity to have the same orientation and level of training as the actual end users would have received. Participants had a mix of backgrounds and demographic characteristics. 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 his or her identity.

3.1.1 Physician Participants

Part ID	Gender	Age	Education	Occupation /Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology
P1	Female	40-49	Master's degree	CMIO/PI	Infectious Disease	20	16	No
P2	Male	50-59	Doctorate degree (e.g. MD, DNP.	Physician	Infectious Disease/ Internal Medicine	37	11	No
P3	Male	50-59	Doctorate degree (e.g. MD,	Physician	Gastroenterology	20	10	No
P4	Male	40-49	Doctorate degree (e.g. MD,	Physician	Family Medicine	25	11	No
P5	Male	60-69	Doctorate degree (e.g. MD,	Family Physician /Chief	Family Medicine	20	2	No
P6	Female	40-49	Doctorate degree (e.g. MD,	Physician /CEO	Obesity Medicine/ Internal	30	8	No
P7	Female	50-59	Doctorate degree (e.g. MD,	Internist	Internal Medicine	20	10	No
P8	Male	40-49	Doctorate degree (e.g. MD,	Physician /AVP for Care	Internal Medicine	25	10	No
P9	Female	30-39	Master's degree	Family Nurse Practitioner	Family Medicine/ Obesity	25	1	No
P10	Female	30-39	Master's degree	Nurse Practitioner	Family Medicine	25	3	No
P11	Female	50-59	Doctorate degree (e.g. MD,	Nurse Practitioner/	Family Practice / GYN	30	9	No
P12	Female	40-49	Master's degree	Nurse Practitioner	Oncology	20	0	No

Part ID	Gender	Age	Education	Occupation /Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology
P13	Male	60-69	Doctorate degree (e.g. MD,	Physician	Family Medicine	25	11	No
P14	Female	40-49	Doctorate degree (e.g. MD,	Primary Care Physician	Primary Care/Family Medicine	20	5	No

Table [1]. Details of physician participants.

3.1.2 Nurse Participants

Part ID	Gender	Age	Education	Occupation /Role	Professional Experience	Computer Experience (Years)	eCW Product Experience (Years)	Assistive Technology Needs
N1	Female	30-39	Bachelor's degree	Registered Nurse	ER Nurse	15	0	No
N2	Female	30-39	Associate degree	Clinical Supervisor	Internal Medicine/Bariatrics	15	4	No
N3	Female	50-59	Associate degree	Registered Nurse	Pediatrics	10	0	No
N4	Female	30-39	Associate degree	Nurse	Nurse	3	0	No
N5	Male	30-39	Bachelor's degree	Nurse	Nurse	7	0	No
N6	Female	40-49	Associate degree	Nurse	Nurse	2	0	No
N7	Female	50-59	Bachelor's degree	Resident Nurse	Cardiology	10	0	No
N8	Female	50-59	Master's degree	Staff Nurse	OB/GYN	10	0	No
N9	Female	40-49	Bachelor's degree	Registered Nurse	Pedi Cardiology	20	0	No

Part ID	Gender	Age	Education	Occupation /Role	Professional Experience	Computer Experience (Years)	eCW Product Experience (Years)	Assistive Technology Needs
N10	Female	30-39	Some college credit, no degree	Medical Assistant	Pediatrics	20	9	No
N11	Female	20-29	Bachelor's degree	Student Nurse Practitioner	Women's health	15	0	No
N12	Female	30-39	Bachelor's degree	Pediatric Nurse	Pediatric nurse	10	0	No

Table [2]. Details of nurse participants.

26 participants (matching the demographics in the section on participants) participated in the usability test. 0 participants failed to show for the study.

Participants were scheduled for 90 minute sessions with 5 minutes in between each session for debrief by the administrator(s) and data logger(s), and to reset systems to proper test conditions. An excel form was used to keep track of the participant schedule, which included each participant's demographic characteristics as provided by the participant.

3.2 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 may be made. During the usability test, participants interacted with 1 EHR. Each participant used the system in the participant-defined location, 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 Section 3.9 on Usability Metrics.

3.3 Tasks

A number of 16 tasks were constructed that would be realistic and representative of the kinds of activities a user might conduct with the EHR, including:

- Computerized provider order entry (Medications, Labs and Diagnostic Imaging)
- Medication List
- Medication allergy list
- Drug-drug, drug-allergy interaction checks
- Electronic prescribing
- Clinical decision support
- Clinical information reconciliation
- Implantable Device
- Problem List
- Demographics

Tasks were selected based on their frequency of use, criticality of function, and those that may be most troublesome for users. Tasks were constructed in light of the study objectives. A detailed list of the tasks provided to the participants can be accessed from Appendix B.

3.4 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 the test ran smoothly, one or more staff members participated in this test: the usability administrator and the data logger (if only one staff was available to administer the test, the recordings were reviewed for accuracy). The usability testing staff member conducting the test had on average 5.5 years of experience with the eClinicalWorks software. The administrator moderated the session, including administering instructions and tasks. The administrator also monitored task times, obtained post-task rating data, and took notes on participant comments. A second person (if available) served as the data logger and took notes on 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 written copy of the task. Task timing began once the administrator finished reading the question. The task time was recorded for each completed task. Scoring is discussed below in Section 3.9.

During the session, the test questionnaire was administered (e.g., the Likert Scale). Participants' demographic information, task success rate, time on task, errors, deviations, verbal responses, and post-test questionnaire were recorded into an excel form. Participants were thanked for their time.

3.5 Test Location

The test facility varied by participant, since eClinicalWorks proctors traveled to meet each participant in a location of their choosing. A computer, computer mouse, barcode scanner, and iPad for the participant, and a recording computer for the administrator were provided. Only the participant(s), data loggers (when available) and test administrator were in the room. Since participants chose their test location the noise and temperature levels could not be controlled by the proctors, however, they would be at a level comfortable to the participant. Availability of safety instruction and evacuation procedures were at the discretion of the participant chosen locations.

3.6 Test Environment

The eClinicalWorks application would be typically be used in a healthcare office or facility. In this instance, the testing was conducted in various business office and home settings. For testing, the computer used was an eCW laptop computer running Windows 8. The participants used a mouse, keyboard and barcode scanner when interacting with eClinicalWorks. eClinicalWorks used a 14 inch laptop monitor, LCD and color display, 1920 x 1080 resolution. The chrome browser settings were set at the default 100%. The application was set up by eClinicalWorks according to the vendor's documentation describing the system setup and preparation. The application itself was running on a HTML/XML Format, Chrome browser and iPad with eClinicalTouch app using a test database setup on the eCW cloud and accessed via a Wireless Internet connection. Technically, the system performance (i.e., response time) was representative to what actual users would experience in a field implementation. Additionally, participants were instructed not to change any of the default system settings (such as control of font size).

3.7 Test Forms and Tools

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

- Moderator's Guide
- Participants Guide

The Moderator's Guide was devised to be able to capture required data. The participant's interaction with the eClinicalWorks application was captured and recorded digitally with screen capture software (Camtasia®) running on the test machine. A video camera (smartphone, action camera, or similar) recorded each participant's facial expressions synced with the screen capture, and verbal comments were recorded with a smartphone, action camera, or similar camera.

3.8 Participant Instructions

The administrator reads the following instructions aloud to each participant (also see the full moderator's guide in Appendix [B4]):

Thank you for participating in this study. Your input is very important. Our session today will last about 60 minutes. During this time, you will be using electronic health record software. I will ask you to complete a few tasks using this system and answer some questions. You should complete the tasks as quickly as possible, making as few errors as possible. Please try to complete the tasks on your own following the instructions very closely. 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. I will be here in case you need specific help, but I am not able to instruct you or provide help in how to use the application.

Overall, we are interested in how easy (or how difficult) this system is to use, what in it would be useful to you, and how we could improve it. Please be honest with your opinions. All of the information that you provide will be kept confidential and your name will not be associated with your comments at any time. Should you feel it necessary, you are able to withdraw at any time during the testing.

Following the procedural instructions, participants were shown the EHR and, as their first task, were given an optional time (20 minutes) to explore the system and make comments. Once this task was completed, the administrator gave the following instructions:

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 your impressions about the task once you are done.

Participants were then given six or 10 tasks to complete based on their role. Tasks are listed in the moderator's guide.

3.9 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:

- Effectiveness of eClinicalWorks V11 by measuring participant success rates and errors
- Efficiency of eClinicalWorks V11 by measuring the average task time and path deviations
- Satisfaction with eClinicalWorks V11 by measuring ease of use ratings

Data Scoring

The following table (Table [3]) details how tasks were scored, errors evaluated, and the time data analyzed.

Measures	Rationale and Scoring
Effectiveness: Task Success	<p>A task was counted as a “Success” if the participant was able to achieve the correct outcome, without assistance, 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.</p> <p>Task times were recorded for successes. Observed task times divided by the optimal time for each task is a measure of optimal efficiency.</p> <p>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 the factor 10 that allows some time buffer because the participants are presumably not trained to expert performance. Thus, if expert, optimal performance on a task was 30 seconds then allotted task time performance was $30 * 10 = 300$ seconds. This ratio should be aggregated across tasks and reported with mean and variance scores.</p>
Effectiveness: Task Failures	<p>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 a “Failure.”</p> <p>Task times were taken for errors to show that the system was not being effective.</p> <p>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.</p> <p>On a qualitative level, an enumeration of errors and error types should be collected. This should also be expressed as the mean number of failed tasks per participant.</p>
Efficiency: Task Deviations	<p>The participant’s path (i.e., steps) through the application was recorded.</p> <p>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 deviations be reported. Optimal paths (i.e., procedural steps) should be recorded when constructing tasks.</p>

Measures	Rationale and Scoring
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	<p>Each participant's subjective impression of the ease-of-use of the application was measured by administering a simple post-task question. After each task, the participant was asked to rate "Overall, this task was easy:" on a scale of 1 (Strongly Agree) to 5 (Strongly Disagree). This data was averaged across participants.</p> <p>Common convention is that average ratings for systems judged easy-to-use should be 3.3 or below.</p> <p>To measure participants' confidence in and likeability of eClinicalWorks overall, the testing team administered using a verbal confirmation of the Likert ranking.</p>

Table [3]. Details of how observed data were scored.

4. Results

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

The usability testing results for eClinicalWorks are detailed (see Table [1]). The results should be seen in light of the objectives and goals outlined in Section 3.2 Study Design. The data should yield actionable results that, if corrected, yield material, positive impact on user performance.

The results from the Likert Scale scored the subjective satisfaction with the system based on performance with these tasks to be: 2. Broadly interpreted, scores over 3 represent systems with poor usability; scores under 2 would be considered above average.

4.1 §170.315 (a)(1) Computerized Physician Order Entry – Medications

4.1.1 Data Analysis and Reporting

Computerized Provider Order Entry Medications Task 5	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed / Optimal)	Mean (SD) seconds	Deviation (Observed / Optimal)	Mean (SD)	Mean (SD)
Task P5 (Desktop)	13	100% (0)	1/9	66 (29.35)	39/27	9% (0.93)	1.92 (0.86)
Task P5 (Browser)	13	92% (0.27)	7/14	56 (33.42)	31/33	10% (2.69)	1.92 (1.04)
Task P5 (iPad)	12	83% (0.37)	5/11	68 (89.14)	49/23	23% (5.68)	1.83 (0.83)

4.1.2 Discussion of Findings

Efficiency

Users of the desktop version consistently errored lower on the Desktop and Browser version than on the iPad largely due to familiarity of the User Interface.

Effectiveness

The task success of the participants on the Desktop and Browser were over 90% since users were familiar with this user interface. Some users were using the iPad app for the first time and took longer to orient themselves with the new User Interface.

Satisfaction

On an average, participants agreed that the user interface was easy to use when using the treatment screen and adding medications. Some users discovering features like the quick orders section or linked orders to Order Sets and eCliniSense showed higher user satisfaction of the order entry for medications.

Major findings

When participants were changing the dose of the medication, they clicked on the treatment screen and were instantly brought to the treatment page with no medications set. Participants

had to navigate to the tab called current meds to stop the current strength of Lipitor and add a new order.

Participants constantly looked for an option to change the strength, similar to Continue, Stop, Refill etc. to change the dose. This was easier for users to do on the iPad.

Areas for improvement

- Consider changing the “share” button, a common icon used for sharing on the iOS platform that was used to indicate the eRx function. This was not common knowledge to some of the users new to the iOS platform.
- Consider adding a “Change Rx” icon like the Continue, Refill 30, 60, 90 days etc. This should add the medication status of Increase/Decrease or Stop and Start the new medication.
- Consider changing the comments label to Status on the iPad. Users were not able to find the status easily.

4.2 §170.315 (a)(2) Computerized Physician Order Entry - Labs

4.2.1 Data Analysis and Reporting

Computerized Provider Order Entry	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P7 (Desktop)	13	100% (0)	1/3	24 (10.77)	11/13	3% (0.28)	1.31 (0.48)
Task P8 (Desktop)	13	92% (0.27)	1/3	35 (40.34)	14/20	21% (1.33)	1.54 (0.66)
Task P7 (Browser)	13	100% (0)	1/3	31 (24.19)	15/15	8% (0.60)	1.62 (0.51)
Task P8 (Browser)	13	100% (0)	1/4	34 (37.14)	30/8	4% (0.38)	1.46 (0.52)
Task P7 (iPad)	12	100% (0)	2/3	28 (18.79)	26/11	19% (1.51)	1.58 (0.51)
Task P8 (iPad)	12	100% (0)	2/3	42 (35.71)	31/11	33% (1.81)	1.75 (0.62)

4.2.2 Discussion of Findings

Efficiency

Overall the efficiency of participants completing the ordering and modifying of lab orders was within a step of the optimal path and the deviation in time only exceeded the optimal time on the iPad. This is understandable since most users were using the platform for the first time and taking time to learn the new User Interface.

Effectiveness

Participants were successful over 99% (average) of the time when completing the six tasks for ordering and modifying lab orders. Task failures were less than 10% for the desktop and browser versions except for one scenario.

Satisfaction

Users consistently rated the task between Strongly Agree and Agree that the tasks were easy to do on all three modalities.

Major findings

Participants pointed out they needed to adjust to the User Interface on all the modalities since they are slightly different.

Areas for improvement

- Consider keeping the User Interface across modalities consistent while optimized.
- Consider giving the user a confirmation popup once the order is placed on the iPad.

4.3 §170.315 (a)(3) Computerized Physician Order Entry – Diagnostic Imaging

4.3.1 Data Analysis and Reporting

Computerized Provider Order Entry Diagnostic Imaging	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P9 (Desktop)	13	100% (0)	3/2	32 (25.76)	21/12	15% (0.85)	1.62 (0.51)
Task P10 (Desktop)	13	100% (0)	1/2	16 (14.44)	10/8	12% (0.60)	1.38 (0.51)
Task P9 (Browser)	13	100% (0)	1/3	18 (11.99)	10/15	13% (0.96)	1.38 (0.51)

Computerized Provider Order Entry Diagnostic Imaging	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P10 (Browser)	13	100% (0)	1/4	23 (15.60)	15/11	13% (0.66)	1.31 (0.48)
Task P9 (iPad)	12	100% (0)	4/3	55 (60.48)	40/15	61% (2.12)	2.00 (1.13)
Task P10 (iPad)	12	92% (0.28)	1/3	16 (13.44)	8/11	19% (1.24)	1.58 (0.51)

4.3.2 Discussion of Findings

Efficiency

Task times were consistently within range of the optimal time, except for the iPad where users took longer to adjust to a new interface. Path deviation from the optimal path was also within a step.

Effectiveness

Participant performance was within 98% success rate for all six tasks of adding and updating Diagnostic Imaging orders. Some participants' systems are configured differently from the test system with favorites setup which usually speed up their ordering process.

Satisfaction

User satisfaction for ease of using the system averaged at 1.54 and was consistently between strongly agree and agree with iPad satisfaction leaning towards agree.

Major findings

Users were typing in various combinations of "X-Ray", "xray", "x ray" while the system had the order saved as x ray : ankle 2 view. This made it harder to find the x-ray order.

Participants noticed the ease of sending orders with the Send button on the browser made it easy to group and send out orders.

Participants were not able to find the DI icon on the iPad which was one of the major reasons for errors and slow task times, since icons for Rx and Labs exist, but not for DI.

Areas for improvement

- Consider allowing synonym search which will treat "xray", "x-ray" and "x ray" all the same.
- Consider allowing moving future orders from the treatment screen to today's visits.
- Consider adding an icon for Diagnostic Imaging on the iPad for orders.

4.4 §170.315 (a)(4) Drug- Drug, Drug – Allergy Interaction Checks

4.4.1 Data Analysis and Reporting

Drug-Drug, Drug-Allergy Interaction Checks	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P6 (Desktop)	13	100% (0)	2/9	69 (47.76)	30/47	0% (0)	2 (1)
Task P6 (Browser)	13	92% (0.27)	2/9	63 (45.58)	37/33	10% (2)	1.69 (0.95)
Task P6 (iPad)	12	92% (0.28)	4/10	82 (54.72)	64/18	23% (4)	1.83 (0.94)

4.4.2 Discussion of Findings

Efficiency

Task times were consistently within range of the optimal time, except for the iPad where users took longer to adjust to a new interface. Path deviation was also within 2 steps of the optimal path.

Effectiveness

Participant performance was within 95% success rate for all three tasks of ordering, receiving the drug to drug allergy interaction and e-prescribing the order. Some participants systems are configured differently from the test system with drug to drug allergy interaction set to critical, which usually speed up their medication ordering and sending process.

Satisfaction

Participant satisfaction for the ease of using the system averaged at 1.84 and ranged between Strongly Agree and Agree.

Major findings

Participants found the drug to drug and drug to allergy interactions quite lengthy to review, claiming that there was a lot of noise and having a more concise list would be more beneficial and reduce click fatigue. Participants generally appeared to skim over the drug to drug and drug to allergy interaction page without completely reviewing all the data on the screen. Participants noted that the iPad version did not pop up an alert when a drug to drug or drug to allergy interaction was noted. The user had to click on the button to view the information.

Areas for improvement

Consider condensing the information presented on the drug to drug and drug to allergy interaction screen pushing important information to the top, while pushing low risk alerts to the bottom.

4.5 §170.315 (a)(5) Demographics

4.5.1 Data Analysis and Reporting

Demographics	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task N1 (Desktop)	12	83% (0.37)	3/4	164 (166)	151/18	104% (5)	2.42 (1.31)
Task N2 (Desktop)	12	83% (0.37)	3/4	228 (326.75)	216/15	131% (10)	2.5 (1)
Task N1 (Browser)	12	75% (0.43)	2.5/4	51 (44.38)	45/13	40% (2)	2.67 (0.78)
Task N2 (Browser)	12	75% (0.43)	3/3	44.38 (47)	47/8	53% (2)	3 (0.78)
Task N1 (iPad)	10	30% (0.46)	6/7	62 (83.65)	58/19	44% (5)	3.90 (1.29)
Task N2 (iPad)	10	30% (0.46)	5/5	99.17 (52.70)	53/10	70% (7.12)	3.8 (1.23)

4.5.2 Discussion of Findings

Efficiency

Participants rarely deviated over the optimal number of steps. While the task times varied, participants could complete the task succeeding more quickly once they knew where to find the new fields for Sexual Orientation and Gender Identity.

Effectiveness

Task success dropped below 80% for this criterion, since users were expecting Sexual Orientation and Gender Identity to be part of the social history instead of demographics. Some user pushed the number of errors over the 100% of the optimal steps, looking in the wrong place of the progress note to add the patient's sexual orientation and gender identity.

Satisfaction

Satisfaction for this measure was consistently neutral averaging at 3.04. Users found it difficult to find the fields on the iPad application since they were hidden under the patient's image icon.

Major findings

Participants were expecting the Sexual Orientation and Gender Identity to be a part of the social history, since asking this question would not be easy for front desk personnel.

Participants that worked on the iPad found it difficult to find where to enter the information since the data is captured under the patient's image icon.

Areas for improvement

- Consider adding the S.O/G.I. button on the social history tab.
- Consider spelling out what S.O/G.I. stands for on hover of the button.
- Consider allowing patients to communicate their sexual orientation/gender identity on a Kiosk or portal questionnaire.
- Consider making it easier to capture the sexual orientation and gender identity easily visible on the iPad

4.6 §170.315 (a)(6) Problem List

4.6.1 Data Analysis and Reporting

Problem List	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) second	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P4 (Desktop)	13	100% (0)	1/5	60 (44)	37/27	6% (0.63)	1.54 (0.52)
Task P4 (Browser)	13	100% (0)	3/5	57 (53)	39/28	31% (2.40)	1.54 (0.66)
Task P4 (iPad)	12	100% (0)	1/5	59 (24)	35/25	12% (0.79)	1.50 (0.67)

4.6.2 Discussion of Findings

Efficiency

Participants consistently took longer than the optimal time to update the problem list, but the path deviation was consistently within one step of the optimal path.

Effectiveness

Participants could complete the task 100% of the time on all three modalities (desktop, browser and iPad), with low error rates on the desktop and iPad, with a slightly raised error rate on the browser.

Satisfaction

Participants rated firmly between Strongly Agree and Agree on the ease of use of the system based on the problem list tasks.

Major findings

Participants found assessments easy to add to the problem list, and then to the visit, but were not aware that the system allowed users to add it to the medical history or assessments screen and then transfer the assessment to the problem list. Training for these features would largely benefit users.

Areas for improvement

- Consider changing the P and PL icons on the iPad to clearly indicate adding the assessment to the problem list.
- Consider making system changes to move assessments from the problem list to the medical history without dropping it off the problem list.

4.7 §170.315 (a)(7) Medication List

4.7.1 Data Analysis and Reporting

Medication List	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P2 (Desktop)	13	100% (0)	0.69/2	16 (10.67)	10/8	0% (0)	1.31 (0.48)
Task N3 (Desktop)	12	92% (0.28)	2.33/6	90 (77)	71/23	12.5% (1.5)	1.6 (0.67)
Task N4 (Desktop)	12	83% (0.37)	5/8	57 (66)	48/18	18% (2.61)	1.92 (0.92)
Task P2 (Browser)	13	100% (0)	1.15/2	26 (21.18)	18/9	15% (0.36)	1.38 (0.51)
Task N3 (Browser)	12	100% (0)	1.92/6	63 (49)	49/14	40% (5.73)	1.92 (0.51)
Task N4 (Browser)	12	92% (0.28)	3.58/8	90 (127)	74/22	30% (5)	2.08 (1.08)
Task P2 (iPad)	12	100% (0)	0.67/2	15 (11.17)	9/10	0% (0)	1.33 (0.49)
Task N3 (iPad)	10	100% (0)	2.5/5	44.60 (27.4)	31/14	14% (1.57)	1.50 (0.53)
Task N4 (iPad)	10	100% (0)	1.9/10	118.4 (133.24)	91/27	6% (0.97)	2.10 (0.99)

4.7.2 Discussion of Findings

Efficiency

Participants were inconsistent with the tasks times taken, but the task deviation remained below 40%. Sub tasks like adding medications to a patient's medication list took significantly longer on the iPad. This is expected since most of the participants were using the iOS platform for the first time.

Effectiveness

Task success averaged to 96% meaning most participants were successfully able to complete the six tasks for medication management. The error rate averaged only 15% for all six tasks.

Satisfaction

The average satisfaction was 1.7 which ranges between Strongly Agree and Agree.

Major findings

Participants identified possible chances for error when a medication status from a previous visit can be applied to today's visit using the "Apply status from previous visit" feature.

Areas for improvement

- Consider adding a status for medications that are taken occasionally or PRN (for example allergy medication) to clearly identify these medications on the medication list.
- Consider the ability to capture compounded medications.
- Consider removing "Apply from previous visit" feature.

4.8 §170.315 (a)(8) Medication Allergy List

4.8.1 Data Analysis and Reporting

Medication Allergy List	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task N5 (Desktop)	12	100% (0)	10/35	230 (89.5)	157/75	13% (6.63)	2.33 (0.89)
Task N5 (Browser)	12	92% (0.28)	13/34	133 (56.02)	62/85	6% (2.09)	2.08 (0.79)

Medication Allergy List	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task N5 (iPad)	10	100% (0)	14/45	146 (33.43)	51/98	2% (1.03)	2.10 (0.57)

4.8.2 Discussion of Findings

Efficiency

The task deviation for this task was consistently below the optimal steps.

Effectiveness

The task success for this measure averaged 97% while the error rate averaged 7%.

Satisfaction

The average satisfaction was 2.17 which ranges between Agree and Neutral.

Major findings

No major findings were identified for this task.

Areas for improvement

- Consider showing the addition of allergies on the same screen on the iPad application. The medication lookup screen did not confirm if the medication allergy was successfully added to the patient's chart.
- Consider switching the Drug Allergy and Non-Drug allergy lookup fields in the browser version since most users intuitively click on the first lookup field, but should be looking for drug allergies in the second lookup field.
- Consider renaming Structured and Non-Structured on the EXE as Drug and Non-Drug Allergies.

4.9 §170.315 (a)(9) Clinical Decision Support

4.9.1 Data Analysis and Reporting

Clinical Decision Support	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P3 (Desktop)	13	69% (0.46)	3/6	42 (41.66)	29/19	10% (1.04)	1.54 (0.52)
Task P3 (Browser)	13	31% (0.46)	5/8	46 (58)	35/22	15% (2.28)	1.85 (0.99)
Task P3 (iPad)	12	17% (0.37)	2/5	45 (47)	30/20	33% (3.14)	1.67 (0.65)

4.9.2 Discussion of Findings

Efficiency

Participants had an error rate of 19% mostly because participants were not aware of the option to send all the assessments using a single click, but used the physician reference lookup where they typed in more information per assessment.

Effectiveness

The success rate was significantly low at 39%. Tasks were considered failed if the participant did not use the option to send all the information using the HL7 standard.

Satisfaction

Once participants discovered the option to send all the assessments with a single click to the physician reference, they rated the feature between Strongly Agree and Agree.

Major findings

Participants were unable to locate the button easily for the physician reference since the button is hidden under the education tab. Participants spent time trying to find the option, and suggested easier locations on the screen where they expected the physician reference to reside.

Areas for improvement

- Consider giving the user the ability to send all assessments to the physician reference from the right chart panel.
- Consider adding the option to the individual assessments under the I icon on the iPad.
- Consider making the button more visible in the assessments screen.

4.10 §170.315 (a)(14) Implantable Device List

4.10.1 Data Analysis and Reporting

<i>Implantable Device List</i>	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) second	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
<i>Task N6 (Desktop)</i>	12	83% (0.37)	3.25/8	148.17 (136.84)	134/21	32% (3.42)	2.42 (0.67)
<i>Task N6 (Browser)</i>	12	83% (0.37)	3.33/10	58 (53)	42/27	6% (1)	2.08 (1)
<i>Task N6 (iPad)</i>	10	90% (0.3)	3.7/8	112 (51)	42.5/87	28% (3.68)	2.80 (0.79)

4.10.2 Discussion of Findings

Efficiency

Participants spent a significant amount of time trying to find the option on the desktop version and the iPad.

Effectiveness

Participants successfully completed the task 85% of the time, while only erroring 22% of the time.

Satisfaction

Users rated their satisfaction between Agree and Neutral for this task mostly because of the amount of time taken to add all the information on the iPad, taking a significant amount of time.

Major findings

Participants had a difficult time entering information on the iPad without a barcode scanner. Some participants were using the barcode scanner for the first time and were not familiar with the device.

Areas for improvement

- Consider adding a more visible barcode scanning ability on the implant screen.
- Consider defaulting the cursor on the barcode field once the user selects the registry option.
- Consider renaming the UDI registry radio button to a more user-friendly option.
- Consider adding the implant option ability from the surgical history section.

4.11 §170.315 (b)(2) Clinical Information Reconciliation and Incorporation

4.11.1 Data Analysis and Reporting

Clinical Information Reconciliation & Incorporation	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) seconds	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
Task P1 (Desktop)	13	92% (0.27)	2.33/8	111.54 (26)	40/60	13% (1.85)	2.08 (0.95)
Task P1 (Browser)	13	100% (0)	3.15/10	65 (28)	26/40	11% (1.95)	1.92 (0.95)
Not applicable for iPad							

4.11.2 Discussion of Findings

Efficiency

Participant efficiency varied between the desktop version and the browser version, mostly due to familiarity with the location of the reconciliation screen.

Effectiveness

Performance on both the desktop and browser version was over 92% with a low error rate of less than 13% which included first time users of the software. The contributing factor was low visibility of the Patient Record under the DRTL tab. Participants could complete the task effectively after successfully completing the task on the desktop version.

Satisfaction

Participants consistently agreed that the system was easy to navigate and indicated that some training would improve usability.

Major findings

Although the efficiency of completing the task, including first time users of the software, there are areas for improvement that are included below.

Areas for improvement

- Consider easily indicating that there is a P2P record available to reconcile for this patient.
- Consider improving the visual design of the reconciliation screen to ease the user experience and reduce errors.
- Consider increasing the size of the medication reconciliation screen to easily allow visualization of all medications together.
- Consider improving the matching technology to provider suggestions of matching medications/problems/allergies.
- Consider reducing the number of clicks needed to complete the reconciliation process.
- Consider adding the functionality to the iPad application for power users that only use the iPad application.
- Consider embedding tutorials for first time users.
- Consider renaming CCR to a more physician friendly term.

4.12 §170.315 (b)(3) Electronic Prescribing

4.12.1 Data Analysis and Reporting

<i>Electronic Prescribing</i>	N	Task Success	Path Deviation	Task Time		Errors	Task Rating 1=Easy
	#	Mean (SD) %	Deviation (Observed/Optimal)	Mean (SD) second	Deviation (Observed/Optimal)	Mean (SD)	Mean (SD)
<i>Task P6 (Desktop)</i>	13	100% (0)	2/9	69 (47.76)	30/47	0% (0)	2 (1)
<i>Task P6 (Browser)</i>	13	92% (0.27)	2/9	63 (45.58)	37/33	10% (2)	1.69 (0.95)
<i>Task P6 (iPad)</i>	12	92% (0.28)	4/10	82 (54.72)	64/18	23% (4)	1.83 (0.94)

4.12.2 Discussion of Findings

Efficiency

Participants were easily able to send the orders out on both the Desktop and Browser but took time on find the send button on the iPad. The task times were higher on the iPad, but within the range of the optimal time for desktop and browser. Path deviations ranged between 2 and 4 steps.

Effectiveness

Participants were successful 95% of the time indicating that ePrescribing is an easy task to accomplish. The error rate average was 11%.

Satisfaction

User satisfaction averaged 1.83, which indicated that users Agreed that ePrescribing was an easy task.

Major findings

No major findings were discovered for this task.

Areas for improvement

The share button, a common icon used for sharing on the iOS platform, was used to indicate the eRx option. This was not common knowledge to some of the users new to the iOS platform.

APPENDIX A: NOTICES

Trademarks

eClinicalWorks®

eClinicalWorks® is a registered trademark of eClinicalWorks®, LLC.

All other trademarks or service marks contained herein are the property of their respective owners.

Current Procedural Terminology® (CPT®*)

CPT® is a registered trademark of the American Medical Association.

Copyright

CPT® Copyright Notice

CPT® copyright 2016 American Medical Association. All rights reserved.

Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT®, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein

*CPT copyright 2016 American Medical Association. All rights reserved.

APPENDIX B: TASKS

Provider Tasks

Your patient is a 40-year-old male/female who was recently discharged from the hospital. He/She is here for a follow up. The patient's current problems are hyperlipidemia, gout and asthma. The patient is presenting with new issues of difficulty urinating and acute right leg pain. The patient has an allergy to Tylenol and is currently taking Lipitor.

Task 1: Reconcile the clinical information from hospital via the Provider to Provider Network

170.315(b)(2) - Clinical information reconciliation and incorporation

- Start in Progress Notes > Right Chart Panel > DRTLM Tab in Right Chart Panel > P2P

Instructions: Reconcile the first medication from the list and the first problem from the list into the patient's progress notes.

Task 2: Reconcile Medication List

170.315(a)(7) - Clinical information reconciliation and incorporation

- Start in the Progress Notes

Instructions: Review and verify the patient's Current Medications list

Task 3: Physician Educates themselves on the patient's assessments

170.315(a)(9) Clinical Decision Support

- Start in Assessment screen

Instructions: Review Education for the patient's assessments and print any material. Vendor used is DynaMed

Task 4: Review Patient's Problem List

170.315(a)(6) Problem list

- Start in Assessments

Instructions: Review the patient's existing Problem List and add a new diagnosis of *Urinary Frequency (ICD-10 is R35.0)* to the assessments

Task 5: Change the medication for his hyperlipidemia

170.315(a)(1) Computerized provider order entry - Medications and 170.315(b)(3) Electronic Prescribing

- Start in Treatment screen

Instructions: Change the existing Lipitor 20 mg order to Lipitor 40 mg once a day, for 30 days and dispense 30 with 3 refills. Electronically prescribe this order.

Task 6: Order a new medication based on the ankle/ leg pain

170.315(a)(1) Computerized provider order entry - Medications, 170.315(a)(4) Drug-drug, drug-allergy interaction checks and 170.315(b)(3) Electronic prescribing

- Continue in the Treatment screen

Instructions: Add an order for Percocet 5/325 mg, you will receive drug-allergy interaction alert, override the alert, and e-prescribe it.

Task 7: Order a lab order based on results of physical exam

170.315(a)(2) Computerized provider order entry - Laboratory

- Continue in Treatment screen

Instructions: Order a Urinalysis (UA)

Task 8: Access and modify current uric acid lab order

170.315(a)(2) Computerized provider order entry - Laboratory

- Continue in Treatment screen

Instructions: Find the future uric acid lab order and change the date of the order to today

Task 9: Sign an imaging order to assess for a possible leg fracture

170.315(a)(2) Computerized provider order entry – Diagnostic Imaging

- Continue in Treatment screen

Instructions: Order an x-ray of the ankle

Task 10: Access and modify current Chest X-ray order

170.315(a)(2) Computerized provider order entry – Diagnostic Imaging

- Continue in Treatment screen

Instructions: Find the future chest x-ray order and change the date of the order to today

Nurse Tasks

Your patient is a 62-year-old homosexual male who comes in for a long overdue visit. His current problems are COPD, a-fib, hypertension and type-II diabetes. He noticed that his ethnicity is not documented correctly and would also like his sexual orientation updated. The patient is currently listed as having no allergies, he is presenting with a list of new allergies for this visit. Current Medications include taking Advair, Atenolol, Tylenol, Coumadin and Glyburide. He states that he is taking some of those medications but not others and has a new list of medications he is on. At his last visit, he did not have an implantable device but recently has had cardiac stents placed and has a card for it. This will need to be added to his chart.

Task 1: Add patient's sexual orientation

170.315(a)(5) Demographics

- Start in Progress Note

Instructions: Change the patient's sexual orientation value to *Lesbian, gay or homosexual*

Task 2: Update Patient's Ethnicity Additional Information

170.315(a)(5) Demographics

- Continue from the Patient Information

Instructions: Change the patient's ethnicity to "Not Hispanic or Latino"

Task 3: Update patient's medication list, indicating which medications the patient is currently taking or not

170.315(a)(7) Medication list

- Start in Progress Note

Instructions: Document which medications the patient is currently and not currently taking:

1. Mark Advair as **Taking**
2. Mark Atenolol as **Taking**
3. Mark Tylenol as **Not taking**
4. Mark Coumadin as **Discontinued**
5. Mark Glyburide as **Discontinued**

Task 4: Add patient's medications

170.315(a)(7) Medication list

- Continuing in the patient's current medication list

Instructions: Add the patient's new medications they are taking and then verify the medication list

- a. Jardiance 10 mg
- b. Eliquis 2.5 mg

Task 5: Update patient's chart with new allergies and mark as reviewed

170.315(a)(8) Medication allergy list

- Start in Progress Note

Instructions: Add the patient's new drug and non-drug allergies

- Drug Allergy: Bactrim - Reaction is rash, Type is allergy, Criticality is Low, Onset date is today
- Drug Allergy: Penicillin G Potassium - Reaction is hives, Type is allergy, Criticality is High, Onset date is today
- Non-Drug Allergy: Mold - Reaction is shortness of breath, Criticality is high, Criticality is High, Onset date is today

Task 6: Add an Implantable Device and Verify List

170.315(a)(14) Implantable device list

- Start in Progress Note

Instructions: Add the patient's implantable device from the card (barcode below) and mark the list as verified.

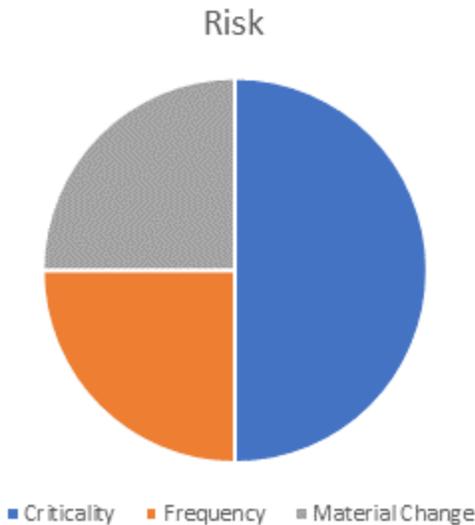


For the iPad, you'll need to type in the barcode numbers:

(01)10884521062856(11)141231(17)150707(10)A213B1(21)1234

APPENDIX C: RISK ANALYSIS OF TASKS

Risk management for each task was calculated by assessing the criticality of function, the frequency of use, and material changes to the window/feature. Criticality was defined as Clinical or Non-Clinical, and has a weighted percentage of 50%. The frequency was classified as low, medium, and high; with high being the frequency used for all tasks. Material changes was designated for windows/features with (yes) or without (no) material changes:



- **Criticality** – Clinical/Non-Clinical – 50%
- **Frequency** – Low/Medium/High – 25%
- **Material Changes** – Yes/ No – 25%

Criticality	Frequency	Material Changes to the Window (Troublesome for Users)	Overall Risk
Clinical	Low	Yes	High
Non-Clinical	Low	Yes	Low
Clinical	Low	No	Moderate
Non-Clinical	Low	No	Low
Clinical	Medium	Yes	High
Non-Clinical	Medium	Yes	Moderate
Clinical	Medium	No	Moderate
Non-Clinical	Medium	No	Low
Clinical	High	Yes	High
Non-Clinical	High	Yes	Moderate

Criticality	Frequency	Material Changes to the Window (Troublesome for Users)	Overall Risk
Clinical	High	No	High
Non-Clinical	High	No	Low

Based on this chart, the tasks were assigned an overall risk:

Provider Task	Criticality	Frequency	Material Changes to the Window	Risk
1	Reconcile the clinical information from hospital via the Provider-to-Provider Network			
	Clinical	High	Yes	High
2	Reconcile the Medication List			
	Clinical	High	No	High
3	Physician educates themselves on the patient's assessments			
	Clinical	High	Yes	High
4	Review patient's Problem List			
	Clinical	High	Yes	High
5	Change the medication for his hyperlipidemia			
	Clinical	High	Yes	High
6	Order a new medication based on the ankle/leg pain			
	Clinical	High	Yes	High
7	Order a lab order based on results of physical exam			
	Clinical	High	No	High
8	Access and modify current uric acid lab order			
	Clinical	High	No	High
9	Sign an imaging order to assess for a possible leg fracture			
	Clinical	High	No	High
10	Access and modify current Chest X-ray order			
	Clinical	High	No	High

Nurse Task	Criticality	Frequency	Material Changes to the screen	Risk
1	Add patient's sexual orientation			
	Non-Clinical	High	Yes	Moderate
2	Update patient's ethnicity additional information			
	Non-Clinical	High	Yes	Moderate
3	Update patient's medication list, indicating which medications the patient is currently taking or not			
	Clinical	High	No	High
4	Add patient's medications			
	Clinical	High	No	High
5	Update patient's chart with new allergies and mark as reviewed			
	Clinical	High	Yes	High
6	Add an implantable device and verify list			
	Clinical	High	Yes	High