



EHR Usability Test Report of
Patient Pattern EHR Version 1.0

Safety Enhanced Design 170.315 (g)(3) – December 2022

Patient Pattern 1.0 – Safety Enhanced Design

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Report Prepared By: Robin Roberts, Product Support

Hyperlink to Full Usability Report: <https://patientpattern.com/cehrt-disclosures>

Main Contact: Dr. Steve Bulsovich , CEO
212-201-1212
support@patientpattern.com
701 Ellicott Street, Buffalo, NY 14203

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Executive Summary

Usability tests of the 1.0 version of the PATIENT PATTERN EHR were conducted at various times during the development cycle, the last session for which was held on December 29th, 2022. The purpose of these tests was to test and validate the usability of the current user interface, and provide evidence of usability of the EHR Under Test (EHRUT).

During the usability test, a combination of 10 test participants and clinicians matching the target demographic criteria served as participants and used the EHRUT in simulated, but representative tasks.

This study collected performance data on 14 tasks typically conducted in the EHR:

Computerized Provider Order Entry

- Record medication order
- Access medication order
- Change medication order

- Record lab order
- Access lab order
- Change lab order

- Record radiology order
- Access radiology order
- Change radiology order

Demographics

- Record demographics
- Access and modify demographics

Clinical decision support

- Create CDS alert
- Edit CDS alert

Implantable Device

- Add Change implantable device

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.

During the 45-minute, one-on-one, remote usability test, each participant was greeted by the . Participants were then assigned a participant ID and asked to review and sign an informed consent/release form. Participants were read an overview of the test, its intended purpose, general instructions, and then advised that they could withdraw at any time. Participants had no prior experience with the PATIENT PATTERN EHR.

The administrator introduced the test, and instructed the participant 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(s) recorded user performance data on paper and electronically. The administrator did not give the participant assistance in how to complete the task.

The test session, including participant screens, user workflow, and audio, was 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 verbal feedback
- Participant's task effort ratings of the system using a Likert Scale

All participant data was de-identified so that no correlation 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. Participants 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 the EHRUT. Following is a summary of the performance and rating data collected on the EHRUT

Introduction

This study is the result of usability testing performed on the 1.0 version of the PATIENT PATTERN EHR, which is designed to collect, track, and report medical information collected from healthcare providers in an ambulatory setting. The application consists of solutions for a range of services including medical, dental, vision, and behavior allowing practices to provide patient care for all their services.

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 to support certification according to criteria outlined in Safety Enhanced Design §170.315(g)(3), specifically:

§ 170.315 (a)(1) Computerized provider order entry – medication

§ 170.315 (a)(2) Computerized provider order entry – laboratory

§ 170.315 (a)(3) Computerized provider order entry – diagnostic imaging

§ 170.315 (a)(5) Demographics

§ 170.315 (a)(9) Clinical decision support

§ 170.315 (a)(14) Implantable device list

Method

Participants

A total of ten (10) participants were tested on the PATIENT PATTERN EHR. Participants in the test included doctors, medical assistants, clinic managers, and test participants general office aptitude for technology. Volunteer participants were recruited by Patient Pattern and were not compensated for their time.

Participants had no direct connection to the development of or organization producing the EHR, and they were not from or affiliated with Patient Pattern, and did not need any orientation or training as they all were experienced PATIENT PATTERN EHR users.

For test purposes, end-user characteristics were identified and translated into a recruitment screener used to solicit potential participants.

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.

User ID	Sex	Age	Education	Occupation /Role	Professional Experience (Months)	Computer Experience (months)	Product Experience (Months)	Assistive Technology
1	Male	60-69	Doctorate degree	Clinic Director, Family Medicine	240	200	0	No
2	Female	40-49	Bachelor's degree	Health IT Specialist, Consultant	192	120	0	No
3	Female	20-29	Some college credit, no degree	Front Office/Triage, Primary Care	168	136	0	No
4	Male	30-39	Doctorate degree	Physician, Geriatrics	132	264	0	No
5	Female	40-49	Bachelor's degree	Regulatory Advisor, Healthcare Practices	180	120	0	No
6	Male	40-49	Doctorate degree	Clinical Provider, Psychology	204	204	0	No
7	Female	50-59	Doctorate degree	Provider, Psychiatry	240	228	0	No
8	Female	30-39	Associates degree	Medical Assistant, Dermatology	156	120	0	No
9	Female	20-29	Associates degree	Medical Assistant, Family Medicine	102	96	0	No
10	Female	30-39	Some college credit, no degree	Clinic Manager, Dermatology	168	150	0	No

10 participants participated in the usability test. 0 participants failed to show for the study.

Participants were scheduled for 45-minute sessions with 5 minutes in between each session for debrief by the administrator and data logger, and to reset systems to proper test conditions. A spreadsheet was used to keep track of the participant schedule, and included each participant's demographic characteristics as provided by the participant.

[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 one EHR. Each participant used the system in the same development environment, 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 Section on Usability Metrics.

Tasks

In support certification according to criteria outlined in Safety Enhanced Design §170.315(g)(3), 14 tasks were constructed that would be realistic and representative of the kinds of activities a user might conduct with the EHR, in the following categories:

- Computerized provider order entry (Medications, Labs, and Diagnostic Imaging)
- Demographics
- Clinical decision support
- Implantable Device

Tasks were selected based on their frequency of use, criticality of function, and those that may be most troublesome for users. Tasks were designed to meet the study objectives. A detailed list of the tasks provided is included in Appendix B.

Procedures

Remote testing was conducted via a Zoom session by a proctor with 10+ years' experience with the EHRUT. A Remote testing methodology was selected to both for convenience to accommodate the

volunteer participants but also because that technology includes recording of the screen-sharing and audio for subsequent review and analysis.

Participants were advised to choose a quiet location to participate in the study using their own computers, and to:

- Complete the tasks as quickly as possible, using their normal workflow
- Complete the tasks without assistance except to clarify task details, if necessary

All test sessions were recorded by Zoom and subsequently analyzed. While participants completed the tasks, an observer monitored task times, obtained post-task rating data, and took notes on participant comments, and the data logger and took notes on task success, path deviations, number and type of errors, and comments.

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

Test Location

Test sessions were conducted remotely via a Zoom meeting. The test administrator, observers, and participant logged into the session from their various locations. All observers and the data logger could see the participant's screen, and listen to the audio of the session.

Test Environment

The EHRUT would be typically be used in a healthcare office or facility. In this instance, the testing was conducted remotely via a Zoom meeting from the participants location origin. For testing, the proctor hosted the EHRUT as a Microsoft Remote Desktop Application running on Windows Server 2016.

The participants used their own hardware including; computer, keyboard, and mouse when testing.

Test Forms and Tools

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

- Proctor Guide
- Participant Guide

The Proctor's Guide was devised to be able to capture required data. The participant's interaction with the PATIENT PATTERN EHR application was captured and recorded via the Zoom meeting technology.

[Participant Instructions](#)

The proctor read the following instructions to each participant:

Thank you for participating in this study. Your input is very important. Our session today will last about 45 minutes. During this time, you will be using the 1.0 version of the PATIENT PATTERN EHR. 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, rather, 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 possibly 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 logged into the EHRUT and then given tasks to complete based on their role, and 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 their tasks to complete.

[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 PATIENT PATTERN EHR 1.0 by measuring participant success rates and errors
- Efficiency of PATIENT PATTERN EHR 1.0 by measuring the average task time and path deviations
- Satisfaction with PATIENT PATTERN EHR 1.0 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	<p>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.</p> <p>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.</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 an “Failures.” No task times were taken for errors.</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. This should also be expressed as the mean number of failed tasks per participant.</p> <p>On a qualitative level, an enumeration of errors and error types should be collected.</p>

Measures	Rationale and Scoring
Efficiency: Task Deviations	<p>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 deviations be reported.</p> <p>Optimal paths (i.e., procedural steps) should be recorded when constructing tasks</p>
Efficiency: Task Time	<p>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.</p>

Measures	Rationale and Scoring
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 Patient Pattern overall, the testing team administered using a verbal confirmation of the Likert ranking.</p>

Results

The results of the usability test were calculated according to the methods specified in the Usability Metrics section. Participants who failed to follow session and task instructions had their data excluded from the analysis. There were no testing irregularities recorded.

The usability testing results for the EHRUT are detailed below. The results should be seen in light of the objectives and goals outlined in section on Study Design. The data should yield actionable results that, if corrected, yield material, positive impact on user performance.

The following section also discusses the results organized around a risk analysis of use, test performance and error rates. The risk analysis of use includes identification of use errors and user interface design issues as well as classification of severity based on the consequence of the error. Use errors and user interface design issues that resulted in subtask failures, that are known industry risk issues, and errors and issues related to aspects of the user interface that are configured per customer site are considered more severe compared to noncritical system usability issues related to efficiency.

The results from the Likert scale scored the subjective satisfaction with the system based on performance with these tasks to broadly interpreted. Scores under 3 represent poor usability and scores over 3 would be considered above average.

§170.315 (a)(1) Computerized Physician Order Entry - Medications

Data Analysis and Reporting

Task	Task Rating	Task Rating - Std Dev.	Task Time - Mean(s)	Task Time - Standard Deviation(s)	Time - Observed/Optimal	Task Success - Mean (%)	Task Success - Std. Deviation(s)	Task Errors - Mean (%)	Task Error - Std. Deviation (%)	Observed - (# of Steps)	Optimal (# of Steps)
a1.1 Record medication order	3	0.45	94	13	117/90	100%	0.0	0.00%	0.00%	9	10
a1.2 Access medication order	5	0.4	21	6	17/30	100%	0.0	0.00%	0.00%	3	3
a1.3 Change medication order	5	0.64	72	15	53/65	100%	0.0	0.00%	0.00%	10	10

Discussion of Findings

Efficiency

Overall the efficiency of participants completing the ordering and modifying of medication orders was not near the optimal path and the deviation in time.

Effectiveness

Participants were successful 100% of the time when completing the tasks for ordering, accessing, and modifying medication orders.

Satisfaction

Participant consensus rated the task between Strongly Agree and Agree that the tasks were easy to perform.

Major findings

Task is performing as designed.

Areas for improvement

Users identified that a drop down of prepopulated medications, without strength, would be ideal. Furthermore all clinical end users requested to know or see which fields are mandatory when entering a medication order.

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

Data Analysis and Reporting

Task	Task Rating	Task Rating - Std Dev.	Task Time - Mean(s)	Task Time - Standard Deviation(s)	Time - Observed/Optimal	Task Success - Mean (%)	Task Success - Std. Deviation(s)	Task Errors - Mean (%)	Task Error - Std. Deviation (%)	Observed - (# of Steps)	Optimal (# of Steps)
a2.1 Record lab order	1	1.02	83	16	58/90	100%	0.0	0.00%	0.00%	9	9
a2.2 Access lab order	5	0.40	22	9	13/30	100%	0.0	0.00%	0.00%	4	4
a2.3 Change lab order	2	1.07	67	18	40/75	100%	0.0	0.00%	0.00%	10	10

Discussion of Findings

Efficiency

Overall the efficiency of participants completing the ordering and modifying of lab orders was near the optimal path and the deviation in time.

Effectiveness

Participants were successful 100% of the time when completing the tasks for ordering, accessing, and changing lab orders.

Satisfaction

Participant consensus rated the task between Strongly Agree and Strongly Disagree that the tasks were easy to perform. Clinical users were most dissatisfied where lack of pre-populate or lab dropdown was not present.

Major findings

Task is performing as designed.

Areas for improvement

Participants reported the need for the lab to show up in a drop down.

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

Data Analysis and Reporting

Task	Task Rating	Task Rating - Std Dev.	Task Time - Mean(s)	Task Time - Standard Deviation(s)	Time - Observed/Optimal	Task Success - Mean (%)	Task Success - Std. Deviation(s)	Task Errors - Mean (%)	Task Error - Std. Deviation (%)	Observed - (# of Steps)	Optimal (# of Steps)
a3.1 Record radiology order	5	0.50	58	13	38/70	100%	0.0	0.00%	0.00%	9	9
a3.2 Access radiology order	5	0.30	32	17	13/30	100%	0.0	0.00%	0.00%	4	4
a3.3 Change radiology order	5	0.50	64	18	43/70	100%	0.0	0.00%	0.00%	10	10

Discussion of Findings

Efficiency

Overall the efficiency of participants completing the radiology orders was near the optimal path and the deviation in time.

Effectiveness

Participants were successful 100% of the time when completing the tasks for ordering, accessing, and changing radiology orders.

Satisfaction

Participant consensus is that they Strongly Agree the tasks were easy to perform.

Major findings

Task is performing as designed.

Areas for improvement

None identified, or requested.

§170.315 (a)(5) Demographics

Data Analysis and Reporting

Task	Task Rating	Task Rating - Std Dev.	Task Time - Mean(s)	Task Time - Standard Deviation(s)	Time - Observed /Optimal	Task Success - Mean (%)	Task Success - Std. Deviation(s)	Task Errors - Mean (%)	Task Error - Std. Deviation (%)	Observed - (# of Steps)	Optimal (# of Steps)
a5.1 Record demographics	5	0.30	63	12	60/60	67%	12.8	33.33%	12.94%	8	6
a5.2 Access & modify demographics	5	0.80	60	42	50/40	100%	5.6	0.00%	5.68%	7	7

Discussion of Findings

Efficiency

Overall the efficiency of participants completing demographics add, change, and access was not within the optimal path and the deviation in time.

Effectiveness

Participants were successful about 100% of the time when completing the tasks for demographics add, change, and access.

Satisfaction

Participant consensus rated Strongly Agree that tasks were very easy to perform.

Major findings

Task performance functioned as designed. Although, 3 of 10 participants experiences a “404 Error” 1 or more times when attempting to save demographics edits.

Areas for improvement

Issues of 404 errors was captured during recording process and elevated to developers for review.

§170.315 (a)(9) Clinical Decision Support

Data Analysis and Reporting

Task	Task Rating	Task Rating - Std Dev.	Task Time - Mean(s)	Task Time - Standard Deviation(s)	Time - Observed/ Optimal	Task Success - Mean (%)	Task Success - Std. Deviation(s)	Task Errors - Mean (%)	Task Error - Std. Deviation (%)	Observed - (# of Steps)	Optimal (# of Steps)
a9.1 Create CDS alert	1	1.18	118	35	119/90	100%	8.6	0.00%	6.00%	7	7
a9.2 Edit CDS rule	2	1.4	90	52	35/90	86%	5.6	14.28%	5.71%	7	7

Discussion of Findings

Efficiency

Overall the efficiency of participants completing the clinical decision support tasks was not within the optimal path and the deviation in time.

Effectiveness

Participants were successful about 100% (average) of the time when completing the tasks for performing the clinical decision support. Task failures were about 14%. Process was moderately difficult to use.

Satisfaction

Participant consensus rated the task between Strongly Disagree and Disagree that the tasks were moderately difficult to perform.

Major findings

Task is performing as designed. But the users had issues performing the tasks in an efficient manner. Workflow process has been scheduled for developers to review CDS alerts and edits.

Areas for improvement

Changes to the user interface and save details to improve the workflow would be beneficial.

§170.315 (a)(14) Implantable Device List

Data Analysis and Reporting

Task	Task Rating	Task Rating - Std Dev.	Task Time - Mean(s)	Task Time - Standard Deviation(s)	Time - Observed/Optimal	Task Success - Mean (%)	Task Success - Std. Deviation(s)	Task Errors - Mean (%)	Task Error - Std. Deviation (%)	Observed - (# of Steps)	Optimal (# of Steps)
a 14.1 Add Change implantable device	5	0.4	25	9	49/25	100%	0.0	0.00%	0.00%	8	8

Discussion of Findings

Efficiency

Overall the efficiency of participants completing the adding and reviewing of the implantable devices was within the optimal path and the deviation in time.

Effectiveness

Participants were successful 100% of the time when completing the tasks for performing the implantable device process.

Satisfaction

Participant consensus rated the task Strongly Agree that the tasks were very easy to perform.

Major findings

None to report.

Areas for improvement

None identified.

Appendices

Appendix A - Trademarks

PATIENT PATTERN® is a registered trademark of Patient Pattern Corporation
 All other trademarks or service marks contained herein are the property of their respective owners.

Appendix B - Tasks

PATIENT PATTERN EHR
 Usability Testing Script
 Site: <https://patientpattern.com/accounts/login/>
 User ID: ehrdoctor@patientpattern.com
 Password: @Password2022

170.315 (a)(1) – CPOE Medications

Task No.	Description										
a1.1	CPOE - Record a Medication Order <i>(Review and/or consult the lab entry process overview document, if necessary)</i>										
	Actor										
	Provider										
	Steps										
	<ol style="list-style-type: none"> Select “Patient Search” Select Facility > Facility One Hit Search for Patient Results and Select any Patient Select Encounters at top of screen Select the most recent encounter record Scroll to medications Path: Medications > Add or Cancel Type “Amoxicillin” and select in drop down Add additional field as place holder values: Start and End Date, Route, Dose, Frequency, Strength, and Unit Click “ Save” medication Entry button 										
	Observations										
	<table border="1"> <thead> <tr> <th>Task Success</th> <th>Path Deviations</th> <th>Errors</th> <th>Effort: (1) v. high, (5) v. low</th> <th>Time to Complete</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input type="checkbox"/>1 <input type="checkbox"/>2 <input checked="" type="checkbox"/>3 <input type="checkbox"/>4 <input type="checkbox"/>5</td> <td>66 secs</td> </tr> </tbody> </table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	66 secs
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	66 secs						
	Comments										
Click here											

Task No.	Description
----------	-------------

a1.2	CPOE - Access a Medication Order <i>(Review and/or consult the medication entry process overview document, if necessary)</i>
	Actor
	Provider, MA
	Steps

<ol style="list-style-type: none"> 1. Remain in patient encounter 2. Open patient encounter and scroll to “Medications” Path: Medications 3. Verify start date from medication you just entered 				
Observations				
Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete
<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	10 secs
Comments				
Click here				

Task No.	Description				
a1.3	CPOE - Change a Medication Order <i>(Review and/or consult the medication entry process overview document, if necessary)</i>				
	<i>Note that medication order can only be edited before it is sent. To change a medication order that has already been sent, you must delete and reorder with changes.</i>				
	Actor				
	Provider				
	Steps				
	<ol style="list-style-type: none"> 1. Select a patient encounter 2. Open patient encounter and scroll to “Medications” Path: Medications 3. Verify start date 4. Delete existing order 5. Confirm deletion 6. Scroll back to Medications 7. Click Add or Cancel to enter new and accurate order 8. Type Amoxicillin and Select in drop down 9. Add additional fields: Start and End Date, Route, Dose, Frequency, Strength, and Unit 10. Click Save Medication Entry button 				
	Observations				
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	32 secs
	Comments				

[Click here](#)

170.315 (a)(2) - CPOE Labs

Task No.	Description										
a2.1	CPOE - Record a Lab Order <i>(Review and/or consult the lab entry process overview document, if necessary)</i>										
	Actor										
	Provider										
	Steps										
	<ol style="list-style-type: none">1. Select "Search patient"2. Hit Search for Patient Results and Select a Patient3. Select Encounters4. Select a recent encounter record5. Scroll to Labs Path: Labs > Add or Cancel6. Type "HbA1c" in the Lab Name7. Add any order start date8. Populate status as "Pending" complete9. Click " Save" Lab Entry button										
	Observations										
	<table border="1"><thead><tr><th>Task Success</th><th>Path Deviations</th><th>Errors</th><th>Effort: (1) v. high, (5) v. low</th><th>Time to Complete</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td><td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td><td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td><td><input type="checkbox"/>1 <input type="checkbox"/>2 <input checked="" type="checkbox"/>3 <input type="checkbox"/>4 <input type="checkbox"/>5</td><td>66 secs</td></tr></tbody></table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	66 secs
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	66 secs						
	Comments										
Click here											

Task No.	Description
a2.2	CPOE - Access a Lab Order <i>(Review and/or consult the lab entry process overview document, if necessary)</i>
	Actor
	Provider, MA
	Steps

	<ol style="list-style-type: none">1. Select the same patient as the prior task2. Select the same encounter as the prior task3. Open Encounter and Scroll to "Labs" Orders screen Path: Labs > View Lab Orders4. Verify date and status										
	Observations										
	<table border="1"><thead><tr><th>Task Success</th><th>Path Deviations</th><th>Errors</th><th>Effort: (1) v. high, (5) v. low</th><th>Time to Complete</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td><td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td><td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td><td><input type="checkbox"/>1 <input checked="" type="checkbox"/>2 <input type="checkbox"/>3 <input type="checkbox"/>4 <input type="checkbox"/>5</td><td>10 secs</td></tr></tbody></table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	10 secs
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	10 secs						
Comments											
Click here											

Task No.	Description				
a2.3	<p>CPOE - Change a Lab Order <i>(Review and/or consult the lab entry process overview document, if necessary)</i></p> <p><i>Note that lab order can only be edited before it is sent. To change a lab order that has already been sent, you must delete and reorder with changes.</i></p>				
Actor					
Provider					
Steps					
<ol style="list-style-type: none"> 1. Select "Search patient" 2. Hit Search for Patient Results and Select the Patient previously used 3. Select Encounters 4. Select a recent encounter record 5. Scroll to Labs Path: Labs > Delete 6. Delete record 7. Confirm deletion 8. Add or Cancel new Lab 9. Populate new Lab Name "pH of Urine test Strip", add Start Date, and select "completed" Status 10. Click " Save" Lab Entry button 					
Observations					
Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	
<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	32 secs	
Comments					
Click here					

170.315 (a)(3) - CPOE Dx Imaging

Task No.	Description										
a3.1	CPOE - Record a Radiology Order <i>(Review and/or consult the Referrals and Radiology Orders process overview document, if necessary)</i>										
	Actor										
	Provider										
	Steps										
	<ol style="list-style-type: none"> 1. Select "Search patient" 2. Hit Search for Patient Results and Select a Patient 3. Select Encounters 4. Select a recent encounter record 5. Scroll to Imaging Path: Imaging > Add or Cancel 6. Select Add or Cancel 7. Type "Chest X-ray 2-Views" 8. Populate status as pending or complete 9. Click " Save" Imaging Entry button 										
	Observations										
	<table border="1"> <thead> <tr> <th>Task Success</th> <th>Path Deviations</th> <th>Errors</th> <th>Effort: (1) v. high, (5) v. low</th> <th>Time to Complete</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input type="checkbox"/>1 <input type="checkbox"/>2 <input type="checkbox"/>3 <input checked="" type="checkbox"/>4 <input type="checkbox"/>5</td> <td>43 secs</td> </tr> </tbody> </table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	43 secs
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	43 secs						
	Comments										
Click here											

Task No.	Description										
a3.2	CPOE - Access a Radiology Order <i>(Review and/or consult the Referrals and Radiology Orders process overview document, if necessary)</i>										
	Actor										
	Provider, MA, Case Manager										
	Steps										
	<ol style="list-style-type: none"> 1. Select the same patient as prior task 2. Select the prior encounter 3. Open Encounter and Scroll to "Imaging" orders screen Path: Imaging > View Imaging Orders List 4. Verify date and status in list 										
	Observations										
	<table border="1"> <thead> <tr> <th>Task Success</th> <th>Path Deviations</th> <th>Errors</th> <th>Effort: (1) v. high, (5) v. low</th> <th>Time to Complete</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input type="checkbox"/>1 <input type="checkbox"/>2 <input type="checkbox"/>3 <input type="checkbox"/>4 <input checked="" type="checkbox"/>5</td> <td>24 secs</td> </tr> </tbody> </table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	24 secs
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	24 secs						
	Comments										
Click here											

Task No.	Description			
a3.3	CPOE - Change a Radiology Order <i>(Review and/or consult the Referrals and Radiology Orders process overview document, if necessary)</i>			
	Actor			
	Provider, MA, Case Manager			
	Steps			
	<ol style="list-style-type: none"> 1. Select the same patient as prior task 2. Hit Search for Patient Results and Select a Patient 3. Select prior task Encounters 4. Select a recent encounter record 5. Scroll to Imaging Path: Imaging > Add or Cancel 6. Delete Record 7. Confirm deletion 8. Add new imaging order 9. Populate any new Imaging Name, Start Date, and Status 10. Click “ Save” Imaging Entry button 			
	Observations			
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5
	Time to Complete			
	54 secs			
	Comments			
	Click here			

170.315 (a)(5) - Demographics

Task No.	Description									
a5.1	Record demographics <i>(Review, add, change demographic information, if necessary)</i>									
	Actor									
	Provider									
	Steps									
	<ol style="list-style-type: none"> 1. Select "Search Patient" 2. Select search 3. Click "Create Button" 4. Create a patient 'Ed Smith' 5. Populate Address and Race 6. Click Create 									
	Observations									
	<table border="1"> <thead> <tr> <th>Task Success</th> <th>Path Deviations</th> <th>Errors</th> <th>Effort: (1) v. high, (5) v. low</th> <th>Time to Complete</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input type="checkbox"/>1 <input checked="" type="checkbox"/>2 <input type="checkbox"/>3 <input type="checkbox"/>4 <input type="checkbox"/>5</td> <td>63 secs</td> </tr> </tbody> </table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	63 secs						
Comments										
Click here										

Task No.	Description									
a5.2	Access and modify demographics <i>(Access and modify demographic information, if necessary)</i>									
	Actor									
	Provider, MA, Case Manager									
	Steps									
	<ol style="list-style-type: none"> 1. Open patient update screen using blue "Search" button Path: Patients > Search > Select 2. Select Ed Smith 3. Click Edit button on top left 4. Add sexual orientation to any drop-down selection 5. Delete Patient DOB 6. Change patient DOB and re-populate 12/30/1963 7. Click Save button to save in top left to save updates 									
	Observations									
	<table border="1"> <thead> <tr> <th>Task Success</th> <th>Path Deviations</th> <th>Errors</th> <th>Effort: (1) v. high, (5) v. low</th> <th>Time to Complete</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input type="checkbox"/>1 <input type="checkbox"/>2 <input checked="" type="checkbox"/>3 <input type="checkbox"/>4 <input type="checkbox"/>5</td> <td>59 secs</td> </tr> </tbody> </table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	59 secs						
Comments										
Click here										

§170.314 (a)(9) – Clinical Decision Support

Site: <https://patientpattern.com/accounts/login/>

User ID: ehrcqm@patientpattern.com

Password: @Password2022

Overview

Validate ability to configure clinical decision support interventions for Problems, Med List, Med Allergy List, Demographics, Lab Tests and values/results, Vital Signs, and combinations thereof, for a user.

Task No.	Description										
a9.1	Create CDS Alert <i>(Review and/or consult the CDS Setup & Administration process overview document, if necessary)</i>										
	Actor										
	Clinic Manager (Admin)										
	Steps										
	<ol style="list-style-type: none"> 1. Login as Admin User Path: Admin items > Rules > Create new rule 2. Create short name for rule "Routine Mammogram - Annual Order" 3. Populate a short 'Alert Message ' as "This patient is due for annual mammogram. Create order and refer" 4. Add rule author > End User first and last name 5. Add rule conditions Age greater than 40, Gender equal to female, Test Name equal to "Mammogram", LOINC code equal to 24606-6 6. Click "Save" definition changes 7. Close Admin Tab/Window 										
	Observations										
	<table border="1"> <thead> <tr> <th>Task Success</th> <th>Path Deviations</th> <th>Errors</th> <th>Effort: (1) v. high, (5) v. low</th> <th>Time to Complete</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/>Pass <input type="checkbox"/>Fail</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input checked="" type="checkbox"/>No <input type="checkbox"/>Yes</td> <td><input type="checkbox"/>1 <input type="checkbox"/>2 <input type="checkbox"/>3 <input type="checkbox"/>4 <input checked="" type="checkbox"/>5</td> <td>77 secs</td> </tr> </tbody> </table>	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	77 secs
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete						
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	77 secs						
	Comments										
Click here											

Task No.	Description
a9.2	Edit CDS Alert <i>(Review and/or consult the CDS Setup & Administration process overview document, if necessary)</i>
	Actor
	Clinic Manager (Admin)
	Steps
	<ol style="list-style-type: none"> 1. Login as Admin User 2. Go to "Patient Search" Path: Admin items > Rules 3. Rule list is displayed 4. Select "Edit" 5. Select to "Edit" rule

- 6. Change specific age to be greater than "44"
- 7. Click " Save definition changes" to CDS rule

Observations

Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete
<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	111 secs

Comments

[Click here](#)

170.315 (a)(14) – Add/change Implantable Device

Site: <https://patientpattern.com/accounts/login/>

User ID: ehrdoctor@patientpattern.com

Password: @Password2022

Overview

Validate ability to add and change implantable devices.

Task No.	Description				
a14.1	Implantable Device – Add/review implantable device <i>(Review and update/change implantable device, if necessary)</i>				
	Actor				
	Clinic Manager (Admin)				
	Steps				
	<ol style="list-style-type: none"> 1. Use “Patient Search” 2. Find and Select a Patient “Jeremy Bates” 3. Select a recent Encounters 4. Scroll to UDIs Path: UDIs > DeviceID 5. Review existing UDI entry 6. Select “More Info” 7. Review listing data 8. Select “More Info” to collapse the screen 				
	Observations				
	Task Success	Path Deviations	Errors	Effort: (1) v. high, (5) v. low	Time to Complete
	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5	135 secs
	Comments				
	Click here				

[Appendix C - Consent to Remote Testing](#)

Consent Form: Remote Usability Test (Adult)

Please read and sign this form.

During this usability test I agree to participate in an online session using my computer and telephone. During the session I will be interviewed about the site, asked to find information or complete tasks using the site and asked to complete an online questionnaire about the experience.

I understand and consent to the use and release of the recording by Patient Pattern. I understand that the information and recording are for research purposes only and that my name and image will not be used for any other purpose. I relinquish any rights to the recording and understand the recording may be copied and used by Patient Pattern without further permission.

I understand that participation is voluntary and I agree to immediately raise any concerns I might have.

If you have any questions after today, please contact support@patientpattern.com

Please sign below to indicate that you have read and understand the information on this form and that any questions you might have about the session have been answered.

Date: _____

Please print your name: _____

Please sign your name: _____

Participant's Signature or eSignature

Thank you!

We appreciate your participation.

Please return the signed document to:

Email: support@patientpattern.com

Test: / / to / /

Appendix D – Pre-Test Risk Analysis

As part of the SED testing procedure the level of potential risk to a patient’s safety is assessed. These risks are determined by potential for tasks covered in the SED test to be rated pre-test for assumed risk and compared to post-test results. The nature of each function coupled with the system’s ability to mitigate risk and the landscape of EHRs in the patient care workflow is presented in the table below.

Pre-test discussions of risk determined three levels of potential risk rated as High, Moderate or Low. The largest risk is anticipated to be largely determined to be the impact of correct entry of information into the correct patient chart and the widespread impact of erroneous or incomplete information being disseminated to other providers / care settings through the electronic exchange of medical information.

Task #	Task/Risk Level	Risk Rational
1	Record medication order	The inability to quickly select appropriate medications could cause inappropriate prescribing or lack of usage of CPOE medication orders impacting electronic ordering and drug-drug/drug-allergy interactions
	High	
2	Access medication order	As the medication list is available from one singular area of the system there is a low likelihood of an inability to find this information.
	Low	
3	Change medication order	The inability to quickly select appropriate medications could cause inappropriate prescribing or lack of usage of CPOE medication orders impacting electronic ordering and drug-drug/drug-allergy interactions
	High	
4	Record lab order	Inability to properly record Lab Orders could lead to delayed, incomplete or erroneous information impacting the ability for the provider to accurately assess proper care for patient.
	High	
5	Access lab order	As the lab orders are available from one singular area of the system there is a low likelihood of an inability to find this information..
	Low	
6	Change lab order	Inability to properly record Lab Orders could lead to delayed, incomplete or erroneous information impacting the ability for the provider to accurately assess proper care for patient.
	High	
7	Records radiology orders	An inability to quickly record the correct imaging order could lead to incorrect selections with consequences of repeated imaging, incorrect diagnosis and inappropriate patient care.
	High	
8	Access Radiology orders	As the radiology orders list is available from one singular area of the system there is a low likelihood of an inability to find this information.
	Low	
9	Change radiology orders	

	High	An inability to quickly record the correct imaging order could lead to incorrect selections with consequences of repeated imaging, incorrect diagnosis and inappropriate patient care.
10	Record demographics	With the large number of new fields in conjunction with practice and state requirements for demographic information, there is potential for the erroneous entry of information which could lead to patient mix ups.
	Moderate	
11	Access and modify demographics	As information is readily displayed risk at multiple stages in the workflow, the risk is minimal.
	Low	
12	Create CDS rule	Incorrectly creating CDS interventions can lead to providers relying on system prompts that are not presenting as expected. The lack of an expected warning could lead to assumptions that warning does not apply to patient.
	Moderate	
13	Edit CDS rule	As CDS intervention/resource attributes are shown with the intervention users should readily have access to this information
	Low	
14	Add/change Implantable Device	As UDI information is readily displayed on summary and patient history screens there is low risk of information being missed in accessing UDI data.
	Moderate	

Appendix E – Post-Test Risk Analysis

As expected, primary concerns from participants revolved around the copious and accuracy of data needed to fulfill test requirements. Many participants struggled to identify fields that were mandatory versus optional. Some participants were confused by in screen navigation versus top bar navigation.

Task #	Task/Pre-test Risk Level	Test Error Percentage	Discussion
1	Record medication order	0%	Users identified that a drop down of prepopulated medications, without strength, would be ideal. Furthermore all clinical end users requested to know or see which fields are mandatory when entering a medication order. To minimize risk developers will revisit fields to indicate required areas of medication order capture.
	High		
2	Access medication order	0%	The users had limited issue and in turn very low risk in referencing and reviewing medication orders that had been entered.
	Low		
3	Change medication order	0%	In line with recording medication orders, the change of an order lacks the visual indicator or hard stop for a required field. To minimize risk the development team, congruent with task 1, will review elements to indicate mandatory areas.
	High		
4	Record lab order	0%	No errors recorded but participants expressed uncertainty about the free text nature of the lab order name. It was suggested that a drop-down order of standardized lab orders would make it easier to avoid errors.
	High		
5	Access lab order	0%	There were zero errors and there was no impression or concerns for accessing an already recorded lab and its associated fields.
	Low		
6	Change lab order	0%	Similar to task 4, since order amendment requires a deletion and re-entry, participants again expressed concerns over risk of free text lab order name where abbreviations or errors in lab name could create confusion or laboratory errors.
	High		
7	Records radiology orders	0%	There were zero errors in fulfilling this task. There was concern expressed by 2 participants that a dropdown of orders versus free text for the imaging/radiology name would have made the task easier and would mitigate errors in order fulfillment.
	High		
8	Access Radiology orders	0%	There were zero errors and there was no impression or concerns for accessing an already recorded radiology order and its associated fields.

	Low		
9	Change radiology orders	0%	There were zero errors in fulfilling this task. There was concern expressed by 2 participants that a dropdown of orders versus free text for the imaging/radiology name would have made the task easier and would mitigate errors in order fulfillment.
	High		
10	Record demographics	33%	The errors recorded in the recording of patient demographic were related to 404 server issues and not end-user operation. There is a high level of familiarity with this function and its basic data entry nature. While no errors were recorded there were some initial deviations and many participants commented about the necessity of so many fields and the increased difficulty in finding the correct entry location due to the volume of potential entries. The large volume of potential demographic fields did present time delays for some users.
	Moderate		
11	Access and modify demographics	0%	No errors were recorded in the changing of patient demographic information. There is a high level of familiarity with this function and participants were more comfortable making changes.
	Low		
12	Create CDS rule	0%	Participants were generally unfamiliar with the screens. This led to an increase in time but no errors. The creation of the CDS alert and attributes, while longer than expected yielded no errors.
	Moderate		
13	Edit CDS rule	14%	Participants were generally unfamiliar with the screens and errors dropped with each task as familiarity increased. Errors were the result of uncertainty between creating the rule and the selections for potential edits. Incorrectly creating a rule could negatively impact expected alert functions for the provider.
	Low		
14	Add/change Implantable Device	0%	No errors were recorded in accessing UDI Device description, identifiers, and attributes.
	Moderate		