EHR Usability Test Report EZDERM EHR 3.0

EZDERM EHR Version 3.0

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

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EXECUTIVE SUMMARY

A usability test of dermatology EHR, EZDERM version 3.0, was conducted on July 29, 2019 in Naples, Florida by EZDERM, LLC. The purpose of this test was to test and validate the usability of the current user interface, and provide evidence of usability in the EHR Under Test (EHRUT). During the usability test, ten healthcare providers matching the target demographic criteria served as participants and used the EHRUT in simulated, but representative tasks.

This study collected performance data on 50 tasks typically conducted on the EHR:

1. Record Medication via CPOE

2. Change Medication order via CPOE

3. Display changed CPOE medication order

4. Record Laboratory Order via CPOE

5. Change Laboratory Order via CPOE

6. Display changed CPOE Lab order

7. Record Imaging Order via CPOE

8. Change Imaging Order via CPOE

9. Display changed CPOE Imaging Order

10. Drug-Drug Interaction Check (Using CPOE)

11. Drug-Allergy Interaction Check (Using CPOE)

12. Adjust Severity Drug-Drug Interactions

13. Record Personal Informations about the patient

14. Change personal information for patient

15. Display changed personal information for patient

16. Record a problem to the problem list

17. Change a problem on the problem list

18. Display the active problem list

19. Display the historical problem list

20. Record a medication to the medication list

21. Change a medication on the medication list

22. Display the active medication list

23. Display the historical medication list

24. Record a medication allergy

25. Change a medication allergy

26. Display the active medication allergy list

27. Display the historical medication allergy list

28. Add a CDS for the Problem List

29. Add a CDS for the Medication List

30. Add a CDS for the Medication Allergy List

31. Add a CDS for the Demographics

32. Add a CDS for the Laboratory Test

33. Add a CDS for the Vital Signs

34. Add a CDS for a Combination of Demographics and Medication

35. Tigger the CDS interventions/resources added using the applicable data elements from each of the

required elements: Medication, Medication Allergy, Problem, Lab Test, Age, Vital Signs and combination for Medication and Age

36. View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics

37. Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary

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

39. Record UDI on the Implantable Device List

40. Change UDI Status

41. Access UDI, Device info

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

43. Incorporate a CCDA and conduct reconciliation of problems in the CCDA with the information currently in the patient's record

44. Generate a new CCDA with reconciled data

45. Create new prescription (e-Prescribing)

46. Change Prescription (dosage or duration)

47. Cancel Prescription

48. Refill Prescription

49. Receive Fill Status Notification

50. Request and Receive Medication History Information

During the 60 minutes one-on-one usability test, each participant was greeted by the administrator and asked to review and sign an informed consent/release form (included in Appendix 3); they were instructed that they could withdraw at any time. Participants had prior experience with the EHR. The administrator introduced the test, and instructed participants to complete a series of tasks (given one at a time) using the EHRUT. During the testing, the administrator timed the test and, along with the data logger(s) recorded user performance data on paper and electronically. The administrator did not give the participant assistance in how to complete the task.

Participant screens, headshots and audio were recorded for subsequent analysis.

The following types of data were collected for each participant:

- Number of tasks successfully completed within the allotted time without assistance

- Time to complete the tasks

- Number and types of errors

- Path deviations

- Participant's verbalizations

- Participant's satisfaction ratings of the system

All participant data was de-identified – no correspondence could be made from the identity of the participant to the data collected. Following the conclusion of the testing, participants were asked to complete a post-test questionnaire. 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.

All tasks and respective user paths employed in the study were prioritized in accordance with the risk associated with user. In the table below, tasks are listed by criteria in order to facilitate the review of achieved results. Risk assessment was calculated by combining two components, test performance and user errors. The risk assessment was measured on a scale of 1 (no/low risk) to 5 (high risk). Tasks with the highest completion rate, completed with minimum or no errors, would have a rating of "1", while tasks with the lowest completion rate and a lot of errors made would receive a rating of "5". There were

no tasks that had a 0% completion rate, so no tasks were rated "5" for risk assessment.

Following is a summary of the performance and rating data collected on the EHRUT.

Task	N	Task Success		Path Deviation	Task Time (In Seconds)		Errors	Task Ratings 1=Easy	Risk Assessment
	#	#	Mean (SD)	Deviations (Observed/ Optimal)	Mean (SD)	Deviations (Observed/ Optimal)	Mean (SD)	Mean (SD)	1=no/ low risk 5=high risk
1. Record Medication via CPOE	10	9	90%	15/15	41.55 (4.5)	41.55 / 50	0 (0)	2.1 (0.99)	1
2. Change Medication order via CPOE	10	8	80%	15/15	45.25 (5.39)	45.25 / 50	0 (0)	1.9 (0.99)	1
3. Display changed CPOE medication order	10	9	90%	7/7	10.89 (2.71)	10.89 / 15	0 (0)	1.6 (0.52)	1
4. Record Laboratory Order via CPOE	10	9	90%	14/14	43.78 (4.58)	43.78 / 50	0 (0)	3 (0.94)	1
5. Change Laboratory Order via CPOE	10	8	80%	17/16	51.62 (5.6)	51.62 / 60	0.2 (0.42)	3.3 (1.06)	2
6. Display changed CPOE Lab order	10	9	90%	13/12	19.44 (3.28)	19.44 / 25	0.2 (0.42)	3.3 (0.82)	1
7. Record Imaging Order via CPOE	10	9	90%	14/14	40.33 (3.77)	40.33 / 45	0 (0)	2.1 (0.32)	1
8. Change Imaging Order via CPOE	10	8	80%	16/16	37.75 (4.53)	37.75 / 45	0 (0)	1.1 (0.32)	1
9. Display changed CPOE Imaging Order	10	10	100%	12/12	20.2 (2.82)	20.2 / 25	0 (0)	1.5 (0.53)	1
10. Drug-Drug Interaction Check (sing CPOE)	10	8	80%	16/15	62.62 (4.9)	62.62 / 70	0.3 (0.48)	2 (0)	2

11. Drug-Allergy Interaction Check (Using CPOE)	10	7	70%	12/11	62.86 (5.55)	62.86 / 70	0.2 (0.42)	2.1 (0.57)	3
12. Adjust Severity Drug-Drug Interaction	10	8	80%	20/19	34.62 (4.17)	34.62 / 40	0.4 (0.52)	2.9 (0.32)	3
13. Record Personal Informations about the patient	10	8	80%	7/6	85.5 (10.53)	85.5 / 100	0.1 (0.32)	2.3 (0.67)	2
14. Change personal information for patient	10	8	80%	7/7	59.87 (3.4)	59.87 / 65	0 (0)	1.6 (0.7)	1
15. Display changed personal information for patient	10	10	100%	4/4	11.9 (2.81)	11.9 /15	0 (0)	2.1 (0.99)	1
16. Record a problem to the problem list	10	8	80%	7/6	24.12 (3.68)	24.12 / 30	0.2 (0.63)	2.4 (0.52)	2
17. Change a problem on the problem list	10	7	70%	7/6	16.57 (3)	16.57 / 20	0.2 (0.42)	2.1 (0.32)	3
18. Display the active problem list	10	10	100%	6/6	11.6 (2.76)	11.6 / 15	0 (0)	2.1 (0.99)	1
19. Display the historical problem list	10	9	90%	6/6	11.44 (2.83)	11.44 / 15	0 (0)	1.6 (0.52)	1
20. Record a medication to the medication list	10	9	90%	15/13	44.56 (3.94)	44.56 / 50	0.1 (0.32)	2.5 (0.71)	1
21. Change a medication on the medication list	10	9	90%	11/11	29.44 (3.91)	29.44 / 35	0 (0)	2.2 (0.42)	1
22. Display the active medication list	10	9	90%	10/9	25.44 (3.21)	25.44 / 30	0.2 (0.42)	2.3 (0.48)	1
23. Display the historical medication list	10	10	100%	9/9	24.6 (2.17)	24.6 / 30	0 (0)	2.1 (0.32)	1

24. Record a medication allergy	10	7	70%	11/11	33.71 (2.14)	33.71 / 40	0 (0)	2.4 (0.52)	2
25. Change a medication allergy	10	8	80%	11/10	29 (3.46)	29 / 35	0.1 (0.32)	2.2 (0.63)	2
26. Display the active medication allergy list	10	9	90%	8/8	25.22 (3.83)	25.22 / 30	0 (0)	1.9 (0.32)	1
27. Display the historical medication allergy list	10	9	90%	8/8	24.67 (3.71)	24.67 / 30	0 (0)	2 (0.47)	1
28. Add a CDS for the Problem List	10	6	60%	17/16	109.5(6.09)	109.5 / 120	0.4 (0.7)	3.6 (0.84)	4
29. Add a CDS for the Medication List	10	6	60%	16/16	74.5 (5.05)	74.5 / 80	0 (0)	2.9 (0.99)	3
30. Add a CDS for the Medication Allergy List	10	6	60%	14/14	66.83 (3.06)	66.83 / 70	0 (0)	3.2 (0.32)	3
31. Add a CDS for the Demographics	10	8	80%	16/16	70.87 (5)	70.87 / 80	0 (0)	2.2 (1.03)	1
32. Add a CDS for the Laboratory Test	10	7	70%	14/14	63.43 (2.88)	63.43 / 70	0 (0)	3 (0)	2
33. Add a CDS for the Vital Signs	10	7	70%	13/13	66 (3.11)	66 / 70	0 (0)	2.8 (0.92)	2
34. Add a CDS for a Combination of Demographics and Medication	10	6	60%	14/14	70.67 (1.86)	70.67 / 75	0 (0)	2.7 (0.82)	3
35. Tigger the CDS interventions from each of the added elements	10	7	70%	6/5	17.71 (2.06)	17.71 / 20	0.1 (0.32)	2.6 (0.84)	3
36. View the CDS interventions using the Infobutton standard for all added elements	10	7	70%	7/6	38.71 (4.89)	38.71 / 40	0.1 (0.32)	3.1 (0.57)	3

37. Trigger the CDS interventions based on all added elements	10	8	80%	11/11	41.5 (3.89)	41.5 / 45	0 (0)	3.2 (0.42)	1
38. Access the attributes for one of the triggered CDS intervention	10	9	90%	5/5	13.44 (1.67)	13.44 / 15	0 (0)	1 (0)	1
39. Record UDI on the Implantable Device List	10	6	60%	9/9	37.67 (4.41)	37.67 / 40	0 (0)	1	3
40. Change UDI Status	10	8	80%	9/9	17.25 (1.98)	17.25 / 20	0 (0)	2.5 (0.53)	1
41. Access UDI, Device Info	10	9	90%	7/7	12.67 (1.8)	12.67 / 15	0 (0)	2.2 (1.03)	1
42. Incorporate a CCDA and conduct reconciliation of the medications and medication allergies in the CCDA	10	6	60%	7/6	21.67 (2.58)	21.67 / 25	0.1 (0.32)	2.9 (0.32)	3
43. Incorporate a CCDA and conduct reconciliation of problems in the CCDA	10	6	60%	6/6	22.5 (1.76)	22.5 / 25	0.3 (0.48)	3.5 (0.85)	4
44. Generate a new CCDA with reconciled data	10	6	60%	8/8	13.5 (1.52)	13.5 / 15	0 (0)	2.7 (0.82)	3
45. Create new prescription (e-Prescribing)	10	7	70%	15/15	61.57 (6.42)	71.57 / 70	0 (0)	2.1 (0.32)	2
46. Change Prescription (dosage or duration)	10	10	100%	9/9	70.8 (2.7)	70.8 / 75	0 (0)	2.4 (1.07)	1
47. Cancel Prescription	10	10	100%	10/10	46.1 (3.14)	46.1 / 50	0 (0)	2.4 (1.07)	1

48. Refill Prescription	10	10	100%	10/10	41 (2.71)	41 / 45	0 (0)	2.5 (0.71)	1
49. Receive Fill Status Notification	10	10	100%	4/4	37.8 (3.55)	37.8 / 40	0 (0)	2.2 (1.03)	1
50. Request and Receive Medication History Information	10	10	100%	11/11	73.6 (35.6)	73.6 / 80	0 (0)	2 (0.82)	1

The results from the System Usability Scale scored the subjective satisfaction with the system based on performance with these tasks to be: 71.25.

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

Major findings

- Majority of the tasks were completed, but not all tasks were completed successfully. Some participants didn't complete tasks within the allotted time and, therefore, such tasks were noted as "not successful". Only two participants failed to finish two tasks

- Most tasks were completed with success rate between 80%-100%. Sixteen tasks had a success rate below 80%. The main reason for low completion rate are errors committed due to unfamiliarity with the new functionalities and insufficiently intuitive design of new features.

- On the scale of 1 ("Very Easy") to 5 ("Very difficult"), most of the tasks were marked as 2 ("Easy") and 3 ("Medium"). An average rating across all tasks is 2.37.

- Tasks associated with Clinical Decision Support (CDS) and CCDA modules were a little confusing for participants, generally. Some participants weren't comfortable with CDS configuration and CCDA, more specifically reconciliation process.

Areas for improvement

This study has shown that there are certainly some areas that need to be improved in the future:

- During the testing process we have noticed that some paths are unnecessarily long and that step reduction is needed for such paths. This improvement will create more efficient EHR and should be considered a high priority improvement.

- The study also showed us the most common user errors, which could be anticipated and avoided in the future by implementing further functionalities. Development of "smart" features in order to facilitate application usability should be considered.

- Clinical Decision Support and reconciliation in the CCDA were perceived as the least intuitive modules, therefor resulted in failures and a task times longer than allotted. We should consider adding more visual clues (like info messages), which would facilitate the use of the CDS functionality, as well as data reconciliation in the CCDA.

INTRODUCTION

The EHRUT tested for this study was EZDERM, version 3.0, dermatology EHR designed to present medical information to healthcare providers in ambulatory physician practices. The usability testing attempted to represent realistic exercises and conditions.

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

USER-CENTERED DESIGN PROCESS

EZDERM, LLC developed the EHR by understanding user needs, workflows and work environment and adopted the design changes proposed by our users. We maintain continuous communication with our users in order to ensure the best possible performance of EZDERM application, defined by high levels of effectiveness, efficiency and satisfaction.

The EZDERM team used a UCD process based on NIST 7741 model. The following EHR technology capabilities were submitted for testing of UCD process implementation:

- 170.315(a)(1) CPOE – Medications
- 170.315(a)(2) CPOE – Laboratory
- 170.315(a)(3) CPOE – Diagnostic Imaging
- 170.315(a)(4) Drug-drug, Drug-allergy Interaction Checks
- 170.315(a)(5) Demographics
- 170.315(a)(6) Problem List
- 170.315(a)(7) Medication List
- 170.315(a)(8) Medication Allergy List
- 170.315(a)(9) Clinical Decision Support
- 170.315(a)(14) Implantable Device List

- 170.315(b)(2) Clinical Information Reconciliation and Incorporation
- 170.315(b)(3) Electronic Prescribing

It should be noted that we are constantly using the findings from this study to meet the requirements and needs of our users in order to make useful product for clinical environment and workflows.

METHOD

Participants

A total of ten participants were tested on the EHRUT. Participants in the test were Providers and they all were recruited by EZDERM LLC. In addition, participants had no direct connection to the development of or organization producing the EHRUT. Participants were not from the testing or supplier organization. Participants were given the opportunity to have the same orientation and level of training as the actual end users would have received.

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

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

Part. ID	Gender (M/F)	Age	Education	Occupation	Prof. Experience (Years)	Weekly iPad Usage (Hours)	Monthly EHR Usage
P1	F	23-39	College Graduate	Other	< 1	10-15	Daily
P2	F	23-39	Some College	Administrative Staff	10-20	15-20	Daily
P3	F	23-39	Some College	Other	1-5	10-15	Daily

P4	F	23-39	College Graduate	Administrative Staff	10-20	> 20	Daily
P5	F	23-39	High School	Other	< 1	< 5	Daily
P6	F	23-39	Some College	Medical Assistant	10-20	> 20	Daily
P7	F	23-39	College Graduate	Medical Assistant	< 1	10-15	Daily
P8	F	23-39	Some College	Medical Assistant, Administrative Staff	5-10	> 20	Daily
P9	F	< 23	College Graduate	Medical Assistant	< 1	> 20	Daily
P10	F	23-39	Some College	Administrative Staff	1-5	> 20	Daily

Ten participants were recruited and all participated in the usability test.

Participants were scheduled for 60-minute sessions with 15 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 recruiting firm.

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 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 the section Usability Metrics.

Tasks

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

1. Record Medication via CPOE

2. Change Medication order via CPOE

3. Display changed CPOE medication order

4. Record Laboratory Order via CPOE

5. Change Laboratory Order via CPOE

6. Display changed CPOE Lab order

7. Record Imaging Order via CPOE

8. Change Imaging Order via CPOE

9. Display changed CPOE Imaging Order

10. Drug-Drug Interaction Check (Using CPOE)

11. Drug-Allergy Interaction Check (Using CPOE)

12. Adjust Severity Drug-Drug Interactions

13. Record Personal Informations about the patient

14. Change personal information for patient

15. Display changed personal information for patient

16. Record a problem to the problem list

17. Change a problem on the problem list

18. Display the active problem list

19. Display the historical problem list

20. Record a medication to the medication list

21. Change a medication on the medication list

22. Display the active medication list

23. Display the historical medication list

24. Record a medication allergy

25. Change a medication allergy

26. Display the active medication allergy list

27. Display the historical medication allergy list

28. Add a CDS for the Problem List

29. Add a CDS for the Medication List

30. Add a CDS for the Medication Allergy List

31. Add a CDS for the Demographics

32. Add a CDS for the Laboratory Test

33. Add a CDS for the Vital Signs

34. Add a CDS for a Combination of Demographics and Medication

35. Tigger the CDS interventions/resources added using the applicable data elements from each of the required elements: Medication, Medication Allergy, Problem, Lab Test, Age, Vital Signs and combination for Medication and Age

36. View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics

37. Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/ referral summary

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

39. Record UDI on the Implantable Device List

40. Change UDI Status

41. Access UDI, Device info

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

43. Incorporate a CCDA and conduct reconciliation of problems in the CCDA with the information currently in the patient's record

44. Generate a new CCDA with reconciled data

45. Create new prescription (e-Prescribing)

46. Change Prescription (dosage or duration)

47. Cancel Prescription

48. Refill Prescription

49. Receive Fill Status Notification

50. Request and Receive Medication History Information

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

Procedures

Upon arrival, participants were greeted; their identity was verified and matched with a name on the participant schedule. Participants were then assigned a participant ID. Each participant reviewed and signed an informed consent and release form (See Appendix 3). A representative from the test team witnessed the participant's signature.

To ensure that the test ran smoothly, two staff members participated in this test, the data logger and the usability administrator. The usability testing staff conducting the test was experienced usability practitioners with a Master's degree, trained in usability research, and each with over 10 years of experience.

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 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 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 stopped once the participant indicated they had successfully completed the task. Scoring is discussed below in the section Usability Metrics.

Following the session, the administrator gave the participant the post-test questionnaire (See Appendix 5), and thanked participants for their participation.

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

Participants were thanked for their time and compensated. Participants signed a receipt and acknowledgement form (See Appendix 6) indicating that they had received the compensation.

Test Location

The test facility included a waiting area and a quiet testing room with a table, computer for the participant, and recording computer for the administrator. Only the participant and administrator were in the test room. All observers and the data logger worked from a separate room where they could see the participant's screen and face shot, and listen to the audio of the session. To ensure that the environment was comfortable for users, noise levels were kept to a minimum with the ambient temperature within a normal range. All of the safety instruction and evacuation procedures were valid, in place, and visible to the participants.

Test Environment

The EHRUT would typically be used in a healthcare office or facility. In this instance, the testing was conducted in healthcare office. For testing, the participants used an Apple iPad 6th generation running IOS 12.3.1 operating system. The participants used touchscreen when interacting with the EHRUT.

The EHRUT used a 9.7-inch screen, set on resolution 1536 x 2048 pixels, with 16M colors. The application was set up by the EZDERM, LLC according to the vendor's documentation describing the system set-up and preparation. The application itself was accessed over the Internet via private office network, and it was running against an internal environment set up on EZDERM's internal network. 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).

Test Forms and Tools

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

1. Non-Disclosure Agreement and Informed Consent Form

2. Moderator's Guide

3. System Usability Scale Questionnaire

4. Incentive Receipt and Acknowledgment Form

Examples of these documents can be found in Appendices 3-5, respectively. The Moderator's Guide was devised so as to be able to capture required data.

The participant's interaction with the EHRUT was captured and recorded digitally with screen capture software running on the test machine. A video camera recorded each participant's facial expressions synced with the screen capture, and verbal comments were recorded with a microphone. The test session

were electronically transmitted to a nearby observation room where the data logger observed the test session.

Participant Instructions

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

> *Thank you for participating in this study. Your input is very important. Our session today will last about 60 minutes. During that time you will use an instance of an electronic health record. 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. I did not have any involvement in its creation, so 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 3 minutes to explore the system and make comments. Once this task was complete, 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 would like to request that you* not *talk aloud or verbalize while you are doing the tasks. 9 I will ask you your impressions about the task once you are done.*

Participants were then given 50 tasks to complete. Tasks are listed in the moderator's guide in Appendix 4.

Usability Metrics

According to the *NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records*, EHRs should support a process that provides a high level of usability for all users. The goal is for users to interact with the system effectively, efficiently, and with an acceptable level of satisfaction. To this end, metrics for effectiveness, efficiency and user satisfaction were captured during the usability testing. The goals of the test were to assess:

1. Effectiveness of EZDERM EHR by measuring participant success rates and errors

2. Efficiency of EZDERM EHR by measuring the average task time and path deviations

3. Satisfaction of EZDERM EHR by measuring ease of use ratings

DATA SCORING

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

Measures	Rationale and Scoring
Effectiveness: Task Success	A task was counted as a "Success" if the participant was able to achieve the correct outcome, without assistance, within the time allotted on a per task basis. The total number of successes were calculated for each task and then divided by the total number of times that task was attempted. The results are provided as a percentage. Task times were recorded for successes. Observed task times divided by the optimal time for each task is a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance under realistic conditions, is recorded when constructing tasks. Target task times used for task times in the Moderator's Guide must be operationally defined by taking multiple measures of optimal performance and multiplying by some factor [e.g., 1.25] that allows some time buffer because the participants are presumably not trained to expert performance. Thus, if expert, optimal performance on a task was [x] seconds then allotted task time performance was [x * 1.25] seconds. This ratio should be aggregated across tasks and reported with mean and variance scores.
Effectiveness: Task Failures	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 "Failures." No task times were taken for errors. The total number of errors was calculated for each task and then divided by the total number of times that task was attempted. Not all deviations would be counted as errors. This should also be expressed as the mean number of failed tasks per participant. On a qualitative level, an enumeration of errors and error types should be collected.
Efficiency: Task Deviations	The participant's path 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. Optimal paths should be recorded when constructing tasks.
Efficiency: Task Time	Each task was timed from when the administrator said "Begin" until the participant said, "Done." If he or she failed to say "Done," the time was stopped when the participant stopped performing the task. Only task times for tasks that were successfully completed were included in the average task time analysis. Average time per task was calculated for each task. Variance measures (standard deviation and standard error) were also calculated.

Satisfaction: Task Rating	Participant's subjective impression of the ease of use of the application was measured by administering both a simple post-task question as well as a post-session questionnaire. After each task, the participant was asked to rate "Overall, this task was:" on a scale of 1 (Very Difficult) to 5 (Very Easy). These data are averaged across participants. Common convention is that average ratings for systems judged easy to use should be 3.3 or above. To measure participants' confidence in and likeability of the EZDERM EHR overall, the testing team administered the System Usability Scale (SUS) post-test questionnaire. Questions included, "I think I would like to use this system frequently," "I thought the system was easy to use," and "I would imagine that most people would learn to use this system very quickly." See full System Usability Score questionnaire in Appendix 5.

RESULTS

Data Analysis and Reporting

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

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

Task	N	Task Success		Path Deviation	Task Time (In Seconds)		Errors	Task Ratings 1=Easy	Risk Assessment
	#	#	Mean (SD)	Deviations (Observed/ Optimal)	Mean (SD)	Deviations (Observed/ Optimal)	Mean (SD)	Mean (SD)	1=no/ low risk 5=high risk
1. Record Medication via CPOE	10	9	90%	15/15	41.55 (4.5)	41.55 / 50	0 (0)	2.1 (0.99)	1
2. Change Medication order via CPOE	10	8	80%	15/15	45.25 (5.39)	45.25 / 50	0 (0)	1.9 (0.99)	1
3. Display changed CPOE medication order	10	9	90%	7/7	10.89 (2.71)	10.89 / 15	0 (0)	1.6 (0.52)	1
4. Record Laboratory Order via CPOE	10	9	90%	14/14	43.78 (4.58)	43.78 / 50	0 (0)	3 (0.94)	1
5. Change Laboratory Order via CPOE	10	8	80%	17/16	51.62 (5.6)	51.62 / 60	0.2 (0.42)	3.3 (1.06)	2
6. Display changed CPOE Lab order	10	9	90%	13/12	19.44 (3.28)	19.44 / 25	0.2 (0.42)	3.3 (0.82)	1
7. Record Imaging Order via CPOE	10	9	90%	14/14	40.33 (3.77)	40.33 / 45	0 (0)	2.1 (0.32)	1
8. Change Imaging Order via CPOE	10	8	80%	16/16	37.75 (4.53)	37.75 / 45	0 (0)	1.1 (0.32)	1
9. Display changed CPOE Imaging Order	10	10	100%	12/12	20.2 (2.82)	20.2 / 25	0 (0)	1.5 (0.53)	1
10. Drug-Drug Interaction Check (sing CPOE)	10	8	80%	16/15	62.62 (4.9)	62.62 / 70	0.3 (0.48)	2 (0)	2
11. Drug-Allergy Interaction Check (Using CPOE)	10	7	70%	12/11	62.86 (5.55)	62.86 / 70	0.2 (0.42)	2.1 (0.57)	3
12. Adjust Severity Drug-Drug Interaction	10	8	80%	20/19	34.62 (4.17)	34.62 / 40	0.4 (0.52)	2.9 (0.32)	3

13. Record Personal Informations about the patient	10	8	80%	7/6	85.5 (10.53)	85.5 / 100	0.1 (0.32)	2.3 (0.67)	2
14. Change personal information for patient	10	8	80%	7/7	59.87 (3.4)	59.87 / 65	0 (0)	1.6 (0.7)	1
15. Display changed personal information for patient	10	10	100%	4/4	11.9 (2.81)	11.9 /15	0 (0)	2.1 (0.99)	1
16. Record a problem to the problem list	10	8	80%	7/6	24.12 (3.68)	24.12 / 30	0.2 (0.63)	2.4 (0.52)	2
17. Change a problem on the problem list	10	7	70%	7/6	16.57 (3)	16.57 / 20	0.2 (0.42)	2.1 (0.32)	3
18. Display the active problem list	10	10	100%	6/6	11.6 (2.76)	11.6 / 15	0 (0)	2.1 (0.99)	1
19. Display the historical problem list	10	9	90%	6/6	11.44 (2.83)	11.44 / 15	0 (0)	1.6 (0.52)	1
20. Record a medication to the medication list	10	9	90%	15/13	44.56 (3.94)	44.56 / 50	0.1 (0.32)	2.5 (0.71)	1
21. Change a medication on the medication list	10	9	90%	11/11	29.44 (3.91)	29.44 / 35	0 (0)	2.2 (0.42)	1
22. Display the active medication list	10	9	90%	10/9	25.44 (3.21)	25.44 / 30	0.2 (0.42)	2.3 (0.48)	1
23. Display the historical medication list	10	10	100%	9/9	24.6 (2.17)	24.6 / 30	0 (0)	2.1 (0.32)	1
24. Record a medication allergy	10	7	70%	11/11	33.71 (2.14)	33.71 / 40	0 (0)	2.4 (0.52)	2
25. Change a medication allergy	10	8	80%	11/10	29 (3.46)	29 / 35	0.1 (0.32)	2.2 (0.63)	2

26. Display the active medication allergy list	10	9	90%	8/8	25.22 (3.83)	25.22 / 30	0 (0)	1.9 (0.32)	1
27. Display the historical medication allergy list	10	9	90%	8/8	24.67 (3.71)	24.67 / 30	0 (0)	2 (0.47)	1
28. Add a CDS for the Problem List	10	6	60%	17/16	109.5(6.09)	109.5 / 120	0.4 (0.7)	3.6 (0.84)	4
29. Add a CDS for the Medication List	10	6	60%	16/16	74.5 (5.05)	74.5 / 80	0 (0)	2.9 (0.99)	3
30. Add a CDS for the Medication Allergy List	10	6	60%	14/14	66.83 (3.06)	66.83 / 70	0 (0)	3.2 (0.32)	3
31. Add a CDS for the Demographics	10	8	80%	16/16	70.87 (5)	70.87 / 80	0 (0)	2.2 (1.03)	1
32. Add a CDS for the Laboratory Test	10	7	70%	14/14	63.43 (2.88)	63.43 / 70	0 (0)	3 (0)	2
33. Add a CDS for the Vital Signs	10	7	70%	13/13	66 (3.11)	66 / 70	0 (0)	2.8 (0.92)	2
34. Add a CDS for a Combination of Demographics and Medication	10	6	60%	14/14	70.67 (1.86)	70.67 / 75	0 (0)	2.7 (0.82)	3
35. Tigger the CDS interventions from each of the added elements	10	7	70%	6/5	17.71 (2.06)	17.71 / 20	0.1 (0.32)	2.6 (0.84)	3
36. View the CDS interventions using the Infobutton standard for all added elements	10	7	70%	7/6	38.71 (4.89)	38.71 / 40	0.1 (0.32)	3.1 (0.57)	3
37. Trigger the CDS interventions based on all added elements	10	8	80%	11/11	41.5 (3.89)	41.5 / 45	0 (0)	3.2 (0.42)	1

Task									
38. Access the attributes for one of the triggered CDS intervention	10	9	90%	5/5	13.44 (1.67)	13.44 / 15	0 (0)	1 (0)	1
39. Record UDI on the Implantable Device List	10	6	60%	9/9	37.67 (4.41)	37.67 / 40	0 (0)	2.3 (0.82)	3
40. Change UDI Status	10	8	80%	9/9	17.25 (1.98)	17.25 / 20	0 (0)	2.5 (0.53)	1
41. Access UDI, Device Info	10	9	90%	7/7	12.67 (1.8)	12.67 / 15	0 (0)	2.2 (1.03)	1
42. Incorporate a CCDA and conduct reconciliation of the medications and medication allergies in the CCDA	10	6	60%	7/6	21.67 (2.58)	21.67 / 25	0.1 (0.32)	2.9 (0.32)	3
43. Incorporate a CCDA and conduct reconciliation of problems in the CCDA	10	6	60%	6/6	22.5 (1.76)	22.5 / 25	0.3 (0.48)	3.5 (0.85)	4
44. Generate a new CCDA with reconciled data	10	6	60%	8/8	13.5 (1.52)	13.5 / 15	0 (0)	2.7 (0.82)	3
45. Create new prescription (e-Prescribing)	10	7	70%	15/15	61.57 (6.42)	71.57 / 70	0 (0)	2.1 (0.32)	2
46. Change Prescription (dosage or duration)	10	10	100%	9/9	70.8 (2.7)	70.8 / 75	0 (0)	2.4 (1.07)	1
47. Cancel Prescription	10	10	100%	10/10	46.1 (3.14)	46.1 / 50	0 (0)	2.4 (1.07)	1
48. Refill Prescription	10	10	100%	10/10	41 (2.71)	41 / 45	0 (0)	2.5 (0.71)	1
49. Receive Fill Status Notification	10	10	100%	4/4	37.8 (3.55)	37.8 / 40	0 (0)	2.2 (1.03)	1

50. Request and Receive Medication History Information	10	10	100%	11/11	73.6 (35.6)	73.6 / 80	0 (0)	2 (0.82)	1

The results from the SUS (System Usability Scale) scored the subjective satisfaction with the system based on performance with these tasks to be: 71.25, which is considered as an average score.

Discussion of the Findings

The study demonstrated that the majority of tasks were completed successfully with minimal or no errors. By analyzing gathered information we have come to the conclusion that participant handled tasks very well, although there were several new functionalities. Also, some tasks should have been given more allotted time and a few participants failed on those tasks due to such issue.

Evaluation of effectiveness, efficiency and satisfaction has shown that our current users are satisfied with new EZDERM functionalities in the terms of usability, optimal performance, number of errors committed and visual impressions.

All errors and suggestions noted by participants were taken into consideration and fixed or are currently being improved or redesigned.

EFFECTIVENESS

Most tasks were completed successfully, as evidenced in the summary table. Tasks were marked as "not completed" if participant had abandoned the task, performed it incorrectly or reached the end of the allotted time before successful completion.

Majority of participants completed their tasks using optimal paths, but not all were completed within the allotted time. Number of tasks effectively completed by all participants (success rate 90% or greater) is 22

of 50, which is satisfied outcome. Number of tasks that were completed at success rate 80% is 11, and 16 tasks were completed at 60-70% success rate.

EFFICIENCY

Some users took longer than what the allotted time was for the task, but this is mainly related to unfamiliarity with new features. Majority of tasks related to Clinical Decision Support and to CCDA and task "Record UDI on the Implantable Device List" should have had longer allotted time set, as majority of participants had gone beyond time limits for those tasks or their observed time varied more than 20% from the optimal task time. Also, a few observed times were longer due to issues with local server.

Several path deviations were noticed during the testing sessions. Most of them were result of participant's distraction, clumsiness, but some of them are result of unfamiliarity with new functionalities. Tasks associated with Clinical Decision Support module provoked more difficulties and errors, as some features in this module are new and participants should have had a deeper insight into its functionality in order to successfully complete these tasks.

SATISFACTION

The overall impression was rated as averagely satisfying among the participants, with a score of 71.25. Participants' overall impressions of the system were very encouraging: "user-friendly", "easy to use" etc. Regarding the ratings of individual tasks, 57% of the tasks were rated as "Very Easy" or "Easy". Percentage of tasks that were rated as "Medium" was 33.4%, and only 8.8% as "Difficult". Only two tasks were rated as "Very difficult" - those were tasks related to Clinical Decision Support module and reconciliation in CCDA module.

Participants' feedbacks and suggestions were gladly taken into consideration and the EZDERM team will ensure that most of these requests are fulfilled and incorporated into future versions of our EHR.

MAJOR FINDINGS

- Majority of the tasks were completed, but not all tasks were completed successfully. Some participants didn't complete tasks within the allotted time and, therefore, such tasks were noted as "not successful". Only two participants failed to finish two tasks (related to Clinical Decision Support and CCDA modules).

- Most tasks were completed with success rate between 80%-100%. Fifteen tasks had a success rate below 80%. The main reason for low completion rate are errors committed due to unfamiliarity with the new functionalities and insufficiently intuitive design.

- On the scale of 1 ("Very Easy") to 5 ("Very difficult"), most of the tasks were marked as 2 ("Easy") and 3 ("Medium"). An average rating across all tasks is 2.37.

- Tasks associated with Clinical Decision Support (CDS) and CCDA modules were a little confusing for participants, generally. Some participants weren't comfortable with CDS configuration and CCDA, more specifically reconciliation process.

AREAS FOR IMPROVEMENT

This study has shown that there are certainly some areas that need to be improved in the future:

- During the testing process we have noticed that some paths are unnecessarily long and that step reduction is needed for such paths. This improvement will create more efficient EHR and should be considered a high priority improvement.

- The study also showed us the most common user errors, which could be anticipated and avoided in the future by implementing further functionalities. Development of "smart" features in order to facilitate application usability should be considered.

- Clinical Decision Support and reconciliation in the CCDA were perceived as the least intuitive, therefor resulted in failures and a task times longer than allotted. We should consider adding

more visual clues (like info messages), which would facilitate the use of the CDS functionality, as well as data reconciliation in the CCDA.

APPENDICES

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

1. Sample Recruiting Screener

2. Participant Demographics

3. Non-Disclosure Agreement (NDA) and Informed Consent Form

4. Example Moderator's Guide

5. System Usability Scale Questionnaire

6. Incentive Receipt and Acknowledgment Form

Recruiting Screener

Please fill out the below information in order to see if you qualify and if you would like to participate in a usability study for an electronic health record. This study is for research purposes only and should take a few minutes of your time.

1. Please select your gender:
   - ❏ Male
   - ❏ Female

2. Have you participated in a usability test in the past 6 months?
   - ❏ Yes
   - ❏ No

3. Do you, or does anyone in your home, work in marketing research, usability research, or web design?
   - ❏ Yes
   - ❏ No

4. Do you, or does anyone in your home, have a commercial or research interest in an electronic health record software or consulting company?
   - ❏ Yes
   - ❏ No

5. Which of the following best describes your age?
   - ❏ Under 23
   - ❏ 23 to 39
   - ❏ 40 to 59
   - ❏ 60 to 74
   - ❏ 74 and older

6. Which of the following best describes your ethnicity?

   ❏ Caucasian

   ❏ African American

   ❏ American Indian or Alaskan Native

   ❏ Asian

   ❏ Native Hawaiian or Other Pacific Islander

7. Do you require any assistive technologies to use a computer?

   ❏ Yes

   ❏ No

   If yes, please describe:

Professional Demographics

8. What is your current position and title? (Must be health care provider)

   ❏ Physician

   ❏ Medical Assistant

   ❏ Nurse

   ❏ Administrative Staff

   ❏ Other

9. How long have you held this position?

   ❏ Less than 1 year

   ❏ 1-5 years

   ❏ 5-10 years

   ❏ 10-20 years

   ❏ More than 20 years

10. Which of the following describes your level of education?

   ❏ High School

   ❏ Some College

   ❏ College Graduate

❏ Postgraduate

❏ Other

Computer Expertise

11. Besides reading email, what professional activities do you do on the computer?

❏ Access EHR   ❏ Programming
❏ Research   ❏ Word processing
❏ Reading news/books ❏ Data processing
❏ Shopping/Banking   ❏ Other

12. How many hours per week do you spend on the computer?

❏ Less than 10 hours

❏ 10-20 hours

❏ 20-30 hours

❏ 30-40 hours

❏ More than 40 hours

13. What computer platform do you usually use?

❏ Mac

❏ Windows

❏ Other

14. What Internet browser(s) do you usually use?

❏ Safari   ❏ Mozilla Firefox
❏ Internet Explorer   ❏ Opera
❏ Google Chrome   ❏ Other

15. Do you have some experience with iPad?

❏ I have very little experience

❏ I have some experience

❏ I have a lot of experience

❏ I have never used iPad

16. What activities do you do on iPad?

❏ Access EHR   ❏ Word processing
❏ Research   ❏ Data processing
❏ Reading news/books   ❏ Playing games
❏ Shopping/Banking   ❏ Social media
❏ Watch movies, series, TV   ❏ Other

17. How many hours per week do you spend using iPad?

❏ Less than 5 hours

❏ 5-10 hours

❏ 10-15 hours

❏ 15-20 hours

❏ More than 20 hours

18. In the last month, how often have you used an electronic health record?

❏ Not at all

❏ Less than 10 times

❏ 10-20 times

❏ I use it every day

19. How many years have you used an electronic health record?

❏ I have never used it

❏ 0-1 years

❏ 1-5 years

❏ 5-10 years

❏ More than 10 years

20. How many EHRs do you use or are you familiar with?

❏ None

❏ 1

❏ 2

❏ 3

❏ More than 3

21. How does your work document patient records?

❏ On paper

❏ Some paper, some electronic

❏ All electronic

Contact information

Name of participant:

Address:

City, State, Zip:

Daytime phone number:

Evening phone number:

Alternate [cell] phone number:

Email address:

Before your session starts, you will have to sign a release form allowing us to videotape your session. The videotape will only be used internally for further study if needed. Will you consent to be videotaped?

❏ Yes
❏ No

Participant Demographics

Following is a high-level overview of the participants in this study.

1. **Gender**

Men	[X]
Women	[X]
Total	[X]

2. **Age**

Under 23	[X]
23 to 39	[X]
40 to 59	[X]
60 to 74	[X]
74 and older	[X]

3. **Occupation/Role**

Physician	[X]
Medical Assistant	[X]
Nurse	[X]
Administrative Staff	[X]
Other	[X]

4. **Education**

High School	[X]
Some College	[X]
College Graduate	[X]
Postgraduate	[X]
Other	[X]

5. **Professional Experience**

Less than 1 year	[X]
1-5 years	[X]
5-10 years	[X]
10-20 years	[X]
More than 20 years	[X]

6. **Weekly iPad Usage**

Less than 5 hours	[X]
5-10 hours	[X]
10-15 hours	[X]
15-20 hours	[X]
More than 20 hours	[X]

7. **Monthly EHR Usage**

Never used	[X]
0-1 years	[X]
1-5 years	[X]
5-10 years	[X]
More than 10 years	[X]

Non-Disclosure Agreement and Informed Consent Form

Non-Disclosure Agreement

THIS AGREEMENT is entered into as of _____, 2019, between _____ ("the Participant") and the testing organization EZDERM, LLC located at 9128 Strada Pl #10115 Naples, Florida 34108.

The Participant acknowledges his or her voluntary participation in today's usability study may bring the Participant into possession of Confidential Information. The term "Confidential Information" means all technical and commercial information of a proprietary or confidential nature which is disclosed by EZDERM LLC, or otherwise acquired by the Participant, in the course of today's study.

By way of illustration, but not limitation, Confidential Information includes trade secrets, processes, formulae, data, know-how, products, designs, drawings, computer aided design files and other computer files, computer software, ideas, improvements, inventions, training methods and materials, marketing techniques, plans, strategies, budgets, financial information, or forecasts.

Any information the Participant acquires relating to this product during this study is confidential and proprietary to EZDERM LLC and is being disclosed solely for the purposes of the Participant's participation in today's usability study. By signing this form the Participant acknowledges that s/he will receive monetary compensation for feedback and will not disclose this confidential information obtained today to anyone else or any other organizations.

Participant's printed name: _____

Signature: _____   Date: _____

Informed Consent

EZDERM LLC would like to thank you for participating in this study. The purpose of this study is to evaluate an electronic health records system. If you decide to participate, you will be asked to perform several tasks using the prototype and give your feedback. The study will last about 60 minutes. At the conclusion of the test, you will be compensated for your time.

Agreement

I understand and agree that as a voluntary participant in the present study conducted by EZDERM LLC I am free to withdraw consent or discontinue participation at any time. I understand and agree to participate in the study conducted and videotaped by the EZDERM LLC.

I understand and consent to the use and release of the videotape by EZDERM LLC. I understand that the information and videotape is for research purposes only and that my name and image will not be used for any purpose other than research. I relinquish any rights to the videotape and understand the videotape may be copied and used by EZDERM LLC without further permission.

I understand and agree that the purpose of this study is to make software applications more useful and usable in the future.

I understand and agree that the data collected from this study may be shared with outside of EZDERM LLC and EZDERM LLC's client. I understand and agree that data confidentiality is assured, because only de- identified data – i.e., identification numbers not names – will be used in analysis and reporting of the results.

I agree to immediately raise any concerns or areas of discomfort with the study administrator. I understand that I can leave at any time.

Please check one of the following:

      ☐ YES, I have read the above statement and agree to be a participant.

      ☐ NO, I choose not to participate in this study.

Signature: _____   Date: _____

APPENDIX 4

Moderator's Guide

Appendix 4: EZDERM Usability Test
Moderator's Guide

Administrator _____
Data Logger_____
Date _____ Time _____
Participant #_____
Location_____

<u>Prior to testing</u>
- Confirm schedule with participants
- Email consent form to participants
- Collect faxed/emailed consent
- Ensure lab and data recording equipment is running properly

<u>Prior to each participant</u>
- Reset application
- Start session recordings

<u>Prior to each task</u>
- Reset application to starting point for next task

<u>After each participant</u>
- End session recordings

<u>After all testing</u>
- Backup all data

Thank you for participating in this study. Our session today will last 60 minutes. During that time you will take a look at an electronic health record system.

I will ask you to complete a few tasks using this system and answer some questions. 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. You will be asked to complete these tasks on your own trying to do them as quickly as possible with the fewest possible errors or deviations. Do not do anything more than asked. If you get lost or have difficulty I cannot answer or help you with anything that has to do with the system itself. Please save your detailed comments until the end of a task or the end of the session as a whole, when we can discuss freely.

I did not have any involvement in its creation, so please be honest with your opinions.
The product you will be using today is the next production version. Some of the data may not make sense as it is placeholder data.

We are recording the audio and screenshots of our session today. All of the information that you provide will be kept confidential and your name will not be associated with your comments at any time.

Do you have any questions or concerns?

Preliminary Questions (3 minutes)

1. What is your job title / appointment?

2. What are your main responsibilities?

3. How long have you been using the EZDERM in your practice?

4. Have you used some other EHR? If yes, which?

<u>Task 1: First Impressions (180 seconds)</u>

1. This is the application you will be working with. Have you heard of it?
    - ❏ Yes
    - ❏ No

    If yes, please tell what you know about it.

Show test participant the EZDERM application.

2. What do you notice first?

3. Do you have some negative impressions on EZDERM application?

Task 2: Record medication via CPOE (50 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and enter a New Prescription for Aspirin 325 mg tablet.

Success:

❑ Easily completed
❑ Completed with difficulty or help (Describe in comments below)
❑ Not completed
Comments:

Task Time: _____ seconds

Optimal Path: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open encounter (New Virtual Encounter)→ Click on the Rx icon in the side menu → Add Prescription (Plus button) → Add Aspirin 325 mg tablet → Done → Close
Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open encounter (New Virtual Encounter) → Physical Exam → Long press beside Body Map → Plan → Rx → Add Prescription (Plus button) → Add Aspirin 325 mg tablet → Done → Done → Done

❑ Correct
❑ Minor deviations / cycles (Describe in comments below)
❑ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❑ 1   ❑ 2   ❑ 3   ❑ 4   ❑ 5

Administrator / Notetaker Comments:

Task 3: Change Medication Order (50 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and change Aspirin 325 mg tablet to Lorazepam 2 mg tablet.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Click on the Rx icon in the side menu → Open existing Prescription → Change data to Lorazepam 2 mg tablet → Done → Done → Done
Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Physical Exam → Long press beside Body Map → Plan → Rx → Open existing Prescription → Change data to Lorazepam 2 mg tablet → Done → Done → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 4: Display changed CPOE medication order (15 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and open the screen with the list of the recorded Medication Lorazepam 2 mg tablet.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Chart→ Rx History→ See in the list of the active medication Lorazepam 2 mg tablet.

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
        Comments:

Rating:
        Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

        ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 5: Record Laboratory Order (50 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and add Erythrocyte sedimentation rate Lab Test.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Long press on the Lab icon in the side menu → Choose Laboratory → Tap "+" button and search for Erythrocyte sedimentation rate (Loinc) → Tap to add → Close → Done
Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open encounter → Physical Exam → Long press beside Body Map → Go to Plan → Labs → Tap "+" button and search for Erythrocyte sedimentation rate (Loinc) → Tap to add → Close → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:

  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1　　　❏ 2　　　❏ 3　　　❏ 4　　　❏ 5

Administrator / Notetaker Comments:

Task 6: Change Laboratory Order (60 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and change Erythrocyte sedimentation rate to Blood bank comment Lab Test.

Success:

      ❏ Easily completed

      ❏ Completed with difficulty or help (Describe in comments below)

      ❏ Not completed

          Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open encounter → Long press on the Lab icon in the side menu → Choose Laboratory → Swipe item Erythrocyte sedimentation rate to delete → Delete → Tap "+" button and search for Blood bank comment (Loinc) → Tap to add → Close → Done

Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Physical Exam → Long press beside Body Map → Plan → Labs → Swipe item Erythrocyte sedimentation rate to delete → Delete → Tap "+" button and search for Blood bank comment (Loinc) → Tap to add → Close → Done

      ❏ Correct

      ❏ Minor deviations / cycles (Describe in comments below)

      ❏ Major deviations (Describe in comments below)

          Comments:

Observed Errors and Verbalizations:

      Comments:

Rating:

      Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

      ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 7: Display changed CPOE Laboratory order (25 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and open the screen with the list of ordered Laboratory, see in the list changed order Blood bank comment.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Long press on the lab icon in the side menu → Choose Laboratory → Ordered → See in the list Lab order Blood bank comment.
Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Physical Exam → Long press beside Body Map → Plan → Labs → Ordered → See in the list Lab order Blood bank comment

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 8: Record Imaging order via CPOE (45 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and add Chest MRI Imaging Test.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Long press on the Lab icon in the side menu → Choose Imaging → Tap "+" button and search for Chest MRI → Tap to add → Close → Done
Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Physical Exam → Long press beside Body Map → Go to Plan → Imaging → Tap "+" button and search for Chest MRI → Tap to add → Close → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
　　Comments:

Rating:
　　Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

　　　　　❏ 1　　　　❏ 2　　　　❏ 3　　　　❏ 4　　　　❏ 5

Administrator / Notetaker Comments:

Task 9: Change Imaging order via CPOE (45 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and change Imaging Test Chest MRI to Chest CT.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
    Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Long press on the Lab icon in the side menu → Choose Imaging → Swipe item Chest MRI to delete → Delete → Tap "+" button and search for Chest CT → Tap to add → Close → Done

Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Physical Exam → Long press beside Body Map → Plan → Imaging → Swipe item Chest MRI to delete → Delete → Tap "+" button and search for Chest CT → Tap to add → Close → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
    Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

    ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 10: Display changed CPOE Imaging order (25 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and open the screen with the list of Imaging orders, see in the list changed order Chest CT.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Path 1: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Long press on the lab icon in the side menu → Choose Imaging → Ordered → See in the list Imaging order Chest Ct

 Path 2: Homescreen → Chart → Patients → Choose the patient Janet Anderson → Encounters → Open Encounter → Physical Exam → Long press beside Body Map → Plan → Imaging → Ordered →See in the list Imaging order Chest CT

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 11: Drug-Drug Interaction Check (Using CPOE) (70 seconds)

Starting point: Homescreen

Instructions for participant: Indicate the drug-drug alert by prescribing Warfarin 4 mg Oral Tablet and Ibuprofen 400 mg Oral Tablet for the patient Barbara Thompson.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patients → Choose the patient Barbara Thompson → Encounters → Open encounter → Click on the Rx icon in the side menu → Add Prescription → Choose Warfarin 4 mg Oral Tablet → Done → Add prescription → Choose Ibuprofen 400 mg Oral Tablet → Done (Alert will be triggered and displayed on the screen) → Close → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 12: Drug-Allergy Interaction Check (Using CPOE) (70 seconds)

Starting point: Homescreen

Instructions for participant: Barbara Thompson has the Record of the Aspirin. Select the Medication for Prescription Aspirin 200 mg Oral Tablet. An alert should be triggered.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patients → Choose the patient Barbara Thompson → Encounters → Open Encounter → Click on the Rx icon in the side menu → Add prescription → Choose Aspirin 200 mg Oral Tablet → Done (Alert will be triggered and displayed on the screen) → Cancel

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
        Comments:

Rating:
        Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
        ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 13: Adjust Severity Drug-Drug Interactions (40 seconds)

Starting point: Homescreen

Instructions for participant: Indicate the Drug-Drug alert by prescribing Aspirin 325 mg Oral Tablet and Ibuprofen 400 mg Oral Tablet for the patient Barbara Thompson. Than choose (filter) not to see this interaction.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: : Homescreen → Chart → Patients → Choose patient Alex James → Encounters → Open encounter → Physical Exam → Plan → Rx → Add prescription → Choose Aspirin 325 mg Oral Tablet → Done → Add prescription → Choose Ibuprofen 400 mg Oral Tablet → Done (Alert will be triggered and displayed on the screen) → Interactions → Filter → Uncheck Moderate → Close

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 14: Record Personal Informations about the patient (100 seconds)

Starting point: Homescreen

Instructions for participant: Create new patient, Sam Smith and record his personal information.
English for Preferred Language, 01/27/1994 for Date of Birth, Female for Birth Sex, White for the Race,
Hispanic or Latino for Ethinicity, Straight or Heterosexual for Sexual Orientation, Identifies as Female for
Gender Identity.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Create New Patient → Fill out all required fields with the
specified data and choose Sexual Orientation and Gender Identity also with specified data → Done →
Close

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 15: Change personal information for patient (65 seconds)

Starting point: Homescreen

Instructions for participant: Find the Patient Sam Smith and change personal information. Preffered Language change to Spanish, Date of Birth to 12/12/1993, Birth Sex to Male, Race to Black or African American, Ethnicity to Declined to Specify, Sexual Orientation to Other, Gender Identity to Identefies as Male.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Find the patient Sam Smith → Edit → Change data for the patient → Save → Close

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 16: Display changed personal information for patient (15 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Sam Smith and display Demographics of the patient.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Find the patient Sam Smith → see personal information about the patient.

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 17: Record a problem to the problem list (30 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and add Medical
Problem Hypertension.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Find the patient Linda Garcia → Go to Problems screen → Add
new Medical Problem Hypertension with Status Active → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 18: Change a problem on the problem list (20 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and modify previously added Medical Problem Hypertension (change status from Active to Inactive).

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Find the patient Linda Garcia → Go to Problems screen → tap on the Problem Hypertension in the Problem list → Change status from Active to Inactive

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 19: Display the active problem list (15 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and open the screen with Active Problem List.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Find the patient Linda Garcia → Go to Problems → Tap on the tab Active → See list of Active Problems.

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 20: Display the historical problem list (15 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and open the screen with Historical Problem List.

Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
   Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Find the patient Linda Garcia → Go to the Problems screen → Tap on the tab Inactive → See list of Inactive Problems.

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
   Comments:

Observed Errors and Verbalizations:
   Comments:

Rating:
   Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

   ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 21: Record Medication on the Medication List (50 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and add Medication Simvastatin 20 mg tablet by mouth once daily.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Patients → Choose the patient Linda Garcia → Encounters → Open Encounter → History → Pinch out → Select Medication → Add medication → tap the medication->Add frequency once daily → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 22: Change Medication on the Medication List (35 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and discontinue previously added Medication Simvastatin 20 mg tablet by mouth once daily.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Patients → Choose the patient Linda Garcia → Encounters → Open Encounter → History → Tap on Simvastatin → Status → Change status from Currently taking to Drug Discontinued → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

    ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 23: Display the active medication list (30 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and open the screen where Active Drugs are displayed.

Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patient → search for the patient Linda Garcia → Go to Encounter → History→ tap on the "Options" button → Set "Currently Taking" for the filter → See the list of Active Medications

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 24: Display the historical medication list (30 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and open the screen where the Drugs Taken in the Past are displayed.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
     Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patient → search for the patient Linda Garcia → Go to Encounter → History→ tap on the "Options" button → Set "Used in the Past" for the filter → See the list of Medications Taken in the Past

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
     Comments:

Observed Errors and Verbalizations:
     Comments:

Rating:
     Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
     ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 25: Record Medication Allergy List (40 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and record that she is allergic to Penicillin V. Status should be Active and reactions should be Dizziness.

Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Patients → Choose the patient Linda Garcia → Encounters → Open encounter → History → Pinch out → Allergy → Search for Penicillin V, set presence Yes, symptom Dizziness and status Active → Done

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 26: Change Medication Allergy List (35 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and modify previously added Penicillin V allergy (change status from Active to Inactive).

Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
Comments:

Task Time: _____ seconds

Optimal Paths: Homescreen → Chart → Patients → Choose the patient Linda Garcia → Encounters → Open encounter → History → Allergy → Tap Penicillin V and change status from Active to Inactive → Done

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1　　　❏ 2　　　❏ 3　　　❏ 4　　　❏ 5

Administrator / Notetaker Comments:

<u>Task 27: Display the active medication allergy list (30 seconds)</u>

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and open the screen where Active Medication Allergy are displayed.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patient → search for the patient Linda Garcia → Open an existing encounter → History → Tap on the "Options" button and set Active for the filter → See list of active Medication allergies

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 28: Display the historical medication allergy list (30 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Linda Garcia and open the screen where Historical Medication Allergy are displayed.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patient → search for the patient Linda Garcia → Open an existing encounter → History → Tap on the "Options" button and set Inactive for the filter → See list of inactive Medication Allergies

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
    ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 29: CDS for the Problem (120 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for Problem Malignant hypertension, with reference link *https://medlineplus.gov/ency/article/000491.htm*, bibliography: *National Library of Medicine*, Developer: *Jacob L. Heller. MD. MHA*, Funding source: *National Institute of Health* and release date (4/5/2013). In the Expressions should be added Active Problem Malignant hypertension. Search Criteria should be set for Problem Malignant hypertension. Apply rule to all roles.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
    Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: Malignant hypertension → Fill in required fields and other (Bibliography, Developer, Funding Source) → Expressions → New Expression (Choose Active problem- Contains- Malignant hypertension) → Back → Roles (select all)→ Search Criteria (Choose Problem- Malignant hypertension) → Back → Back → Done → Close

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
    Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

    ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 30: CDS for the Medication (80 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for Medication Selegiline HCL, with reference link *https://www.ncbi.nlm.nih.gov/pubmed/9829163* and set release date (11/1/1998). In the Expression should be added Active Medication Selegiline HCL. Search Criteria should be set for medication Selegiline HCL. Apply rule to all roles.

Success:

> ❏ Easily completed
> ❏ Completed with difficulty or help (Describe in comments below)
> ❏ Not completed
> Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: Selegiline HCL → Fill in required fields → Expressions → New Expression (Choose Active medication- Contains- Selegiline HCL) → Back → Roles (select all) → Search Criteria (Choose Medication - Selegiline HCL) → Back → Back → Done → Close

> ❏ Correct
> ❏ Minor deviations / cycles (Describe in comments below)
> ❏ Major deviations (Describe in comments below)
> Comments:

Observed Errors and Verbalizations:
> Comments:

Rating:
> Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

> ❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 31: CDS for Medication Allergy (70 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for Medication Allergy Penicillins , with reference link *https://www.verywellhealth.com/penicillin-amoxicillin-and-cephalosporin-allergy-83074* and set release date (1/1/2014). In the Expression should be added Active Medication Allergy to Penicillins. Apply rule to all roles.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
   Comments:

Task Time: _____ seconds

Optimal Path: Home screen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: Medication Allergy → Fill in required fields → Expressions → New Expression (Choose Active Allergies - Contains- Penicillins) → Back → Roles (select all) → Back → Done → Close
- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
   Comments:

Observed Errors and Verbalizations:
   Comments:

Rating:
   Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

   ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 32: CDS for Demographic (80 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for Demographics (Age Old), with reference link *http://www.biomedcentral.com/1471-2318/8/6* and set release date (3/17/2008). In the Expression should be added Age Old - greater than 80. And Search Criteria should be set for Problem Myopathy. Apply rule to all roles.

Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
   Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: Demographics (Age old) → Fill in required fields → Expressions → New Expression (Choose Age Old- Greater Than- 80) → Back → Roles (select all) → Search Criteria (Choose Problem - Myopathy) → Back → Back → Done →Close

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
   Comments:

Observed Errors and Verbalizations:
   Comments:

Rating:
   Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

   ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 33: CDS for the Laboratory test (70 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for Laboratory test Urinalysis macro (dipstick) panel - Urine, with reference link *https://www.ncbi.nlm.nih.gov/pubmed/22292573* and set release date (12/3/2014). In the Expression should be added Lab test Urinalysis macro (dipstick) panel - Urine with Test Results Greater Than 0.5. Apply rule to all roles.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: Laboratory test → Fill in required fields → Expressions → New expression (Choose Lab test - Contains- Urinalysis macro (dipstick) panel - Urine with Test results Greater Than 0.5) → Back → Roles (select all) → Back → Done → Close

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1　　　❏ 2　　　❏ 3　　　❏ 4　　　❏ 5

Administrator / Notetaker Comments:

Task 34: CDS for Vital Signs (70 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for Vitals signs, with reference link *https://www.ncbi.nlm.nih.gov/pubmed/21390056* and set release date (3/10/2011). In the Expression should be added Age Old Greater Than 80, and Systolic Greater Than 160. Apply rule to all roles.

Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
Comments:

Task Time: _____ seconds

Optimal Path: Home screen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: "Vital signs " → Fill in required fields → Expressions → New Expression (Choose Age Old - Greater Than- 80 , Systolic - Greater Than - 160) → Back → Roles (select all) → Back → Done → Close

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 35: CDS for Combination of Demographics and Medication (75 seconds)

Starting point: Homescreen

Instructions for participant: Add a CDS intervention and/or reference resource for combination of Demographics and Medication (Age old >80 and Benadryl) with reference link *http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3381503/* and set release date (6/22/2012). In the Expression should be added Age Old Greater Than 80, and Active Medication Benadryl. Apply rule to all roles.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Settings → Practice → CDS Rules → New Rule → Add in Title field name of the CDS rule: Combination Demographics and Medication (>80, Benadryl) → Fill in required fields → Expressions → New expression (Choose Age Old - Greater Than- 80, Active Medication - Contains- Benadryl) → Back → Roles (select all) → Back → Done → Close

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
     Comments:

Rating:
     Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
          ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 36: Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements (20 seconds)

Starting point: Homescreen

Instructions for participant: Trigger the CDS intervention/resource for Medication, Medication Allergy, Problem, Lab Test, Age, Vital Signs and combination for Medication and Age, for the patient Mark Brown.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Find the Patient → Mark Brown → Tap on the Clinical Decision Support section → See triggered CDS rule for the patient

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:
  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 37: View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics (40 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Mark Brown see the CDS rule intervention information taping on the infobutton.

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Find the Patient → Mark Brown → Tap on Clinical Decision Support section → Tap on the infobutton for next CDS rules: "Malignant Hypertension", "Selegiline HCL" and "Elderly fall risk". → After clicking on the infobutton, user need to tap on the Close button, to go back to the Application.

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 38: Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary (45 seconds)

Starting point: Homescreen

Instructions for participant: Compare Problem list, Medication list and Medication Allergy (from a transition of care) list for the patient Mark Brown, with the triggered CDS rules on the patient chart.
Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
Comments:

Task Time: _____ seconds

Optimal Path: Home screen → Find the patient → Mark Brown → Go to Encounter → Open MACRA → Go to Transition of Care → Tap on button Transition of Care → See information about: Medication, Medication allergies and Medical Problems → Go back to patient Chart → Open Clinical Decision Support Rules section → see triggered CDS rules for previous seen information on the Transition of Care form

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 39: Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date (15 seconds)

Starting point: Homescreen

Instructions for participant:
Find the patient Mark Brown and tap on the Clinical Decision Support Rules. See the CDS Rule informations (Bibliography, Developer, Funding source, Release date) for the Problem Hypertension.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Find the patient → Mark Brown → Open Clinical Decision Support Rules section → See information about CDS rule for problem Malignant Hypertension

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 40: Record UDI on the Implantable Device List (40 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Barbara Thompson and add new Implantable Device "Polyester suture, non-bioabsorbable, multifilament" by recording UDI number (01)10884521062856(11)141231(17)150707(10)A213B1(21)1234

Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path:

Path2: Homescreen → Chart → Patient → Barbara Thompson → Implantable Device List → Add New → Click Camera icon in the top right corner → Scan Barcode (see below) → Done

Path1: Homescreen → Chart → Patient → Linda Garcia → Implantable Device List → Add New → Manually add UDI number (01)10884521062856(11)141231(17)150707(10)A213B1(21)1234 in field UDI → Done

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

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
   Comments:

Rating:
   Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

   ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

<u>Task 41: Change UDI Status (20 seconds)</u>

Starting point: Homescreen

Instructions for participant: Find the patient Barbara Thompson and change status for Implantable Device "Polyester suture, non-bioabsorbable, multifilament".
Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
    Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patient → Barbara Thompson → Implantable Device List → Tap "Polyester suture, non-bioabsorbable, multifilament" → UDI status → Switch from Active to Inactive → Done

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
    Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 42: Access UDI, device info (15 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Barbara Thompson to access the Implantable Device Description, Identifiers and Attributes for the "Polyester suture, non-bioabsorbable, multifilament".
Success:

❏ Easily completed
❏ Completed with difficulty or help (Describe in comments below)
❏ Not completed
Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patient → Barbara Thompson → Implantable Device LIst → Tap "Polyester suture, non-bioabsorbable, multifilament" → See device info

❏ Correct
❏ Minor deviations / cycles (Describe in comments below)
❏ Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 43: Incorporate a CCDA and conduct reconciliation of the medications, medication allergies in the CCDA with the information currently in the patient's record(25 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Cecilia Cummings and reconcile Medication and Medication Allergy list: Medication: Aranesp 500 mcg/ml (in polysorbate) injection syringe
Medication Allergy: PenicillinG Hives
Success:

- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
    Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Problem List → tap on Reconciliation button → Select Medication: Aranesp 500 mcg/ml (in polysorbate) injection syringe and Allergie: Penicillin G Hives → Done

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
    Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

    ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 44: Incorporate a CCDA and conduct reconciliation of problems in the CCDA with the information currently in the patient's record (25 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Cecilia Cummings and reconcile Problem from the Problem list: Essential hypertension
Success:

❏   Easily completed
❏   Completed with difficulty or help (Describe in comments below)
❏   Not completed
Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Find the patient Cecilia Cummings → Go to Problems → tap Reconciliation button → select problem Essential hypertension → Done

❏   Correct
❏   Minor deviations / cycles (Describe in comments below)
❏   Major deviations (Describe in comments below)
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 45: Generate a new CCDA with reconciled data(15 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Cecilia Cummings and generate a new CCDA with reconciled data.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
    Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Find the patient Cecilia Cummings → Encounter → Macra → Transition of Care → Tap Transition of Care button → CCDA with reconciled data is generated

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
    Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

    ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 46: Create new prescription (e-Prescribing) (70 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Janet Anderson and send New Rx for prescription *Aspirin 325 mg tablet to the pharmacy CA Pharmacy Store 10.6*. (the user can change the existing one or add a new prescription)

Success:

❏   Easily completed
❏   Completed with difficulty or help (Describe in comments below)
❏   Not completed
    Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patients → Choose patient Janet Anderson → Encounters → Open encounter → Open Rx Order → Select prescription *Aspirin 325 mg tablet* (the user can change the existing one or add a new prescription) → Select Pharmacy → Other pharmacy → Search for *CA Pharmacy Store 10.6* → Select a pharmacy → Preview → Tap share button → Send Rx

❏   Correct
❏   Minor deviations / cycles (Describe in comments below)
❏   Major deviations (Describe in comments below)
    Comments:

Observed Errors and Verbalizations:
    Comments:

Rating:
    Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

        ❏   1　　　❏   2　　　❏   3　　　❏   4　　　❏   5

Administrator / Notetaker Comments:

Task 47: Change prescription (dosage or duration) (75 seconds)

Starting point: Homescreen

Instructions for participant: Approve dose changes for prescription *Diclofenac potassium 50 mg tablet*s, for the patient Grant Custer.

Success:

> ❏ Easily completed
> ❏ Completed with difficulty or help (Describe in comments below)
> ❏ Not completed
> Comments:

Task Time: _____ seconds

Optimal Path: Homescreen →Inbox → Rx Change→ open side menu by pressing on the three point button → Select prescription *Diclofenac potassium 50 mg tablets* → Tap share button → Select Apporve-> Send-> Close

> ❏ Correct
> ❏ Minor deviations / cycles (Describe in comments below)
> ❏ Major deviations (Describe in comments below)
> Comments:

Observed Errors and Verbalizations:

> Comments:

Rating:

> Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

> ❏ 1 ❏ 2 ❏ 3 ❏ 4 ❏ 5

Administrator / Notetaker Comments:

Task 48: Cancel prescription (e-Prescribing) (50 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Susanne Adirondack and Cancel Rx for prescription *Hydrochlorothiazide 50 MG Tablet*.

Success:

❏   Easily completed
❏   Completed with difficulty or help (Describe in comments below)
❏   Not completed
     Comments:

Task Time: _____ seconds

Optimal Path: Homescreen → Chart → Patients → Choose patient Susanne Adirondack → Encounters → Open encounter → Open Rx Order → Swipe item *Hydrochlorothiazide 50 MG Tablet* to the left → press Cancel → Close

❏   Correct
❏   Minor deviations / cycles (Describe in comments below)
❏   Major deviations (Describe in comments below)
     Comments:

Observed Errors and Verbalizations:
     Comments:

Rating:
     Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

          ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

<u>Task 49: Refill prescription (e-Prescribing) (45 seconds)</u>

Starting point: Homescreen

Instructions for participant: Find the patient Susanne Adirondack and refill prescription *Lanoxin 125 MCG Oral Tablet*.

Success:

      ❏ Easily completed

      ❏ Completed with difficulty or help (Describe in comments below)

      ❏ Not completed

         Comments:

Task Time: _____ seconds

Optimal Path: Homescreen →Inbox → Refill Requests → open side menu by pressing on the three point button→Choose *Lanoxin 125 MCG Oral Tablet* → Click Share button → Choose Approved → Back → Send → Close

      ❏ Correct

      ❏ Minor deviations / cycles (Describe in comments below)

      ❏ Major deviations (Describe in comments below)

         Comments:

Observed Errors and Verbalizations:

      Comments:

Rating:

      Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

            ❏ 1   ❏ 2   ❏ 3   ❏ 4   ❏ 5

Administrator / Notetaker Comments:

Task 50: Receive fill status notification (e-Prescribing) (40 seconds)

Starting point: Homescreen

Instructions for participant: Find the patient Grant Custer and and see fill status for the prescription *Diclofenac Potassium 50 mg Tablet*.

Success:
- ❏ Easily completed
- ❏ Completed with difficulty or help (Describe in comments below)
- ❏ Not completed
  Comments:

Task Time: _____ seconds

Optimal Path: Find the patient Grant Custer → Open existing encounter Encounter → Go to Rx Order → See received fill status for the prescription *Diclofenac Potassium 50 mg Tablet*

- ❏ Correct
- ❏ Minor deviations / cycles (Describe in comments below)
- ❏ Major deviations (Describe in comments below)
  Comments:

Observed Errors and Verbalizations:
  Comments:

Rating:
  Choosing from 1 (Very easy) to 5 (Very difficult), please rate this task:

  ❏ 1　　　❏ 2　　　❏ 3　　　❏ 4　　　❏ 5

Administrator / Notetaker Comments:

s

FInal Questions (5 Minutes)

1. What was your overall impression of this system?

2. What aspects of the system did you like most?

3. What aspects of the system did you like least?

4. What would you like to see changed?

5. Would you recommend this system to your colleagues?

System Usability Scale Questionnaire

	Strongly disagree				Strongly agree
1. I think that I would like to use this system frequently.	1	2	3	4	5
2. I found the system unnecessarily complex.	1	2	3	4	5
3. I thought the system was easy to use.	1	2	3	4	5
4. I think that I would need the support of a technical person to be able to use this system.	1	2	3	4	5
5. I found the various functions in this system were well integrated.	1	2	3	4	5
6. I thought there was too much inconsistency in this system.	1	2	3	4	5
7. I would imagine that most people would learn to use this system very quickly.	1	2	3	4	5
8. I found the system very cumbersome to use.	1	2	3	4	5
9. I felt very confident using the system.	1	2	3	4	5
10. I needed to learn a lot of things before I could get going with this system.	1	2	3	4	5

APPENDIX 6

INCENTIVE RECEIPT AND ACKNOWLEDGEMENT FORM

Acknowledgement of Receipt

I hereby acknowledge receipt of a $25 voucher for my participation in a research study run by EZDERM LLC.

Printed Name:_____

Address: _____

Signature: _____ Date:_____

Usability Researcher: _____

Signature of Usability Researcher: _____

Date: _____

Witness: _____

Witness Signature: _____

Date: _____