2026 EHR Usability Test Report

ezEMRx Version 10.01

(a)(5) Addendum Report

Adaptation: Common Industry Format for Usability Test Reports

Reference Standards:

- ISO 13407

Report Prepared By: ezEMRx Customer Teams
Siri Kumar, Balaji Venkatesh

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EXECUTIVE SUMMARY

A usability test of ezEMRx 10.01, an Ambulatory EHR, was conducted online. 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).

For the usability test, ten healthcare providers participated and used the EHRUT in simulated, but representative task.

This study collected performance data on the following one features:

- 170.315 (a)(5) – Patient Demographics and Observations

During the usability test, each participant was asked to review and sign an informed consent/release form (template included in Appendix); they were instructed that they could withdraw at any time. All the participants had no prior experience in working with a previous version of the EHRUT.

The participants were instructed to complete the task using the EHRUT. During the test, the test duration was timed and recorded as user performance data, online. There was no assistance provided to the participants on how to complete the task.

All participant data was de-identified, that is, no correlation could be made between the identity of the participant and the collected data. Following the conclusion of the testing, participants were compensated with $50 for their time.

Various recommended metrics, in accordance with the examples listed in the NIST Guide to the Process Approach for Improving the Usability of Electronic Health Records, were used to evaluate the usability of the EHRUT.

The UCD process applied for the EHR Under Test (EHRUT) is conforming to the industry standard process, which is based on the ISO 13407[1] Human-centered design processes for interactive systems.

[1] ISO 13407 - Human-centered design processes for interactive systems

ISO 13407 provides guidance on achieving quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centred design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.
http://www.iso.org/iso/catalogue_detail.htm?csnumber=21197

INTRODUCTION

The EHRUT tested for this study was ezEMRx 10.01, an Ambulatory EHR. Designed to present medical information to healthcare providers in a clinic and specialty setting, the EHRUT consists of a workflow-based approach for data capture and retrieval. The usability test was designed to represent realistic 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 achieve this, measures of effectiveness, efficiency and user satisfaction, such as time taken to perform decision-support intervention, were captured during the usability test.

The UCD process applied for the EHR Under Test (EHRUT) is conforming to the industry standard process, which is based on the ISO 13407[2] Human-centered design processes for interactive systems.

- 170.315(a)(5) – Patient Demographics and Observations

UCD PROCESS OUTLINE

The UCD process applied for the EHR Under Test (EHRUT) is an industry-standard process, that is based on the "ISO 13407 Human-centered design processes for interactive systems".

ISO 13407 provides guidance on how to achieve quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centered design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.

DESIGN ACTIVITIES

The user-centered design processes for the EHR Under Test (EHRUT) are based on four design activities as described in "ISO 13407 Human-centered design processes for interactive systems".

The four activities initiated early into the product design and user interface designs are:

[2] ISO 13407 - Human-centered design processes for interactive systems

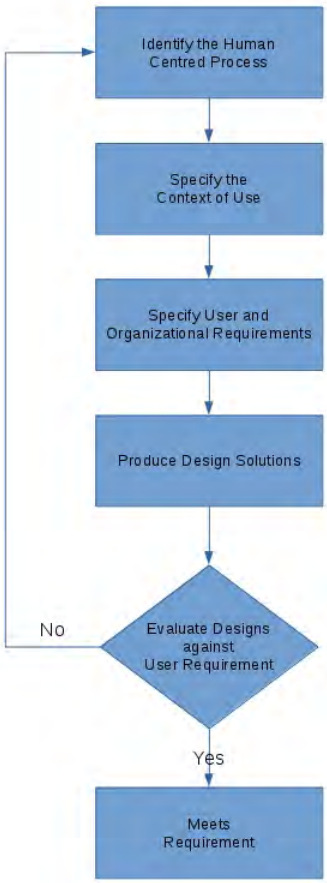
ISO 13407 provides guidance on achieving quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centred design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.
http://www.iso.org/iso/catalogue_detail.htm?csnumber=21197

- Understanding and specifying the context of use
- Specifying the user and organizational requirements
- Producing design solutions
- Evaluating designs against requirements

These activities were applied in an iterative manner for every interactive user interface element.

UCD PROCESS CHART

The following chart represents the UCD process and the interdependence of the UCD activities applied on an iterative model of the EHR Under Test (EHRUT).


Identify the Human Centred Process
Specify the Context of Use
Specify User and Organizational Requirements
Produce Design Solutions
Evaluate Designs against User Requirement
No
Yes
Meets Requirement

STUDY METHOD

PARTICIPANTS

To facilitate the usability study, the selected participants were from mixed backgrounds, with different demographic characteristics. The following table lists the participants by characteristics, including demographics, professional experience and user needs for assistive technology. Participant names were replaced with Participant IDs to ensure that an individual's data was not tied back to the individual's identity.

Ten participants were selected to participate in the usability test conducted online on 12th Feb 2026. The usability tests were scheduled for a duration of 30 minutes

Sl No.	Participant ID	Gender	Age	Education	Occupation / Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
1	User01	Female	50-59	Master's degree	Nurse Practitioner	288	540	0	No
2	User02	Male	40-49	Bachelor's degree	RN	168	300	0	No
3	User03	Female	30-39	Some college credit, no degree	Nurse	48	120	0	No
4	User04	Female	40-49	Bachelor's degree	RN	180	264	0	No
5	User05	Male	20-29	Some college credit, no degree	Admin Assistant	12	24	0	No
6	User06	Female	30-39	Master's Degree	RN	204	360	0	No
7	User07	Female	20-29	High school graduate, diploma or the equivalent (for example: GED)	Healthcare Student	12	180	0	No
8	User08	Female	20-29	Some college credit, no degree	Certified Nursing Assistant	24	120	0	No
9	User09	Female	20-29	High school graduate, diploma or the equivalent (for example: GED)	Healthcare Student	12	12	0	No
10	User10	Female	20-29	High school graduate, diploma or the equivalent (for example: GED)	Healthcare Student	48	96	0	No

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 can be used as a baseline for future tests with an updated version of the same EHR and/or in comparison with other EHRs, provided the same tasks are used. In short, this test served as both a means to record or benchmark the current usability, and to identify areas where improvements must be made.

This study was an adoption of the process as defined in ISO 13407. The methodology was adjusted to accommodate usability requirements of the ezEMRx EHR and serve as a mechanism to incorporate user feedback into product development lifecycles. The participants were engaged to simulate realistic clinical environments, using the provided laptop and with similar network connectivity. The task elements and results were documented online while the study was in progress. This methodology injects user feedback on usability into the product development life cycle.

During the usability test, the system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

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

Additional information about the various measures can be found in the section on Usability Metrics.

DATA SCORING

The following table describes how the tasks were scored, errors evaluated, and 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 allotted time. The results were provided as a percentage. Task times were recorded for successes. Observed task times divided by the optimal time for the task was a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance, under realistic conditions, was recorded while constructing tasks.
Effectiveness: Task Failures	If the participant abandoned the task, did not get the correct answer, performed it incorrectly, or reached the end of the allotted time before successful completion, the task was counted as a "Failure." No task times were recorded for errors. Not all deviations were counted as errors. They were expressed as the mean number of failed tasks per participant.
Efficiency: Task Deviations	The participant's path (steps) through the application was reviewed. Deviations occurred 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 was divided by the number of optimal steps to provide a ratio of path deviation.
Efficiency: Task Time	Each task was timed. 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.
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 Easy) to 5 (Very Difficult). This data was averaged across participants. To measure participants' likeability of the EHRUT and confidence in using it, 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.

TASKS

The task was constructed that were realistic and representative of the kinds of activities performed in a clinic using the following EHR feature:

- 170.315(a)(5) – Patient Demographics and Observations

The task selected was based on the 170.315(g)(3) safety-enhanced design criteria, as part of the ONC HIT Certification Program.

TEST ENVIRONMENT

The EHRUT was one that is typically used in an ambulatory healthcare facility or clinic.

For testing, the participants used computing equipment to connect to a controlled remote desktop environment that was configured with Microsoft Windows as the operating system. The participants used a mouse and keyboard when interacting with the EHRUT.

The application (EHRUT) itself was setup by the vendor using a training database. The application was setup to be accessible by computers over an internet connection, using a browser and a URL.

During the test, participants used computers with the Microsoft Windows platform (as stated above), and Mozilla Firefox ESR Version 128 to access the EHRUT that was set up previously with a training database, on an internet connection.

TEST FORMS AND TOOLS

During the usability test, the material that were used included:

- Participant Invite
    - See sample email, attached document - ezEMRx Usability Study Participation Invite.pdf
- Participant Instructions
    - See sample instructions, attached document - Login Instructions.pdf
- Informed Consent and Questionnaire
    - See sample questionnaire, attached document - System Usability Study Questionnaire.pdf

The participant's interaction with the EHRUT was captured and recorded within the EHR. Audit events were used to collaborate the user's actions within the EHR.

USABILITY METRICS

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

The goals of the test were to assess:

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

SUMMARY OF TEST RESULTS

PARTICIPANTS

Ten participants were tested on the EHRUT(s). Participants in the test were nurses, admin assistant, medical assistants and upcoming healthcare students. Participants were compensated $50 for their time. In addition, participants had no direct connection with the development of the EHRUT(s). Participants were given the same orientation.

For test purposes, end-user characteristics were de-identified and translated into this document. The following table lists participants by characteristics, including demographics, professional experience and user needs for assistive technology. Participant names were replaced with Participant IDs so that an individual's data could not be tied back to individual' identity.

Sl No.	Participant ID	Gender	Age	Education	Occupation / Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
1	User01	Female	50-59	Master's degree	Nurse Practitioner	288	540	0	No
2	User02	Male	40-49	Bachelor's degree	RN	168	300	0	No
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DATA ANALYSIS AND REPORTING

The results of the usability test were calculated according to methods specified in the Usability Metrics section.

The usability testing results for the EHRUT are detailed below. The results should be seen in light of the objectives and goals outlined in Section Study Design.

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

Measure / Task	N	Task Success		Path Deviation	Task Time Deviation		Task Time		Errors		Task Ratings 5=Very Easy 1=Very Difficult	
	#	Mean	SD	Deviations (Observed / Optimal)	Mean Observed (Secs)	Mean Optimal[1] (Secs)	SD (Secs)	Mean (Secs)	Mean	SD	Mean	SD
Capturing Patient Demographics	10	88%	12%	115/110	1665	285	458	767	15%	85%	4.4	0.84

The results from the SUS (System Usability Scale) indicated that the score for Subjective Satisfaction with the System, based on performance, with these tasks, was 88%. Broadly interpreted, scores under 60 represented systems with poor usability; scores over 80 were considered “Very Good”. Since the interactions with the EHRUT were untrained users, the SUS score of 88% was an indicator of sustainable use even with users having used the system for very first time.

FINDINGS

Feedback from the participants ranged in findings regarding the usability of the overall system. In sections of the race and ethnicity, it was noted that the selection was not very intuitive for users. It was also noted that there was overall slowness in accessing the system.

The overall discussions presented a positive mindset from the participants.

EFFECTIVENESS

The analysis indicated that most participants were successful in completing the tasks as presented.

EFFICIENCY

The analysis indicated that the participants were able to perform all functions successfully.

SATISFACTION

To measure participants' confidence and likeability of the EHRUT overall, the Testing team administered the System Usability Scale (SUS) post-test questionnaire. The satisfaction index presented a positive outlook on usability. The responses have been aggregated and presented in the table below.

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." The responses indicated very positive user usability responses.

Aggregate SUS index -- 1 (Strongly Disagree) to 5 (Strongly Agree)

Index Parameter	**Index**
I think that I would like to use this system frequently	5
I found the system unnecessarily complex	2
I thought the system was easy to use	4
I think that I would need the support of a technical person to use this system	2
I thought there was too much inconsistency in this system	2
I would imagine that most people would learn to use this system very quickly	5
I found the system very cumbersome to use	4
I felt very confident using the system	2
I needed to learn a lot of things before I could get going with this system	2

MAJOR FINDINGS

None.

AREAS FOR IMPROVEMENT

Observations and discussions did present several areas of improvement. The highlights were:

- Training is required for users where selection criteria are not visually intuitive.
- A higher performance staging system could be used for the study to avoid the overall system slowness.

From: ezEMRx Feedback
To: ezEMRx Feedback
Subject: ezEMRx Usability Study Participation
Date: Wednesday, February 18, 2026 9:24:00 AM

<Participant>,
ezEMRx is performing a usability study geared towards criteria requirements - 170.315(a)(5) - Patient Demographics and Observations. The intention of the study is to gather usability feedback on the usage and capture of demographic data elements within the EHR. We thank you for your interest in the study and you will be reimbursed $50 for your time. We appreciate your time and feedback. Please do complete the study at your earliest.

Please see attached the document to help guide you thru the process of accessing the system and EHR. The following credentials are provided for your access.

1. System credentials
   Username : user00@eztest.local
   Password : **********
2. EHR login credentials
   Username : 00000_frontdesk00
   Password : **********

We recommend you first read thru the attached document prior to accessing the EHR system and then subsequently perform the study. Your feedback and responses for the study will need to be recorded at - https://form.jotform.com/260254071430142. Once you have completed the study, please reply back to this email confirming the completion and also how you would like receive the renumeration for this participation (PayPal - Preferred - please provide us with your email address associated or Check - please provide us with your mailing address).
Once again, we thank you for your time.

Sincerely,
ezEMRx Product and Customer Management Team

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Accessing the ezEMRx EHR for the study based towards criteria requirements - 170.315(a)(5) - Patient Demographics and Observations

The intention of the study is to gather usability feedback on the usage and capture of demographic data elements within the EHR.

This document outlines the steps to access the ezEMRx EHR application for the purpose of the study. The system will be accessed via the following URL.

https://ezuse.ezemrx.com/RDWeb

Your study responses will be captured in a separate URL provided later in the document.

Requirements –

a. A computer or laptop running Microsoft Windows.
b. An internet browser.

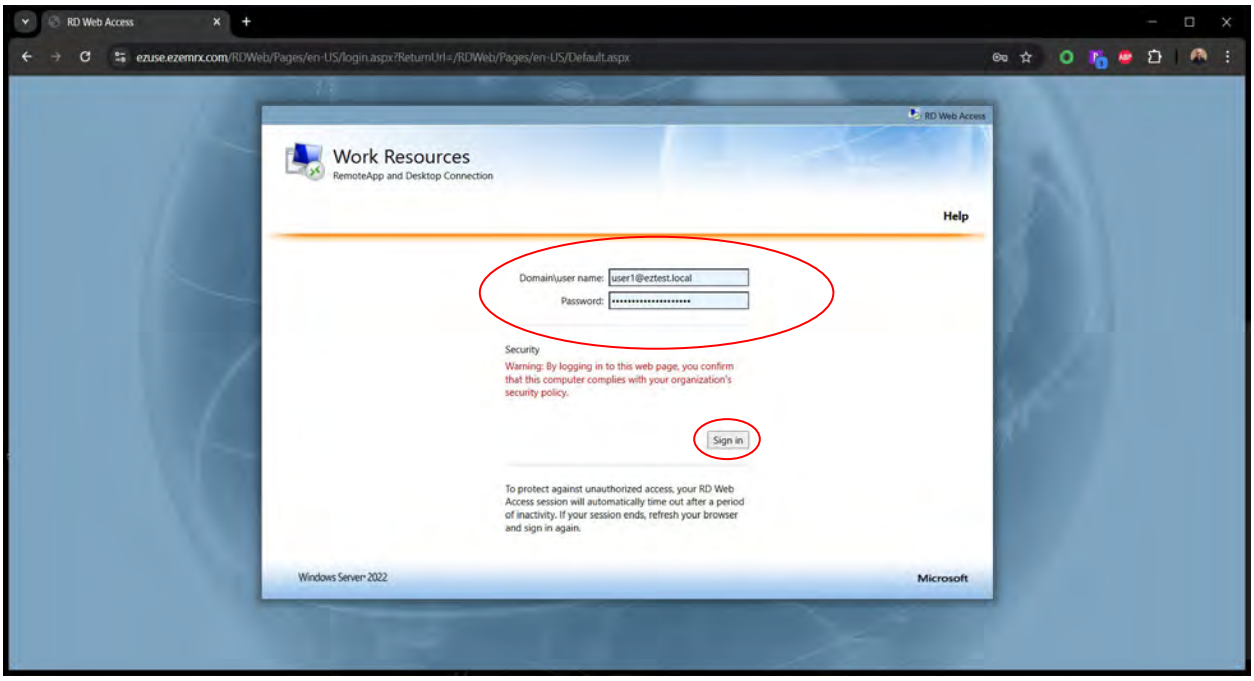
You will have received your credentials via an email for access which will include two parts.

- System credentials to access the browser system.
- EHR login credentials to access the ezEMRx EHR application.

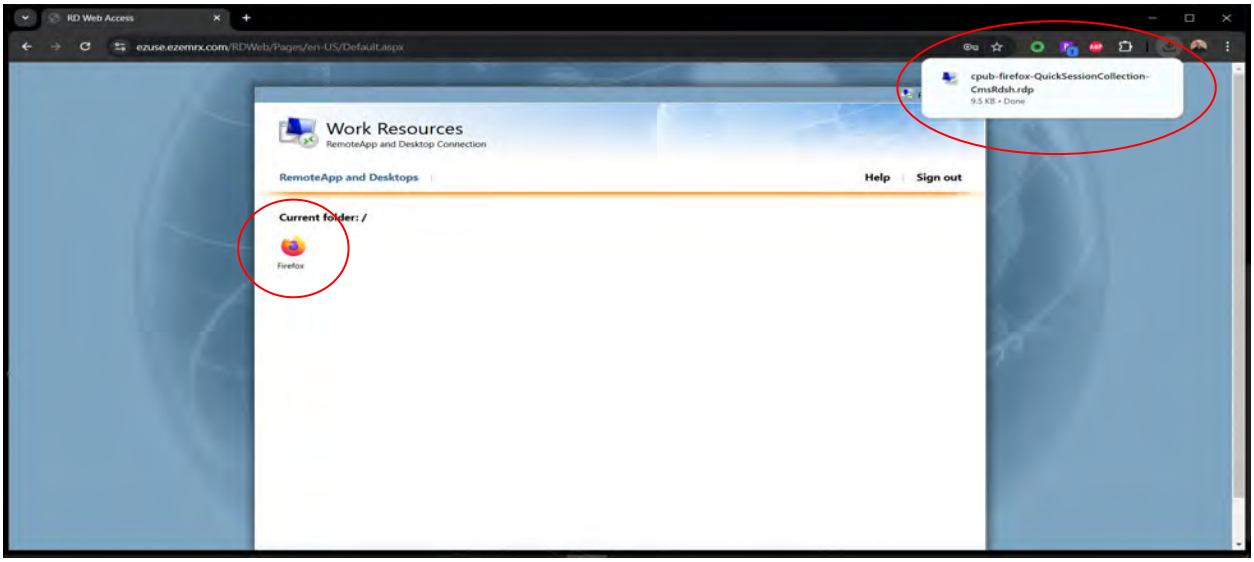
Support Information for connectivity issues -
Please email us at - ez_feedback@ezemrx.com for any assistance with your contact information and the best time to reach you. One of our support staff will get in touch with you.

The following series of screenshots outlines the process to access the ezEMRx EHR application. (The screenshots displayed have performed using the Chrome browser).

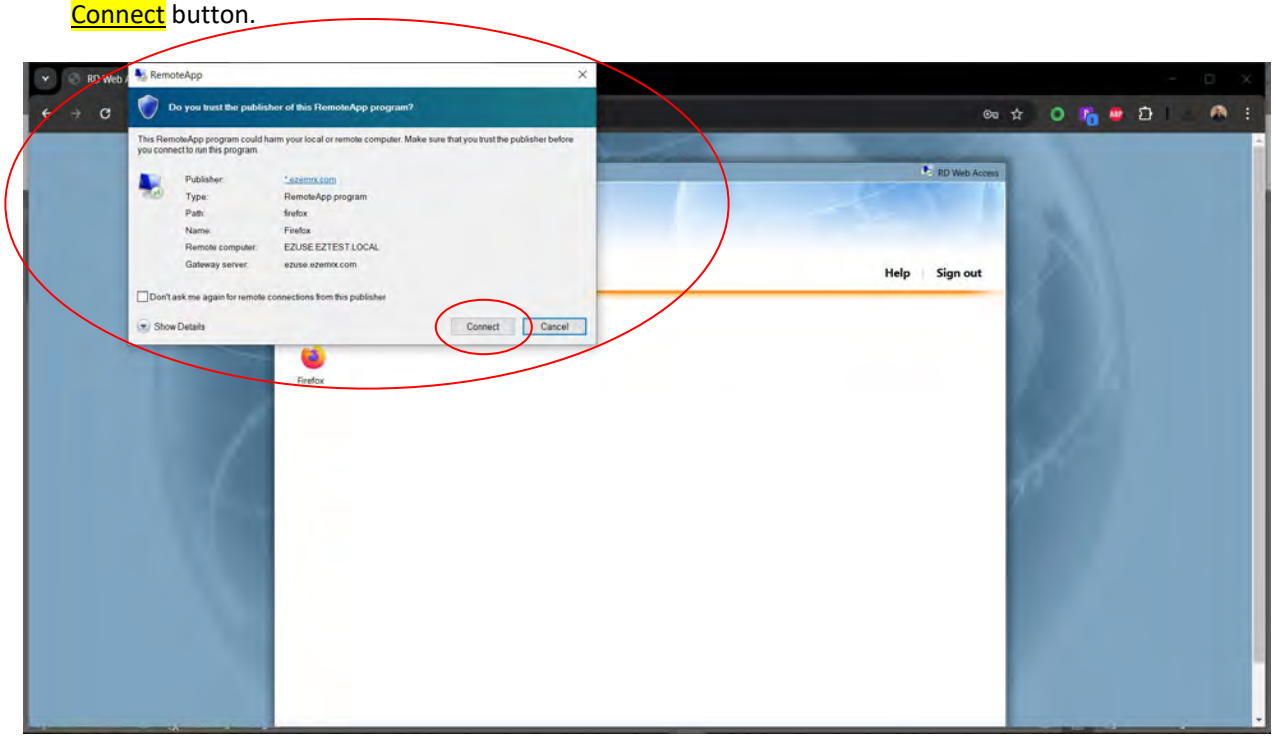
1. The system can be accessed using the above URL from your computer browser. The URL will display the following screen. You will now enter the system credentials and click on Sign in.



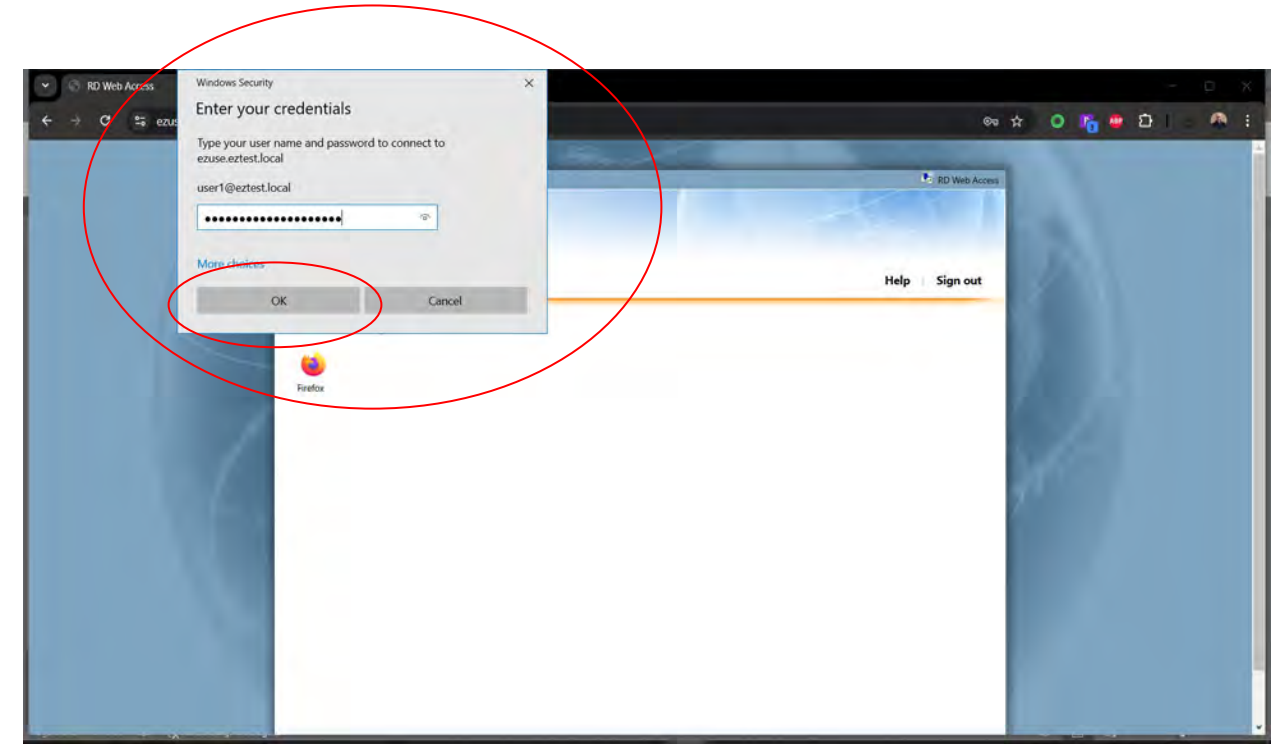
2. Upon successful login, following screen will be displayed. You will now click on the Firefox icon. This will in-turn download a file to your computer (This popup may vary in display depending on your browser). It is recommended to click on the popup to launch the next screen (In the event, you do not see this popup, the file will be available within your download folder, you can launch the same by double clicking there).



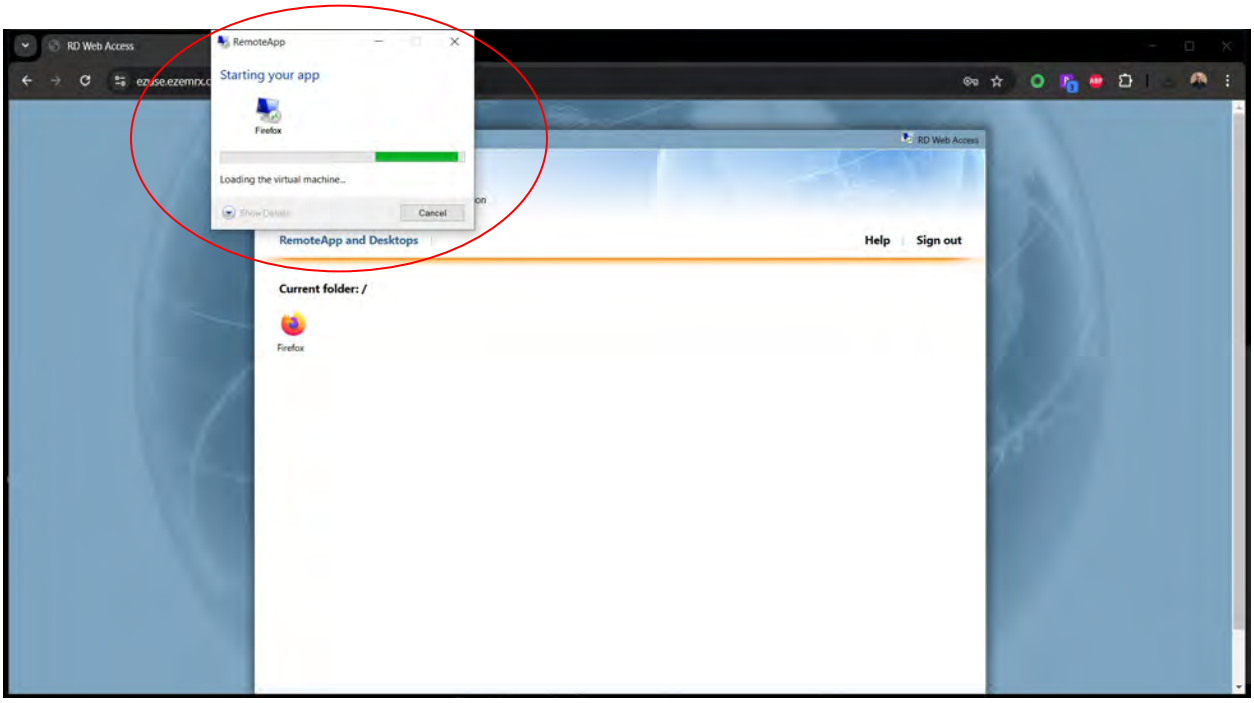
3. Launch of the pop-up/downloaded file will display the following screen. You will now click on the Connect button.



4. The Connect option will launch the following screen. You will enter your system credentials (once more) and click on the OK button.



5. The previous step will now setup a connection to the ezEMRx EHR application browser. The following screen describes the process. No intervention is required at this step.

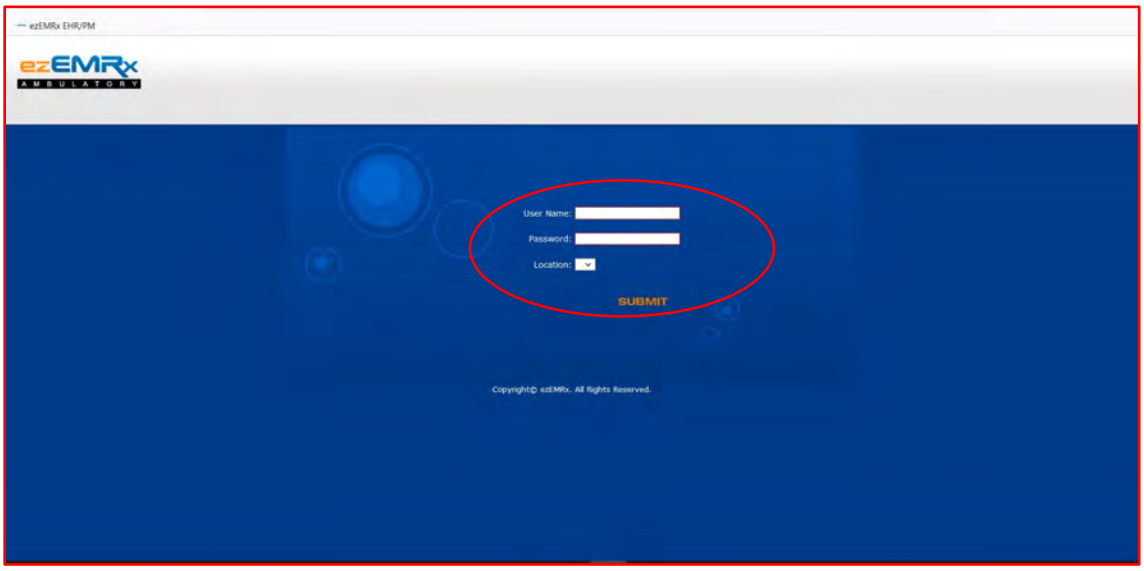


6. A successful connection to the system will launch the ezEMRx EHR application Firefox browser. You will be presented with the following screen. This concludes with your system access. You will now use your login credentials to access the ezEMRx EHR application to perform the study.

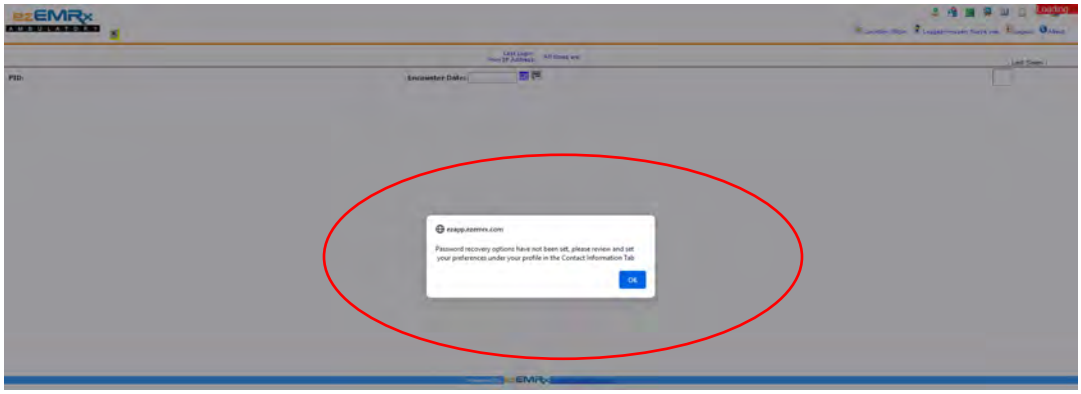
   Please note: You need to perform the study within the EHR while adhering to the instructions and capturing your responses in parallel via the response URL at - https://form.jotform.com/260254071430142

   Please note: You will need to record your **TASK START TIME** and **TASK COMPLETION TIME**. These times will need to be recorded within the form in the above mentioned URL.

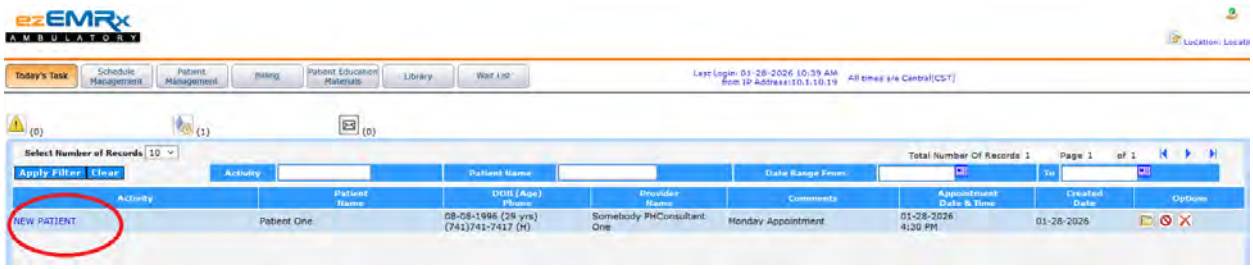
7. The system can be accessed using from your computer browser. The browser will display the following screen. You will now enter the EHR login credentials (Username / Password – sent in the email) – select the location from the drop-down and click on Submit.



8. Upon successful login to the ezEMRx EHR Application, you will be presented with "Password Recovery Screen" as shown below. Click on OK.

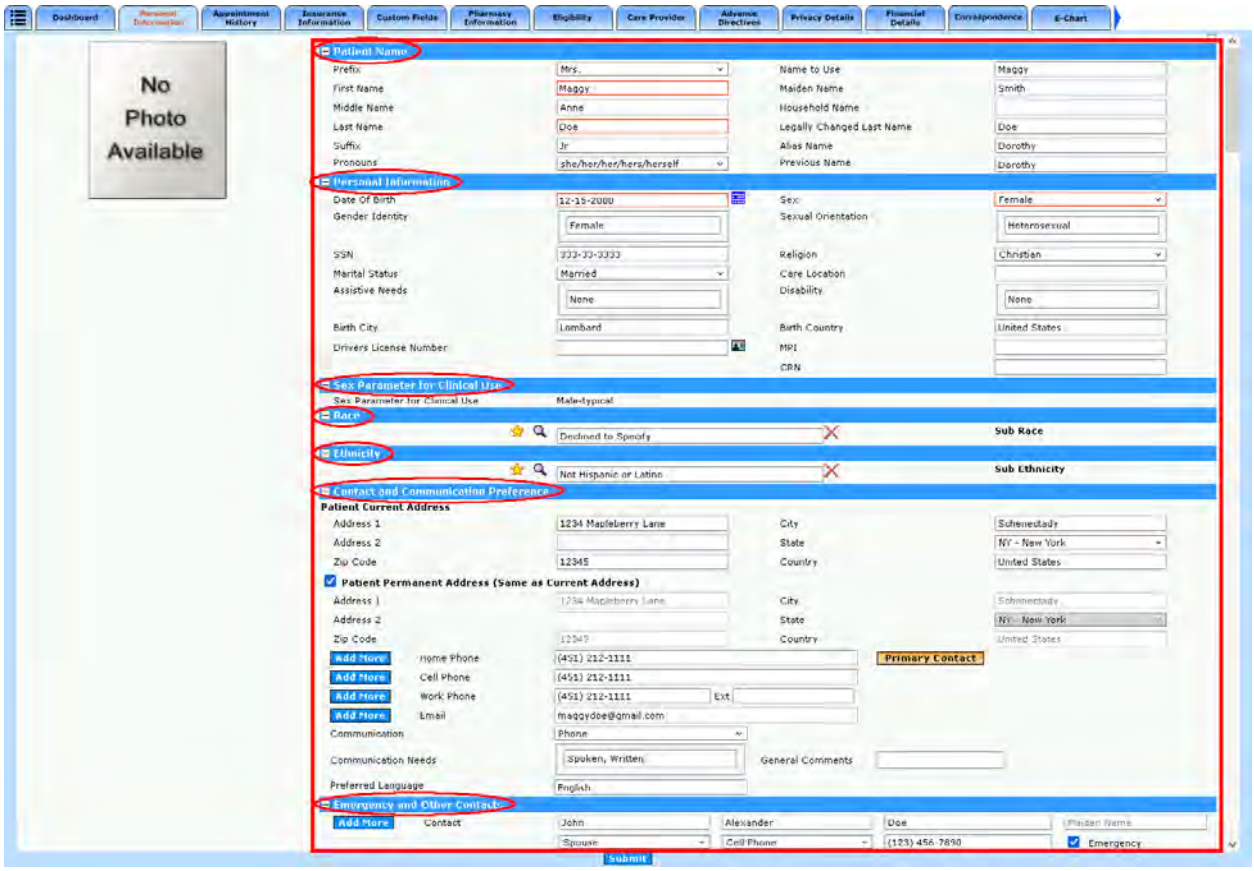


9. The system will load the **Today's task**, and you will be presented with the activity name called "**New Patient**". Click on the **NEW PATIENT** activity as shown below.



10. You will now be presented with the Dashboard screen showing the patient details. Click on the **Personal Information** tab of the screen to view the patient demographics details of this patient as show below.

11. Please refer to the form - https://form.jotform.com/260254071430142 and follow the instructions to capture all the fields within all the sections on this tab as highlighted in the below (you may need to scroll the screen to see all the sections).



12. After capturing all the fields under all the highlighted sections (as shown above), please click on the Submit button at the bottom of the screen to save the details.

To complete the study, please go to the following URL for instructions and capture your responses at https://form.jotform.com/260254071430142. It is recommended to open the URL on your mobile phone in landscape mode to perform, follow and capture your responses while using the EHR application.

Thank you for your time.

Wednesday, February 18, 2026

EHR Usability Survey

Help us improve by sharing your experience with our health application.

ProgressBar Nulla tellus. In sagittis dui vel nisl. Duis ac nibh.

ezEMRx would like to thank you for participating in this study. The purpose of this study is to evaluate the described functionality within the 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 15-30 minutes. At the conclusion of the test, you will be compensated for your time.

- I understand and agree to be a voluntary participant in the present study conducted by ezEMRx Inc.
- I am free to withdraw consent or discontinue participation at any time.
- I understand and agree that the purpose of this study is to make the software application more usable in the future.
- I understand and agree that the data collected from this study may be shared with ezEMRx and other third parties.
- I understand and agree that data confidentiality is assured. 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.

Terms and Conditions Nulla tellus. In sagittis dui vel nisl. Duis ac nibh.

Participant Information

Participant Full Name Frank Ashington

Email Address smajury0@bloglines.com

Mobile Phone Number +46 (68) 274-2571

Sex Unknown

What is your age group? 60-69

Do you require Assistive Technology No

Participant Education	Bachelor's Degree (RN/BSN)
Participant Occupation / Role	Donec dapibus.
Participant Professional Experience (Years of experience)	Donec dapibus.
Participant Computer Experience (Years of experience in using computer)	Donec dapibus.
Participant Product Experience (Health IT/EHR products)	Donec dapibus.

Usability Study Section

Task Start Time	6:24 pm
Login into the ezEMRx EHR application. The system will present the Todays Task list page.	Major Deviation

Task - Login Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Locate the Task Name "New Patient" and click on the same from the Todays Task listing. The systems layout is designed to present data using a Tab based layout and will present the patient's details and the Dashboard Tab.	Minor Deviation

Task - New Patient Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Navigate the "Personal Information" tab. The system will present the demographic input fields for the patient. Locate the sectional blue bar - Patient Name (as shown below) within the screen. Fill up all the field entries in this section (Eg: Middle Name, Previous Name, etc).	Correct

Patient Name

Task - Patient Name Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Within the same screen, locate the sectional blue bar "Personal Information" (as shown below) within the screen. Fill up all the field entries in this section (Eg: Gender identity, Martial Status, etc).

Major Deviation

Personal Information

Task - Personal Information Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Within the same screen, locate the sectional blue bar "Race" (as shown below) within the screen. Select the lookup icon (magnifying glass) and select any appropriate value and on click the "Add" button.

Minor Deviation

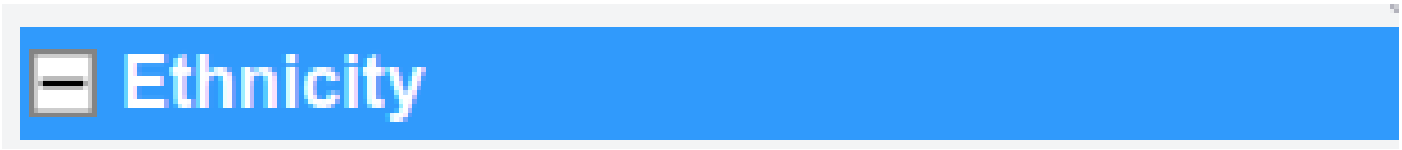
Race

Task - Race Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Within the same screen, locate the sectional blue bar "Ethinicity" (as shown below) within the screen. Select the lookup icon (magnifying glass) and select any appropriate value and on click the "Add" button.

Major Deviation



Task - Ethnicity Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Within the same screen, locate the sectional blue bar "Contact and Communication Preference" (as shown below) within the screen. Fill up all the field entries in this section (Eg: Address, Home Phone, etc).

Major Deviation

Task - Contact and Communication Preference Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Within the same screen, locate the sectional blue bar "Emergency and Other Contacts" (as shown below) within the screen. Fill up all the field entries in this section (Eg: Firstname, Relationship Type, etc).

Minor Deviation

Task - Emergency and Other Contacts Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Now click on the "Submit" button located at the bottom of the screen. The system will save the demographics details and go back to Today's Task	Correct

Task - Demographics Submit Deviations

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Task Completion Time	6:24 pm

Product Scoring

Did you complete the Usability Study Successfully?	Completed with difficulty or help

Please rate the usability as mentioned below

Usability Scale	Very Easy

Product Scoring

I think I would like to use this system frequently	Strongly Agree
I found the system unnecessarily Comples	Strongly Agree
I thought the system was easy to use	Strongly Agree
I think that I would need the support of a technical person to use this system	Strongly Agree
I thought there was too much inconsistency in this system	Strongly Agree
I would imagine that most people would learn to use this system very quickly	Strongly Agree
I felt very confident using the system	Strongly Agree
I needed to learn a lot of things before i could get going with this system	Strongly Agree

I found the system very cumbersome to use	Strongly Agree

Usability feedback

What was your overall impression of this system?

What aspect of the system did you like least?

Donec dapibus.

What aspects of the system did you like most?

Donec dapibus.

What features did you expect to encounter but did not see? is there anything that is missing in this system?

Donec dapibus.

Compare this system to other system you have used?

Nulla tellus. In sagittis dui vel nisl. Duis ac nibh. / 4

Have you experienced any problems or issues while using the system? Please describe.

Cras in purus eu magna vulputate luctus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Would you recommend this system to others?

Maybe

2025 EHR Usability Test Report

ezEMRx Version 10.01

(b)(11) Addendum Report

Adaptation: Common Industry Format for Usability Test Reports

Reference Standards:

- ISO 13407

Report Prepared By: ezEMRx Customer Teams
Siri Kumar, Balaji Venkatesh

Table of Contents

EXECUTIVE SUMMARY

A usability test of ezEMRx 10.01, an Ambulatory EHR, was conducted online. 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).

For the usability test, ten healthcare providers participated and used the EHRUT in a simulated, but representative task.

This study collected performance data on the following one features:

- 170.315 (b) (11) - Decision Support Interventions

During the usability test, each participant was asked to review and sign an informed consent/release form (template included in Appendix); they were instructed that they could withdraw at any time. Some of the participants had prior experience in working with the EHRUT.

The participants were instructed to complete tasks using the EHRUT. During the test, the test duration was timed and recorded as user performance data, online. There was no assistance provided to the participants with how to complete each task.

All participant data was de-identified, that is, no correlation could be made between the identity of the participant and the collected data. Following the conclusion of the testing, participants were compensated with $150 for their time.

Various recommended metrics, in accordance with the examples listed in the NIST Guide to the Process Approach for Improving the Usability of Electronic Health Records, were used to evaluate the usability of the EHRUT.

The UCD process applied for the EHR Under Test (EHRUT) is based on the industry standard process, based on the ISO 13407[1] Human-centered design processes for interactive systems.

[1] ISO 13407 - Human-centered design processes for interactive systems

ISO 13407 provides guidance on achieving quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centred design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.
http://www.iso.org/iso/catalogue_detail.htm?csnumber=21197

INTRODUCTION

The EHRUT tested for this study was ezEMRx 10.01, an Ambulatory EHR. Designed to present medical information to healthcare providers in a clinic and specialty setting, the EHRUT consists of a workflow-based approach for data capture and retrieval. The usability test was designed 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 achieve this, measures of effectiveness, efficiency and user satisfaction, such as time taken to perform decision-support intervention, were captured during the usability test.

The UCD process applied for the EHR Under Test (EHRUT) is based on industry standard process, using the ISO 13407 Human centered design processes for interactive systems.

- 170.315(b)(11) – Decision Support Interventions (DSI)

UCD PROCESS OUTLINE

The UCD process applied for the EHR Under Test (EHRUT) is based on an industry-standard process, that is based on the “ISO 13407 Human-centered design processes for interactive systems”.

ISO 13407 provides guidance on how to achieve quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centered design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.

DESIGN ACTIVITIES

The user-centered design processes for the EHR Under Test (EHRUT) are based on four design activities as described in “ISO 13407 Human-centered design processes for interactive systems”.

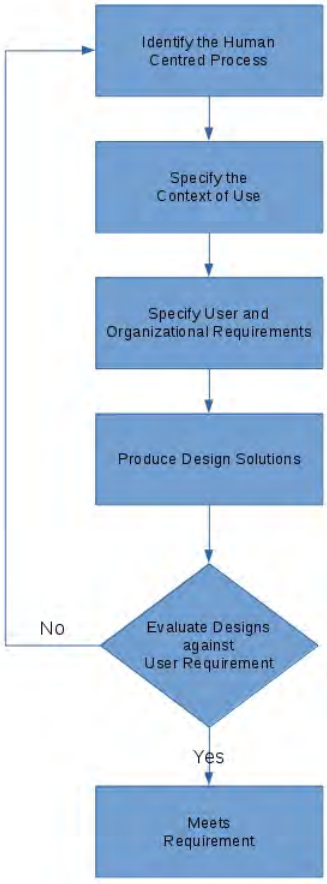
The four activities initiated early into the product design and user interface designs are:

- Understanding and specifying the context of use
- Specifying the user and organizational requirements
- Producing design solutions
- Evaluating designs against requirements

These activities were applied in an iterative manner for every interactive user interface element.

UCD PROCESS CHART

The following chart represents the UCD process and the interdependence of the UCD activities applied on an iterative model of the EHR Under Test (EHRUT).



STUDY METHOD

PARTICIPANTS

To facilitate the usability study, the selected participants were from mixed backgrounds, with different demographic characteristics. The following table lists the participants by characteristics, including demographics, professional experience and user needs for assistive technology. Participant names were replaced with Participant IDs to ensure that an individual's data was not tied back to the individual's identity.

Sl No.	Participant ID	Gender	Age	Education	Occupation / Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
1	Nurse 11	Female	30-39	Bachelor's degree	RN	96	96	0	No
2	Nurse 18	Female	40-49	College Degree	Office Manager	108	456	84	No
3	Nurse 17	Female	40-49	Master's Degree	Health Director	264	300	12	No
4	Nurse 8	Female	30-39	Associate degree	RN	84	240	0	No
5	Nurse 12	Female	50-59	Master's Degree	RN	276	540	0	No
6	Nurse 16	Female	20-29	Master's Degree	Social Worker	12	216	0	No
7	Nurse 6	Female	20-29	Bachelor's Degree	Nurse	30	120	0	No
8	Nurse 5	Female	40-49	Master's Degree	Nurse	192	312	0	No
9	Nurse 2	Female	20-29	Physician associate degree	PA	24	96	0	No
10	Nurse 15	Female	20-29	College Degree	CNA	6	6	0	No

Ten participants were selected to participate in the usability test conducted online at participant location on 02-17-2025. The usability tests were scheduled for a duration of 45 minutes.

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 can be used as a baseline for future tests with an updated version of the same EHR and/or in comparison with other EHRs, provided the same tasks are used. In short, this test served as both a means to record or benchmark the current usability, and to identify areas where improvements must be made.

The methodology was adjusted to accommodate usability requirements of the ezEMRx EHR and serve as a mechanism to incorporate user feedback into product development lifecycles. The participants were engaged to simulate realistic clinical environments, using the provided laptop and with similar network connectivity. The task elements and results were documented online while the study was in progress. This methodology injects user feedback on usability into the product development life cycle.

During the usability test, the system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

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

Additional information about the various measures can be found in the section on Usability Metrics.

DATA SCORING

The following table describes how the tasks were scored, errors evaluated, and 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 allotted time. The results were provided as a percentage. Task times were recorded for successes. Observed task times divided by the optimal time for the task was a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance, under realistic conditions, was recorded while constructing tasks.
Effectiveness: Task Failures	If the participant abandoned the task, did not get the correct answer, performed it incorrectly, or reached the end of the allotted time before successful completion, the task was counted as a "Failure." No task times were recorded for errors. Not all deviations were counted as errors. They were expressed as the mean number of failed tasks per participant.
Efficiency: Task Deviations	The participant's path (steps) through the application was reviewed. Deviations occurred if the participant, for example, went to a wrong screen, clicked on an incorrect menu item, followed an incorrect link, or interacted incorrectly with on-screen control. This path was compared to the optimal path. The number of steps in the observed path was divided by the number of optimal steps to provide a ratio of path deviation.
Efficiency: Task Time	Each task was timed. 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.
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 Easy) to 5 (Very Difficult). This data was averaged across participants. To measure participants' likeability of the EHRUT and confidence in using it, the testing team administered the Likert Scale 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.

TASKS

Tasks were constructed that were realistic and representative of the kinds of activities performed in a clinic using the following EHR features:

- 170.315(b)(11) - Decision Support Interventions

Tasks were selected based on the 170.315(g)(3) safety-enhanced design criteria, as part of the ONC HIT Certification Program.

TEST ENVIRONMENT

The EHRUT was one that is typically used in an ambulatory healthcare facility or clinic.

For testing, the participants (providers) used computing equipment to connect to a controlled remote desktop environment that was configured with Microsoft Windows as the operating system. The participants used a mouse and keyboard when interacting with the EHRUT.

The application (EHRUT) itself was set up by the vendor using a training database. The application was set up to be accessible by computers over an internet connection, using a browser and a URL.

During the test, participants used computers with the Microsoft Windows platform (as stated above), and Mozilla Firefox ESR Version 102 to access the EHRUT that was set up previously with a training database, on an internet connection.

The test was conducted online and users logged in from their remote environment and connected to our RDP environment to perform the test.

TEST FORMS AND TOOLS

During the usability test, the material that was used included:

- Participant Invite
    - See sample email, attached document - ezEMRx Usability Study Participation Invite.pdf
- Participant Instructions
    - See sample instructions, attached document - SUS Login Instructions.pdf
- Informed Consent and Questionnaire
    - See sample questionnaire, attached document - System Usability Study Questionnaire.pdf

The participant's interaction with the EHRUT was captured and recorded within the EHR. Audit events were used to collaborate the users' actions within the EHR.

USABILITY METRICS

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

this end, metrics for effectiveness, efficiency and user satisfaction were captured during the usability testing.

The goals of the test were to assess:

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

SUMMARY OF TEST RESULTS

PARTICIPANTS

Ten participants were tested on the EHRUT(s). Participants in the test were users from healthcare organizations. Participants were compensated $150 for their time. In addition, participants had no direct connection with the development of the EHRUT(s). Some participants were familiar, and some were not familiar with the use of the EHRUT. Participants were given the same orientation and level of training.

For test purposes, end-user characteristics were identified and translated into this document.

The following table lists participants by characteristics, including demographics, professional experience and user needs for assistive technology. Participant names were replaced with Participant IDs so that an individual's data could not be tied back to an individual's identity.

Ten participants were recruited and requested to participate in the usability tests performed on the 02-17-2025.

Sl No.	Participant ID	Gender	Age	Education	Occupation / Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
1	Nurse 11	Female	30-39	Bachelor's degree	RN	96	96	0	No
2	Nurse 18	Female	40-49	College Degree	Office Manager	108	456	84	No
3	Nurse 17	Female	40-49	Master's Degree	Health Director	264	300	12	No
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5	Nurse 12	Female	50-59	Master's Degree	RN	276	540	0	No
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8	Nurse 5	Female	40-49	Master's Degree	Nurse	192	312	0	No
9	Nurse 2	Female	20-29	Physician Associate Degree	PA	24	96	0	No
10	Nurse 15	Female	20-29	College Degree	CNA	6	6	0	No

DATA ANALYSIS AND REPORTING

The results of the usability test were calculated according to methods specified in the Usability Metrics section.

The usability testing results for the EHRUT are detailed below. The results should be seen considering the objectives and goals outlined in Section Study Design.

The following is a summary of the performance and rating data collected from the EHRUT.

Measure / Task	N	Task Success		Path Deviation	Task Time Deviation		Task Time		Errors		Task Ratings 5=Very Easy 1=Very Difficult	
	#	Mean	SD	Deviations (Observed / Optimal)	Mean Observed (Secs)	Mean Optimal[1] (Secs)	SD (Secs)	Mean (Secs)	Mean	SD	Mean	SD
User selects a patient the encounter to access DSI capabilities	10	92%	9%	31/30	8	6	1	7	11%	89%	4.6	0.52
User accesses the DSI feature using the DSI Icon to perform consent	10	90%	10%	50/50	305	28	105	99	12%	88%	4.5	0.53
User reviews the recommendation of the DSI, for publication and citations	10	94%	6%	42/40	284	72	52	101	10%	90%	4.7	0.48
User takes action based on the DSI recommendation to identify and execute lab orders	10	90%	10%	52/50	159	65	53	103	28%	72%	4.5	1.27
User accesses the DSI rules engine and modifies parameters	10	96%	4%	142/140	1200	540	209	906	13%	87%	4.8	0.63
User reviews and verifies feedback report	10	92%	8%	33/30	149	65	30	102	11%	89%	4.6	0.52

The results from the SUS (System Usability Scale) indicated that the score for Subjective Satisfaction with the System, based on performance, with these tasks, was 73%. Broadly interpreted, scores under 60 represented systems with poor usability; scores over 80 were considered “above average”. Since the interactions with the EHRUT were untrained users, the SUS score of 73% was an indicator of sustainable use even with users having used the system for very first time.

FINDINGS

Feedback from the participants ranged in findings regarding the usability of the overall system. In specific areas of the DSI function, it was noted that the alerting mechanism was not readily visible. Deviations were noted as one participant could not follow directions as outlined.

Functional concepts of DSI seemed to be challenging to few users and discussions indicated mandatory requirements of user training and education of requirements. There were indications of users looking to find the trigger events. On an alternate note, some participants found the DSI alerts to be apt towards decision support intervention assistance.

The overall discussions presented a positive attitude from the participants.

EFFECTIVENESS

The analysis indicated that most participants were successful in completing the tasks as presented. Deviations were noticed for participants whose roles restricted functional areas.

EFFICIENCY

The analysis indicated that the providers were able to perform all functions successfully. Observations of participants with roles such as clinical administration showed deviations. However, these observations were considered as exclusions since tasks as DSI were not realistic events in a daily working scenario and hence the participants could not relate to the functional aspects of such tasks.

SATISFACTION

To measure participants' confidence and likeability of the EHRUT overall, the Testing team administered the System Usability Scale (SUS) post-test questionnaire. The satisfaction index presented a positive outlook on usability. The responses have been aggregated and presented in the table below.

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." The responses indicated very positive user usability responses.

Aggregate SUS index -- 1 (Strongly Disagree) to 5 (Strongly Agree)

Index Parameter	**Index**
I think that I would like to use this system frequently	5
I found the system unnecessarily complex	2
I thought the system was easy to use	4
I think that I would need the support of a technical person to use this system	3
I thought there was too much inconsistency in this system	3
I would imagine that most people would learn to use this system very quickly	4
I found the system very cumbersome to use	3
I felt very confident using the system	4
I needed to learn a lot of things before I could get going with this system	2

MAJOR FINDINGS

None.

AREAS FOR IMPROVEMENT

Observations and discussions did present several areas of improvement. The highlights were:

- Training is required for users, based on roles

Message Insert Format text Draw Options

Aptos 12

Send

To

Bcc

Cc

ezEMRx Usability Study Participation

Draft saved at 10:50 AM

login_instructions.pdf
417 KB

Participant,

Thank you participating in the ezEMRx Usability study. We appreciate your time and feedback.

Please see attached the document to help guide you thru the process of accessing the system and EHR. The following credentials are provided for your access.

1. System credentials
   Username : **********
   Password : **********
2. EHR login credentials
   Username : **********
   Password : **********

(Ctrl)

We recommend you first read thru the attached document and then subsequently perform the study. Once you have completed the study, please reply back to this email confirming the completion and also how you would like receive the renumeration for this participation (PayPal - please provide us with your email address associated or Check - please provide us with your mailing address).

Once again, we thank you for your time.

Sincerely,
ezEMRx Product and Customer Management Team

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Accessing the ezEMRx EHR for the study based towards criteria requirements - 170.315(b)(11)

The intention of the study is to gather usability feedback on usage and accuracy of clinical decision support interventions within the context of a patient encounter when associated risk factors are present. Such factors can include (but not limited to) types of problems, medications, allergies, family chronic history associated with a patient which then automatically trigger elements such as (but not limited to) order sets, publications associated with such morbidities and possibly guidance. The decision support engine is designed to consider such factors associated with the patient and intelligently provide guidance or recommendations to the provider.

This document outlines the steps to access the ezEMRx EHR application and guidance of usage for the purpose of the study. The system will be accessed via the following URL.

https://ezuse.ezemrx.com/RDWeb

Your study responses will be captured in a separate URL provided later in the document.

Requirements –

a. A computer or laptop running Microsoft Windows.
b. An internet browser.

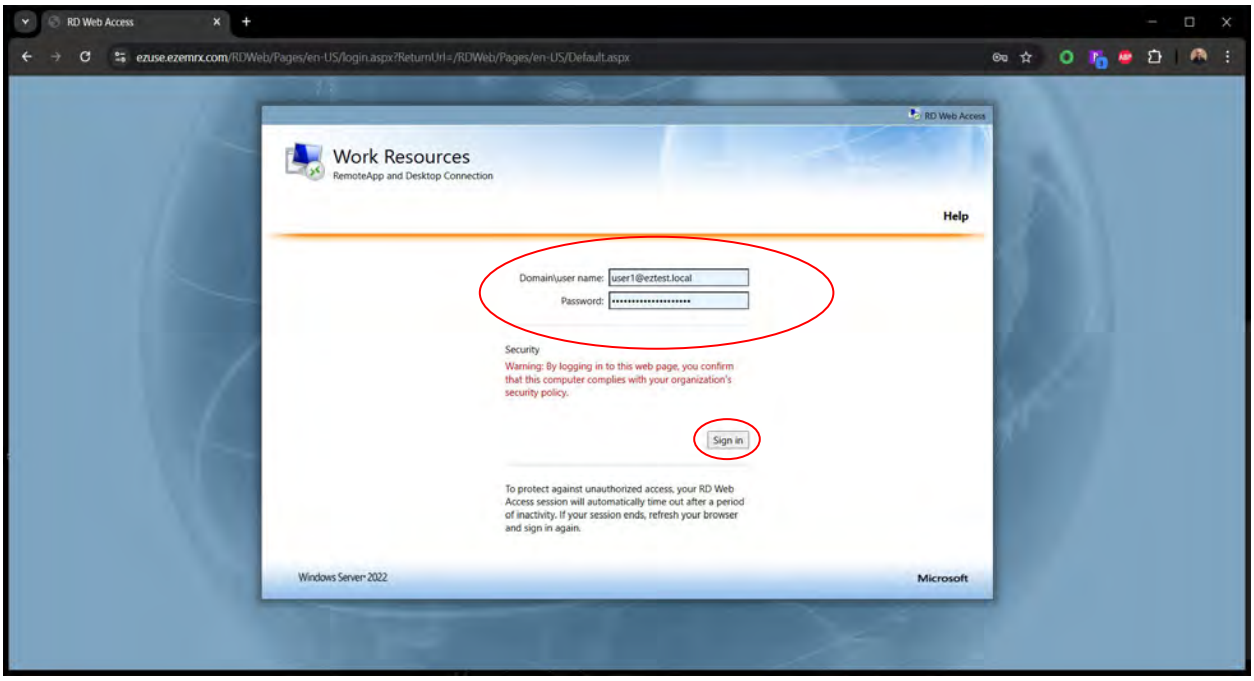
You will have received your credentials via email for access which will include two parts.

- System credentials to access the browser system.
- EHR login credentials to access the ezEMRx EHR application.

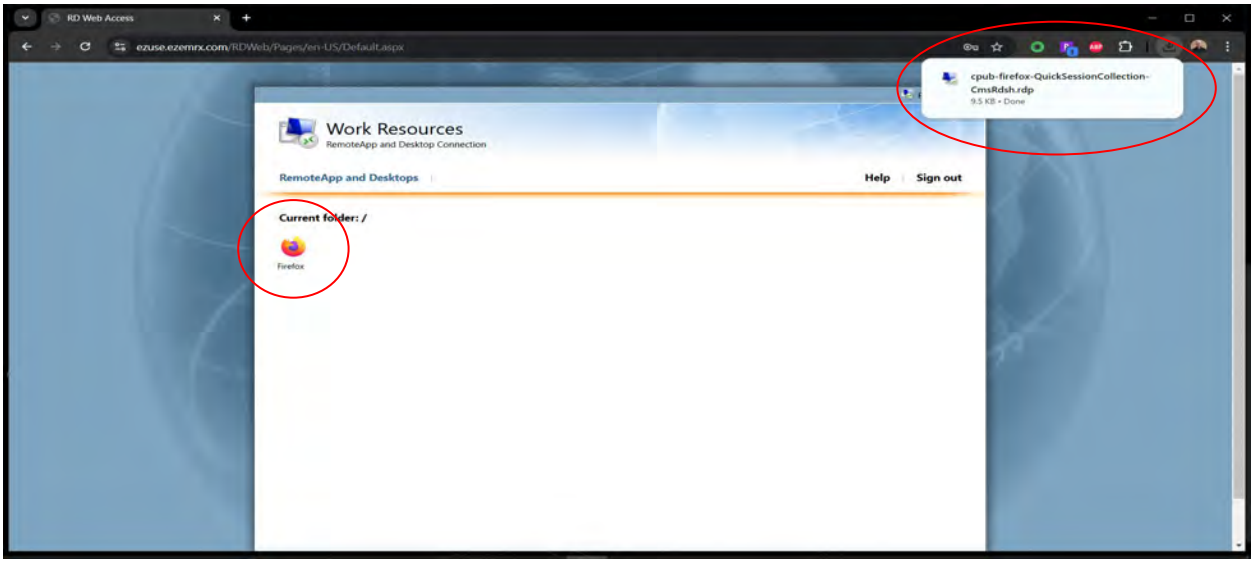
Support Information for connectivity issues -
Please email us at - ez_feedback@ezemrx.com for any assistance with your contact information and the best time to reach you. One of our support staff will get in touch with you.

The following series of screenshots outlines the process to access the ezEMRx EHR application. (The screenshots displayed have performed using the Chrome browser).

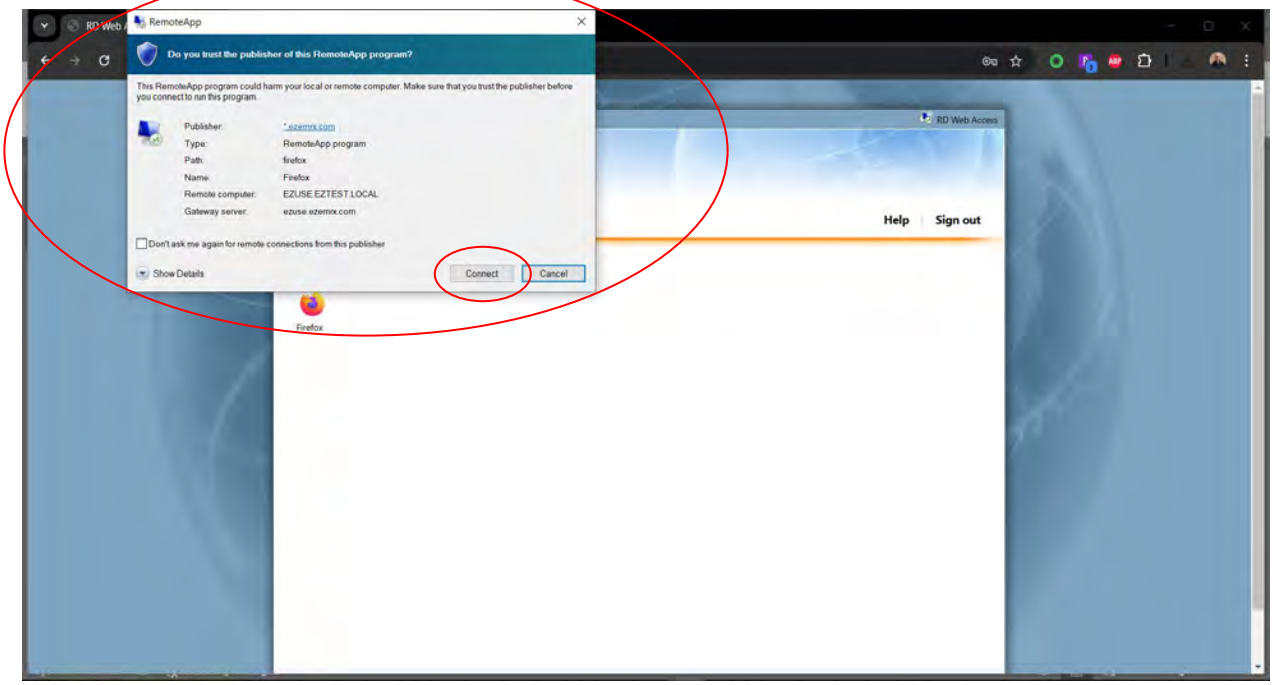
1. The system can be accessed using the above URL from your computer browser. The URL will display the following screen. You will now enter the system credentials and click on Sign in.



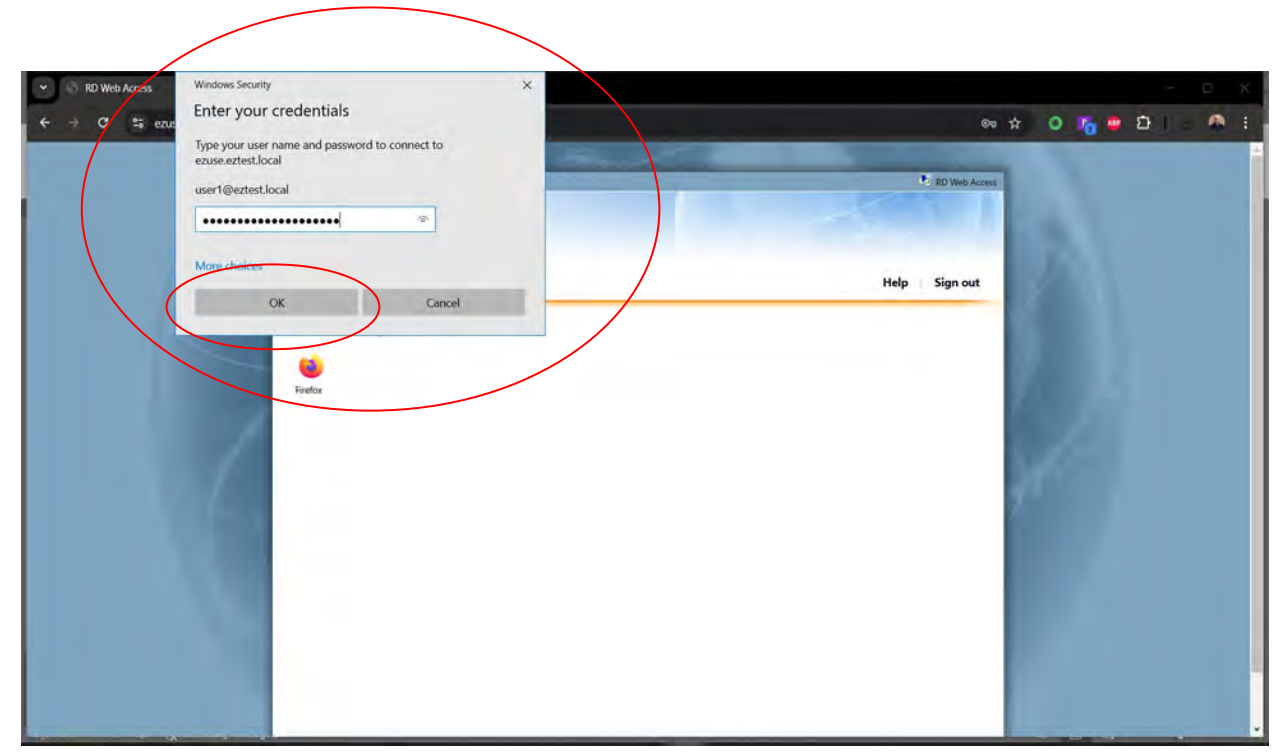
2. Upon successful login, the following screen will be displayed. You will now click on the Firefox icon. This will in turn download a file to your computer (This popup may vary in display depending on your browser). It is recommended to click on the popup to launch the next screen (In the event, you do not see this popup, the file will be available within your download folder, you can launch the same by double clicking there).



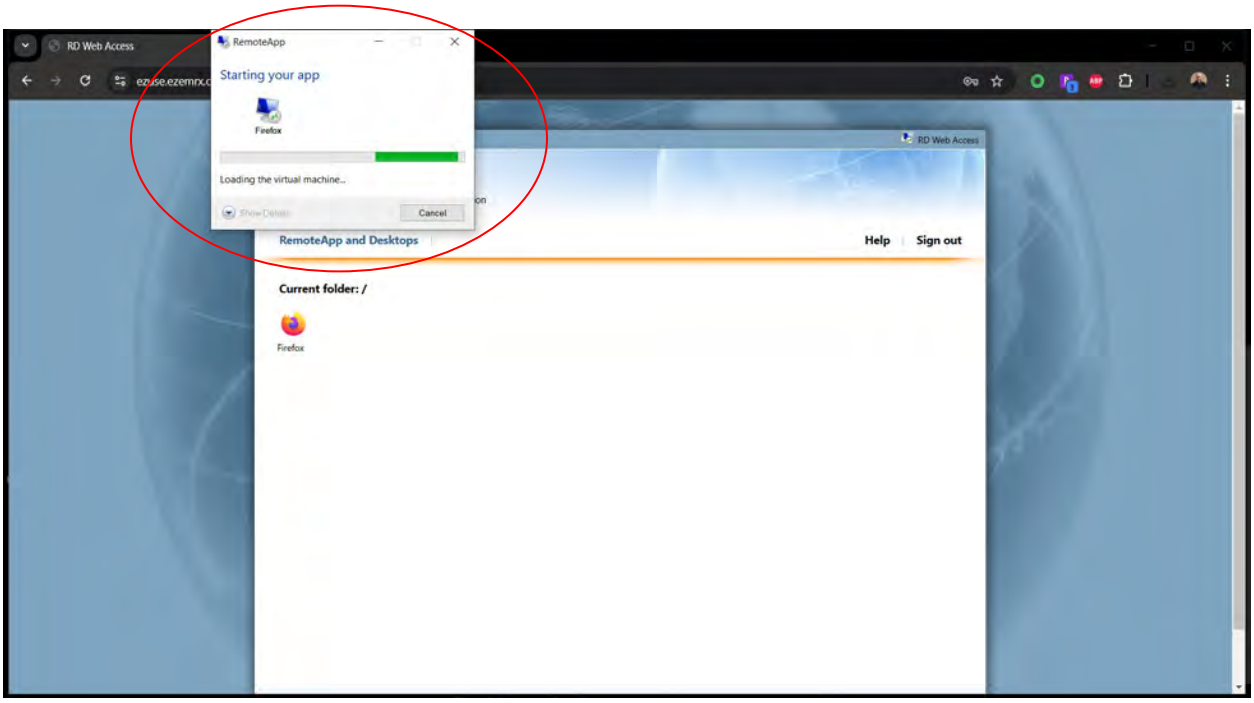
3. Launch of the pop-up/downloaded file will display the following screen. You will now click on the Connect button.



4. The Connect option will launch the following screen. You will enter your system credentials (once more) and click on the OK button.



5. The previous step will now setup a connection to the ezEMRx EHR application browser. The following screen describes the process. No intervention is required at this step.

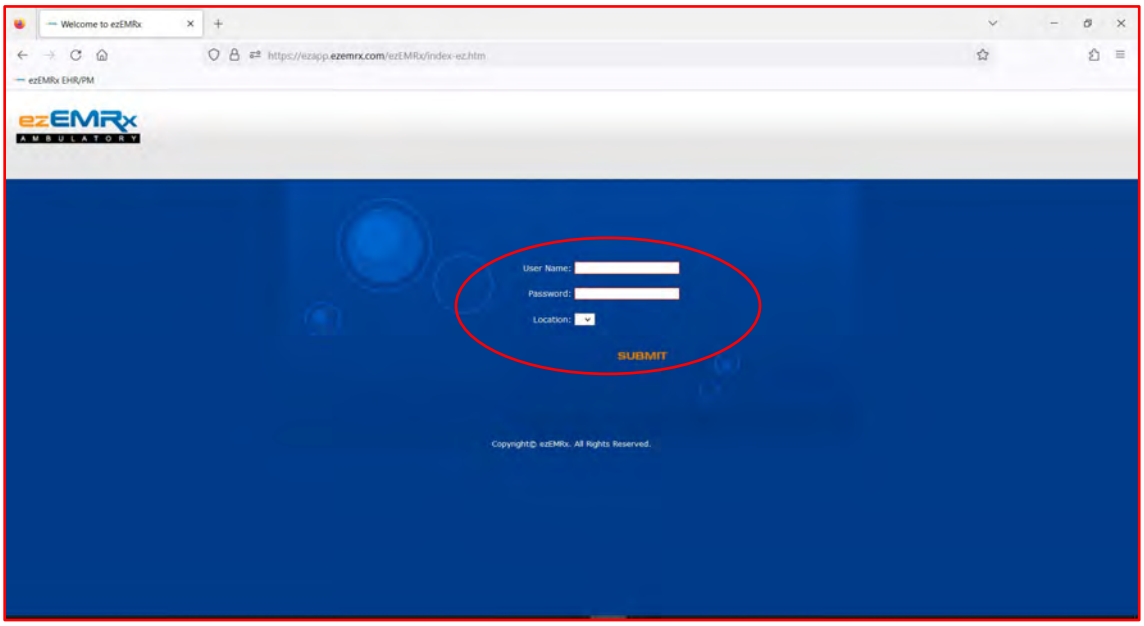


6. A successful connection to the system will launch the ezEMRx EHR application Firefox browser. You will be presented with the following screen. This concludes with your system access. You will now use your login credentials to access the ezEMRx EHR application to perform the study.

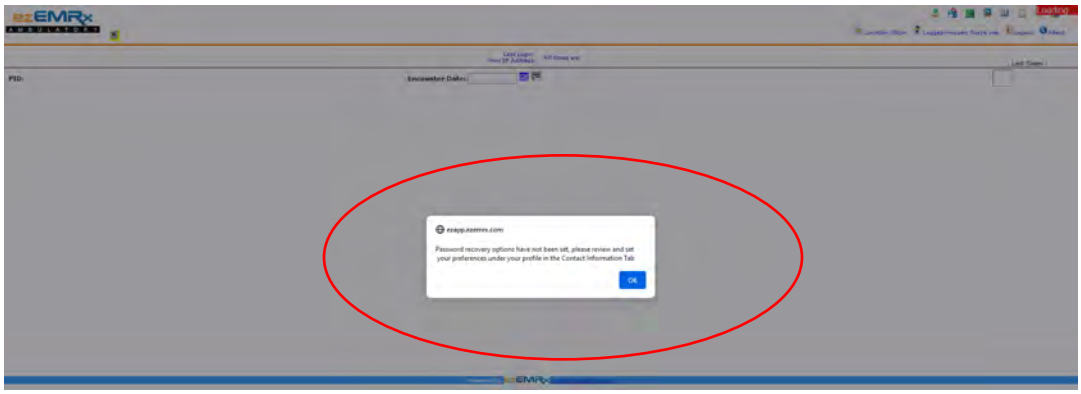
   Please note: You need to perform the study within the EHR while adhering to the instructions and capturing your responses in parallel via the response URL at – https://forms.office.com/r/8T9pQAtWxW

   Please note: You will need to record your **START TIME** with **STEP NUMBER 9** and **END TIME** at **STEP NUMBER 18**. These times will need to be recorded within the form in the above mentioned URL.

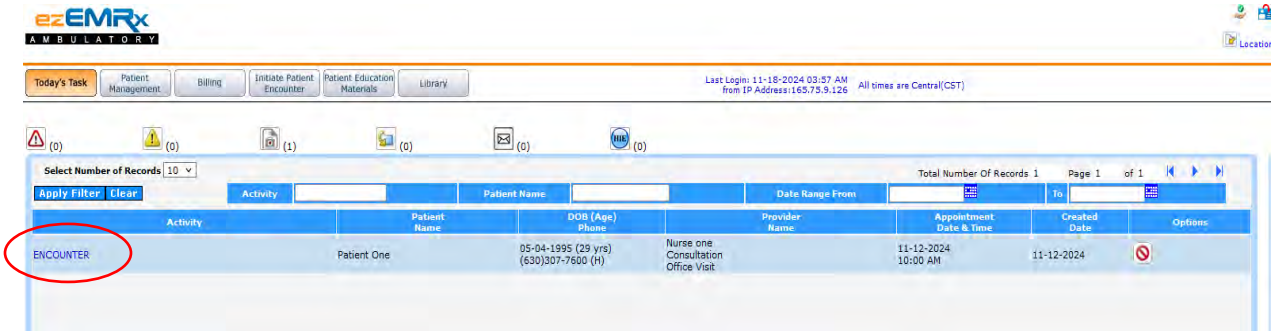
7. The system can be accessed using the above URL from your computer browser. The URL will display the following screen. You will now enter the EHR login credentials (Username / Password) – select the location from the drop-down and click on Submit.



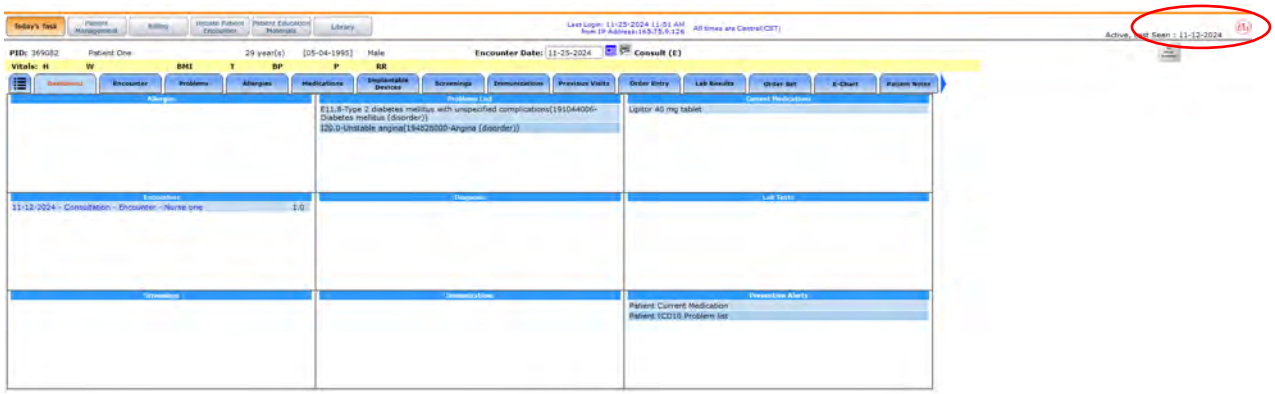
8. Upon successful login to the ezEMRx EHR Application, you will be presented with "Password Recovery Screen" as shown below. Click on OK.



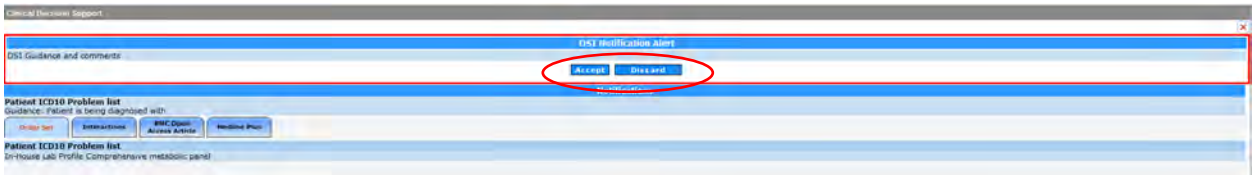
9. You will next be presented with the ezEMRx landing page Today's Task. A test patient will be listed on the task-list as shown below (the patient name may vary). Click on Encounter to access the patient chart.



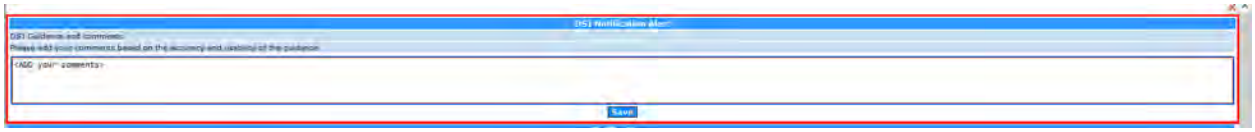
10. The system will then present the following screen known as the clinical dashboard. A DSI icon will be visible as shown below. You will then click on this icon to review the Clinical Decision support interventions options.



11. The system will then present the following screen to accept or discard the DSI alert. The guidance here is for you to decide the accuracy of the recommendation based on the rule definitions. You can choose to Accent or Discard the guidance. Further along, you will be presented with the comments section to capture your feedback on the choice for the DSI alert.



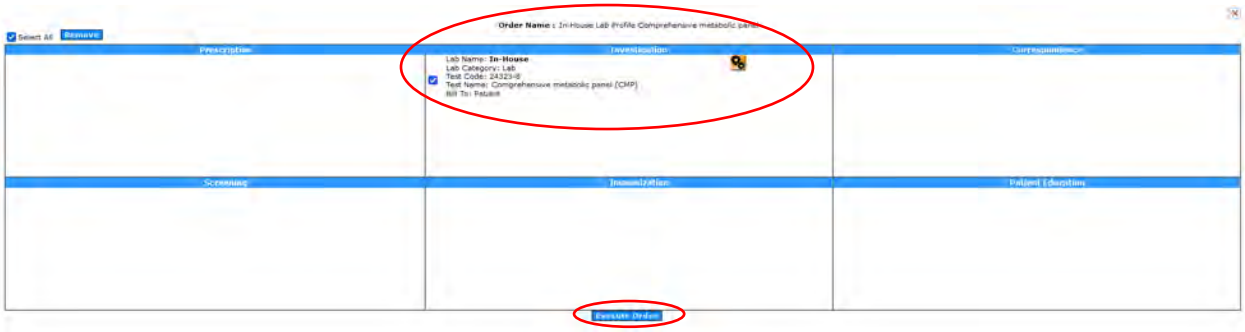
a. Accept - You can fill in comments regarding the guidance as shown below (Comments are optional). Save will take you step 12.



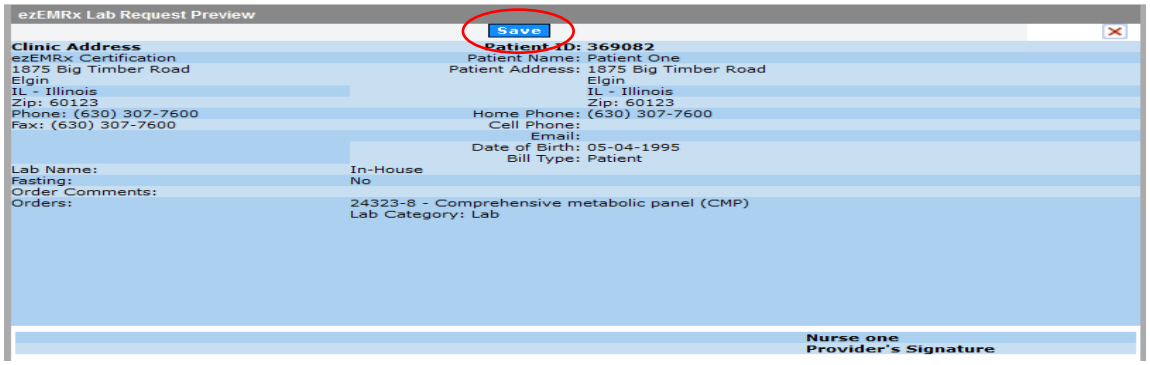
b. Discard - You must fill in the comments regarding the guidance as shown below (Comments are mandatory) as to why you consider this to be inaccurate. Save will take you back to the parent screen at step 18.

12. The following screen is displayed with the next set of options associated with Clinical Decision support interventions. Click on Individual tabs listed below to view the articles / education materials.
Click on the Inhouse Lab Profile Comprehensive Metabolic Panel and execute the order.

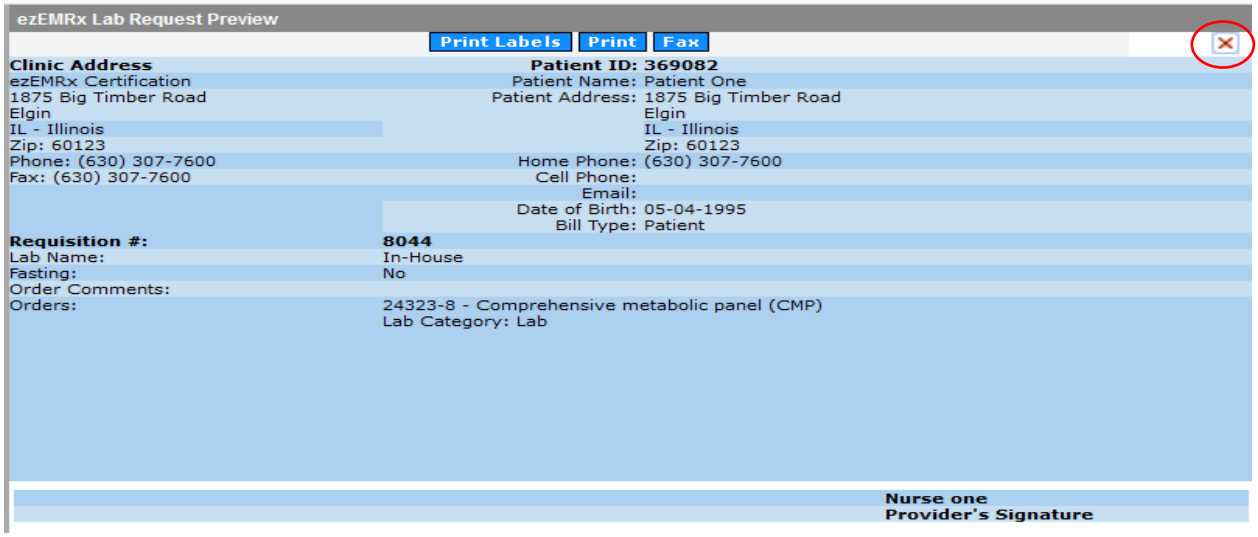
13. Upon clicking on the Inhouse Lab Profile Comprehensive Metabolic Panel and you can select the order checkbox and click on Execute Order to complete the order as show in the screen below.



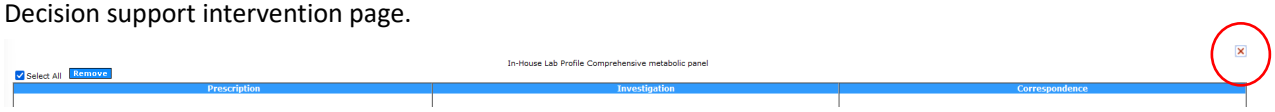
14. The following screen will be displayed for user to complete the orders. Please click on Save as show in the screen below.



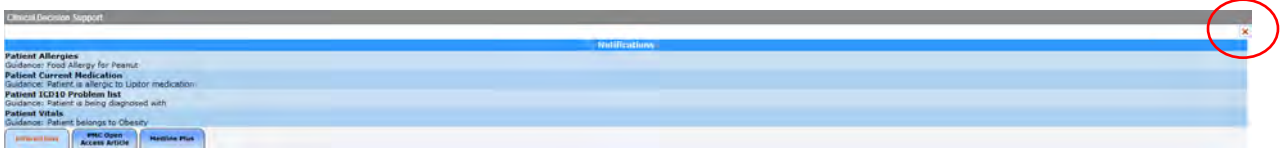
15. The following screen will be displayed which will include requestion print options. You may click on the X to close the window as shown below.



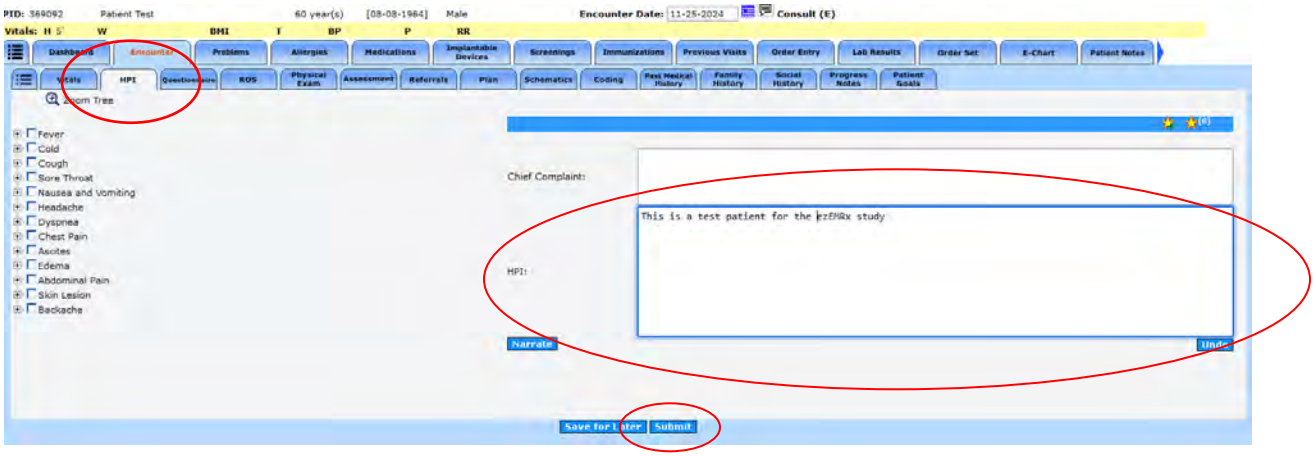
16. After completing the order, click on the X to close the window as shown below. This will take you to Decision support intervention page.



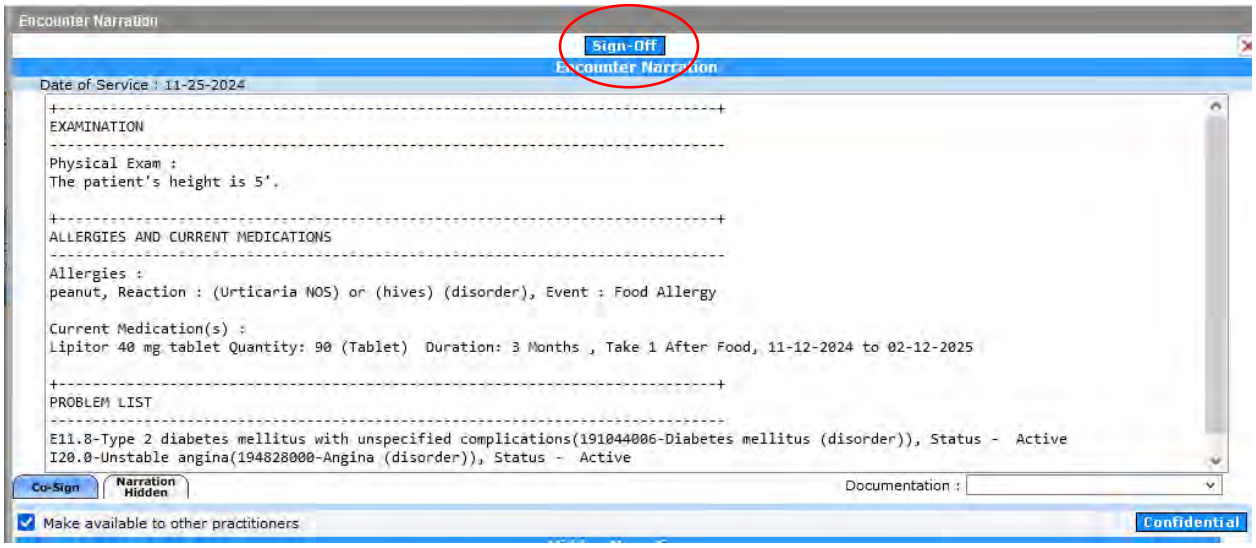
17. After completing the review of Decision support interventions, Click on X to close the window as shown below. This will take you to the Encounter screen.



18. Now click the HPI tab and document some test notes (This is a test patient for the ezEMRx study) within the HPI section of the text box as shown below. Once documented, you will then click on Submit to complete the encounter.



19. You will then be presented with a final review screen as shown below. Click on Sign-off to finalize the encounter for the patient.



This completes the study for DSI review. Please capture your responses at

https://forms.office.com/r/8T9pQAtWxW

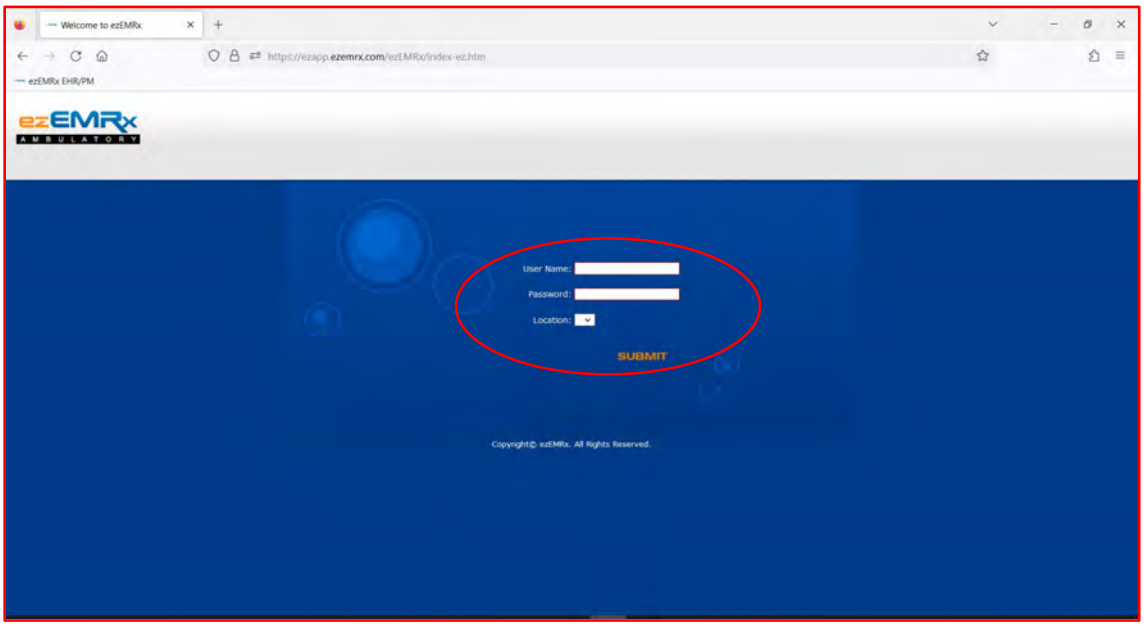
Thank you for your time.

Modifying the DSI Rules Engine

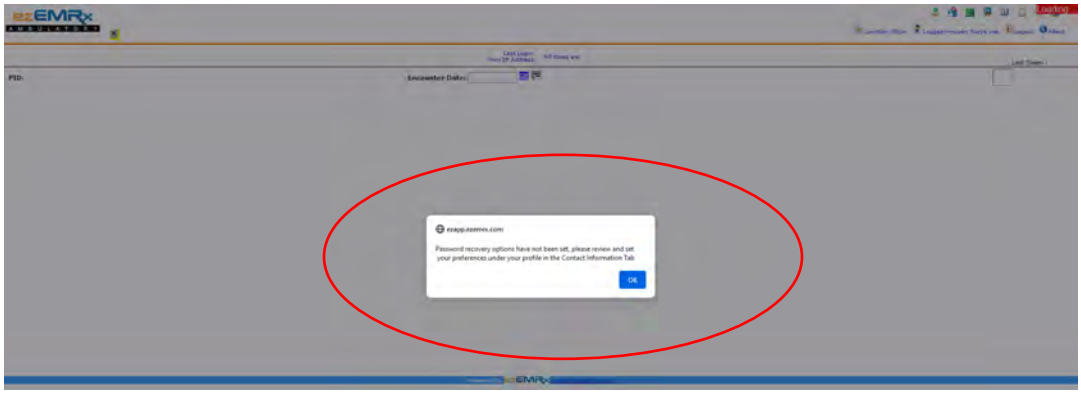
Please note: You need to perform this section of the study within the EHR while adhering to the instructions and capturing your responses in parallel via the response URL at – https://forms.office.com/r/Ts8c16q1GP

Please note: You will need to record your **START TIME** with **STEP NUMBER 9** and **END TIME** at **STEP NUMBER 15**. These times will need to be recorded within the form in the above mentioned URL.

20. The system can be accessed using the above URL from your computer browser. The URL will display the following screen. You will now enter the EHR login credentials (Username / Password) – select the location from the drop-down and click on Submit.



21. Upon successful login to the ezEMRx EHR Application, you will be presented with "Password Recovery Screen" as shown below. Click on OK.



22. You will next be presented with the ezEMRx landing page Today's Task. Lookup for the icon  Preference icon on the top right-hand side.

23. The system will then present the following screen. Click on the icon  pull down menu. This allows the authorized user to setup/configure the business rules for the practice.

24. Select the option Preventive Alerts from the pull down list as shown below and Navigate to the tab – Preventive Alerts.

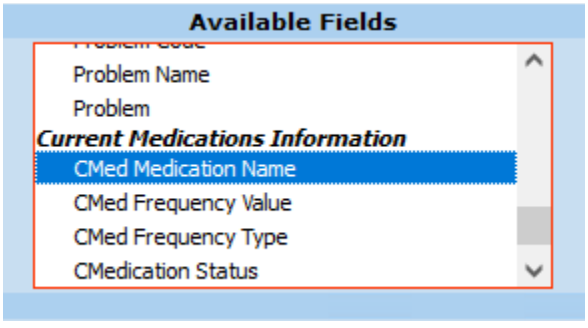
25. The system will then present the following screen listing the DSI rules that have been created.

26. You will now take steps to modify guidance rules. The goal here is to modify a rule to check for the presence of a medication within the patient's medication list the rule when a certain diagnosis is made. Your feedback will be required on the usability of making such changes. We will first select the attribute

(described below) that we need to associate. To begin, click on the Edit button against the rule identified by your username as 2216_nurse<NN>_rule to modify / add additional attributes to this DSI alert.

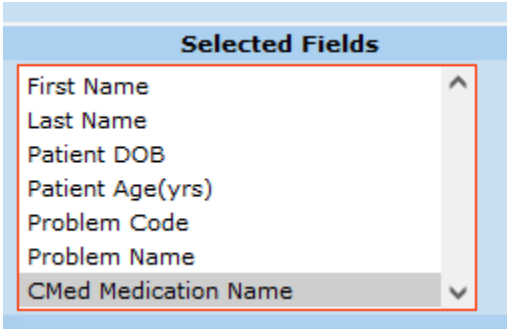
a. The Preventive alert screen is divided into three sections.
    i. Section 1 -> Alert Types
        1. Alert Types - > This will list the attributes such as patient, demographics, problems, medications, and allergies.
        2. You can select the checkbox next to select this attribute as shown below.

    ii. Section 2 -> Available Fields
        1. Upon selecting the attributes from the previous section – The available fields will be listed on this section.
        2. Navigate this section using the scrollbar and lookup for the attributes that were selected in the previous section.
        3. Click on the Field names and click on the icon  to move the field to the selected Field section.



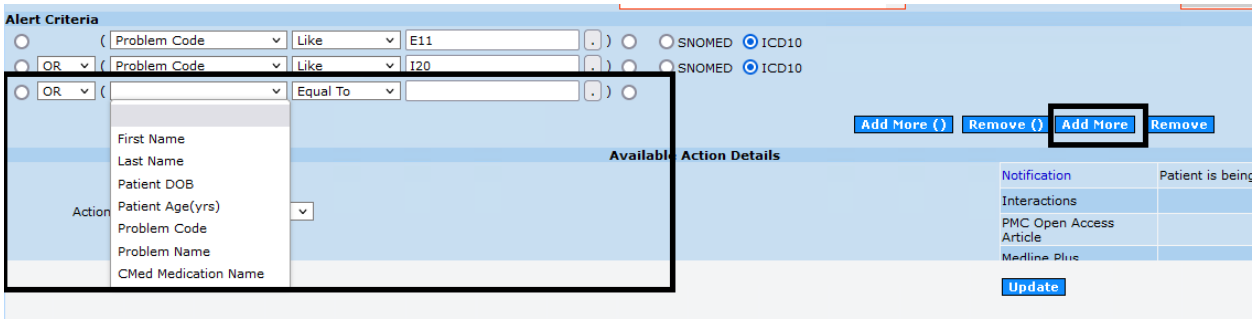
iii. Section 3 -> Selected Fields

1. This will list all the selected fields from various attributes. You can further remove the attributes (by double clicking on the same) that may not apply.



27. Next, we will associate the attribute with the rule. We define the rule to match the medication with a diagnosis code. In essence, if the patient is on this medication and has this diagnosis, this rule will trigger and display the required guidance. This is accomplished under the section, Alert Criteria.

a. Click on the button Add More as shown below and select an attribute from the drop-down on the left.

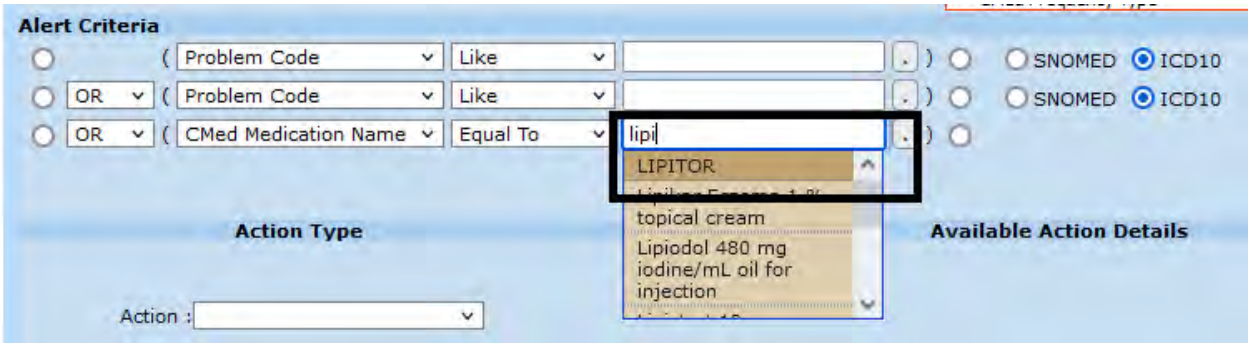


i. Choose the condition type <And> / <OR> to combine with the diagnosis check

ii. Select the field name <Cmed Medication Name>

iii. Select the operator condition <Like>

iv. Next, enter the match criteria within the next field – Type a few characters (such as - lipi), the system will list based on the type input criteria, select from the list as shown below.



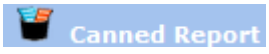
28. The screen should display as shown below once the attributes are added to the rule. The section below - Available Action Details will display the associated guidance and related actions that will trigger once the rule conditions are met when in an encounter. Optional - additional trigger events or guidance can be added via the Action drop down. Click on Update button to save these changes and take you back to the parent screen.

Review of the Feedback Report

Please note: You need to perform this section of the study within the EHR while adhering to the instructions and capturing your responses in parallel via the response URL at – https://forms.office.com/r/Ts8c16q1GP

29. Click on the Today's Task to land on the landing page.

30. Click on the Magic wand  icon to access the report wizard.

31. Click on the Canned Report 

32. Click on the report name “CDS Audit Report” to view the details. Select the start date /end date and consultant drop-down to view and validate the report.

This completes the study for DSI modifications.

Please capture your responses at

https://forms.office.com/r/Ts8c16q1GP

Thank you for your time.

System Usability Study - Provider Usage

Study based towards criteria requirements - 170.315(b)(11)

* Required

Informed Consent

1. ezEMRx would like to thank you for participating in this study. The purpose of this study is to evaluate the described functionality within the 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 15-30 minutes. At the conclusion of the test, you will be compensated for your time.

    - I understand and agree to be a voluntary participant in the present study conducted by ezEMRx Inc.
    - I am free to withdraw consent or discontinue participation at any time.
    - I understand and agree that the purpose of this study is to make the software application more usable in the future.
    - I understand and agree that the data collected from this study may be shared with ezEMRx and other third parties.
    - I understand and agree that data confidentiality is assured. 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

◯ Yes, I have read the above statement and agree to be a participant

◯ No, I choose not to participate in this study

Submitter Demographics

2. Full Name *

Enter your answer

3. Gender *

- ◯ Male
- ◯ Female
- ◯ Others

4. Age *

The value must be a number

5. Email *

6. Education *

- ◯ No High School Degree
- ◯ High School graduate, diploma or the equivalent
- ◯ Some College credit, no degree
- ◯ Trade/Technical/Vocational training
- ◯ Associate degree
- ◯ Bachelor's degree (RN/ BSN)
- ◯ Master's degree
- ◯ Doctorate degree (MD/ DNP/ DMD)

7. Phone Number *

The value must be a number

8. Current Occupation/Role *

9. Professional Experience (in years) *

The value must be a number

10. Product Experience (in years) *

The value must be a number

11. Computer Experience (in years) *

The value must be a number

12. Assistance Technology Needs *

- ◯ Yes
- ◯ No

Usability - Decision Support

13. Please Click on the Today's Task tab to begin the task. A patient by the name "Test Patient" is an existing patient of yours and has come in for a consultation and is currently on multiple medication and has several problems.

    1. Click on the Encounter task against your patient name
    2. System will trigger an automated decision support interventions based on the patient's conditions / medication and labs

    Optimal Path

    - **Click on the encounter task**
    - **System will trigger an automated decision support interventions icon on the top right-hand corner. The icon is circular, red in color with an indicator text as DSI.**
    - **Click on the DSI icon and the decision support window will be displayed showing the tigger details as per the patient risk definitons against medication / problems / allergies and other clinical elements. You will then choose to Accept or Discard the given recommendation (see SUS Instructions).**

    *

    ◯ Correct

    ◯ Minor Deviations

    ◯ Major Deviations

14. Successfully completed *

    ◯ Easily Completed

    ◯ Completed with difficulty or help

    ◯ Not Completed

15. Start Time *

16. End Time *

17. Participant Usability Scale *

- ◯ Very Easy
- ◯ Easy
- ◯ Challenging
- ◯ Difficult
- ◯ Very difficult

18. Comments

General Product Scoring

19. I think I would like to use this system frequently *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

20. I found the system unnecessarily complex *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

21. I thought the system was easy to use *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

22. I think that I would need the support of a technical person to use this system *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

23. I thought there was too much inconsistency in this system *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

24. I would imagine that most people would lern to use this system very quickly *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

25. I found the system very cumbersome to use *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

26. I felt very confident using the system *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

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

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

Usability feedback

28. What was your overall impression of this system *

29. What aspects of the system did you like most? *

30. What aspects of the system did you like least? *

31. What features did you expect to encounter but did not see? Is there anything that is missing in this application?

32. Compare this system to other system you have used? *

- ◯ Easy
- ◯ Challenging
- ◯ Somewhat difficult
- ◯ Very difficult

33. Would you recommend this system to your colleagues *

- ◯ Yes
- ◯ No
- ◯ Maybe

34. Question

System Usability Study - Office Manager Setup

Study based towards criteria requirements - 170.315(b)(11)

* Required

Informed Consent

1. ezEMRx would like to thank you for participating in this study. The purpose of this study is to evaluate the described functionality within the 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 15-30 minutes. At the conclusion of the test, you will be compensated for your time.

    - I understand and agree to be a voluntary participant in the present study conducted by ezEMRx Inc.
    - I am free to withdraw consent or discontinue participation at any time.
    - I understand and agree that the purpose of this study is to make the software application more usable in the future.
    - I understand and agree that the data collected from this study may be shared with ezEMRx and other third parties.
    - I understand and agree that data confidentiality is assured. 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

    *

    ◯ Yes, I have read the above statement and agree to be a participant

    ◯ No, I choose not to participate in this study

Submitter Demographics

2. Full Name *

3. Gender *

- ◯ Male
- ◯ Female
- ◯ Others

4. Age *

5. Email *

6. Education *

- ◯ No High School Degree
- ◯ High School graduate, diploma or the equivalent
- ◯ Some College Credit, no degree
- ◯ Trade/Technical/Vocational training
- ◯ Associate degree
- ◯ Bachelor's degree (RN/BSN)
- ◯ Master's degree
- ◯ Doctorate degree (MD/DNP/DMD)

7. Phone Number *

The value must be a number

8. Current Occupation/role *

9. Computer Experience (in years) *

The value must be a number

10. Professional Experience (in years) *

The value must be a number

11. Product Experience (in years) *

The value must be a number

12. Assistance Technology needs *

- ◯ Yes
- ◯ No

Usability Study - Decision Support

13. Please Click on the Today's Task tab to begin the task.

    1. Click on the preference icon
    2. Navigate to the preventive alert
    3. Authorized user will have an ability to edit/modify the DSI rule engine.

Optimal Path
Task-01

- **Click on the Preventive alert tab**
- **Lookup the rule listing and click on the "Edit" button**
- **Select the required alert type / available fields and add that to the rule condition**
- **Click on "Add More" and select the fields from the drop-down.**
- **Add the matching criteria for the available fields**
  - **Operator like (equal to)**
  - **matching criteria (lipitor)**
- **Click on Update**

*

◯ Correct

◯ Minor Deviation

◯ Major Deviation

14. Successfully completed *

◯ Easily Completed

◯ Completed with difficulty

◯ Not Completed

15. Start Time *

The value must be a number

16. End time *

The value must be a number

17. Participant Usability Scale *

- ◯ Very Easy
- ◯ Easy
- ◯ Challenging
- ◯ Difficult
- ◯ Very Difficult

18. Please Click on the Today's Task to begin the Task

1. Click on the Report Wizard (magic wand icon)
2. Click on the Report name "CDS Audit report"
3. Enter the date parameter and click on the "OK" to view the reports

*

- ◯ Correct
- ◯ Minor Deviation
- ◯ Major Deviation

19. Successfully Completed *

- ◯ Easily Completed
- ◯ Completed with difficulty or help
- ◯ Not Completed

20. Start Time *

The value must be a number

21. End Time *

The value must be a number

22. Participant Usability Scale *

- ◯ Very Easy
- ◯ Easy
- ◯ Challenging
- ◯ Difficult
- ◯ Verify Difficult

23. Comments *

General Product Scoring

24. I think I would like to use this system frequently *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

25. I found system unnecessarily complex *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

26. I found system unnecessarily complex *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

27. I thought the system was easy to use *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

28. I think that I would need the support of a technical person to use this system *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

29. I thought there was too much inconsistency in this system *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

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

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

31. I found the system very cumbersome to use *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

32. I felt very confident using the system *

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

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

- ◯ Strongly agree
- ◯ Agree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Neutral

Usability feedback

34. What was your overall impression of this system? *

35. What aspects of the system did you like most? *

36. What aspects of the system did you like least? *

37. What features did you expect to encounter but did not see? Is there anything that is missing in this application? *

38. Compare this system to other system you have used? *

- ◯ Easy
- ◯ Challenging
- ◯ Somewhat difficult
- ◯ Very difficult

39. Would you recommend this system to your colleagues? *

- ◯ Yes
- ◯ No
- ◯ Maybe

40. Questions/ Comments *

EHR Usability Test Report of ezEMRx Version 10.00

Adaptation: Common Industry Format for Usability Test Reports

Reference Standards:

- NISTIR 7741

Report Prepared By: ezEMRx Customer Teams
Balaji Venkatesh, Dmitrii Badmaev

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EXECUTIVE SUMMARY

A usability test of ezEMRx 10.00, an Ambulatory EHR, was conducted on-site at a conference center, centrally located to the participants in Northbrook, IL by ezEMRx. 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).

For the usability test, ten healthcare providers participated and used the EHRUT in simulated, but representative tasks.

This study collected performance data on the following twelve features:

- Medication List
- Medication Allergy List
- Problem List
- Interaction Check
- Prescribe Medication
- CPOE - Medication
- CPOE - Lab Orders
- CPOE - Radiology Orders
- Clinical Reconciliation Information
- Clinical Decision Support
- Demographics
- Implantable Devices

During the usability test, each participant was asked to review and sign an informed consent/release form (template included in Appendix); they were instructed that they could withdraw at any time. All the participants had no prior experience in working with a previous version of the EHRUT.

The participants were instructed to complete a series of tasks using the EHRUT. During the test, the test duration was timed and recorded as user performance data, on paper. There was no assistance provided to the participants on how to complete each task.

All participant data was de-identified, that is, no correlation could be made between the identity of the participant and the collected data. Following the conclusion of the testing, participants were compensated with $150 for their time.

Various recommended metrics, in accordance with the examples listed in the NIST Guide to the Process Approach for Improving the Usability of Electronic Health Records, were used to evaluate the usability of the EHRUT.

The UCD process applied for the EHR Under Test (EHRUT) is not an industry standard process, but rather a custom process that is broadly based on the ISO 13407[1] Human-centered design processes for interactive systems.

[1] ISO 13407 - Human-centered design processes for interactive systems

ISO 13407 provides guidance on achieving quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centred design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.
http://www.iso.org/iso/catalogue_detail.htm?csnumber=21197

INTRODUCTION

The EHRUT tested for this study was ezEMRx 10.00, an Ambulatory EHR. Designed to present medical information to healthcare providers in a clinic and specialty setting, the EHRUT consists of a workflow based approach for data capture and retrieval. The usability test was designed 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 achieve this, measures of effectiveness, efficiency and user satisfaction, such as time taken to write a prescription, capture medications and allergies, and execute orders with decision-support validation, were captured during the usability test.

The UCD process applied for the EHR Under Test (EHRUT) is not an industry standard process, but rather a custom process that is broadly based on the ISO 13407 Human centered design processes for interactive systems.

The UCD study methods (adaptation based on ISO/IEC 25062:2006[2] and NIST IR 7742[3]) and the UCD process (non-standard custom process) described in this document were applied for the following criteria:

- 170.315(a)(1) - Computerized provider order entry – medications
- 170.315(a)(2) - Computerized provider order entry – laboratory
- 170.315(a)(3) - Computerized provider order entry – diagnostic imaging
- 170.315(a)(4) - Drug-drug, drug-allergy interaction checks for CPOE
- 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 (CDS)
- 170.315(a)(14) - Implantable device list
- 170.315(b)(3) - Electronic prescribing
- 170.315(b)(2) - Clinical information reconciliation and incorporation

[2] ISO/IEC 25062:2006 Software Engineering - Software Product Quality Requirements and Evaluation (SQuaRE) -- Common Industry Format (CIF) for usability test reports. ISO/IEC 25062:2006 provides a standard method for reporting usability test findings. The format is designed to report results of formal usability tests in which quantitative measurements are collected, and is particularly appropriate for summative/comparative testing. http://www.iso.org/iso/catalogue_detail.htm?csnumber=43046

[3] NISTIR 7742 - Customized Common Industry Format Template for Electronic Health Record Usability Testing. NISTIR 7742 provides a template for the modified version of Software Engineering Software Product Quality Requirements and Evaluation (SQuaRE) Common Industry Format (CIF) for usability test reports (ISO/IEC 25062:2006(E)), the Common Industry Format (CIF) usability test report. http://www.nist.gov/manuscript-publication-search.cfm?pub_id=907312

UCD PROCESS OUTLINE

The UCD process applied for the EHR Under Test (EHRUT) is not an industry-standard process, but rather a custom process that is broadly based on the "ISO 13407 Human-centered design processes for interactive systems".

ISO 13407 provides guidance on how to achieve quality in use by incorporating user-centered design activities throughout the life cycle of interactive computer-based systems. It describes user-centered design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance.

DESIGN ACTIVITIES

The user-centered design processes for the EHR Under Test (EHRUT) are based on four design activities as described in "ISO 13407 Human-centered design processes for interactive systems".

The four activities initiated early into the product design and user interface designs are:

- Understanding and specifying the context of use
- Specifying the user and organizational requirements
- Producing design solutions
- Evaluating designs against requirements

These activities were applied in an iterative manner for every interactive user interface element.

UCD PROCESS CHART

The following chart represents the UCD process and the interdependence of the UCD activities applied on an iterative model of the EHR Under Test (EHRUT).

STUDY METHOD

PARTICIPANTS

To facilitate the usability study, the selected participants were from mixed backgrounds, with different demographic characteristics. The following table lists the participants by characteristics, including demographics, professional experience, computing experience and user needs for assistive technology. Participant names were replaced with Participant IDs to ensure that an individual's data was not tied back to the individual's identity.

Sl No.	Participant ID	Gender	Age	Education	Occupation / Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
1	EZUSE201712001	Male	50-59	Bachelor's Degree	RN	114 Months	114 Months	0 Months	No
2	EZUSE201712002	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
3	EZUSE201712003	Male	50-59	Bachelor's Degree	RN	96 Months	96 Months	0 Months	No
4	EZUSE201712004	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
5	EZUSE201712005	Male	60-69	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
6	EZUSE201712006	Male	40-49	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
7	EZUSE201712007	Male	40-49	Bachelor's Degree	RN	144 Months	144 Months	0 Months	No
8	EZUSE201712008	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
9	EZUSE201712009	Female	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
10	EZUSE201712010	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No

Ten participants were selected to participate in the usability test conducted on 20171227. The usability tests were scheduled for a duration of 120 minutes.

Usability tests were conducted on-site at a conference center, centrally located to the participants in Northbrook, IL.

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 can be used as a baseline for future tests with an updated version of the same EHR and/or in comparison with other EHRs, provided the same tasks are used. In short, this test served as both a means to record or benchmark the current usability, and also to identify areas where improvements must be made.

This study was an adoption of the process as defined in NIST IR 7742. The methodology was adjusted to accommodate usability requirements of the ezEMRx EHR and serve as a mechanism to incorporate user feedback into product development lifecycles. The participants were engaged to simulate realistic clinical environments, using the provided laptop and with a similar network connectivity. The task elements and results were documented on paper while the study was in progress. This methodology injects user feedback on usability into the product development life cycle.

During the usability test, the system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

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

Additional information about the various measures can be found in the section on Usability Metrics.

DATA SCORING

The following table describes how the tasks were scored, errors evaluated, and 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 allotted time. The results were provided as a percentage. Task times were recorded for successes. Observed task times divided by the optimal time for the task was a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance, under realistic conditions, was recorded while constructing tasks.
Effectiveness: Task Failures	If the participant abandoned the task, did not get the correct answer, performed it incorrectly, or reached the end of the allotted time before successful completion, the task was counted as a "Failure." No task times were recorded for errors. Not all deviations were counted as errors. They were expressed as the mean number of failed tasks per participant.
Efficiency: Task Deviations	The participant's path (steps) through the application was reviewed. Deviations occurred 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 was divided by the number of optimal steps to provide a ratio of path deviation.
Efficiency: Task Time	Each task was timed. 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.
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 Easy) to 5 (Very Difficult). This data was averaged across participants. To measure participants' likeability of the EHRUT and confidence in using it, 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.

TASKS

A number of tasks were constructed that were realistic and representative of the kinds of activities performed in a clinic using the following EHR features:

- Medication List
- Medication Allergy List
- Problem List
- Interaction Check
- Prescribe Medication
- CPOE - Medication
- CPOE - Lab Orders
- CPOE - Radiology Orders
- Clinical Reconciliation Information
- Clinical Decision Support
- Demographics
- Implantable Devices

Tasks were selected based on the 170.314(g)(3) safety-enhanced design criteria, as part of the ONC HIT Certification Program.

TEST ENVIRONMENT

The EHRUT was one that is typically used in a healthcare office or clinic.

In this instance, the testing was conducted at a conference center located in Northbrook-Illinois. The conference center (test location) comprised of comfortable and ergonomic work spaces, and an Internet connection with a bandwidth < 5 MBPs.

For testing, the participants (Ambulatory physicians and nurses) used laptop computers comprising of a 15.6 inch display, Intel core i5 processor with 4GB memory, and configured with Microsoft Windows 10 as the operating system. During the test, the screen resolution was set to 1600x900. The participants used a mouse and keyboard when interacting with the EHRUT. The participants were instructed not to change any of the default system settings.

The application (EHRUT) itself was setup by the vendor using a training database. The application was setup to be accessible by laptop computers over a WAN connection, using a browser and a URL. The Internet response time was slower, and as a result, the overall performance degraded when compared to what users would experience in a production implementation. The intent was also to review interactions with the EHRUT under lower Internet speeds.

During the test, participants used laptops configured with the Microsoft Windows 10 platform (as stated above), and Mozilla Firefox ESR Version 52 to access the EHRUT that was set up previously with a training database, on a WAN connection.

TEST FORMS AND TOOLS

During the usability test, the documents that were used included:

- Informed Consent Form
- Initial Questionnaire
- Participant Instructions
- SUS Questionnaire
- Incentive Receipt and Acknowledgement

Examples of these documents can be found in the **Appendices**.

The participant's interaction with the EHRUT was captured and recorded within the EHR.

USABILITY METRICS

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

The goals of the test were to assess:

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

SUMMARY OF TEST RESULTS

PARTICIPANTS

Ten participants were tested on the EHRUT(s). Participants in the test were physicians, nurses and medical assistants. Participants were compensated $150 for their time. In addition, participants had no direct connection with the development of the EHRUT(s). Participants were clinicians and were not familiar with the use of the EHRUT. Participants were given the same orientation and level of training.

For test purposes, end-user characteristics were identified and translated into this document.

The following table lists 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 could not be tied back to individual' identity.

Sl No.	Participant ID	Gender	Age	Education	Occupation / Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
1	EZUSE201712001	Male	50-59	Bachelor's Degree	RN	114 Months	114 Months	0 Months	No
2	EZUSE201712002	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
3	EZUSE201712003	Male	50-59	Bachelor's Degree	RN	96 Months	96 Months	0 Months	No
4	EZUSE201712004	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
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6	EZUSE201712006	Male	40-49	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
7	EZUSE201712007	Male	40-49	Bachelor's Degree	RN	144 Months	144 Months	0 Months	No
8	EZUSE201712008	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
9	EZUSE201712009	Female	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No
10	EZUSE201712010	Male	50-59	Bachelor's Degree	RN	120 Months	120 Months	0 Months	No

Ten participants were recruited and requested to participate in the usability tests on 12-27-2017. Participants were scheduled for one session with a time of 120 minutes.

Usability tests were conducted on site at a conference center located in Northbrook, IL.

DATA ANALYSIS AND REPORTING

The results of the usability test were calculated according to methods specified in the Usability Metrics section.

The usability testing results for the EHRUT are detailed below. The results should be seen in light of the objectives and goals outlined in Section Study Design.

The following is a summary of the performance and rating data collected from the EHRUT.

Measure / Task	N	Task Success		Path Deviation	Task Time Deviation		Task Time		Errors		Task Ratings 5=Very Easy 1=Very Difficult	
	#	Mean	SD	Deviations (Observed / Optimal)	Mean Observed (Secs)	Mean Optimal[1] (Secs)	SD (Secs)	Mean (Secs)	Mean	SD	Mean	SD
Medication List	10	70%	34%	61/60	400	78	137	215	30%	66%	3.5	1.18
Medication Allergy List	10	78%	28%	71/70	129	58	96	117	22%	72%	3.9	1.10
Problem List	10	73%	36%	56/56	0	111	108	145	28%	64%	3.6	1.30
Interaction Check	10	80%	37%	82/80	127	120	124	144	20%	63%	4.0	1.49
Prescribe Medication	10	78%	33%	101/100	280	160	178	192	22%	67%	3.9	1.29
CPOE - Medication	10	84%	29%	81/80	240	80	267	187	16%	17%	4.2	1.23
CPOE - Lab Orders	10	90%	16%	70/70	0	111	63	108	10%	84%	4.5	0.71
CPOE - Radiology Orders	10	90%	16%	70/70	0	88	77	118	10%	84%	4.5	0.71
Clinical Reconciliation Information	10	86%	22%	128/126	185	137	105	138	14%	78%	4.3	0.95
Clinical Decision Support	10	82%	37%	37/36	108	83	141	134	18%	63%	4.1	1.54
Demographics	10	86%	22%	70/70	0	118	122	140	14%	78%	4.3	0.95
Implantable Devices	10	84%	29%	61/60	184	126	113	135	16%	71%	4.2	1.23

[1]Task Time Deviation – Mean Optimal in seconds was established using the same infrastructure and internet connection at the Test Environment Site to reflect a correct baseline.

The results from the SUS (System Usability Scale) indicated that the score for Subjective Satisfaction with the System, based on performance, with these tasks, was 73%. Broadly interpreted, scores under 60 represented systems with poor usability; scores over 80 were considered “above average”. Since the interactions with the EHRUT were under lower Internet speeds, the SUS score of 73% was an indicator of sustainable use even under low grade Internet speeds.

DISCUSSION ON THE FINDINGS

Discussions with the participants ranged in findings from slowness to usability of the overall system. In specific areas of the CDS function, it was noted that the alerting mechanism was not readily visible. Deviations were noted as some participants could not follow directions as outlined.

The system slowness was related to a lower Internet speed at the test facility when compared to production customer facilities. The lower internet access speeds resulted in the deviations.

Functional concepts of CDS seemed to be challenging and discussions indicated mandatory requirements of user training and education of requirements. The presentation of CDS alerts invoked positive and negative responses from the participants. There were indications of users looking to find the trigger events on such instances. On an alternate note, some participants found the CDS alerts to be apt towards clinical decision assistance.

The overall discussions presented a positive mindset from the participants.

EFFECTIVENESS

The analysis indicated that most participants were successful in completing the tasks as presented. Deviations were noticed for participants whose roles restricted functional areas.

EFFICIENCY

The analysis indicated that the providers were able to perform all functions successfully Observations of participants with roles such as Nurses showed deviations. However, these observations were considered as exclusions since tasks such as CPOE and CDS were not realistic events in a daily working scenario and hence the participants could not relate to the functional aspects of such tasks.

SATISFACTION

To measure participants' confidence and likeability of the EHRUT overall, the Testing team administered the System Usability Scale (SUS) post-test questionnaire. The satisfaction index presented a positive outlook on usability. The responses have been aggregated and presented in the table below.

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." The responses indicated very positive user usability responses.

Aggregate SUS index -- 1 (Strongly Disagree) to 5 (Strongly Agree)

Index Parameter	Index
I think that I would like to use this system frequently	5
I found the system unnecessarily complex	2
I thought the system was easy to use	4
I think that I would need the support of a technical person to use this system	3
I thought there was too much inconsistency in this system	3
I would imagine that most people would learn to use this system very quickly	4
I found the system very cumbersome to use	3
I felt very confident using the system	4
I needed to learn a lot of things before I could get going with this system	2

MAJOR FINDINGS

The major finding based on the study indicated slowness of the system by all participants. This was a result of lower Internet connectivity speeds. It was further determined that such slow response times are not present in production environments.

AREAS FOR IMPROVEMENT

Observations and discussions did present several areas of improvement. The highlights were:

- Training was required for users, based on roles
- More intuitive screen descriptors were required
- Directions for study had to be improved and screenshots were required in the training material

APPENDIX

Sample – Initial Questionnaire

ezEMRx is recruiting individuals to participate in a usability study of its Electronic Health Record (EHR). We would like to ask you a few questions if you are interested in participating. This will only take a few minutes of your time. This is strictly for research purposes. If you are interested and qualify for the study, you will be paid to participate.

1. Have you participated in a focus group or usability test in the past 6 months?

   _____

   _____

   _____

2. Do you, or does anyone in your home, work in marketing research, usability research or web design?

   _____

   _____

   _____

3. Do you, or does anyone in your home, have a commercial or research interest in electronic health record software or a consulting company?

   _____

   _____

   _____

4. Which of the following best describes your age? [23 to 39; 40 to 59; 60 - to 74; 75 and older]

   _____

   _____

   _____

5. Which of the following best describes your race or ethnic group? [Caucasian, Asian, Black/African-American, Latino or Hispanic]

_____

_____

_____

6. Do you require any assistive technologies to use a computer? [if so, please describe.]

_____

_____

_____

Professional Demographics

What is your current position and title? (Must be a healthcare provider.)

RN: Specialty _____

Physician: Specialty _____

Resident: Specialty _____

Administrative Staff

How long have you held this position? _____

Describe your work location (or affiliation) and environment?

_____

_____

Which of the following describes your highest level of education? [High school graduate/GED, some college, college graduate (RN, BSN), postgraduate (MD/PhD), other (explain)]

_____

_____

Sample – Computer Expertise

Computer Expertise

Approximately how many hours per week do you spend on the computer? [e.g., 0 to 10, 11 to 25, 26+ hours per week]

_____

_____

Which computer platform do you usually use? [e.g., Mac, Windows, etc.]

_____

Which Internet browser do you usually use? [e.g., Firefox, IE, Chrome, etc.]

_____

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

_____

For how many years have you used an electronic health record?

_____

How many EHRs do you use or which are the ones that you are familiar with?

_____

How does your work environment maintain patient records?

☐ On paper

☐ Some on paper, some electronically

☐ Electronically

Contact and Demographic Details

Participant Name: _____

Gender: _____

Address: _____

_____

City, State, Zip: _____

Phone Number (Daytime): _____

Phone Number (Evening): _____

Alternate Phone Number: _____

Email Address: _____

Sample – Non-Disclosure Agreement

NON-Disclosure Agreement

This AGREEMENT is entered into as of _____ 2017 between _____ ("the Participant") and the testing organization "**ezEMRx Inc**", located at 1875 Big Timber Road, Suite: A (East Entrance), Elgin IL 60123.

The Participant acknowledges that 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 *ezEMRx Inc.*, 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 *ezEMRx, Inc.* 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 she/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: _____

Sample – Informed Consent

Informed Consent

ezEMRx Inc would like to thank you for participating in this study. The purpose of this study is to evaluate the 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 *60-90* 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 ezEMRx Inc. I am free to withdraw consent or discontinue participation at any time.

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 others, outside of ezEMRx Inc and ezEMRx clients. 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: _____

Sample – Incentive Receipt and Acknowledgement

INCENTIVE RECEIPT AND ACKNOWLEDGMENT FORM

I hereby acknowledge receipt of $150.00 for my participation in a research study conducted by ezEMRx, Inc.

Printed Name: _____

Address: _____

_____

Signature: _____ Date: _____

Usability Researcher: _____

Signature of Usability Researcher: _____

Date: _____

Witness: _____

Witness Signature: _____

Date: _____

Sample – System Usability Scale Questionnaire

SYSTEM USABILITY SCALE QUESTIONNAIRE

	Strongly Disagree				Strongly Agree
I think that I would like to use this system frequently	1	2	3	4	5
I found the system unnecessarily complex	1	2	3	4	5
I thought the system was easy to use	1	2	3	4	5
I think that I would need the support of a technical person to use this system	1	2	3	4	5
I thought there was too much inconsistency in this system	1	2	3	4	5
I would imagine that most people would learn to use this system very quickly	1	2	3	4	5
I found the system very cumbersome to use	1	2	3	4	5
I felt very confident using the system	1	2	3	4	5
I needed to learn a lot of things before I could get going with this system	1	2	3	4	5

Sample – Final Questions

Final Questions

What was your overall impression of this system? _____

_____

_____

What aspects of the system did you like most? _____

_____

_____

What aspects of the system did you like the least? _____

_____

_____

Were there any features that you were surprised to see? _____

_____

_____

What features did you expect to encounter but did not see? That is, is there anything that is missing in this application? _____

_____

_____

Compare this system to other systems you have used? _____

_____

_____

Would you recommend this system to your colleagues? _____

Task 01: First Impression

This is the application you will be working with. Have you heard of It? _____ YES _____NO
If yes, what do you know about it?

_____

_____

Please don't click on anything just yet.
What do you notice? What are you able to do here? Please be specific.

Notes / Comments:

_____

_____

_____

Task 1: Medication List

Please click the Today's Task tab to begin the task.

On the current visit, patient "**Nia Doe**" indicates that there is change in his medication history. Locate the Medication tab and complete the following task:

1) View active medication.
2) Change the existing medication to "Completed" or "Discontinue".
3) Add new medication.
4) Click "Medication History" to view the medication history.

Optimal Path:

1) Click Patient Management.
2) Search for patient "Nia Doe".
3) Navigate to 'Medications'.
4) Click the medication name, change the status to "Discontinue", specify a '**Reason**' and click **Save.**
5) Search for new medication from the auto-lookup field and click Add.
6) Click "History" to view a history of the patient's medication details.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
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Success:

☐ Easily completed
☐ Completed with difficulty or with help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____
Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 2: Medication Allergy List

Please click the Today's Task tab to begin the task.

On the current visit, patient "**Nia Maker**" indicates that there is change in his Allergy list. Locate the Allergy tab and complete the following task:

1) View the patient's active allergy list.
2) Change the status of one allergy to "Inactive".
3) Add a new allergy.
4) Verify the patient allergy history.

Optimal Path:

1) Click Patient Management.
2) Search for patient " Nia Maker".
3) Navigate to 'Allergy'.
4) Click on an existing Allergy and change the status to "Inactive".
5) Search for a new allergy from the auto-lookup field and specify the "Severity", "Event", and "Reaction".
6) Click 'Add' to add the allergies.
7) Click "History" to view the patient's historical allergy list.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____
Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 3: Problem List

Please click the Today's Task Tab to begin the task.

On the current visit, patient "**Nia Doran**" indicates that there is change in his problem list. Locate the Problem tab and complete the following task:

1) View the patient's active problem list.
2) Change the status of one problem to "Resolved".
3) Add a new problem.
4) Verify the patient problem history.

Optimal Path:

1) Click Patient Management.
2) Search for patient " Nia Doran".
3) Navigate to the 'Problem' tab.
4) Click an existing Problem and change the status to "Resolved".
5) Search for a new problem by specifying the 'Problem Code' or Problem Name'. Capture the onset date as '05/05/2010' and click 'Save'.
6) If ICD10 to Snomed mappings does not exist, then the system will show the Snomed mapping overlay and you can search or lookup and add the associated "SNOMED CODE'.
7) Click Save.
8) Click "History" to view the patient's historical problems.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____
Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 4: Interaction Check – [D-to-D and D-to-A]

Please click the Today's Task tab to begin the task.

After examining the patient "**Nia Miller**", you have decided to put this patient on the medication -> "Lipitor". Check for any 'D to D or 'D to A' interaction and place an order for this medication.

Optimal Path:

1) Click Patient Management.
2) Search for patient "Nia Miller".
3) Navigate to 'Order Entry'.
4) Click 'Rx'.
5) Click the "Drug Search" button
6) Search and select the required drug.
7) Add "Duration", "Quantity", "Sig", "Refill" and click Add.
8) Click "Execute Order" to view D-to-D and D-to-A interaction.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
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Success:

☐ Easily completed
☐ Completed with difficulty or required help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 5: Prescribe Medication

Please click the Today's Task tab to being the task.

After examining the patient "**Nia Jones**", you have decided to put this patient on the medication -> "Lipitor". Check for any interaction, choose the pharmacy and ePrescribe this medication.

Optimal Path:

1) Click Patient Management.
2) Search for patient "Nia Jones".
3) Navigate to 'Order Entry'.
4) Click the 'Rx' tab.
5) Click the "Drug Search" button.
6) Search and select the required drug.
7) Add "Duration", "Quantity", "Sig", "Refill" and click Add.
8) Click "Execute Order" to view interaction.
9) Select Pharmacy.
10) Click "Send" to ePrescribe.

- ☐ Correct
- ☐ Minor Deviations / Cycles: Describe below
  _____
  _____
- ☐ Major Deviations: Describe below
  _____
  _____

Success:

- ☐ Easily completed
- ☐ Completed with difficulty or help: Describe below
  _____
  _____
- ☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 6: CPOE - Medication

Please click the Today's Task tab to begin the task.

After examining the patient "**Nia Miller**", you have decided to create an order for medication for this patient. Check for any D-to-D interaction and complete the order.

1) Select the existing order-set for this patient.
2) Add or remove any one medication based on the patient requirement.
3) Select the required action and execute the order.

Optimal Path:

1) Click Patient Management
2) Search for patient "Nia Miller".
3) Navigate to 'Order Entry'.
4) Click the 'Select Order Set' button and choose 'CPOE – Medication Orders'.
5) Click the **RX** tab to make changes to the medication orders, if required.
6) Click "**Execute Orders**' to execute orders from the "**RX"** tab.
7) System will show any 'Drug to 'Drug' or 'Drug to 'Allergy' Interaction page -> select the override reason, if applicable, and click 'OK'.
8) Select 'No Pharmacy Found' and click 'Print' to print the Prescription.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 7: CPOE – Laboratory Orders

Please click the Today's Task tab to begin the task.

After examining the patient "**Nia Miller**", you have decided to create an order for lab for this patient.

1) Select the existing order-set for this patient.
2) Add or remove any one investigation based on the patient requirement.
3) Select the required action and execute the order.

Optimal Path:

1) Click Patient Management.
2) Search for patient "Nia Miller".
3) Navigate to 'Order Entry'.
4) Click the 'Select Order Set' button and choose 'CPOE – Laboratory Orders'.
5) Click the **Lab Name** '**Others'** to make changes to the Laboratory orders, if required.
6) Click the '**Execute Orders'** button on the right hand side", to execute orders.
7) Click 'Save' to complete the Lab orders.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 8: CPOE – Radiology Orders

Please click the Today's Task tab to begin the task.

After examining the patient "**Nia Miller**", you have decided to create an order for radiology for this patient.

1) Select the existing order-set for this patient.
2) Add or remove any one investigation based on the patient requirement
3) Select the required action and execute the order.

Optimal Path:

1) Click Patient Management.
2) Search for patient "Nia Miller".
3) Navigate to 'Order Entry'.
4) Click the 'Select Order Set' button and choose 'CPOE – Radiology Orders'.
5) Click the **Lab Name 'Others'** to make changes to the Radiology orders.
6) Click 'Execute Orders' from the "**Lab" tab.**
7) Click 'Save' to complete the Radiology orders.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
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☐ Major Deviations: Describe below
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_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
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_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____
Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 9 : Clinical Information Reconciliation

Please click the Today's Task tab to begin the task.

Patient "**Christina Jones"** is an existing patient of yours and has recently undergone surgery and has received the CCDA from the facility. Incorporate the CCDA to the her System.

a) Verify the patient incoming medical records (Problems / Medication / Allergies) against the existing records and complete reconciliation for this patient.

Optimal Path:

1) Click the 'Incoming HIE' task.
2) Select the patient "Christina Jones".
3) If the patient is not matched, click "Search' and create the patient.
4) Click the 'Verified' button. Clinical Reconciliation Task will be shown with the following tabs. "Medication', 'Problems' and 'Allergies'

Reconciliation Process

1) System will show the medication received (via CCDA) and the current medication (side by Side), verify the Medication and click "Accept (✓) or discard the changes (✗)".
2) After confirming, click "Validate" and 'Confirm".
3) Repeat Step 1 through 3 for the other 2 tabs (Allergies / Problems)
4) Click 'Submit' to complete clinical reconciliation.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 10: Clinical Decision Support

Please click the Today's Task tab to begin the task.

Patient "**Nia Major"** is an existing patient of yours and has come in for a consultation and is currently on multiple medications / has active problems and has pending results for verification.

1) Click the patient's records. System will trigger an automated clinical decision support based on the patient conditions / medication / labs
2) Click the CDS alert icon and complete the required task.

Optimal Path:

1) Click Patient Management.

2) Select the Patient "Nia Major". System will trigger an automated CDS alerts 

on the right hand top corner.
3) Click the icon and a CDS window will be displayed showing the appropriate details as per the patient medication / problems / allergies etc.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
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_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____
Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 11: Demographics

Please click the Today's Task tab to begin the task.

Patient '**Nia Major's'** demographics have to be captured again as they have changed. Follow the instructions below to update the demographics for this patient.

Optimal Path:

1) Log into ezEMRx and click Patient Management.
2) Search for the patient "Nia Major".
3) Navigate to 'Demographics'.
4) Click 'Personal Information' and add the following details:
    - Specify the patient's middle name as 'Jones'.
    - Gender identity
    - Sexual Orientation
    - Race
    - Ethnicity
    - Patient's Current Address
    - Patient's Home Phone
5) Capture all the information and click 'Update' to save the changes.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
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_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments

Task 12: Implantable Devices

Please Click on the Today's Task Tab as starting point of the task.

Patient **'Nia Major'** has under surgery and a 'Pacemaker' has been implanted. Navigate the patient medical records and capture the 'Implantable device for this patient.

Optimal Path :

1) Click Patient Management.
2) Search for patient "Nia Major".
3) Navigate to the 'Implantable Devices' tab.
4) Click 'Device Lookup'.
5) Select 'Entry' -> Enter device ID – **00643169007222** and click 'Search'.
6) Select Device and click 'Add'.

☐ Correct
☐ Minor Deviations / Cycles: Describe below
_____
_____
☐ Major Deviations: Describe below
_____
_____

Success:

☐ Easily completed
☐ Completed with difficulty or help: Describe below
_____
_____
☐ Not completed

Task Time: _____ seconds

Observed Errors and Verbalizations:

Comments: _____
_____

Rating: Overall, this task was: _____

Participant written scale*: "Very Easy" (1) to "Very Difficult" (5)*

Administrator Comments