

Usability Test Report

BroadStreet v1

Report based on NISTIR 7742 Format for Usability Test Reports

Date of Test: June 19-20, 2023

Date of Report: June 23, 2023

Report Prepared by: BroadStreet Health, LLC
121 Inman Street
Cambridge, MA 02139

Table of Contents

1	EXECUTIVE SUMMARY	3
2	INTRODUCTION	4
3	METHOD	4
3.1	PARTICIPANTS	4
3.2	STUDY DESIGN	5
3.3	TASKS	5
3.4	PROCEDURE	6
3.5	TEST LOCATION & ENVIRONMENT	6
3.6	TEST FORMS & TOOLS	7
3.7	PARTICIPANT INSTRUCTIONS	7
3.8	USABILITY METRICS	7
3.9	DATA SCORING	7
4	RESULTS	9
4.1	DATA ANALYSIS AND REPORTING	9
4.2	DISCUSSION OF THE FINDINGS	9
5	APPENDICES	10
5.1	Appendix 1: PARTICIPANT DEMOGRAPHICS	10
5.2	Appendix 2: INFORMED CONSENT	11
5.3	Appendix 3: EXAMPLE MODERATOR'S GUIDE	11
5.4	Appendix 4: EXAMPLE PARTICIPANT GUIDE	13
5.5	Appendix 5: SYSTEM USABILITY SCALE & POST TEST QUESTIONNAIRE	16

Executive Summary

A usability test of BroadStreet Version 1 was conducted between June 19 and June 20 of 2023. It was performed remotely by BroadStreet Health, LLC. The NISTIR 7741 User Center Design Process was utilized in the design of the usability test and its report. This is the common industry standard for a usability test report. The purpose of the exercise was to test and validate the usability of the current user interface and provide evidence of usability in the EHR User Test (EHRUT). The eleven participants tested and matched target demographic criteria as prospective users of the EHR. The EHRUT utilized simulated but representative tasks of necessary health care job performances.

BroadStreet Version 1 was developed with a goal of creating a new way to experience, interact, and deliver care while meeting the specific requirements of an ONC Certified Electronic Health Record. A unique task architecture was implemented on how users capture, modify, and interact with patient health information. With this in mind, the EHRUT provided limited to no explanations to our test user participants with limited to no prior experience. This was done to specifically grade new user EHR usability. Throughout the entire User Centered Design process, we prioritized safety-enhanced design.

Eleven participants with limited to no experience will be tasked with completing the following tasks to be frequently used in the BroadStreet EHR. :

(§ 170.315(a)(5))	Change Demographics
(§ 170.315(a)(5))	Record Demographics
(§ 170.315(a)(1))	CPOE: Review Medication Order
(§ 170.315(a)(1))	CPOE: Enter Medication Order
(§ 170.315(a)(1))	CPOE: Modify Medication Order
(§ 170.315(a)(5))	Modify Demographics

Table [1] Task Testing Scenarios

Each participant was greeted and thanked by the Moderator for participating and introduced to the experienced Data Collector. The participant joined virtually and was briefed that the session would last approximately 30 minutes. Each participant was asked to complete tasks utilizing the EHR system and then to complete questions indicating the ease or difficulty of functionality, likes or dislikes, and suggestions for possible improvements. The Moderator clarified no assistance would be given during the test for questions about or suggestions in the use of the system itself.

The test sessions were recorded, and the experienced Data Collector timed tasks and documented user performance. Key metrics tracked included task success, task errors, path deviations, task time, task rating, and System Usability Scale (SUS) score.

INTRODUCTION

The EHRUT tested for this study was BroadStreet version 1. BroadStreet is designed to support and streamline healthcare providers' workflow in the Post Acute/Long Term Care (PALTC) and clinic/ambulatory settings. The usability testing focused on realistic tasks performed on a daily basis around collecting, modifying, and writing different actions related to demographics, labs, and medications. The BroadStreet workflow is designed to prioritize efficiency while providing care with unified views of patient information.

The purpose of this study was to test and validate the usability of the current user interface and provide evidence of usability in the EHRUT. To this end, measures of effectiveness, efficiency, and user satisfaction were captured during the usability testing.

3 METHOD

3.1 PARTICIPANTS

A total of 11 participants were tested on the EHRUT BroadStreet. Participants in the test included Physicians, NP, RN, LPN, and medical office staff. Participants had no direct connection to the development of or the organization producing the EHRUT BroadStreet. Participants were NOT given the opportunity to have the same orientation and level of training as the actual end users would have received.

Participants had a mix of backgrounds and demographic characteristics as noted below.

Participant Demographic Table							
Gender	Age Range	Education	Occupation/Role	Professional Experience (mos)	Computer Experience (mos)	Product Experience	Assistive Technology Needs
Female	50-59	High school diploma	Office Staff Member	>240	>240	0	No
Female	30-39	MD	Physician	132-240	>240	0	No
Male	30-39	Master's degree	Nurse Practitioner	60 - 120	>240	0	No
Male	50-59	MD	Physician	>240	>240	0	No
Female	70-79	PhD	Private Psych Practice (retired 2022)	>240	>240	0	No
Female	50-59	Associate degree	Registered Nurse	>240	60 - 120	0	No
Female	40-49	Associate degree	Office Manager	132-240	>240	0	No
Female	40-49	Master's degree	Nurse Practitioner (NP)	>240	<60	0	No
Male	20-29	Some college credit, no degree	Office Staff Member	<60	>240	0	No
Male	20-29	Bachelor's degree	Accounting/Payroll (HR)	<60	132-240	0	No
Female	40-49	Associate degree	Licensed Practical Nurse	>240	>240	0	No

Table [2] Participant Demographics

Eleven participants took part in the usability test with no participants failing to show up for the study. Participants were scheduled for 30-minute sessions. Time was allotted to set systems for proper testing conditions as well as to debrief the tester after completion of the test. Standardized forms were used to collect and organize the testers' demographics.

3.2 STUDY DESIGN

The objective of this test was to discover areas where the system performed well in effectiveness, efficiency and in user satisfaction while noting areas where the system fell short or failed in the usability by the test participant. Data collected from the test may be used in future tests as a baseline when new versions of the EHR may be written.

During the usability test, only BroadStreet EHR was tested. Each participant performed the test on their own equipment, in a place of their choosing, and with the same provided instructions. The system was evaluated as noted above by observing and recording the participants' test for:

- Tasks completed successfully in the allotted time
- Time to complete the task
- Number and type of errors performed by the participant
- Number of deviations from the task performance path
- Comments from the participants
- Rating for ease/difficulty in performing the task

3.3 TASKS

Tasks were created that would be representative of the activity and work a user might do with BroadStreet EHR. Each participant was given the set of tasks below. The tasks were chosen because of their importance with regard to safety and the frequency of use in the system. The participants were welcomed to ask questions prior to and after the timed tasks, and to refer to the written instructions. Below are the scenarios that are related to the ONC Criteria tested.

Task 2 (§ 170.315(a)(5))

Section 1: Modify Demographics – correction of DOB

Select Year “1938”, Select Month “March”, Select Day “10” as the date

Task 2 (§ 170.315(a)(5))

Section 2: Enter Demographics – gender, preferred language, race

Gender - select Male, Preferred Language - select English, Race - select Asian

Task 4 (§ 170.315(a)(1))

Section 1: Review Medication Order – Identifying medication name and current dosage.

Find the Omeprazole order. Write down/state the dosage of MG

Task 4 (§ 170.315(a)(1))

Section 2: Order Medication – Including its name, dosage, directions, and diagnosis

Enter Lipitor - select “Lipitor 10mg PO Tablet”

Enter Quantity – 1, Type -- select Tablet(s), Frequency -- select Daily (QD), Duration -- enter 30, Type Hyperlipidemia - select E78.5 - Hyperlipemia, unspecified

Task 4 (§ 170.315(a)(1))

Section 3: Modify Medication – Identify a current medication, change the dosage

Find the most recent Lipitor order in the list, Modify to Lipitor 40mg

Task 5 (§ 170.315(a)(5))

Section 1: Enter Demographics - add death date and reason

Select year “2020”, Select month “January”, Select day “1” as the date, Enter “Pneumonia”

3.4 PROCEDURE

Upon initiation of the testing session, participants were greeted and their identity was confirmed. They were asked to review the Consent for Research and Development document and return via Dropbox Sign.

Two staff members participated in the test, one to moderate and one to log data. The Moderator ran the testing session including administering instructions and tasks. The Data Logger took notes on task success, error, path deviations, timing of the task, and recording the session through shared video. Participants were instructed to perform the tasks (Appendix 4) as quickly as possible making as few errors and deviations as possible; without assistance from the staff members; and without comments while performing the task.

For each task, the participants were given a written copy of the task. Task timing began once the administrator stated to begin the task, and timing stopped once the participant indicated s/he had finished and/or the task was completed.

Scoring on a 1 to 5 scale with 1 being very hard and 5 being very easy, was performed after each individual task section.

Following the entire testing session, the participant was asked to fill out a post-test questionnaire and the System Usability Scale (SUS). (Appendix 5)

The participants’ demographic information, task success rate, time on task, errors and deviations, verbal responses, and post-test questionnaires were recorded into a spreadsheet. Participants were thanked for their time, recording was stopped, and the testing session was concluded.

3.5 TEST LOCATION & ENVIRONMENT

The tests were performed in the participants’ location of choice. Locations were representative of and simulated the environment they would normally perform their work activities in an EHR. The test was performed utilizing video technology while monitoring the participant’s screen and

recording the audio. The equipment used by the participant was their normal work computer or laptop and mouse or keyboard. The screen magnification was set to no more than 100% for optimal EHR viewing. Video invitation was sent to the participant by the Moderator or Data Collector and assistance was given as needed to arrive at the test starting point. The EHR was accessed through Google Chrome or Microsoft Edge browser. Assistance was given to the participant to gain access and navigate through security measures.

3.6 TEST FORMS & TOOLS

Various documents and electronic platforms were used to perform and record this test as well as participant demographic data and test data.

Documents:

- Consent for Research and Development (Appendix 2)
- Post Test Questionnaire (Appendix 5)
- System Usability Scale SUS (Appendix 5)
- Participant Demographic Questionnaire (reference results on demographic chart)
- Moderator Script (Appendix 3)

Platforms:

- Zoom or Skype
- Google Chrome or Microsoft Edge Browser
- Dropbox Sign

3.7 PARTICIPANT INSTRUCTIONS

The participants were emailed a Volunteer User Packet prior to their individual testing session. This included the orientation and instructions which were read to the participants by the Moderator. Audio and video were recorded for each participant's session. Samples of the written instructions are available in Appendix (3) and Appendix (4).

3.8 USABILITY METRICS

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

The goals of the test were to assess:

1. Effectiveness of BroadStreet by measuring participant success rates and errors
2. Efficiency of BroadStreet by measuring path deviations and task time
3. Satisfaction with BroadStreet by measuring ease of use ratings and SUS score

3.9 DATA SCORING

The following table [3] details how we scored tasks, evaluated errors, and analyzed time data.

Measures	Rationale and Scoring
<p>Effectiveness: Task Success</p>	<p>A task was counted as a “success” if the user was able to achieve the correct outcome within target task time.</p> <p>The total number of successes are calculated for each task and then divided by the total number of times that task was attempted. The results are provided as a percentage.</p> <p>Task times were recorded for successes. Observed task times divided by the optimal time for each task is a measure of optimal efficiency.</p> <p>Optimal task performance was generated by timing experienced users executing the same steps/tasks as participants. Target task times used for the task times in the instructions are defined by taking the optimal performance and multiplying it by 1.25 allowing for some buffer time because participants lack experience in task architecture performed.</p>
<p>Effectiveness: Task Failures</p>	<p>If the participant abandoned the task, or could not perform the overall task, or reached the end of the allotted time without successful completion, the task was counted as a “Failure.” No task times were taken for failures.</p> <p>Errors were counted if the overall task was successful but the task was not executed properly. The total number of errors was calculated for each task and then divided by the total number of participants. This should also be expressed as how error-prone the task is.</p>
<p>Efficiency: Task Deviations</p>	<p>The participant’s path through the application is recorded. Deviations occur if the participant, for example, visits an incorrect screen, clicks on an incorrect menu item, follows an incorrect link, or interacts incorrectly with an on-screen control. This path is compared to the optimal path. The number of steps in the observed path is divided by the number of optimal steps to provide a ratio of path deviation.</p>
<p>Efficiency: Task Time</p>	<p>Each task is timed from when the administrator says “Begin: until the participant says “Done” or when the participant stopped performing the task. Only times for tasks that are successfully completed are included in the average task time analysis. Average time per task is calculated for each task. Variance measures (standard deviation and standard error) are also calculated.</p> <p>Optimal task time, as benchmarked by experienced users, is recorded when constructing tasks. Target task times used for the times in the instructions are defined by taking the optimal performance and multiplying it by 1.25 allowing for some buffer time because participants lack experience in tasks performed. The task completion time of the observed task recordings was divided by the optimal task performance time to provide a ratio of the task time.</p>
<p>Satisfaction: Task Rating</p>	<p>Participant’s subjective impression of the ease of use of the application was measured by administering both a simple post-task question as well as a post-session questionnaire. After each task, the participant was asked to rate “Overall, this task was:” on a scale of 1 (Very Difficult) to 5 (Very Easy). These data are averaged across participants.</p> <p>To measure participants’ confidence in and likeability of the EHRUT overall, the testing team administered a series of post-test questions included in Appendix (5) as well as the System Usability Scale (SUS) questionnaire</p>

Table [3] Details of Raionale and Scoring

4 RESULTS

4.1 DATA ANALYSIS AND REPORTING

The results of the usability test were calculated according to the methods specified in the Usability Metrics section above. The results should be seen in light of the objectives and goals outlined in the Study Design. The data should yield actionable results that, if corrected, yield material, positive impact on user performance.

Task		Effectiveness				Efficiency				Satisfaction			
Task Description	n	Task Success		Task Errors		Path Deviation		Task Time (seconds)				Task Ratings 5 = Easy	
		Mean	Standard Deviation	Mean	Standard Deviation	Observed	Optimal	Mean	Standard Deviation	Observed	Optimal	Mean	Standard Deviation
Change a patient's demographic	11	100%	0%	0%	0%	6.0	6.0	69.1	25.9	69.1	39.2	4.5	0.7
Record patient's demographic	11	100%	0%	9%	30%	8.3	8.0	43.4	24.3	43.4	33.4	4.6	0.9
Review Medication Orders in Patient Record	11	91%	95%	0%	0%	3.0	3.0	21.4	9.5	21.4	13.2	4.5	0.9
Create New Medication Order	11	100%	0%	0%	0%	13.4	13.0	78.3	18.1	78.3	53.7	4.7	0.6
Modify Medication Order	11	100%	0%	0%	0%	9.1	9.0	55.0	25.1	55.0	37.9	4.5	0.8
Record patient's date of death with reason	11	100%	0%	0%	0%	7.0	7.0	47.2	13.7	47.2	39.2	4.9	0.3

Table [4] Results of Each Measure

4.2 DISCUSSION OF THE FINDINGS

A.1 Medications

Efficiency

- Overall users finished tasks within allotted time and did not experience any burden of data entry. The deviations experienced were a result of unfamiliarity with the task architecture.

Effectiveness

- Despite varying degrees of previous digital technology experience, users had a > 90% success rate and felt they were informed and understood exactly how to enter the prescription. The error experienced was a result of lack of familiarity with reviewing a medication order.

Satisfaction

- Out of a scale of 1 = very hard, 5 = easy, user satisfaction scored 4 or above for each task

A.5 Demographics

Efficiency

- The task architecture was unfamiliar in the first demographics task but became more intuitive as the following tasks were completed with a minor deviation.

Effectiveness

- Presentation summary easy to understand leading to a 100% success rate with one error.

Satisfaction

- Out of a scale of 1 = very hard, 5 = easy, user satisfaction scored 4 or above for each task.

Major Takeaways

The volunteer user participants were purposefully selected to have minimal, if any experience with the new EHR functionality. A common theme of “easy to learn”, “intuitive product”, “user friendly”, and “now I’ve learned what to do” were made by multiple participants in the Post Test Questionnaire. This helped to validate the system developers' goal of quick learning and easy system utilization by its users.

Volunteer user participants also expressed liking the organization of the task and system functionality such as “drop and click”, “important patient data was upfront and readily seen”, and “able to navigate multiple places from the main summary page”.

Areas for Improvement

Volunteer user participants expressed concerns regarding “industry verbiage or web symbols” and issues due to “color shading and font contrast”. Suggestions were taken for possible improvements in future versions. Occasional path deviations were noted by the testing staff due to the patient task header and will be taken to the developers for improvements in future versions.

5 APPENDICES

5.1 Appendix 1: PARTICIPANT DEMOGRAPHICS

Participant Demographic Table							
Gender	Age Range	Education	Occupation/Role	Professional Experience (mos)	Computer Experience (mos)	Product Experience	Assistive Technology Needs
Female	50-59	High school diploma	Office Staff Member	>240	>240	0	No
Female	30-39	MD	Physician	132-240	>240	0	No
Male	30-39	Master's degree	Nurse Practitioner	60 - 120	>240	0	No
Male	50-59	MD	Physician	>240	>240	0	No
Female	70-79	PhD	Private Psych Practice (retired 2022)	>240	>240	0	No
Female	50-59	Associate degree	Registered Nurse	>240	60 - 120	0	No
Female	40-49	Associate degree	Office Manager	132-240	>240	0	No
Female	40-49	Master's degree	Nurse Practitioner (NP)	>240	<60	0	No
Male	20-29	Some college credit, no degree	Office Staff Member	<60	>240	0	No
Male	20-29	Bachelor's degree	Accounting/Payroll (HR)	<60	132-240	0	No
Female	40-49	Associate degree	Licensed Practical Nurse	>240	>240	0	No

Table [2] Participant Demographics

5.2 Appendix 2: INFORMED CONSENT

Informed Consent

BroadStreet EHR would like to thank you for participating in this study. The purpose of this study is to evaluate an electronic health records system. You will be asked to perform several tasks using the prototype and give your feedback. The study will last about 30 minutes.

Agreement

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

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

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

I understand and agree that the data collected from this study may be shared with others outside of WashSense. I understand and agree that data confidentiality is assured, because only deidentified 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.

I understand that I am volunteering for this study and no monetary or other compensation is being offered.

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: _____

5.3 Appendix 3: EXAMPLE OF MODERATOR'S GUIDE

Orientation by Moderator and Task 1

Moderator: (Read Orientation)

Thank you for participating in this study. Our session today will last approximately 30 minutes. During that time, you will be looking at an electronic health record system. I will ask you to complete a few tasks using this system and answer some questions. We are interested in how easy or difficult this system is to use, what you like in the system, and how we could improve it. You will be asked to complete these tasks independently, trying to do them as quickly as possible and with the fewest possible errors or deviations. Do not do anything more than asked. If you get lost or have difficulty, I cannot answer or help you with the system itself. Please save your comments until the end of a task or the end of the session. At that point,

we can discuss your comments or questions freely. Please be as honest as you can in your comments. This test is not a reflection of you but of the EHR. Any positive or negative comments will only help to improve the system. The product you will be using today is BroadStreet. Some of the data may not make sense as it is demo data. We are recording the audio and screenshots of our session today. The information that you provide will be kept confidential and your name will not be associated with your comments at any time. Please have your instructions printed and at your fingertips or a blank piece of paper. Do you have any questions or concerns?

Moderator: We will now begin with Task 1: First Impression

I will navigate you to the EHR BroadStreet your demo patient's chart, but do not click on anything once we have arrived. Please notice the patient clinical summary at the top and below the horizontal tab menu (blue text) to review the patient's detailed information. You will have 1 minute to record your comments about what you notice. Include likes/dislikes, what you expect to do from this page, its organization, the ease of understanding for how to possibly navigate the EHR, etc.

Moderator: (Navigate the test user to their demo patient) Please start your 1 minute First Impression now. Remember, do not click on anything. Remove your hands from the keyboard. 1 minute lapses, and Moderator will call "Time". Please read your comments for our recording.

Task 2: Demographics a5

Moderator: Please refer to the directions for completing Task 2 in your handout. There are two sections to this task. Each section will be timed separately. I will give you a few seconds to review the instructions for each section before timing starts. After completion of each section, you will have a few seconds to grade the section by ease/difficulty of completion. Please write and state your grade. Please review directions for the first section and let me know when you are ready to proceed. (give about 30s) Please start (and begin timing) (User calls Done or set time elapses and Moderator will call "Time")

Moderator: Please rate this section using the 1 to 5 scale, write and state your answer. Then we will proceed to the next section. Please review directions for the second section and let me know when you are ready to proceed. (give about 30s) Please start (and begin timing) (User calls Done or set time elapses and Moderator will call "Time")

Moderator: Please rate this section using the 1 to 5 scale, write and state your answer. Then we will proceed to the next section.

Task 3: Laboratory

Moderator: Please refer to the directions for completing Task 3 in your handout. [This is information gathering only and not part of the testing criteria submission at this time.]

Task 4: Medications a1

Moderator: Please refer to the directions for completing Task 4 in your handout. There are three sections to this task. Each section will be timed separately. I will give you a few seconds to review the instructions for each section before timing starts. After completion of each section, you will have a few seconds to grade the section by ease/difficulty of completion. Please write and state your grade. Please review directions for the first section and let me know when you are ready to proceed. (give about 30s) Please start (and begin timing) (User calls Done or set time elapses and Moderator will call "Time")

Moderator: Please rate this section using the 1 to 5 scale, write and state your answer. Then we will proceed to the next section. Please review directions for the second section and let me know when you are ready to proceed. (give about 30s) Please start (and begin timing) (User calls Done or set time elapses and Moderator will call "Time")

Moderator: Please rate this section using the 1 to 5 scale, write and state your answer. Then we will proceed to the next section. Please review directions for the third section and let me know when you are ready to proceed. (give about 30s) Please start (and begin timing) (User calls Done or set time elapses and Moderator will call "Time") Moderator: Please rate this section using the 1 to 5 scale, write and state your answer. Then we will proceed to the next section.

Taks 5: Demographics a5

Moderator: Please refer to the directions for completing Task 5 in your handout. There is one section to this task. I will give you a few seconds to review the instructions for this section before timing starts. After completion of each section, you will have a few seconds to grade the section by ease/difficulty of completion. Please write and state your grade. Please review directions for the section and let me know when you are ready to proceed. (give about 30s) Please start (and begin timing) (User calls Done or set time elapses and Moderator will call "Time"). Moderator: Please rate this section using the 1 to 5 scale, write and state your answer. Then we will proceed to the next section. 5. Please refer to the link you were sent earlier and sign the Consent for Research and Development as well as fill out the Post Test Questionnaire.

5.4 Appendix 4: EXAMPLE OF PARTICIPANT GUIDE

Task 1, First Impression

I will navigate you to the EHR BroadStreet patient's chart, but do not click on anything once we have arrived. Please notice the patient clinical summary at the top and below the horizontal tab menu (blue text) to review the patient 's detailed information. You will have 1 minute to record your comments about what you notice. Include likes/dislikes, what you expect to do from this page, its organization, the ease of understanding for how to possibly navigate the EHR, etc.

Notes/Comments: _____

Task 2, Criteria (a)(5)

Continue from the BroadStreet patient's chart

I. Modify Demographics:

- (a) In the right lower corner of page, Click the green circle with pen. A new window opens.
- (b) Click in the Activity field of the new window,
 - i. > select Demographics (do not change any other information in the header)
- (c) Scroll down to Patient Information
 - i. > Click Birth Date, a calendar pop-up opens.
 - ii. Modify the birth date
 - i. First select year "1938"
 - ii. then select month "March"
 - iii. then select day "10" as the date
- (d). Scroll down and in the lower right corner, click Save & Sign (blue button).
- (e). In pop-up window, Click Sign
State "Done".

Score this task: 1 being very hard and 5 being very easy

II. Record Demographics

- (a) In the right lower corner of page, Click the green circle with pen. A new window opens.
 - (b) Click in the Activity field of the new window,
 - i. > select Demographics (do not change any other information in the header)
 - (c) Scroll down to Demographics and:
 - I. Click Gender and select Male
 - ii. Click Preferred Language and select English
 - iii. Click Race and select Asian
 - (d). Scroll down and in the lower right corner, click Save & Sign (blue button).
 - (e). In pop-up window, Click Sign
- State "Done".

Score this task: 1 being very hard and 5 being very easy

Task 3 [Informational]

I. Review Lab Order

II. Order lab

Task 4, Criteria (a)(1)

Continue from the BroadStreet patient's chart

I. Review Medication List:

- (a) Click the Medications tab on the Patient's Chart
- (b) On the right side of the page,
 - i. click the box "BroadStreet Rx Orders" ->
- (c). Find the Omeprazole order in the list.
 - i. Write down/state the dosage of MG_____

When finished, state "done"

Score this task: 1 being very hard to 5 being very easy

II. Order Medication:

- (a) In the right lower corner of page, Click the green circle with pen. A new window opens.
- (b) Click in the Activity field of the new window,
 - i. > select New Order.
- (c) Scroll down to Orders >
 - i. Click the Add Action box >
 - a. select Rx Orders.
- (d). Complete the fields of the Rx Order:
 - i. Click Medications
 - a. type the word Lipitor
 - b. select "Lipitor 10mg PO Tablet" when it appears;
 - ii. Enter ALL Dosing details:
 - a. Quantity – enter 1;
 - b. Type -- select Tablet(s) from dropdown;
 - c. Frequency -- select Daily (QD) from dropdown;
 - d. Duration -- enter 30.
 - iii. Click Diagnosis –
 - a. type word Hyperlipidemia and
 - b. select E78.5 - Hyperlipemia, unspecified
- (e). Scroll down and in the lower right corner, click Save & Sign in (blue button).

(f). In pop-up window, Click Sign
State “Done”.

Score this task: 1 being very hard to 5 being very easy

1 2 3 4 5

III. Modify Medication:

(a). Click the Orders tab on the Patient's Chart

(b). Find the most recent Lipitor order in the list

(c). To the far right of the order, locate the three vertical dots (:).

(d) Click (:). and

 i. Select Edit Note to open the Order Window

(e) Scroll down to Orders >

 i. Click the “X” to the right side of the Lipitor 10mg PO Tablet.

 ii. Re-type Lipitor in the Medication field and

 iii. Select Lipitor 40mg order.

 iv. (Confirm that the instructions are correct).

(f). Scroll down and in the lower right corner, click Save & Sign in (blue button).

(g). In pop-up window, Click Sign

State “Done”.

Score this task: 1 being very hard to 5 being very easy

1 2 3 4 5

Task 5. Criteria (a)(1)

Continue from the BroadStreet patient’s chart

I. Add Death Date and Reason (demographics continued):

(a) In the right lower corner of page, Click the green circle with pen. A new window opens.

(b) Click in the Activity field of the new window,

(i) > select Demographics.

(c) Scroll to Patient Information

 (i) > Click Date of Death, a calendar pop-up opens.

 a. First select year “2020”

 b. then select month “January”

 c. then select day “1” as the date

 (ii) > Click Cause of Death and

 a. enter “Pneumonia”

(d). Scroll down and in the lower right corner, click Save & Sign in (blue button).

(e). In pop-up window, Click Sign

State “Done”.

Score this task: 1 being very hard and 5 being very easy

1 2 3 4 5

This completes the user test. Thank you for your participation.

5.5 Appendix 5: SYSTEM USABILITY SCALE & POST TEST QUESTIONNAIRE

System Usability Scale (SUS)

Strongly disagree									Strongly agree
1	2	3	4	5					

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

Post Testing 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 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?