EHR Usability Test Report of OneTouch EMR

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

OneTouch EMR, Version 2.0

Date of Usability Test: 5/11/2014
Date of Report: 5/16/2014
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EXECUTIVE SUMMARY

A usability test of OneTouch EMR, a full clinical EHR module for providers in an ambulatory setting covering multiple specialties, was conducted on 5/4/2014 in Dallas, TX. The purpose of this study was to test and validate the usability of the current user interface and provide evidence of usability in OneTouch EMR. During the usability test, 4 healthcare providers (including an administrator) matching the target demographic criteria served as participants and used OneTouch EMR in simulated, but representative tasks.

This study collected performance data on 19 tasks typically conducted on an EHR.

The test procedures under the Meaningful Use Stage 2 certification program are the following:

§170.314(a)(1) Computerized provider order entry
§170.314(a)(2) Drug-drug, drug-allergy interaction checks
§170.314(a)(6) Medication list
§170.314(a)(7) Medication allergy list
§170.314(a)(8) Clinical decision support
§170.314(b)(3) Electronic prescribing
§170.314(b)(4) Clinical information reconciliation

The tasks selected for the usability test based on the aforementioned test procedures are the following:

1. Use CPOE to enter patient vital signs
2. Use CPOE to create, modify, and view lab order
3. Use CPOE to create, modify, and send referral letter to specialist
4. Use CPOE to order and result a POC item (procedure, lab, immunization, and/or injection)
5. Access and review patient's allergy list
6. Record a new allergy
7. Modify an existing allergy
8. Prescribe a new medication in electronic format that would be contraindicated to added allergy
9. Prescribe a second medication that would be contraindicated to the first medication to get a drug-to-drug interaction alert
10. Modify a currently active medication
11. Record a new, patient reported medication
12. Use patient chart to review and comment on lab results
13. Find uploaded colonoscopy report
14. Track the status of previously ordered test
15. Configure a health maintenance plan for each or a combination of the following: problem list, medication list, demographics, and/or lab tests and results
16. Review and reconcile patient's past medical history
17. Document an abnormal finding in the physical exam
18. Enroll a patient in one health maintenance plan based on a diagnosis in their active problem list
19. Create and send an internal message to another user to carry out a patient related task

During the 60 minute one-on-one usability test, each participant was greeted by the administrator and thanked for volunteering their time to participate in the survey. Participants had no prior experience with OneTouch EMR. The administrator introduced the test and instructed participants to complete a series of tasks (given one at a time) using OneTouch EMR. During the testing, the administrator timed the test and, along with data loggers, recorded user performance data.

The following types of data were collected for each participant:

- Number of tasks successfully completed within the allotted time
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participants' verbalizations
- Participants' familiarity and ease-of-use and satisfaction ratings with the system and system components

All participant data was de-identified – no correspondence could be made from the identity of the participant to the data collected. Following the conclusion of the testing, participants were asked to complete a post-test questionnaire. Various recommended metrics, in accordance with the examples set forth in the *NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records*, were used to evaluate the usability of OneTouch EMR.

Task	Task Success	Task Time	Task Time Deviations	Path Deviation	Task Ratings
	Mean	Mean (seconds)	Deviations (observed/optimal)	(1=none, 2=minor deviation, 3=major deviation) Average	Mean
Use CPOE to enter patient vital signs	100	56.58	1.23	1.33	5
Use CPOE to create, modify, and view lab order	60	109.33	1.45	2	3.33
Use CPOE to create, modify, and send referral letter to specialist	100	56.88	1.36	1.33	4
Use CPOE to order and result a POC item (procedure, lab, immunization, and/or injection)	100	64.33	1.22	1	3.67
Access and review patient's allergy list	100	8.84	1.43	1	5
Record a new allergy	100	22.68	1.46	1.33	4.67
Modify an existing allergy	100	8.31	1.04	1	5
Prescribe a new medication for patient in electronic format	60	82.71	1.57	2	5
Prescribe a second medication that would be contraindicated to the first medication to get a drug-drug interaction alert	100	80.33	1.47	1	3.67
Modify a currently active medication	100	17.4	1.16	1	5

Record a new, patient reported medication	75	23.84	1.49	1	5
Use patient chart to review and comment on lab results	75	47.3	1.76	2.33	4.67
Find uploaded colonoscopy report	100	28.7	2.01	1	4
Track the status of a previously ordered test	100	31.23	1.43	1.67	4.67
Review and reconcile patient's Past Medical History	100	14.96	1.98	1.67	4
Document an abnormal finding in the physical exam	100	26.31	1.99	1	5
Enroll a patient in one Health Maintenance Plan based on a diagnosis in their active problem list	60	24.87	1.29	1	3.67
Configure a health maintenance plan for each or a combination of the following: problem list, medication list, demographics, and/or lab tests and results	100	507	2.11	2	3
Create and send an internal message to another user to carry out a patient related task	100	34.56	1.21	1	5

The results from the System Usability Scale scored the subjective satisfaction with the system based on performance with these tasks to be: 91.25.

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

- *Major Findings:*
  - Overall, the users found the system intuitive, user friendly, and easy to learn
  - Most users indicated the system was consistent and logical in layout and infrastructure
  - The users completed the majority of the tasks successfully the first attempt using the optimal workflow with only minor deviations

- *Areas for Improvement:*
  - Complete interface between the e-prescribing screen and the patient's medication list
  - Capability to customize order templates for tests not done in the office (i.e. orders that are sent to an external entity)
  - Ability to view patient summary tab at all times while documenting in the encounter (i.e. see both the summary tab and the tab the user is currently entering data within simultaneously)
  - Additional customization options for the dashboard based on user role

INTRODUCTION

The EHRUT tested for this study was OneTouch EMR, Version 2.0, a complete EHR module designed to be used by in an ambulatory setting. Designed to present medical information to healthcare providers in an outpatient setting for various specialties, OneTouch EMR consists of a comprehensive electronic medical platform intended to capture, store, and exchange patient information. OneTouch EMR is compatible with a wide variety of practice management systems that support HL7 interface. The usability testing attempted to represent realistic exercises and conditions that would typically occur in a medical

practice. The purpose of this study was to test and validate the usability of the current user interface, and provide evidence of usability in OneTouch EMR.To this end, measures of effectiveness, efficiency and user satisfaction, such as ease of use, logical design and flow of information, and reasonable time to complete each task were captured during the usability testing.

METHOD

PARTICIPANTS

A total of 4 participants were tested on OneTouch EMR. Participants in the test were physicians and a registered nurse in an ambulatory setting with varied specialties including gastroenterology and internal medicine, and an administrator with hospital and ambulatory setting experience. No participants had any prior experience with OneTouch EMR. Participants were recruited by OneTouch EMR Administrative Staff. In addition, participants had no direct connection to the development of or organization producing the EHRUT(s). Participants were not from the testing or supplier organization. Participants were given the opportunity to have the same orientation and level of training as the actual end users would have received. For the test purposes, end-user characteristics were identified and translated into an ID numbers so that the participant remains anonymous, and the individual's data cannot be tied back to individual identities.

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

Part ID	Gender	Age	Education	Occupation/ Role	Professional Experience	Computer Experience	Product Experience	Assistive Technology Needs
001	Male	30-39	MD	Internist	8 years	Advanced	n/a	none
002	Male	60-69	MD	Gastroenterol ogist	42 years	Intermediate	n/a	glasses
003	Female	30-39	BSN	RN	10 years	Advanced	n/a	none
004	Male	40-49	BS	Admin	10 years	Intermediate	n/a	none

STUDY DESIGN

Overall, the objective of this test was to uncover areas where the application performed well – that is, effectively, efficiently, and with satisfaction – and areas where the application failed to meet the needs of the participants. The data from this test may serve as a baseline for future tests with an updated version of the same EHR and/or comparison with other EHRs provided the same tasks are used. In short, this testing serves as both a means to record or benchmark current usability, but also to identify areas where improvements must be made.

During the usability test, participants interacted with OneTouch EMR. Each participant used the system in the same location, and was provided with the same instructions. The system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

- Number of tasks successfully completed within the allotted time
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participants' verbalizations (comments)
- Participants' satisfaction ratings of the system

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

TASKS

A number of tasks were constructed that would be realistic and representative of the kinds of activities a user might do with this EHR, and representative of the functionality required for 2014 Meaningful Use certification, including:

1. Use CPOE to enter patient vital signs
2. Use CPOE to create, modify, and view lab order
3. Use CPOE to create, modify, and send referral letter to specialist
4. Use CPOE to order and result a POC item (procedure, lab, immunization, and/or injection)
5. Access and review patient's allergy list
6. Record a new allergy
7. Modify an existing allergy
8. Prescribe a new medication in electronic format that would be contraindicated to added allergy
9. Prescribe a second medication that would be contraindicated to the first medication to get a drug-to-drug interaction alert
10. Modify a currently active medication
11. Record a new, patient reported medication
12. Use patient chart to review and comment on lab results
13. Find uploaded colonoscopy report
14. Track the status of previously ordered test
15. Configure a health maintenance plan for each or a combination of the following: problem list, medication list, demographics, and/or lab tests and results
16. Review and reconcile patient's past medical history
17. Document an abnormal finding in the physical exam
18. Enroll a patient in one health maintenance plan based on a diagnosis in their active problem list
19. Create and send an internal message to another user to carry out a patient related task

Tasks were selected based on required measures for Meaningful Use certification, frequency of use, and representative of commonly performed tasks by individuals who hold the same professional roles as the participants in the survey. Below is a breakdown of tasks presented to the participants based on their role:

Physician /Registered Nurse:

1. Use CPOE to enter patient vital signs
2. Use CPOE to create, modify, and view lab order
3. Use CPOE to create, modify, and send referral letter to specialist
4. Use CPOE to order and result a POC item (procedure, lab, immunization, and/or injection)
5. Access and review patient's allergy list
6. Record a new allergy
7. Modify an existing allergy
8. Prescribe a new medication in electronic format that would be contraindicated to added allergy
9. Prescribe a second medication that would be contraindicated to the first medication to get a drug-to-drug interaction alert
10. Modify a currently active medication
11. Record a new, patient reported medication
12. Use patient chart to review and comment on lab results
13. Track the status of previously ordered test
14. Review and reconcile patient's past medical history

15. Document an abnormal finding in the physical exam

Administrator:

1. Configure a health maintenance plan for each or a combination of the following: problem list, medication list, demographics, and/or lab tests and results
2. Create and send an internal message to another user to carry out a patient related task
3. Find uploaded colonoscopy report

PROCEDURES

Upon arrival, participants were greeted and were then assigned a participant ID. To ensure that the test ran smoothly that the test ran smoothly, two staff members participated in this test, the usability administrator and the data logger. The administrator moderated the session including administering instructions and tasks. The administrator also monitored task times, obtained post-task rating data, and took notes on participant comments. A second person served as the data logger and took notes on task success, path deviations, number and type of errors, and comments.

Participants were instructed to perform the tasks:

- As quickly as possible making as few errors and deviations as possible
- Without assistance; administrators were allowed to give immaterial guidance and clarification on tasks, but not instructions on use.
- Without using a think-aloud technique

Task timing began once the administrator finished reading the question. The task time was stopped once the participant indicated they had successfully completed the task. Following the session, the administrator gave the participant the post-test questionnaire and questions. Participants' demographic information, task success rate, time on task, errors, deviations, verbal responses, and post-test questionnaire were recorded into a spreadsheet. Scoring is discussed below in the Data Scoring section.

TEST LOCATION AND ENVIRONMENT

The testing was conducted at OneTouch EMR head office in Dallas, TX. The application was setup by OneTouch EMR Support Staff according to the OneTouch EMR documentation describing system setup and preparation. The application is a cloud-based, and the participants performed the tasks in the demo database using "test" user accounts and "test" patients. Each participant was assigned a laptop and given a unique user name and password to login. Although OneTouch EMR is accessible through any web browser, for consistency and uniformity each participant used Google Chrome as the web browser during the testing. An overhead projector was hooked up to the laptop so the data logger could see both the participant's face and current screen the participant was on simultaneously for accurate documentation. The administrator sat next to the participant to facilitate the test while the data logger sat across the room in order to see both the participant's face and the projector screen. Technically, the system performance (i.e. response time) was representative to what actual users would experience in a field implementation. Additionally, participants were instructed not to change any of the default system settings (such as color scheme, display settings, and font size).

TEST FORMS AND TOOLS

During the usability test, various documents and instruments were used, including:
1. Participant Demographic form (Appendix A)
2. Moderator's Guide (Appendix B)
3. Post-test System Satisfaction Questionnaire
4. Preliminary Questionnaire

The Moderator's Guide was devised as to be able to capture required data. Each test was observed by the data logger. The data

collected was recorded in a spreadsheet.

PARTICIPANT INSTRUCTIONS

The participant instructions were read from the Moderator's Guide, which is available in Appendix B: Moderator's Guide.

USABILITY METRICS

According to the NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records, EHR's 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 OneTouch EMR by measuring participant success rates and errors
2. Efficiency of OneTouch EMR by measuring the average task time and path deviations
3. Satisfaction with OneTouch EMR by measuring ease-of-use rating

DATA SCORING

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

Measures	Rationale and Scoring
Effectiveness: Task Success	A task was counted as a "success" if the participant was able to achieve the correct outcome, without assistance, within the time allotted on a per task basis. The total number of successes were calculated for each task and then divided by the total number of times that task was attempted. The results are provided as a percentage.
Effectiveness: Task Failure	If the participant abandoned the task, did not reach the correct answer, or performed it incorrectly, the task was counted as a failure. No task times for failed tasks were used in calculations.
Effectiveness: Task Deviations	The participant's path (i.e. steps) through the application was recorded. Deviations occur if the participant, for example, went to a wrong screen, clicked on an incorrect menu item, followed an incorrect link, or interacted incorrectly with an on-screen control. The task deviations were rated on a scale of 1 = no deviations, 2 = minor deviations, 3 = major deviations.

Efficiency: Task Time	Each task was timed from when the administrator said "Begin" until the participant said "Done." If the participant failed to say "Done," the time was stopped when the participant ceased performing the task. Only task times for tasks that were successfully completed at or under the target time were included in the average task time analysis. Average time per task was calculated for each task. Task times were recorded for successes. Optimal task performance time, as benchmarked by expert performance under realistic conditions, was recorded when constructing tasks. Target task times were derived by multiplying benchmarked expert performance by a factor of 2, allowing some buffer as participants had not been trained prior to the testing and therefore did not possess the knowledge to potentially perform at expert level. Observed task times divided by the optimal time for each task were calculated as a measure of optimal efficiency.
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 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 per task. Common convention is that average ratings for systems judged easy to use should be 3.3 or above. To measure participants' confidence in and likeability of OneTouch EMR overall, the testing team administered the System Usability Scale (SUS) post-test questionnaire that included questions like "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 C.

RESULTS

DATA ANALYSIS AND REPORTING

The results of the usability test were calculated according to the methods specified in the Usability Metrics section above. Participants who failed to follow session and task instructions had their task relevant data excluded from the analysis. The only exclusions were made for individual tasks but not for an entire study. The usability testing results for OneTouch EMR are detailed below. The results should be seen in light of the objectives and goals outlined in Study Design section.

Task	Task Success	Task Time	Task Time Deviations	Path Deviation	Task Ratings
	Mean	Mean (seconds)	Deviations (observed/optimal)	(1=none, 2=minor deviation, 3=major deviation) Average	Mean
Use CPOE to enter patient vital signs	**100**	**56.58**	**1.23**	**1.33**	**5**

Use CPOE to create, modify, and view lab order	60	109.33	1.45	2	3.33
Use CPOE to create, modify, and send referral letter to specialist	100	56.88	1.36	1.33	4
Use CPOE to order and result a POC item (procedure, lab, immunization, and/or injection)	100	64.33	1.22	1	3.67
Access and review patient's allergy list	100	8.84	1.43	1	5
Record a new allergy	100	22.68	1.46	1.33	4.67
Modify an existing allergy	100	8.31	1.04	1	5
Prescribe a new medication for patient in electronic format	60	82.71	1.57	2	5
Prescribe a second medication that would be contraindicated to the first medication to get a drug-drug interaction alert	100	80.33	1.47	1	3.67
Modify a currently active medication	100	17.4	1.16	1	5
Record a new, patient reported medication	75	23.84	1.49	1	5
Use patient chart to review and comment on lab results	75	47.3	1.76	2.33	4.67
Find uploaded colonoscopy report	100	28.7	2.01	1	4
Track the status of a previously ordered test	100	31.23	1.43	1.67	4.67
Review and reconcile patient's Past Medical History	100	14.96	1.98	1.67	4
Document an abnormal finding in the physical exam	100	26.31	1.99	1	5
Enroll a patient in one Health Maintenance Plan based on a diagnosis in their active problem list	60	24.87	1.29	1	3.67
Configure a health maintenance plan for each or a combination of the following: problem list, medication list, demographics, and/or lab tests and results	100	507	2.11	2	3

Create and send an internal message to another user to carry out a patient related task	100	34.56	1.21	1	5

DISCUSSION OF THE FINDINGS

The major areas the tasks aligned with were directly related to the core measures for Meaningful Use Stage 2, including computerized provider order entry (CPOD), medication reconciliation, clinical decision support, recording lab values as native data, and additional, miscellaneous tasks that the participants find themselves performing during a typical day at the practice. Overall, the participants performed the tasks in the expected amount of time as a new user of the system, or faster. All tasks were performed successfully either the first or second try with little to no deviation. The participants' verbal comments and feedback regarding areas of improvement coincide with their overall rating of the task.

EFFECTIVENESS / EFFICIENCY

Based on the success, failure, and path deviation data, the success rating of the majority of the tasks was 100% with only a few tasks at a lower percentage indicating that that particular task was not completed successfully the first time. On average, the task time is within normal limits and close to the optimal time done by an expert user with only a small percentage of tasks having a minor deviation from 1-2 of the users. The data indicates high efficiency of the system, and also identifies a few areas needing minor improvement that will reduce path deviation and therefore make the task more intuitive. The average task time for the participants being not far from the expert task time was further indication of the overall efficiency of the system.

SATSIFACTION

Overall, the verbal feedback from the participants, which is also reflected in the data, indicated a high satisfaction rating of the system with only minor inefficiencies and areas of improvement. Most users found the system to be quite intuitive and straight forward, user friendly, and easy to use. The SUS rating of the application and functionality under test was 91.25.

MAJOR FINDINGS

Overall, the participants found the system to be very intuitive and easy to use compared to other modules. They indicated identified similarities between OneTouch EMR and other modules which reduces the learning curve when switching from one platform to another. The areas the participants specified that they liked were the following:

- Internal fax module which allows a seamless, paperless workflow when sending and receiving orders, referrals, and results
- Aesthetically pleasing and intuitive without unnecessary clutter thus creating a cumbersome environment
- The variety of combinations and options for documenting patient visits that allows the EMR to conform to the user's preferences as opposed to the user conforming to the limitations of the EMR

AREAS OF IMPROVEMENT

Most areas of improvement were obvious based on the task deviations and verbal comments made by the participants. Improvement in task time and "click number" (i.e. amount of mouse clicks it takes to perform the task) were the measures used by the participants when identifying areas of improvement. Those areas are:

- A bi-directional interface between the patient's active medication list storing patient reported medications, and the e-prescribing medication list. At this time the two lists will only "talk" to each other when a medication is e-prescribed, but an added patient reported medication will not display in the e-prescribing window until it has been electronically prescribed at least once.

- Ability to see the information displayed on the summary tab (i.e. patient's medication list, allergies, previously ordered tests, problem list, etc.) in an area that allows the provider to view this information while documenting the visit simultaneously. This will reduce the number of time and clicks needed to look up information before continuing to document the visit.
- Ability to customize order templates for orders sent to an external location. At this time only templates for point of care items can be customized.
- Better customization of dashboard based on user roles

APPENDICES

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

A. Participant Demographics Questionnaire
B. Moderator's Guide
C. System Usability Scale Questionnaire

APPENDIX A:

PARTICIPANT DEMOGRAPHICS QUESTIONNAIRE

Please complete the following information for the Usability Study

Participant ID#: _____

Age group	20-29	_____
	30-39	_____
	40-49	_____
	50-59	_____
	60-74	_____
	75 and older	_____

Your current title	MD	_____
	RN	_____
	MA	_____
Administrative		_____
Other		_____

How long have you held this title? _____ Years

What is your primary work environment?   Private Practice/Office _____%

                                                                            Ambulatory Surgery Center_____%

                                                                             Hospital_____%

Have you ever used an EHR?   Yes____
                                                                       No____

If yes, how many and for how long?
_____

Indicate your primary use and frequency of the following tasks within the EHR you currently use:
(Frequently, Sometimes, Never)
Create/modify/review medication orders   _____
Create/modify/review Lab orders _____
Create/modify/review Dx Study orders _____
Drug/Drug/Allergy interaction checks _____
Adjust severity level of drug/drug interactions _____
Record/update patient medications list _____
Review patient medications list _____
Record/update patient medication allergies list _____
Prescribe medications _____
Reconcile patient's active medications, problems and/or allergies _____
Configure Clinical Decision support guidelines _____
View Clinical Decision support guidelines/recommendations _____

APPENDIX B:

MODERATOR'S GUIDE TO CONDUCTING USABILITY TEST FOR ONETOUCH EMR

Administrator: _____

Data Logger: _____

Date/Time: _____

Participant Number: _____

Location: _____

Prior to testing:
- Confirm schedule with participants
- Ensure EHRUT lab environment is running properly

Prior to each participant:
- Reset application

Prior to each task:
- Reset application to starting point for next task

After all testing:
- Confirm all data has been properly recorded in spreadsheet

Orientation (10 minutes)

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

I will ask you to complete a few tasks using this system and answer some questions. We are interested in how easy (or how difficult) this system is to use, what in it would be useful to you, and how we could improve it. You will be asked to complete these tasks on your own trying to do them as quickly as possible with the fewest possible errors or deviations. Do not do anything more than asked. If you get lost or have difficulty I cannot answer or help you with anything to do with the system itself. Please save your detailed comments until the end of a task or the end of the session as a whole when we can discuss freely. I did not have any involvement in its creation, so please be honest with your opinions. The product you will be using today is OneTouch EMR, Version 2.0. Some of the data may not make sense as it is placeholder data.

All of the information that you provide will be kept confidential, and your name will not be associated with your comments at any time.

Do you have any questions or concerns?

Task Administration and Documentation

For each task, guide the participant to the starting point, provide the participant with the task instructions as outlined below, and use the provided spreadsheet to document the following information:
1.   Success:
       a.   1 = easily completed
       b.   2 = completed with difficulty (provide details)

		c.	3 = not completed

2.   Rating:
       a.   1 = very difficult to 5 = very easy

3.   Task Time (in seconds)

4.   Administrator Comments

Individual Task Instructions

Have the demonstration URL account open to the login page at the beginning of each participant's session. Provide login credentials and the test patient they will be using for each task.

"For each task, I will read the description to you and say "begin." At that point please perform the task as instructed and say "done" once you believe you have successfully completed the task. If you feel you have not completed the task successfully and will not be able to, please say "done" anyways, and we can discuss in detail your impressions of the task afterwards. We will use the same login information and the same test patient. There will be an appointment on the schedule for this patient. Let's begin."

Tasks:

TASK	INSTRUCTIONS	Rating
Use CPOE to enter patient vital signs	Open the encounter note for today's appointment and enter the vital signs in the vitals tab	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Use CPOE to create, modify, and view lab order	Inside the encounter note, go to the plan tab and create a new lab order for a CMP, Lipid Panel, and HgbA1c	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Use CPOE to create, modify, and send referral letter to specialist	Inside the encounter note, go to the plan tab and generate a referral letter to send to a cardiologist	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Use CPOE to order and result a POC item (procedure, lab, immunization, and/or injection)	Inside the encounter note, go to the POC tab and document a procedure or immunization	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Access and review patient's allergy list	Inside the encounter note, go to the meds and allergies tab to review the patient's allergy list	Rate on a scale from 1 to 5, and record comments/feedback as necessary

Record a new allergy	Inside the meds and allergies tab, add a drug allergy to Statins	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Modify an existing allergy	Inside the meds and allergies tab, modify the existing allergy of peanuts	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Prescribe a new medication for patient in electronic format	Inside the encounter note, go to the plan tab and electronically prescribe Nexium 20 mg orally once a day	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Prescribe a second medication that would be contraindicated to the allergy entered to get a drug-allergy interaction alert	Inside the RX screen of the plan tab, order Lipitor oral 10mg which is contraindicated to Statins	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Modify a currently active medication	Inside the meds and allergies tab, change Atenolol 100mg to 50mg	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Record a new, patient reported medication	Inside the meds and allergies tab, record Zyrtec 5mg, 1 tab by mouth daily, as a patient reported medication	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Use patient chart to review and comment on lab results	From the dashboard, access your lab results feed, select the new lab result for review, make your comments, and forward user "Nurse" in the system	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Find uploaded colonoscopy report	From the dashboard, access the patient's CHART, go to the attachments section, and view the colonoscopy report stored as an uploaded document	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Track the status of a previously ordered test	From the dashboard, access the order feed to check the status of the MRI of left lower extremity ordered on 3/3/2014	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Review and reconcile patient's Past Medical History	Inside the encounter note, go to the HX (history) tab, and check the box indicating you have reviewed and reconciled the patient's medical history	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Document an abnormal finding in the physical exam	Inside the encounter note, go to the PE tab, locate the Respiratory section, and document that the patient's effort is labored	Rate on a scale from 1 to 5, and record comments/feedback as necessary

Enroll a patient in one Health Maintenance Plan based on a diagnosis in their active problem list	Inside the encounter note, go to the plan tab and select the Health Maintenance Plan "Cancer Screening", and enroll the patient in this plan	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Configure a health maintenance plan for each or a combination of the following: problem list, medication list, demographics, and/or lab tests and results	From the dashboard, access the health maintenance module of the administration menu and create a new plan for patients with a diagnosis of diabetes, and include an action plan to have their Hemoglobin A1c drawn every 3 months. Activate this plan for all patients	Rate on a scale from 1 to 5, and record comments/feedback as necessary
Create and send an internal message to another user to carry out a patient related task	From the dashboard, access your inbox/outbox from the messaging menu, create a new message about your patient, and send it to the "Nurse" user in the system	Rate on a scale from 1 to 5, and record comments/feedback as necessary

Final Questions (5 minutes)

1. What is your overall impression of the system?

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

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

4. Were there any features that you were surprised to see?

5. What features did you expect to encounter but did not see?

6. Compare this system to other systems you have used (if any)

7. Would you recommend this system to your colleges?

APPENDIX C:

SYSTEM USABILITY SCALE QUESTIONNAIRE

Participant ID#: _____
Date: _____

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