

**EHR Usability Test Report of ACOM Health's
RAPID 9.0**

170.315.G.3 – SAFETY ENHANCED DESIGN

DATE: 11/21/2018

RAPID Version 9.0 Usability Test Report

Product Name: RAPID

Version: 9.0

Date of the testing: 11/5/2018 Thru 11/16/2018

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Note: The following study was developed using the NISTIR 7742 template as a guide for reporting our findings: *Customized Common Industry Format Template for Electronic Health Record Usability Testing.*

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1 Executive Summary

A usability test of RAPID, version 9.0, primarily a chiropractic industry EHR, was conducted on November 5, 2018 Thru November 16, 2018, in Cooper City Florida, by Dr. Rick Siegler. The purpose of this test was to test and validate the usability of the current user interface and provide evidence of usability in the EHR Under Test (EHRUT). During the usability test, 10 healthcare providers matching the target demographic criteria served as participants and used the EHRUT in simulated, but representative tasks.

This study collected performance data on 37 tasks, related to the 11 topics below, typically conducted on an EHR:

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

During the 60-minute one-on-one usability test, each participant was greeted by the administrator and asked to review and sign an informed consent/release form (included in Appendix 2); they were instructed that they could withdraw at any time. Participants had prior experience with the HER. The administrator introduced the test and instructed participants to complete a series of tasks (given one at a time) using the EHRUT. During the testing, the administrator timed the test and recorded user performance on paper. The administrator did not give the participant assistance in how to complete the task. The test, screen and audio, were recorded for subsequent analysis

The following types of data were collected for each participant:

- Number of tasks successful completed within allotted time without assistance.
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participants verbalizations
- Participants satisfaction ratings of the system

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

Meaningful use Criteria and Task	N#	Task Success	Path Deviation Total Observed /Optimal	Path Deviation Average Observed /Optimal	Task Time (Seconds) Mean (SD)	Errors Mean (SD)	Task Efficiency (1=Easy) Mean (SD)
a.1 Record Medication via CPOE	10	100%	102/100	10.2/10.0	45 (3.6)	0	1.1 (.3)
a.1 Change medication via CPOE	10	100%	103/100	10.3/10.0	43 (2.8)	0	1.2 (.4)
a.1 Display changed CPOE medication order	10	100%	50/50	5.0/5.0	32 (2.2)	0	1 (0)
a.2 Record lab order via CPOE	10	100%	84/80	8.4/8.0	27 (3.6)	0	1.1 (.3)
a.2 Change lab order via CPOE	10	100%	82/80	8.2/8.0	43 (4.0)	0	1.2 (.4)
a.2 Display changed CPOE lab order	10	100%	50/50	5.0/5.0	8 (1.4)	0	1 (0)
a.3 Record imaging order via CPOE	10	100%	102/100	10.2/10	29 (4.9)	0	1 (0)
a.3 Record imaging order via CPOE	10	100%	130/130	13.0/13.0	34 (5.0)	0	1 (0)
a.3 Display changed CPOE imaging order	10	100%	50/50	5.0/5.0	6 (1.0)	0	1.1 (.3)
a.4 Using CPOE, trigger a drug-drug interaction by entering a new medication order	10	100%	64/60	6.4/6.0	45 (3.6)	0.3	2.2 (.53)
a.4 Using CPOE, trigger a drug-allergy interaction by entering a new medication order	10	100%	63/60	6.3/6.0	43 (2.6)	0	2.2 (.54)
a.4 Adjust the severity level of a displayed drug-drug interaction	10	100%	72/70	7.2/7.0	31 (2.2)	0	1 (0)
a.5 Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100%	80/80	8.0/8.0	41 (2.7)	0	1 (0)

a.5 Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100%	160/160	16.0/16.0	26 (2.7)	0	1 (0)
a.5 Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100%	30/30	3.0/3.0	8 (1.4)	0	1 (0)
a.6 Record a problem to the problem list	10	100%	60/50	6.0/5.0	41 (3.8)	0	1 (0)
a.6 Change a problem on the problem list	10	100%	80/80	8.0/8.0	38 (5.0)	0	1.1
a.6 Display the active problem list	10	100%	30/30	3.0/3.0	8 (1.4)	0	1 (0)
a.6 Display the historical problem list	10	100%	70/70	7.0/7.0	27 (5.8)	0	1 (0)
a.7 Record a medication to the medication list	10	100%	66/60	6.6/6.0	41 (4.4)	0.42	1.4 (.68)
a.7 Change a medication on the medication list	10	100%	74/70	7.4/7.0	42 (3.3)	0.31	1.4 (.68)
a.7 Display the active medication list	10	100%	30/30	3.0/3.0	11 (2.8)	0	1 (0)
a.7 Display the historical medication list	10	100%	50/50	5.0/5.0	8 (1.6)	0	1 (0)
a.8 Record a medication allergy	10	100%	62/60	6.2/6.0	66 (4.7)	0.45	1.4 (.66)
a.8 Change a medication allergy	10	100%	80/80	8.0/8.0	33 (4.2)	0	1.4 (.66)
a.8 Display the active medication allergy list	10	100%	30/30	3.0/3.0	8 (1.4)	0	1 (0)
a.8 Display the historical medication allergy list	10	100%	70/70	7.0/7.0	8 (1.4)	0	1 (0)

a.9 Add a CDS intervention and/or reference resource for each of the required elements: * Problem list * Medication list * Medication Allergy List * At least one Demographic * Laboratory Test * Vital Signs * And a combination of at least 2 of the elements listed above	10	100%	100/100	10/0/10.0	390 (33)	0.3	2 (0)
a.9 Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements	10	100%	80/80	8.0/8.0	15 (1.4)	0	1 (0)
a.9 View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics	10	100%	30/30	3.0/3.0	16 (1.6)	0	1 (0)
a.9 Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary	10	100%	70/70	7.0/7.0	20 (2.2)	0	1 (0)
a.9 Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date	10	100%	50/50	5.0/5.0	14 (1.7)	0	1 (0)
a.14 Record UDI	10	100%	50/50	5.0/5.0	13 (1.4)	0	1 (0)

a.14 Change UDI Status	10	100%	60/60	6.0/6.0	15 (2.5)	0	1 (0)
a.14 o Access UDI, device description, identifiers, and attributes	10	100%	60/60	6.0/6.0	22 (3.4)	0	1.2 (.4)
b.2 Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record	10	100%	103/100	10.3/10.0	87 (7.7)	0	1.5 (.5)
b.2 Generate a new CCDA with reconciled data	10	100%	45/40	4.5/4.0	25 (4.2)	0	1.5 (.83)

The results from the System Usability Scale scored the subjective satisfaction with the system based on performance with these tasks to be : 71

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

Major findings

The study determined that our intended audience finds the system easy to use. User satisfaction rating was high and task time fell into a acceptable range. Participants expressed their satisfaction of the system.

Adding items to the problem list, most participants went off the optimal path, not realizing an additional menu choice needed to be made to complete the process. We have determined that additional user instructions are needed in this area

The Study did not uncover any additional/unknown risks within our system. Our assessment of risks proved to be accurate, we did not find areas where patient safety would be negatively impacted.

Areas for improvement

The study confirmed the need to train users on the use of the clinical information reconciliation feature. It is recommended that a feature description, or instructions, be added to the header of this feature. It is recommended that a slight change be made to the addition of items to the problem list making it more intuitive.

2 Introduction

The EHRUT tested for this study was RAPID 9.0 by ACOM Health. Designed to present clinical health information to healthcare providers in a small to mid-sized ambulatory chiropractic setting, the EHRUT consists of a full-featured Electronic Health Record system. The usability testing attempted to represent realistic exercises and conditions.

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

3 Method

Participants

A total of ten participants were tested on the EHRUT. Participants in the test were all chiropractors. Participants were recruited by Dr. Rick Siegler, an ACOM Health independent contractor. In addition, participants had no direct connection to the development of or organization producing the EHRUT. Participants were not from the testing or supplier organization. Participants were given the opportunity to have similar orientation and level of training as the actual end users would have received.

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

Participant Demographic Data

ID	Age	Gender	Yrs. in Healthcare	Occupation/ Role	Product Experience	Specialty	Assistive Technology
01	60-69	M	23	Chiropractor	4	Chiropractic	No
02	50-59	M	31	Chiropractor	5	Chiropractic	No
03	40-49	M	19	Chiropractor	8	Chiropractic	No
04	50-59	F	22	Chiropractor	10	Chiropractic	No
05	50-59	M	33	Chiropractor	5	Chiropractic	No
06	30-39	F	10	Chiropractor	7	Chiropractic	No
07	60-59	M	30	Chiropractor	7	Chiropractic	No
08	40-49	F	15	Chiropractor	3	Chiropractic	No
09	50-59	M	26	Chiropractor	8	Chiropractic	No
10	50-59	F	28	Chiropractor	16	Chiropractic	No

100% of all participants recruited for the test showed up to participate in the test.

Participants were advised that the test would take 60 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 may serve as a baseline for future tests with an updated version of the same EHR and/or comparison with other EHRs provided the same tasks are used. In short, this testing serves as both a means to record or benchmark current usability, but also to identify areas where improvements must be made. During the usability test, participants interacted with one EHR. Each participant used the test administrator's system via GoToMeeting, a live remote application, 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 successful completed within allotted time without assistance.
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participants verbalizations
- Participants satisfaction ratings of the system

Tasks

A number of tasks were constructed that would be realistic and representative of the kinds of activities a user might do with RAPID.

Tasks were selected based on their frequency of use, criticality of function, and those that may be most troublesome for users. Tasks were constructed in light of the study objectives. User tasks were assigned a risk factor based on 2 criteria;

- Likely hood of a user making an error performing a task
- If an error was made the impact it would have on patient safety

Tasks were placed into 1 of 3 risk categories

- Low
- Moderate
- High

We did not identify any tasks that were considered to be a high risk

Task Detail	Meaningful Use Criterion	Risk
Record, Change, Display medication order via CPOE	170.315 (a)(1): Computerized Provider Order Entry (CPOE) – Medications	Moderate
Record, Change, Display lab order via CPOE	170.315 (a)(2): CPOE – Laboratory	low
Record. Change, displayed imaging order via CPOE	170.315 (a)(3): CPOE – Diagnostic Imaging	low
Drug-drug, drug-allergy interaction checks for CPOE	170.315 (a)(4): Drug-Drug, Drug-Allergy Interaction Checks for CPOE	low
Record/Change/Display Patient Demographics	170.315 (a)(5): Demographics	low
Record, change, display Problem list	170.315 (a)(6): Problem List	low
record, change, display Medication list	170.315 (a)(7): Medication List	Moderate
Record, change, display medication allergy list	170.315 (a)(8): Medication Allergy List	Moderate
Clinical Decision support, create, trigger, view and access	170.315 (a)(9): Clinical Decision Support	Moderate
Record, change, access Implantable device	170.315 (a)(14): Implantable Device List	low
CCDA Incorporate, reconcile and create	170.315 (b)(2): Clinical Information Reconciliation and Incorporation	low

Procedures

Over the phone, participants were greeted; their identity was verified and matched with the name on the participant schedule. After which, the administrator verbally gave the participant a login password to initiate the GoToMeeting remote session. Participants were then assigned a participant ID.

The usability testing administrator conducting the test was an experienced chiropractor and EHR usability instructor with 8+ years of experience training providers on the use of RAPID Doc.

The administrator moderated the session including administering instructions and tasks. The administrator also monitored task times, obtained post-task rating data, and took notes on participant comments. A second person served as the data logger and took notes on task success, path deviations, number and type of errors, and comments. Participants were instructed to perform the tasks (see specific instructions below):

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

For each task, the participants were read what was requested of them. 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 thanked for their participation.

Participants' demographic information, task success rate, time on task, errors, deviations, verbal responses and post-test questionnaire were recorded on paper. The GoToMeeting sessions were also recorded and saved on CD.

Test Location

The testing was done remotely over a GoToMeeting live remote session

Test Environment

The test was conducted over a GoToMeeting live remote online session. For testing the EHRUT, the computer used was a Dell VOSTRO running Windows 7. The participants' computer hardware and software used were unknown.

Test Forms and Documents

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

- 1) Informed Consent
- 2) Moderator's Guide
- 3) Post-test Questionnaire

Examples of these documents can be found in the Appedixes. The Moderator's Guide was devised so as to be able to capture required data.

Participant Instructions

The administrator read the following instructions aloud to the each participant.

Thank you for participating in this study. Our session today will last 45 minutes. During that time you will take a look at the RAPID Doc 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 can provider only limited assistance equal to what you'd typically receive via our training videos; I cannot do anything with the system itself. Please save your detailed comments until the end of a task or the end of the session as a whole when we can discuss freely.

I did not have any involvement in its creation, so please be honest with your opinions.

The product you will be using today is the meaningful use Stage 3 version. Some of the data may not make sense as it is placeholder data.

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

Following the procedural instructions, participants were shown RAPID. The administrator gave the following instructions:

For each task, I will read the description to you and say "Begin." At that point, please perform the task and say "Done" once you believe you have successfully completed the task. I will ask you your impressions about the task once you are done. Do you have any questions or concerns before we begin?

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 RAPID 9.0 by measuring participant success rates and errors.
2. Efficiency of RAPID 9.0 by measuring the average task time and path deviations.

3. Satisfaction with RAPID 9.0 by measuring ease of use ratings.

Data Scoring

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

Task Measures Score card

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.
Effectiveness: Task Failure	If the participant abandons the task, did not reach the correct answer or performed it incorrectly or was helped more than one time before successful completion, the task was counted as a 'Failure'. The number of errors was calculated and recorded for each task.
Efficiency: Task Deviations	The participant's path through the application is recorded. Deviations occur if the participant, for example chooses a path to task completion which requires more steps than the optimal, follow an incorrect link or performs any steps to correct a previous error. Task deviations were recorded and compared to the optimal path.
Efficiency: Task Time	Each scenario was timed from when the administrator said 'Begin' until the participant said 'Done' for the task. Only the times for scenarios where all subtasks were included in the average task time analysis.
Satisfaction: Task Rating	To measure the participant's satisfaction with the system, the post-session questionnaire was provided. After each task the participant was asked to rate the individual task as well.

4 Results

Data Analysis and Reporting

The results of the usability test were calculated according to the methods specified in the Usability Metrics section above. Participants who failed to follow session and task instructions had their data excluded from the analyses. There were no testing irregularities or issues that affected data collection or interpretation of the results.

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

Test results provided an analysis of the use, tested performance and error rates in order to identify risk prone errors – with a potential likelihood of occurrence and adverse consequences.

Meaningful use Criteria and Task	N#	Task Success	Path Deviation Total Observed /Optimal	Path Deviation Average Observed /Optimal	Task Time (Seconds) Mean (SD)	Errors Mean (SD)	Task Efficiency (1=Easy) Mean (SD)
a.1 Record Medication via CPOE	10	100%	102/100	10.2/10.0	45 (3.6)	0	1.1 (.3)
a.1 Change medication via CPOE	10	100%	103/100	10.3/10.0	43 (2.8)	0	1.2 (.4)
a.1 Display changed CPOE medication order	10	100%	50/50	5.0/5.0	32 (2.2)	0	1 (0)
a.2 Record lab order via CPOE	10	100%	84/80	8.4/8.0	27 (3.6)	0	1.1 (.3)
a.2 Change lab order via CPOE	10	100%	82/80	8.2/8.0	43 (4.0)	0	1.2 (.4)
a.2 Display changed CPOE lab order	10	100%	50/50	5.0/5.0	8 (1.4)	0	1 (0)
a.3 Record imaging order via CPOE	10	100%	102/100	10.2/10	29 (4.9)	0	1 (0)
a.3 Record imaging order via CPOE	10	100%	130/130	13.0/13.0	34 (5.0)	0	1 (0)
a.3 Display changed CPOE imaging order	10	100%	50/50	5.0/5.0	6 (1.0)	0	1.1 (.3)
a.4 Using CPOE, trigger a drug-drug interaction by entering a new medication order	10	100%	64/60	6.4/6.0	45 (3.6)	0.3	2.2 (.53)
a.4 Using CPOE, trigger a drug-allergy interaction by entering a new medication order	10	100%	63/60	6.3/6.0	43 (2.6)	0	2.2 (.54)
a.4 Adjust the severity level of a displayed drug-drug interaction	10	100%	72/70	7.2/7/0	31 (2.2)	0	1 (0)

a.5 Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100%	80/80	8.0/8.0	41 (2.7)	0	1 (0)
a.5 Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100%	160/160	16.0/16.0	26 (2.7)	0	1 (0)
a.5 Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100%	30/30	3.0/3.0	8 (1.4)	0	1 (0)
a.6 Record a problem to the problem list	10	100%	60/50	6.0/5.0	41 (3.8)	0	1 (0)
a.6 Change a problem on the problem list	10	100%	80/80	8.0/8.0	38 (5.0)	0	1.1
a.6 Display the active problem list	10	100%	30/30	3.0/3.0	8 (1.4)	0	1 (0)
a.6 Display the historical problem list	10	100%	70/70	7.0/7.0	27 (5.8)	0	1 (0)
a.7 Record a medication to the medication list	10	100%	66/60	6.6/6.0	41 (4.4)	0.42	1.4 (.68)
a.7 Change a medication on the medication list	10	100%	74/70	7.4/7.0	42 (3.3)	0.31	1.4 (.68)
a.7 Display the active medication list	10	100%	30/30	3.0/3.0	11 (2.8)	0	1 (0)
a.7 Display the historical medication list	10	100%	50/50	5.0/5.0	8 (1.6)	0	1 (0)
a.8 Record a medication allergy	10	100%	62/60	6.2/6.0	66 (4.7)	0.45	1.4 (.66)
a.8 Change a medication allergy	10	100%	80/80	8.0/8.0	33 (4.2)	0	1.4 (.66)
a.8 Display the active medication allergy list	10	100%	30/30	3.0/3.0	8 (1.4)	0	1 (0)
a.8 Display the historical medication allergy list	10	100%	70/70	7.0/7.0	8 (1.4)	0	1 (0)

<p>a.9 Add a CDS intervention and/or reference resource for each of the required elements: * Problem list * Medication list * Medication Allergy List * At least one Demographic * Laboratory Test * Vital Signs * And a combination of at least 2 of the elements listed above</p>	10	100%	100/100	10/0/10.0	390 (33)	0.3	2 (0)
<p>a.9 Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements</p>	10	100%	80/80	8.0/8.0	15 (1.4)	0	1 (0)
<p>a.9 View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics</p>	10	100%	30/30	3.0/3.0	16 (1.6)	0	1 (0)
<p>a.9 Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary</p>	10	100%	70/70	7.0/7.0	20 (2.2)	0	1 (0)

a.9 Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date	10	100%	50/50	5.0/5.0	14 (1.7)	0	1 (0)
a.14 Record UDI	10	100%	50/50	5.0/5.0	13 (1.4)	0	1 (0)
a.14 Change UDI Status	10	100%	60/60	6.0/6.0	15 (2.5)	0	1 (0)
a.14 o Access UDI, device description, identifiers, and attributes	10	100%	60/60	6.0/6.0	22 (3.4)	0	1.2 (.4)
b.2 Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient's record	10	100%	103/100	10.3/10.0	87 (7.7)	0	1.5 (.5)
b.2 Generate a new CCDA with reconciled data	10	100%	45/40	4.5/4.0	25 (4.2)	0	1.5 (.83)

Discussion of the Findings

Effectiveness

In most tasks assigned to participants the task was completed effectively. Error rates were relatively low. There were no errors recorded for the following areas a,1, a,2, a.3, a,5, a.6, a.14, b.2. Based on observations of task success and low errors, RAPID 9.0 is an effective system relative to the tasks tested.

Efficiency

Based on the observations of the task time and particularly path deviation data, RAPID Doc v8.0 might benefit from an internal analysis of user workflow to determine if changes can be made to improve ease of use. It should be noted that many of the tasks tested are not often used by chiropractors in regular practice.

Satisfaction

10 participants completed the System Usability Scale questionnaire at the end of their session and the system scored an average of 71. Users overall expressed satisfaction with the system and there was a strong correlation between users who use the system frequently and have more experience with the system to have a higher satisfaction rating.

Major Findings and Areas for Improvement

The study determined that our intended audience finds the system easy to use. User satisfaction rating was high and task time fell into acceptable range for the majority of the features. Participants expressed their satisfaction of the system, expressing the system's easy navigation features.

The study confirmed the need to train users on the use of the clinical information reconciliation of Problems, Allergies, and Medications. The usability test also emphasized the need to clearly educate users on how to configure clinical decision support rules.

The study demonstrated that those who use the system frequently and have more experience with the system are the most satisfied users. In some tasks, a number of participants displayed correct but not the optimal method for completing the task. Concerns brought to our attention through this test that can be addressed or improved on through additional client training will be addressed by the Customer Support and training team

The Study did not uncover any additional/unknown risks within our system. Our assessment of risks proved to be accurate, we did not find areas where patient safety would be impacted.

Appendix-1: RECRUITING SCREENER

The purpose of a screener is to ensure that the participants selected represent the target user population as closely as possible. (Portions of this sample screener are taken from www.usability.gov/templates/index.html#Usability and adapted for use.)

Recruiting Script for Recruiting Participants

Hello, my name is _____, calling from ACOM Health. We are recruiting individuals to participate in a usability study for RAPID Doc, our electronic health record. We would like to ask you a few questions to see if you qualify and if you would like to participate. This will only take a few minutes of your time and is strictly for research purposes. Can I ask you a few questions?

1. [If not obvious] Are you male or female? [Recruit Mix]
2. Have you participated in a focus group or usability test in the past 6 months? [If yes, Terminate]
3. Do you, or does anyone in your home, work in marketing research, usability research, web design [...etc.]? [If yes, Terminate]
4. Do you, or does anyone in your home, have a commercial or research interest in an electronic health record software or consulting company? [If yes, Terminate]
5. Which of the following best describes your age? [23 to 39; 40 to 59; 60 - to 74; 75 and older] [Recruit Mix]
6. Do you require any assistive technologies to use a computer? [if so, please describe]

Professional Demographics

7. What is your current position and title? (Must be healthcare provider)
 - Physician: Chiropractic
 - Physician: Medical
 - Physical Therapist
 - Administrative Staff
 - Other [Terminate]
8. How long have you held this position?
9. Describe your work location (or affiliation) and environment? (Recruit according to the intended users of the application) [e.g., private practice, health system, government clinic, etc.]
10. Which of the following describes your highest level of education? [e.g., high school graduate/GED, some college, college graduate (BS, BA), postgraduate (DC/MD/PhD), other (explain)]

Computer Expertise

11. Besides reading email, what professional activities do you do on the computer? [e.g., access EHR, research; reading news; shopping/banking; digital pictures; programming/word processing, etc.] [If no computer use at all, Terminate]
12. About how many hours per week do you spend on the computer? [Recruit according to the demographics of the intended users, e.g., 0 to 10, 11 to 25, 26+ hours per week]
13. What computer platform do you usually use? [e.g., Mac, Windows, etc.]
14. What Internet browser(s) do you usually use? [e.g., Firefox, IE, AOL, etc.]
15. In the last month, how often have you used an electronic health record?
16. How many years have you used an electronic health record?
17. How many EHRs do you use or are you familiar with?
18. How does your work environment record patient records?
 - On paper
 - Some paper, some electronic
 - All electronic

Contact Information (If the person matches your qualifications, ask)

Those are all the questions I have for you. Your background matches the people we're looking for. Would you be able to participate on [date, time]? [If so collect contact information]

May I get your contact information?

- Name of participant:
- Address:
- City, State, Zip:
- Daytime phone number:
- Evening phone number:
- Alternate [cell] phone number:
- Email address:

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

This study will take place on an ACOM Health computer with you logging into an online session. I will confirm your appointment a couple of days before your session and provide you with directions for connecting to the testing computer. What time is the best time to reach you?

Appendix-2: PARTICIPANT DEMOGRAPHICS

ID	Age	Gender	Yrs. in Healthcare	Occupation/ Role	Product Experience	Specialty	Assistive Technology
01	60-69	M	23	Chiropractor	4	Chiropractic	No
02	50-59	M	31	Chiropractor	5	Chiropractic	No
03	40-49	M	19	Chiropractor	8	Chiropractic	No
04	50-59	F	22	Chiropractor	10	Chiropractic	No
05	50-59	M	33	Chiropractor	5	Chiropractic	No
06	30-39	F	10	Chiropractor	7	Chiropractic	No
07	60-59	M	30	Chiropractor	7	Chiropractic	No
08	40-49	F	15	Chiropractor	3	Chiropractic	No
09	50-59	M	26	Chiropractor	8	Chiropractic	No
10	50-59	F	28	Chiropractor	16	Chiropractic	No

100% of all participants recruited for the test showed up to participate in the test.
Participants were advised that the test would take 60 minutes.

Appendix-3: NON-DISCLOSURE AGREEMENT AND INFORMED CONSENT FORM

These are sample forms. The non-disclosure agreement is discretionary. Other examples may be found at www.usability.gov.

Non-Disclosure Agreement

THIS AGREEMENT is entered into as of _____, 2014, between ("the Participant") and ACOM Health located at 2455 Meadowbrook Pkwy, NE, Duluth, Georgia 30096

The Participant acknowledges his or her voluntary participation in today's usability study may bring the Participant into possession of Confidential Information. The term "Confidential Information" means all technical and commercial information of a proprietary or confidential nature which is disclosed by Test Company, 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 Test Company and is being disclosed solely for the purposes of the Participant's participation in today's usability study. By signing this form the Participant acknowledges that s/he will receive monetary compensation for feedback and will not disclose this confidential information obtained today to anyone else or any other organizations.

Participant's printed name: _____

Signature: _____

Date: _____

Appendix-4: MODERATOR'S GUIDE

EHRUT Usability Test Moderator's Guide

Administrator: _____

Date: _____ Time: _____

Participant #: _____

Location: _____

Prior to testing

- Confirm schedule with Participants
- Ensure EHRUT lab environment is running properly
- Ensure GoToMeeting recording function is running properly

Prior to each participant:

- Reset application
- Start session recordings

Prior to each task:

- Reset application to starting point for next task

After each participant:

- End session recordings with tool

After all testing

- Back up all recording and data files

Orientation

Thank you for participating in this study. Our session today will last 60 minutes. During that time you will take a look at the RAPID Doc 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 can provide only limited assistance equal to what you'd typically receive via our training videos; I cannot do anything with the system itself. Please save your detailed comments until the end of a task or the end of the session as a whole when we can discuss freely.

I did not have any involvement in its creation, so please be honest with your opinions.

The product you will be using today is the meaningful use Stage 3 version. Some of the data may not make sense as it is placeholder data.

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

Do you have any questions or concerns?

Preliminary Questions

What is your job title?

How long have you been working in this role?

What are some of your main responsibilities?

Tell me about your experience with electronic health records.

Please note again that once I say 'Begin', I will not be talking with you while you do the activities so please be sure to make it clear to me once you are done with a task but saying 'Done'.

(a.1) CPOE – Meds

○ Record Medication order via CPOE

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.1) CPOE – Meds**
 - **Change Medication order via CPOE**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.1) CPOE – Meds
 - Display changed CPOE medication order

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.2) CPOE – Labs
 - Record Lab order via CPOE

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.2) CPOE – Labs
 - Change Lab order via CPOE

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.2) CPOE – Labs**
 - **Display changed CPOE Lab order**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.3) CPOE – Diagnostic Imaging**
 - **Record Imaging order via CPOE**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.3) CPOE – Diagnostic Imaging**
 - **Change Imaging order via CPOE**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.3) CPOE – Diagnostic Imaging**
 - **Display changed CPOE Imaging order**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

(a.4) Drug-drug, drug-allergy interaction checks for CPOE

- **Using CPOE, trigger a drug-drug interaction by entering a new medication order**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.4) Drug-drug, drug-allergy interaction checks for CPOE**
 - **Using CPOE, trigger a drug-allergy interaction by entering a new medication order**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

(a.4) Drug-drug, drug-allergy interaction checks for CPOE

- Adjust the severity level of a displayed drug-drug interaction

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.5) Demographics**
 - **Record a patient’s preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity, preliminary cause of death (inpatient only), and preliminary date of death (inpatient only)**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.5) Demographics**

- **Change the patient’s preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity, preliminary cause of death (inpatient only), and preliminary date of death (inpatient only)**

Success:

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

*Comments:***Task Time:** _____ Seconds**Optimal Path:**

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

*Comments:***Observed Errors and Verbalizations:***Comments:***Rating:**

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.5) Demographics**
 - **Display the patient’s changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity, preliminary cause of death (inpatient only), and preliminary date of death (inpatient only)**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.6) Problem List**
 - **Record a problem to the problem list**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.6) Problem List**
 - **Change a problem on the problem list**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.6) Problem List**
 - **Display the active problem list**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:*Comments:***Rating:**

Overall, this task was: _____

Tell participant the scale: "Very Easy" (1) to "Very Difficult" (5)

Administrator / Notetaker Comments:

- **(a.6) Problem List**
 - **Display the historical problem list**

Success:

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

*Comments:***Task Time:** _____ Seconds**Optimal Path:**

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

*Comments:***Observed Errors and Verbalizations:***Comments:*

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.7) Medication list**
 - **Record a medication to the medication list**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.7) Medication list**
 - **Change a medication on the medication list**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.7) Medication list**
 - **Display the active medication list**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.7) Medication list**
 - **Display the historical medication list**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.8) **Medication allergy list**
 - **Record a medication allergy**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.8) **Medication allergy list**
 - **Change a medication allergy**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.8) **Medication allergy list**
 - **Display the active medication allergy list**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: "Very Easy" (1) to "Very Difficult" (5)

Administrator / Notetaker Comments:

- (a.8) **Medication allergy list**
 - **Display the historical medication allergy list**

Success:

- Easily completed
- Completed with difficulty or help :: Describe below

Not completed

Comments:

Task Time: _____Seconds

Optimal Path:

Correct

Minor Deviations / Cycles :: Describe below

Major Deviations :: Describe below

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.9) **Clinical Decision support**
 - **Add a CDS intervention and/or reference resource for each of the required elements**
 - **Problem list**
 - **Medication list**
 - **Medication Allergy list**
 - **At least one demographic**
 - **Laboratory test**
 - **Vital signs**
 - **And a combination of at least 2 of the elements listed above**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.9) **Clinical Decision Support**
 - **Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.9) **Clinical Decision Support**
 - **View the CDS interventions/resource information using the info button standard for data elements in the problem list, medication list, and demographics**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.9) **Clinical Decision Support**
 - **Trigger the CDS interventions/resources based on data elements in the problem list, medication list, and medication allergy list by incorporating patient information from a transition of care/referral summary**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- (a.9) **Clinical Decision Support**
 - **Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.14) Implantable Device List**
 - **Record UDI**

Success:

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

Comments:

Task Time: _____Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.14) Implantable Device List**
 - **Change UDI Status**

Success:

- Easily completed

- Completed with difficulty or help :: Describe below
- Not completed

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(a.14) Implantable Device List**
 - **Access UDI, device description, identifiers, and attributes**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(b.2) Clinical Information Reconciliation and Incorporation**
 - **Incorporate a CCDA and conduct reconciliation of the medications, medication allergies, and problems in the CCDA with the information currently in the patient’s record**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

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

Comments:

Observed Errors and Verbalizations:

Comments:

Rating:

Overall, this task was: _____

Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

- **(b.2) Clinical Information Reconciliation and Incorporation**
 - **Generate a new CCDA with reconciled data**

Success:

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

Comments:

Task Time: _____ Seconds

Optimal Path:

- Correct
- Minor Deviations / Cycles :: Describe below

Major Deviations :: Describe below
Comments:

Observed Errors and Verbalizations:
Comments:

Rating:
Overall, this task was: _____
Tell participant the scale: “Very Easy” (1) to “Very Difficult” (5)

Administrator / Notetaker Comments:

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 least?

Would you recommend this system to your colleagues?

Administer the SUS

Appendix-5: SYSTEM USABILITY SCALE QUESTIONNAIRE

Date:	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 be able to use this system	1	2	3	4	5
I found the various functions in this system were well integrated	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

Source: <http://www.usabilitynet.org/trump/documents/Suschapt.doc>