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EHR USABILITY TEST REPORT
MD Logic EHR v7.0

This reports is based on the NISTIR 7742 Customized Common Industry Format Template
For Electronic Health Record Usability Testing

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1. EXECUTIVE SUMMARY

A usability test of the MD Logic EHR, v 7.0, an Ambulatory EHR was conducted on 04/21/2017 and 04/22/2017 via online meeting by eMarketMD and the MD Logic End User Test Group. 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).

During the usability test, ten (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 48 tasks typically conducted on an EHR:

- §170.315(a)(1) Computerized Provider Order Entry – Medications
- §170.315(a)(2) Computerized Provider Order Entry – Laboratory
- §170.315(a)(3) Computerized Provider Order Entry – Diagnostic Imaging
- §170.315(a)(4) Drug-Drug, Drug-Allergy Interactions Checks
- §170.315(a)(5) Demographics
- §170.315(a)(6) Problem List
- §170.315(a)(7) Medication List
- §170.315(a)(8) Medication Allergy List
- §170.315(a)(9) Clinical Decision Support
- §170.315(a)(14) Implantable Device List
- §170.315(b)(2) Clinical Information Reconciliation and Incorporation
- §170.315(b)(3) Electronic Prescribing

During the 120 minutes one-on-one usability test, each participant was greeted by the administrator online and asked to review and sign an informed consent/release form (included in Appendix 3); they were instructed that they could withdraw at any time. Participants did have prior experience with the EHR. The administrator introduced the test, and instructed participants to complete a series of tasks (given one at a time) using the EHRUT. During the testing, the administrator timed the test and, along with the data logger(s) recorded user performance data on paper and electronically. The administrator did not give the participant assistance in how to complete the task.

The following types of data were collected for each participant:

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

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. Participants were mailed a \$25 gift card in appreciation for their time. Various recommended metrics, in accordance with the examples set forth in the NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records, were used to evaluate the usability of the EHRUT. In addition, results include the following observations:

- Major Findings
- Areas for Improvement
- Participant's verbalizations

2. INTRODUCTION

The EHRUT tested for this study was the MD Logic EHR v7.0 engineered to present medical information to healthcare providers in ambulatory settings. The intended users of the MD Logic EHR are doctors, physical therapists, nurse practitioners, physician assistants, nurses, medical assistants including anyone entering or accessing clinical data at an ambulatory medical practice. The EHRUT consists of electronic health records for order entry, review of past health data and navigation of EHR. 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). The purpose of this study was to test and validate the usability of the current user interface and provide evidence of usability in the EHRUT. To this end, measures of effectiveness, efficiency, and user satisfaction were captured during the usability testing, such as task success, time on task, and task group ratings.

3. METHOD

PARTICIPANTS

A total of 10 participants were tested on the EHRUT(s). Participants in the test were physicians and nurses in ambulatory settings. The Participants ranged in years of experience with the MD Logic EHR and varied in specialty.

Participants were recruited by eMarketMD. The request sent to participants described the end-user roles required for testing. Participants either responded directly or were identified by administrators of their health care organization. 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 - Sample Recruiting Screener. A description of the participants is listed in Table 1. The Participants had no direct connection to the development of or organization producing the EHRUT(s). Participants were given the opportunity to have the same orientation 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.

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. Participant demographics are detailed in Appendix 2 - Participant demographics.

The total number and Description of Participants

Ten (10) participants were recruited and participated in the usability test. The description of the participants are listed in the table below:

Table 1: Participants

Participant ID	Gender	Age	Education Level	Occupation Role	Specialty	Professional Experience (months)	Computer Experience (Months)	Product Experience (months)	Assistive Technology needs
mdl001	Male	60-69	Medical Degree	Physician	Orthopaedics	360	240 Months	180 Months	No
mdl002	Male	60-69	Medical Degree	Physician	Urology	360	240 Months	240 Months	No
mdl003	Male	60-69	Medical Degree	Physician	Hand Surgeon	360	240 Months	240 Months	No
mdl004	Male	60-69	Medical Degree	Physician	Neurology	360	300 Months	120 Months	No
mdl005	Male	60-69	Medical Degree	Physician	ENT	300	240 Months	120 Months	No
mdl006	Male	60-69	Medical Degree	Physician	Spine	300	240 Months	180 Months	No
mdl007	Male	60-69	Medical Degree	Physician	Podiatry	300	240 Months	180 Months	No
mdl008	Male	60-69	Medical Degree	Physician	Neurosurgeon	300	240 Months	60 Months	No
mdl009	Female	60-69	Bachelors Degree	RN	Urology	300	240 Months	180 Months	No
mdl010	Female	30-39	Bachelors Degree	RN	Urology	120	180 Months	60 Months	No

STUDY DESIGN

Overall, the objective of this test was to uncover areas where the application performed well – that is, effectively, efficiently, and with satisfaction – and areas where the application failed to meet the needs of the participants. The data from this test 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 the MD Logic EHR Software. The system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

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

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. Tasks were selected for this study based upon the twelve (12) ONC CEHRT 2015 certification criteria. Frequency of use, potential risk for patient safety and the critical function were all taken into consideration. The safety-enhanced (SED) tasks for the twelve ONC CEHRT 2015 certification included:

- Scenario 1: Medication Allergy List
- Scenario 2: Problem List
- Scenario 3: Implantable Device List
- Scenario 4: Clinical Decision Support
- Scenario 6: Computerized Physician Order Entry (CPOE)
- Scenario 7: Drug Utilization Review
- Scenario 8: Clinical Information Reconciliation & Incorporation
- Scenario 9: Demographics (Clerical)
- Scenario 10: DUR Settings (Administrative)
- Scenario 11: Electronic Prescriptions

PROCEDURES

Upon arrival, participants were greeted; their identity was verified and matched with a name on the participant schedule. Participants were then assigned a participant ID. Each participant reviewed and signed an informed consent and release form (See Appendix 3). To ensure that the test ran smoothly, two staff members participated in this test, the usability administrator and the data logger. The usability testing staff conducting the test was experienced usability researchers. The administrator moderated the session including administering instructions and tasks. The administrator also monitored task times, obtained post-task rating data, and took notes on participant comments. A second person served as the data logger and took notes on task success, path deviations, number and type of errors, and comments. Participants were instructed to perform the tasks (see specific instructions below):

- As quickly as possible making as few errors and deviations as possible.
- Without assistance; administrators were allowed to give immaterial guidance and clarification on tasks, but not instructions on use.
- Without using a think aloud technique.
- For each task, the participants were given a written copy of the task. Task timing began once the administrator finished reading the question. The task time was stopped once the participant indicated they had successfully completed the task.
- Following the session, the administrator gave the participant the post-test questionnaire and thanked each individual for their participation.
- Participants' demographic information, task success rate, time on task, errors, deviations, verbal responses, and post-test questionnaire were recorded into a spreadsheet.
- Participants were thanked for their time.

TEST LOCATION

The test was taken online by the participants. Only the participant, the administrator and data logger were online during the test. All observers and the data logger worked next to the administrator. To ensure that the environment was comfortable for users, background noise levels were kept to a minimum.

TEST ENVIRONMENT

The EHRUT would be typically be used in a healthcare office or facility. In this instance, the testing was conducted online using the MD Logic Data Center. For testing, each participant used their own personal computer to access the MD Logic EHR software. The MD Logic Data Center controlled the size and screen resolution of the MD Logic software ensuring that each participant viewed the same image and resolution in size for software. The application itself was running on a server based platform accessed via online meeting.

TEST FORMS AND TOOLS

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

- Informed Consent
- Usability Protocol
- Moderator's Guide
- Post-test Questionnaire

Examples of these documents can be found in Appendices **3-6** respectively. The Moderator's Guide was devised so as to be able to capture required data.

PARTICIPANT INSTRUCTIONS

The administrator reads the following instructions aloud to the each participant:

Thank you for participating in this study. Your input is very important. Our session today will last approximately 120 minutes. During that time you will use an instance of MD Logic EHR software and answer some questions. You should complete the tasks as quickly as possible making as few errors as possible. Please try to complete the tasks on your own following the instructions very closely. Please note that we are not testing you we are testing the system, therefore if you have difficulty all this means is that something needs to be improved in the system. I will be here in case you need specific help, but I am not able to instruct you or provide help in how to use the application. Overall, we are interested in how easy (or how difficult) this system is to use, what in it would be useful to you, and how we could improve it. I did not have any involvement in its creation, so please be honest with your opinions. All of the information that you provide will be kept confidential and your name will not be associated with your comments at any time. Should you feel it necessary you are able to withdraw at any time during the testing.

Following the procedural instructions, participants were shown the MD Logic EHR software and as their first task, were given time 10 minutes to explore the system and make comments. Once this task was complete, the administrator gave the following instructions:

For each task, I will read the description to you and say "Begin." At that point, please perform the task and say "Done" once you believe you have successfully completed the task. I would like to request that you not talk aloud or verbalize while you are doing the tasks. I will ask you your impressions about the task once you are done.

USABILITY METRICS

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

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

DATA SCORING

Rationale and Scoring

Effectiveness: Task Success

Task success was determined by assigning numeric weights for various levels of task success, as follows:

- Success (without assistance) = 1.0
- Partial success = 0.5
- Failure = 0.0

A task was counted as a “Success” if the participant was able to achieve the correct outcome within the time allotted on a per-task basis and a “Partial success” if the participant was able to achieve the correct outcome with minimal assistance. A success score for each task was calculated by averaging the scores for each task. The results are provided as a percentage.

Task times were recorded for successes. Observed task times divided by the optimal time for each task were calculated as a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance under realistic conditions, was recorded when constructing tasks.

Effectiveness: Task Failures

If the participant abandoned the task, did not reach the correct answer, performed it incorrectly, or reached the end of the allotted time before successful completion, the task was counted as a “Failure”. No task times for failed tasks or tasks that exceeded the target task time were used in calculations. A qualitative account of the observed errors and error types was collected.

Effectiveness: 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 and tasks that were completed at or under the target time were included in the average task time analysis. Average times per task and variance measures were calculated for each task for use in the results analysis.

Satisfaction: Task Rating

Participant’s subjective impression of the ease of use of the application was measured by administering both a simple question on completion of each scenario and a post-session questionnaire. After each scenario, the participant was asked to rate “Overall, these tasks were:” on a scale of 1 (Very Difficult) to 5 (Very Easy). These data were averaged across participants. To measure participants’ confidence in and likeability of MD Logic EHR overall, the testing team administered the System Usability Scale (SUS) post-test questionnaire. Questions included, “I think I would like to use this system frequently,” “I thought the system was easy to use,” and “I would imagine that most people would learn to use this system very quickly.”

4. RESULTS

The results of the usability test were calculated according to the methods specified in the Usability Metrics (see above). The charts representing each area tested and results recorded are listed below. No Participants failed to follow the session and task instructions. The usability testing results for the EHRUT are detailed below. The results should be seen in light of the objectives and goals. The data should yield actionable results that, if corrected, yield material, positive impact on user performance.

Criteria 170.315(a)(1) CPOE – Medications

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Record a New Medication Order (E4)	10	1.00	0.00	8.8	0.92	1	0	0.00	0.00
Change an Existing Medication Order (E3)	10	1.00	0.00	41.49	2.08	1.05	.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Record a New Medication Order (E4)

Change an Existing Medication Order (E3)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Recording a new medication ordered confirmed 10 participants completing the task in the optimal number of steps. Changing an existing medication order resulted in 9 participants completing the task in the optimal number of steps with 1 participant taking an extra step due to touching the wrong button close to the desired button.
- **Satisfaction:** The average satisfaction rating for CPOE was 5 out of 5 points
- **Major Finding:** Medication orders and changes to existing medication orders were executed very quickly and without hesitation
- **Areas of Improvement:** Consider offering an option to increase the font size of the medication.

Criteria 170.315(a)(2) CPOE – Laboratory

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Record a Laboratory Order (f4)	10	1.00	0.00	55.7	2.497	1.04	0.422	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Record a Laboratory Order (f4)

- **Effectiveness:** Success for this task was 100% as participants were easily able to complete the tasks within the time allowed.

- **Efficiency:** Recording a laboratory order confirmed 8 of 10 participants completing the task in the optimal number of steps with the other 2 adding an extra step due to selecting the wrong button.
- **Satisfaction:** The average satisfaction rating for CPOE was 5 out of 5 points
- **Major Finding:** Recording a laboratory order was executed very quickly and without hesitation
- **Areas of Improvement:** Consider offering additional color options when selecting Laboratory orders.

Criteria 170.315(a)(3) CPOE – Diagnostic Imaging

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Access order and Record New Diagnostic Imaging Order (f2)	10	1.00	0.00	42.1	1.5	1.05	0.632	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access order and Record New Diagnostic Imaging Order (f2)

- **Effectiveness:** Success for this task was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Recording a new diagnostic imaging order confirmed 9 of 10 participants completing the task in the optimal number of steps with 1 participant adding extra 2 steps due to selecting the correct button then deselecting the button only to reselect the same button again.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** Recording new diagnostic imaging order was executed very quickly and without hesitation
- **Areas of Improvement:** Consider offering additional color options when selecting diagnostic imaging order.

Criteria 170.315(a)(4) Drug-Drug, Drug-Allergy Interactions Checks

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Identify High-Priority Drug Interactions (g3)	10	1.00	0.00	13.8	1.55	1.1	0.316	0.00	0.00
View Full Details of Drug Interaction (g2)	10	1.00	0.00	16.9	0.994	1.1	0.316	0.00	0.00
Process Drug-Drug, Drug Allergy Interaction Alert (g1)	10	1.00	0.00	16	1.826	1.1	0.316	0.00	0.00
Adjust Severity Level of Interventions – Limited Permissions (j2)	10	1.00	0.00	9.4	0.699	1.1	0.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Identify High-Priority Drug Interactions (g3)
View Full Details of Drug Interaction (g2)
Process Drug-Drug, Drug Allergy Interaction Alert (g1)
Adjust Severity Level of Interventions – Limited Permissions (j2)

- **Effectiveness:** Success for this task was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Identifying high priority drug interactions, viewing details of full drug interaction, processing drug-drug/drug allergy interaction and adjusting the level of interventions confirmed 9 of 10 participants completing the task in the optimal number of steps with 1 participant adding 1 step due to selecting an incorrect button.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** All tasks were executed very quickly and without hesitation
- **Areas of Improvement:** No known areas of improvement identified at this time.

Criteria 170.315(a)(5) Demographics

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Task	#								
Access and Record Demographics (i1)	10	1.00	0.00	85.8	3.645	1.01	0.316	0.00	0.00
Change Demographics (i2)	10	1.00	0.00	17.7	1.159	1.03	.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access and Record Demographics (i1)
Change Demographics (i2)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Accessing and recording demographic information confirmed 9 of 10 participants completing the task in the optimal number of steps with 1 participant adding 2 extra steps due to selecting the incorrect button and having to deselect the button. Changing demographic information confirmed 9 of 10 participants completing the task in the optimal number of steps with 1 participant adding 2 extra steps due to selecting the incorrect button and having to deselect the button.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points

- **Major Finding:** Recording and changing demographic information was executed very quickly and without hesitation
- **Areas of Improvement:** Consider increasing the bolding of required fields to draw more attention to the end user.

Criteria 170.315(a)(6) Problem List

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Access and Active Problem (b1)	10	1.00	0.00	8.7	0.949	1.05	0.316	0.00	0.00
Change an Existing Problem from a Different Encounter (b2)	10	1.00	0.00	26.4	2.459	1.02	0.316	0.00	0.00
Reactivate Inactive Problem (b3)	10	1.00	0.00	27.2	1.751	1.02	0.316	0.00	0.00
Record a New Problem (b4)	10	1.00	0.00	26.9	1.853	1.02	0.316	0.00	0.00
Find Problem SNOMED Code (b5)	10	1.00	0.00	13.9	2.601	1.1	0.632	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access and Active Problem (b1)Change Demographics (i2)
 Change an Existing Problem from a Different Encounter (b2)
 Reactivate Inactive Problem (b3)
 Find Problem SNOMED Code (b5)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** All tasks confirmed 9 of 10 participants completing the task in the optimal number of steps with a single participant in each task selecting an incorrect button.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** Each of these tasks were executed very quickly and without hesitation
- **Areas of Improvement:** Consider adding the color red to Snomed codes so they stand out when viewing on the screen.

Criteria 170.315(a)(7) Medication List

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Access Active Medication List (e1)	10	1.00	0.00	8.5	0.707	1.05	.316	0.00	0.00

Access Full Medication List (e2)	10	1.00	0.00	8.6	0.699	1	0	0.00	0.00
Change an Existing Medication (k6)	10	1.00	0.00	9.3	0.823	1.05	.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access Active Medication List (e1)Change Demographics (i2)
 Access Full Medication List (e2)
 Change an Existing Medication (k6)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Accessing active medication confirmed 9 of 10 participants completing the task in the optimal number of steps with 1 participant adding extra steps due to selecting the incorrect button. Accessing full medication list confirmed 10 of 10 participants completing the task in the optimal number of steps. Change existing medication confirmed 9 of 10 participants completing the task in the optimal number of steps with one participant taking an extra step due to selecting the incorrect button.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** Accessing and changing medication list information was executed very quickly and without hesitation
- **Areas of Improvement:** No known areas for improvement were noted at this time.

Criteria 170.315(a)(8) Medication Allergy List

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Task	#								
Access Active Medication Allergies (a1)	10	1.00	0.00	18.1	1.969	1.05	0.316	0.00	0.00
Change an Existing Medication Allergy (a3)	10	1.00	0.00	26.2	3.521	1.05	0.632	0.00	0.00
Record a New Medication Allergy (a4)	10	1.00	0.00	41.6	3.406	1.02	0.316	0.00	0.00
Access Inactive Allergies in Medication Allergy List (a5)	10	1.00	0.00	12.9	2.234	1.05	0.316	0.00	0.00
Reactivate an Inactive Medication Allergy (a2)	10	1.00	0.00	22.2	2.201	1.1	0.422	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access Active Medication Allergies (a1)Access Full Medication List (e2)

Change an Existing Medication Allergy (a3)
 Record a New Medication Allergy (a4)
 Access Inactive Allergies in Medication Allergy List (a5)
 Reactivate an Inactive Medication Allergy (a2)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Accessing active medication allergies confirmed 9 of 10 participants completing the task in the optimal number of steps. Changing and existing medication allergy confirmed 8 of 10 participants completing the task in the optimal number of steps. Recording a new medication allergy confirmed 9 of 10 participants completing the task in the optimal number of steps. Accessing inactive medication allergies confirmed 9 of 10 participants completing the task in the optimal number of steps. Reactivating an inactive medication allergy confirmed 8 of 10 participants completing the task in the optimal number of steps. Participants that did not complete the task in the optimal number of steps simply selected an incorrect button when trying to complete the task.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** These tasks were executed very quickly and without hesitation
- **Areas of Improvement:** No known areas for improvement were noted at this time.

Criteria 170.315(a)(9) Clinical Decision Support

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Task	#								
Access CDS Interventions (d1)	10	1.00	0.00	8.7	1.059	1.05	0.316	0.00	0.00
Identify Due / Overdue CDS Interventions (d2)	10	1.00	0.00	8.3	0.949	1.1	0.316	0.00	0.00
Identify the guidelines for CDS Interventions (d3)	10	1.00	0.00	42	2.708	1.03	0.316	0.00	0.00
Locate Reference Information for a CDS Intervention (d4)	10	1.00	0.00	8.9	0.8756	1.1	0.316	0.00	0.00
Configure a CDS Guideline (j1)	10	1.00	0.00	29.5	4.007	1.03	0.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access CDS Interventions (d1)
 Identify Due / Overdue CDS Interventions (d2)
 Identify the guidelines for CDS Interventions (d3)
 Locate Reference Information for a CDS Intervention (4)
 Configure a CDS Guideline (j1)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.

- **Efficiency:** All tasks confirmed 9 of 10 participants completing the task in the optimal number of steps with a single participant in each task selecting an incorrect button.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** Each of these tasks were executed very quickly and without hesitation
- **Areas of Improvement:** No known areas of improvement were identified at this time.

Criteria 170.315(a)(14) Implantable Device List

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
		Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Access Current Device (c1)	10	1.00	0.00	26.6	3.204	1.025	0.316	0.00	0.00
Change an Existing Implantable Device (c2)	10	1.00	0.00	25.9	1.792	1.025	0.316	0.00	0.00
Record a New Implantable Device (c3)	10	1.00	0.00	26	1.414	1.05	0.632	0.00	0.00
Change device list to show current Device List (c5)	10	1.00	0.00	12.5	1.509	1.1	0.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

- Access Current Device (c1)
- Change an Existing Implantable Device (c2)
- Record a New Implantable Device (c3)
- Change device list to show current Device List (c5)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Accessing current devices confirmed 9 of 10 participants completing the task in the optimal number of steps. Changing and existing implantable device confirmed 9 of 10 participants completing the task in the optimal number of steps. Recording a new implantable device confirmed 8 of 10 participants completing the task in the optimal number of steps. Changing device list to show current device list confirmed 9 of 10 participants completing the task in the optimal number of steps. Participants that did not complete the task in the optimal number of steps simply selected an incorrect button when trying to complete the task.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** These tasks were executed very quickly and without hesitation
- **Areas of Improvement:** Consider making the button Font for Devices larger in the future.

Criteria 170.315(b)(2) Clinical Information Reconciliation and Incorporation

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success	Task Time (sec)	Path Deviation	Errors
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Task	#	Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Access Retrieved C-CDA Document (h1)	10	1.00	0.00	8.6	0.966	1.033	0.316	0.00	0.00
Go to import CCD Option (h2)	10	1.00	0.00	9.4	0.699	1.1	0.316	0.00	0.00
Import C-CDA Data into Chart (h3)	10	1.00	0.00	86.9	5.131	1.02	0.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Access Retrieved C-CDA Document (h1)

Go to import CCD Option (h2)

Import C-CDA Data into Chart (h3)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Accessing retrieved CCD document confirmed 9 of 10 participants completing the task in the optimal number of steps. Go to import CCD option confirmed 9 of 10 participants completing the task in the optimal number of steps. Importing CCD document into chart confirmed 9 of 10 participants completing the task in the optimal number of steps. Participants that did not complete the task in the optimal number of steps simply selected an incorrect button when trying to complete the task.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** These tasks were executed very quickly and without hesitation
- **Areas of Improvement:** Consider making the screen heading for Import CCD much larger.

Criteria 170.315(b)(3) Electronic Prescribing

DATA ANALYSIS AND REPORTING

Task Scores	N	Task Success		Task Time (sec)		Path Deviation		Errors	
Task	#	Mean (%)	(SD)	Mean (sec)	(SD)	Deviations Observed/Optimal	(SD)	Mean	(SD)
Create New Electronic Prescription (k3)	10	1.00	0.00	42.5	4.601	1.02	0.316	0.00	0.00
Send Prescription to specific pharmacy (k4)	10	1.00	0.00	18.6	1.174	1.05	0.316	0.00	0.00
Process Electronic Rx Request from Pharmacy (k8)	10	1.00	0.00	9.5	2.068	1.1	0.316	0.00	0.00

Task Scenario Ratings	Mean	(SD)
Task Group Familiarity Ratings (5=very familiar)	5	0
Task Group Satisfactory Ratings (5=very familiar)	5	0

Discussion of Finding

Create New Electronic Prescription (k3)

- **Effectiveness:** Success for these tasks was 100% as participants were easily able to complete the tasks within the time allowed.
- **Efficiency:** Creating electronic prescription, sending electronic prescription to specific pharmacy and processing electronic request from pharmacy confirmed 9 of 10 participants completing these tasks in the optimal number of steps. Participants that did not complete the task in the optimal number of steps simply selected an incorrect button when trying to complete the task.
- **Satisfaction:** The average satisfaction rating for was 5 out of 5 points
- **Major Finding:** These tasks were executed very quickly and without hesitation
- **Areas of Improvement:** No known areas of improvement were identified at this time.

Overall Results

In addition to the specific findings and areas of improvement, the overall results of the test were excellent. This was due in part to the participants being well versed in using the MD Logic EHR software on a daily basis in clinic. As test participants completed each task, their overall ability to efficiently navigate the EHR system increased with each completed task. No known major issues were encountered with the test group. Test participants were effectively able to follow each task assigned with total effectiveness.

As expected, the EHR software was designed for easy adoption in the healthcare industry. The EHR software has been used in the healthcare industry for the past 20 years. The EHR Company develops its entire suite of software around touch screen technology making it simple for users to navigate. The study confirmed the EHR is intuitive, simple to navigate and saves time. Having larger easy to touch buttons simplifies the learning curve and makes using the software simple and easy.

APPENDICES

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

- 1: Sample recruiting screener
- 2: Participant demographics
- 3: Non-Disclosure Agreement (NDA) and Informed Consent Form
- 4: Example Moderator's Guide
- 5: System Usability Scale Questionnaire
- 6: Acknowledgment form

Appendix 1: SAMPLE RECRUITING SCREENER

Hello, my name is **(callers name goes here)** calling for MD Logic. We are recruiting individuals to participate in a usability study for an 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 should only take a few minutes of your time. This is strictly for research purposes. If you are interested and qualify for the study, you will be paid to participate. Can I ask you a few questions?

1. Are you male or female?
2. Have you participated in a focus group or EHR usability test in the past xx 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]
6. Do you require any assistive technologies to use a computer? [if so, please describe]
7. What is your current position and title? (Must be healthcare provider)
 - RN: Specialty
 - Physician: Specialty
 - Resident: Specialty
 - Administrative Staff
 - Other [Terminate]
8. How long have you held this position?
9. Which of the following describes your highest level of education? [e.g., high school graduate/GED, some college, college graduate (RN, BSN), postgraduate (MD/PhD), other (explain)]

Computer Expertise Customize this to reflect what you know about your EHR's audience

1. Besides reading email, what professional activities do you do on the computer?
2. 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]
3. What computer platform do you usually use? [e.g., Mac, Windows, etc.]
4. What Internet browser(s) do you usually use? [Firefox, IE, Chrome, etc.]
5. Are you familiar with online meetings?
6. In the last month, how often have you used an electronic health record?
7. How many years have you used an electronic health record?
8. How many EHRs do you use or are you familiar with?
9. How does your work environment manage 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:

Before your session starts, we reserve the right to have you sign a release form giving us the option of videotaping your session. The videotape would only be used internally for further study if needed. Will you consent to be videotaped? This study will take place online. I will confirm your appointment a couple of days before your session and provide you instructions on how to login for the test. What time is the best time to reach you?

Appendix 2: PARTICIPANT DEMOGRAPHICS

The report should contain a breakdown of the key participant demographics.

Participant Age		
	N=10	%
20-29	0	0%
30-39	1	10%
40-49	0	0%
50-59	0	0%
60-69	9	90%

Participant Gender		
	N=10	%
Male	8	80%
Female	2	20%
Other	0	0%

Participant Education		
	N=10	%
No High School	0	0%
High School Graduate	0	0%
Some College	0	0%
Trade / Technical	0	0%
Associates Degree	0	0%
Bachelor's Degree	2	20%
Master's Degree	0	0%
Doctorate (MD, DO, DNP, DMD, PhD)	8	80%

Participant Roles		
	N=10	%
Physician	8	80%
RN	2	20%

Participant Specialties		
	N=10	%
Orthopaedics	1	10%
Urology	3	30%
Hand Surgery	1	10%
Neurology	1	10%
ENT	1	10%
Spine	1	10%
Podiatry	1	10%
Neurosurgeon	1	10%

Participant Professional Experience				
Months			Years	
Mean		306		25.5
	Min	Max	Min	Max
Range	120	360	10	30

Participant Computer Experience				
Months			Years	
Mean		240		20
	Min	Max	Min	Max
Range	180	300	15	25

Participant Experience with MD Logic EHR				
Months			Years	
Mean		156		13
	Min	Max	Min	Max
Range	60	240	5	20

Appendix 3: Non-Disclosure Agreement / Informed Consent Form

Non-Disclosure Agreement

THIS AGREEMENT is entered into as of ____/____/2017, between ("the Participant") and the testing Organization eMarketMD.

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 Printed Name: _____

Participant Signature: _____

Date: _____

Recording Consent Form

The session today will be recorded for to allow our team to go back and review your tasks completed. If you agree to the terms below, the please sign and date the form.

I understand that my usability test session will be recorded. I grant eMarketMD the permission to use this recording for internal use only, for the purpose of improving the products being tested.

Participant Printed Name: _____

Participant Signature: _____

Date: _____

Informed Consent Form

We would like to thank you for participating in this study. The purpose of this study is to evaluate an electronic health records system. If you decide to participate, you will be asked to perform several tasks using the prototype and give your feedback.

Agreement

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

I understand and consent to the use and release of videotape. I understand that the information and videotape is for research purposes only and that my name and image will not be used for any purpose other than research. I relinquish

any rights to the videotape and understand the videotape may be copied and used for research. I understand and agree that the purpose of this study is to make EHR software applications more useful and usable in the future.

I understand and agree that data confidentiality is assured, because only de-identified data – i.e., identification numbers not names – will be used in analysis and reporting of the results.

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

Please check one of the following:

- YES, I have read the above statement and agree to be a participant.
- NO, I choose not to participate in this study.

Participant Printed Name: _____

Participant Signature: _____

Date: _____

Appendix 4: Sample Orientation

Introduction

Thank you for taking the time today to participate in this study.

You will be helping us evaluate workflows pertaining to the ONC's EHR vendor certification requirements. I will be asking you to complete a variety of tasks in the MD Logic EHR software. Please remember that the reason for the study is to review the MD Logic EHR software and how users relate to each task assigned. If during a task you get to a point where you are not sure what to do please use your best judgement to proceed. Our goal is to observe how you handle each task.

I have consent forms that I need you to sign before beginning the study? Once signed, we can begin the study. You will be asked to perform specific tasks in a workflow and can begin each task when I say "begin". Once you have completed the task please say the word "done". We will be recoding the times it takes to complete each task.

Appendix 5: User Protocol Tasks

Scenario 1: Medication Allergy List

1. Zach Jones has come in today for a follow -up visit for his prehypertension, but he now complains of ringing in his left ear and bilateral sinus pressure
2. Open Zach Jones chart so that you can review his known allergies with him
3. Locate Zach's active allergies (**Begin Now**)
4. Zach then states that he is not allergic to Iodine as noted in his health record.
5. Please update Iodine to Inactive in his chart. (**Begin Now**)
6. Zach says his reaction to Penicillin is not correct. Zach says he get a rash when he takes penicillin but does NOT get shortness of breath.
7. Your task is to update the adverse reaction for Penicillin to rash. (**Begin Now**)
8. Zach also states that he gets a rash when takes Sulfa Drugs.
9. Your task is to add Sulfa drugs and the adverse reaction as rash. (**Begin Now**)
10. After adding Sulfa drugs Zach suddenly remembers that it was not Sulfa drugs he had a reaction too. It was Latex.
11. Your task is to Inactivate Sulfa drugs(**Begin Now**)
12. Zach confirms he gets a rash with Latex.
13. Your task is to add Latex and the adverse reaction of rash. (**Begin Now**)

Scenario 2: Problem List

It has been several months since Zach has visited the practice. During the past few months Zach has lost 10lbs but BMI is still high.

1. Go to Zach's Problem list. **(Begin Now)**
2. Zach's states that he controlling his prehypertension with eating healthy and daily exercise.
3. Update the Assessment for prehypertension to "Resolved". **(Begin Now)**
4. Zach's is having a recurrent problem with Tinnitus.
5. Locate Zach's Inactive Problem List. Change the Status of Tinnitus to Active. **(Begin Now)**
6. After careful review, it is confirmed that Zach's cholesterol is elevated / high. Add a problem for Hyperlipidemia with an onset for today's date. **(Begin Now)**
7. For the Hypertension (essential) problem, find the SNOMED code. **(Begin Now)**

Scenario 3: Implantable Device

Since the last visit Zach had Cystoscopy (Balloon) for Gross Hematuria. Today, Zach was working on his car and accidentally cut his forearm. After examination you decide he requires and suture and implant a non-absorbable suture.

1. Add Cystoscopy Balloon in Zach's Chart. **(Begin Now)**
2. Since the balloon was used but not implanted, update the Cystoscopy Balloon as inactive. **(Begin Now)**
3. Add Zach's suture to the device list. **(Begin Now)**
4. Change the Device List setting to show inactive. **(Begin Now)**
5. Change the Device List setting to show Current. **(Begin Now)**

Scenario 4: Clinical Decision Support

To ensure the best quality of care is being provided, you need to check Zach's health reminders.

1. Locate Health Reminders for Zach. **(Begin Now)**
2. Identify which reminders are due now. **(Begin Now)**
3. Identify which guidelines trigger the PSA reminder. **(Begin Now)**
4. You are not sure how often the patient should complete PSA. Look for the reference information for the PSA reminder. **(Begin Now)**
5. The U.S. Preventive Services Task Force (USPSTF) recommends against prostate -specific antigen (PSA)-based screening for prostate cancer. In MD Logic maintenance remove the PSA testing guideline for Males 50 to 60 years of age from the reminder.

Scenario 5: Medication List

Next let's review Zach's Medications.

1. Locate Zach's current medication list. **(Begin Now)**
2. After asking Zack about the current medications he is taking he confirms he is taking Crestor. Review Zach's past medications history to see if there are any other medications that have been prescribed to Zach. **(Begin Now)**
3. You identify Bactrim in Zach's chart and he confirms that he is no longer taking the medication. Discontinue Bactrim. **(Begin Now)**
4. Zach confirms that he started taking Nexium OTC 20MG once a day. Please add Nexium to his Mediation List. **(Begin Now)**
5. If asked by the patient, how would you find the generic name for Prilosec. **(Begin Now)**

Scenario 6: Computerized Physician Order Entry (CPOE)

Upon examination of Zach, he is complaining of bilateral pain in the upper sinus area and constant drainage (greenish color). You diagnose Sinusitis and decided to create an order for a Nasal Endoscopy and order antibiotics to treat the sinus infection. Do not save the order – simply add the orders.

1. Electronically order Augmentin 875mg twice a day for seven days to be taken with food. **(Begin Now)**
2. Next order a CT sinus. **(Begin Now)**
3. Next renew Zach’s prescription for Crestor. **(Begin Now)**
4. Finally, order a Lipid Panel. Please stop when the system confirms that you want to order the Lipid Panel. **(Begin Now)**

Scenario 7: Drug Utilization Review

Now you will save the orders

1. Select “save” the prescription for Augmentin and identify the priority warnings. **(Begin Now)**
2. Review the drug-allergy interaction and describe your options displayed. **(Begin Now)**
3. Review all warning and explain your options for the highest drug interaction warnings. **(Begin Now)**

Scenario 8: (CIRI) Clinical Information Reconciliation & Incorporation

Part of the Meaningful Use measures requires interoperability and the exchange of clinical data between healthcare providers. The data is available electronically or printed on paper and is referred to as a CCD document and commonly referred to as a CCDa document. CCDa standard for Consolidated Clinical Document Architecture. The idea behind the CCDa standards is to automate the sharing of clinical information (between doctors in different clinic) on a patient. Your next patient has arrived and his name is Jeff Garmon. Jeff has brought his CCD file on a flash drive provided by his other doctor. The medical assistant has already opened Jeff’s chart and imported the available health data that you can import into Jeff’s electronic chart.

1. Open up Jeff’s chart. **(Begin Now)**
2. Got to Import CCD option. **(Begin Now)**
3. Now import and reconcile the new clinical information not already in Jeff’s chart from the CCD file. **(Begin Now)**
4. After importing the clinical information, please demonstrate where you would go to view Health Reminders that may be triggered after importing new health information into Jeff’s chart. **(Begin Now)**. *As part of meaningful use, data imported from CCD documents that meet the criteria for health reminders should trigger the reminders.*

Scenario 9: Demographics – Clerical

Samantha Smith is referred to you by a mutual friend and stops in to see if she can be seen today. Your staff collects her insurance information and adds her basic demographic information (name, address) into the system. Normally the staff would hand the patient a touch screen table where the patient would to the scree and answer demographic questions required by meaningful use. This automation is provided by the MD Logic Kiosk software. Since Samantha is a work-in patient, there are no available tablets for her to use to answer the meaningful use questions.

1. Add the following demographic information for this patient. **(Begin Now)**
 - Date of Birth 02-21-1982
 - Race White
 - Ethnicity Non-Hispanic or Latino
 - Sex Female
 - Sexual Orientation Hetero Sexual
 - Gender Identity Female
 - Language English
2. Upon completing the history, the patient questions Ethnicity and tells you she does not want to answer the question. Change her answer from Non-Hispanic or Latino to Patient Declined. **(Begin Now)**

Scenario 10: (DUR) Drug Utilization Review Settings – Administrative

For this example you are a system administrator with the practice. The doctors have brought it to your attention that the (DUR) is reporting drug interactions that are insignificant and request the level of interactions be changed.

1. Go to DUR Configuration Settings. **(Begin Now)**
2. Explain how you could change the configuration so that the minimum severity of interactions reported includes only major drug interactions? **(Begin Now)**

Scenario 11: Electronic Prescriptions

Sending drug prescriptions electronically in the state of New York is the law. Doctor can no longer generate paper prescriptions. Chris Turner is a patient you have not seen in 6 months. Chris has come back to the clinic complaining of recent heart burn and reported that taking OTC Nexium 20MG is not working as well as it used to and wants to know if there is something else he can take for heartburn. You explain to Chris that he can take (2) Nexium 20MG pills each day. As an option, you explain that you can write him a prescription for Nexium 40MG. Chris decides that he wants the prescription for Nexium 40MG.

1. Open Chris's chart and view his Current Medications. **(Begin Now)**
2. Update Nexium 20MG as discontinued. **(Begin Now)**
3. Order an electronic prescription for Nexium 40MG to be taken once a day for 90 days. **(Begin Now)**
4. Chris has asked you to send the prescription to his new pharmacy (Publix off State Bridge Road). **(Begin Now)**

Chris returns back to the clinic after in 30 days complaining of a sore throat and post nasal drip. Chris explains to you that he looked into the cost of the Nexium 40MG prescription and said it was more than taking 2 OTC Nexium 20MG tablet each day so he decided not to use the Nexium 40MG prescription. Void the Nexium 40MG prescription and send electronic cancellation to his Pharmacy.

5. Update Chris's charts that he is taking Nexium 20MG / 2 tablets once a day. **(Begin Now)**
6. Update Nexium 40MG as discontinued. **(Begin Now)**

The next patient is Kurt Kenyon and he is in the office today for right knee pain. After the examination, you decide you are going to write Kurt a prescription for NDAIDS (anti-inflammatory medication).

7. Review his medication history to see if he has been prescribed NDAIDS (anti-inflammatory medication) in the past. **(Begin Now)**

Your last patient just before lunch is a no show so you decide to review your Prescriptions

8. Find the prescription renewal request for Flomax for Eric Moore. Approve the prescription renewal. **(Begin Now)**

Appendix 6: System Usability Scale Questionnaire

Please answer the following questions based upon your overall experience with the tasks you were asked to complete in the user Study.

1. I thought the system was easy to navigate

Strongly Disagree 1 2 3 4 5 Strongly Agree

2. I found the system complex and hard to use
Strongly Disagree 1 2 3 4 5 Strongly Agree
3. I would like to use this system in a clinic setting
Strongly Disagree 1 2 3 4 5 Strongly Agree
4. I found the system workflow was easy to follow
Strongly Disagree 1 2 3 4 5 Strongly Agree
5. I believe users would quickly be able to learn the system
Strongly Disagree 1 2 3 4 5 Strongly Agree
6. I did not feel confident using the system
Strongly Disagree 1 2 3 4 5 Strongly Agree
7. I found the workflow of the system to be cumbersome
Strongly Disagree 1 2 3 4 5 Strongly Agree
8. I believe a user would need a lot of training before being able to use this system
Strongly Disagree 1 2 3 4 5 Strongly Agree
9. I believe the speed of the system was very fast
Strongly Disagree 1 2 3 4 5 Strongly Agree
10. I believe that users could begin using this system with minimal training