EHR Usability Test Report of Moyae Version 1

Report based on NISTIR 7742
Date of tests conducted 11/11/22 - 12/18/22

Moyae, Version 1

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Testing Locations: Austin, TX & virtual video screen share

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SUMMARY

This study of Moyae version1, an ambulatory medical record software, was conducted between November 11th, 2022 and December 18th, 2022. A majority of the tests were done over video-share and screen sharing, while some were conducted live face to face within conference rooms in Austin, Texas.

The study was designed around NISTIR 7741 to standardize each step and test method and gain insight on user interactions within an EHR for ophthalmology. The purpose of the test was to validate the usability of the current design and user interface as well as provide evidence of usability of the EHR Under Test (EHRUT).

A sample of 10 adults working in the medical field whose jobs typically included medical data entry and matched the target demographic were chosen to replicate tasks typically found in an ophthalmic clinical setting.

A complete list of the tasks assigned can be found in Appendix 2.

The 45 tasks were designed to test combinations between changing and recording medication orders, triggering drug-drug interactions, the user interface between changing patient demographics, confirming and recording allergy intolerances and medications, and various clinical decision support pertaining to certification criterion 170.315(a)(3),170.315(a)(5), 170.315(a)(9), 170.315(a)(14), and 170.315(b)(3). Part of the test script also included several elements to 170.315(a)(4) which were also included in the study, but were not part of the active certification criterion.

Over the course of 30 minutes, each participant was greeted by the proctor and informed about the five different sections that the test was divided into. Each participant gave express verbal consent to be a part of a study and were informed they could withdraw at any time. All participants had no prior experience of the EHRUT. The proctor would inform participants that if assistance was given for any tasks, the task would have been marked as failure. Participants were reminded of this again if they asked for help during the test.

Following each of the five subsections, participants were asked to complete a post-test survey based on a Likert scale of 1-5, 1 being the easiest and 5 being the hardest to complete.

Please see the Appendix 4 for results.

Findings
The following observations and notes were collected:
- Participants enjoyed using the software and thought it was more aesthetically pleasing than their status quo. In comments and questionnaires users commented that it was very intuitive
- The largest problems stemmed from the eRX module autocomplete and comments and suggestions for improvements were noted.

- Towards the end of the test, some of the test individuals had many copies of the same data within their profiles, which were deleted visually but not at the data level as it mirrored production standards. This slowed down the initial load of the patient. This has been noted internally within Moyae for future testing and for next iterations. This was not a large factor in task completion times.

Other Improvements:
- Since most of the interviews were done via video calls, different screen sizes were used. Several end-users noted that they had to scroll to find certain buttons that were collapsed further down the page which resulted in longer completion times.

INTRODUCTION
The EHRUT tested was Moyae version 1. Moyae (EHRUT) is an ophthalmology specific ambulatory medical record system. The EHRUT was designed for ophthalmologists, optometrists, and their staff in mind and the test was made to reflect that.

Scenarios created in the tasks were made to represent realistic situations, problems, and conditions a staff member might see and use on a day to day basis.

The study was conducted to validate the usability and measure the evidence of said usability through task completion times, user satisfaction, and any deviations from the optimal path. Deviations that occurred were noted and reported as tickets to the engineering team in order of risk prioritization noted in the chart in the tasks section below.

PARTICIPANTS

10 participants were tested on the EHRT. Participants ranged from nurses, ophthalmology technicians, medical students, to software engineers in health IT. All participants had never dealt with the EHRUT before but had some experience with a different EHR prior.

Participant Identifier	Participant Gender	Participant Age	Participant Education	Participant Occupation/Role	Participant Professional Experience (in years)	Participant Computer Experience (in years)	Participant Product Experience	Needs Assistive tech?
bh19	Male	30-39	Bachelor's degree	Ophthalmic Technician	2	10	None	No
ap20	Male	30-39	Bachelor's degree	Ophthalmic Technician	4	14	None	No
ek21	Male	30-39	Bachelor's degree	Health IT Engineer	3	22	None	No
zm22	Male	20-29	Bachelor's degree	Medical Student	6	5	None	No
ac23	Male	30-39	Bachelor's degree	Optometry Technician	10	10	None	No
dn24	Female	30-39	Bachelor's degree	Pharmacist	7	12	None	No
gk25	Male	30-39	Bachelor's degree	Health IT	10	24	None	No
kl26	Female	30-39	Bachelor's degree	Doctor	7	20	None	No
da27	Male	30-39	Master's degree	Registered Nurse	6	22	None	No
et28	Female	20-29	Bachelor's degree	Nurse	4	15	None	No

Participants were scheduled for 30 minute sessions and a spreadsheet was used to track all interactions. When testing began please see Appendix 1 for the script that was read to each participant.

STUDY

The test was designed around NISTIR 7741 standards to identify shortcomings of the EHRUT since it is the first iteration of the software. It measured the efficiency and the user satisfaction of each participant as well as deviations from the expected path to success.

During the usability portion of the test participants were each read a scenario that clearly described the tasks they would have to complete before allowing the user to login and complete the tasks. The task was displayed clearly in electronic format in front of the user and they were told that if they asked for help or if any proctor intervention was needed, then the task would be considered a failure. Participants were told that a timer would start the moment they started typing to login.

The following were noted as data points:
- Time to complete tasks
- Errors and number of misclicks / wrong page navigation
- # of Misspellings
- User notes at the end of each subsection
- User's satisfaction
- Any other comments the users had about the system that did not match their expectation

TASKS

All tasks were created around 2015 Certified Health IT Requirement subsection 170.315(g)(3) for safety enhanced design. In accordance with NISTIR 7804 Technical Evaluation, Testing, and Validation of the Usability of Electronic Health Records (EUP) (page 8), test scenarios were ranked around patient safety, which can be mitigated or eliminated by improvements to the user interface design and prioritization was given to more critical risk areas.

Not all tasks performed were directly related to a certification criterion, but were necessary steps to measuring efficiency and effectiveness of the usability test.

The following chart indicates how the priority distribution was handled to each corresponding certification criterion:

Recording Medication Orders	High
Changing Medication Orders	High
Confirming and Displaying Changed Medication Orders	Low
Recording Diagnostic Imaging Order	Moderate
Changing Diagnostic Imaging Order	Moderate
Confirming Changed Diagnostic Imaging Order	Low
Recording Implantable Device	High
Trigger Drug-Drug Interaction	High
Trigger Drug-Allergy Interaction	High
Confirm Severity of Drug-Drug Interaction	Low
Demographics - Record Patient Information	Low
Demographics - Change Patient Information	Low
Demographics - Confirm updated Patient Demographics	Low
Confirming the active medication list	Moderate
Confirming and displaying past medications	Moderate
Confirming and displaying allergy intolerances	Moderate
Clinical Decision Support: intervention and referential material for a problem	Low
Clinical Decision Support: intervention and referential material for medication	Low

Clinical Decision Support: intervention and referential material for allergy intolerances	Low
Clinical Decision Support: intervention for a vital sign intervention	Low

The following chart is a description of the user tasks (task scenarios) that were tested and association of each task to corresponding certification criteria. It should be noted that while this study included elements of 170.315(a)(4), it was not in scope for certification.

The scenarios that the users were prompted with can be found in Appendix 3.

Task Id	Task Description	Scenario Id	Certification Criterion
1	Log into EHR Via a Technician Role with given credentials	1	
2	Discover Patient Search	1	
3	Correctly Search example Patient, "Bobbie Fray"	1	
4	Correctly Identify Searched Patients from List. Verify Medication and Patient History.	1	(a)(4) Confirming and displaying Allergy Intolerances (a)(4) Confirming the active medication list (a)(4)Confirming and displaying allergy intolerances
5	Navigated to Patient Details Page	1	
6	Discovered Existing Encounters and correctly navigate into a prior visit	1	
7	Discovered Orders in the Navigation Bar.	1	(a)(3)Recording Diagnostic Imaging Order
8	Correctly identified and clicked on "+ New Order" to add Imaging Resource	1	(a)(3)Recording Diagnostic Imaging Order
9	Correctly Identified an OCT scan via autocomplete search	1	(a)(3)Changing Diagnostic Imaging Order
10	Input a future date and save order.	1	(a)(3)Changing Diagnostic Imaging Order
11	Correctly updates the order: by updating date.	1	(a)(3)Changing Diagnostic Imaging Order

12	Verify order after saving	1	(a)(3)Confirming and Displaying Changed Diagnostic Imaging
13	Logging into EHR with given credentials for demographic change	2	
14	Patient search	2	
15	Patient selection after search	2	
16	Discovery of Patient Edit Button	2	(a)(5)Demographics - Record Patient Information
17	Clicking Patient Edit Button	2	(a)(5)Demographics - Record Patient Information
18	Discovery of Demographics section	2	(a)(5)Demographics - Record Patient Information
19	Making necessary changes to Patient Demographics: Race	2	(a)(5)Demographics - Change Patient Information
20	Making Edits to Patient Demographics: Ethnicity	2	(a)(5)Demographics - Change Patient Information
21	Making necessary changes to Patient Demographics: Sexual Orientation	2	(a)(5)Demographics - Change Patient Information
22	Making Edits to Patient Demographics: Preferred language	2	(a)(5)Demographics - Change Patient Information
23	Clicking "Save" to persist data on patient record	2	(a)(5)Demographics - Confirm updated Patient Demographics
24	Login with doctor credentials for CDS referential materials	3a	
25	Discovery of CDS Modal in Navbar	3a	
26	CDS: Searching a medical condition: "Asthma"	3a	(a)(9) Clinical Decision Support: intervention and referential material for a problem
27	CDS: Searching a drug: "Warfarin Sodium"	3a	(a)(9) Clinical Decision Support: intervention and referential material for medication
28	CDS: Searching an allergy: "Latex"	3a	(a)(9) Clinical Decision Support:

			intervention and referential material for allergy intolerances
29	CDS: Clicking on external link provides referential material asked for	3a	a(9) Clinical Decision Support: intervention for a vital sign
30	User logs into EHR given technician credentials	3b	
31	User searches for Patient "Bobbie Fray" correctly	3b	
32	User creates a new encounter for Bobbie Fray. Verifies Vitals and Historical info.	3b	
33	User correctly identifies location to modify and add an Implantable device	3b	(a)(14) Recording Implantable Device
34	User correctly enters in the following DI: 00380652458108	3b	(a)(14) Recording Implantable Device
35	User confirms the device is added to the patient and clicks save	3b	(a)(14) Confirming saved Implantable Device
36	Signs into application using an account with prescribing privileges	4	
37	Correctly navigates to the patients view for example patient and views patient history: Susanne Adirondack	4	(a)(9)Confirming and displaying past medications
38	Correctly navigates to the ongoing encounter and confirms Allergies and Ongoing Medication	4	(b)(3) Confirming the active medication list (a)(4)
39	Correctly selects the correct pharmacy given: NYC Pharmacy	4	(b)(3)Recording Medication Orders
40	Correctly chooses correct drug from autocomplete: Hydrochlorothiazide 50MG Oral Tablet	4	(b)(3)Recording Medication Orders
41	Correctly inputs quantity: 30	4	(b)(3)Recording Medication Orders
42	Correctly inputs refills: 2	4	(b)(3)Recording Medication Orders
43	Correctly identifies if generics or substitutes can be used: No	4	(b)(3)Recording Medication Orders

44	CDS: On save a warning is displayed for Drug Drug interaction and is confirmed and verified.	4	(a)(4)Trigger Drug-Drug Interaction, (a)(9)Trigger Drug-Allergy Interaction (a)(4)Confirm Severity of Drug-Drug Interaction
45	Correctly updates the medication after saving with the following: Refills 1		(b)(3)Changing Medication Orders, Confirming and Displaying Changed Medication Orders

PROCEDURES AND TEST ENVIRONMENT

Patients were scheduled and sent digital video links for screen-sharing tests. For in-person testing, the proctor's computer was used and meetings were conducted in conference rooms in Austin, TX. Each participant was asked to verbally consent to participating in the voluntary study. Each meeting started with the script seen in Appendix 1.

Participants were asked to share their screen in order for the proctor to see successes and deviations. The proctor timed the exam via stopwatch and took notes within a spreadsheet during the test.

Following standard user testing protocol, the proctor did not influence the subject and did not speak during testing unless:

1. The user verbally requested help
          or
2. The time limit was breached.

Because Moyae V1 is a cloud based SAAS EHR tool, all forms of browsers and screen-sizes were allowed. For future tests, it should be noted that future tests should only include Chrome or Mozilla only as one individual did have problems sharing their screen using a Mac while on Safari.

After the introduction, test participants could start their respective scenarios by beginning to log into the EHR system from a logged out state.

USABILITY METRICS

Moyae aims to have a high level of usability across its design. And the original goal in design was to make sure that users could intuitively find all fields with minimal to no effort in training. Metrics that were captured to determine this included;

1. Measuring participant success rates and errors
2. Efficiency and intuitive design by measuring the average task path to participant path deviations.
3. User satisfaction at the end of each subsection task.

DEFINITIONS OF SUCCESS AND FAILURES

Success	A "successful" task was one that was completed within the time-limit and contained fewer than the optimal number of suggested deviations for a path. A user could not ask for help with a task. The average mean successes were calculated and results are provided back as an average and a percentage of success. Task times were benchmarked against the times it took for the task creators to run through the test in a professional setting.
Failure	A "Failed" task was one that exceeded the allotted time for the individual task or the user grossly deviated from the assigned task or verbally asked for help from the proctor after being warned that any help from the proctor would result in a "fail". Tasks where the user logged out and verbally said they were done without actually completing the task were also marked as failures.
Efficiency	Tasks were timed from the moment the user began to to login for each subsection of the test. Average time per task was calculated and recorded for each task. Standard Deviation variances for success and error were also calculated.
User Satisfaction	Participants were asked to score each task with a value from 1-5. One being "Very Easy To Use" and five being the "most difficult" task. After giving a rating for each task, participants were encouraged to give feedback in freeform and describe why they picked such a rating.

RESULTS
Data Analysis and Report

The chart below represents the usability report in its entirety. Participants who withdrew or failed to complete all five sections of the exam were not included in the study.

By using the critical risk chart and comparing deviations optimal task time as well as overall task ratings, it is evident to determine what should be immediately improved upon next.

	Task Success - Mean (%)	Task Success - Std Dev (%)	Task Path Deviation - Observed #	Task Path Deviation - Optimal #	Task Time - Mean (seconds)	Task Time - Standard Deviation (seconds)	Task Time Optimal Seconds	Task Errors Mean(%)	Task Errors - Std Dev (%)	Task Rating	Task Rating - Standard Deviation
1	100	0	0	0	10	1.78	9.5	0	0	1	0
2	100	0	0	0	8	5.2	5.5	0	0	1	0
3	100	0	0	0	16	6.33	10	0	0	1	0
4	100	0	0	0	5	1.2	5	0	0	1	0
5	100	0	0	0	25	8.33	20	0	0	1	0
6	100	0	0	0	19	4.6	17.5	0	0	1	0
7	90	94.8	1	0	42	12.5	30	10%	1.2	2.5	1.0
8	100	0	0	0	5	1	5	0	0	1	0
9	100	0	0	0	8	1.2	5	0	0	1	0
10	100	0	0	0	1	0	0	0	0	1	0
11	100	0	0	0	36	5.8	30	0	0	1	0
12	80	35.8	2	0	14	2.66	10	20%	2.66	3.2	1.25
13	100	0	0	1	15	6	10	0	0	1.5	.5
14	100	0	0	1	12	4	10	0	0	1	0
15	100	0	0	1	3	6.2	1	0	0	1	0
16	100	0	1	1	25	8	20	0	0	1	0
17	100	0	0	1	10	7	10	0	0	1.5	.5
18	100	0	0	1	5	2	5	0	0	2	1
19	100	0	0	1	5	3	5	0	0	1	0
20	100	0	0	1	5	2	5	0	0	1	0
21	100	0	0	1	5	3	5	0	0	1	0
22	100	0	0	1	5	2	5	0	0	1.5	.5
23	90	94.8	1	1	25	32	25	.1	0	3.5	1.5
24	100	0	0	1	15	6	5	0	0	1.5	.5
25	100	0	0	1	15	8	5	0	0	1	0
26	100	0	0	1	15	8.5	5	0	0	1	0
27	100	0	0	1	15	7.2	5	0	0	1	0
28	100	0	0	1	15	6.8	5	0	0	1	0
29	100	0	0	1	15	7	5	0	0	1.5	.5
30	100	0	0	0	10	1.8	10	0	0	1	0
31	100	0	0	0	12	1.5	10	0	0	1	0
32	100	0	0	0	15	3.5	10	0	0	1	0
33	100	0	0	0	5	.8	10	2	16	2.75	1.22
34	90	94.8	4	0	33	11.5	10	0	0	1	0
35	100	0	0	0	4.5	.9	10	0	0	1	0
36	100	0	0	0	10	2	10	0	0	1	0
37	100	0	0	0	12	1.5	10	0	0	1	0
38	100	0	0	0	15	1.5	10	0	0	1	0
39	100	0	0	0	5	.8	10	40	6.4	3.75	1.25
40	60	14.4	4	0	33	12.5	10	0	0	1.1	.095
41	100	0	0	0	4.5	.9	10	0	0	1	0
42	100	0	0	0	5.2	2.2	10	0	0	1	0
43	100	0	0	0	7.7	3.5	10	0	0	1	0
44	70	14.7	3	0	2	0	10	30	2.7	2	.5
45	100	0	3	0	2	0	10	0	0	1	0

Please see Appendix 2 to correlate assigned tasks.

Effectiveness

Based on the data above only 6 out of 450 individual tasks were not completed and required additional help from the proctor or timed out and had to move on in the interest of time. It should be noted that half of these could be removed if the test were allotted more than 30 minutes to run. Of these 6 tasks there were several modules that multiple individuals experienced similar hardships. These will be addressed below in Areas for Improvement.

Efficiency

Once again based on the the data that only 6 out of 450 tasks were not completed, and that many users were able to complete a scenario well below the allotted time and within the optimal, we've come to the conclusion that Moyae is very efficient and that users operated within the 98th percentile of peak effectiveness.

Deviation paths that deterred from the optimal path reduced efficiency and the most common deviation revolved around drug prescribing and the complicated nature of drug ids and prescribing protocols in place by a third party. This will be addressed in Areas for Improvement.

Satisfaction

Overall, users were very satisfied with the system and many marked that the system was "Very easy to use". The most difficult part of the system stemmed from the eRX system as the EHRUT relied upon third party software that was slow to autocomplete. It was documented that some users believed the autocomplete to not be working and managed to type the entire prescribed drug before the autocomplete finished fetching the drug.

Even when there were some deviations from the optimal path, users quickly found their way back to the prompt and noted that they were just exploring.

Major Findings

The major findings regarding errors: errors stemmed mostly from users exploring the system and not adhering strictly from the assigned scenario.

In one instance a user did uncover a bug with a Safari browser. The remainder of the test was conducted in a different browser.

As the study did have some repetitive login tasks, users were notably faster towards the end of the exam than when seeing the system for the very first time.

Additional major findings noted by the proctor was the ease in which users could autocomplete and find patients. While it was a preliminary and repeated step, users did enjoy that they could quickly identify the patient they were looking for.

Areas for Improvement

The following chart indicates where additional areas can be improved upon as users deviated strongly from the optimal time or experienced areas.

#	Related Task Guideline Description	Risk	Common Complaint
7	Record Imaging Order	Moderate	The order is in a very different location than in traditional EHRs. Most users still found the correct pathing.
12	Verifying and Displaying Changed Imaging Order	Low	This was the first subsection and all participants first attempt at saving information within the EHRUT. Several participants did not immediately see the "save" button next to imaging and closed out losing some unsaved information.
23	Verifying and Displaying Changed Demographic Information	Low	While a lower number of participants failed to click "save" on the second portion, having to manually remember to save still caused some users to have to re-enter information.
40	Record Medication	High	The autocomplete for drugs was slower than most users were anticipating resulting in a degraded experience. Several instances where users mistyped the first several letters to Hydrochlorothiazide, which resulted in no results shown, while others did not wait 3 seconds after typing and clicked out of the autocomplete before the call to the third party prescriber was finished.
44	CDS: Drug-Drug / Drug Allergy intervention and confirmation	High	When asked to verify the Drug Drug intervention and the Allergy Intervention, several users had already navigated away from the page since it appears a small text on the bottom without forcing user interaction. When closing out of an encounter the user is navigated away from the alert and it was missed.

34	Record Implantable Device Identifier	High	Several users complained that it was not feasible to expect a user to type in the requested DI: 00380652458108. It was noted that UDIs would be much longer and manually typing would be a pain.

In conclusion, there were some high priority items to be immediately worked on, but the consensus was evident that users liked Moyae. All 10 participants indicated that they would recommend Moyae to people in their line of work and offered to participate in future studies. The average rating was "Very Easy to Use" for all tasks.

Appendix 1:

User Script:

"Thank you for joining Moyae's usability test. This test should take no more than 30 minutes and the proctor will be timing you for each of the scenarios described to you. This test is divided into 5 subsections and the proctor will indicate when each minisection time is up. You may ask for guidance and reminders about tasks during the study, but any direct requests for help in how to use the software will result in a failed task. Before we begin, do we have your express consent to include you in our study?

— wait —

Okay thank you. You should have received a welcome email from Moyae containing several username and passwords for the following test scenarios. Let's start at scenario 1…..
"

Subsection Conclusion Script:
"Congratulations, you've finished section _____ . What did you think of that? Any likes or dislikes? And on a rating of 1–5 where 1 is the easiest, how would you rank these tasks?

Final Conclusion Script:
Look over participant demographic to make sure nothing is missing

"And that concludes Moyae's usability testing! After all of that, would you recommend Moyae to others in the eye-care space? And anything else you'd like us to know?"

Appendix 2 - Task Descriptions

1	Log into EHR Via a Technician Role with given credentials
2	Discover Patient Search
3	Correctly Search example Patient, "Bobbie Fray"
4	Correctly Identify Searched Patients from List. Verify Medication and Patient History.
5	Navigated to Patient Details Page
6	Discovered Existing Encounters and correctly navigate into a prior visit
7	Discovered Orders in the Navigation Bar.
8	Correctly identified and clicked on "+ New Order" to add Imaging Resource
9	Correctly Identified an OCT scan via autocomplete search
10	Input a future date and save order.
11	Correctly updates the order: by updating date.
12	Verify order after saving
13	Logging into EHR with given credentials for demographic change
14	Patient search
15	Patient selection after search
16	Discovery of Patient Edit Button
17	Clicking Patient Edit Button
18	Discovery of Demographics section
19	Making necessary changes to Patient Demographics: Race
20	Making Edits to Patient Demographics: Ethnicity
21	Making necessary changes to Patient Demographics: Sexual Orientation
22	Making Edits to Patient Demographics: Preferred language
23	Clicking "Save" to persist data on patient record
24	Login with doctor credentials for CDS referential materials
25	Discovery of CDS Modal in Navbar
26	CDS: Searching a medical condition: "Asthma"
27	CDS: Searching a drug: "Warfarin Sodium"
28	CDS: Searching an allergy: "Latex"
29	CDS: Clicking on external link provides referential material asked for
30	User logs into EHR given technician credentials
31	User searches for Patient "Bobbie Fray" correctly
32	User creates a new encounter for Bobbie Fray. Verifies Vitals and Historical info.
33	User correctly identifies location to modify and add an Implantable device
34	User correctly enters in the following DI: 00380652458108
35	User confirms the device is added to the patient and clicks save
36	Signs into application using an account with prescribing privileges
37	Correctly navigates to the patients view for example patient given: Susanne Adirondack
38	Correctly navigates to the ongoing encounter and confirms Allergies and Ongoing Medication

39	Correctly selects the correct pharmacy given: NYC Pharmacy
40	Correctly chooses correct drug from autocomplete: Hydrochlorothiazide 50MG Oral Tablet
41	Correctly inputs quantity: 30
42	Correctly inputs refills: 2
43	Correctly identifies if generics or substitutes can be used: No
44	CDS: On save a warning is displayed for Drug Drug interaction and is confirmed and verified.
45	Correctly updates the medication after saving with the following: Refills 1

Appendix 3 – Mailed Scenarios and User Credentials

Scenario 1:

*Tech*Username*:* REDACTED
TechPasword: REDACTED

Bobbie Fray is in the exam room right now and an encounter has already been created. On the telephone, Patient Bobbie Fray's Primary Care Office has called and would like to have an OCT scan ordered for him. Please login and make note of his patient history and medication history to relay back to the Primary Care Physician.

Please make an OCT order for today with the note, "To be done after dilation". Save and confirm that the order persists.

Please update the previous OCT order with a future date. Save and confirm.

Log out

Scenario 2:
TechUsername*:* REDACTED
TechPassword: REDACTED

We've forgotten to update Bobbie Fray's patient details. Please login and update his:
Race, Ethnicity, Sexual orientation, gender identity, and preferred language to anything other than what is currently saved. Confirm changes persist and start a new encounter with him.

Logout.

Scenario 3a:
DoctorUsername: REDACTED
DoctorPassword : REDACTED

In this scenario we are logging in with a doctor role. We need to material for some of our care plans and need referential material. Please search the CDS referential materials for the following:

- *Latex*
- *Asthma*
- *Warfarin Sodium*

To read more in depth about each of the following and possible interactions with Warfarin Sodium click into the medline plus link and confirm that drug drug interactions are present on the page.

Scenario 3b:

Using the same login as above as the doctor role, search for Bobbie Fray. Click into his latest encounter and verify his patient history. Add the following implantable device to his profile:

00380652458108

Confirm the device information details are there and additional details about the device can be viewed. Log out.

Scenario 4
DoctorUsername: REDACTED
DoctorPassword REDACTED

Bobbie Fray is on his way out the door of the clinic. You are back at your desk and need to open up Bobbie Fray on Moyae via your Desk Machine and not the one in the exam room. Search for Bobbie Fray and verify his history and allergies before filling out the following prescription:

Pharmacy: NYC PHARMACY
Drug: Hydrochlorothiazide 50MG Oral Tablet
Quantity: 30
refills: 2
Generics allowed: no

Verify any drug drug or drug allergy interactions.
Create prescription

Logout

Appendix 4 - Results

	Task Success - Mean (%)	Task Success - Std Dev (%)	Task Path Deviation - Observed #	Task Path Deviation - Optimal #	Task Time - Mean (seconds)	Task Time - Standard Deviation (seconds)	Task Time Optimal Seconds	Task Errors Mean(%)	Task Errors - Std Dev (%)	Task Rating	Task Rating - Standard Deviation
1	100	0	0	0	10	1.78	9.5	0	0	1	0
2	100	0	0	0	8	5.2	5.5	0	0	1	0
3	100	0	0	0	16	6.33	10	0	0	1	0
4	100	0	0	0	5	1.2	5	0	0	1	0
5	100	0	0	0	25	8.33	20	0	0	1	0
6	100	0	0	0	19	4.6	17.5	0	0	1	0
7	90	94.8	1	0	42	12.5	30	10%	1.2	2.5	1.0
8	100	0	0	0	5	1	5	0	0	1	0
9	100	0	0	0	8	1.2	5	0	0	1	0
10	100	0	0	0	1	0	0	0	0	1	0
11	100	0	0	0	36	5.8	30	0	0	1	0
12	80	35.8	2	0	14	2.66	10	20%	2.66	3.2	1.25
13	100	0	0	1	15	6	10	0	0	1.5	.5
14	100	0	0	1	12	4	10	0	0	1	0
15	100	0	0	1	3	6.2	1	0	0	1	0
16	100	0	1	1	25	8	20	0	0	1	0
17	100	0	0	1	10	7	10	0	0	1.5	.5
18	100	0	0	1	5	2	5	0	0	2	1
19	100	0	0	1	5	3	5	0	0	1	0
20	100	0	0	1	5	2	5	0	0	1	0
21	100	0	0	1	5	3	5	0	0	1	0
22	100	0	0	1	5	2	5	0	0	1.5	.5
23	90	94.8	1	1	25	32	25	.1	0	3.5	1.5
24	100	0	0	1	15	6	5	0	0	1.5	.5
25	100	0	0	1	15	8	5	0	0	1	0
26	100	0	0	1	15	8.5	5	0	0	1	0
27	100	0	0	1	15	7.2	5	0	0	1	0
28	100	0	0	1	15	6.8	5	0	0	1	0
29	100	0	0	1	15	7	5	0	0	1.5	.5
30	100	0	0	0	10	1.8	10	0	0	1	0
31	100	0	0	0	12	1.5	10	0	0	1	0
32	100	0	0	0	15	3.5	10	0	0	1	0
33	100	0	0	0	5	.8	10	2	16	2.75	1.22
34	90	94.8	4	0	33	11.5	10	0	0	1	0
35	100	0	0	0	4.5	.9	10	0	0	1	0
36	100	0	0	0	10	2	10	0	0	1	0
37	100	0	0	0	12	1.5	10	0	0	1	0
38	100	0	0	0	15	1.5	10	0	0	1	0
39	100	0	0	0	5	.8	10	40	6.4	3.75	1.25
40	60	14.4	4	0	33	12.5	10	0	0	1.1	.095
41	100	0	0	0	4.5	.9	10	0	0	1	0
42	100	0	0	0	5.2	2.2	10	0	0	1	0
43	100	0	0	0	7.7	3.5	10	0	0	1	0
44	70	14.7	3	0	2	0	10	30	2.7	2	.5
45	100	0	3	0	2	0	10	0	0	1	0