Medi-EHR v2.1

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SAFETY ENHANCED DESIGN

NIST 7742

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Executive Summary

This document is a Study to meet the *§170.315(g)(3) Safety-enhanced design (SED) criteria* for Meaningful Use 2015 Edition. As per the requirements 10 users matching the demographic criteria of Medi-EHR's user pool served as participants for this SED test.

The tests being conducted assesses the user interface of the EHR. This is done by having each user perform various role-specific tasks on Medi-EHR. The tasks as per the certification requirements included:

- *§ 170.315 (a)(1) Computerized provider order entry (CPOE) – medications*
- *§ 170.315 (a)(2) Computerized provider order entry (CPOE) – laboratory*
- *§ 170.315 (a)(3) Computerized provider order entry (CPOE) – diagnostic imaging*
- *§ 170.315 (a)(4) Drug-drug, drug-allergy interaction checks for CPOE*
- *§ 170.315 (a)(5) Demographics*
- *§ 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*

The testing was done over a remote session, 40-60 minutes per user. During each test, EHR operations (proctor) greeted the participant. Each participant signed an informed consent/release which were signed and stored in our records. They were offered a $25 gift card as an incentive for participation and were advised that the incentive would be given and should not impact their performance or feedback. They were also advised that if needed they can end the testing at any time.

Participants ranged from new, current, and previous users of Medi-EHR. Some had some experience with the current or previous version of the system, whereas others were using it for the first time. The proctor member introduced the test and instructed participants to complete a series of tasks (given incrementally) using the EHR Under Test (EHRUT).

During each test, the participant's screens were shared electronically, and the proctor recorded notes on paper and electronically. All participant data was de-identified.

The UCD process was based on NISTIR 7741, and various recommended benchmarks were used to evaluate the usability of the EHRUT. The following metrics were recorded:

- Number of tasks successfully completed within the allotted time without assistance.
- Time to complete each task.
- Number and types of errors.
- Path Deviation
- Satisfaction ratings of the system and its components
- System Usability Scale (SUS)

In addition to the recorded data, general feedback from the testers was gauged based on:

- Major findings
- Areas for improvement
- Participant's verbal comments

The results from the System Usability Scale (SUS) scored the overall satisfaction of the testers with the system and are reported at the end of this report.

INTRODUCTION

The EHR Under Test (EHRUT) tested for this study was Medi-EHR v2.1, a fully customizable EHR designed for outpatient practices, surgical centers, behavioral health practices and numerous other specialties. Medi-EHR Is a web-based system It can be accessed using any desktop or mobile browser. The database is powered by Oracle and the front end by Oracle apex. The system is designed to be intuitive and easy to use. The intended users of the system are physicians, physician assistants, medical/clinical assistants, therapists, social workers, nurses, administrative staff etc. The purpose of this testing was to simulate the environment within an outpatient practice and to record the performance of the testers within that scope.

The purpose of this study is to evaluate the usability of the EHR and to collect data demonstrating its simplicity and intuitiveness.

METHOD

Participants

A total of 10 participants were tested. Medi-EHR team members contacted the staff of numerous practices and facilities to recruit potential candidates.

None of the Participants were from the Medi-EHR, LLC organization. All testers received the same instructions and performed the same tasks. A diverse group of participants was chosen from the general age range of the system is user pool with varying education and genders. Details can be found in Table 1 – It should be noted that a patient identifier has been used to protect the identities of the participants.

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Total Number and Participants Details

The total number of participants was 10. Their details are indicated in the below table:

Table 1: Participants Details

Participant Identifier	Gender	Age	Education	Occupation/Role	Professional Experience (months)	Computer Experience (months)	Product Experience (months)	Assistive Technology Needs
ID01	Male	30-39	Master's degree	Physician Assistant	192	240	48	None
ID02	Female	20-29	Bachelor's degree	Medical or Physician Assistant Student	15	15	1	None
ID03	Male	30-39	Master's degree	Office Admin or Executive	60	140	60	None
ID04	Male	20-29	Doctorate degree	Medical or Physician Assistant Student	80	240	60	None
ID05	Female	20-29	Doctorate degree	Office Admin or Executive	48	60	48	None
ID06	Male	30-39	Doctorate degree	Medical or Physician Assistant Student/Clinical Assistant	10	10	10	None
ID07	Female	30-39	High school graduate, diploma or equivalent	Office Admin or Executive	96	156	96	None
ID08	Male	30-39	Bachelor's degree	Clinical or Medical Assistant	48	24	12	None
ID09	Female	40-49	2 years of college	Office Admin or Executive	18	240	18	None
ID10	Male	40-49	Doctorate degree	Physician	240	25	120	None

All participants were scheduled for 60-minute sessions.

Study Design

The purpose of this study was to identify where the designers of the EHR were successful in providing an easy-to-use interface for the users. The study design also assisted in determining areas of improvement.

Each participant was provided with the same instructions. The system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

- Number of tasks successfully completed within the allotted time without assistance.
- Time to complete each task.
- Number and types of errors.
- Path Deviation
- Satisfaction ratings of the system and its components
- System Usability Scale (SUS)

Additional information about the various measures can be found in the Usability Metrics section of this report.

Tasks

The standardized tasks were as follows:

Criteria 170.315(a)(1) CPOE – Medications

A.1.1 Record medication order via CPOE
A.1.2 Change medication order via CPOE
A.1.3 Display changed CPOE medication order

Criteria 170.315(a)(2) CPOE – Laboratory

A.2.1 Record Lab Order via CPOE
A.2.2 Change Lab Order via CPOE
A.2.3 Display changed CPOE Lab order

Criteria 170.315(a)(3) CPOE – Radiology

A.3.1 Record Diagnostic Imaging Order via CPOE
A.3.2 Change Diagnostic Imaging Order via CPOE
A.3.3 Display changed CPOE Diagnostic Imaging Order

Criteria 170.315(a)(4) Drug-Drug, Drug-Allergy Interaction Check

A.4.1 Using CPOE, trigger a drug-drug interaction by entering a new medication order
A.4.2 Using CPOE, trigger a drug-allergy interaction by entering a new medication order
A.4.3 Adjust the severity level of a displayed drug-drug interaction

Criteria 170.315(a)(5) Patient Demographics

A.5.1 Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity
A.5.2 Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation,gender identity
A.5.3 Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity

Criteria 170.315(a)(9) Clinical Decision Support

A.9.1 Add a CDS intervention and/or reference resource for each of the required elements
A.9.2 Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements
A.9.3 View the intervention/resource information using the Info-button standard for data elements in the problem list, medication list, and demographics
A.9.4 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
A.9.5 Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date

Criteria 170.315(a)(14) Implantable Device List

A.14.1 Record UDI
A.14.2 Change UDI Status
A.14.3 Access UDI, device description, identifiers, and attributes

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

B.2.1 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
B.2.2 Generate a new CCDA with reconciled data

Criteria 170.315(b)(3) E-Prescribing

B.3.1 Create new prescription
B.3.2 Change prescription (dosage or duration)
B.3.3 Cancel prescription
B.3.4 Refill Prescription
B.3.5 Receive fill status notification

Procedure

After arriving, participants were welcomed and greeted – their identity was verified and matched with a name on the participant schedule. Participants were then assigned a participant ID. Each participant was sent a consent/release form and asked to electronically sign the consent form. They were also advised that should they need to; they can stop the test at any time. Additionally, they were being given an incentive for participation, however the intent of the incentive was to encourage participation and should not impact their performance or their overall feedback regarding the system.

Participants were instructed to perform the tasks to the best of their abilities and as quickly as possible.

Verbal directions were given for each task and at the end of the directions the Proctor indicated '*Your time starts now'* and task timing began. Task time was stopped once the tester had successfully completed the task. This was assessed verbally i.e. the tester stated that the task had.

At the end, participants were thanked for their time and advised that a follow-up survey would be sent out i.e. *The System Usability Scale Questionnaire*.

Test Location

Testing was done remotely over zoom meetings.

Test Environment

Usability testing was conducted remotely, with participants interacting with the Medi-EHR software over Zoom. Using remote testing allowed the participants to use the Medi-EHR from their normal office/private location. Participants were emailed instructions on how to access the meeting online. Once in the meeting, they were given standardized credentials to log into the test environment (located on the live server).

- Computer type - PC
- Operating System – Windows 10
- Interaction style - a mouse and keyboard
- Description of the display including screen size, resolution and color settings – 21.5" with 1920x1080p HDR
- Set up of environment completed by vendor.
- System platform - 11G Oracle Database with Apex 5.1 on a Centos 7 Operating System
- Type of system (training/test database) - live with test environment.

Medi-EHR staff set up the test office per the default standardized system setup and configuration. Technically, the system performance (i.e., response time) was representative of what actual users would experience in a field implementation. If the user's system was unable to meet the requirements above, a virtual machine was set up to meet the requirements. However, it was not needed as all users met the standardized criteria.

Different patients were used for each participant performing the task to ensure accurate results.
Participants did not change any of the default system settings. The usability test setup provided a uniform experience for all participants.

Test Forms and Tools

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

1. Consent Statement
2. Usability Protocol, including the SUS.
3. Zoom

Examples of these documents can be found in the Appendices.

Usability Metrics

Per 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 easily. The goals of the test were to assess:

1. Effectiveness of Medi-EHR by measuring participant success rates and errors
2. Efficiency of Medi-EHR by measuring the average task time and noting Path Deviation
3. Satisfaction with Medi-EHR by measuring SUS ratings.

Data Scoring

Table 2 below details how tasks were scored, errors evaluated, and the time data analyzed.

Table 2: Details of how observed data was analyzed and scored.

TYPE	EXPLAINATION
Effectiveness: Task Success	If the task was completed successfully as in the user achieved the desired outcome, it was considered a success. Times were only recorded for successes. This is represented as a percentage.
Effectiveness: Task Failures	If the participant quit while performing the task, did not complete it as intended, performed it incorrectly, or required assistance the task was not considered a success.
Efficiency: Task Deviations	When using the system, different users will approach a task in different ways. The intuitiveness of the system should allow for various user types and approaches which in turn should lead the user through a generally similar workflow. If the user diverged from that workflow a deviation was recorded. Deviations were noted as going to the wrong page, opening the incorrect menu, selecting the wrong item, etc.
Efficiency: Task Time	Time started after the user was told that their time starts now and ended when they stated done or completed. If they did not say anything verbally then time was stopped upon witnessing the completion of the task over the remote session. Average time per task has been recorded in the data provided.
Satisfaction: Task Rating	Users were asked for verbal feedback on each task, along with feedback on each individual measure. They were also sent the system usability scale questionnaire to gauge the overall feedback regarding the system. A copy of the questionnaire has been added to the appendix.

Results

The results of the usability test were calculated according to the methods specified in the Usability Metrics section above. **The rating scale type used was the Likert Scale** and the Observed vs Optimal time deviations (sec) for each measure have been tabulated in Overall Results II.

The usability tests results are detailed below and should be analyzed within the scope of the Study and per the explanations provided:

Criteria 170.315(a)(1) CPOE – Medications

Data Analysis and Reporting

Table 3.1: Computerized Physician Order Entry (CPOE) – Medications Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviation Steps (Observed/optimal)	Mean	(SD)	Mean	(SD)
Record medication order via CPOE	10	100	0	20	7	12/11	30	67.49	4.3	0.95
Change medication order via CPOE	10	100	0	9	6	4/3	20	63.24	4.6	0.97
Display changed CPOE medication order	10	100	0	2	1	1/1	0	0.00	4.8	0.42

Discussion of Findings

The participants were given the following CPOE—Medications tasks:

A.1.1 Record medication order via CPOE
A.1.2 Change medication order via CPOE
A.1.3 Display changed CPOE medication order

Effectiveness

100% success rate indicating users were able to complete the respective medication tasks. By limiting the number of steps, we were able to minimize the Path Deviation and errors.

Efficiency

Participants completed the task as expected with some deviation.

Satisfaction

Comments indicated that most clinical users appreciated the clinically sound interface.

Major Findings

All participants found that the system was very easy to adapt and did not require much training.

Areas for Improvement

No significant areas of improvement were identified.

Criteria 170.315(a)(2) CPOE – Laboratory

Data Analysis and Reporting

Table 4.1: Computerized Physician Order Entry (CPOE) – Laboratory Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviation Steps (Observed/optimal)	Mean	(SD)	Mean	(SD)
Record Lab Order via CPOE	10	90	31.6	65	17	9/7	30	67.49	4.2	0.92
Change Lab Order via CPOE	10	100	0	26	7	5/5	20	63.25	4.1	0.86
Display changed CPOE Lab order	10	100	0	2	1	1/1	0	31.62	4	0.94

Discussion of Findings

The participants were given the following CPOE - Laboratory tasks:

A.2.1 Record Lab Order via CPOE
A.2.2 Change Lab Order via CPOE
A.2.3 Display changed CPOE Lab order

Effectiveness

The simple design elements of the lab order workflow were extremely effective.

Efficiency

All participants completed the task as expected with minimal deviation.

Satisfaction

Comments indicated that the system performed within expected parameters.

Major Findings

All participants found that the lab orders were simple to create and edit.

Areas for Improvement

Minimal suggestions for improvement were provided by the testers.

Criteria 170.315(a)(3) CPOE – Radiology

Data Analysis and Reporting

Table 5.1: Computerized Physician Order Entry (CPOE) – Radiology Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Record Diagnostic Imaging Order via CPOE	10	100	0	36	6	7/7	30	67.49	4.4	0.84
Change Diagnostic Imaging Order via CPOE	10	100	0	12	6	6/5	20	63.25	4.1	0.88
Display changed CPOE Diagnostic Imaging Order	10	100	0	1	0	1/1	10	31.62	4.6	0.70

Discussion of Findings

The participants were given the following CPOE - Radiology tasks:

A.3.1 Record Diagnostic Imaging Order via CPOE
A.3.2 Change Diagnostic Imaging Order via CPOE
A.3.3 Display changed CPOE Diagnostic Imaging Order

Effectiveness

All users were able to perform this task with great ease.

Efficiency

The common elements between the previous 2 measures allowed users to complete this task with greater accuracy.

Satisfaction

Comments indicated that users appreciated the common elements between the various order pages.

Major Findings

There were no reportable findings.

Areas for Improvement

No significant areas of improvement were identified.

Criteria 170.315(a)(4) Drug-Drug, Drug-Allergy Interaction Check

Data Analysis and Reporting

Table 6.1: Drug-Drug, Drug-Allergy Interaction Check Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Using CPOE, trigger a drug-drug interaction by entering a new medication order	10	90	31.62	53	18	14/13	30	48.30	4.3	0.67
Using CPOE, trigger a drug-allergy interaction by entering a new medication order	10	100	0	38	7	13/13	30	67.49	3.9	0.86
Adjust the severity level of a displayed drug-drug interaction	10	100	0	9	3	4/4	10	31.62	4.2	1.03

Discussion of Findings

The participants were given the following Drug-Drug, Drug-Allergy Interaction Check tasks:

A.4.1 Using CPOE, trigger a drug-drug interaction by entering a new medication order
A.4.2 Using CPOE, trigger a drug-allergy interaction by entering a new medication order
A.4.3 Adjust the severity level of a displayed drug-drug interaction

Effectiveness

The respective task was completed with a variable success rate, however the navigation through various screens did account for additional deviations and errors. One of the users was only partially able to complete the task.

Efficiency

The tasks were successfully completed despite a few errors.

Satisfaction

Users appeared satisfied with the workflow.

Major Findings

None

Areas for Improvement

Despite the lack of negative feedback, the comparatively higher errors indicated that tightening up the flow could improve the interface.

Criteria 170.315(a)(5) Patient Demographics

Data Analysis and Reporting

Table 7.1: Patient Demographics Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100	0	52	18	13/12	30	94.87	4.2	0.92
Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100	0	11	2	9/9	20	42.16	4.4	0.843
Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	100	0	2	1	1/1	0	0	4.6	0.51

Discussion of Findings

The participants were given the following Patient Demographics tasks:

A.5.1	Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, genderidentity
A.5.2	Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity
A.5.3	Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity

Effectiveness

A 100% success rate was achieved in spite of one of the users struggling to locate a field on the page. The overall score indicates that the users were able to complete the respective demographic tasks.

Efficiency

All participants completed the task as expected with minimal deviation.

Satisfaction

Comments indicated that the system performed within expected parameters.

Major Findings

All participants found that the system was very easy to adapt and did not require much training.

Areas for Improvement

No significant areas of improvement were identified.

Criteria 170.315(a)(9) Clinical Decision Support

Data Analysis and Reporting

Table 8.1: Clinical Decision Support Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Add a CDS intervention and/or reference resource for each of the required elements	10	80	42.16	60	18	32/20	40	69.92	3.9	1.29
Trigger the CDS interventions/ resources added using the applicable data elements from each of the required elements	10	100	0	43	5	25/25	10	31.62	4.1	1.1
View the intervention/resource information using the Info-button standard for data elements in the problem list, medication list, and demographics	10	100	0	3	1	3/3	10	31.62	4.5	0.71

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	70	100	0	10	2	19/18	20	42.16	4	0.67
Access the following attributes for one of the triggered CDS interventions/ resources: bibliographic citation, developer, funding source, release/ revision date	10	100	0	2	1	3/3	10	31.62	4.2	1.03

Discussion of Findings

The participants were given the following Clinical Decision Support tasks:

A.9.1 Add a CDS intervention and/or reference resource for each of the required elements:
1. Problem list
2. Medication list
3. Medication Allergy List
4. At least one Demographic
5. Laboratory Test
6. Vital Signs
7. And a combination of at least 2 of the elements listed above

A.9.2 Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements

A.9.3 View the intervention/resource information using the Info-button standard for data elements in the problem list, medication list, and demographics

A.9.4 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

A.9.5 Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date

Effectiveness

The CDS tasks were effectively however some users had difficulty understanding the workflow.

Efficiency

A logical step by step flow accounted for the efficiency of this measure for users who were successful.

Satisfaction

Users were surprised by the numerous uses of this feature within their individual practices/facilities.

Major Findings

All participants were able to navigate the flow without too many deviations, despite the number of steps of this task.

Areas for Improvement

None were noted.

Criteria 170.315(a)(14) Implantable Device List

Data Analysis and Reporting

Table 9.1: Implantable Device List Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Record UDI	10	90	31.62	58	17	9/8	30	67.49	4.4	0.97
Change UDI Status	10	100	0	3	2	2/2	0	0.00	4	0.82
Access UDI, device description, identifiers, and attributes	10	100	0	2	1	1/1	0	0.00	4.6	0.52

Discussion of Findings

The participants were given the following Medication Allergy List tasks:

A.14.1 Record UDI
A.14.2 Change UDI Status
A.14.3 Access UDI, device description, identifiers, and attributes

Effectiveness

The devices were added, edited, and accessed with a fair success rate.

Efficiency

Tasks were completed efficiently.

Satisfaction

Users expressed displeasure at the general complexity of device codes but were still able to perform the tasks

Major Findings

There were no major findings

Areas for Improvement

None reportable

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

Data Analysis and Reporting

Table 10.1: Clinical Information Reconciliation and Incorporate Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
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	90	31.62	75	18	9/9	20	42.16	4.2	0.79
Generate a new CCDA with reconciled data	10	100	0	10	5	4/4	10	31.62	4.1	1.10

Discussion of Findings

The participants were given the following Medication Allergy List tasks:

B.2.1 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

B.2.2 Generate a new CCDA with reconciled data

Effectiveness

The CCDA tasks were completed with an almost perfect success rate.

Efficiency

Due to the simplicity of the CCDA import and export, there were no deviations or error.

Satisfaction

The processing time of the import was a general source of dissatisfaction. The remainder of the flow was navigated with ease.

Major Findings

Users were able to adequately use the screens.

Areas for Improvement

Faster processing of the import files would lead to better outcomes for this measure.

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Criteria 170.315(b)(3) E-Prescribing

Data Analysis and Reporting

Table 11.1: E-Prescribing Task Results

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean	(SD)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Create new prescription	10	90	31.62	64	13	11/11	0	0	4.3	0.82
Change prescription (dosage or duration)	10	100	0	11	4	3/3	0	0	4.0	1.05
Cancel prescription	10	100	0	11	2	1/1	0	0	4.6	0.70
Refill Prescription	10	100	0	23	4	5/5	10	31.62	4.2	0.92
Receive fill status notification	10	100	0	3	1	1/1	0	0	4.1	0.99

Discussion of Findings

The participants were given the following Medication Allergy List tasks:

B.3.1 Create new prescription
B.3.2 Change prescription (dosage or duration)
B.3.3 Cancel prescription
B.3.4 Refill Prescription
B.3.5 Receive fill status notification

Effectiveness

With an excellent success rate, the prescription tasks were completed with expert effectiveness.

Efficiency

Testers enjoyed the vertical flow of the interface.

Satisfaction

Comments indicated that the integration of clinical and technological components was successful.

Major Findings

A top-down approach can be just as or possibly more effective than a wizard or screen-by-screen flow.

Areas for Improvement

None in this measure. However, the general positive feedback could be extrapolated to other pages in the EHR.

OVERALL RESULTS I

The results from the SUS (System Usability Scale) showed an over score of 87.

Per usability.gov the average SUS score is a 68. With 87 falling into the above average range

OVERALL RESULTS II

Task Time Deviation - Observed vs Optimal (in seconds) by measure

MEASURE	Task Time Deviation - Observed Seconds	Task Time Deviation - Optimal Seconds
Criteria 170.315(a)(1) CPOE – Medications		
A.1.1 Record medication order via CPOE	20	9
A.1.2 Change medication order via CPOE	10	4
A.1.3 Display changed CPOE medication order	2	1
Criteria 170.315(a)(2) CPOE – Laboratory		
A.2.1 Record Lab Order via CPOE	63	29
A.2.2 Change Lab Order via CPOE	20	10
A.2.3 Display changed CPOE Lab order	2	1
Criteria 170.315(a)(3) CPOE – Radiology		
A.3.1 Record Diagnostic Imaging Order via CPOE	39	18
A.3.2 Change Diagnostic Imaging Order via CPOE	11	5
A.3.3 Display changed CPOE Diagnostic Imaging Order	2	1
Criteria 170.315(a)(4) Drug-Drug, Drug-Allergy Interaction Check		
A.4.1 Using CPOE, trigger a drug-drug interaction by entering a new medication order	50	23
A.4.2 Using CPOE, trigger a drug-allergy interaction by entering a new medication order	32	16
A.4.3 Adjust the severity level of a displayed drug-drug interaction	26	13
Criteria 170.315(a)(5) Patient Demographics		
A.5.1 Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	49	23
A.5.2 Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	10	5
A.5.3 Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	2	1
Criteria 170.315(a)(9) Clinical Decision Support		

A.9.1 Add a CDS intervention and/or reference resource for each of the required elements	62	28
A.9.2 Trigger the CDS interventions/resources added using the applicable data elements from each of the required elements	40	18
A.9.3 View the intervention/resource information using the Info-button standard for data elements in the problem list, medication list, and demographics	7	3
A.9.4 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	18	8
A.9.5 Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date	3	1
Criteria 170.315(a)(14) Implantable Device List		
A.14.1 Record UDI	49	23
A.14.2 Change UDI Status	2	1
A.14.3 Access UDI, device description, identifiers, and attributes	2	1
Criteria 170.315(b)(2) Clinical Information Reconciliation and Incorporate		
B.2.1 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	30	15
B.2.2 Generate a new CCDA with reconciled data	8	4
Criteria 170.315(b)(3) E-Prescribing		
B.3.1 Create new prescription	28	13
B.3.2 Change prescription (dosage or duration)	10	4
B.3.3 Cancel prescription	10	5
B.3.4 Refill Prescription	21	10
B.3.5 Receive fill status notification	5	2

Appendices

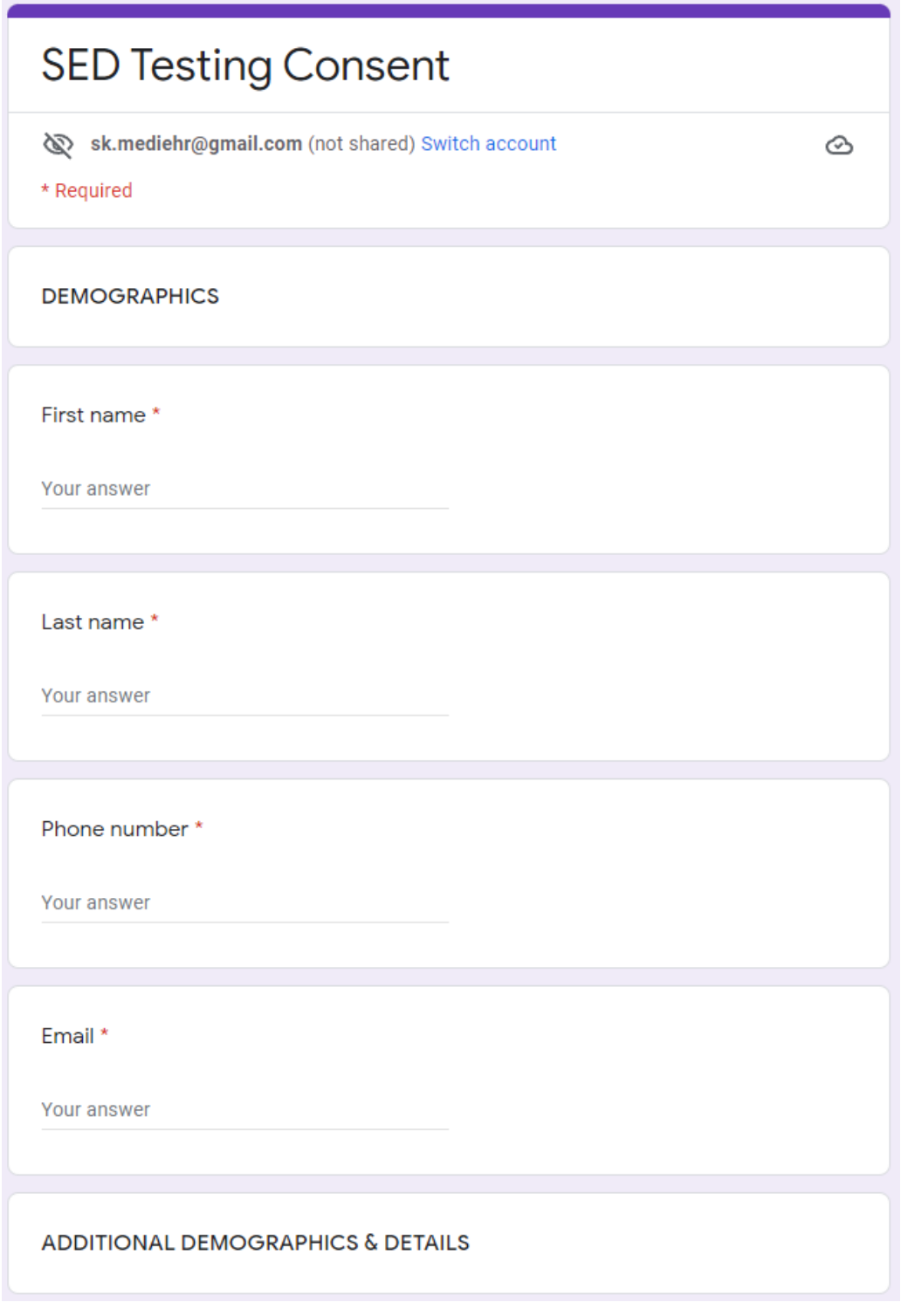
The following appendices include supplemental data for this usability test report. Following is a list of the appendices provided:

Appendix A | Participant Consent with Questionnaire

Appendix B | Participant Instructions Sample

Appendix C | System Usability Scale Questionnaire

Appendix A | Participant Consent with Questionnaire



SED Testing Consent

sk.mediehr@gmail.com (not shared) Switch account

* Required

DEMOGRAPHICS

First name *

Your answer

Last name *

Your answer

Phone number *

Your answer

Email *

Your answer

ADDITIONAL DEMOGRAPHICS & DETAILS

What is your current Gender? *

- ○ Male
- ○ Female
- ○ Other: _____

What is your highest education? *

- ○ High school graduate, diploma or equivalent
- ○ Associate degree
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctorate degree (e.g., MD, DNP, DMD, PhD)
- ○ Other: _____

What is your age range? *

- ○ 20-29
- ○ 30-39
- ○ 40-49
- ○ 50-59

What is your current job title/role? *

- ◯ Physician
- ◯ Physician Assistant
- ◯ Nurse or Nurse Practitioner
- ◯ Clinical or Medical Assistant
- ◯ Medical or Physician Assistant Student
- ◯ Office Admin or Executive

How many month(s) of computer experience do you have? *

Your answer

How many month(s) of professional experience do you have in this role? *

Your answer

How long (in months) have you been working in this role? *

Your answer

How many month(s) of experience do you have using Medi-EHR? *

Your answer

CONSENT(S)

Any incentive provided to participate in this study will not impact my performance: *

- ◯ Yes, I was given an incentive and I agree to the above statement
- ◯ I did not receive an incentive

Do you agree to keep details about this testing confidential? *

- ◯ I agree with the above statement

Do you grant Medi-EHR, LLC permission to record details of this usability test session and use this recording for internal use only for the purpose of improving the products being tested and for meaningful use certification? *

- ◯ I agree with the above statement

Electronically signed by: *
Please enter your full name

Your answer

*

Date Time

mm/dd/yyyy : AM

Appendix B | Sample Orientation

Introduction

Thank you for your participation in this study. The purpose of this study is to evaluate the ease of use of MDH per the requirements of the Office of the National Coordinator (ONC). You have been given an incentive to participate in this research, however this should not impact your performance or feedback in any way. Should it be necessary, you may end this session at any time.

Before I explain the format of the study, would you like to express any concerns? Or ask any questions?

Pause

Over the next hour, I will be asking you to perform a number of tasks in the EHR. These tasks will be used to determine how easy and intuitive the system is to use. I'll be documenting the time it takes for you to perform tasks along with any deviations or errors. You will be given a verbal explanation before each task and the steps you will have to follow, please follow them to the best of your abilities. After verbal instructions are given, I will say '*your time starts now*' which means that you can now proceed with the task. Once you finish, please say done or completed.

Any and all information collected will be kept confidential and it will only be used for the purposes of this study.

Shortly after this meeting began, I sent you an email. Please take a moment to check your email and sign and fill out the consent and questionnaire.

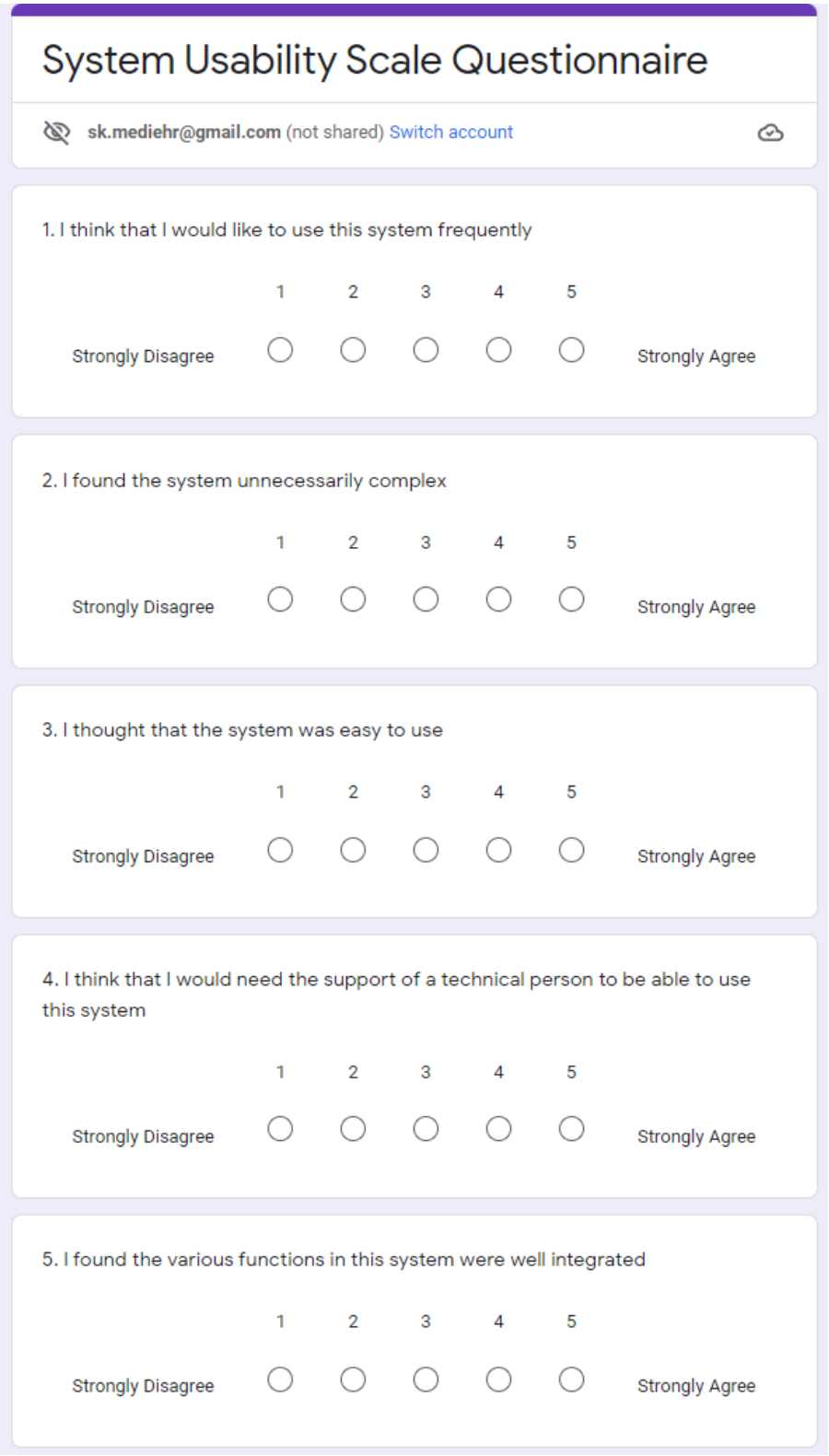
Feel free to let me know if you have any questions or concerns about the consent or questionnaire.

Pause

Do you have any questions or concerns before we begin?

Pause

Appendix C | System Usability Scale Questionnaire



System Usability Scale Questionnaire

sk.mediehr@gmail.com (not shared) Switch account

1. I think that I would like to use this system frequently

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2. I found the system unnecessarily complex

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3. I thought that the system was easy to use

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

4. I think that I would need the support of a technical person to be able to use this system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

5. I found the various functions in this system were well integrated

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

6. I thought there was too much inconsistency in this system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

7. I would imagine that most people would learn to use this system very quickly

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

8. I found the system very cumbersome to use

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

9. I felt very confident using the system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

10. I needed to learn a lot of things before I could get going with this system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

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SAFETY ENHANCED DESIGN

NIST 7742

§170.315(b)(11) Decision Support Interventions

Date of testing: 12.02.24 – 12.05.24
Date report was prepared: 12.07.24

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Table of Contents

INTRODUCTION

This study, a follow-up to a previous Safety Enhanced Design (SED) study, builds upon similar modalities and processes to evaluate the usability and effectiveness of a Decision Support Interventions (DSI) system in alignment with §170.315(b)(11) of the Health IT Certification Program. Participants completed tasks such as configuring interventions, triggering rules, and exporting feedback, with performance assessed against optimal metrics. Additionally, a System Usability Scale (SUS) questionnaire captured user perceptions of ease of use, complexity, and confidence. The analysis provides insights into task success rates, deviations from optimal performance, and user satisfaction to ensure certification compliance and identify areas for improvement. The intended users of the system are physicians, physician assistants, medical/clinical assistants, therapists, social workers, nurses, administrative staff etc.

METHOD

Participants

A total of 10 participants were tested. The Medi-EHR SED team reached out to the staff of various practices and facilities to recruit potential candidates, along with the addition of a few candidates who had no experience with the system. A variety of candidates were chosen to ensure diverse representation, including varying levels of experience with electronic health record systems, professional roles, and familiarity with clinical workflows. This approach aimed to provide a comprehensive evaluation of the system's usability across different user demographics and expertise levels.

Total Number and Participants Details

Participant Identifier	Gender	Age	Education	Occupation/Role	Professional Experience (months)	Computer Experience (months)	Product Experience (months)	Assistive Technology Needs
ID01.B11	Male	40-49	Bachelor's degree	Physician Assistant	216	288	96	None
ID02.B11	Female	20-29	High school graduate, diploma or equivalent	Office Admin or Executive	120	100	0	None
ID03.B11	Female	50-59	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Physician	240	300	192	None
ID04.B11	Male	40-49	Bachelor's degree	Office Admin or Executive	40	240	40	None
ID05.B11	Female	30-39	Bachelor's degree	Office Admin or Executive	168	216	0	None
ID06.B11	Male	30-39	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Office Admin or Executive	144	144	144	None
ID07.B11	Female	20-29	Master's degree	Physician Assistant	20	20	24	None
ID08.B11	Female	50-59	Associate degree	Office Admin or Executive	200	200	100	None
ID09.B11	Male	30-39	Master's degree	Office Admin or Executive	192	276	96	None
ID10.B11	Female	20-29	Bachelor's degree	Office Admin or Executive	120	144	12	None

Table D1: Participants Details

All participants were scheduled for 30-minute sessions.

Study Design

The study aimed to assess the effectiveness of the EHR's user interface design in providing an easy-to-use experience. It also sought to identify areas for potential improvement. Each participant was provided with the same instructions. The system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

- Number of tasks successfully completed within the allotted time without assistance.
- Time to complete each task.
- Number and types of errors.
- Path Deviation
- Satisfaction ratings of the system and its components
- System Usability Scale (SUS)

Additional information about the various measures can be found in the Usability Metrics section of this report.

Tasks

The standardized tasks were as follows:

Criteria 170.315(b)(11) Decision Support Interventions

B.11.1 Add/Modify Source Attributes - *Low Risk*

Users accessed the CDS rules and added the source attributes as follows:

- Bibliographic Citation of the Intervention
- Developer of the Intervention
- Release Date of the Intervention
- Revision Date for Recommendation
- Use of Race Data
- Use of Ethnicity Data
- Use of Language Data
- Use of Sexual Orientation Data
- Use of Gender Identity Data
- Use of Sex Data
- Use of Date of Birth Data

B.11.2 Trigger CDS Rule and add feedback - *Moderate Risk*

Users triggered the CDS rule, accessed the rule and provided feedback per the parameters of the criteria:

- Location
- Action
- Feedback

B.11.3 Export Feedback - *Low Risk*

For their final task, users accessed the system report and exported feedback

Procedure

After arriving, participants were welcomed and greeted – their identity was verified and matched with a name on the participant schedule. Participants were then assigned a participant ID. Each participant was sent a consent/release form and asked to electronically sign the consent form. They were also advised that should they need to; they can stop the test at any time. Additionally, they were being given an incentive for participation, however the intent of the incentive was to encourage participation and should not impact their performance or their overall feedback regarding the system.

Participants were instructed to perform the tasks to the best of their abilities and as quickly as possible.

Verbal directions were given for each task and at the end of the directions the Proctor indicated '*Your time starts now*' and task timing began. Task time was stopped once the tester had successfully completed the task. This was assessed verbally i.e. the tester stated that the task had.

At the end, participants were thanked for their time and advised that a follow-up survey would be sent out i.e. *The System Usability Scale Questionnaire*.

Test Location

Testing was done remotely over zoom meetings.

Test Environment

Usability testing was conducted remotely, with participants interacting with the Medi-EHR software over Zoom. Using remote testing allowed the participants to use the Medi-EHR from their normal office/private location.
Participants were emailed instructions on how to access the meeting online. Once in the meeting, they were given standardized credentials to log into the test environment (located on the live server).

- Computer type - PC
- Operating System – Windows 10
- Interaction style - a mouse and keyboard
- Description of the display including screen size, resolution and color settings – 21.5" with 1920x1080p HDR
- Set up of environment completed by vendor.
- System platform - 11G Oracle Database with Apex 5.1 on a Centos 7 Operating System
- Type of system (training/test database) - live with test environment.

Medi-EHR staff set up the test office per the default standardized system setup and configuration. Technically, the system performance (i.e., response time) was representative of what actual users would experience in a field implementation. If the user's system was unable to meet the requirements above, a virtual machine was set up to meet the requirements. However, it was not needed as all users met the standardized criteria.

Different patients were used for each participant performing the task to ensure accurate results. Participants did not change any of the default system settings. The usability test setup provided a uniform experience for all participants.

Test Forms and Tools

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

1. Consent Statement
2. Usability Protocol, including the SUS.
3. Zoom

Examples of these documents can be found in the Appendices.

Usability Metrics

Per the **NISTIR 7741 - 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 easily. The goals of the test were to assess:

1. Effectiveness of Medi-EHR by measuring participant success rates and errors
2. Efficiency of Medi-EHR by measuring the average task time and noting Path Deviation
3. Satisfaction with Medi-EHR by measuring SUS ratings.

Data Scoring

Table 2 below details how tasks were scored, errors evaluated, and the time data analyzed.

TYPE	EXPLAINATION
Effectiveness: Task Success	If the task was completed successfully as in the user achieved the desired outcome, it was considered a success. Times were only recorded for successes. This is represented as a percentage.
Effectiveness: Task Failures	If the participant quit while performing the task, did not complete it as intended, performed it incorrectly, or required assistance the task was not considered a success.
Efficiency: Task Deviations	When using the system, different users will approach a task in different ways. The intuitiveness of the system should allow for various user types and approaches which in turn should lead the user through a generally similar workflow. If the user diverged from that workflow a deviation was recorded. Deviations were noted as going to the wrong page, opening the incorrect menu, selecting the wrong item, etc.
Efficiency: Task Time	Time started after the user was told that their time starts now and ended when they stated done or completed. If they did not say anything verbally then time was stopped upon witnessing the completion of the task over the remote session. Average time per task has been recorded in the data provided.
Satisfaction: Task Rating	Users were asked for verbal feedback on each task, along with feedback on each individual measure. They were also sent the system usability scale questionnaire to gauge the overall feedback regarding the system. A copy of the questionnaire has been added to the appendix.

Table 2: Details of how observed data was analyzed and scored.

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170.315(b)(11) Decision support interventions

Data Analysis and Reporting

Task Scores	N	Task Success (%)		Task Time (sec)		Path Deviation	Errors (%)		Rating	
Task	#	Mean	(SD)	Mean (SD)	Deviations (Observed/optimal)	Deviations (Observed/optimal)	Mean	(SD)	Mean	(SD)
Add/Modify Source Attributes	10	100	0	141 (45)	141/100	21/16	30	48	4.9	0.32
Trigger CDS Rule and add feedback	10	100	0	79 (14)	79/60	10/9	10	31	4.9	0.32
Export Feedback	10	100	0	29 (22)	29/20	3/3	0	0	5	0

Table D2: CDS Results (Note: one rating was calculated for all tasks)

Discussion of Findings

The participants were given the following tasks:

B.11.1 Add/Modify Source Attributes
B.11.2 Trigger CDS Rule and add feedback
B.11.3 Export Feedback

Effectiveness

All participants successfully completed the tasks, demonstrating the system's effectiveness in guiding users through critical workflows like adding or modifying source attributes, triggering rules, and exporting feedback. The error rates were minimal for most tasks, with zero errors observed in the "Export Feedback" task, indicating high accuracy in task execution.

Efficiency

Task times were close to the optimal thresholds, with "Export Feedback" being completed the fastest (29 seconds meantime) and Add/Modify Source Attributes taking the longest (141 seconds mean time). While efficiency was generally high, some deviations were noted, particularly in the Add/Modify Source Attributes task, with a higher standard deviation of 45 seconds.

Satisfaction

User satisfaction, as assessed via the SUS questionnaire, indicated positive perceptions of ease of use and system integration. Minor dissatisfaction emerged with task complexity, particularly for tasks requiring more steps, such as "Add Source Attributes."

Major Findings

1. Tasks were completed successfully by all participants, confirming the system's functional robustness.
2. Efficiency was high overall, but variability in task times suggests areas where workflows could be streamlined further.
3. Zero errors in simpler tasks like Export Feedback underscore the system's usability for straightforward operations.

Areas for Improvement

1. Complex Tasks: The Add/Modify Source Attributes task exhibited higher error rates (30%) and deviations from the optimal time, indicating room for improvement in workflow clarity or guidance.
2. Training Needs: Slight variability in performance suggests additional training could benefit users unfamiliar with the system.
3. Feedback Loop: Enhancing real-time guidance or alerts during task execution could further reduce deviations and improve efficiency.

Conclusion

This study builds upon the findings of the previous SED study, which demonstrated an overall System Usability Scale (SUS) score of **88.46**, indicating excellent usability. Consistent with these results, the current study reaffirmed the system's high level of effectiveness, with all participants successfully completing the tasks. Furthermore, the system showcased robust efficiency, particularly in straightforward tasks like "Export Feedback," where no errors were observed, and task times were near optimal. However, tasks requiring more steps, such as "Add Source Attributes," highlighted areas for potential refinement, including workflow clarity and user guidance.

User satisfaction remained strong, as indicated by SUS responses, with participants noting the system's ease of use and integration of functions. While some variability in task completion times and minor error rates suggest opportunities for improvement, these findings underline the system's overall effectiveness in supporting diverse user groups, including those with no prior experience.

The study confirms that the Decision Support Interventions (DSI) system aligns with the requirements of §170.315(b)(11) of the Health IT Certification Program, demonstrating its readiness for real-world application. Future enhancements should focus on further optimizing workflows for complex tasks and strengthening user training, ensuring continued alignment with usability and performance standards.

Appendices

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

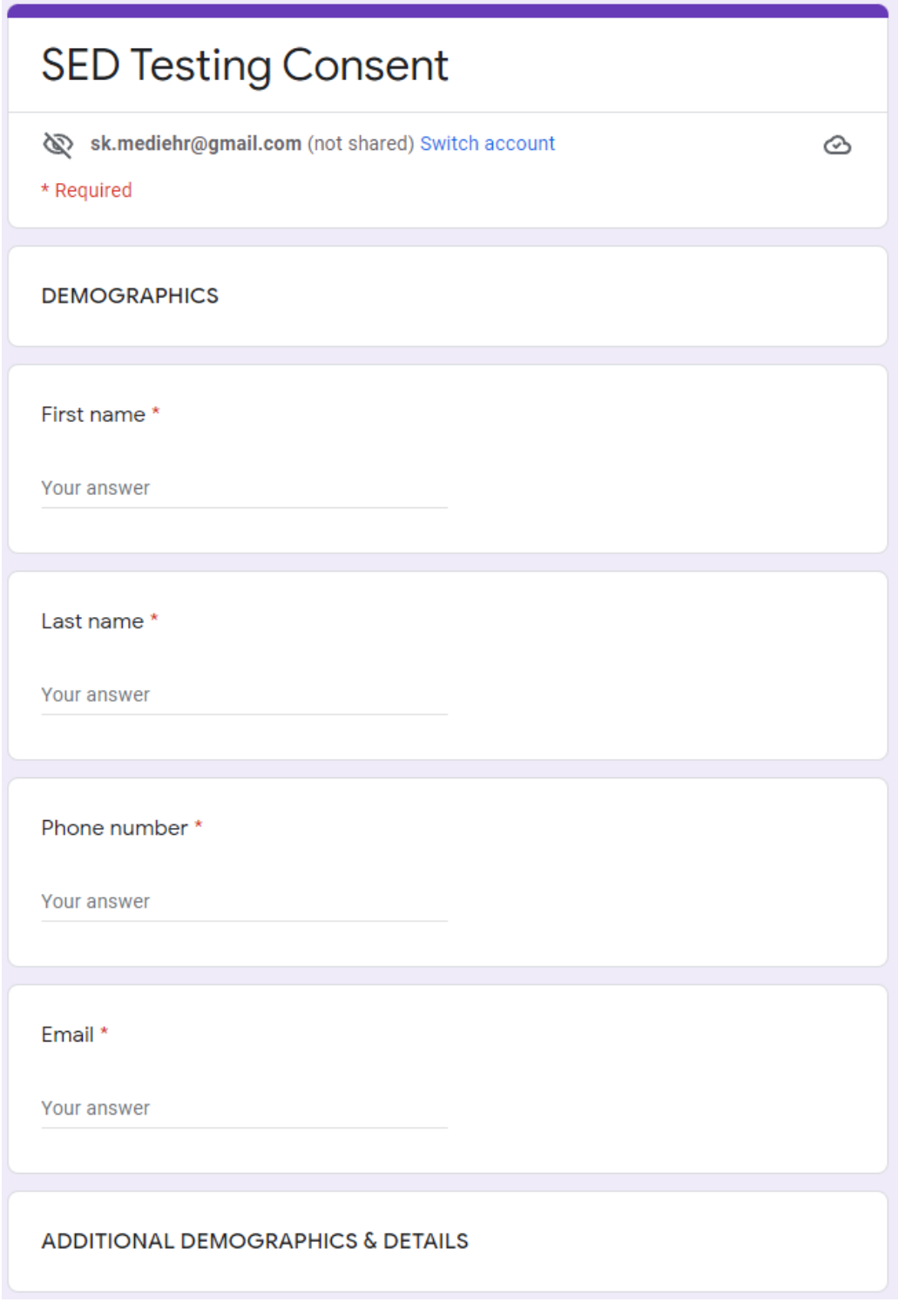
Appendix A | Participant Consent with Questionnaire

Appendix B | Sample Orientation & Participant Instructions

Appendix C | System Usability Scale Questionnaire

Appendix D | Task Rating Questionnaire

Appendix A | Participant Consent with Questionnaire



SED Testing Consent

sk.mediehr@gmail.com (not shared) Switch account

* Required

DEMOGRAPHICS

First name *

Your answer

Last name *

Your answer

Phone number *

Your answer

Email *

Your answer

ADDITIONAL DEMOGRAPHICS & DETAILS

What is your current Gender? *

- ○ Male
- ○ Female
- ○ Other: _____

What is your highest education? *

- ○ High school graduate, diploma or equivalent
- ○ Associate degree
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctorate degree (e.g., MD, DNP, DMD, PhD)
- ○ Other: _____

What is your age range? *

- ○ 20-29
- ○ 30-39
- ○ 40-49
- ○ 50-59

What is your current job title/role? *

- ◯ Physician
- ◯ Physician Assistant
- ◯ Nurse or Nurse Practitioner
- ◯ Clinical or Medical Assistant
- ◯ Medical or Physician Assistant Student
- ◯ Office Admin or Executive

How many month(s) of computer experience do you have? *

Your answer

How many month(s) of professional experience do you have in this role? *

Your answer

How long (in months) have you been working in this role? *

Your answer

How many month(s) of experience do you have using Medi-EHR? *

Your answer

CONSENT(S)

Any incentive provided to participate in this study will not impact my performance: *

- ◯ Yes, I was given an incentive and I agree to the above statement
- ◯ I did not receive an incentive

Do you agree to keep details about this testing confidential? *

- ◯ I agree with the above statement

Do you grant Medi-EHR, LLC permission to record details of this usability test session and use this recording for internal use only for the purpose of improving the products being tested and for meaningful use certification? *

- ◯ I agree with the above statement

Electronically signed by: *
Please enter your full name

Your answer

*

Date mm/dd/yyyy

Time : AM

Appendix B | Sample Orientation & Participant Instructions

Introduction

Thank you for your participation in this study. The purpose of this study is to evaluate the ease of use of MDH per the requirements of the Office of the National Coordinator (ONC). You have been given an incentive to participate in this research, however this should not impact your performance or feedback in any way. Should it be necessary, you may end this session at any time.

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Pause

Over the next hour, I will be asking you to perform a number of tasks in the EHR. These tasks will be used to determine how easy and intuitive the system is to use. I'll be documenting the time it takes for you to perform tasks along with any deviations or errors. You will be given a verbal explanation before each task and the steps you will have to follow, please follow them to the best of your abilities. After verbal instructions are given, I will say '*your time starts now*' which means that you can now proceed with the task. Once you finish, please say done or completed.

Any and all information collected will be kept confidential and it will only be used for the purposes of this study.

Shortly after this meeting began, I sent you an email. Please take a moment to check your email and sign and fill out the consent and questionnaire.

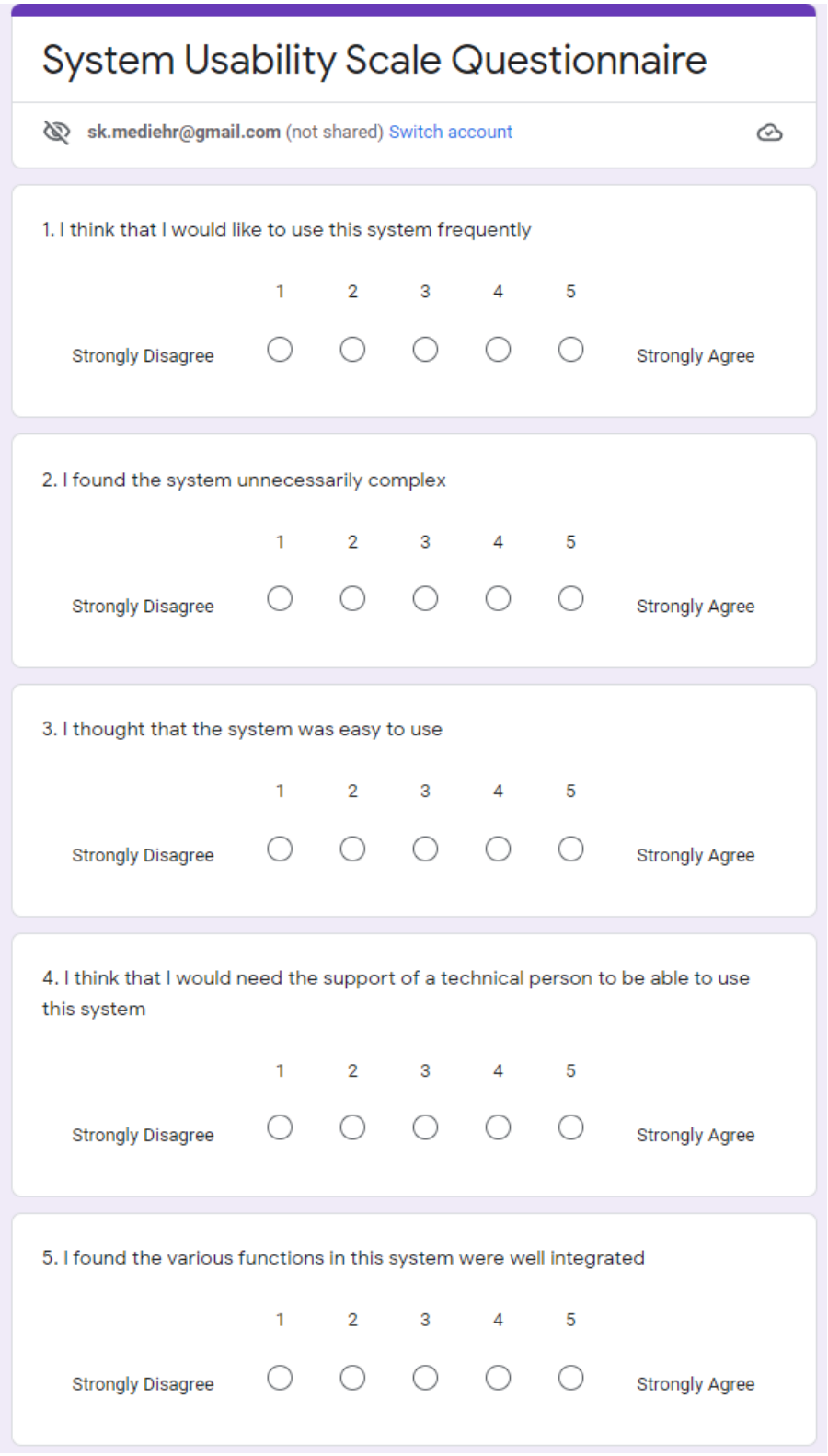
Feel free to let me know if you have any questions or concerns about the consent or questionnaire.

Pause

Do you have any questions or concerns before we begin?

Pause

Appendix C | System Usability Scale Questionnaire



System Usability Scale Questionnaire

sk.mediehr@gmail.com (not shared) Switch account

1. I think that I would like to use this system frequently

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

2. I found the system unnecessarily complex

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

3. I thought that the system was easy to use

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

4. I think that I would need the support of a technical person to be able to use this system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

5. I found the various functions in this system were well integrated

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

6. I thought there was too much inconsistency in this system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

7. I would imagine that most people would learn to use this system very quickly

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

8. I found the system very cumbersome to use

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

9. I felt very confident using the system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

10. I needed to learn a lot of things before I could get going with this system

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

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Appendix D | Task Rating Questionnaire

Task Rating

Sign in to Google to save your progress. Learn more

* Indicates required question

Enter your name: *

Your answer

Task 1 - Adding or Modifying the source attributes. *
This is the task where you copy pasted all the source attributes

Please rate this task where 1 means it was very complicated and 5 means it was very easy

	1	2	3	4	5	
Low (very complicated)	○	○	○	○	○	High (very easy)

Task 2 - Enter Feedback *
This is the task where you entered vitals and the clicked on the obesity pop-up. After that you picked a location and action and entered some feedback.
Please rate this task where 1 means it was very complicated and 5 means it was very easy

	1	2	3	4	5	
Low (very complicated)	○	○	○	○	○	High (very easy)

Task 3 - Export *
This is the task where you clicked on the download button on the bottom right corner of the table
Please rate this task where 1 means it was very complicated and 5 means it was very easy

	1	2	3	4	5	
Low (very complicated)	○	○	○	○	○	High (very easy)