

December 7, 2017

**Drummond Group, Inc.
13359 North Hwy 183
Austin, TX 78750**

Dear Sirs/Madams:

Claimpower, Inc. attests to the accuracy of the information contained in the attached Claimpower Safety-Enhanced Design Usability Report. The Safety- Enhanced Design Usability Report is being submitted as part of the EHR certification Requirements contained in 170.315(g)(3)- Safety Enhanced Design.

Sincerely,



Rajeev Thadani
President/CEO
Claimpower, Inc.

65 Harristown Road, Suite 204
Glen Rock, NJ 07452
Phone: (201)-447-4447

December 7, 2017

Drummond Group, Inc.
13359 North Hwy 183
Austin, TX 78750

Dear Sirs/Madams:

Claimpower, Inc. followed the principles of ISO 9241-210:2010 Ergonomics of human-system interaction -- Part 210: Human-centred design for interactive systems to guide this user testing.

Specifically, our work was guided by these six principles:

- The design is based upon an explicit understanding of users, tasks and environments.
- Users are involved throughout design and development.
- The design is driven and refined by user-centred evaluation.
- The process is iterative.
- The design addresses the whole user experience.
- The design team includes multidisciplinary skills and perspectives.

Sincerely,



Rajeev Thadani
President/CEO
Claimpower, Inc.

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 Glen Rock, NJ 07452
 Phone: (201)-447-4447

Claimpower Safety-Enhanced Design Usability Report

Report based on NISTIR 7742 Customized Common Industry Format Template for Electronic Health Record Usability Testing

PRODUCT	Claimpower Mobile EMR V6.0
DATES OF USABILITY TESTS	Multiple encounters between November 21 st , 2017 and December 4 th , 2017
DATE OF REPORT	December 7 th , 2017
REPORT PREPARED BY:	Claimpower, Inc. 65 Harristown Road, Suite 204 Glen Rock, NJ 07452

Claimpower Safety-Enhanced Design Usability Report

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Executive Summary

Claimpower, Inc’s approach to the design of our Mobile EMR has consistently been based on the principles detailed in of ISO 9241-210:2010 Ergonomics of human-system interaction -- Part 210: Human-centred design for interactive systems.

Claimpower’s Mobile EMR is intended for use by physicians, and their staff (Physician Assistants, Nurse Practitioners and Administrative staff) in an Ambulatory environment.

Claimpower conducts ongoing usability testing on all features of the Claimpower Mobile EMR (henceforth referred to as the EHRUT). This document relates to a study performed on select features of the EHRUT for purposes of completing the Safety-Enhanced Design requirements outlined in §170.315(g)(3). The purpose of this study was to test and validate the functionality and usability of specific features of the EHRUT and to obtain feedback in order to further enhance the design, development, and maintenance of these modules of the EHRUT.

The tests with each of the participants lasted about one hour and were conducted either in a face-to-face encounter or an on-line encounter using GoToMyPC. All face-to-face encounters took place in the offices of the participants, to best mimic how the software would be used in practice. The Test Environment was created on a Production Grade server, using a ‘Test’ database so as to create as close to a Production grade environment as possible.

We evaluated tasks that were selected based on the required criteria under Safety-Enhanced Design. The following EHRUT features and processes were tested as part of the tasks of this study:

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

The specific tasks presented for usability testing were the following and were presented to the participants based on their Role.

TASK DESCRIPTION	USER ROLE
Record a Problem to the problem list	PHYS/NP/PA
Change a problem on the problem list	PHYSICIAN/NP/PA
Display the active problem list	PHYSICIAN/NP/PA
Display the historical problem list	PHYSICIAN/NP/PA
Record a medication to the medication list	Physician/NP/PA/ADMIN
Change a medication on the medication list	PHYSICIAN/NP/PA/ADMIN
Display the active medication list	PHYSICIAN/NP/PA/ADMIN
Display the Historical Medication List	PHYSICIAN/NP/PA
Record a medication allergy	PHYSICIAN/NP/PA/ADMIN
Change a medication allergy	PHYSICIAN/NP/PA/ADMIN

Display the active medication allergy list	PHYSICIAN/NP/PA/ADMIN
Display the historical medication allergy list	PHYSICIAN/NP/PA
Add a CDS intervention and/or reference resource for: Problem list, Medications List, Medication Allergy Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date, 1 demographic, Laboratory Test, Vital signs, a combo of 2+ of these factors	PHYSICIAN/NP/PA
Trigger CDS interventions/resources from applicable data	PHYSICIAN/NP/PA
View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics	PHYSICIAN/NP/PA
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	PHYSICIAN/NP/PA
Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date	PHYSICIAN/NP/PA
Record UDI	PHYSICIAN/NP/PA
Change UDI Status	PHYSICIAN/NP/PA
Access UDI, device description, identifiers, and attributes	PHYSICIAN/NP/PA
Incorporate a CCD and conduct reconciliation of the medications, medication allergies, and problems in the CCD with the information currently in the patient's record	PHYSICIAN/NP/PA
Generate a new CCD with reconciled data	PHYSICIAN/NP/PA
Create new prescription	PHYSICIAN/NP/PA
Change prescription (dosage or duration)	PHYSICIAN/NP/PA
Cancel prescription	PHYSICIAN/NP/PA
Refill prescription	PHYSICIAN/NP/PA
Receive fill status notification	PHYSICIAN/NP/PA
Request and receive medication history information	PHYSICIAN/NP/PA
Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	PHYSICIAN/NP/PA/ADMIN
Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity,	PHYSICIAN/NP/PA/ADMIN
Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity,	PHYSICIAN/NP/PA/ADMIN

Findings

- The tested modules were largely found to be user friendly and relatively easy to use
- The general consensus was that the modules were easy to learn
- The participants were able to complete most tasks optimally

Areas of Improvement

- The Medication ordering and ePrescribing module can be enhanced to reduce clicks, be more intuitive, and run faster.
- The CCDA Reconciliation function was found to be difficult to use.
- The CDS could be better implemented throughout the system.

Introduction

The Claimpower EMR tested for these studies was the Claimpower EMR Version 6.0 (EHRUT). The EHRUT consists of various modules that allow clinicians in ambulatory outpatient practices to record and manage patient charts, as well as the ability to order medications, laboratory tests, and radiology tests. It also lets them perform a variety of other clinical and practice-management functions such as maintaining medication lists, recording immunizations, maintaining lists of drug allergies, and scheduling patient appointments, messaging, billing, interfacing with labs for receipt of lab results and integration with an Online patient portal. Clinicians can also use the EHRUT to send and receive patient info from other doctors.

The usability testing attempted to represent realistic exercises and conditions and focused primarily on the set of tasks and measures that are presented for certification under the Meaningful Use 2015 certification program and required for the 170.315(g)(3) measure.

Method

Participants

Five Physicians, 3 PA, 2 NP and 2 practice administrators served as participants (total of 12 participants). They used the EMR in simulated, but representative tasks. Participant names were replaced with Participant Identifiers so that an individual's data cannot be tied back to individual participants. All participants had prior experience with the EMR. A summary of the participant characteristics is provided below. All participants met the criteria of the intended users of the EMR.

ID	Gender	Age	Education	Occupation /Role	Professional Experience	Computer Experience	Product Experience
ID01	Male	40-49	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Doctor	120	180	36
ID02	male	40-49	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Doctor	130	180	2
ID03	male	60-69	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Doctor	153	180	26
ID04	male	40-49	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Doctor	180	180	62
ID05	Female	40-49	Doctorate degree (e.g., MD, DNP, DMD, PhD)	Doctor	117	220	9
ID06	Male	30-39	Trade/technical/vocational training	PA	102	192	4
ID07	Female	30-39	Trade/technical/vocational training	PA	90	138	30
ID08	Female	30-39	Trade/technical/vocational training	PA	50	86	11
ID09	Female	30-39	Trade/technical/vocational training	NP	47	107	15
ID10	Male	30-39	Trade/technical/vocational training	NP	52	162	26
ID11	Female	20-29	Bachelor's Degree	Admin	36	109	31
ID12	Female	20-29	Bachelor's Degree	Admin	28	107	30

Before each test, the participants were briefed on the testing protocols, and advised that they could withdraw from the test at any time. They were provided with the usual training resources provided to all users of the Claimpower Mobile EMR, like written training guides and online Help pages. All test participants had prior experience with the EMR.

Participants were introduced to the test and requested to complete the expected tasks as quickly as possible. Participants were not directly assisted in performing the tasks during the study.

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. In short, this testing serves as both a means to record or benchmark current usability, and also to identify areas where improvements can be made. Each participant used the system in their own location, but were 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 (%)
- Time to complete the tasks
- Number and types of errors
- Path deviations
- Participant's verbalizations
- Participant's satisfaction ratings of the tested modules

Tasks

The following test scripts were written for the tasks:

Scenario 1 – Patient A - Tasks: Record demographics (170.315 (a)(5))

- Myra Jones calls to set up an appointment. Open the scheduler and try to find them in the database
- You see that there are no patients that match your search, so click on the demographics button to create them in the system
- Enter in a birth date for the client
- Fill out Ethnicity
- Fill out Race
- Fill out Preferred Language
- Fill out Sexual Orientation
- Fill out Gender Identity
- Save and view your changes

Scenario 2 – Patient B - Tasks: View demographics (170.315 (a)(5)), Change demographics (170.315 (a)(5))

- Tyrque Smith has gone through some intense changes since their last appointment. They now have a different preferred language, sexual orientation, and gender identity. Update the demographics screen accordingly
- As luck would have it, their date of birth, birth sex, race, ethnicity, were previously entered incorrectly. Update those as well.
- Save and view your changes

Scenario 3– Patient A - Tasks: View medications/medication list (170.315(a)(1) & 170.315(a)(7)), View medication allergy list (170.315(a)(8)), Change medication/medication list (170.315(a)(1) & 170.315(a)(7)), Record medication/medication list (170.315(a)(1) & 170.315(a)(7)), Electronically prescribe (170.315(b)(3))

- As you talk with your client during the appointment, they state that they continue to have trouble sleeping. You decide to prescribe Lunesta. Open the “Launch” ePrescribe for “Myra Jones”
- You review the EMR’s active medication list and medication history list and realize the patient has been prescribed Ambien, 10 mg, as needed at bedtime.
- You also see the patient’s current medication allergy list and see they are allergic to Lunesta.
- In order to prevent prescribing more than one sleep agent (e.g., same-class polypharmacy) and avoid an allergic reaction, you discontinue the Ambien 10mg and you prescribe a new drug, trazodone, 150 mg tablet, as needed at bedtime.
- Upon completing the order send the prescription via eRx to the Surescripts Test Pharmacy.
- Verify the order was made by reviewing the new medication list.
- Access the ePrescribe tab to see the medication history screen. Click on the Trazodone record and click to add a Comment. You want to make note that this was prescribed over Lunesta because of a drug allergy, so type that into the comment box.
- Close the chart

Scenario 4 – Patient B - Tasks: View medication allergies (170.315(a)(8)), Record medication allergy (170.315(a)(8)), Change medication allergy (170.315(a)(8)), Order lab test (170.315(a)(2)), Record medication (170.315(a)(1)), View drug-allergy interactions (170.315(a)(4)), View drug-drug interactions (170.315(a)(4)), Change medication (170.315(a)(1)), Change the level of severity for drug-drug interactions (170.315(a)(4))

- Your patient comes in for their regular appointment. You discuss the current symptoms they have been experiencing. They mention they are having a mild allergic reaction of swelling when taking their Abilify. Open the “Allergies” form for “(name)”. Add Aripiprazole (medication name for Abilify brand) as an allergy to the chart with a severity of mild. Close the form after adding
- Open the “ePrescribe” form for “(name)”.
- View all allergies for the patient. Verify that the Aripiprazole allergy added in the EHR appears in the client’s known allergies list.
- The client also indicates that their peanut allergy has gone away and they no longer have any reactions to eating peanuts. Click on the allergy tab. Discontinue the peanut allergy. While here, change the severity of the Abilify allergy to Moderate, because the patient indicated that their swelling gets pretty bad after taking their Abilify.
- The patient complains about being overly fatigued, achy and has trouble urinating. You suspect it’s a simple urinary tract infection from the symptoms described, but want to be sure.
- Select the test request button
- You plan to order a urinalysis, submit
- Change the urinalysis type from $\frac{2}{3}$ glass test to microscopic only
- View the submitted order
- You also prescribe Bactrim for the suspected UTI. You notice that on the chart, you see both moderate and major interaction alerts. You would like to only see major interactions. Filter accordingly.
- After you speak to your client more, you decide to add a Comprehensive Metabolic Panel.
- The patient reports they don’t feel like the Flonase has been working, so you decide to discontinue Flonase as well as Abilify, since the client reported the allergic reaction.
- Close the chart

Scenario 5 – Patient C - Tasks: View problem list (170.315(a)(6)), Change a problem on the problem list (170.315(a)(6)), Display the active problem list (170.315(a)(6)), Display the historical problem list (170.315(a)(6))

- Open the chart for “Zucker ,Tom”
- He complains of sleep apnea. Add this to the list
- He also mentions that his sinus is now inflamed. Update his existing Acute Recurrent Frontal Sinusitis accordingly
- View the other active issues on the list
- View the historical issues on the problem list

Scenario 6 – Patient D - Tasks: Implantable Device List (170.315(a)(4)), Refill prescription (170.315(b)(3))

- Open the chart for “Fisherman, Kathleen ”
- She is getting a Nexaplanon Implant. Open the implantable device screen and record this and save
- View the device description, identifiers, and attributes
- Six months has gone by and she’s found that the change in her hormones from Nexaplanon has made her horribly unhappy. Remove the device and update accordingly
- She also requests a refill on her Xanax prescription. Request and receive her medication to check her dosage
- Open the ePrescribe tab and request a refill
- Receive and view a fill status notification

Scenario 7 – Patient B - Tasks: View lab test results (170.315(a)(2)), Change lab test (170.315(a)(2)), Add radiology order (170.315(a)(3)), Change radiology order (170.315(a)(3)), View radiology order (170.315(a)(3)), Change medication (170.315(a)(1))

- At the last visit you ordered a urinalysis lab test. Open the lab tests form to Review the lab test results for the order, changing the status to clinically reviewed.
- To be thorough, you decide to order a CT scan to determine if the patient’s symptoms could be related to a stroke.
- After placing the order, the patient tells you that they will be out of town for the next three days, so you will need to change the order’s start date to 3 days later. Discontinue the placed order and re-order the new order with the new start date. Confirm the order change by viewing the radiology list.
- Based on the discussion with the patient you decide to change the current medications to help with the immediate issues. Increase the medication RISPERDAL 2mg, 1 tablet, every night at bedtime to 3mg with the same directions. Confirm the order change.

Scenario 8 – Configure CDS Interventions - Tasks: Add CDS Interventions (170.315(a)(9))

- Navigate to the CDS/CQM tab in the settings tab. Select all Diabetes CDS options.
- Select Documentation of current medications in the medical record and use of high-risk medications in the elderly
- Confirm that DoB, gender, preferred language and vitals entered for each encounter, and patient allergies documented are selected
- Note: only doctors are able to update this configuration

Scenario 9- Patient D- Trigger CDS Interventions (170.315(a)(9)), View Intervention/ Resource Information (170.315(a)(9)), Access CDS Information (170.315(a)(9))

- Search for “Kathy Medicare” a 68-year-old diabetic female patient
- Confirm that the Diabetes Low Density Lipo-protein CDS has been triggered
- Confirm that documentation of current medications has been triggered
- Confirm that patient allergies have been documented
- Confirm DOB/gender/race/preferred language have been triggered
- Confirm that controlling high blood pressure has been triggered
- View the information associated with each
- View the metadata information for a measure

Scenario 10- Patient E- Clinical Information Reconciliation and Incorporation (170.315(b)(2))

- Receive a CCDA file
- Upload and map it
- Navigate to the patient
- Hit doc for review
- Make changes
- Hit clinical documentation, generate a new CCDA

The tasks were evaluated based on the potential for risk of adverse events to the patient. They were assigned a risk level of High, Moderate or Low. Tasks with a risk level of High were prioritized for evaluation and any resulting requirements for product modifications. The assigned risk level for each individual task is found in the table below.

TASK	RISK LEVEL
Use CPOE to create and modify a Medication order	HIGH
Display a changed CPOE medication order	LOW
Refill prescription	HIGH

Receive fill status notification	LOW
Request and receive medication history information	MODERATE
Record a lab order via CPOE	MODERATE
Change lab order via CPOE	MODERATE
Display changed lab order via CPOE	LOW
Use CPOE to create, view and modify a Diagnostic study (Radiology) order	MODERATE
Display changed CPOE Imaging Order	LOW
Record a patient allergy and prescribe a medication that would be contraindicated to that allergy, to get a drug-allergy interaction alert	HIGH
Add two medications that are contraindicated to get a drug-drug interaction alert	HIGH
Adjust a drug/drug interaction level	MODERATE
Reconcile the medications, allergies and problems from a received CCDA document into the patient's chart.	MODERATE
Record a patient's preferred language, DoB, birth sex, race, ethnicity, sexual orientation, gender identity	LOW
Change a patient's preferred language, DoB, birth sex, race, ethnicity, sexual orientation, gender identity	LOW
Display a patient's changed preferred language, DoB, birth sex, race, ethnicity, sexual orientation, gender identity	LOW
Record a problem to the problem list	MODERATE
Change a problem on the problem list	MODERATE
Display the active problem list	LOW
Record a medication on the medication list	HIGH
Change a medication on the medication list	HIGH
Display the historical medication list	LOW
Record a medication allergy	HIGH
Change a medication allergy	HIGH
Display the active medication allergy list	LOW
Record UDI	LOW
Change UDI Status	LOW
Access UDI device description, identifiers, and attributes	LOW
Configure clinical decision support Guidelines	HIGH
Respond to a CDS Intervention (Demographics/Vitals)	LOW
Respond to a CDS Intervention (all others)	MODERATE
Review a clinical decision support guideline and reference information	LOW
Clinical Information Reconciliation and Incorporation	HIGH
Generate a CCDA	HIGH

Procedures

Test Location

The tests with each of the participants lasted about one hour and were conducted either in a face-to-face encounter or an on-line encounter using GoToMyPC.

Test Environment

The Test Environment was created on a Production Grade server, using a 'Test' database so as to create as close to a Production grade environment as possible.

To prepare for each session, the testing environment was set up to ensure that the database being used was the 'Test' database and that all data would be captured and the remote access (if necessary) to the test participant was successful, secure, and stable. The test administrator verified the identity of all remote participants prior to beginning the tasks.

The test administrator moderated the session, including providing instructions to the test participants and reading through the task list prior to beginning the session. The administrator also monitored tasks times, obtained post-task rating data, and took notes that would assist with evaluating the session at the conclusion of the test. Following the session, the administrator gave each participant the post-test System Usability Scale Questionnaire (Appendix D) and compensated them for their time (Appendix E).

Test Forms and Tools

During the test, various documents were used, including a Moderator's Guide (Appendix C) and a post-test questionnaire. Following each task we asked participants to comment on the ease-of-use, and to explain their rationale, as described in the Moderator's Guide. At the conclusion of the session, participants were also asked to complete a post-test questionnaire, which was based on the standard System Usability Scale (Appendix D).

Participant Instructions

Participants were informed that the test session would last approximately 1 hour, and that they were free to withdraw at any time. They were requested to complete a list of tasks provided to them (based on their user role). They were provided with the Optimal Time for each task and were asked to attempt to complete their task in as close to the optimal time, without sacrificing accuracy or their comfort.

Usability Metrics

Based on the NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records, metrics for effectiveness, efficiency and user satisfaction were captured during the usability testing. The goals of the test were to assess:

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

Scoring

Scoring was performed based on the following table:

TASK SUCCESS (Effectiveness)	Every correct outcome achieved without assistance.
TASK FAILURE (Effectiveness)	An Incorrect outcome, or an inability to reach the conclusion of a task. Task Times were not recorded for a failed task
TASK TIME (Efficiency)	Tasks were timed from the moment the user started on the task till they finished. An Optimal task performance time was previously calculated for each task and the tasks efficiency was calculated
TASK DEVIATION (Efficiency)	Deviation in seconds of the amount of time it took for a task to be completed
TASK RATING (Satisfaction)	At the end of each task, the participant was asked to rate the ease of performing the task on a scale of 1 – 5. 1 being very easy and 5 being very difficult

Following the test, all participants completed the System Usability Scale (SUS) Questionnaire.

Results

Data Analysis and Reporting

The results of the usability test were calculated according to the methods specified in the Usability Metrics section above. The usability testing results for each task of the EHRUT are detailed below.

Task Description	Task Success - Mean (%)	Task Time -		Task Rating
		Mean (seconds)	Task Time - Standard Deviation (seconds)	
Record a medication via CPOE	100%	40	17	5
Change medication via CPOE	100%	63	20	4.4
Display changed CPOE medication order	100%	6	1	4.4
Record Lab order via CPOE	100%	46	22	5
Change lab order via CPOE	100%	40	27	4.9
Display changed lab order via CPOE	100%	0	0	5
Record Imaging order via CPOE	100%	21	10	5
Change Imaging order via CPOE	100%	13	9	4.9
Display changed CPOE Imaging order	100%	1	0	5
Using CPOE, trigger a drug-drug interaction by entering a new medication order	100%	40	15	4.4
Using CPOE, trigger a drug-allergy interaction by entering a new medication order	100%	63	23	4.4
Adjust the severity level of a displayed drug-drug interaction	100%	6	10	4.9
Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	100%	30	20	4.9

Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity,	100%	27	14	4.9
Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity,	100%	2	1	3.9
Record a problem to the problem list	100%	12	7	4.4
Change a problem on the problem list	100%	11	6	4.9
Display the active problem list	100%	1	1	4.78
Display the historical problem list	100%	1	1	4.78
Record a medication to the medication list	100%	40	15	3.9
Change a medication on the medication list	100%	63	20	2.5
Display the active medication list	100%	1	1	3.9
Display the historical medication list	100%	7	9	2.5
Record a medication allergy	100%	45	17	3.9
Change a medication allergy	100%	65	20	2.5
Display the active medication allergy list	100%	2	1	3.9
Display the historical medication allergy list	100%	7	9	2.5
Configure CDS	50%	80	60	2.8
Trigger CDS	100%	10	7	5
View Resource	70%	58	58	1.80
Access Attributes	60%	65	50	2.1
Record UDI	100%	46	11	5

Change UDI Status	100%	40	7	5
Access UDI, device description, identifiers, and attributes	100%	0	0	5
Incorporate a CCDA	70%	137	40	2.1
Conduct Reconciliation	70%	187	37	2.1
Generate a new CCDA	70%	180	32	2.1
Create new prescription	100%	50	9	5
Change prescription (dosage or duration)	80%	68	12	4.4
Cancel prescription	50%	80	15	2.5
Refill prescription	100%	35	7	3.9
Receive fill status notification	100%	10	5	3.9
Request and receive medication history information	80%	30	10	2.6

Major Test Findings

A considerable amount of valuable information was collected as a result of the usability studies completed as part of the Safety-Enhanced Design requirement for 2015 ONC EHR certification. The test results, feedback from the SUS questionnaire and user comments indicated that the Claimpower Mobile EMR scores high on Ease-Of-Use and satisfaction with the product.

The areas studied revolved around Problem List, Medication List, Medication Allergy List, Lab Orders, Diagnostic Imaging, Demographics, Clinical Decision Support, Implantable Device Lists, Clinical Information Reconciliation, and e-Prescribing.

The study demonstrated that the majority of the tasks were completed successfully with no or minor deviations.

The test result tables provide insight into the success of each of the tasks by analyzing the number of path deviations, task time as it relates to the Optimum time, number of errors, task ratings, and the task efficiency rating. While there were errors logged for some of the tasks, these errors would not be categorized as resulting in adverse consequences and the occurrence would likely decline over time with more familiarity with the product.

In discussions with the participants subsequent to each test, their errors and comments were categorized as design changes, confusing instructions or 'bugs' in the software. 'Bugs' were fixed and design changes have been addressed, and areas of Help Documents where changes were warranted are in progress.

Several participants remarked on the ease of updating the problem list and of ordering labs. Participants did note that they were a bit confused about the process for saving changes to medication lists, allergies, and ePrescribing. We sent a recommendation to our ePrescribe partner that they add a "save" button to the screen to ease these issues.

Users also expressed confusion about how some CDS information is within our CQM/PQRS menu.

Finally, a few participants expressed that they wish the software was "prettier." We share similar feelings and intend on investing more resources into the design of our software in the coming months.

Effectiveness

Most tasks were completed effectively as evidenced by their task completion rates. Error rates were low or non-existent across most modules that have been in the EMR for some time. Some of the newer screens in the EMR require an upgrade of the browser to the latest versions available and it was determined that the failure of task performance was attributable to an older version of IE running on the user's machines.

Efficiency

Time efficiency varied 50 – 60% from the Optimal time. This was not a major concern to the participants and was largely attributed to the participant's level of comfort in using a computer. Two of our participants consistently took longer to complete each task.

Satisfaction

Overall, participants expressed satisfaction with the features tested in the study. This is consistent with the feedback we receive from our general user community on the overall performance of the EMR in live conditions.

Areas of Improvement

- Improve the quality and depth of user education materials and 'Help' documents.
- Not all pop-ups can be moved and some cover relevant areas of the underlying screen. The suggested improvement was to allow all pop-ups to be moved.
- Add a "save button" to where medications are added and allergy information is stored
- Make the screens "prettier"
- Increase ePrescribe speed
- Within ePrescribe, make move to current medications button more obvious
- Make it possible to see a changed medicine order without opening ePrescribe.
- One participant accidentally added all urinalysis to one lab order, had to go through and individually delete. Add a "Clear all" to lab orders
- "Sent to labs" and "questions answered" "print" and "close" buttons load below screen on smaller screen sizes within the lab order window
- Participants expressed some confusion on how to send test/ lab orders
- Some participants expressed that they wished it was more clear how to edit patient demographics-
- Participants requested we add more keyboard shortcuts
- The "edit" button on problem list is unclear
- Add a save & close button to problem list
- It's not obvious you can click the "medication," or any other buttons on the demo screen
- When someone goes to add allergy, they should go straight to the allergy screen
- The button for showing historical medications could be more clear

Appendices

These appendices include supplemental documents for this usability test report

- A. Non-Disclosure Agreement (NDA),
- B. Informed Consent Form
- C. Moderator's Guide
- D. System Usability Scale Questionnaire
- E. Acknowledgement of Incentive Receipt

Appendix A

Non-Disclosure Agreement (NDA)

THIS AGREEMENT is entered into as of _____, 2017, between _____ ("the Participant") and the testing organization Claimpower, Inc. located at 65 Harristown Road, Suite 204, Glen Rock, NJ 07452

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 Claimpower, Inc., 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 Claimpower, Inc. 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 the practice they are employed at, will receive monetary compensation for feedback and that they will not disclose this confidential information obtained today to anyone else or any other organizations.

Participant's printed name: _____

Signature: _____ Date: _____

Appendix B

Informed Consent Form

Claimpower, Inc. would like to thank you for participating in this study. The purpose of this study is to evaluate Claimpower's electronic medical records system – Claimpower Mobile EMR V6.0. If you decide to participate, you will be asked to perform several tasks using the application and give your feedback. The study will last about 60 minutes. At the conclusion of the test, you practice will be compensated for your time.

Agreement

I understand and agree that as a voluntary participant in the present study conducted by Claimpower, Inc. I am free to withdraw consent or discontinue participation at any time. I understand and agree to participate in the study conducted and recorded by Claimpower.

I understand and consent to the use and release of the recordings by Claimpower.

I understand that the information and recording 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 recording and understand the recording may be copied and used by Claimpower without further permission.

I understand and agree that the purpose of this study is to make software applications more useful and usable in the future.

I understand and agree that the data collected from this study may be shared with entities outside of Claimpower.

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.

Signature: _____ Date: _____

Appendix C

Moderators Guide

Prior to testing

- Confirm schedule with Participants
- Ensure EHRUT Test environment is running properly

Prior to each participant:

- Reset application
- Start session recordings with Go To Meeting (for remote tests)

Prior to starting testing:

- Verify the participants identity
- Assign the participant ID
- Review the NDA and Informed consent form and have the participant sign the form
- Provide the test credentials to the participant to verify they are able to log in to the test EHRUT
- Provide the participant with the test data reference sheet

Prior to each task:

Ensure participant has returned to the Main Application Menu

After each remote participant:

- End session recordings with Go To Meeting

Upon completion of testing with each participant:

- Thank participant(s) and inform Practice Manager of method of compensation for their time and help

Orientation Speech (to be used as a guideline)

Thank you for participating in this study today. Our session will last approximately 1 hour. During this time you will use Version 6.0 of the Claimpower Mobile EMR, hooked to a Test database. We will specifically test some functionality and tasks required for Meaningful Use Certification. You are already familiar with most of these tasks as they are currently part of your day to day workflows.

I will ask you to complete the tasks using the 6.0 Version of the EMR and answer some questions. We are interested in your feedback regarding how easy or difficult these tasks are to perform, and how we could improve them. You will be asked to complete these tasks on your own trying to do them as quickly as possible with the fewest possible steps, errors or deviations. Do not do anything more than asked. If you get lost or have difficulty I cannot answer or help you with anything to do with the system itself, but I can remind you of the test data or the task itself if you need me to repeat it. Please save your detailed comments until the end of a task or the end of the session as a whole when we will specifically ask for your comments and suggestions. Please be honest with your opinions. Some of the data may not make sense as it is test data.

We are documenting our session today. All of the information that you provide will be kept confidential and your name will not be associated with your comments and overall test results at any time.

Do you have any questions or concerns?

Administration

Ensure the participant starts at the Main application Menu and has the Individual Task Instructions. Use our Template excel spreadsheet to complete the following information at the end of each task.

- Success or Failure
- Deviations from the normal path
- Time in seconds
- Participants rating of the task (1 = 'Very Easy', 5 = 'Very Difficult')
- Type in their end of task comments

Individual Task Instructions

TASK DESCRIPTION	TASK END-ADMIN ACTION	USER ROLE
Record a Problem to the problem list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYS/NP/PA
Change a problem on the problem list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Display the active problem list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Display the historical problem list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Record a medication to the medication list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	Physician/NP/PA/ADMIN
Change a medication on the medication list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Display the active medication list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Display the Historical Medication List	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Record a medication allergy	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Change a medication allergy	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Display the active medication allergy list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Display the historical medication allergy list	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Add a CDS intervention and/or reference resource for: Problem list, Medications List, Medication Allergy	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA

Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date, 1 demographic, Laboratory Test, Vital signs, a combo of 2+ of these factors		
Trigger CDS interventions/resources from applicable data	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
View the intervention/resource information using the Infobutton standard for data elements in the problem list, medication list, and demographics	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
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	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Access the following attributes for one of the triggered CDS interventions/resources: bibliographic citation, developer, funding source, release/revision date	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Record UDI	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Change UDI Status	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Access UDI, device description, identifiers, and attributes	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
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	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Generate a new CCDA with reconciled data	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Create new prescription	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Change prescription (dosage or duration)	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Cancel prescription	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Refill prescription	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA

Receive fill status notification	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Request and receive medication history information	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA
Record a patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Change the patient's preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity,	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN
Display the patient's changed preferred language, date of birth, birth sex, race, ethnicity, sexual orientation, gender identity,	Rate on scale from 1 to 5 Comments/feedback? Return to Main Menu	PHYSICIAN/NP/PA/ADMIN

Post Test Questions

- What is your overall impression of the functionality you just tested
- What aspects did you like the most
- What aspects did you like the least
- Document your post-test discussions in as much detail as possible

Appendix D

System Usability Scale Questionnaire

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

Appendix E

Acknowledgement of Payment

I hereby understand that Claimpower will provide my practice with a \$100 discount on my next monthly invoice as compensation for my participation in the Usability Testing research study.

Printed Name: _____

Practice Address: _____

Signature: _____ Date: _____