



# **Usability**

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# **Benchmarking**

## **ePrescribe Scenarios v1.0**

Version 1.0  
Tyrone Austen, James Lai, Colin Partridge, Morgan Price  
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# Part 1. Background

## A. UB Study Subject Reference Sheet

- UB studies capture data pertaining to a system's performance and usability (learnability, ease of use, efficiency, safety, and effectiveness) by recording the actions taken by system users during the fulfillment of realistic use case scenarios.
- You (the user) will complete two sets of ePrescribe scenarios:
  - **Normal condition scenarios** – where you complete the scenarios under normal working conditions
    - At the end of each normal condition test, you will be asked to fill out a brief After Scenario Questionnaire (duration: app. 2 minutes )
    - Once you have completed all of the normal condition tests, you will be asked to fill out a Post-Study System Usability Questionnaire (duration: app. 5-10 minutes)
  - **Think aloud scenarios** – where you complete scenarios while 'Thinking Aloud' (verbally stating your thought processes as you complete the scenario tasks)
    - Think aloud comments are analogous to the comments made by a sports play-by-play announcer (all actions are stated aloud as they happen in real time). Such comments will involve: what you are doing (i.e. I'm looking for the file menu); anything that you find confusing (i.e. I'm not sure what to do here); anything you like/dislike about the system or process (i.e. "It takes too long to do this"); and anything you would like to change about the system or process (i.e. "I wish the system had this feature").
- Both the normal condition and think aloud scenarios are described with three forms of notation:
  - **Contextual Information** (written in paragraph form) – describes the scenario background information (i.e. who the patient is, what their medical background is, etc.)
  - **Action Points** (written with green bullet points) – describe tasks for you to perform, using your ePrescribe system
    - ❖ **This is an example of an action statement.**
    - If you are not able to perform the action point with your ePrescribe system, state aloud: "Due to system limitations, I cannot perform this task" or "I don't know how to perform this task", and move onto the next task.
    - You may not agree with the action or actually need to perform the given action (i.e. you may be asked to lookup information that you already know); however, for the purpose of standardizing the tests, it is asked that you follow through with all indicated actions.
  - **Footnotes** (written in the footnotes section of the scenario) – contain additional pieces of information about some of the action points (i.e. information that you are meant to retrieve) or they may contain explanations regarding why a certain action is given.
- At the start of each scenario, state: your name; the current date; the name of the system being tested; and the name of the scenario and condition being tested
- To make the encounters more realistic, you may find it helpful to document patient encounter notes during the scenarios; however, such notes are not essential to the completion of the scenarios
- Create a test folder in which you can save all of the prescriptions that are created in the scenarios. These prescriptions can then be used for future analysis.
- After each scenario, you will be recorded and asked to comment on any additional thoughts you may have about the scenario. This time can be used to: clarify your actions; add any relevant information about the system component that was tested; state what you liked/didn't like about the scenario, etc.

## B. Purpose

The purpose of this document is to provide fictitious but realistic community practice ePrescription scenarios that can be used during the data collection phase of Usability Benchmarking (UB) studies. UB studies capture data pertaining to a system's performance and usability (learnability, ease of use, efficiency, safety, and effectiveness) by recording the actions taken by system users during the fulfillment of realistic use case scenarios. These recordings can then be analyzed to produce quantitative system use benchmarks (i.e. the amount of time required to complete a system task) and system usability statistics.

To ensure that a broad spectrum of ePrescription system use behaviour could be captured, these scenarios were designed to generate a wide range of user process goals. Each scenario was created to promote the use of one or more of the ePrescription system functions identified in the literature (primarily the PITO functional requirements specification document for EMRs (Health, 2007)). The realistic medical situations defined in this document will promote natural system responses that will guide the tested system users through the completion of their process goals in a similar fashion to their normal working conditions.

Through the use of these ePrescribe scenarios, the final UB study recordings can be analyzed to produce the following study outcomes:

- the establishment of system use benchmarks for ePrescribe systems;
- the definition of found usability issues within the system user process flows;
- the definition of found system errors;
- a comparison between user process flows under normal vs. 'Think Aloud' test conditions (where the users verbally state their thought processes as they complete the scenario).

## C. Limitations

In order to ensure the realism of the defined ePrescribe scenarios, several iterative review/revise cycles were performed by a team of three General Practitioners with prior ePrescription experience. This, however, cannot guarantee that the user responses generated from the completion of these fictitious scenarios will be identical to the users' reactions in a real working environment, with real patients. It is a future goal of this study group to validate the use of these scenarios in a multi-practice ePrescription UB study.

In order to ensure that a broad spectrum of ePrescribe system features is tested, some system use actions are directed in the defined scenarios. This has the potential to alter the system users' overall process flow. For a closer reproduction of system users' process flows, a traditional 'Usability Test' (Kushniruk & Patel, 1995) can be performed, where generalized tasks are assigned to the system users during testing to generate a more natural process flow. If, however, it is necessary to reproduce a wide range of user actions within a short study timeframe, the UB study design's utilization of directed scenarios makes it better positioned to produce such immediate results.

## D. Instructions

### D.1 Selecting the scenarios

There are two rounds of testing in UB studies: normal condition testing and 'Think Aloud' testing, as well as a third, optional round of system automation testing. Each round of testing has its own unique set of

scenarios (defined below). Before these data collection phases of a UB study can commence, the scope of the system functionality to be tested within the study must be determined. Once this is known, a set of scenarios can be chosen from the normal condition scenario set to cover this selected study scope.

The scenarios defined for normal condition testing and 'Think Aloud' testing are designed to elicit natural system use behaviour from the system users (with the exception that in the 'Think Aloud' tests, the user will be stating their thought processes aloud). This will allow the study to capture system use benchmarks and usability issues/events from the user recordings. The normal condition and 'Think Aloud' scenario sets contain similar tasks for each respective scenario in order to facilitate the comparison of system use behaviour between the two testing conditions. For example, scenarios #1-10 (respectively) in both the normal condition set and the think aloud set test the users' ability to: write a basic prescription; renew a prescription; substitute/make a change to a prescription; write a prescription that meets the needs of a patient's medical plan; write a prescription for a controlled medication; create/change/renew/cancel multiple prescriptions; create a sliding scale prescription; create a tapering dose prescription; write a prescription with a customized cycle, and renew a set of prescription renewal requests from multiple patients. As a result, the same scenario numbers that were selected from the normal condition scenario set will be selected from the 'Think Aloud' scenario set for the second round of UB testing.

System automation testing, the third, and optional round of data collection in a UB study, involves testing the features of a system that are independent from the user (those features that are automated by the system). For this reason, scenarios that are realistic to normal working conditions are not required, as the focus of these tests is not to determine the system's usability; rather the focus is to test if a system's automated features (i.e. flags, warning messages, etc.) will respond as intended. Instead of realistic use case scenarios, system automation testing utilizes task sets that are designed to trigger a system's automated responses. This form of system automation testing can test a system's automated features for flaws; however, such tests cannot conclusively prove that all of the system's automated features are fully functional (which is a universal limitation of software functional testing). If system automation testing is in the scope of the UB study for an ePrescription system, it is recommended that all of the system automation test task sets are completed from this document. All system automation testing task sets for ePrescription systems are provided in part 4 of this document.

## D.2 Data collection

In UB studies, data collection occurs in the following three stages:

1. Normal condition system tests – users are recorded as they complete the selected normal condition scenarios in a typical working context;
2. 'Think Aloud' condition system tests – users are recorded as they complete the selected 'Think Aloud' scenarios, whilst verbally stating their thought processes as they work through the scenarios;

(Optional)

3. System automation tests – one selected user steps through the system automation test task sets in an attempt to test the triggering of automated system responses.

The Normal condition testing and 'Think Aloud' testing are repeated for each tested system user, such that the first user will perform normal condition testing, then 'Think Aloud' testing, then the second tested system user will perform normal condition testing, then 'Think Aloud' testing, and so on. System automation testing only requires one round of testing per system setup. Unless the tested system differs between users, a single system automation test, with one user will suffice.

In order to support later analysis processes, at the start of each recording, in all data collection phases of a UB study, the user must state the following:

- their name

- the current date
- the name of the system being tested
- the name of the scenario and condition that is being tested

All prescriptions created during the scenario are to be saved in a test folder and later provided to the study administrator for analysis.

In each of the testing rounds, after a scenario or task set recording is completed, the test facilitator is to conduct a recorded, semi-structured interview to collect further usability data and to clarify the events that occurred during the system testing.

### **D.2.1 Normal Condition Data Collection**

The first round of data collection involves the fulfillment of the normal condition scenarios. During normal condition testing, the system users are recorded as they complete each of the selected scenarios under normal working conditions (as they would normally fulfill the defined scenario tasks in their office environment with a real patient). This round of testing is used to produce the system benchmark data (i.e. the speed at which a task can be completed), as it is best comparable to the fulfillment of a task in a real working situation (with real patients and real data). After a user completes a normal condition scenario, he/she is to fill out a brief, three question scenario-based usability questionnaire called the ASQ (After survey questionnaire) (Lewis, 1995). After all normal condition scenarios have been completed, a second, system-based usability questionnaire, the PSSUQ (Post-Study System Usability Questionnaire) (Lewis, 1995), is to be completed by the test subject.

For each user, at the conclusion of normal condition testing, the following data sets will have been collected:

- the normal condition scenario recordings for each of the scenarios
- post test questioning recordings for each of the scenarios
- a completed ASQ for each of the scenarios
- a completed PSSUQ

### **D.2.2 Think Aloud Data Collection**

'Think Aloud' testing, the second round of data collection that is tested after the user completes the normal condition testing round, involves the users fulfilling the selected 'Think Aloud' scenarios as they verbalize their thought processes. The thoughts or 'Think Aloud' comments that are of most interest in a UB study include: what the expert user is doing (i.e. "I'm looking for the close button") and any difficulties that the expert system user is having in the fulfillment of the system tasks (i.e. "How do I get out of this window?"). Such comments can be likened to a sports commentator, who is providing a play-by-play of a hockey game (stating who is doing what, how well they are doing it, and what's going right/wrong). The ASQ and PSSUQ questionnaires do not need to be completed during the 'Think Aloud' testing round.

At the conclusion of the 'Think Aloud' testing round, the following data sets will be collected for each user:

- the 'Think Aloud' scenario recordings for each of the scenarios
- post test questioning recordings for each of the scenarios

### **D.2.3 System Automation Testing Data Collection (Optional)**

In the system automation testing round, one user is selected to complete the tasks listed in the system automation testing task sets, whilst being recorded. During the system automation test task recordings, the user will again 'Think Aloud' to commentate the recordings. These comments will help with later analysis efforts, as they can be used to help distinguish which system automation testing tasks are being performed and when.

At the conclusion of the System Automation testing round, the following data set will be collected:

- one 'Think Aloud' recording of every system automation test task set

### **D.3 Scenario Action Points**

For each scenario, a fictitious patient encounter will be described. During these encounters, medical issues will be brought up by the patient that will require the system user to perform actions with their ePrescribe system. All ePrescribe action points are signified with a green action bullet:

- ❖ **This is an example of an action statement.**

When action bullets are reached, the system users can follow the ePrescribe action defined in the point. If the users aren't capable of fulfilling any of the action points with their ePrescribe systems, they can state aloud that either due to system limitations (the system is incapable of performing the task) or personal limitations (they don't know how to do it with their system) they cannot perform the given task, and move on to the next scenario task.

### **D.4 Footnotes**

Some of the scenarios will include information retrieval tasks (i.e. lookup the best practice guidelines for medication X, and use those guidelines to write the prescription). For such tasks, the user is to follow through with the action point (as they would with any of the other action points); however, for the purpose of standardizing the flow of the scenarios, the information to be retrieved is also included within the scenario footnotes. If a user is not able to retrieve the desired information with their ePrescribe system, they can refer to the scenario footnote in order to continue on with the scenario.

The scenario footnotes may also contain disclaimers about given action statements. These disclaimers may indicate warnings such that not all physicians will agree with the given action or need to perform the given action (i.e. they may be asked to lookup information that they already know); however, for the purpose of standardizing the tests, it is asked that the users follow through with the indicated actions. For example, the physician may prefer to prescribe a different medication or prescribe the same medication using a different dose than the one indicated in the scenario. In order to standardize the UB study results across all users, however, the tested system user is to follow whatever action point is assigned to them in the scenarios. These scenarios are not designed to test physician competence; rather they are designed to test a physician's use of their ePrescribe system.

# Part 2. Normal Condition

## Scenarios

### Scenario #1 – Bill Hodgeson – Pneumonia – Basic Prescription

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Bill Hodgeson was born April 3<sup>rd</sup>, 1952.

- ❖ **Create a patient record for Bill Hodgeson**
- ❖ **Create and load a patient encounter/appointment record for Bill Hodgeson**

The reason Bill came in today is that he has had a one week history of fever, cough and purulent sputum, which is getting worse. He thinks he has a bad “chest infection”. After your physical exam, you agree and suspect a *Streptococcus pneumoniae* infection. You decide to write out a prescription for Biaxin (clarithromycin).

The Biaxin (clarithromycin) prescription is as follows:

- 1x500mg of Biaxin (clarithromycin), Q12H for 10 days
- ❖ **Using your ePrescribe system, create the above Biaxin (clarithromycin) prescription**

Bill then states that there is nothing else bothering him at this time, so you decide to finalize the prescription.

- ❖ **Electronically authorize (sign off on) Bill’s prescription and save it to the test folder (if possible).**

You tell Bill that he needs to contact you within the next few days if his chest infection doesn’t improve, and you also arrange a follow up appointment for Bill in two weeks time. Bill thanks you for your time and tells you that he’ll definitely see you if he doesn’t feel better in the next few days.



## Scenario #2 – Mandy Oberg – Hypothyroidism - Basic Renewal

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Mandy Oberg was born on July 4<sup>th</sup>, 1963.

- ❖ **Create a patient record for Mandy Oberg**
- ❖ **Create and load a patient encounter/appointment record for Mandy**

As a consequence of postpartum thyroiditis four years ago, Mandy developed hypothyroidism, and has since been taking the drug Synthroid (levothyroxine sodium) to keep her thyroid hormone levels balanced.

- ❖ **Update Mandy's medication history record to include:**
  - **1x100mcg Synthroid (levothyroxine sodium), QD**

Mandy has come in today for her annual check up. After examining Mandy, you determine that aside from her known hypothyroid condition, she is in fine health. You then decide to renew her Synthroid prescription for another six months with an additional six month renewal.

- ❖ **Renew Mandy's prescription of 1x100mcg Synthroid (levothyroxine sodium), QD for six months with one renewal.**
- ❖ **Electronically authorize (sign off on) Mandy's prescription and save it to the test folder (if possible).**

You tell Mandy that if all is well, you will see her again in one year for her next check up.

## Scenario #3 – Samantha Gendur – Congestive Heart Failure – Substitution

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Samantha Gendur was born on February 12<sup>th</sup>, 1975. This is the first time that Samantha has visited your clinic.

- ❖ Create a patient record for Samantha Gendur
- ❖ Create and load an encounter/appointment record for Samantha

Normally, Samantha sees her family doctor in Vancouver (who she saw 7 months ago); however, after suffering a Myocardial Infarction (MI), Samantha has spent the past 6 months living downtown at her brother's house. A complication of her recent MI was Congestive Heart Failure (CHF), for which she is currently under treatment.

You take Samantha's medical history and find out that her Vancouver GP has prescribed her Accupril (quinapril), which she has been taking over the past year.

- ❖ Update Samantha's medication history record to include:
  - 1x20mg Accupril (quinapril), QD

You think that Altace (ramipril) may be a cheaper alternative to Accupril (quinapril) under Samantha's drug plan, so you decide to investigate:

- ❖ Compare the costs of Accupril (quinapril) and Altace (ramipril) under the Samantha's extended drug plan (Standard Life) formulary<sup>1</sup>
- ❖ Substitute Samantha's Accupril prescription for a prescription of 1x10mg Altace (ramipril), QD, for a 2 week period
- ❖ Add the Altace prescription to your list of favourite prescriptions
- ❖ Electronically authorize (sign off on) Samantha's prescription and save it to the test folder (if possible).

Samantha thanks you for your time and leaves your office.

### Footnotes

1. You find that Altace (ramipril) is a cheaper alternative

## Scenario #4 – Cynthia Grabner – Depression – Plan Coverage

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Cynthia Grabner was born on July 3<sup>rd</sup>, 1985. Cynthia suffers from depression. You first became aware of Cynthia's depression two years ago, and have since then been treating her with Prozac (fluoxetine) @ 1x20mg QD.

During the office visit, Cynthia mentions that she “doesn't feel that the Prozac is working like it used to”, and that she's starting to feel more depressed and isolated. You decide to augment her drug treatment with bupropion hydrochloride:

- ❖ **Create a patient record for Cynthia Grabner**
- ❖ **Create and load a patient encounter/appointment record for Cynthia**
- ❖ **Update Cynthia's medication history to include:**
  - **1x20mg Prozac (fluoxetine), QD**
- ❖ **Search for the different brands of drug under the generic name bupropion hydrochloride**
- ❖ **Lookup the clinical benefits of the Wellbutrin XL brand of bupropion hydrochloride**
- ❖ **Investigate if Wellbutrin XL (bupropion hydrochloride) is available under “Plan G” coverage<sup>1</sup>**
- ❖ **Complete a Plan G coverage form for a Wellbutrin XL prescription (for the reason that “without the medication, serious consequences could result”)**
- ❖ **Send the Plan G coverage form<sup>2</sup>**
- ❖ **Create a 4 week Wellbutrin XL prescription under the following criteria:**
  - **Document “Depression” as the reason for the Wellbutrin (bupropion) prescription**
  - **Start the dose at 1x150mg QAM**
    - **If the dose is adequately tolerated after one week, increase the dose to 2x150mg QAM for the remaining 3 weeks (totalling 49 tablets for the 4 week prescription)**

You tell Cynthia to check back with you in one week, to see how she is handling the new prescription.

- ❖ **Electronically authorize (sign off on) Cynthia's prescription and save it to the test folder (if possible).**

### Footnotes

1. Wellbutrin (bupropion) is available under limited coverage
2. Go through all of the steps of sending the form, without actually sending it

## Scenario #5 – Anthony Rodin – Severe back pain –Controlled Prescription Capture

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Anthony Rodin was born August 18<sup>th</sup>, 1973. He is a life-time smoker and has been attending your clinic for the past year. Anthony has been suffering from degenerative disc disease since his mid twenties. Anthony has lived in severe pain since the onset of his condition.

- ❖ **Create a patient record for Anthony Rodin**
- ❖ **Create and load an encounter/appointment record for Anthony**

Two years ago, due to failed rehabilitation attempts and under guidance from his spinal specialist, Anthony had his L-4 and L-5 vertebrae surgically fused. Anthony enjoyed a three month period of reduced pain after recovering from the surgery; however, shortly thereafter, Anthony developed Pseudarthrosis on the fuse site, and is now in more pain than ever. Anthony must wait nine months for his surgery to repair the unhealed fusion. For the past month, Anthony has been taking MS-IR, (morphine sulphate), as needed to help minimize his pain.

- ❖ **Update Anthony’s medication history to include:**
  - **1x10mg MS-IR (morphine sulphate), PO, Q6H, PRN**

After learning that Anthony was able to successfully manage his pain using a consistent daily dose of 40mg, you decide to switch Anthony to an extended release morphine sulphate to help improve his round-the-clock pain management and to reduce the risk of dependency.

- ❖ **Cancel Anthony’s MS-IR prescription, listing the reason: “Changing prescription to an extended-release morphine sulphate”**
- ❖ **Create a prescription for 1x20mg MS-Contin (morphine sulphate), Q12H, for 2 weeks (both in the ePrescribe system and on the required controlled drug prescription form)**
- ❖ **Record the reason for the MS-Contin (morphine sulphate) prescription as being for “back pain”**
- ❖ **Electronically authorize (sign off on) Anthony’s prescription and save it to the test folder (if possible).**

## Scenario #6 – Paul Pope – Hospital Discharge – Advanced Renewal and Cancellation

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Paul Pope was born on January 26<sup>th</sup>, 1942.

- ❖ **Create a patient record for Paul Pope**
- ❖ **Create and load an encounter/appointment record for Paul**

Paul has type II diabetes with hypertension, chronic renal insufficiency, and hyperlipidemia. Your practice has recently switched from a paper based record system to an EMR, and thus, before the appointment, you must first transfer Paul's medication history into the electronic record.

- ❖ **Update Paul's medication history record to include:**
  - **2x500mg Glucophage (metformin), BID**
    - **Indicate that it is for diabetes**
  - **1x5mg Altace (ramipril), QD**
  - **1x10mg Pravachol (pravastatin), QD**
  - **2x5mg Diabeta (glyburide), BID**
    - **Indicate that it is for diabetes**
  - **1x4mg Avandia (rosiglitazone), QD**
    - **Indicate that it is for diabetes**
- ❖ **Look at Paul's current medication history in the ePrescribe system**
- ❖ **Filter the medication list to only display Paul's diabetes prescriptions**
- ❖ **Remove the diabetes filter**

Paul was recently hospitalized after suffering a ST segment elevation myocardial infarction (STEMI). Coronary angiography showed an 80% occlusion of his left anterior descending coronary artery and he underwent Percutaneous Coronary Intervention with a bare metal stent placement. He was discharged from the hospital 4 days ago.

Paul shows you a list of the medications that were prescribed to him when he was in the hospital and tells you that some of the medications that you put him on before the surgery had been changed or discontinued. He was told to see you to go over his updated medication regimen before going to see a cardiac specialist in 8 weeks.

The following prescriptions were on Paul's updated hospital medication list:

- 2x500mg Glucophage (metformin), BID
- 1x10mg Altace (ramipril), QD
- 1x5mg Norvasc (amlodipine), QD
- 1x40mg ZOCOR (simvastatin), QHS
- 1x75mg PLAVIX (clopidogrel bisulfate), QD
  
- Diabeta (glyburide) was held pending further assessment of his blood sugar after discharge
- Pravachol (pravastatin) was substituted for the ZOCOR (simvastatin) prescription due to availability at the hospital
- Avandia (rosiglitazone) was discontinued due to his recent MI

You decide update Paul's medication history to reflect the hospital's changes. You first update his medication history with those medications that were held or cancelled by the hospital physicians:

- ❖ **Hold Paul's Diabeta (glyburide) prescription until further is known from his blood sugar assessment**
- ❖ **Discontinue Paul's Avandia (rosiglitazone) prescription, recording the reason as: "possible cardiovascular risk"**
- ❖ **Substitute Paul's 1x10mg Pravachol (pravastatin), QD prescription for the hospital issued 1x40mg ZOCOR (simvastatin), QHS prescription**

You then update the medication history to reflect the hospital's change to Paul's Altace prescription:

- ❖ **Change Paul's Altace medication history listing from 1x5mg Altace, QD to 1x10mg Altace (ramipril), QD**

Finally, you update the medication history to include the new medications that were prescribed:

- ❖ **Add the following medications to Paul's medication history:**
  - **1x5mg Norvasc (amlodipine), QD**
  - **1x75mg PLAVIX (clopidogrel bisulfate), QD**

After updating Paul's medication history to reflect the hospital's changes, you decide to renew the updated medication regimen to last for a total of 9 weeks, so that he has enough pills to last him until his specialist appointment.

- ❖ **Set all of Paul's prescriptions to be contained in daily dose blister packs**
- ❖ **In one step (if possible, otherwise one at a time) renew Paul's Glucophage (metformin), Altace (ramipril), ZOCOR (simvastatin), Norvasc (amlodipine), and PLAVIX (clopidogrel bisulfate) prescriptions for a total of 9 weeks**
- ❖ **Electronically authorize (sign off on) Paul's prescriptions and save them to the test folder (if possible).**

## Scenario #7 – Edward Hansen – Diabetes – Sliding Scale

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Edward Hansen was born 8 years ago from today's date. Edward is 157.5cm (5'2) tall and weighs 43.5kg (96lbs). Edward suffers from type 1 diabetes.

- ❖ Create a patient record for Edward Hansen
- ❖ Create and load an encounter/appointment record for Edward

Edward, along with his mother Trisha are in your office today to discuss Edward's diabetes care plan. You decide upon the following insulin regimen for Edward:

Breakfast	Dinner
<ul style="list-style-type: none"><li>• 25 units of NPH (N) - intermediate acting insulin</li></ul>	<ul style="list-style-type: none"><li>• 20 units of NPH (N) - intermediate acting insulin</li></ul>
<ul style="list-style-type: none"><li>• 8 units of Regular (R) Humulin - short acting insulin</li></ul>	<ul style="list-style-type: none"><li>• 6 units of Regular (R) Humulin - short acting insulin</li></ul>

Measurements of Edward's blood sugar level should be taken 4 times daily (before: breakfast, lunch, dinner, and bedtime). Extra Regular Insulin should be given after the measurement according to the following sliding scale:

Blood Sugar Measurement	Extra Regular Insulin Units
<5	0
10-15	5 Units
16-20	10 Units
>20	15 Units

- ❖ Create the above insulin prescriptions for a period of 2 months.
- ❖ Electronically authorize (sign off on) Edward's prescription and save it to the test folder (if possible).
- ❖ Print off a patient prescription instruction sheet for Edward and his mother.

You give Edward and Trisha the patient instruction sheet and show them out of your office.

## Scenario #8 – Jack Ellington - Acute Asthma Exacerbation – Tapering Dose

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Jack Ellington was born on May 3<sup>rd</sup>, 1992.

- ❖ **Create a patient record for Jack Ellington**
- ❖ **Create and load an encounter/appointment record for Jack**

Jack's father (Ron) had to take Jack out of school this morning due to an asthma attack. Jack was diagnosed with asthma as young boy. Currently, his asthma prescriptions include: Ventolin MDI (salbutamol) and Advair Diskus 500/50 (fluticasone propionate 500 mcg and salmeterol 50 mcg). You do a peak flow measurement in the office and find that his Peak Flow Rate (PFR) is only 75% of predicted. In addition to advising Jack to maximize his MDI use, you decide to treat this exacerbation with the oral steroid Deltasone (prednisone).

- ❖ **Create a prescription for Deltasone (prednisone), starting at 1x50mg QD and tapering at a rate 5mg/day until finished (i.e. day 1 = 1x50mg Deltasone (prednisone) QD; day 2 = 2x20mg and 1x5mg Deltasone (prednisone) QD; .... day 10 = 1x5mg Deltasone (prednisone) QD; and day 11 = no Deltasone (prednisone))**
- ❖ **Using your ePrescribe system, determine the date when the prescription will terminate, so that you can ask Ron to book an appointment with your secretary for that date**
- ❖ **Electronically authorize (sign off on) Jack's prescription and save it to the test folder (if possible).**

You then inform Jack and his father to immediately go to the Emergency Room if his self-monitored peak flows worsen.



## Scenario #9 – Mathew Sauve – Edema - Customized Prescription Cycle

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Mathew Sauve was born July 23<sup>rd</sup>, 1969.

- ❖ **Create a patient record for Mathew Sauve**
- ❖ **Create and load an encounter/appointment record for Mathew**

This is the first time you have seen Mathew as a patient, as he has only recently moved into town from Fredericton, NB. Mathew suffers from hypothyroidism, and his medications for the condition have almost expired. You decide to prescribe him Synthroid (levothyroxine sodium).

- ❖ **Create a 6 week prescription of Synthroid (levothyroxine sodium) that alternates daily between**
  - **1x88mcg Synthroid (levothyroxine sodium) QD, and**
  - **1x100mcg Synthroid (levothyroxine sodium) QD**
- ❖ **Electronically authorize (sign off on) Mathew's prescription and save it to the test folder (if possible).**

Nothing else ails Mathew at this time, so you wish him the best in his new town.

## Scenario #10 – Multiple Patient Renewal Requests

- Several patients need to be setup with patient histories and requests for renewals of medications
- Once setup, the following features can be tested:
  - E-289
    - Can office staff send requests to the physicians?
    - Once the physician has made the renewal, is the office staff notified?
  - 290 - Can you cluster the renewal requests by patient?
  - 291 - Do the renewal requests show the patient: allergies, previous prescriptions, etc.?
  - 292 - Can the physician document that the pharmacy has been notified of a follow-up associated with the medication renewal?
  - 293 - Can you change/cancel these renewal requests and provide a reason and can you store information in the patients record
  - 294 - Are the same features available in these renewals as regular prescriptions?

Scenario to be defined if/ when needed

# Part 3. Think Aloud Scenarios

## Scenario #1 – Lisa Anthony – UTI - Basic Prescription

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Lisa Anthony was born on October 30th, 1989.

- ❖ Create a patient record for Lisa Anthony
- ❖ Create and load an encounter/appointment record for Lisa

Lisa came into the office today because she is complaining of frequent, stinging urination with traces of blood. Having had several in the past year, Lisa is confident that this is another urinary tract infection. You agree and decide to treat the condition with Apo-Amoxi (amoxicillin).

- ❖ Create a prescription for 1x500mg Apo-Amoxi (amoxicillin), Q8H for 5 days
- ❖ Electronically authorize (sign off on) Lisa's prescription and save it to the test folder (if possible).

You tell Lisa that if the UTI is still bothering her after a few days, to come back in to see you.

## Scenario #2 – Andrew Rai – Compound Fracture - Basic Renewal

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Andrew Rai was born on September 3<sup>rd</sup>, 1993. He is 185cm (6'1) tall and weighs 77kg (170lbs).

- ❖ **Create a patient record for Andrew Rai**
- ❖ **Create and load an encounter/appointment record for Andrew**

While skateboarding, Andrew fell down a flight of stairs and sustained a compound fracture of his right radius. At the time of the accident, Andrew was prescribed 3 days of 1-2xTylenol with Codeine #3, Q4-6H, PRN (acetaminophen and codeine phosphate) and was told to come back to see you if he was still in pain after the second day.

- ❖ **Update Andrew's medication history record to include:**
  - **1-2xTylenol with Codeine #3 (300mg acetaminophen and 30mg codeine phosphate), Q4-6H, PRN**

Andrew has returned to your office still in great discomfort. You decide to renew the prescription for an additional week.

- ❖ **Renew the prescription of 1-2xTylenol with Codeine #3 (300mg acetaminophen and 30mg codeine phosphate), Q4-6H, PRN for 1 week.**
- ❖ **Electronically authorize (sign off on) Andrew's prescription and save it to the test folder (if possible).**

You tell Andrew to come back to see you in another week to see how his arm is mending.

### Scenario #3 – Susie Schroeder – Strep throat – Substitution

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Susie Schroeder was born six years ago from today's date. She is 114.3cm (3'9) tall, and weighs 18.1kgs (40lbs).

- ❖ Create a patient record for Susie Schroeder
- ❖ Create and load an encounter/appointment record for Susie

Susie came into the clinic with her mother (Lydia) because Susie has been feeling ill lately (symptoms include: fever, sore throat, etc.). Susie is severely allergic to Penicillin.

- ❖ Enter that Susie has a severe drug allergy to Penicillin that induces anaphylaxis

You examine Susie and come to the conclusion that Susie is likely suffering from Strep throat. You come to the conclusion that a good alternative to Penicillin for the treatment of Susie's strep throat is E-Mycin (erythromycin).

- ❖ Determine the best practice pediatric dosing guidelines for the erythromycin brand E-Mycin<sup>1</sup>
- ❖ Create a prescription for 1x250mg of E-Mycin (erythromycin), Q8H, for 10 days
- ❖ Electronically authorize (sign off on) Susie's prescription and save it to the test folder (if possible).

Later that day, Susie and her mother return to your office. Susie's mother informs you that Susie hasn't been able to take her prescription, because she finds it hard to swallow the pill and she finds the taste "yucky". Susie's mom goes on to say that Susie has told her that she will only take her medicine if it tastes like chocolate.

- ❖ Change Susie's E-Mycin prescription so that it is in a 'chocolate flavoured' compound liquid form, where 1tsp of liquid = 180mg of E-Mycin (erythromycin). Susie's updated prescription is then:
  - 1x1tsp E-Mycin (erythromycin) in the compound, chocolate flavoured liquid form, Q8H, for 10 days
- ❖ Electronically authorize (sign off on) Susie's prescription and save it to the test folder (if possible).

Susie's mother thanks you for your patience and takes Susie to the pharmacy to pick up the new prescription.

#### Footnotes

1. The recommended dose of E-Mycin (erythromycin) for child patients is 30-50mg/kg/day, in divided doses throughout the day (i.e. 1x180mg, Q8H for Susie)

## Scenario #4 – Alfred Rome – GERD – Plan Coverage

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Alfred Rome was born September 22<sup>nd</sup>, 1973.

- ❖ Create a patient record for Alfred Rome
- ❖ Create and load an encounter/appointment record for Alfred

Alfred comes into your office and tells you that his acid reflux has steadily been worsening since the last time he saw you. Alfred has been suffering from GERD for the past 6 months. In that time, Alfred has been taking Apo-Cimetidine (cimetidine), but has not felt any relief from his symptoms. Alfred is also intolerant to rabeprazole.

- ❖ Update Alfred's allergy list to include rabeprazole
- ❖ Update Alfred's medication history to include:
  - 1x600mg Apo-Cimetidine (cimetidine) Q6H
- ❖ Record the Apo-Cimetidine treatment as having failed

You decide to look up an alternative to cimetidine and rabeprazole for Alfred's GERD treatment.

- ❖ Look for an alternative to cimetidine and rabeprazole for Alfred's GERD treatment<sup>1</sup>
- ❖ Check to see if Pharmacare covers Pantoloc (pantoprazole) prescriptions<sup>2</sup>

Because Pantoloc is not covered under Pharmacare, you must submit a special authority form for the Pantoloc prescription.

- ❖ Electronically (if possible) create and submit a Special Authority form for a Pantoloc prescription due to treatment failure of the Apo-Cimetidine (cimetidine) prescription and to the patient's allergy to rabeprazole<sup>3</sup>
- ❖ Create a prescription for 1x40mg Pantoloc (pantoprazole), QAM for 8 weeks
- ❖ Electronically authorize (sign off on) Alfred's prescription and save it to the test folder (if possible).

### Footnotes

1. This is to test your system's ability to lookup alternative drugs. Please follow through with the steps even if you are already aware of such an alternative. You find that pantoprazole is an appropriate alternative.
2. Pantoloc (pantoprazole) is not covered by Pharmacare
3. Do not actually submit the special authority form, but go through the steps of submitting it (up until the submission point)

## Scenario #5 – William Connauton – Rheumatoid Arthritis - Controlled Prescription Capture

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

William Connauton was born on June 12<sup>th</sup>, 1941.

- ❖ **Create a patient record for William Connauton**
- ❖ **Create and load an encounter/appointment record for William**

William was diagnosed with rheumatoid arthritis at the age of 53. Of late, William's pain has intensified, causing you to try him out on a 3 week trial of immediate-release oxycodone (Oxy-IR).

- ❖ **Update William's medication history to include:**
  - **1-2 x5mg Oxy-IR (oxycodone), Q6H, PRN**

William returns to your office and tells you that he has managed to keep his pain under control with a total daily dose of 20mg. Given the success of the immediate-release oxycodone prescription, you decide to switch William to an extended release oxycodone hydrochloride (OxyContin) to better manage William's pain and reduce the risk of dependency.

- ❖ **Cancel William's Oxy-IR prescription, listing the reason: "Changing prescription to an extended-release oxycodone hydrochloride"**
- ❖ **Create a prescription for 1x10mg OxyContin (oxycodone hydrochloride), Q12H, for 2 weeks (both in the ePrescribe system and on the required controlled drug prescription form)**
- ❖ **Record the reason for the OxyContin prescription as being for "pain caused by rheumatoid arthritis"**
- ❖ **Electronically authorize (sign off on) William's prescription and save it to the test folder (if possible).**

William thanks you for your time and leaves the office.

## Scenario #6 – Anton Andersson – Co-Morbidities - Advanced Renewal and Cancellation

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Anton Andersson was born on August 22<sup>nd</sup>, 1932.

- ❖ Create a patient record for Anton Andersson
- ❖ Create and load an encounter/appointment record for Anton

Anton has type II diabetes with chronic renal insufficiency, benign prostatic hyperplasia (BPH), and osteoarthritis of both knees. For the past six months, Anton has been taking the following medication regimen:

- ❖ Update Anton's medication history record to include:
  - 2x500mg Glucophage (metformin), BID
    - Indicate that the medication is for diabetes
  - 2x5mg Diabeta (glyburide), BID
    - Indicate that the medication is for diabetes
  - 1x4mg Avandia (rosiglitazone), QD
    - Indicate that the medication is for diabetes
  - 1x0.4mg Flomax CR (tamsulosin), PO, QHS
    - Indicate that the medication is for BPH
  - 1x200mg Celebrex (celecoxib), QD
    - Indicate that the medication is for osteoarthritis

During the patient examination, Anton tells you that his blood pressure, which he monitors weekly, has been on the rise over the past two months, with an average of 140/90. You take Anton's blood pressure and confirm his findings. This high blood pressure, combined with Anton's type II Diabetes, leads you to start treating Anton for hypertension. You also update Anton's current medications accordingly.

- ❖ Cancel the Celebrex (celecoxib) and Avandia (rosiglitazone) prescriptions, listing the reason as "cardiovascular risk"
- ❖ Update Anton's medication history to include 1x50mg Apo-Chlorthalidone (chlorthalidone), QD
- ❖ Change Anton's Flomax prescription from 1x0.4mg Flomax CR (tamsulosin), PO, QHS to 2.0.4mg Flomax (tamsulosin), PO, QHS
- ❖ In one step (if possible), place Anton's Glucophage, Diabeta, Flomax, and Apo-Chlorthalidone in daily dose blister packs and renew the prescriptions for 2 weeks
- ❖ Review Anton's chart
- ❖ Filter Anton's current medications to display medications for osteoarthritis
- ❖ Create a prescription for 1-2 Tylenol #3 (acetaminophen and codeine phosphate), QID, PRN,
  - Indicate that the medication is for osteoarthritis
  - Prescribe Anton 40 tablets
- ❖ Remove the osteoarthritis display filter
- ❖ Electronically authorize (sign off on) Anton's prescriptions and save them to the test folder (if possible).



## Scenario #7 – Frank Glass – Hypertension, CAF, and Hyperlipidemia – Sliding Scale

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Frank Glass was born August 2<sup>nd</sup>, 1943. This is the first time Frank has been treated in your office.

- ❖ **Create a patient record for Frank Glass**
- ❖ **Create and load an encounter/appointment record for Frank**

During the patient examination, you learn that Frank suffers from Hypertension, Chronic Atrial Fibrillation, and Hyperlipidemia. To treat these conditions, you decide to prescribe Frank the following:

- ❖ **Create the following prescriptions and prescribe them for 3 weeks**
  - **1x20mg of Altace (ramipril), QD**
  - **1x20mg and 1x10mg (equalling 30mg) of Lipitor (atorvastatin), QD**
  - **2x400mg of Apo-Acebutolol (acebutolol hydrochloride), QD, before dinner,**
- ❖ **Create a prescription of 126x0.5mg Coumadin (warfarin) tablets under the following sliding scale conditions:**
  - **5x0.5mg of Coumadin (warfarin), QD (if his INR is between 3.0 and 4.0)**
  - **6x0.5mg of Coumadin (warfarin), QD (if his INR is between 2.0 and 3.0)**
  - **7x0.5mg of Coumadin (warfarin), QD (if his INR is less than 2.0)**
  - **An appointment is immediately required (if his INR is greater than 4.0)**

You tell Frank that you will need him to get his INR tested weekly for his warfarin prescription, and that when you get the test results in, you will call him to confirm the medication that he should be taking (under this sliding scale). You decide to also print off the patient instructions for Frank's Coumadin (warfarin) prescription to serve as a secondary reference for Frank during your weekly telephone-based INR checkups.

- ❖ **Print both the drug information and patient instruction sets for the Coumadin (warfarin) prescription.**

You tell Frank to come back in 3 weeks to update you on the new Coumadin dosage. You then decide to send Frank's prescriptions to the pharmacy.

- ❖ **Electronically authorize (sign off on) Frank's prescriptions and save them to the test folder (if possible).**

## Scenario #8 – Jesse Tochkin – Pregnancy - Tapering Dose

- ❖ Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition

Jesse Tochkin was born April 27<sup>th</sup>, 1981.

- ❖ Create a patient record for Jesse Tochkin
- ❖ Create and load an encounter/appointment record for Jesse

Jesse suffers from depression. For her depression she has been taking Prozac (fluoxetine) and Wellbutrin (bupropion) for the past three years.

- ❖ Update Jesse's medication history to include:
  - 1x20mg Prozac (fluoxetine), QD
  - 1x150mg Wellbutrin (bupropion), BID

With this visit, Jesse brings news that she's pregnant. Her long term boyfriend had recently returned home after serving in the Navy for the past 2 years, and they have decided to start a family together. Jesse wants to know if the antidepressants that she is taking can affect her pregnancy in any way.

- ❖ Check Jesse's current medications for possible side effects with pregnancy<sup>1</sup>

You discuss the possible risks of using the antidepressants during pregnancy and breastfeeding with Jesse, and together, you decide that she is capable of going off of the medications.

- ❖ Cancel the Prozac (fluoxetine) prescription, and provide the reason (i.e. "Possible side-effects with pregnancy")
- ❖ Renew the Wellbutrin (bupropion) prescription for 27x150mg tablets to taper off at the following rate:
  - Week 1 – 1x150mg Wellbutrin (bupropion), BID
  - Week 2 – 1x150mg Wellbutrin (bupropion), QD
  - Week 3 – 1x150mg Wellbutrin (bupropion), 4/week (four per week)
  - Week 4 – 1x150mg Wellbutrin (bupropion), 2/week (two per week)
  - Stop after week 4

You congratulate Jesse as she leaves your office.

### Footnotes

1. A warning should be issued to the physician about possible side effects concerning pregnancy/lactation for both of the anti-depressants she is currently taking.

## Scenario #9 – Jane Schneider – Menopause Treatment – Customized Prescription Cycle

- ❖ **Start the recording and state your name, the current date, the name of the system that is being tested, the name of the scenario that is being tested, and the test condition**

Jane Schneider was born on March 1st, 1951. She has recently been suffering from severe menopausal symptoms (hot flashes, irregular menstruation, mood changes, etc.).

- ❖ **Create a patient record for Jane Schneider**
- ❖ **Create and load an encounter/appointment record for Jane**

She has come to you to see if there is anything you can do to help relieve these symptoms, as she feels that they are preventing her from enjoying her life. She mentions to you that she has a friend in a similar situation who recently started taking the drugs Premarin (conjugated estrogens) and Prometrium (progesterone), and that this has made her feel much better. Jane is wondering if such drugs could help her condition.

- ❖ **Look up the contraindications for using Premarin (conjugated estrogens) and Prometrium (progesterone) <sup>1</sup>**
- ❖ **Using your EMR, check Jane Schneider's record for a family history of the above found contraindications as well as for her last breast exam**
  - **You find that there is no recorded family history of the above found contraindications**

Your research helps you conclude that Premarin (conjugated estrogens) and Prometrium (progesterone) are appropriate drugs for your patient. You decide to prescribe them under the following criteria<sup>1</sup>:

- 1x0.3mg Premarin (conjugated estrogens) QD, for 25 days
    - Take 5 days off from taking the Premarin (conjugated estrogens)
    - Repeat the 30 day cycle 3 times (equalling 75 tablets), then return for another check-up
  - 1x200mg Prometrium (progesterone) QHS, for 10 days, on days 16-25 of the 30 day Premarin (conjugated estrogens) cycle
    - Repeat for each of the three Premarin (conjugated estrogens) cycles (30 tablets)
- ❖ **Create a prescription for Premarin (conjugated estrogens) according to the above criteria**
  - ❖ **Create a prescription for Prometrium (progesterone) according to the above criteria**
  - ❖ **Using the ePrescribe tool, calculate the when the combination Premarin and Prometrium prescriptions will expire and schedule an appointment for Jane one week before this date.**
  - ❖ **Electronically authorize (sign off on) Jane's prescriptions and save them to the test folder (if possible).**

There is nothing else ailing Jane at this time. She thanks you for your time, and tells you that she will see you in around 3 months to review her hormone replacement therapy.

### Footnotes

1. Premarin and Prometrium should not be used on patients with such conditions as: Undiagnosed abnormal genital bleeding; Known, suspected, or history of cancer of the breast except in appropriately selected patients being treated for metastatic disease; Known or suspected estrogen-dependent neoplasia, etc.
2. It is known that the listed Premarin customized prescription cycle may not be used by all physicians; however, it is intended to be used in this scenario as an example of a tailored prescription cycle (so that the usability in such system flows can be tested).

## Scenario #10 – Multiple Patient Renewal Requests

- Several patients need to be setup with patient histories and requests for renewals of medications
  - E-289
    - Can office staff send requests to the physicians?
    - Once the physician has made the renewal, is the office staff notified?
  - 290 - Can you cluster the renewal requests by patient?
  - 291 - Do the renewal requests show the patient: allergies, previous prescriptions, etc.?
  - 292 - Can the physician document that the pharmacy has been notified of a follow-up associated with the medication renewal?
  - 293 - Can you change/cancel these renewal requests and provide a reason and can you store information in the patients record
  - 294 - Are the same features available in these renewals as regular prescriptions?

*Scenario to be defined if/when needed*

# Part 4. System Automation Test Task Sets

## Task Set #1 – James Druken – Middle-aged Male Tests

- ❖ Create and load a patient record and encounter for James Druken, born February 23, 1971

Req. ID	Feature	Test
E-181	Updates drug formulary on a timely basis, when available	<i>[Test by questioning the user]</i>
E-183	Provides an alert capacity able to provide drug interaction checking:	(see 183.1-183.4 below)
E-183.1	Drug : drug	<ul style="list-style-type: none"> <li>❖ Create a prescription for 1x3mg Coumadin (warfarin), QD, expires in two weeks</li> <li>❖ Create a prescription for 1x500mg Biaxin (clarithromycin, Q12H, expires in 2 weeks)</li> </ul> <p>A warning should be issued to alert the physician that a possible drug-drug interaction would occur between the Coumadin (warfarin) and the Biaxin (clarithromycin) A prompt should also inform the physician about the monitoring parameters of warfarin (T-9)</p>
E-183.2	Drug : disease	<ul style="list-style-type: none"> <li>❖ Enter Congestive Heart Failure into James' record</li> <li>❖ Create a prescription for 2x500mg Glucophage (metformin), BID, expires in 3 weeks</li> </ul> <p>A warning should be issued to alert the physician that Glucophage should not be given to a patient with Congestive Heart failure</p>
E-183.3	Drug : Allergy	<ul style="list-style-type: none"> <li>❖ Enter Penicillin as an allergy into James' record</li> <li>❖ Create a prescription for 2x500mg Amoxil (amoxicillin), Q8H, for 10 days</li> </ul> <p>An allergy warning should be thrown by the ePrescribe system, as Amoxil (amoxicillin) is in the same drug class as Penicillin</p>
E-183.4	Drug : Procedure	<ul style="list-style-type: none"> <li>❖ Enter that James is going to have a colonoscopy in 3 days into his record</li> <li>❖ Create a prescription for 1x81mg Aspirin (acetylsalicylic acid), QD – prescription expires in 3 weeks</li> </ul> <p>A warning should be issued that Aspirin should not be taken for 1 week before the colonoscopy</p>
E-185	Calculates total number of days duration for a prescription if requested in # of doses where appropriate / possible	<ul style="list-style-type: none"> <li>❖ Create a prescription for 1x250mg of E-Mycin (erythromycin), Q8H, for 27 doses</li> </ul> <p>The system should calculate the expiry date to be 9 days away</p>
E-190	Generates paper prescription with provider / clinic details as per CPSBC requirements	<ul style="list-style-type: none"> <li>❖ Print the above E-Mycin (erythromycin) prescription</li> </ul> <p>Check that the printed prescription meets with CPSBC requirements</p>
E-194	Links renewals back to the	<ul style="list-style-type: none"> <li>❖ Create a prescription for 1x20mg Accupril</li> </ul>

	original prescription	<ul style="list-style-type: none"> <li>❖ (quinapril), QD, prescription expires today</li> <li>❖ Renew the prescription for another week</li> </ul> <p>Check that the renewal is linked back to the original prescription</p>
E-204	Flags when a prescription renewal request is occurring before expected renewal date	<ul style="list-style-type: none"> <li>❖ Create a back-dated prescription from 1 week ago for 2xTylenol #3 (acetaminophen and codeine phosphate), QID, expires in 3 weeks</li> <li>❖ Create a renewal request for the Tylenol #3 prescription</li> </ul> <p>A premature renewal warning should be issued since the Tylenol #3 prescription shouldn't expire for another 2 weeks</p>
E-205	Displays consistent and accurate dosages for medications in the medication profile	<ul style="list-style-type: none"> <li>❖ Create a prescription for 1x5mg + 2x1mg tablets of Deltasone (prednisone), QD, for 1 week</li> </ul> <p>The Deltasone (prednisone) prescription should display the full 7mg dose</p>
T-1	Audit trails show exactly which physician or provider prescribed a medication and when	<ul style="list-style-type: none"> <li>❖ Look at the audit trail for the above Deltasone (prednisone) prescription.</li> </ul> <p>The audit trail should contain information about the user who created it and the time it was created</p>
T-2	Role-based access, meaning only those who are authorized to see sensitive patient information can access it	<ul style="list-style-type: none"> <li>❖ Log out of the system as a physician. Log back into the system as someone with lower role privileges.</li> </ul> <p>The system should not allow you to look up James' medical history</p>
T-7	Provides duplicate therapy checking	<ul style="list-style-type: none"> <li>❖ Log back into the system as a physician and go back into the encounter for James.</li> <li>❖ Create another prescription for 1x250mg of E-Mycin (erythromycin), Q8H, for 27 doses</li> </ul> <p>The system should throw a duplicate prescription warning, as James has already been prescribed E-Mycin</p>
T-9	Prompts prescriber of medications with special monitoring parameters	Tested in 183.1
T-10	Provides drug-Pediatric dose checking	See task set #3
T-11	Provides drug-pregnancy/lactation checking	See task set #4
T-17	Automatically mails the patient's diagnostic record to the office of the patient's primary care provider	<i>[Test by questioning the user]</i>
T-18	Electronic transfer of "fill status" from pharmacy to physician	<i>[Test by questioning the user]</i>
T-23	Uses visual cues to indicate the formulary status of a medication for a patient	<ul style="list-style-type: none"> <li>❖ Set James' extended drug plan to Standard Life</li> <li>❖ Lookup the available diabetes under the Standard Life formulary</li> </ul> <p>The system should provide visual cues to indicate the drug's formulary status.</p>
T-24	Alerts physicians about abnormal medication dosages	<ul style="list-style-type: none"> <li>❖ Create a prescription for 2x150mg Wellbutrin (bupropion), QID, for 1 week</li> </ul> <p>A warning should be given by the system that the maximum recommended Wellbutrin dose is 300mg per day as (1x150mg, BID)</p>

## Task Set #2 – Jamie Reid – Pregnant Female Tests

- ❖ Create and load a patient record and encounter for Jamie Reid, born April 13, 1984
- ❖ Update Jamie's record to indicate that she's 6 months pregnant

Req. ID	Feature	Test
T-11.1	Provides drug-pregnancy	<ul style="list-style-type: none"> <li>❖ Create a prescription for 1x150mg Wellbutrin (bupropion), QAM, for 2 weeks</li> <li>❖ Create a prescription for 1x20mg of Lipitor (atorvastatin), QD - prescription expires in 1 day</li> </ul> <p>A minor warning should be triggered, stating that Wellbutrin is not recommended for pregnant women A major warning should be triggered, stating that Lipitor should not be taken by pregnant women.</p>
T-11.2	Provides drug- lactation checking	<ul style="list-style-type: none"> <li>❖ Change Jamie's status from pregnant to breastfeeding</li> <li>❖ Create a prescription for 1x50mg Imuran (azathioprine), QD, for 2 weeks</li> </ul> <p>A warning should be triggered that Imuran (azathioprine) is not recommended for breastfeeding mothers.</p>

## Task Set #3 – Amy Weekes – Paediatric Patient Tests

- ❖ Create and load a patient record and encounter for Amy Weekes, born 5 years ago today. She is 114.3cm (3'9) tall and weighs 18.1kg (40lbs)
- ❖ Add that her family has a history of severe penicillin allergies (involving anaphylaxis)

Req. ID	Feature	Test
T-8	Links to external DSS tools	<ul style="list-style-type: none"> <li>❖ Create a prescription for 2x500mg Amoxil (amoxicillin), Q8H, for 10 days</li> </ul> <p>A warning should note that Amy's family has a history of severe penicillin allergies and that Amoxil (amoxicillin) is in the same drug class as Penicillin</p>
T-10	Provides drug-Pediatric dose checking	<p>A warning should note that an adult dose (2x500mg, Q8H) was prescribed for a child patient. Under the guidelines of 40mg/kg/day divided in doses every 8 hours for child patients &lt; 20kg, an appropriate Amoxil (amoxicillin) dose for Susie would be 1x250mg Amoxil (amoxicillin), Q8H, for 10 days (if there were no allergy present).</p>

## Part 5. Feature Checklist

Feature Present	Req. ID	Category	Sub-category	Requirement Description	Example (e.g.)	Tested In Scenario
Order Medications (Health, 2007)						
<input type="checkbox"/>	E-173	Order Medications	Process Prescriptions	Maintains patient's medication as discrete data elements.		*Must be tested after scenarios
<input type="checkbox"/>	E-174	Order Medications	Process Prescriptions	Maintains patient medication list, including prescribing and dispensing events.		
<input type="checkbox"/>	E-175	Order Medications	Process Prescriptions	Provides prescription writing and printing.		
<input type="checkbox"/>	E-176	Order Medications	Process Prescriptions	Ability to search medications by category / class when writing a prescription.	e.g. Supports the ATC and AHFS classification schemes.	
<input type="checkbox"/>	E-177	Order Medications	Process Prescriptions	Ability to create a user-defined list of "favourites" medications to assist when writing prescriptions.	e.g. Each user of the system can set up a list of common medications (with dosage, frequency, patient instructions, etc) that they prescribe that can be quickly accessed.	
<input type="checkbox"/>	E-178	Order Medications	Generate Prescription	Ability to capture medications dispensed locally (i.e. at the clinic).		
<input type="checkbox"/>	E-179	Order Medications	Process Prescriptions	Provides a searchable listing of medications, by Canadian brand name and generic name, when writing prescriptions.	e.g. User may search for Altace and Ramipril and find the same medications.	



Feature Present	Req. ID	Category	Sub-category	Requirement Description	Example (e.g.)	Tested In Scenario
<input type="checkbox"/>	E-180	Order Medications	Drug Formulary	Maintains a BC-compatible medication formulary that can be shown when writing prescriptions.  Shows the provider which medications are covered by various formularies.		
<input type="checkbox"/>	E-181	Order Medications	Drug Formulary	Updates drug formulary on a timely basis, when available.	e.g. Once a month.	*Not testable in scenarios
<input type="checkbox"/>	E-182	Order Medications	Process Prescriptions	Ability to enter drugs that are not in the standard Formulary.	e.g. Custom creams are supported.	
<input type="checkbox"/>	E-183	Order Medications	Interaction Checking	Provides an alert capacity able to provide drug interaction checking.  Drug interaction checking includes: Drug:Drug, Drug:Disease, Drug:Allergy, Drug:Procedure.		
<input type="checkbox"/>	E-184	Order Medications	Process Prescriptions	Provides support to prescription writing including: recommended dosage, route, refills, repeats, etc.		
<input type="checkbox"/>	E-185	Order Medications	Process Prescriptions	Calculates total number of days duration for a prescription if requested in # of doses where appropriate / possible.	e.g. Prescription for 100mg TID for 30 doses displays 10 days duration.	
Feature Present	Req. ID	Category	Sub-category	Requirement Description	Example (e.g.)	Tested In Scenario

<input type="checkbox"/>	E-186	Order Medications	Process Prescriptions	Provides a mechanism for quick renewal of medications.		
<input type="checkbox"/>	E-187	Order Medications	Process Prescriptions	Ability to individualize dosing, such as a tapering dose of steroids.  The prescription writer allows for non-standard and complex dosing patterns (e.g. 1 twice a day and 2 at bed time, e.g. 5mg day one and tapering by 1 mg every 2 days until completed).		
<input type="checkbox"/>	E-188	Order Medications	Process Prescriptions	Ability to add custom directions for medications.		
<input type="checkbox"/>	E-189	Order Medications	Process Prescriptions	Provides ability to include multiple prescriptions on one printout.		
<input type="checkbox"/>	E-190	Order Medications	Generate Prescription	Generates paper prescription with provider / clinic details as per CPSBC requirements.	e.g. Print at either 1/4 page or full page a prescription with the list of prescribed medications with typical formatting of a paper prescription in BC, including clinic / prescriber information (address, phone, name, college ID).	
<input type="checkbox"/>	E-191	Order Medications	Transmit Prescriptions	Ability to send prescriptions by fax / e-fax to a pharmacy.		
<input type="checkbox"/>	E-192	Order Medications	Process Prescriptions	Captures controlled prescriptions in the EMR Application (not currently able to print valid prescriptions due to CPSBC guidelines). See: <a href="https://www.cpsbc.ca/cps/college_programs/controlled_prescription">https://www.cpsbc.ca/cps/college_programs/controlled_prescription</a>	e.g. Can document prescriptions for Dilaudid so it can be tracked by physician, etc. even though these need to be hand written also.	
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>

<input type="checkbox"/>	E-193	Order Medications	Process Prescriptions	Ability to renew medication from patient's list of existing medications without retyping medication.	e.g. Can refill Ramipril for 90 days quickly without retyping dosage, strength, etc.	
<input type="checkbox"/>	E-194	Order Medications	Manage Renewals	Links renewals back to the original prescription.		
<input type="checkbox"/>	E-195	Order Medications	Medication Profiles	Ability to change medications.	e.g. Highlights changing the dosage, frequency or strength.	
<input type="checkbox"/>	E-196	Order Medications	Process Prescriptions	Ability to discontinue a patient's prescription and record the reason.	e.g. Patient has side effect.	
<input type="checkbox"/>	E-197	Order Medications	Reference Support	Professional (as well as patient) monographs are available while prescribing and can be printed from within the EMR Application.		
<input type="checkbox"/>	E-198	Order Medications	Transmit Prescriptions	Ability to maintain a list of pharmacies and preferred method of prescription receipt.	e.g. Include a fax number for transmission.	
<input type="checkbox"/>	E-199	Order Medications	Transmit Prescriptions	Maintains patient-preferred pharmacy information.	e.g. Can document name, address and phone number of patient's preferred pharmacy and it is accessible from the patient's main screen and medication screens in case a call is required.	
<input type="checkbox"/>	E-200	Order Medications	Process Prescriptions	Ability to generate Special Authority Forms.  For current forms, see: <a href="http://www.healthservices.gov.bc.ca/pharme/sa/criteria/formsiindex.html">http://www.healthservices.gov.bc.ca/pharme/sa/criteria/formsiindex.html</a>	e.g. Provides the user with a pre-populated special authority form for the particular medication that is being prescribed.	
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>

<input type="checkbox"/>	E-201	Order Medications	Process Prescriptions	Provides a Special Authority Form tool with ability to easily document appropriate reasons for requiring special authority.	e.g. Can provide pick list for reasons that a medication is required.	
<input type="checkbox"/>	E-202	Order Medications	Process Prescriptions	Tracks the duration of special authority authorization on a per-patient, per-medication level and can provide reminders to providers when the special authority is coming due or is overdue.		
<input type="checkbox"/>	E-203	Order Medications	View Medications	Ability to display and sort historical medication data using a user-defined selection criteria.	e.g. Show all prescriptions in the system. e.g. Show all anti-depressants that have been prescribed to the patient from the EMR Application.	
<input type="checkbox"/>	E-204	Order Medications	View Medications	Flags when a prescription renewal request is occurring before expected renewal date.	e.g. When prescribing addictive substances it is important to flag if a medication is being used more quickly than expected.	
<input type="checkbox"/>	E-205	Order Medications	Medication Profiles	Displays consistent and accurate dosages for medications in the medication profile.	e.g. Profile shows both taking 1 1/2 40mg tablets and 60mg dosage. e.g. If two prescriptions for a medication are overlapping, the combined dose is displayed (e.g. Prednisone 1 5mg tablet + 2 1 mg tablets = 7mg dose).	
Medication Renewal Requests (Health, 2007)						
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>

<input type="checkbox"/>	E-289	Medication Renewals	Manage Renewals	Support the process of managing renewal requests.	e.g. Office Staff receive medication renewal requests from patients, pharmacists and nurses by phone, fax, electronic and generate renewal requests in EMR Application for physician to review and sign off. Once the physician signs off, the office staff are alerted and can call pharmacy.	
<input type="checkbox"/>	E-290	Medication Renewals	Manage Renewals	Allow providers to renew prescriptions easily from a list of active renewal requests.	e.g. Provides a list of renewal requests. e.g. Can cluster requests by patient for better workflow.	
<input type="checkbox"/>	E-291	Medication Renewals	Manage Renewals	Allow direct access to the patient summary and chart from the renewal request to review recent medical history, prescription patterns, prescription usage, allergies, alerts, etc.	e.g. Will show allergies, will show if previous prescription has not expired during renewal process.	
<input type="checkbox"/>	E-292	Medication Renewals	Manage Renewals	Ability to document that patient or pharmacy has been notified of follow-up associated with medication renewals.	e.g. Document that the pharmacy was faxed or phoned.	
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>
<input type="checkbox"/>	E-293	Medication Renewals	Manage Renewals	Ability to document a change or cancellation of renewal requests and provide a reason for the change or cancellation.  Ability to store information in the patient record for future follow up.		

<input type="checkbox"/>	E-294	Medication Renewals	Manage Renewals	All prescription renewals are created as regular prescriptions and have the same features available.		
<b>Non-PITO Required ePrescribe Functions</b>						
<input type="checkbox"/>	T-1	Order Medications	Process prescription	Audit trails show exactly which physician or provider prescribed a medication and when	e.g. Physician ID "21324" prescribed patient ID "29402" 100mg of Penicillin on Jan 21, 2009 at 12:30pm.	test after scenarios)
<input type="checkbox"/>	T-2	Order Medications	Process prescription	Role-based access, meaning only those who are authorized to see sensitive patient information can access it	e.g. A walk-in clinic physician will not be able to view the patient's medication history for his mental health issues if the patient is just coming in for influenza.	(*test after scenarios)
<input type="checkbox"/>	T-3	Order Medications	Reference Support	Integrates patient demographics into the e-prescribing application quickly and easily	e.g. The patient's: full name, gender, address, phone numbers, date of birth, etc. are associated with each prescription entry	
<input type="checkbox"/>	T-4	Order Medications	Process Prescriptions	System provides diagnosis with prescription	e.g. A Biaxin (clarithromycin) prescription is associated with a Streptococcus Pneumoniae diagnosis	
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>
<input type="checkbox"/>	T-5	Order Medications	Reference Support	Provides information regarding a drug's clinical efficacy and benefits	e.g. "Prednisone can be used for inflammatory diseases such as...."	
<input type="checkbox"/>	T-6	Order Medications	Reference Support	Ability to look-up and/or print dosing and usage guidelines, side-effects, indications and contraindications	e.g. "Coumadin (warfarin) sodium can cause major or fatal bleeding..."	
<input type="checkbox"/>	T-7	Order Medications	Interaction Checking	Provides duplicate therapy checking	e.g. The ePrescribe system would prompt the ordering physician with a warning if a medication was ordered that was similar to a medication that the patient is already taking (i.e. Two ACE inhibitors)	

<input type="checkbox"/>	T-8	Order Medications	Reference Support	Links to external DSS tools	e.g. The ePrescribe system would not only utilize its own internal decision support engine but also the EMR's decision support tools for additional safety checks (i.e. Checking family history, etc.)	
<input type="checkbox"/>	T-9	Order Medications	Process Prescriptions	Prompts prescriber of medications with special monitoring parameters	e.g. For a Coumadin (warfarin) prescription, a prompt would come up to the ordering physician indicating that the dose should be changed depending on rising or falling INR values	
<input type="checkbox"/>	T-10	Order Medications	Interaction Checking	Provides drug-paediatric dose checking	e.g. Checks the prescribed dose against the weight of the paediatric patient	
<input type="checkbox"/>	T-11	Order Medications	Interaction Checking	Provides drug-pregnancy/lactation checking	e.g. A warning is provided to a physician if a pregnant woman is ordered to take an ACE inhibitor	
<input type="checkbox"/>	T-12	Order Medications	Drug Formulary	Provides information concerning the availability of a lower cost, therapeutically appropriate alternative drug (if any is available)	e.g. A proton pump inhibitor is needed so the physician orders Pantoloc (pantoprazole), but the system provides a warning that Zantac (ranitidine) is a more cost effective alternative.	
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>
<input type="checkbox"/>	T-13	Order Medications	Process Prescriptions	System suggests alternate meds as necessary due to clinical needs	e.g. A system prompt recommends one antibiotic over another for fighting the patient's specified bacterial infection	
<input type="checkbox"/>	T-14	Order Medications	Drug Formulary	System suggests alternate meds as necessary due to eligibility needs	e.g. A proton pump inhibitor is needed so the physician orders Pantoloc (pantoprazole), but the system provides a warning that Pantoloc (pantoprazole) isn't covered by Pharmacare, so Zantac (ranitidine), a drug that is covered by Pharmacare should be ordered in its place	

<input type="checkbox"/>	T-15	Order Medications	Process Prescriptions	Ability to electronically sign off on one or multiple prescriptions	e.g. During a patient encounter, the physician prescribed 4 medications. Instead of having to individually authorize each medication, the physician can simply check all prescriptions he/she wishes to authorize, and then complete the authorization process for all prescriptions in one step.	
<input type="checkbox"/>	T-16	Order Medications	Process Prescriptions	Ability to electronically sign off on the items created by ancillary staff, residents, or others	e.g. A student filled out an antibiotic prescription for their patient; however, for the prescription to be authorized, a physician must first electronically approve the student's choice of intervention	
<input type="checkbox"/>	T-17	Order Medications	Transmit Prescriptions	Electronic transfer of "fill status" from pharmacy to physician	e.g. The pharmacy information system automatically sends a notification to the physician's ePrescribe system when a prescription has been filled by the patient (meaning the pharmacist has dispensed the medications)	
<b>Feature Present</b>	<b>Req. ID</b>	<b>Category</b>	<b>Sub-category</b>	<b>Requirement Description</b>	<b>Example (e.g.)</b>	<b>Tested In Scenario</b>
<input type="checkbox"/>	T-18	Order Medications	Generate Prescription	Generates educational material (i.e. prescription directions), an invoice and a prescription (when clinically appropriate) for the patient	e.g. For more complicated prescriptions, the ePrescribe system can automatically print off instructional or informational material about the prescription for the patient	
<input type="checkbox"/>	T-19	Medication Renewals	Transmit Prescriptions	Supports refill request routing: that pharmacies use to send refill reminders/requests to prescribers for approval and return for processing	e.g. A patient can go into a pharmacy and request a prescription renewal from the pharmacist, who can then forward the prescription renewal request to the ordering physician	*Can't be tested without a pharmacy



<input type="checkbox"/>	T-20	Order Medications	Transmit Prescriptions	Ability to send prescriptions to multiple locations	e.g. The prescription can be sent to multiple pharmacies, a hospital ward, etc.
<input type="checkbox"/>	T-21	Order Medications	Interaction Checking	Maintains and utilizes a history of patient-specific drug allergy and adverse reactions, along with the allergy/reaction severity.	e.g. The system would differentiate between a mild rash that the patient suffered from after taking one drug, from Anaphylactic shock that occurred after taking another drug
<input type="checkbox"/>	T-22	Order Medications	Drug Formulary	Uses visual cues to indicate the formulary status of a medication for a patient	e.g. Green = available, red = non-formulary, etc.
<input type="checkbox"/>	T-23	Order Medications	Process Prescriptions	Alerts physicians about abnormal medication dosages	e.g. A prescription of 3x100mg Wellbutrin (bupropion) QAM exceeds the recommended one time dose safety guidelines for the drug (150mg). In this case, a warning should be issued by the system to alert the prescriber to this potential danger.

# Part 6. Sources of ePrescribe Features

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