Software Engineering 2

for

CLAP Processing System

Version 1.0 approved

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Contents

1. Introduction

1.1 Purpose

This document is written to describe the conceptual design of the CLAP system. CLAP system is an add-on web application, which allows clinicians or health providers to view, edit and add medical information/record (for example medical conditions, treatments, prescriptions, etc.) for a patient under their care. This report will document all expected functionalities of the system and different roles or users that will be using this system. The document will present an overview of the system through system context and architecture, system activities, conceptual model, as well as the analysed model and design on each requirement.

1.2 Scope and Boundary

As CLAP is an extended application of MyHealthRecord, all the medical information of the patients and clinicians' profiles are based on and will be saved in MyHealthRecord database. The CLAP system will not only aid with health providers to operate the medical system easier, but also to combine the medical information from different health providers. In this documentation, CLAP system will be illustrated by architecture model, use-case diagram, activity diagrams, conceptual model, explanation of use cases and their acceptance tests. The use cases provided in this report are used to identify, clarify, and organise system requirements. They also build up the possible sequences of interactions between the CLAP system, MyHealthRecord system, clinicians and patients for particular goals. Furthermore, this document provides the conceptual model to help the reader understand or simulate the CLAP system including patient, clinician, treatment, condition, prescription, etc. To avoid scope creep, assumptions will be listed under section 1.4.

1.3 Assumptions and Decisions

1.3.1 Patient

- Patient has Medicare card, and their ID has already registered in the system.
- Upon authenticating new provider, patient agrees to share all medical history (of all previous old providers) with the new health provider.
- Upon authenticating new provider, patient will be accepting or rejecting the request on-site, hence there will be no waiting time.
- Patient already login-ed into the system and the credential is valid.
- Patient has an email address that has been recorded in the system.

1.3.2 Clinician (Health Provider)

- Clinicians already login-ed into the system and the credential is valid.
- Same clinician shall be handling treatment and follow-up.

1.3.3 Treatment

- Consultation will be treated as a treatment.

- Options for treatment details (dose/quantity, frequency, schedule) can be null for different kinds of treatments. For example:
    - Having vaccine needs dose, frequency and schedule (no null value).
    - A surgery requires schedule and description (dose/quantity and frequency are null).
- Diagnostic test is recorded as a part of the treatment.
- In order to edit a previous treatment, there must be at least one treatment recorded in the system.

1.3.4 Treatment follow-up

- Adding follow-up to a treatment happens when the patient has finished a treatment and their recovery progress needs to be monitored by clinical staffs.
- Sending patient reminder email is applicable for at-home patient.
- Patient reminder is only for reminding the patient to book an appointment with the doctor.
- Patient receives reminder email one week earlier than the estimated appointment date.

1.4 References

[1] Azure DevOps. "Azure DevOps." https://azure.microsoft.com/en-us/services/devops/ (accessed 18 Sept, 2020).

[2] draw.io. "Draw.io." https://app.diagrams.net/ (accessed 18 Sept, 2020).

[3] Lucidchart. "Lucidchart." https://app.lucidchart.com/ (accessed 18 Sept, 2020).

[4] S. Qin. "Project Broad Statement of Needs" https://flo.flinders.edu.au/pluginfile.php/4273606/mod_resource/content/1/SE2ProjectBroadStatementOfNeeds2020.pdf (accessed 18 Sept, 2020).

[5] S. Qin. "Project Phase 1 Specification." https://flo.flinders.edu.au/mod/resource/view.php?id=2814591 (accessed 18 Sept, 2020).

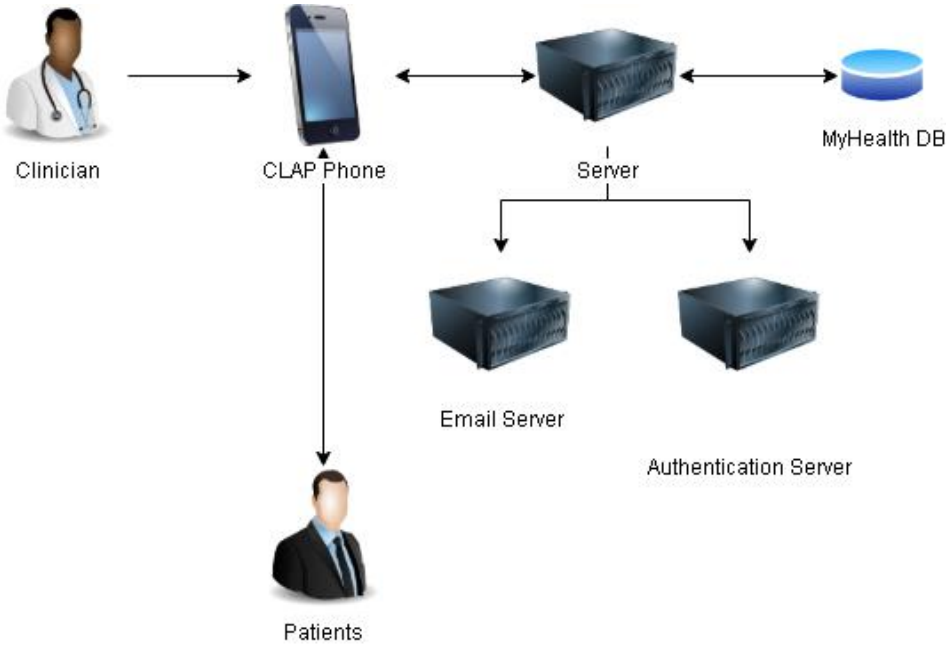
[6] Repo. “Azure DevOps” https://dev.azure.com/SE2-MyHealthRecord (accessed 18 Sep,2020).

[7] Microsoft Teams. “Microsoft teams” https://www.microsoft.com/en-au/microsoft-365/microsoft-teams/group-chat-software (accessed 18 Sep,2020).

2. System Overview

2.1 System Context and Architecture

2.1.1 Preliminary system architecture design diagram



2.1.2 System context diagram / Use-case diagram

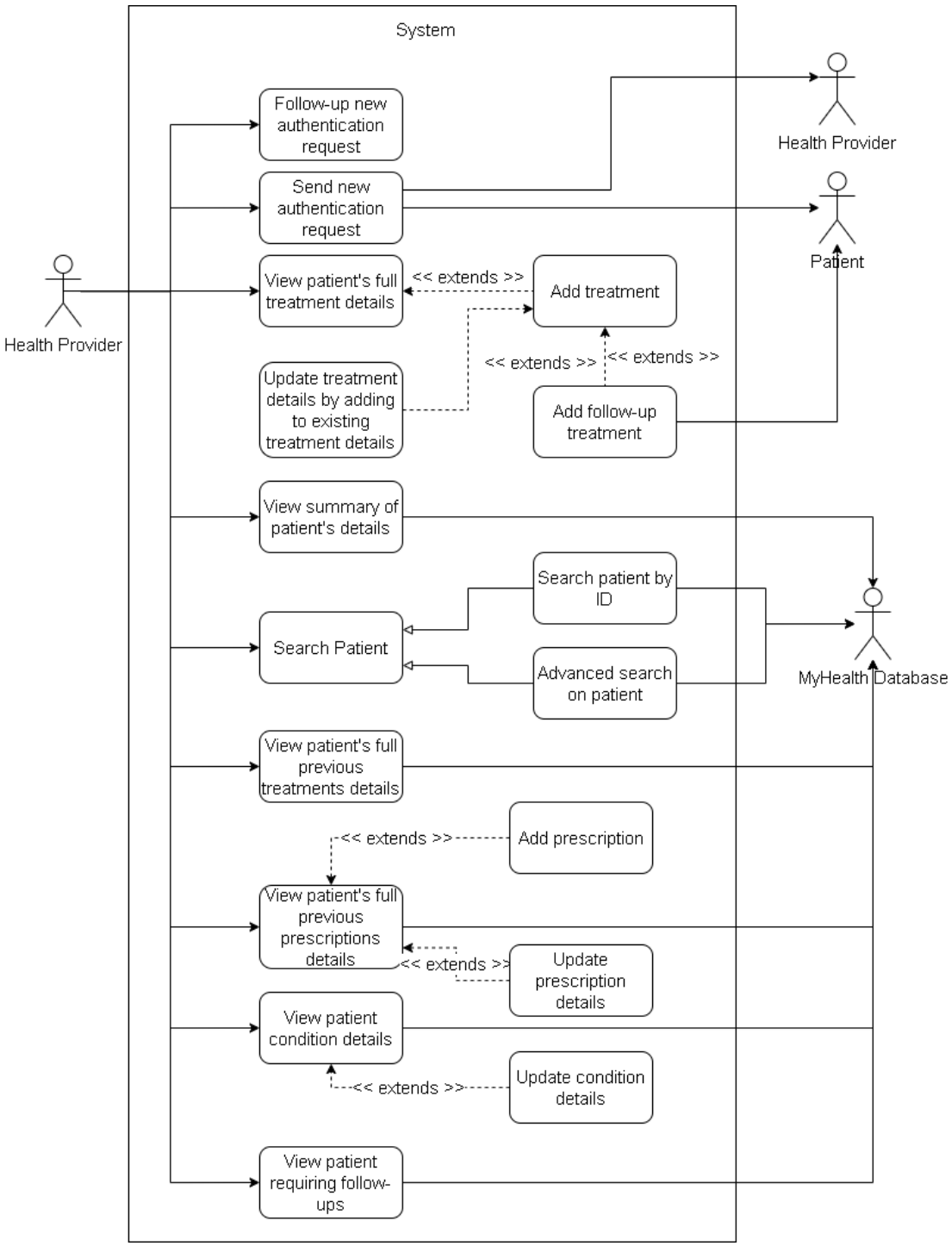
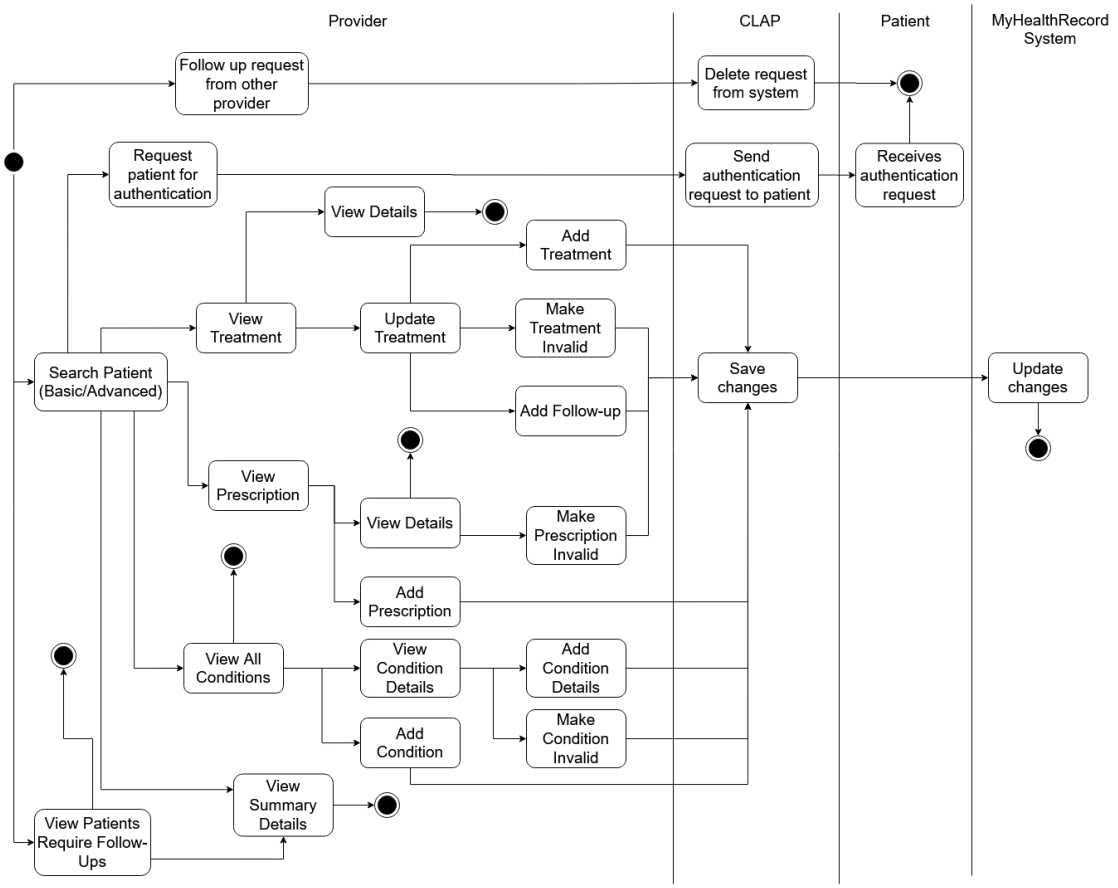


Figure above will show the use cases required in the system. All the use cases recorded are the one retrieved from project broads of statement needs [4]. Note that this use case diagram is a high-level concept. More elaboration of how each use cases work will be explained in the next few sections.

2.2 System activity diagram

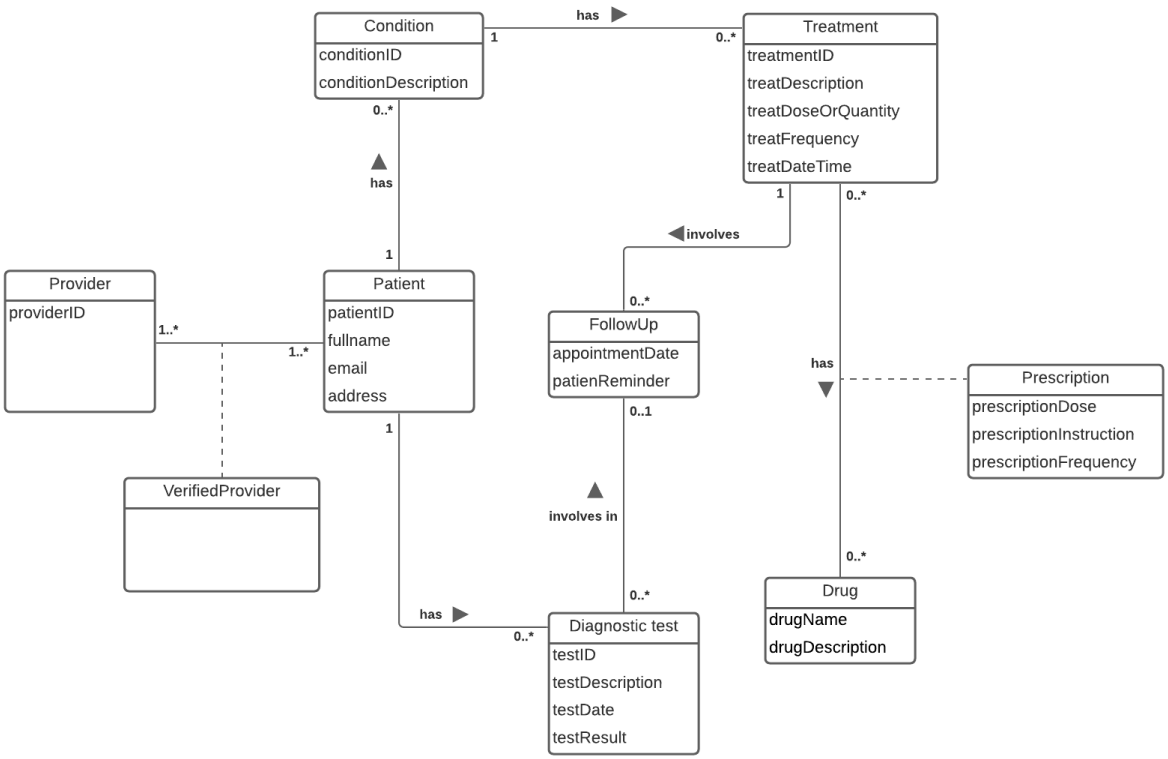


The activity diagram is one type of UML diagram. It helps to describe the relationship within the system. They can also be used to describe each step in a use case diagram and can be sequential and concurrent. Likewise, the activity diagram displays the flow from one activity to another activity and works as an advanced version of the flow chart. These activity diagrams in the CLAP system are representing a series of actions or workflow of control in a system like a flowchart or a data flow diagram. More detailed activity diagrams can be seen in section 3, where all the use cases will be explained and elaborated further. System activity diagram, as shown above, will integrate various use cases. For this documentation, the system activity diagram shows the workflow in different activities among different roles such as Health provider, patient, CLAP system, and MyHealthRecord system.

2.3 Conceptual Model

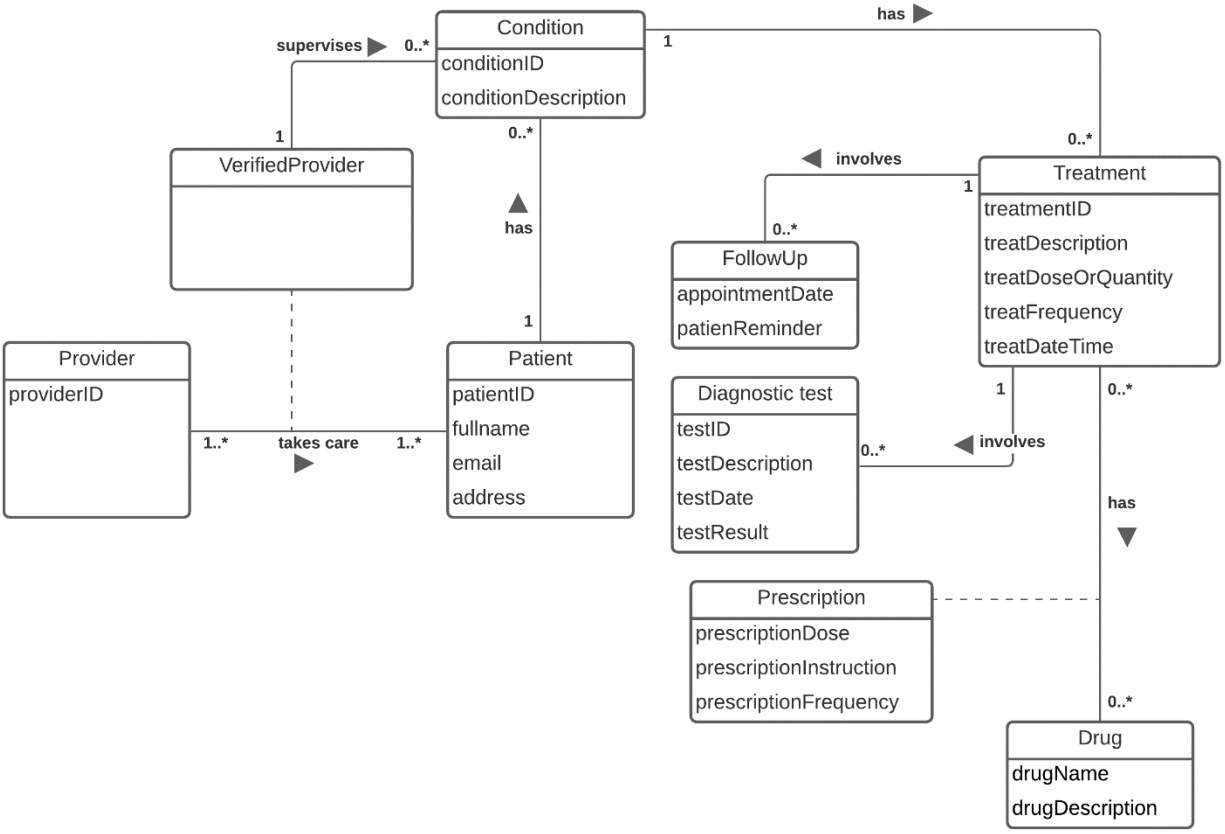
The conceptual diagram captures candidate concepts (entities) from the defined use cases, together with the relationships between entities, and the associated attributes of entities and some of the relationships. This document identifies several entities involving in the CLAP web-application, including the Health Provider, Verified Health Provider, Patient, Condition, Treatment, Follow up, Diagnostic test, Drug, and Prescription. Also, the occurrence of all the entities in the system is described by the multiplicities associated with each of the relationships.

2.3.1 First Iteration



This iteration creates a very rough draft of the conceptual model of CLAP system. There were some minor details missing in this diagram, such as the fact that verified provider will not be able to create new conditions to patients. Based on this model, each condition may have treatments given by the health provider. Patient may or may not have diagnostic test on-site such as X-Ray. The follow-ups may or may not be required for each treatments or diagnostic tests. During discussion, it is decided that diagnostic tests are better to be treated as a part of treatment, considering the assumption that listed under treatment. A treatment might have drugs included. If there is drug included in the treatment, it will be listed under prescription.

2.3.2 Second Iteration



In this iteration, now the authenticated health provider that takes care of patient can create a condition and add it to the system. Based on this system, health provider could also add treatment since there is a relationship between condition and treatment. This will force the health provider to create treatment based on each condition, since it would not be possible for patient to be treated without any condition. The treatment, as previously mentioned, will still have follow-ups if required. The diagnostic test entity is now connected with treatment as well, as mentioned above. This would allow diagnostic test to be tracked for each treatment, considering multiple same diagnostic tests might be necessary. A treatment might have several different diagnostic tests such as MRI, X-Ray or blood test.

3. User Stories/Use cases

3.1 New provider first time access jointly authenticated by the patient and healthcare providers

Use Case: New provider first time access jointly authenticated by the patient and healthcare providers (created by fan: lie0005)

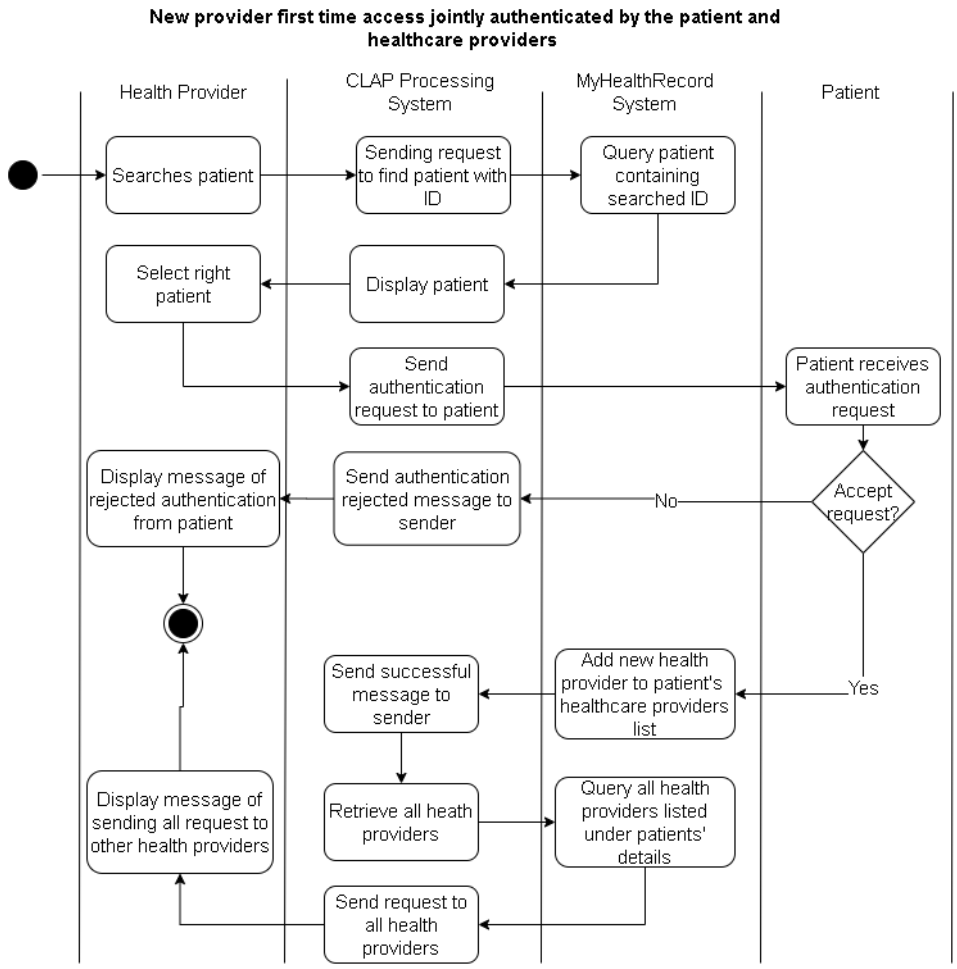
Actors: Patient, Health Providers, My Health Record System, Patient

Type: Primary, Essential

Description: This use case starts when new health provider would like to be authenticated as one

of patient's health provider. The way they do this is by providing details such as username and password they created and offer an inquiry for a specific patient for authentication. On completion, information box displaying message will be showed to the health provider.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
1.1	Health provider searches patient ID 12345	List of patients with ID containing 12345 will be shown on screen		
1.2	Health provider selects the patient after searching	Patient selected will be highlighted on screen		
1.3	Patient receives request to be authenticated from health provider	Request should be appearing on patient's end with the health provider's details.		
1.4	Patient accepts the request	Health provider will be added to the list of patient's lists of health care and display message of successful authentication		
1.5	Sending request to all providers of corresponding patient	Health providers will be notified when all requests have been sent to all providers related to the patient		



3.2 Follow-up accessed by clinician login

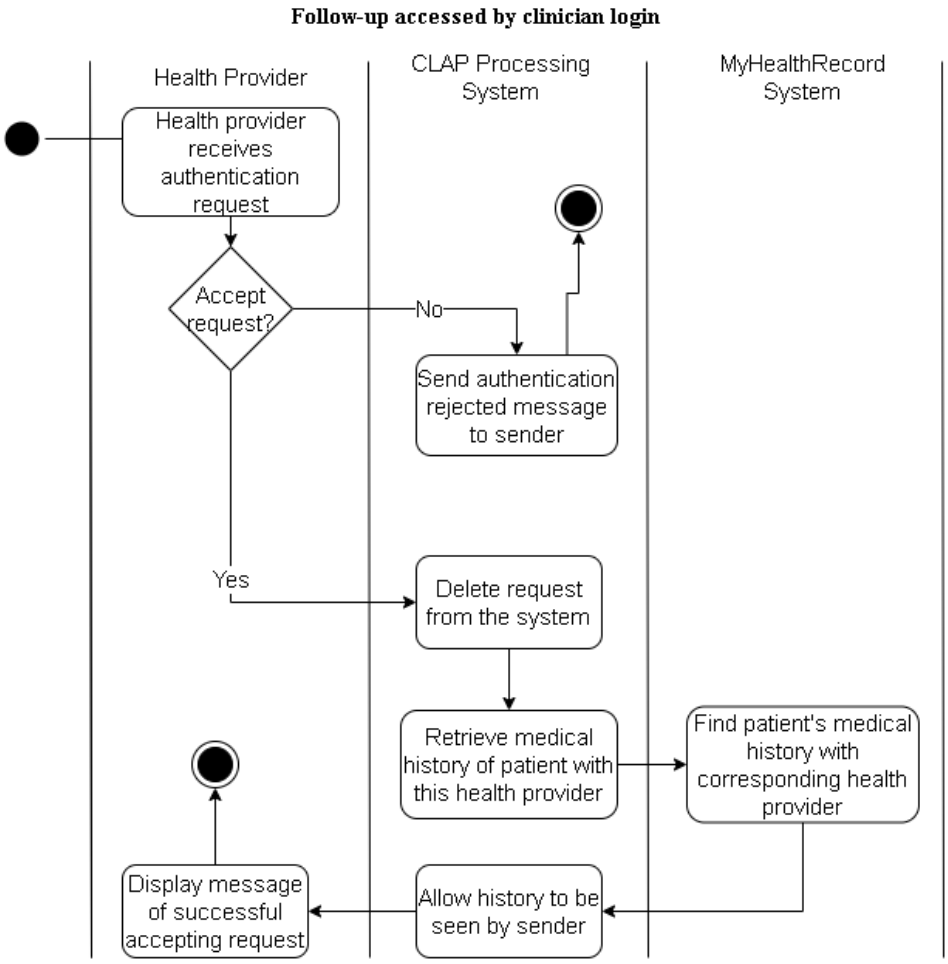
Use Case: Follow-up accessed by clinician login (created by fan: lie0005)

Actors: Health provider, CLAP processing system, My Health Record system.

Type: Primary, Essential

Description: This use case starts when health provider wants to follow up on any request from other health providers. Once there is a request access in the system, clinician then can login and either accept or reject the request. Once this is accepted, the request will be deleted from the system and patient's history with this health provider will be unlocked for the new health provider to see.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
2.1	Health provider wants to accept a request	Request will be deleted from the system and information box will be displayed.		
2.2	Health provider rejects a request	Request will be marked as rejected and message will be sent to sender		



3.3 Search for a patient by their patient ID

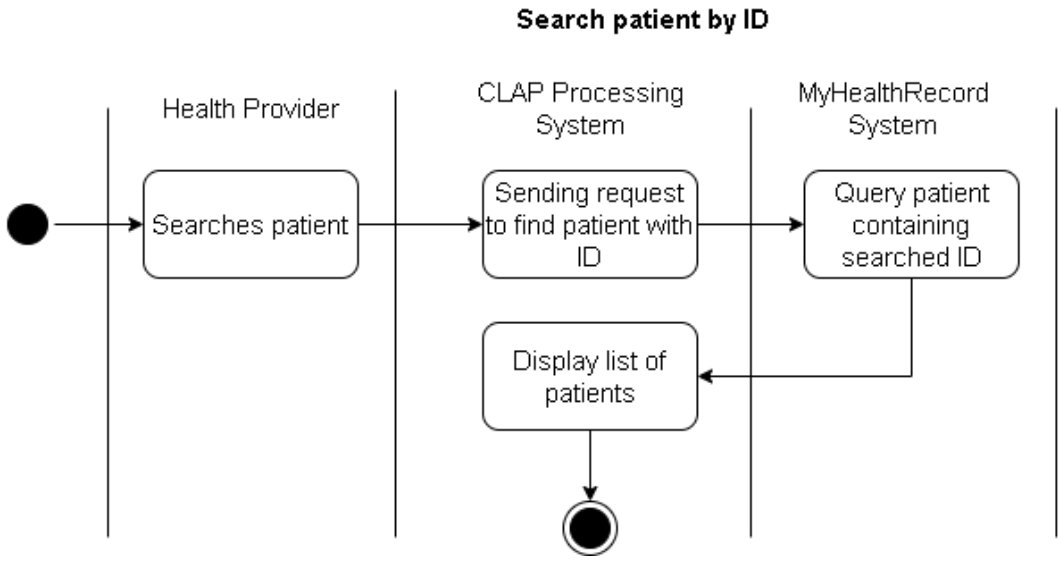
Use Case: Search for a patient by their patient ID (created by fan: lie0005)

Actors: Health provider, CLAP processing system, My Health Record system

Type: Primary, Essential

Description: Use case starts when health providers want to search patient ID in the system. Once completed, the list of patients whose ID matched the search criteria will be shown on the screen.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
3.1	Health provider searches patient ID 12345	List of patients with ID containing 12345 will be shown on screen		
3.2	Patient ID cannot be found in the system	Confirmation box displaying patient with searched ID cannot be found in the system		



3.4 Search for a patient with advanced search

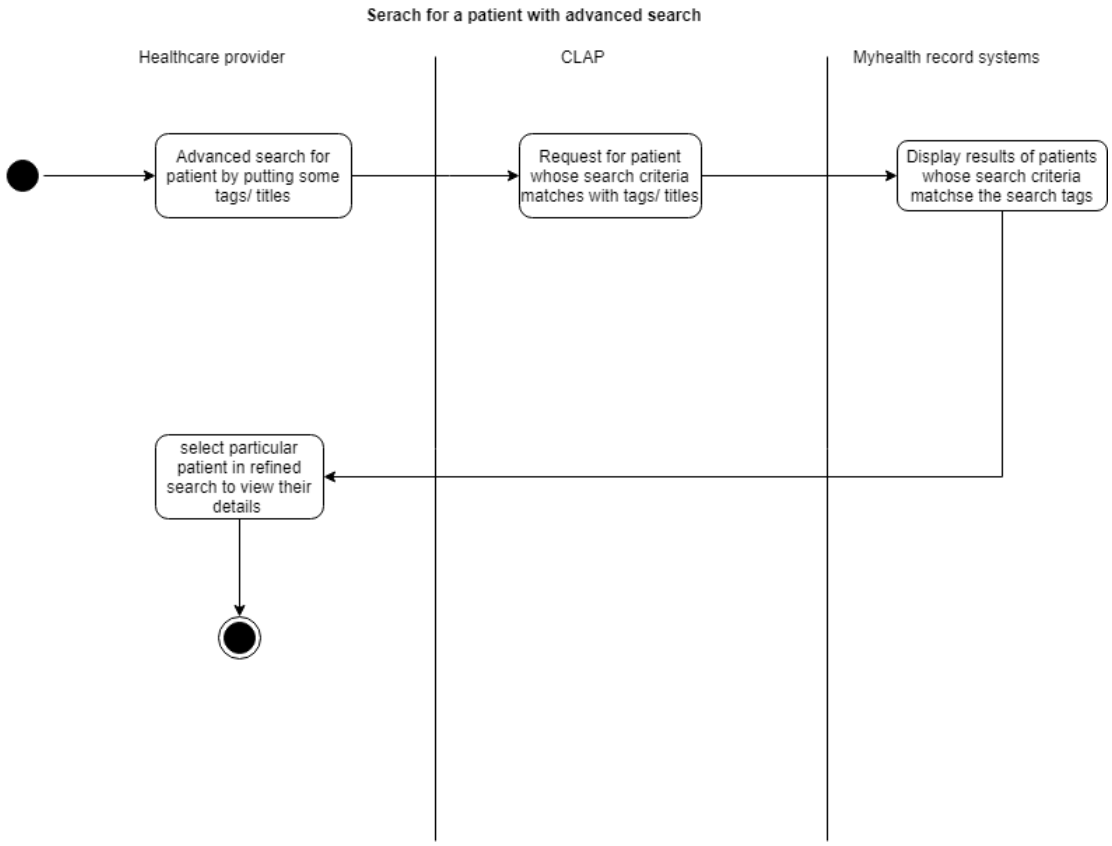
Use Case: Search for a patient with advanced search (created by fan: pane0023)

Actors: Healthcare provider

Type: Primary, essential

Description: Healthcare provider can search for patient's details in more refined way. For instance, clinicians can search for a particular patient by putting some titles/ tags in the search box. On completion, patients whose match the advanced search criteria will be displayed.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
4.1	Healthcare provided search for a patient with last name abcd	The CLAP will show the list of patients with last name abcd.		
4.2	Details of patient cannot be found in the sytem.	Confirmation box displaying patient with the provided tags/ titles cannot be found in the system.		



3.5 View summary of patient's details

Use Case: View summary of patient's details (created by fan: pane0023)

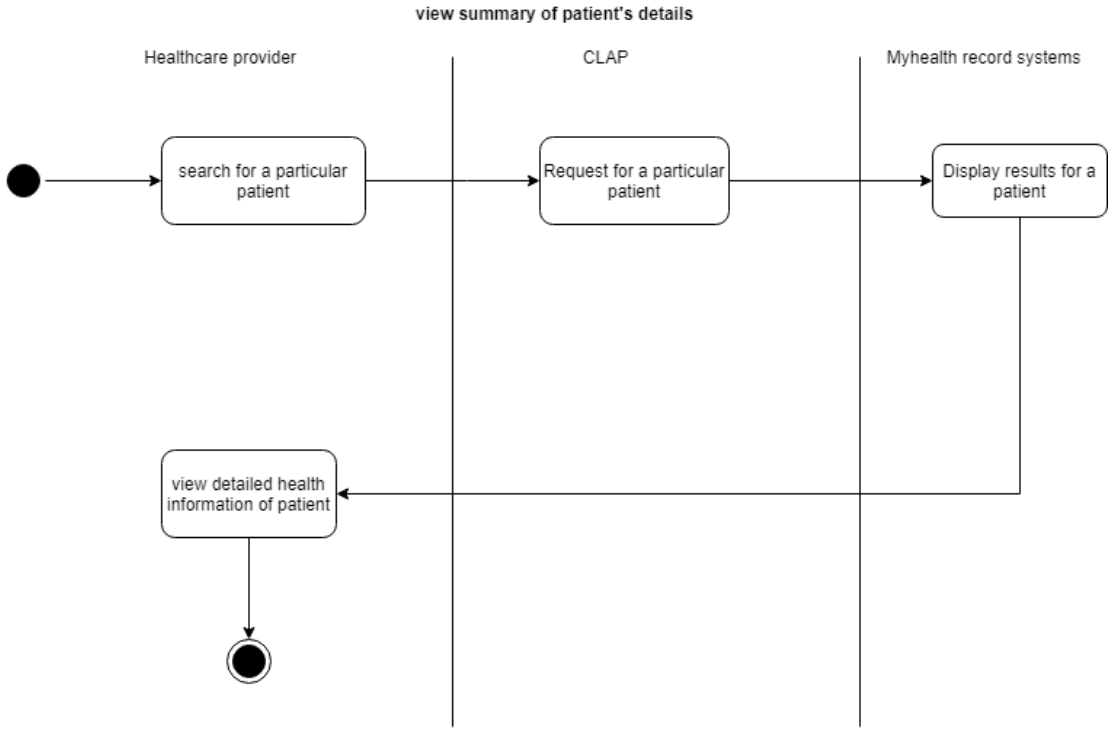
Actors: Healthcare provider

Type: Primary, essential

Description: This use case begins when the healthcare provider requires to see the detailed information about patient's health e.g. information regarding allergies, immunization, prescribed medicines, appointments and medical history. Once completed, summarized details of patient's records will be displayed on the screen.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
5.1	Healthcare provided wants to see summary of patient with patient id 12345	The CLAP will show the summary of health details of patient with patient id 12345		
5.2	Summary of patient cannot be found in the	Dialog box confirming that no summary found for the patient requested.		

	system			



3.6 View patient's full previous treatments

Use Case: View patient's full previous treatments (created by fan: pane0023)

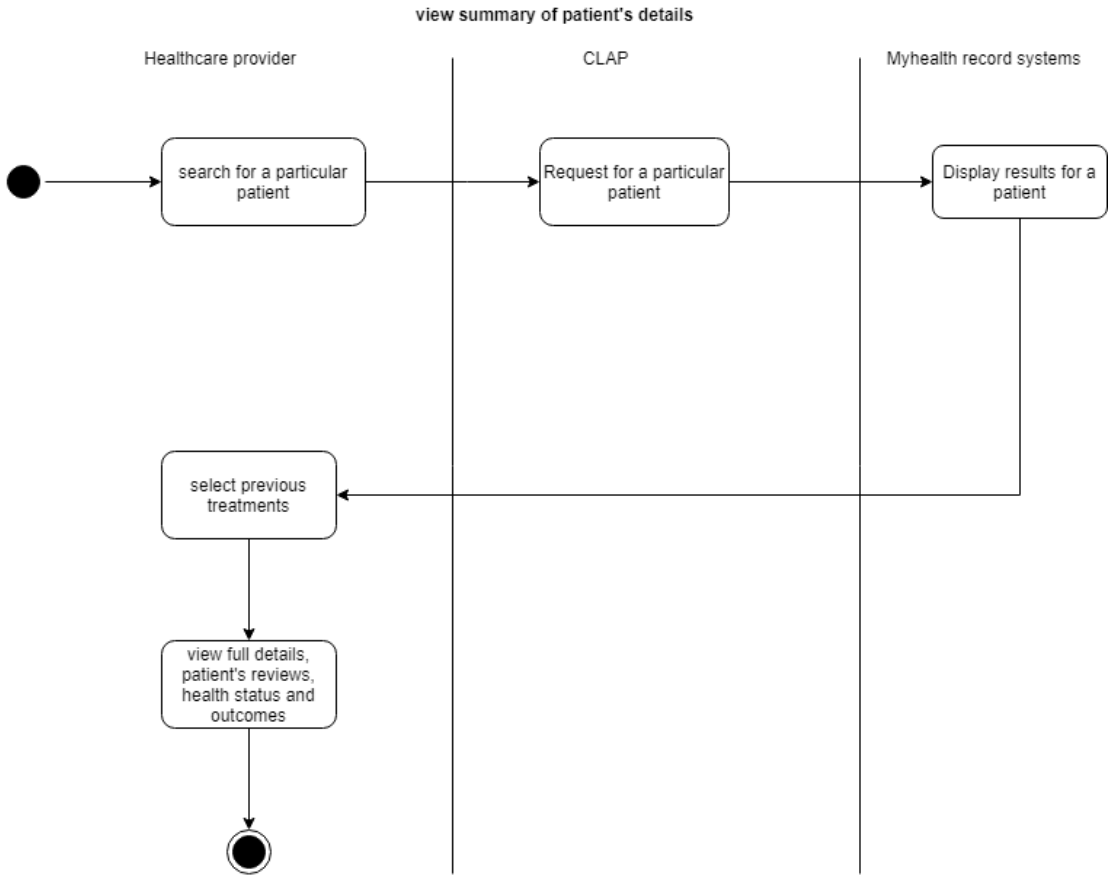
Actors: Healthcare provider

Type: Primary, essential

Description: This use case begins when the healthcare provider needs to view the records of patient's previous treatments. Healthcare provider must acknowledge patient's reviews for the previous treatments, their health status, methods used and outcomes from previous treatments and patient's preferences before conducting a new treatment for them

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
6.1	Healthcare provided wants to view full details of previous treatments of patient with	The CLAP will show the full details of the previous treatments of patient with patient id 12345.		

	patient id 12345			
6.2	Details of previous treatments cannot be found on the system	Dialog box confirming that no details of previous treatments found for the patient requested		



3.7 View records of details of patient's full treatment

Use case: View records of details of patient's full treatment (created by fan: grew0031)

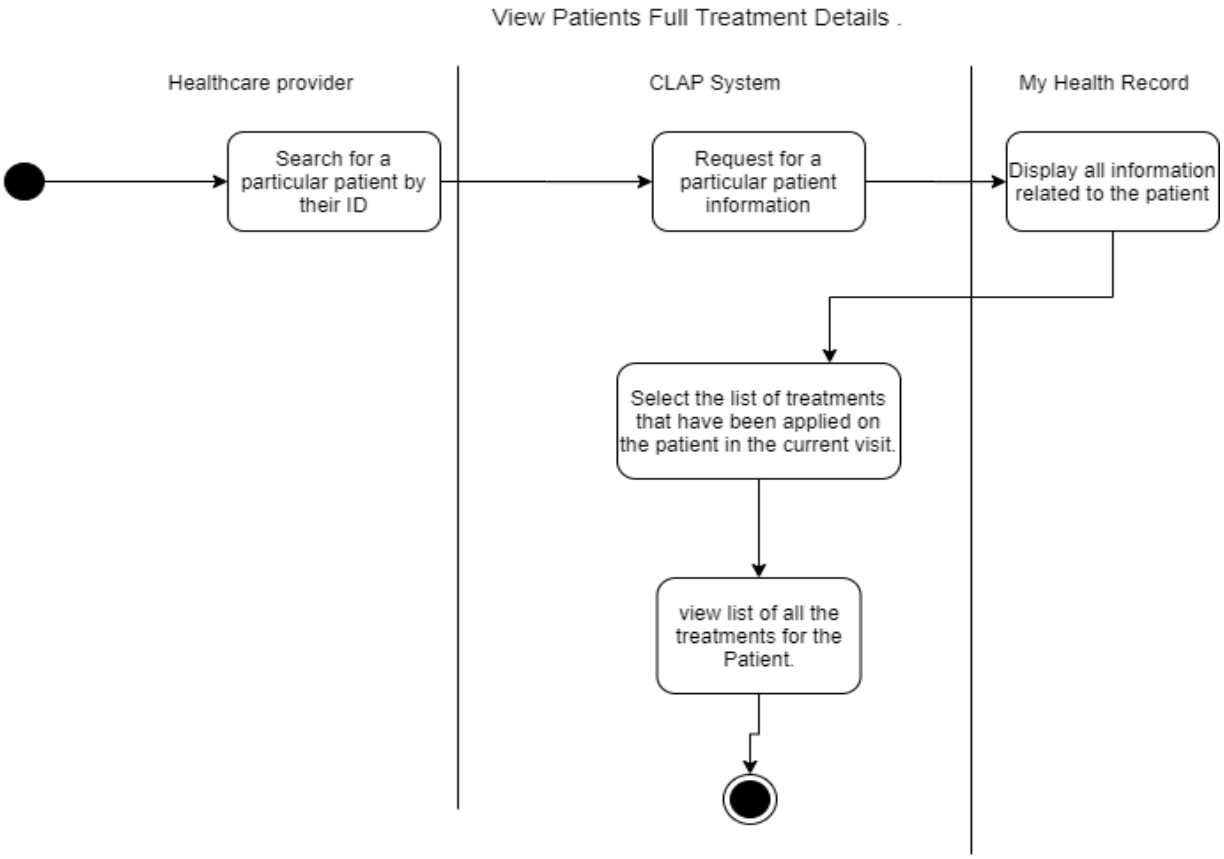
Actors: Healthcare Provider

Type: Primary, Essential

Description: This use case begins when the healthcare provider needs to view the records of details of patient's full treatment. On completion, details/summary of patient's full treatment will be shown.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**

7.1	Healthcare wants to view full treatment details of a patient with a patient ID 12345	The CLAP will show full treatment details of the patient with a patient id 12345		
7.2	Details of Full Treatment of a patient cannot be found on system	It will reject the search Confirming No Results Found in the system for the Patients Full Treatment		



3.8 View Patients full prescription details

Use case: View Patients full prescription details. (created by fan: grew0031)

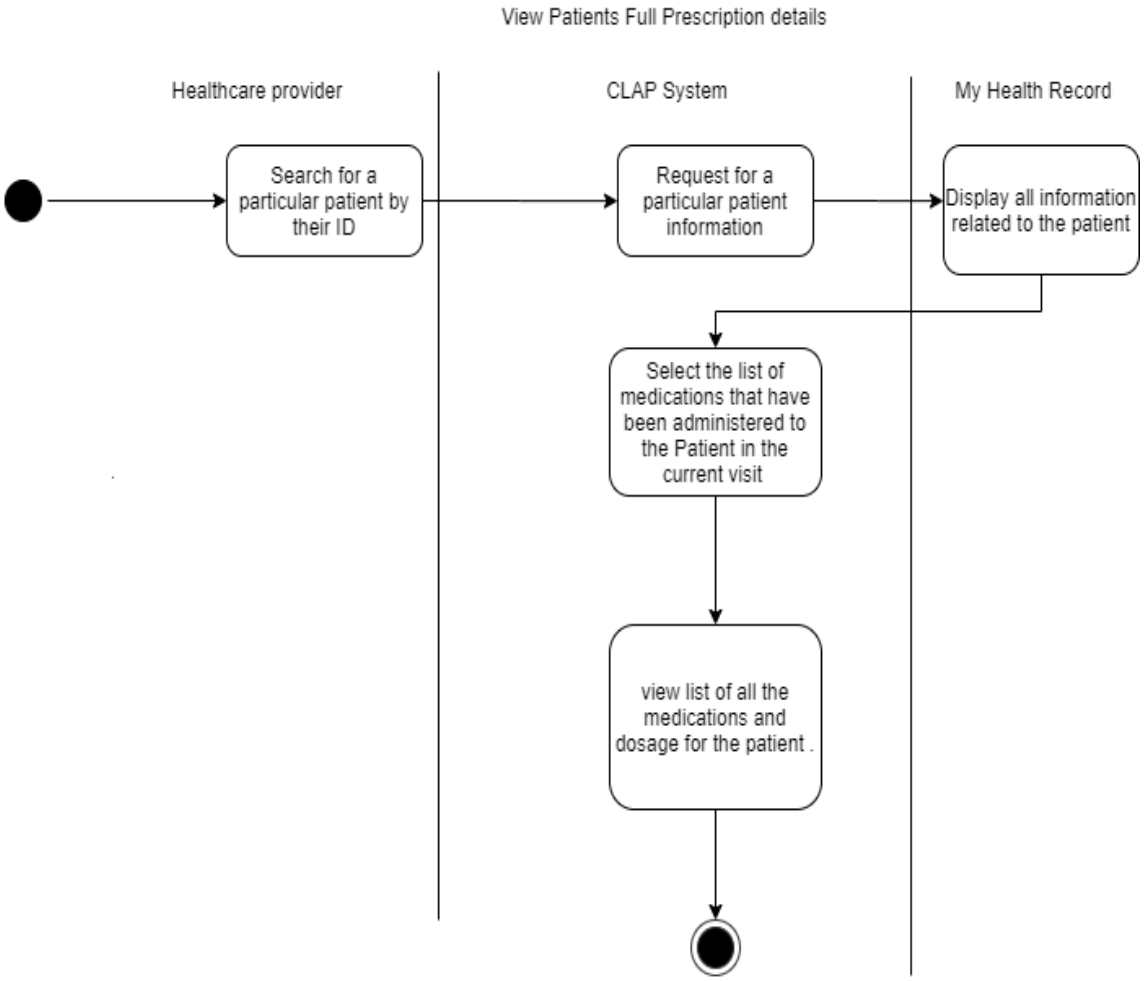
Actors: Health care provider

Type: Primary, essential

Description: This Use case begins when the healthcare provider needs to view the details of the prescriptions. In completion, details/summary of patient's prescriptions will be shown.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**

8.1	Healthcare wants to view full prescription details of a patient with a patient ID 12345	The CLAP will show detailed information of Patients Full Prescription Details with a Patient 12345		
8.2	Details of full prescription of a patient cannot be found	It will end up with request cannot be processed for the patient full prescription details		



3.9 View Patient's Full Condition Details

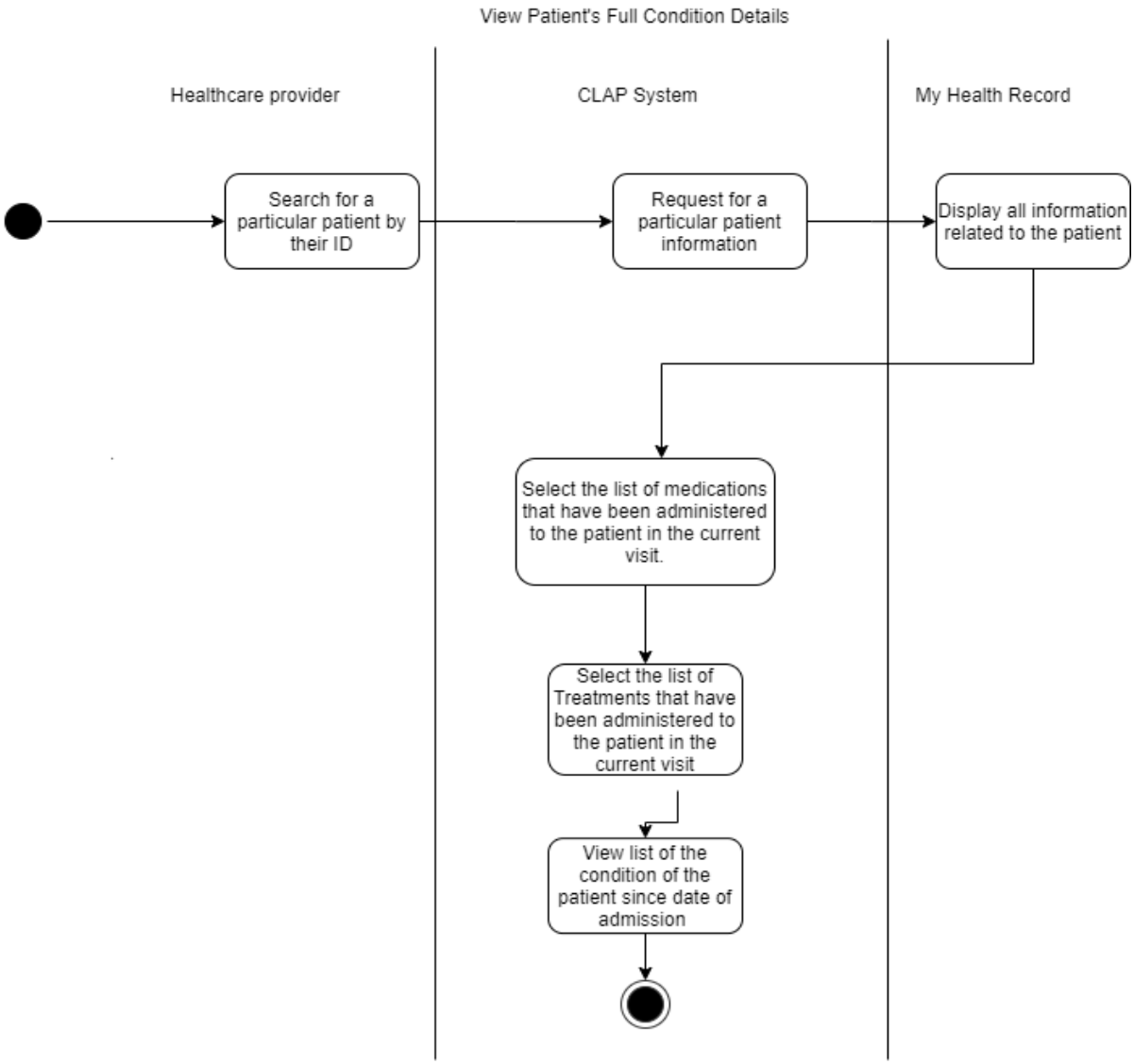
Use case: View Patient's Full Condition Details. (created by fan: grew0031)

Actors: Health care Provider

Type: Primary, Essential

Description: This use case begins with the healthcare providers when needs to view the full condition of the patient. In which Healthcare should start the details from first visit of the patients what health problems detected and what medication used. How far the prescribed medication helps to get better.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
9.1	Healthcare wants to View Patients Full Condition Details with a patient ID 12345.	The CLAP will show detailed information of Full Condition Details of Patient With patient ID12345.		
9.2	Summary of full condition details cannot be found	It will display no page found in the system regarding the full condition details of patient		



3.10 View list of patients that require follow-up

Use case: View list of patients that require follow-up (created by fan: nguy1029)

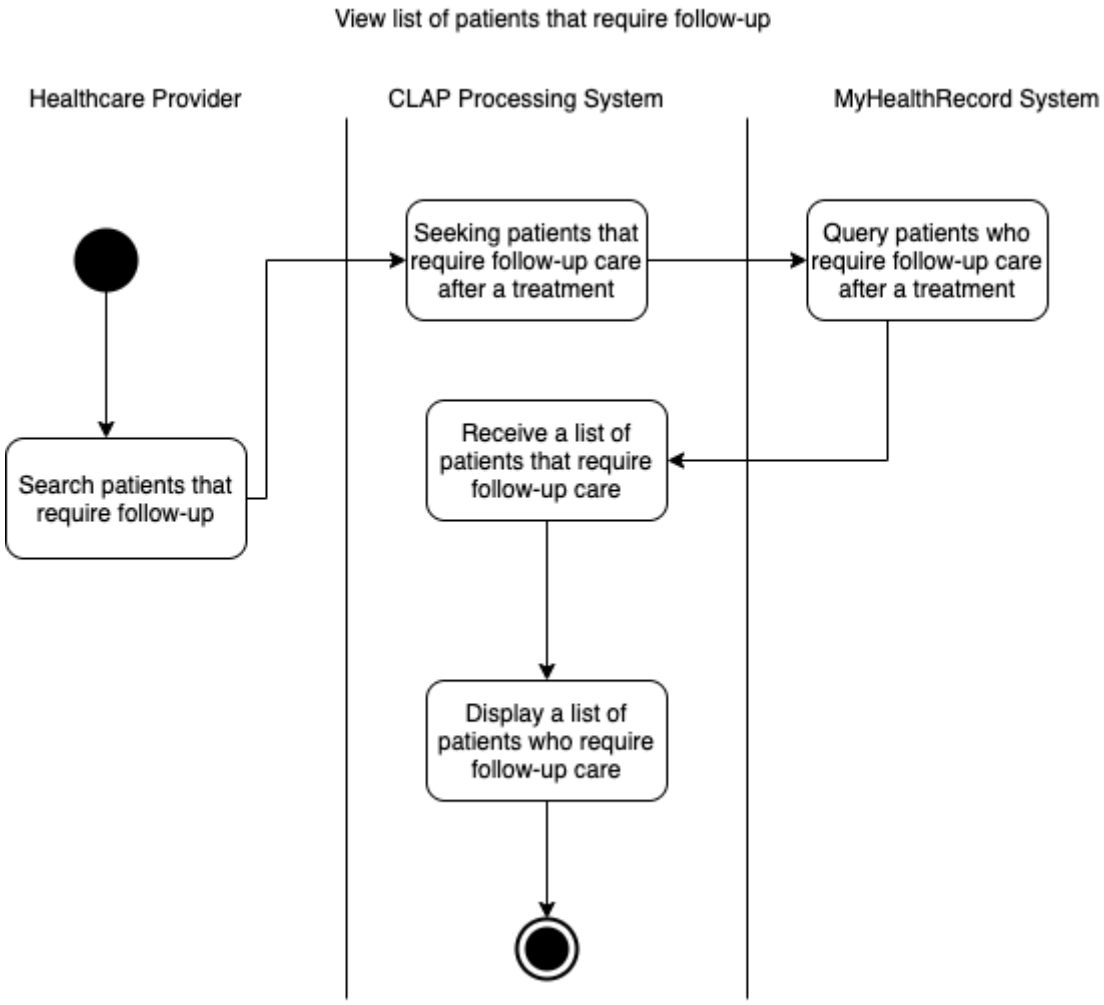
Actors: Healthcare Provider, CLAP Processing System, MyHealthRecord System

Type: Primary, Essential

Description: The use case begins when the Healthcare Provider needs to view health record of patients that require follow-up care. The CLAP Processing System seeking patients that require follow-up. The MyHealthRecord System query the patients. Once completing, a list of patients that require follow-up are displayed on CLAP Processing System.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
10.1	Verify viewing patient	A list of patients that		

	that require follow-up	require follow-up are displayed.		
10.2	Notify no patient that require follow-up	Notify message: no patient that require follow-up		



3.11 View patient current and past conditions

Use case: View patient current and past conditions (created by fan: nguy1029)

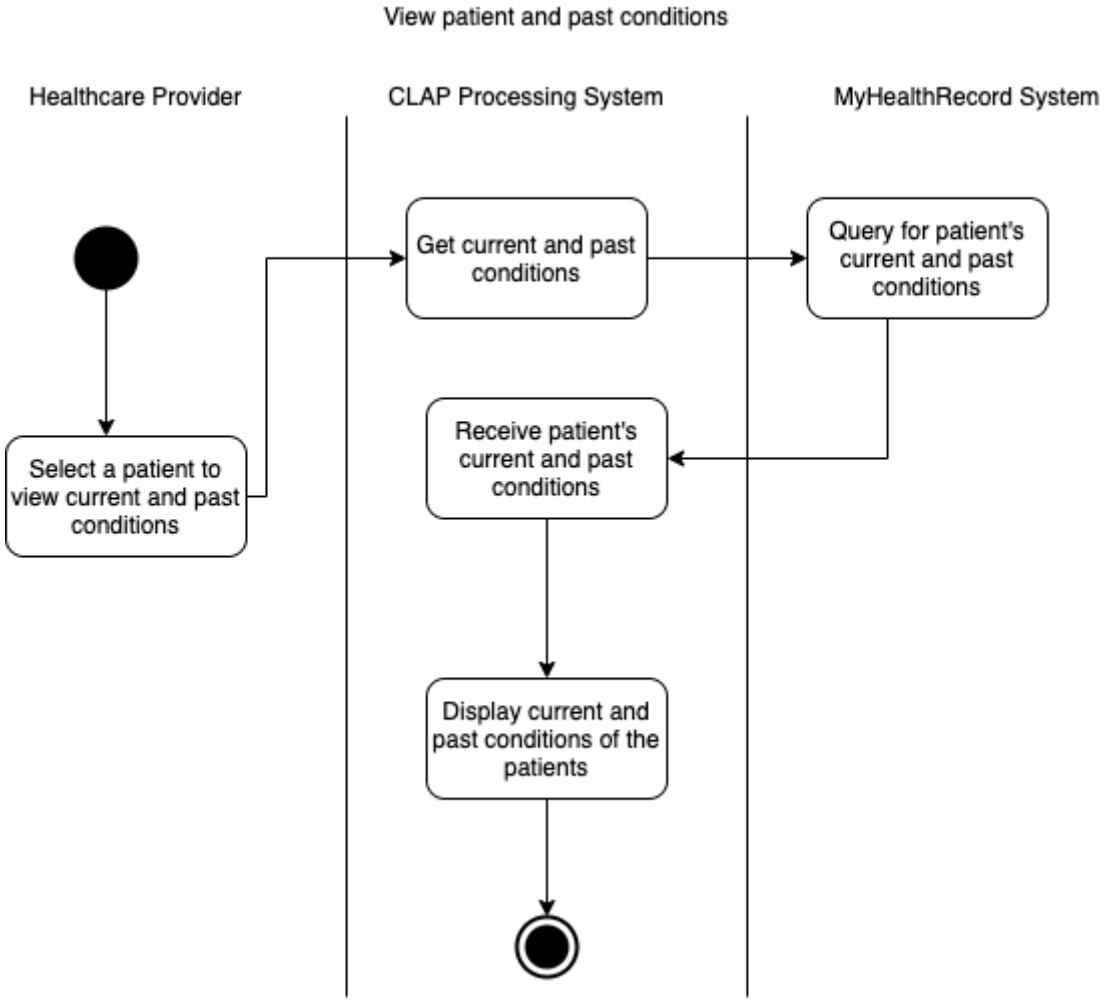
Actors: Health care Provider, CLAP Processing System, MyHealthRecord System

Type: Primary, Essential

Description: The use case begins when the Healthcare Provider needs to view medical history conditions of a patient. The CLAP Processing System shall get current and past conditions from MyHealthRecord System. The MyHealthRecord System query the patient's current and past conditions. Once completed, medical conditions of the patient are showed from past to current conditions.

Acceptance test:

Test ID	Scenario/ Use case/ Variation	Expected Result	Actual Result	Pass/Fail
11.1	View patient's current and past conditions	A list of patient's conditions from past to current is viewed		
11.2	Notify message when the patient does not have any conditions	A message notifies that there is no conditions when viewing conditions of the patient		



3.12 Add a new prescription

Use case: Add a new prescription (created by fan: nguy1029)

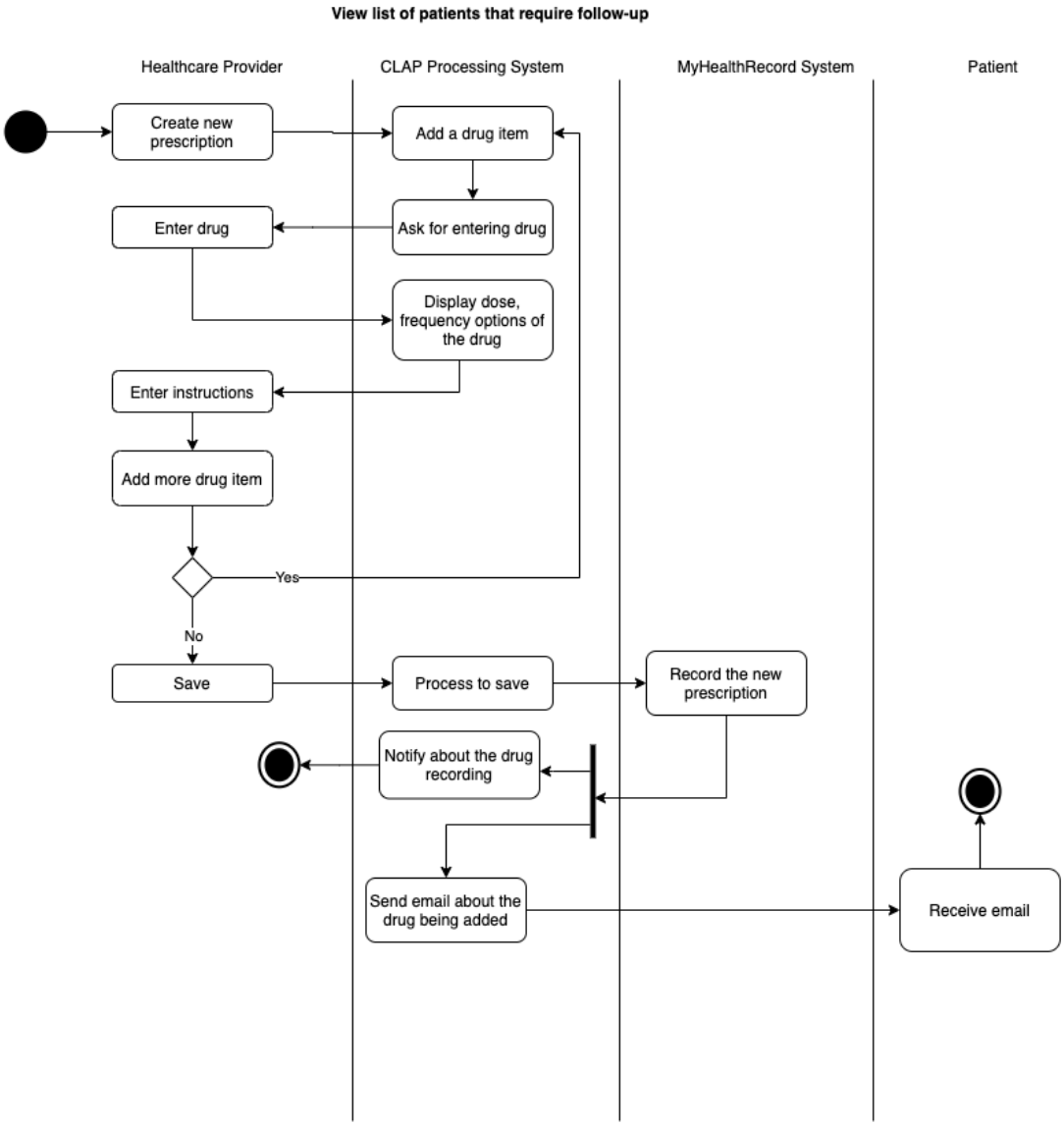
Actors: Healthcare Provider, CLAP Processing System, MyHealthRecord System, Patient

Type: Primary, Essential

Description: The use case begins when the Healthcare Provider needs to add a new prescription for a patient. The CLAP Processing system asks the Healthcare Provider for medication (drug name).

Once the medication has been selected, the Healthcare Provider can specify the medication's dose, frequency, and instruction. Once completed, the MyHealthRecord System records the new prescription.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
12.1	Add a new prescription with one drug item	The prescription is recorded into the MyHealthRecord successfully, and CLAP notifies the prescription is saved.		
12.2	Add a new prescription with many drug items	The prescription is recorded into the MyHealthRecord successfully, and CLAP notifies the prescription is saved.		
12.3	Send email to patient after adding new prescription	An email will be sent to the patient that has the new prescription.		



3.13 Add a new treatment

Use case: Add a new treatment (created by fan: vu0081)

Actors: Health provider, CLAP Processing System, MyHealthRecord System

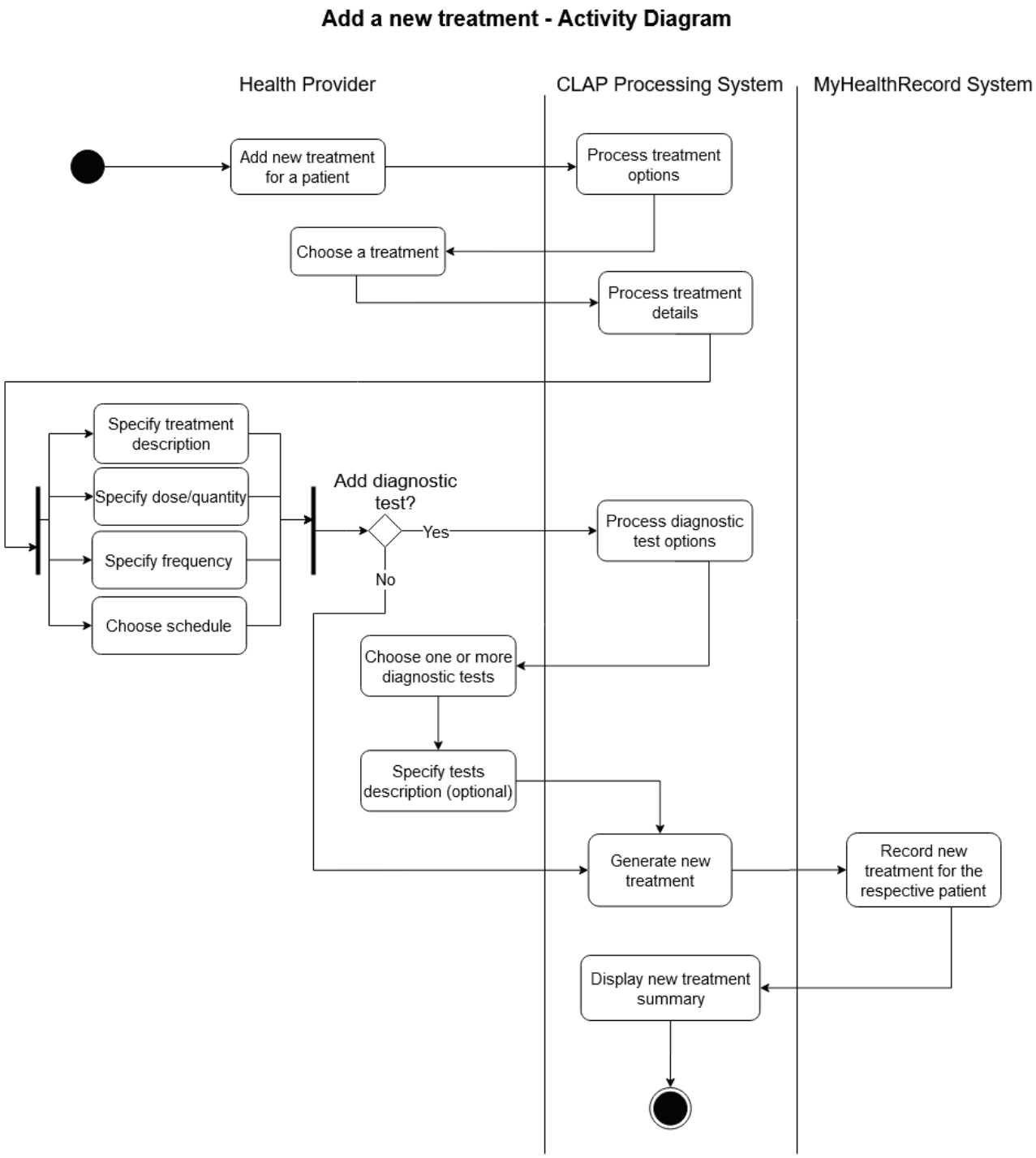
Type: Primary, Essential

Description: This use case begins when the Health Provider wants to add a new treatment for a patient. The Health Provider chooses a treatment from the list of treatments and specifies treatment details, including description, dose/quantity, frequency, schedule. The Health Provider can choose to add one or more diagnostic tests and tests' description if needed. On completion, the System generates the new treatment and saves it in MyHealthRecord database.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**

13.1	The System processes treatment options	The list of all treatments the hospital provides is displayed		
13.2	The Health Provider chooses a treatment to add from the treatment options list	The chosen treatment is selected and highlighted		
13.3	The System asks for treatment details	The fields for specifying treatment details are displayed, including: Description, Dose/quantity, Frequency, Schedule		
13.4	The Health Provider saves the inputs in order to generate the new treatment	Treatment summary is displayed with the exact information specified for treatment details		
13.5	The System asks if the Health Provider want to add diagnostic test after he/she finishes specifying treatment details	The options for adding diagnostic test appear with ‘Yes’ and ‘No’		
13.6	The System saves only treatment details when Health Provider chose not to add diagnostic test	Treatment summary is displayed with the exact information specified for treatment details		
13.7	The System processes diagnostic test options when the Health Provider chose to add diagnostic test	The list of all diagnostic tests the hospital provides is displayed along with the fields for test description		
13.8	The Health Provider chooses one or more diagnostic tests from the list and specifies description if needed	The chosen test/tests are selected and highlighted		
13.9	The System saves the treatment details and the chosen diagnostic test/tests into new treatment	Treatment summary is displayed with the exact information specified for treatment details and the exact chosen diagnostic test/tests		
13.10	Patient’s treatment list is	The new treatment appears		

	updated with the new treatment when either test 13.6 or 13.9 complete	in the list of patient's current treatments		



3.14 Add follow up to a treatment

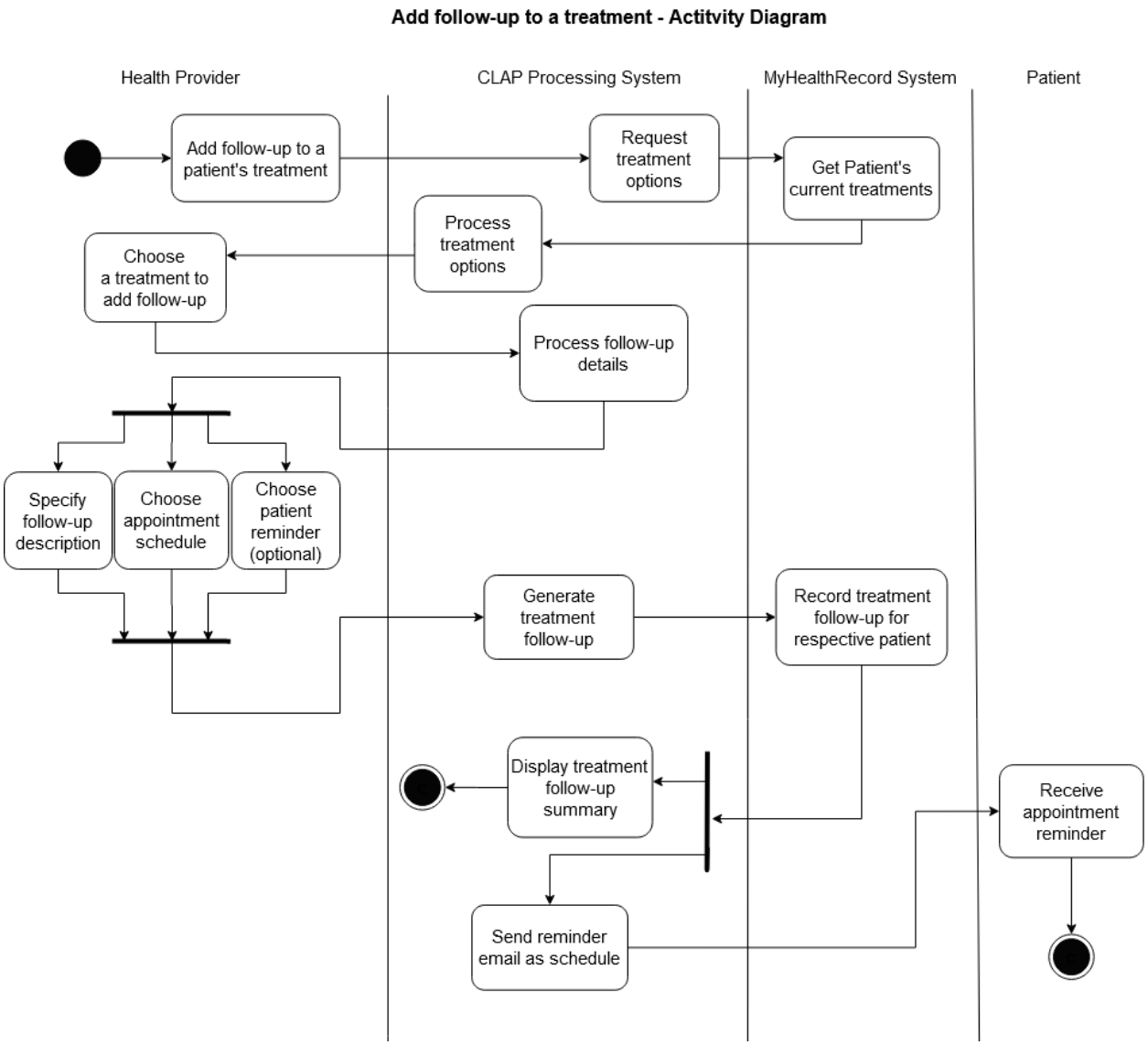
Use case: Add follow up to a treatment (created by fan: vu0081)

Actors: Health Provider, CLAP Processing System, MyHealthRecord System, Patient

Type: Primary, Essential

Description: This use case begins when the Health Provider wants to add follow up to a current treatment of a patient. The Health Provider chooses a treatment from the list of patient's current treatments and specifies follow up details, including description, appointment date and option for sending patient reminder email. On completion, the new treatment follow-up is recorded in MyHealthRecord database.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
14.1	The System processes patient's current treatments	The full list of the intended patient's current treatments is displayed		
14.2	The Health Provider chooses a treatment from the list	The chosen treatment is selected and highlighted		
14.3	The System asks for treatment follow up details	The fields for specifying follow up details are displayed, including: • Description • Appointment date • Patient reminder option		
14.4	The System saves follow up details when the Health Provider finishes adding	Treatment follow up summary is displayed with the exact information specified for follow up details		
14.5	The list of patients that require follow up is updated with the new follow up once test 14.5 or 14.8 completes	The new treatment follow-up appears in the list of patients that require follow up		
14.6	The System sends reminder email for the patient when patient reminder was selected in test ID 14.3	The Patient receives email one week before the appointment date AND Reminder email includes correct information for follow up description and appointment date		



3.15 Add new patient condition

Use case: Add new patient condition (created by fan: vu0081)

Actors: Health provider

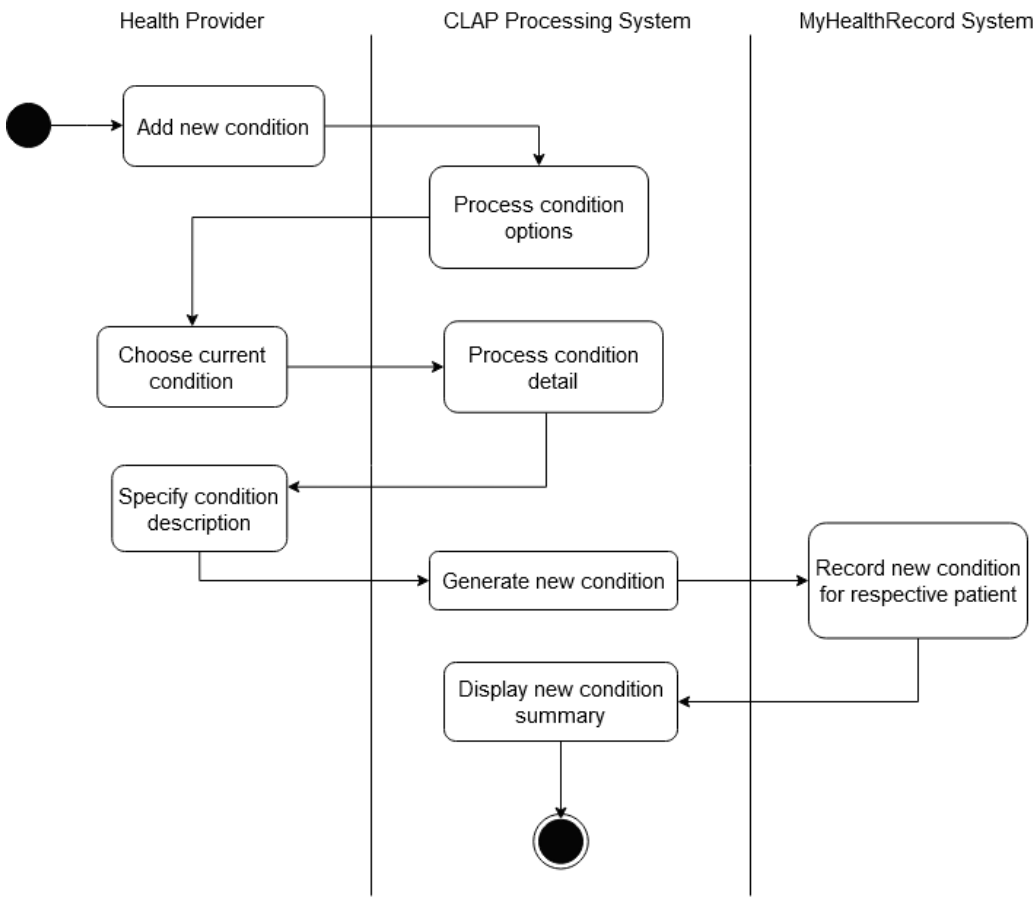
Type: Primary, essential

Description: This use case begins when the health provider wants to update patient's current condition. The Health Provider chooses a condition from the list of condition options and specifies condition description. On completion, the new patient condition is generated and saved in MyHealthRecord database.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
15.1	The System processes condition options	The list of all conditions is displayed		

15.2	The Health Provider chooses a condition from the list	The chosen condition is selected and highlighted		
15.3	The System asks for condition description	The field for specifying treatment description is displayed		
15.4	The Health Provider saves the input to generate the new condition	Condition summary is displayed with the exact information specified for condition description		
15.5	Patient's condition list is updated with the new condition once test 15.4 completes	The new condition appears in the list of patient's current condition		

Add new patient condition - Activity Diagram



3.16 Create update to patient's condition

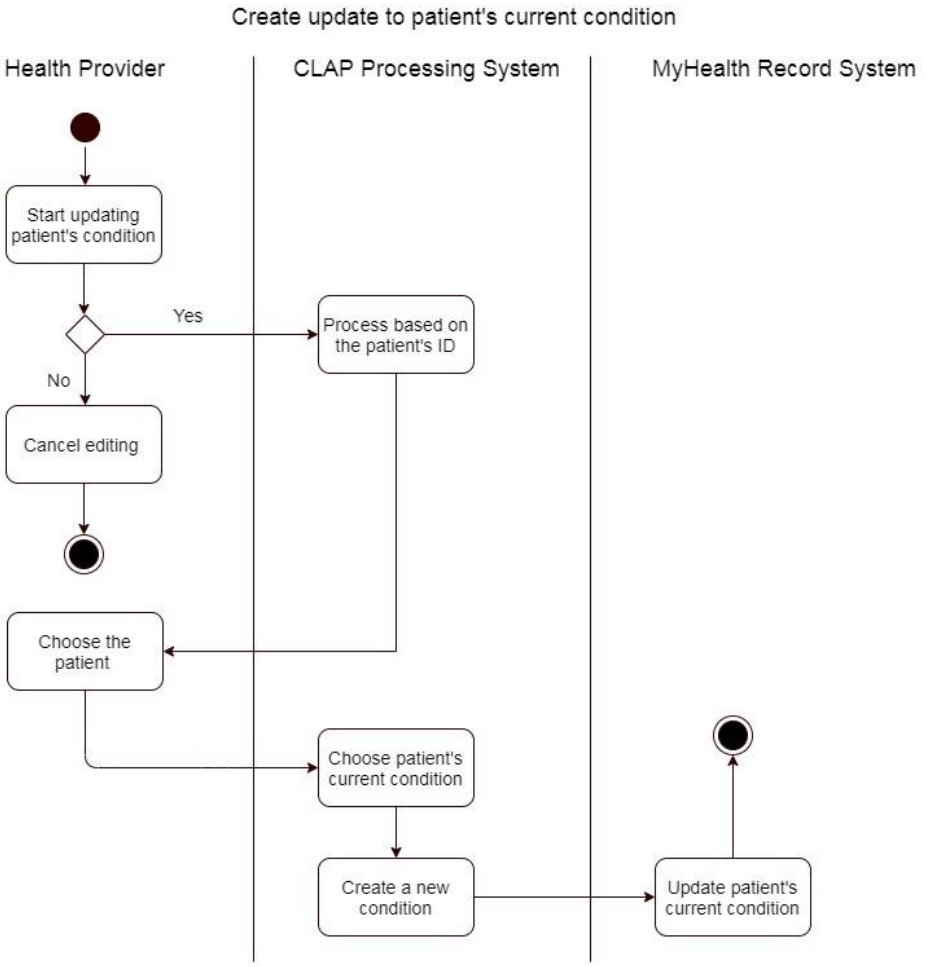
Use case: Create update to patient's condition (created by fan: chan1065)

Actors: Health provider, CLAP processing system, MyHealthRecord system

Type: Primary, essential

Description: The use case begins when the health provider needs to update the patient's current situation. Health provider will provide condition or status updates about patients who are being treated. In completion, patient's health status will be reported such as current state and short-term prognosis. For example, current state (good or serious), short-term prognosis (improve or worse)

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
16.1	Health providers want to update patient's current condition	Patient will be selected on screen		
16.2	The CLAP system processes patient's condition	Patient's status will be process based on the patient ID		
16.3	Health providers select patient ID 12345 to update his/her current condition	Patient's current condition will be updated		
16.4	The CLAP system retrieves patient's current condition	Patient's current condition will be processed		
16.5	The CLAP system creates a new condition for patient	Patient's current condition will be added into MyHealthRecord system		
16.6	MyHealthRecord system updates patient's current condition	Patient's current condition is recorded		



3.17 Add prescription by editing a previous prescription

Use case: Add prescription by editing a previous prescription (created by fan: chan1065)

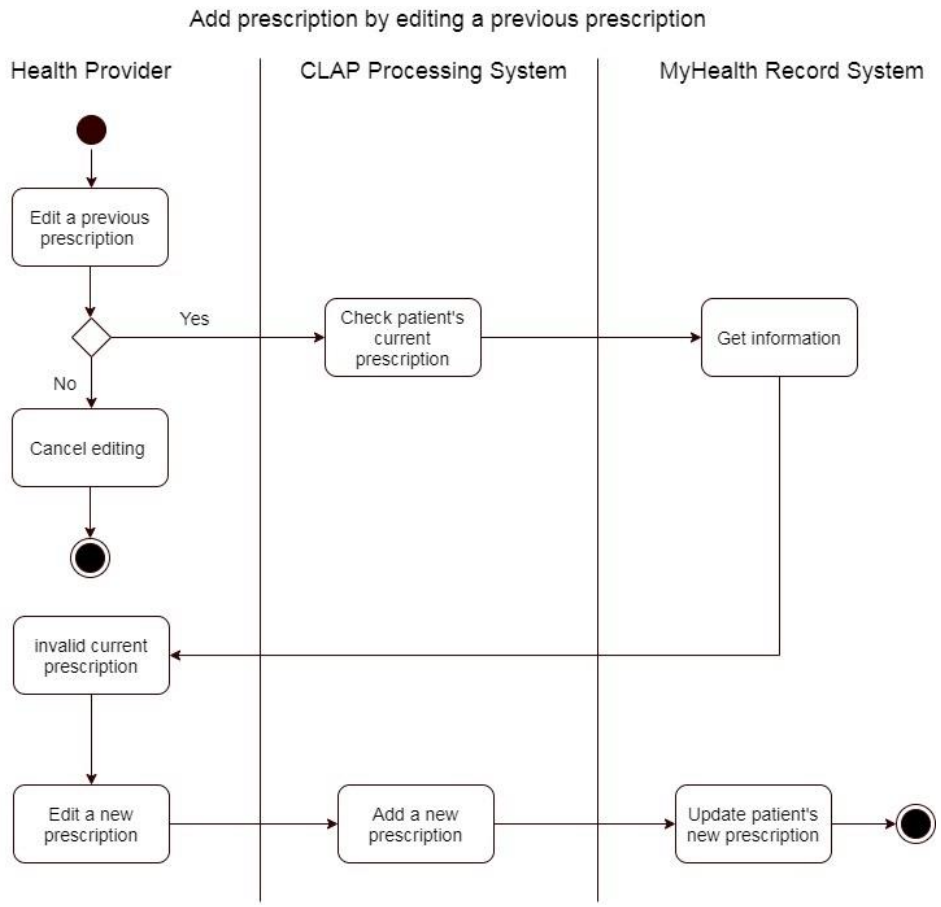
Actors: Health provider, CLAP processing system, MyHealthRecord system

Type: Primary, essential

Description: The use case begins when health providers must add a new prescription for their patients. In completion, suitable medicine for the patient's current condition will be added.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
17.1	Health providers want to edit a previous prescription	Patient will be selected and showed on the screen		
17.2	The CLAP system processes patient's current prescription	Patient ID 12345's current prescription will be processed		
17.3	MyHealthRecord System Shows the information	Health providers get patient's information from		

	to Health provider	MyHealthRecord system		
17.4	Health providers edit patient's current prescription	Patient's current prescription will be edited		
17.5	Health providers invalidate the patient's current prescription	Patient's current prescription will be invalidated but health provider still can view previous prescription on the screen		
17.6	The CLAP system adds a new prescription for patient	Patient's new prescription will be process into MyHealthRecord system		
17.7	MyHealthRecord system updates a new prescription for the patient	Patient's new prescription will be saved into MyHealthRecord system		



3.18 Create a new treatment record by edit an existing treatment details

Use case: Create a new treatment record by edit an existing treatment details (created by fan: chan1065)

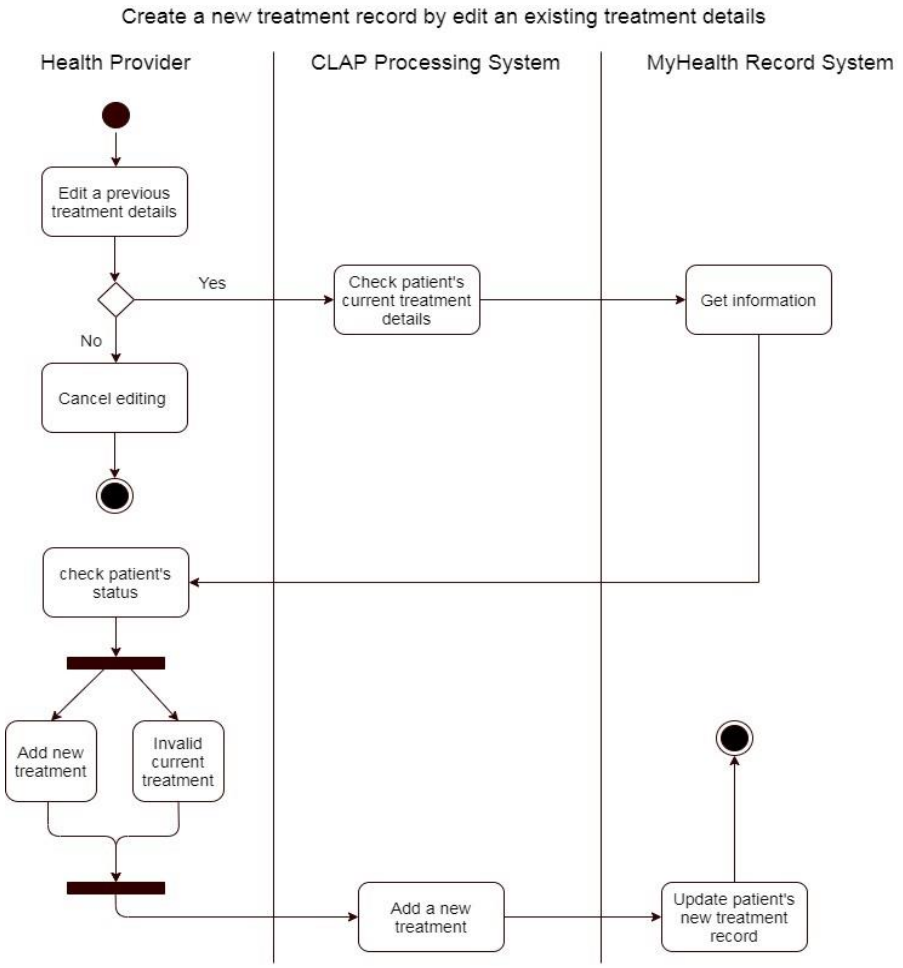
Actors: Health provider, CLAP processing system, MyHealthRecord system

Type: Primary, essential

Description: The use case begins when the health provider desires to append a new treatment record to the existing treatment details. In completion, the health providers will be able to create a new treatment record on an existing treatment details.

Acceptance test:				
Test ID	**Scenario/ Use case/ Variation**	**Expected Result**	**Actual Result**	**Pass/Fail**
18.1	Health provider wants to create a new treatment record by editing an existing treatment details	Patient will be selected and the treatment details will display on the screen		
18.2	The CLAP system has to check patient's current treatment details	Patient's current treatment details will show on the screen		
18.3	MyHealthRecord system shows the information to Health provider	Health providers get patient's information from MyHealthRecord system		
18.4	Health providers check the patient's current status	Patient's current status will show on the screen		
18.5	Health providers invalidate the patient's current treatment	Patient's current treatment will be invalidated but health provider still can view previous prescription on the screen		
18.6	Health providers add a new treatment for the patient	Patient's new treatment will be process into MyHealthRecord system		
18.7	The CLAP systems add a new treatment for patient	Patient's new treatment will be processes into MyHealthRecord system		

18.8	MyhealthRecord system updates patient's new treatment	Patient's new treatment will be saved into MyHealthRecord system		



Appendix A: **Glossary**

- Clinician will be assumed as Healthcare provider in this document.
- Healthcare providers can be referred as health provider.

Appendix B: **Quality Assurance**

To ensure the quality of this documentation, the same tools and methods are used. The explanation of what are the tools and functions can be seen from explanation below.

1. Project Management and Document sharing

Azure DevOps is a very important and crucial tool to manage the flow of the project. It has work items which can be assigned to specific person and can be marked as 'To Do', 'Done' or 'Doing', which would be useful to see the progress of the project so far. Azure can also be used to view

different sprints and send any overdue work items to backlog. Repository is also one of the features that was heavily used during the creation of this document, which will be explained below.

2. Azure Repos

Azure Repos functionality helps to manage versions of documents, keep a history of changes to documents. It is also a place for team members to access to review each other's work. Team members can modify the document and commit or can reverse the old version of the document. It helps to avoid any loss of changes in case they want to get the old version back. It is important to note that Azure only allows up to 5 users to view, add and edit repository. Because of this, the use of Microsoft Team, which will be explained in the next sub-section, was used.

3. Microsoft teams

Microsoft Team was used in order to allow file sharing between all team members. Microsoft teams is enriched source of communication in group project to discuss the project work within the group members. It allows members to access file for live collaboration.

4. Draw.IO & Lucid chart

Draw.IO and Lucid Chart are examples of web-based drawing tool for creating professional flowcharts and diagrams that are used within this documentation. These platforms provide a wide range of shape libraries, making the diagram drawing experience easier and quicker than normal sketching software. The completed work can be saved as image file formats (e.g. PNG) and XML file formats which strongly support editing a saved work and reusing shapes in another diagram. Furthermore, Lucid Chart also has the feature of real-time collaboration, thus, the project team can work together on the shared documents effectively. All documentation done within this assignment is done by using Draw.io (e.g. activity diagrams and use case diagram) and Lucid Chart (e.g. conceptual diagram).

5. Meeting minutes

Meeting minutes is a good tool to improve our product quality because it helps to record all the agenda contents and assemble different work items from different teammates. For example, one of our teammates is offshore, she was able to receive weekly information through meeting minutes and follow up agenda details. Also, we had to assign the tasks for everyone and record what we have done at the tutorials. Meeting minutes help us to preview all the agenda details and catch up on what everyone has done for their work.

6. Discussion and meeting every week at tutorial

By having discussion and meeting in a weekly basis, it allowed us to discuss further what work items lacking behind and needed to be done, what is the next sprint is going to be, and assignation

of new work items. This method is proven useful as it allows us to review each other's work and ensure all of us are on the same page.