



HL7 INDIA FHIR CONNECTATHON 2021

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FHIR STARTER TRACK- MAPPING FHIR TO PATIENT JOURNEY ACTIVITY SOLUTION

Patient appointment to encounter journey

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Objective

Intent of this entire story/use case is to show how FHIR using its resources and APIs can solve healthcare interoperability scenarios. For each interaction between various systems, we will understand how using FHIR resources and APIs, data can be exchanged.

Patient Use Case

Summary

Patient Peter Hawkins plans to go for a heart check-up in Good Health Hospital (GHH) where he is already registered. He is using BYD app provided by HL7 India for booking appointment of his Cardiologist Dr. Sheldon Buffet of GHH. Doctor is available on 12th December 2021 for 1 hour between 9AM to 10 AM and can see two patients. During visit doctor captures some vitals and order a radiology test. Visit ended after half an hour.

Pre-requisite step using Postman collection

EMR backend consist of Patient record, doctor record. There is schedule for doctor with 2 slots on 12th December between 9 am 10 am. Each slot of 30 mins.

Resources involved:

Patient, Practitioner, Schedule and 2 Slot resources.

Slot refers to Schedule which refers to Practitioner.

Interactions between various systems using FHIR Resources

1. Step 1: Patient using app and searching Doctor's available slots

App requesting for all slots on a specific schedule of a doctor using FHIR query.

EMR sending FHIR resources with Dr. availability for a particular Schedule.

Resources involved:

Schedule and Slot. Each Slot refers to Schedule.

Schedule resource refers to Practitioner Resource (linking Schedule to doctor).

In short, Doctor has a Schedule with various slots. Patient is choosing one particular Slot to book.

2. Step 2: App Sending request for Appointment

Based on the available time slots of a doctor, Patient on BYD app will chose his/her preferred time slot on APP UI.

On selection of time slot by Patient, App sending appointment request to the EMR

Resources involved:

Appointment.

But Appointment will have to refer to Patient, Practitioner and Slot resources. For our use case, we will simply use resource id. This Appointment will have status=proposed.

Transaction: Create Appointment resource with links to practitioner, slot and patient

3. Step 3: EMR confirms the appointment booking

EMR confirms the appointment booking by updating the status of the original appointment request.

Resources involved:

Appointment.

This Appointment will have status=booked.

Appointment for patient is created for 12th of December 2021 at 9AM. Attending doctor falls under cardiology department. Duration of the appointment is 30 minutes. It is a routine check-up for heart.

Appointment resource will refer to Patient and Slot.

a. Transaction: Update the slot status from free to busy.

b. Transaction: update the appointment resource with status changed to booked.

4. Step 4: Patient Visits starts

Registration system of the hospital creates actual visit record and pass on this information to OPD system. Registration system also assigns a visit id for this specific visit record. Registration system is just starting the visit and passing on the information to OPD system which will carry on the visit.

Resources involved:

Encounter.

Transaction: Encounter resource is created.

It refers to Patient and Practitioner resource.

5. Step 5: Dr Sheldon captures Heart rate and orders Heart Ultrasound

During ongoing visit, Dr. Sheldon measures heart of the patient which comes out 82. LOINC provides standard code "8867-4" for heart rate. This information is also shared by OPD system to Patient's primary care physician.

Resources involved:

Observation.

It refers to Patient, Practitioner resources.

Transaction: Create an Observation resource to capture the patient's heart rate.

6. Step 6: Dr Sheldon orders Heart Ultrasound

She also suggests to “Three-dimensional ultrasound imaging of heart”. This concept has been defined by SNOMED CD with code 5216004.

Resources involved:

ServiceRequest.

It refers to Patient, Practitioner resources.

Transaction: Create a ServiceRequest resource to capture the patient’s heart rate.

7. Step 7: Patient visits ended. This is updated in OPD system and informed to Registration system also.

Finally, Patient visits ends. OPD system on their UI marks the end of the visit and captured visit end date time. This system wants to notify the same to Registration system.

Resources involved:

Encounter.

It refers to Patient resource.

Transaction: Update the Encounter status to finished

Technical go through: Resources and API

We will also see how each of the steps can be achieved through FHIR Rest API. At the end we are exchanging data between system using FHIR REST API (GET/PUT/POST)