HL7 INDIA VIRTUAL FHIR CONNECTATHON

3RD TO 5TH JULY 2020

FHIR STARTER TRACK- MAPPING FHIR TO PATIENT JOURNEY ACTIVITY

Patient appointment to encounter journey

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Contents

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 5th July 2020 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.

A little detail

Peter Hawkins (Patient) using HL7 India Scheduling app known as BYD (Book your doctor). Using BYD app, Patient searches for available time slots of a specific doctor named as Dr. Sheldon Buffet). Dr. Sheldon works at Good Health Hospital and his NPI (unique id) is 456789. Patient choses an available time slot of 5th July 9 am to 9:30 am and request for booking appointment. Hospital registration receives request and confirms the booking.

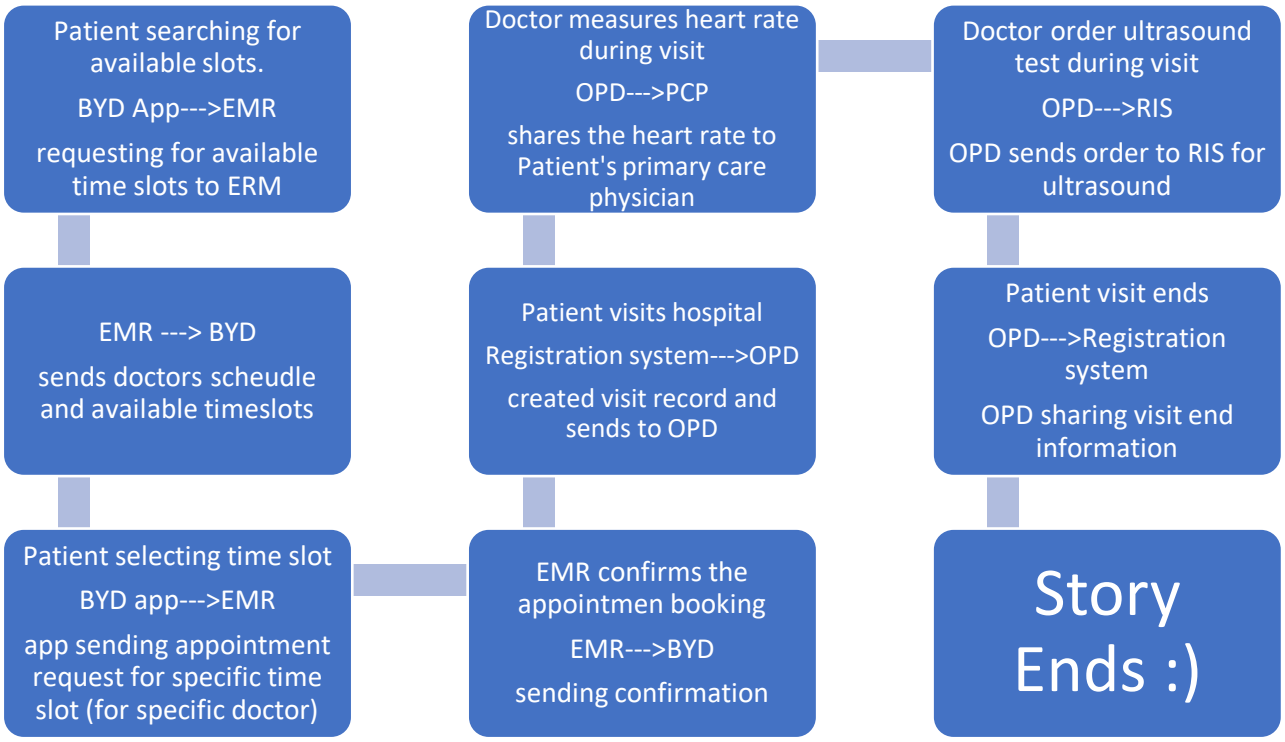
Patient arrives at hospital on 5th July 9 am and his visits starts with Doctor Sheldon. During visit, Dr. Sheldon measures Peter Hawkins Heart rate and records in his OPD software system. Heart rate information is also shared to Patient's primary care physician (simply to another system knows as PCP).

Dr. Sheldon also order a Heart Ultrasound to get more details on the condition. Order is sent by OPD system to RIS system.

At 9:30 am, Patient visits ends and he left the healthcare facility.

Scenario at a glance

A quick view of various interactions happened during visit-



Actors involved

- Living entities
  - Patient
  - Doctor Sheldon

- Software Systems:
  - EMR FHIR server
  - BYD app for appointment booking
  - OPD system
  - RIS system
  - PCP system

EMR Maintaining Doctor's roster

Generally, each hospital or clinic would have doctor's roster defining clearly their availabilities for various purposes like OPD, surgery etc.

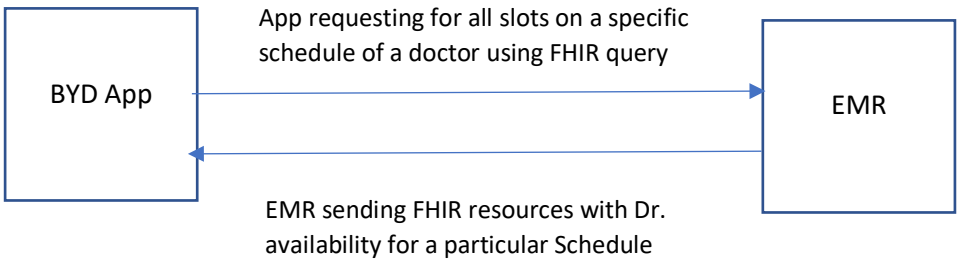
In our Case, EMR should have Dr. Sheldon roster for Saturday, 5th July. As per her schedule, she will be having OPD from 9 am to 11 am and will see only 4 patients giving each patient 30 mins time for visit.

When request for this availability of this Doctor for Saturday, 5th July comes from BYD app, FHIR server hosted on top of EMR will get Dr. Sheldon time slots for 5th July OPD schedule and share it to requestor (Patient using app).

FHIR server will be responsible to create appropriate resources to send Doctor's OPD schedule and availability.

Interactions between various systems:

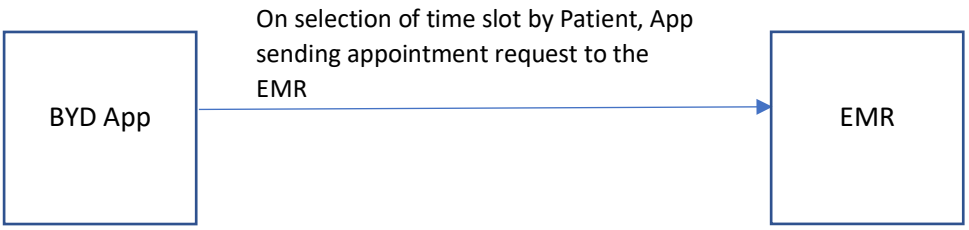
1. Step 1: Patient using app and searching Doctor's available slots



Question 1: Find out which resources would be sent by FHIR server to fulfil above request. App's intent is to show all available time slots of a doctor on a specific schedule. App not showing Doctors demographic data in query response.

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.

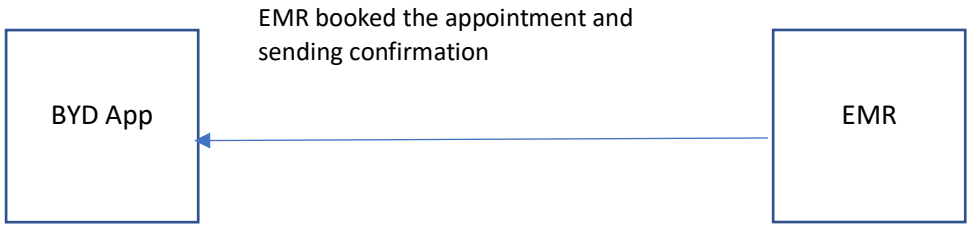


Question 2: Find out which resource would be used by BYD App for this transaction, for sending appointment request to the EMR.

Also find out will this Resource will have references to any other resources received in Step 1.

3. Step 3: EMR confirms the appointment booking

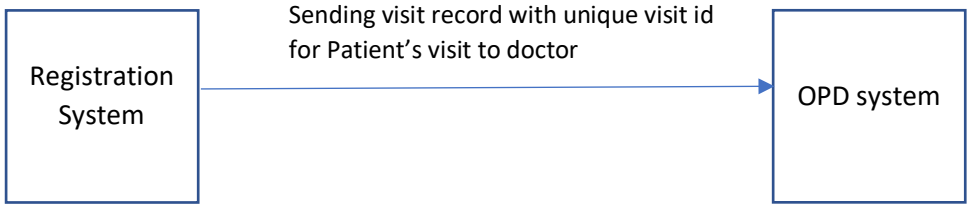
EMR confirms the appointment booking by updating the status of the original appointment request.



Question 3: Find out which resources would be used by EMR for confirming the appointment to the App. Also, find out what is the key element in the resource through which BYD App will know that Appointment is 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.

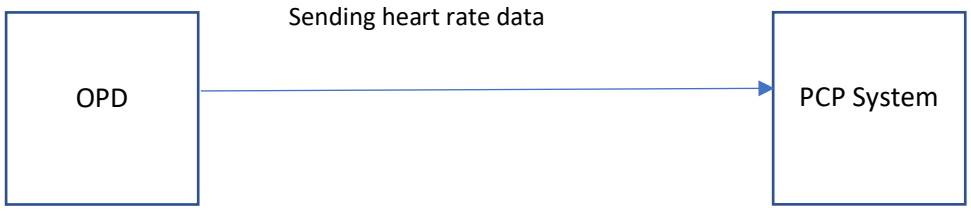


Question 4: Find out which resource would be used by Registration System for exchanging visit record (that visit id is created and visit starts now).

How this FHIR resource about visit information will link to out Patient?

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

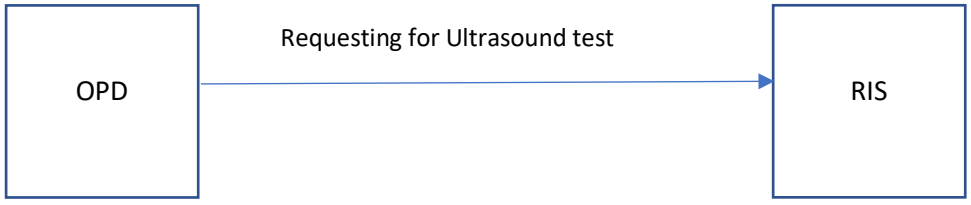
During ongoing visit, Dr. Sheldon measures heart of the patient which comes out 82. LOINC provides standard code “8867-4” for heart rate. This information is also shared by OPD system to Patient’s primary care physician.



Question 5: Find out which resources would be used by OPD system for exchanging heart rate information to PCP system

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.



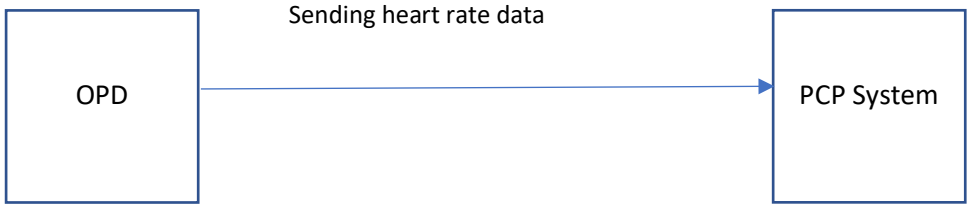
Question 6: Find out which resources would be used by OPD System for requesting Ultrasound test.

Question 7: How OPD system will ensure that Resources sent for Heart rate and order are linked to our patient in this story.

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.

Note: it might possible that for this particular case, systems mentioned are not appropriate. Our intent is to focus on the FHIR Resource process part. We want to understand if this information has to exchange then what would be the Resource and how that will be done. Like one other use case could be to update FHIR server hosted at EMR side. Updating FHIR server that visit ends.



Question 8: Find out which resources would be used by OPD system for updating visit end information.