

# HL7 Hong Kong FHIR® Connectathon Series 2023-2024

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THIRD CONNECTATHON

6 MAY 2024

EXECUTIVE RM 119, 1/F, HKPC BUILDING, 78 TAT CHEE AVENUE, KOWLOON, HONG KONG

# Welcoming remarks

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By Mr Alan Young (Chairman, HL7 Hong Kong)

# Welcoming remarks

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## Topics: Problem & Procedure

Programme	Speaker
<b>Update on eHealth+</b>	<b>Louise Wong</b> Health Informatics Analyst I, HA
<b>Dataset briefing for Problem &amp; Procedure</b>	<b>Austen Wong</b> Health Informatics Analyst I, HA
<b>FHIR mapping for Problem &amp; Procedure</b>	<b>Michael Cheung</b> Systems Manager, HA
<b>Open discussion</b>	

- Fully supported by Electronic Health Record Office

# Update on eHealth+

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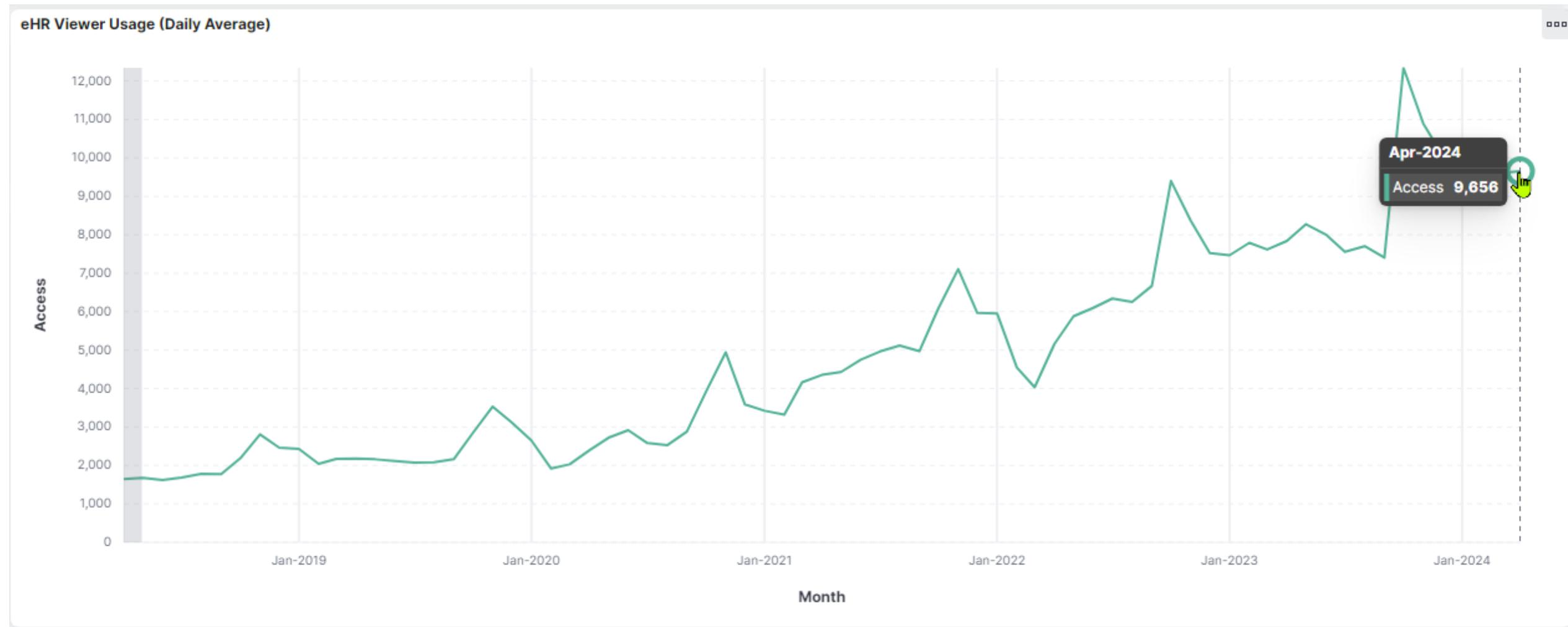
By Ms Louise Wong (Health Informatics Analyst I, Hospital Authority)

# Electronic Health Record Sharing System

3<sup>rd</sup> Connectathon of HL7 HONG KONG FHIR ®  
Connectathon Series 2023-2024  
06 May 2024

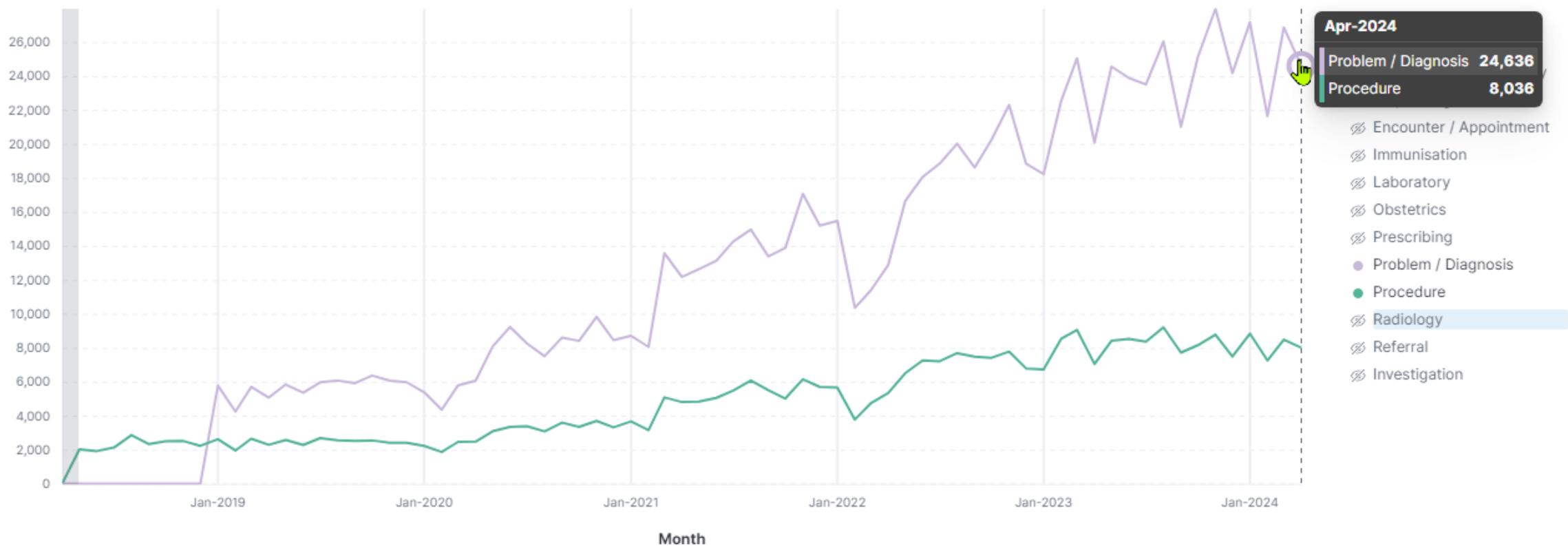


# Monthly eHRSS Record Access (~10,000)



## eHRSS Records Access Per Month

# Problem and Procedure Access as at 30 Apr 2024



# Healthcare Professionals Participation

Healthcare Professional Registration 54,840

Nurse



Doctor



Physiotherapist



Midwife



Pharmacist



Medical laboratory technologist



Occupational therapist



optometrist



Radiographer



Dentist



Chinese Medicine Practitioner



# Usage and Record Sharing

**3.9B Record Shared**

**14 PPP programs**

**43 HA hospitals**

**3032 private clinics**

**12 DH services**

**98 NGOs**

**13 private hospitals**

**18 DHC**

**27 Radiology  
groups / centres\***

**~ 28 280 Public Private Partnership services per month**  
**~ \$264M Elderly Health Care Voucher claim per month**

\* Including 0.56 B radiological images in the pilots as part of eHRSS sharing (private HCP to HA) (As of Jan 2024)

# eHealth App



The landing page features a large banner at the top with two women in white coats running towards the right, set against a backdrop of a modern city skyline. A smartphone displays the eHealth app interface with various icons like 'Appointments', 'Medicine', and 'Health Management'. Below the banner, the tagline 'HEALTHY FUTURE IS WITHIN YOUR GRASP' is displayed. The main headline reads 'Managing Your Health, anytime, anywhere.' Below this, a paragraph describes the app as a one-stop access to health information and records. It includes download links for the App Store, Google Play, and AppGallery, along with QR codes for scanning.

醫健通  
eHealth  
香港特別行政區政府 HKSAF GOVT

Home One-stop Service ▾ Tips on Privacy Protection & Security Tutorials Free Downloads ▾ Promulgation

EN 繁 簡

HEALTHY FUTURE IS WITHIN YOUR GRASP

Managing Your Health, anytime, anywhere.

醫健通 eHealth, a one-stop access of useful health information and your health records. Leading you to better health within one click.

Download on the App Store GET IT ON Google Play EXPLORE IT ON AppGallery

Keep Track of Your Health

Amoxicillin + clavulanic acid Augmentin (Certain) Rash Last updated on 29-Aug-2015 Hospital Authority

Download Now!

QR code

QR code

QR code

10

# Personal Health Information

## Allergy

16:50

醫健通  
eHealth

Hello SOENG, MUT LEI ➔

Allergy

Drug and Other Allergy

- Peanut
- amoxicillin + clavulanic acid

Adverse Drug Reaction

- ibuprofen

Education Information



What is allergy?  
An allergic reaction is a hypersensitivity reaction initiated by the immune system to allergens etc

## Vaccine

16:51

醫健通  
eHealth

Hello SOENG, MUT LEI ➔

Vaccines

Please back up your vaccine records (including photo records) regularly to prevent data loss when switching to other mobile device.

+ Add My Vaccine Record

My Input

- 04-May-2023 hepatitis B vaccine
- 31-Oct-2022 hepatitis A vaccine

eHealth Record

- 22-Feb-2021 COVID-19 vaccine

Capture My Vaccine Card

Vaccine Card Album

## Medication

16:51

醫健通  
eHealth

Hello SOENG, MUT LEI ➔

Medications

Select Year

2019

- 30-Dec-2019 QUEEN MARY HOSPITAL
  - Diamicron (gliclazide) oral tablet 80 mg
  - Glucophage (metformin hydrochloride) oral tab...
- 29-Jun-2019 Healthy Clinic - Central
  - Diamicron MR (gliclazide) oral tablet 30 mg
  - Glucophage (metformin hydrochloride) oral tab...

Show More

Select Year

## Appointment

16:52

醫健通  
eHealth

Hello SOENG, MUT LEI ➔

Appointments

Upcoming Past

+ Add My Appointment Record

My Input

- 18-Sep-2023 Mon 2:15 PM  
好健康醫務所 Internal Medicine Outpatient Edit

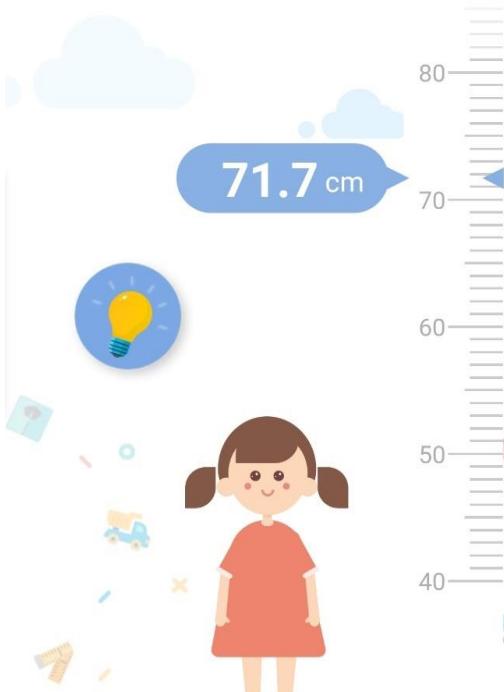
Can't find your appointment record? Please refer to our [FAQ](#).

Show cancelled appointment

## Growth

16:28

Edit Growth Record



71.7 cm

Confirm

# Public Health Information

## Public Health

7:54 4G  
Health Programme  
Private Healthcare Facilities (PHF) Register  
PHF Register lists out information of the PHFs with valid licence / letter of exemption.

長者醫療券計劃  
Elderly Health Care Voucher Scheme

Elderly Health Care Voucher Scheme

TO PREVENT COLONRECTAL CANCER  
LIVE A HEALTHY LIFESTYLE  
Colorectal Cancer Screening Programme  
Aged 50 - 75 years

CRC Screening Programme  
The Colorectal Cancer Screening Programme subsidises asymptomatic HK residents aged between...

## Voucher/Quota

16:39  
Elderly Health Care Voucher Scheme

Current Position

Available Voucher Balance \$0

Maximum Voucher Amount that can be used on Optometry Services \$1,000

(Based on own Voucher Balance/ sum of own and spouse's Voucher Balance and own "Available Quota on Optometry Services")

Available Spouse's Voucher Balance \$6,900

Find more healthcare professionals

Latest Claim Transaction Record

Date	Patient Name	Amount
2023-07-20	CHAN, FIVE MAN	\$0
2023-07-20	Medical Practitioner	\$1,000
2023-07-20	CHAN, FIVE MAN	\$0
2023-07-20	Spouse's vouchers	\$100

## Promotion

2:47  
Colorectal Cancer Screening Programme

My Screening Flow

Return FOBT Specimens  
Please return the Specimens to the collection points

Find more healthcare professionals

Welcome to join the CRC Screening Programme

Screening flow

Before specimen collection - Tips

How to collect stool specimen

Returning specimens

## Investigation Result

My Screening Flow

FOBT Result

Date	Result
04-Jun-2021	Negative
04-Jun-2021	Negative

The test result to be shown here is for record purpose only. There is a time lag of around eight weeks.

Find more healthcare professionals

Past CRC Screening Results

FOBT Result

Date	Result
26-Apr-2019	Negative
26-Apr-2019	Negative

Last Updated: 21-Apr-2022 7:49 PM

## Reminder

9:40  
Monday, June 3

醫健通 e-health now

Reminder: Please be reminded to return the FIT tubes. If you have returned the FIT tubes, please ignore this message.

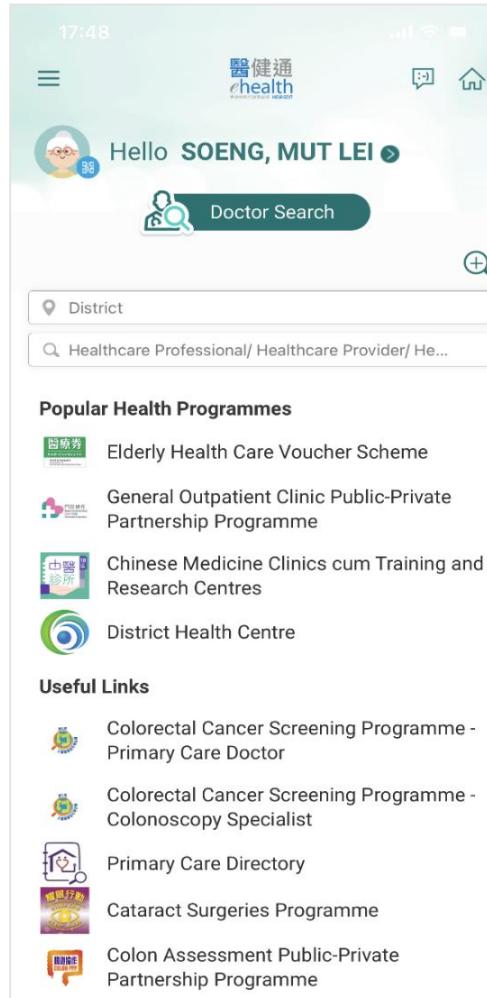
swipe up to open

# Health and Self Management Resources

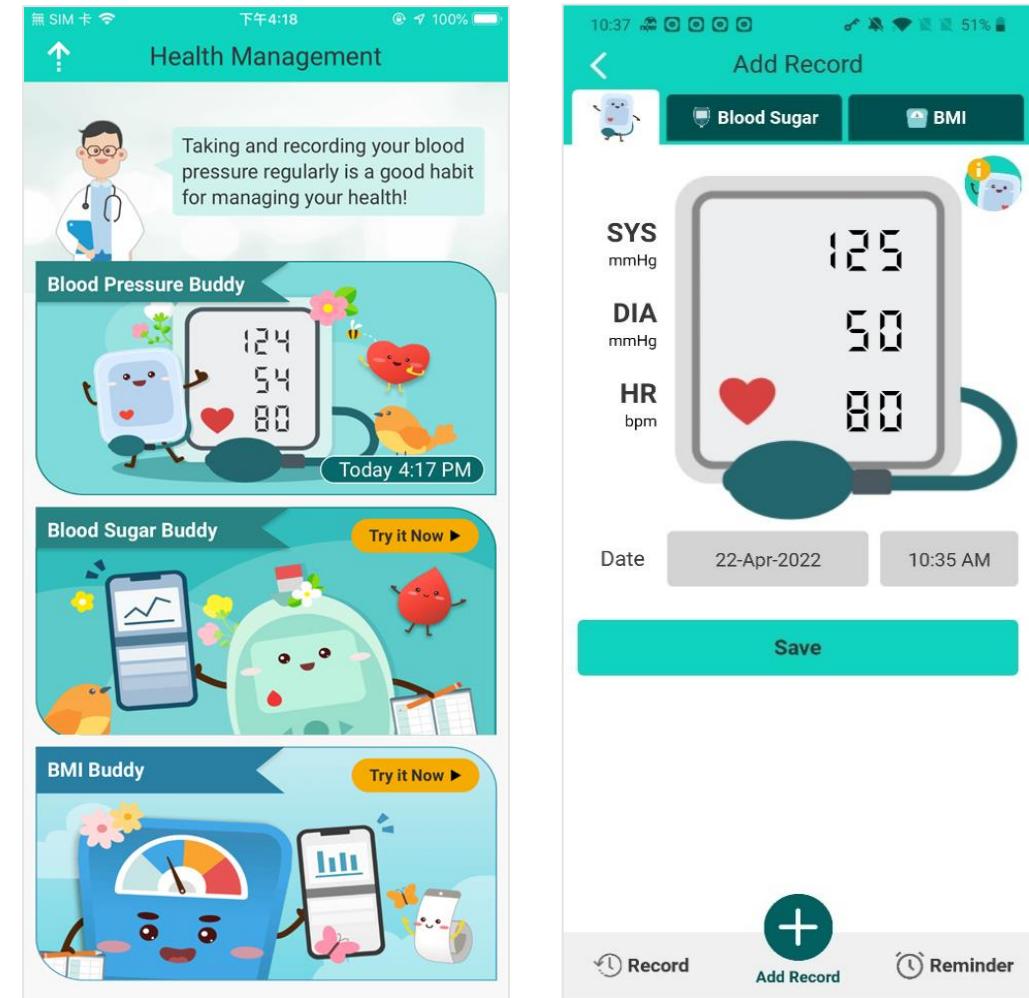
## DHC



## Healthcare Provider



## Health Management



# eHR promotion



# DHC Services

Districts		Implementation	Operators
1	Kwai Tsing	17 September 2019	 葵青安全社區及健康城市協會 KWAI TONG SAFE COMMUNITY AND HEALTHY CITY ASSOCIATION
2	Sham Shui Po	30 June 2021	 聖雅各福群會 St. James' Settlement
3	Sai Kung	1 September 2021	 葵青樂善堂 THE LOK SIN TONG BENEVOLENT SOCIETY KOWLOON
4	Kowloon City	2 October 2021	
5	Yau Tsim Mong	2 October 2021	
6	Wan Chai	5 October 2021	 街道衛理中心 Methodist Centre
7	Kwun Tong	15 October 2021	 基督教聯合醫務協會 UNITED CHRISTIAN MEDICAL SERVICE
8	Tai Po	15 October 2021	
9	Islands	18 October 2021	 鄰舍輔導會 THE NEIGHBORHOOD ACTION COUNCIL
10	North	18 October 2021	 香港基督教女青年會 HONG KONG CHRISTIAN SERVICE FOR YOUNG WOMEN
11	Sha Tin	30 October 2021	 香港復康會 The Hong Kong Society for Rehabilitation
12	Central & Western	30 October 2021	
13	Eastern	30 October 2021	
14	Tuen Mun	31 May 2022	 基督教香港信義會社會服務部 EVANGELICAL LUTHERAN CHURCH SOCIAL SERVICE - HONG KONG
15	Wong Tai Sin	30 June 2022	 香港聖公會信義會有限公司 HONG KONG SHENG KUNG HUI WESLEY COUNCIL LIMITED
16	Yuen Long	24 Oct 2022	 博愛醫院 Pok Oi Hospital
17	Southern	17 Oct 2022	 香港仔坊會 AKA
18	Tsuen Wan	30 Dec 2022	 仁濟醫院 Yan Chai Hospital



地區康健中心  
District Health Centre



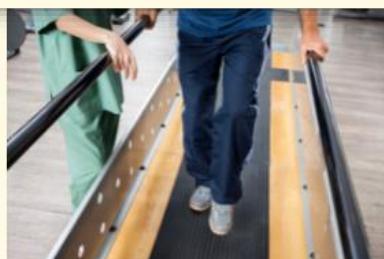
**Health Promotion**



**Health Assessment**



**Chronic Disease Management**



**Community Rehabilitation**

# PPP Services

## HA PPP Programmes

- General Outpatient Clinic Public-Private Partnership Programme (GOPC PPP)
- Radiological Investigation Services Collaboration (Radi Collaboration)
- Cataract Surgeries Programme (CSP)
- Haemodialysis Public-Private Partnership Programme (HD PPP)
- Colon Assessment Public-Private Partnership Programme (Colon PPP)
- Glaucoma Public-Private Partnership Programme (Glaucoma PPP)
- Radiotherapy Services Collaboration Programme

## HHB Programmes

- District Health Centres related programmes

## HA Service Collaboration Programmes

- Breast Cancer Surgery Collaboration (CA Breast PPP)
- Trauma Operative Service Collaboration Programme (Trauma PPP)
- CUHK Collaboration Programme
- HA referral to private hospital low-charge bed
- Investigation Service Public-Private Partnership Programme (Coming soon)

## DH Collaboration Programmes

- Colorectal Cancer Screening Programme

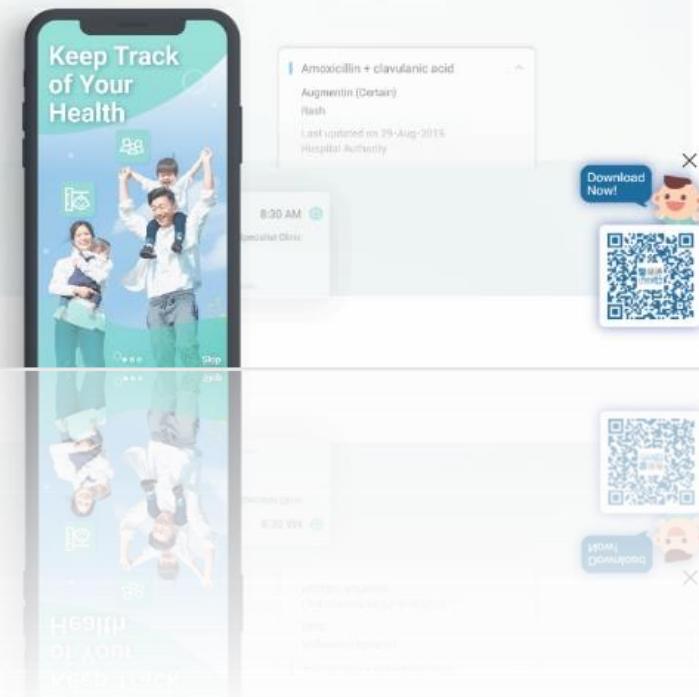
Total 14 services





Managing Your Health  
anytime, anywhere.

醫健通 eHealth, a one-stop access of useful health information and your health records. Leading you to better health within one click.



# Thank You!

# Dataset briefing for Problem & Procedure

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By Ms Austen Wong (Health Informatics Analyst I, Hospital Authority)



# **Problem & Procedure Information Standards**

**HL7 Hong Kong FHIR® Connectathon**

**6 May 2024**

**Prepared by Standards & Policy Team 4**

# Aim

- To introduce the information standards of eHRSS domains
  - Problem
  - Procedure



# PROBLEM

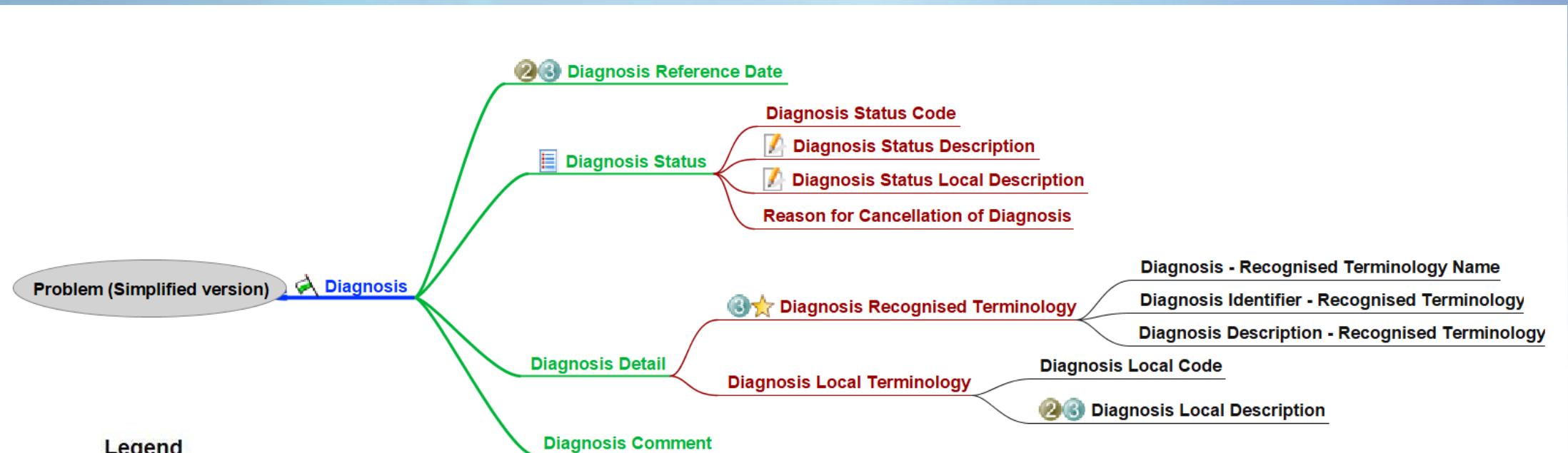


# Problem

- Can be
  - diagnosis
  - social issue
  - risk factor
  - significant abnormal physical sign and examination finding
  - pathophysiological state
  - reactions to food or drugs
  - health alert
- Problem list includes all active and inactive significant health and social problems
- No free text data or data in PDF will be accepted



# Mind map – Problem (Simplified Version)



## Legend

- ✓ Mandatory for all Levels
- ① Mandatory for Level 1
- ② Mandatory for Level 2
- ③ Mandatory for Level 3
- 📝 Conditional mandatory
- 🔁 Repeated data
- 🔒 Encrypted eHR storage
- 📋 Code table
- ⭐ Recognised terminology

# Example – Problem (Data Compliance Level 2)

Entity Name	Data requirement (Certified Level 2)	Example (Certified Level 2)
Diagnosis reference date	M	06/12/2010
Diagnosis status local description	O	not active
Diagnosis local code	O	332
Diagnosis local description	M	Transient ischaemic attack - TIA
Diagnosis comment	O	affect left side of body

# Example – Problem (Data Compliance Level 3)

**Codex**



Entity Name	Data requirement (Certified Level 3)	Example (Certified Level 3)
Diagnosis reference date	M	06/12/2010
Diagnosis status code	O	C
Diagnosis status description	M if [Diagnosis status code] is given; NA if [Diagnosis status code] is blank	Cancelled
Diagnosis status local description	M if [Diagnosis status code] is given; NA if [Diagnosis status code] is blank	Wrong
Reason for cancellation of diagnosis	O if [Diagnosis Status Code] is "C" ; NA if [Diagnosis Status Code] is not "C"	Wrong diagnosis as no evidence supported that patient has this condition
Diagnosis - recognised terminology name	M	HKCTT
Diagnosis identifier - recognised terminology	M	1234
Diagnosis description - recognised terminology	M	Transient ischaemic attack
Diagnosis local code	O	332
Diagnosis local description	M	Transient ischaemic attack - TIA
Diagnosis comment	O	affect left side of body



# eHR Viewer – Problem (Summary Page)

**醫健通 ehealth** All Local Non-Local Help COVID-19 Related Records

**Clinical Note & Summary**  
Clinical Note & Summary  
Referral  
Birth Record

**Condition**  
Obstetrics

**Encounter / Appointment**

**Problem & Procedure**  
**Problem / Diagnosis** (highlighted)  
Procedure

**Investigation Report**

**Medication**  
Prescribing History  
Dispensing History

**Laboratory Record**  
Chemical Pathology  
Haematology  
Immunology  
Microbiology & Virology  
Anatomical Pathology  
Toxicology

**Problem / Diagnosis**

Date	Description
23-Mar-2020	Diverticulosis of colon
24-Feb-2016	Atopic dermatitis
28-Apr-2015	Fever
01-Jan-2014	Appendicitis
24-Feb-2013	Diabetes Mellitus
24-Feb-2013	Type II diabetes mellitus with complication
24-Feb-2013	Type II diabetes mellitus with complication B

**Laboratory Record**

Date	Profile Description	Institution
25-Sep-2019	Colon/Biopsy	IPATH TEST
24-Dec-2012	AD, RFT	VUC4_A
15-Dec-2012	APTT,PT	VHC4
21-Aug-2012	AD	VHC4
20-Aug-2012	Haematology Result	VHC4
09-Aug-2012	Haematology Laboratory Report (PDF)	QEH
09-Aug-2012	Molecular Pathology Report (PDF)	QEH

**Encounter / Appointment**

Start Date	Specialty	HCP
25-Oct-2021 11:15	Nursing service	KTSIDHC TEST
04-Sep-2019 10:55		VHR2_R

**Allergy & Adverse Drug Reaction**

Allergen  
milk  
zanubrutinib  
vildagliptin

**ADR Causative Agent**  
zanubrutinib  
vildagliptin  
vericiguat

**ADR Causative Agent (Chinese Medicine)**  
No record, p confirm.

**Prescribing History**

Date	Medication
30-Dec-2018	DIFLUCORTOLONE
08-Nov-2018	calcium magnesium inosithexaphosphate cetylpyridinium chloride + lidocaine hydrochloride
07-Nov-2018	betamethasone + dextchlorpheniramine maleate bromhexine hydrochloride chlorphenamine maleate + dextromethorphan hydrobromide codeine phosphate + pseudoephedrine



# eHR Viewer – Problem (Summary Page: Full View)

The screenshot shows the eHR Viewer interface with the following details:

- Top Navigation:** 醫健通 eHealth, All Local Non-Local, Help, COVID-19 Related Records.
- Left Sidebar:** Clinical Note & Summary, Referral, Birth Record, Condition (Obstetrics), Encounter / Appointment, Problem & Procedure (selected), Procedure, Investigation Report, Medication, Prescribing History.
- Right Main Area:** Problem / Diagnosis table with columns: Date, Description, Institution.
- Data in Table:**

Date	Description	Institution
23-Mar-2020	Diagnosis Status: Active	VHC4
24-Feb-2016	Appendicitis	SHS-FLTC SHS
28-Apr-2015	Fever	VHB2
01-Jan-2014	Appendicitis	VHC4_A
24-Feb-2013	Diabetes Mellitus	VHA
24-Feb-2013	Type II diabetes mellitus with complication	VHA
24-Feb-2013	Type II diabetes mellitus with complication B	VHA
24-Feb-2013	Type II diabetes mellitus with ischaemic heart disease	VHA
23-Feb-2013	Vesical pain	VUC4_A
28-Feb-2011	Delirium	VHA
28-Feb-2011	Confusion	VUC4_A
27-Jun-2000		VUC4_B
- Annotations:**
  - A yellow callout box points to the "i" icon in the "Description" column of the first row, with the text: "Click i to see additional information".
    - Diagnosis Status Description
    - Diagnosis Cancelled Reason
    - Diagnosis Comment
  - A yellow callout box points to the folder icon in the "Description" column of the second row, with the text: "Click folder to see details".

# eHR Viewer – Problem (Detail Page of Individual Problem)

醫健通 eHealth

All Local Non-Local Help

COVID-19 Related Records

Condition  
Obstetrics

Encounter / Appointment

Problem & Procedure  
Problem / Diagnosis

Procedure

Investigation Report

Medication  
Prescribing History  
Dispensing History

Laboratory Record  
Chemical Pathology  
Haematology  
Immunology  
Microbiology & Virology  
Anatomical Pathology

Problem / Diagnosis Details

Date	Diagnosis Description	Institution
23-Feb-2013	Vesical pain	VUC4_A
21-Feb-2013	Vesical pain	VUC4_B
12-Dec-2000	Vesical pain	VHA

Local descriptions transmitted by HCP

Date	Diagnosis Description	Institution
23-Feb-2013	Vesical pain	VUC4_A
21-Feb-2013	Vesical pain	VUC4_B
12-Dec-2000	Vesical pain	VHA

# PROCEDURE



# Procedure

- Can be any significant procedures that are performed for these purposes
  - Diagnostic
  - Exploratory
  - Treatment
- No free text data or data in PDF will be accepted



# Mind map – Procedure (Simplified Version)



## Legend

- ✓ Mandatory for all Levels
- ① Mandatory for Level 1
- ② Mandatory for Level 2
- ③ Mandatory for Level 3
- 📝 Conditional mandatory
- 🔁 Repeated data
- 🔒 Encrypted eHR storage
- 📋 Code table
- ⭐ Recognised terminology

# Example – Procedure (Data Compliance Level 2)

Entity Name	Data requirement (Certified Level 2)	Example (Certified Level 2)
Procedure performed reference date	M	06/12/2010
Procedure performed local code	O	2231
Procedure performed local description	M	Lobectomy of left lung
Procedure performed comment	O	lower lobe

# Example – Procedure (Data Compliance Level 3)

Codex  
★  
★  
★

Entity Name	Data requirement (Certified Level 3)	Example (Certified Level 3)
Procedure performed reference date	M	06/12/2010
Procedure performed - recognised terminology name	M	HKCTT
Procedure performed identifier - recognised terminology	M	23815
Procedure performed description - recognised terminology	M	Lobectomy of lung - left lower lobe
Procedure performed local code	O	2231
Procedure performed local description	M	Lobectomy of left lung
Procedure performed comment	O	lower lobe

# eHR Viewer – Procedure (Summary Page: Full View)

The screenshot shows the eHR Viewer interface for viewing procedure records. The left sidebar includes links for Clinical Note & Summary, Condition, Encounter / Appointment, Problem & Procedure, and Investigation Report. The main area displays a table of procedures:

Date	Description	Institution
23-Mar-2020	Diagnostic colonoscopy	VHC4
24-Dec-2014	Bone graft to rib	VHB2_B
24-Dec-2014	Decortication of lung. total	VHB2_B
10-Jan-2013	Comment: Exercises prescribed	VHA
05-Jan-2013	Ultrasonogram of abdomen ?	VHA

Two yellow callout boxes provide instructions:

- Click folder to see details
- Click to see Procedure comment

# eHR Viewer – Procedure (Detail Page – Individual Procedure )

The screenshot shows the eHR Viewer interface. On the left is a navigation sidebar with sections like Clinical Note & Summary, Condition, Encounter / Appointment, Problem & Procedure (which is selected), and Investigation Report. The main area is titled 'Procedure Details' and shows a table with one row. The row contains 'Date' (24-Dec-2014), 'Procedure' ('Decortication of lung, total'), and 'Institution' (VHB2\_B). A yellow callout box with a black border and a yellow arrow pointing to the procedure description says 'Local descriptions transmitted by HCP'. The top right of the main area has a 'Return' button.

Date	Procedure	Institution
24-Dec-2014	Decortication of lung, total	VHB2_B

Local descriptions transmitted by HCP

# Data Compliance Checking & Follow up

- Routine validation on data transmitted to eHRSS
- If data not meeting the declared compliance level, exception reports will be delivered to HCP via eHR INBOX for necessary follow up
- Examples of scenarios
  - Mandatory data ‘Diagnosis Reference Date’ missing
  - HKCTT Procedure concept being transmitted as Problem
  - ‘N’ being transmitted as Diagnosis status

Diagnosis Status		
Purpose : to indicate the status of the diagnosis		
Source : HA		
Term ID	eHR Value	eHR Description
9050360	P	Provisional
9050003	A	Active
9050192	I	Inactive
9050379	R	Resolved
9050058	C	Cancelled

# Exception reports sample

## Adverse Drug Reaction: Inappropriate RT code (13-Sep-2016 to 19-Sep-2016)

Sender: eHR Clinical Data Repository

Date: 26-Feb-2020 13:42



### Adverse Drug Reaction: Inappropriate RT code for VHA from 13-Sep-2016 to 19-Sep-2016

Some of the records uploaded by your organization during the captioned period contained Recognized Terminology (RT) codes which are not appropriate for the domain. The records were uploaded successfully but regraded to other compliance level(s).

Record Key	RT Name	RT Identifier	RT Description	Local Code (if any)	Local Description
UAT_EXPT_RPT_R1110000037	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	HYPOTEARS PLUS
UAT_EXPT_RPT_R1110000037SRC_GEN	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	HYPOTEARS PLUS
UAT_EXPT_RPT_R1110000041	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	ASPIRIN BUFFERED
UAT_EXPT_RPT_R1110000041SRC_GEN	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	ASPIRIN BUFFERED
UAT_EXPT_RPT_R1110000048	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	ASPIRIN
UAT_EXPT_RPT_R1110000048SRC_GEN	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	ASPIRIN
UAT_EXPT_RPT_R1110000094	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	TECHNETIUM OXIDRONATE
UAT_EXPT_RPT_R1110000094SRC_GEN	INPUT_STD_CD_TYPE1	INPUT_STD_CD1	INPUT_STD_DESC1	INPUT_LOCAL_CD1	TECHNETIUM OXIDRONATE

Please contact your organization Information Technology / Informatics Support for conducting record list review and appreciated if rectification could be arranged at your convenience.

End of report

# Summary

- Problem & Procedure
  - Separate domains
  - Accept Level 2 & Level 3



**THANK YOU**



# FHIR mapping for Problem & Procedure

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HL7 HONG KONG – 3<sup>RD</sup> CONNECTATHON

MAY 6, 2024

# What is “Connectathon”?

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Connectathon has two very important purposes and one very important principle. A Connectathon is an event that is centered on an open consensus built Interoperability (Connection) specification. The purpose of a Connectathon is both to prove that the specification is complete as well as to prove that implementations written to that specification can ‘connect’. The most important principle of a Connectathon is that it is a safe place for failure in these endeavors. That is that it is free of negative consequences of a mistake in someone’s implementation and that the specification might need to be refined.

Source: <https://healthcaresecprivacy.blogspot.com/2013/11/what-is-connectathon.html>

# Our Purpose

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## EHR

- Consent HL7 interface specification for EHR
- Speed up private data sharing

## HL7 HK

- Form a community on HL7 & FHIR in HK to develop healthcare interface standards

# Topic

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- ◆ Resources

- Condition, Procedure

- ◆ Mode of sharing

- Generic vs Specific

- ◆ Challenge

# FHIR Resources

Categorized	Alphabetical	R2 Layout	By Maturity	Security Category	By Standards Status	By Committee
<b>Foundation</b>	<b>Conformance</b> <ul style="list-style-type: none"> <li>CapabilityStatement <a href="#">N</a></li> <li>StructureDefinition <a href="#">N</a></li> <li>ImplementationGuide 1</li> <li>SearchParameter 3</li> <li>MessageDefinition 1</li> <li>OperationDefinition <a href="#">N</a></li> <li>CompartmentDefinition 1</li> <li>StructureMap 2</li> <li>GraphDefinition 1</li> <li>ExampleScenario 0</li> </ul>	<b>Terminology</b> <ul style="list-style-type: none"> <li>CodeSystem <a href="#">N</a></li> <li>ValueSet <a href="#">N</a></li> <li>ConceptMap 3</li> <li>NamingSystem 2</li> <li>TerminologyCapabilities 0</li> </ul>	<b>Security</b> <ul style="list-style-type: none"> <li>Provenance 3</li> <li>AuditEvent 3</li> <li>Consent 2</li> </ul>	<b>Documents</b> <ul style="list-style-type: none"> <li>Composition 2</li> <li>DocumentManifest 2</li> <li>DocumentReference 3</li> <li>CatalogEntry 0</li> </ul>	<b>Other</b> <ul style="list-style-type: none"> <li>Basic 1</li> <li>Binary <a href="#">N</a></li> <li>Bundle <a href="#">N</a></li> <li>Linkage 0</li> <li>MessageHeader 4</li> <li>OperationOutcome <a href="#">N</a></li> <li>Parameters <a href="#">N</a></li> <li>Subscription 3</li> <li>SubscriptionStatus 0</li> <li>SubscriptionTopic 0</li> </ul>	
<b>Base</b>	<b>Individuals</b> <ul style="list-style-type: none"> <li>Patient <a href="#">N</a></li> <li>Practitioner 3</li> <li>PractitionerRole 2</li> <li>RelatedPerson 2</li> <li>Person 2</li> <li>Group 1</li> </ul>	<b>Entities #1</b> <ul style="list-style-type: none"> <li>Organization 3</li> <li>OrganizationAffiliation 0</li> <li>HealthcareService 2</li> </ul>	<b>Entities #2</b> <ul style="list-style-type: none"> <li>Substance 2</li> <li>BiologicallyDerivedProduct 0</li> <li>Device 2</li> </ul>	<b>Workflow</b> <ul style="list-style-type: none"> <li>Task 2</li> <li>Appointment 3</li> <li>AppointmentResponse 3</li> </ul>	<b>Management</b> <ul style="list-style-type: none"> <li>Encounter 2</li> <li>EpisodeOfCare 2</li> <li>Flag 1</li> <li>List 1</li> <li>Library 3</li> </ul>	
<b>Clinical</b>	<b>Summary</b> <ul style="list-style-type: none"> <li>AllergyIntolerance 3</li> <li>AdverseEvent 0</li> <li>Condition (Problem) 3 <span style="border: 2px solid red; padding: 2px;">● Condition (Problem) 3</span></li> <li>Procedure 3 <span style="border: 2px solid red; padding: 2px;">● Procedure 3</span></li> <li>FamilyMemberHistory 2</li> <li>ClinicalImpression 0</li> <li>DetectedIssue 1</li> </ul>	<b>DiagnosticReport 3</b> <ul style="list-style-type: none"> <li>Specimen 2</li> <li>BodyStructure 1</li> <li>ImagingStudy 3</li> <li>QuestionnaireResponse 3</li> <li>MolecularSequence 1</li> </ul>	<b>MedicationDispense 2</b> <ul style="list-style-type: none"> <li>MedicationStatement 3</li> <li>Medication 3</li> <li>MedicationKnowledge 0</li> <li>Immunization 3</li> <li>ImmunizationEvaluation 0</li> <li>ImmunizationRecommendation 1</li> </ul>	<b>Goal 2</b> <ul style="list-style-type: none"> <li>ServiceRequest 2</li> <li>NutritionOrder 2</li> <li>VisionPrescription 2</li> <li>RiskAssessment 1</li> <li>RequestGroup 2</li> </ul>	<b>Request &amp; Response</b> <ul style="list-style-type: none"> <li>Communication 2</li> <li>CommunicationRequest 2</li> <li>DeviceRequest 1</li> <li>DeviceUseStatement 0</li> <li>GuidanceResponse 2</li> <li>SupplyRequest 1</li> <li>SupplyDelivery 1</li> </ul>	

# Condition

A clinical condition, problem, diagnosis, or other event, situation, issue, or clinical concept that has risen to a level of concern.

## Structure

Name	Flags	Card.	Type	Description & Constraints
Condition	TU		DomainResource	Detailed information about conditions, problems or diagnoses + Warning: If category is problems list item, the clinicalStatus should not be unknown + Rule: If condition is abated, then clinicalStatus must be either inactive, resolved, or remission.
identifier	Σ	0..*	Identifier	Elements defined in Ancestors: id, meta, implicitRules, language, text, contained, extension, modifierExtension External Ids for this condition
clinicalStatus	?! Σ C	1..1	CodeableConcept	active   recurrence   relapse   inactive   remission   resolved   unknown Binding: Condition Clinical Status Codes (Required)
verificationStatus	?! Σ	0..1	CodeableConcept	unconfirmed   provisional   differential   confirmed   refuted   entered-in-error Binding: Condition Verification Status (Required)
category	C	0..*	CodeableConcept	problem-list-item   encounter-diagnosis Binding: Condition Category Codes (Preferred)
severity		0..1	CodeableConcept	Subjective severity of condition Binding: Condition/Diagnosis Severity (Preferred)
code	Σ	0..1	CodeableConcept	Identification of the condition, problem or diagnosis Binding: Condition/Problem/Diagnosis Codes (Example)
bodySite	Σ	0..*	CodeableConcept	Anatomical location, if relevant Binding: SNOMED CT Body Structures (Example)
subject	Σ	1..1	Reference(Patient   Group)	Who has the condition?
encounter	Σ	0..1	Reference(Encounter)	The Encounter during which this Condition was created
onset[x]	Σ	0..1		Estimated or actual date, date-time, or age
onsetDateTime			DateTime	

# Procedure

## Structure

Name	Flags	Card.	Type	Description & Constraints
Procedure	TU		DomainResource	An action that is being or was performed on an individual or entity
				Elements defined in Ancestors: id, meta, implicitRules, language, text, contained, extension, modifierExtension
identifier	Σ	0..*	Identifier	External Identifiers for this procedure
instantiatesCanonical	Σ	0..*	canonical(PlanDefinition   ActivityDefinition   Measure   OperationDefinition   Questionnaire)	Instantiates FHIR protocol or definition
instantiatesUri	Σ	0..*	uri	Instantiates external protocol or definition
basedOn	Σ	0..*	Reference(CarePlan   ServiceRequest)	A request for this procedure
partOf	Σ	0..*	Reference(Procedure   Observation   MedicationAdministration)	Part of referenced event
status	?! Σ	1..1	code	preparation   in-progress   not-done   on-hold   stopped   completed   entered-in-error   unknown Binding: <a href="#">EventStatus (Required)</a>
statusReason	Σ	0..1	CodeableConcept	Reason for current status Binding: <a href="#">Procedure Not Performed Reason (SNOMED-CT) (Example)</a>
category	Σ	0..*	CodeableConcept	Classification of the procedure Binding: <a href="#">Procedure Category Codes (SNOMED CT) (Example)</a>
code	Σ	0..1	CodeableConcept	Identification of the procedure Binding: <a href="#">Procedure Codes (SNOMED CT) (Example)</a>
subject	Σ	1..1	Reference(Patient   Group   Device   Practitioner   Organization   Location)	Individual or entity the procedure was performed on
focus	Σ	0..1	Reference(Patient   Group   RelatedPerson   Practitioner   Organization   CareTeam   PractitionerRole   Specimen)	Who is the target of the procedure when it is not the subject of record only
encounter	Σ	0..1	Reference(Encounter)	The Encounter during which this Procedure was created

<https://www.hl7.org/fhir/procedure.html>

# Maturity Levels

## 9.2 Resource Condition - Content

Patient Care  Work Group	Maturity Level: 3	Trial Use	Security Category: Patient	Compartments: Encounter, Patient, Practitioner, RelatedPerson
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## 9.3 Resource Procedure - Content

Patient Care  Work Group	Maturity Level: 3	Trial Use	Security Category: Patient	Compartments: Encounter, Patient, Practitioner, RelatedPerson
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# FHIR Documents

Exchange > Documents

This page is part of the FHIR Specification (v5.0.0: R5 - [STU](#)). This is the current published version. For a full list of available versions, see the [Directory of published versions](#)  
🕒 Page versions: [R5](#) [R4B](#) [R4](#) [R3](#) [R2](#)

## 3.4 FHIR Documents

FHIR Infrastructure <a href="#">Work Group</a>	Maturity Level: 3	Standards Status: Trial Use
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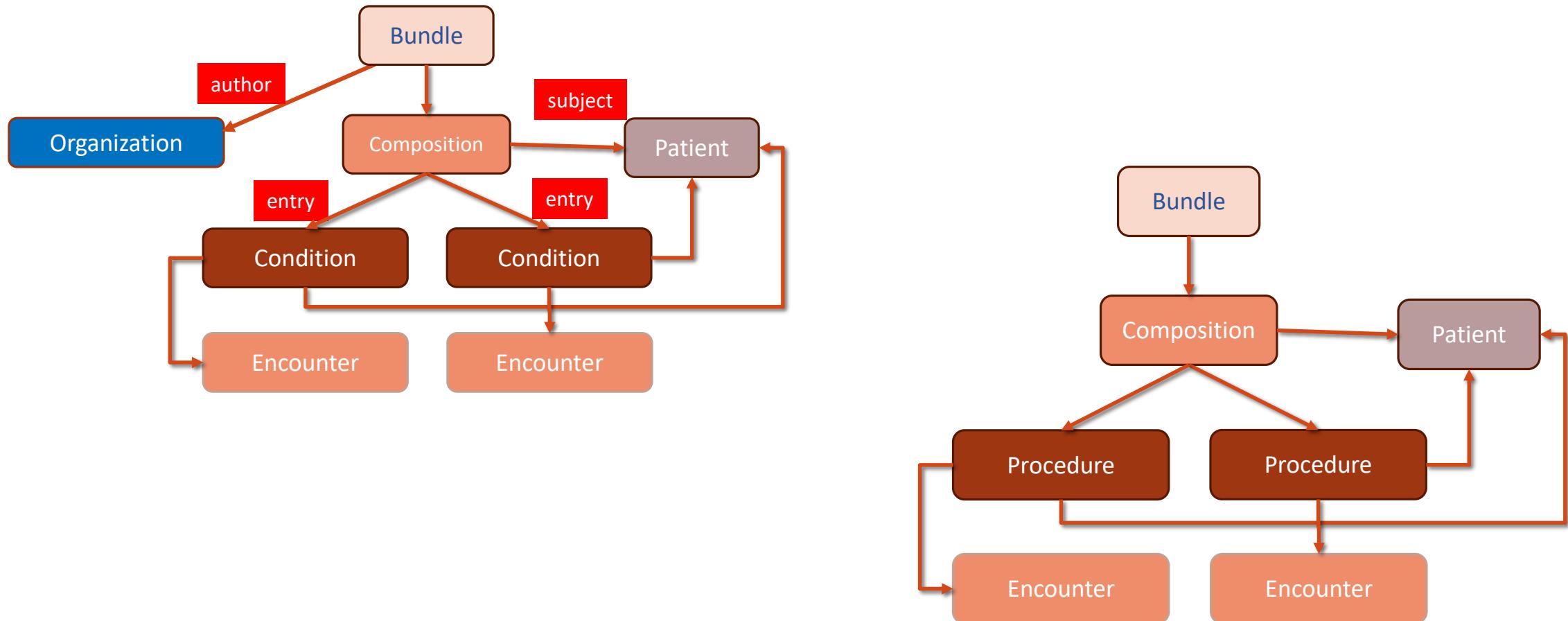
FHIR resources can be used to build documents that represent a composition: a coherent set of information that is a statement of healthcare information, including clinical observations and services. A document is a set of resources with a fixed presentation that is authored and/or attested by humans, organizations and devices.

A FHIR document instance is a [Bundle](#) of type [document](#) that starts with a [Composition](#) and contains specific frozen versions of other resources. Changes to a document Bundle may risk invalidating the attestation present within the document. Implementations SHOULD have policies around when documents can be 'updated' (new version of the same instance) vs. when a distinct document needs to be created, as well as what types of change are permitted, in order to retain attestation validity. These rules might vary based on the type of document (e.g. legal documents, clinical documents, etc.).

Documents built in this fashion may be exchanged between systems and persisted in document storage and management systems, including systems such as [IHE XDS](#).

Bundle.type=document

# Composition structure for Problem & Procedure



# Data Mapping for Problem



Diagnosis reference date

Diagnosis status code

Diagnosis status description

Diagnosis status local description

Reason for cancellation of Diagnosis

Diagnosis - recognised terminology name

Diagnosis identifier - recognised terminology

Diagnosis description - recognised terminology

Diagnosis local code

Diagnosis local description

Diagnosis Comment

?

Condition.clinicalStatus

Condition.verificationStatus

Condition.category

Condition.severity

Condition.code

Condition.bodySite

Condition.subject

Condition.encounter

Condition.onset[x]

Condition.abatement[x]

Condition.recordedDate

Condition.recorder

Condition.stage

Condition.evidence

Condition.note

# Data Mapping for Procedure



Procedure performed reference date  
Procedure performed - recognised terminology name  
Procedure performed identifier - recognised terminology  
Procedure performed description - recognised terminology  
Procedure performed local code  
Procedure performed local description  
Procedure performed Comment

Procedure.status  
Procedure.statusReason  
Procedure.category  
Procedure.code  
Procedure.subject  
Procedure.encounter  
Procedure.performedDateTime  
Procedure.recorder  
Procedure.reported[x]  
Procedure.performer  
Procedure.location  
Procedure.reasonCode  
Procedure.bodySite  
Procedure.outcome  
Procedure.note



# Extension (1)

## Diagnosis Status / Condition.clinicalStatus

### Diagnosis Status

Purpose : to indicate the status of the diagnosis

Source : HA

Term ID	eHR Value	eHR Description	Definition
9050360	P	Provisional	Diagnosis not confirmed
9050003	A	Active	Under management
9050192	I	Inactive	No active treatment required
9050379	R	Resolved	Cured
9050058	C	Cancelled	Cancel

Expansion based on [Condition Clinical Status Codes v2.0.0 \(CodeSystem\)](#)

Level	Code	System	Display	Definition	Canonical Mapping for "Condition Clinical Status Codes"
1	<a href="#">active</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Active	The subject is currently experiencing the condition or situation, there is evidence of the condition or situation, or considered to be a significant risk.	<a href="#">~active</a>
2	<a href="#">recurrence</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Recurrence	The subject is experiencing a reoccurrence or repeating of a previously resolved condition or situation, e.g. urinary tract infection, food insecurity.	<a href="#">~active</a>
2	<a href="#">relapse</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Relapse	The subject is experiencing a return of a condition or situation after a period of improvement or remission, e.g. relapse of cancer, alcoholism.	<a href="#">~active</a>
1	<a href="#">inactive</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Inactive	The subject is no longer experiencing the condition or situation and there is no longer evidence or appreciable risk of the condition or situation.	<a href="#">~suspended</a>
2	<a href="#">remission</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Remission	The subject is not presently experiencing the condition or situation, but there is a risk of the condition or situation returning.	<a href="#">~suspended</a>
2	<a href="#">resolved</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Resolved	The subject is not presently experiencing the condition or situation and there is a negligible perceived risk of the condition or situation returning.	<a href="#">~failed</a>
1	<a href="#">unknown</a>	<a href="http://terminology.hl7.org/CodeSystem/condition-clinical">http://terminology.hl7.org/CodeSystem/condition-clinical</a>	Unknown	The authoring/source system does not know which of the status values currently applies for this condition. Note: This concept is not to be used for "other" - one of the listed statuses is presumed to apply, but the authoring/source system does not know which.	

```
"clinicalStatus": {
  "coding": [
    {
      "system": "https://ehealth.gov.hk/FHIR/DiagStatuscd",
      "code": "A",
      "display": "Active"
    }
  ],
  "text": "Active"
},
```

# Extension (2)

```
"resource": {  
    "resourceType": "Condition",  
    "id": "[resource id for Condition]",  
    "extension": [  
        {  
            "url": "http://ehealth.gov.hk/FHIR/1003582-ReasonForCancel",  
            "valueString": "[Reason for cancellation of diagnosis]"  
        }  
    ]  
}
```

Entity Name	Entity ID	Definition
Reason for cancellation of diagnosis	1003582	The stated reason for cancelling the diagnosis

# Mode of Sharing

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“GENERIC VS SPECIFIC”

# Re-cap 1<sup>st</sup> Connectathon

## ■ GOPC PPP data download – Generic Approach of using Questionnaires

FHIR Resources – Questionnaire and QuestionnaireResponse

[Content](#) Examples Detailed Descriptions Mappings Profiles & Extensions R3 Conversions

**2.37 Resource Questionnaire - Content**

FHIR Infrastructure Work Group Maturity Level: 3 Trial Use Security Category: Business Compartments: Not linked to any defined compartments

A structured set of questions intended to guide the collection of answers from end-users. Questionnaires provide detailed control over order, presentation, phraseology and grouping to allow coherent, consistent data collection.

**2.37.1 Scope and Usage**

A Questionnaire is an organized collection of questions intended to solicit information from patients, simple flat lists of questions or can be hierarchically organized in groups and sub-groups, each containing what order, what choices for answers were, etc. Each of these questions is part of the Questionnaire, and the individual questions are not. (Questionnaire questions can be linked to shared data elements using the [QuestionnaireResponse](#) resource).

Questionnaires cover the need to communicate data originating from forms used in medical history exams records. In many systems this data is collected using user-defined screens and forms. Questionnaires define what order, what choices for answers were, etc. Each of these questions is part of the Questionnaire, and the individual questions are not. (Questionnaire questions can be linked to shared data elements using the [QuestionnaireResponse](#) resource).

Examples of Questionnaires include:

**2.38 Resource QuestionnaireResponse - Content**

FHIR Infrastructure Work Group Maturity Level: 3 Trial Use Security Category: Patient Compartments: Device, Encounter, Patient, Practitioner, RelatedPerson

A structured set of questions and their answers. The questions are ordered and grouped into coherent subsets, corresponding to the structure of the grouping of the questionnaire being responded to.

**2.38.1 Scope and Usage**

QuestionnaireResponse provides a complete or partial list of answers to a set of questions filled when responding to a questionnaire. The questions may be included directly or by reference to a Questionnaire resource that defines the questions as well as the constraints on the allowed answers. In some cases, both formal rules for editing the questionnaire (via link to Questionnaire) as well as sufficient local information to allow rendering of the questionnaire may be provided.

Each time a questionnaire is completed for a different subject or at a different time, a distinct QuestionnaireResponse is generated, though it may be possible for a previously entered set of answers to be edited or updated.

Questionnaire responses cover the need to communicate data originating from forms used in medical history examinations, research questionnaires and sometimes full clinical specialty records. In many systems this data is collected using user-defined screens and forms. Questionnaire responses record specifics about data capture - exactly what questions were asked, in what order, what answers were given, etc. Each of these questions is part of the Questionnaire, and as such the Questionnaire is a separately identifiable Resource, whereas the individual questions are not.

# Generic approach for structure data capturing

## Example of FHIR Questionnaires usage

- Assessments (Primary Care)
- Past medical history
- Social history
- Care Plans
- Public Health Reporting
- General data entry

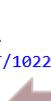
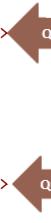
### Narrative QuestionnaireResponse

Assessment

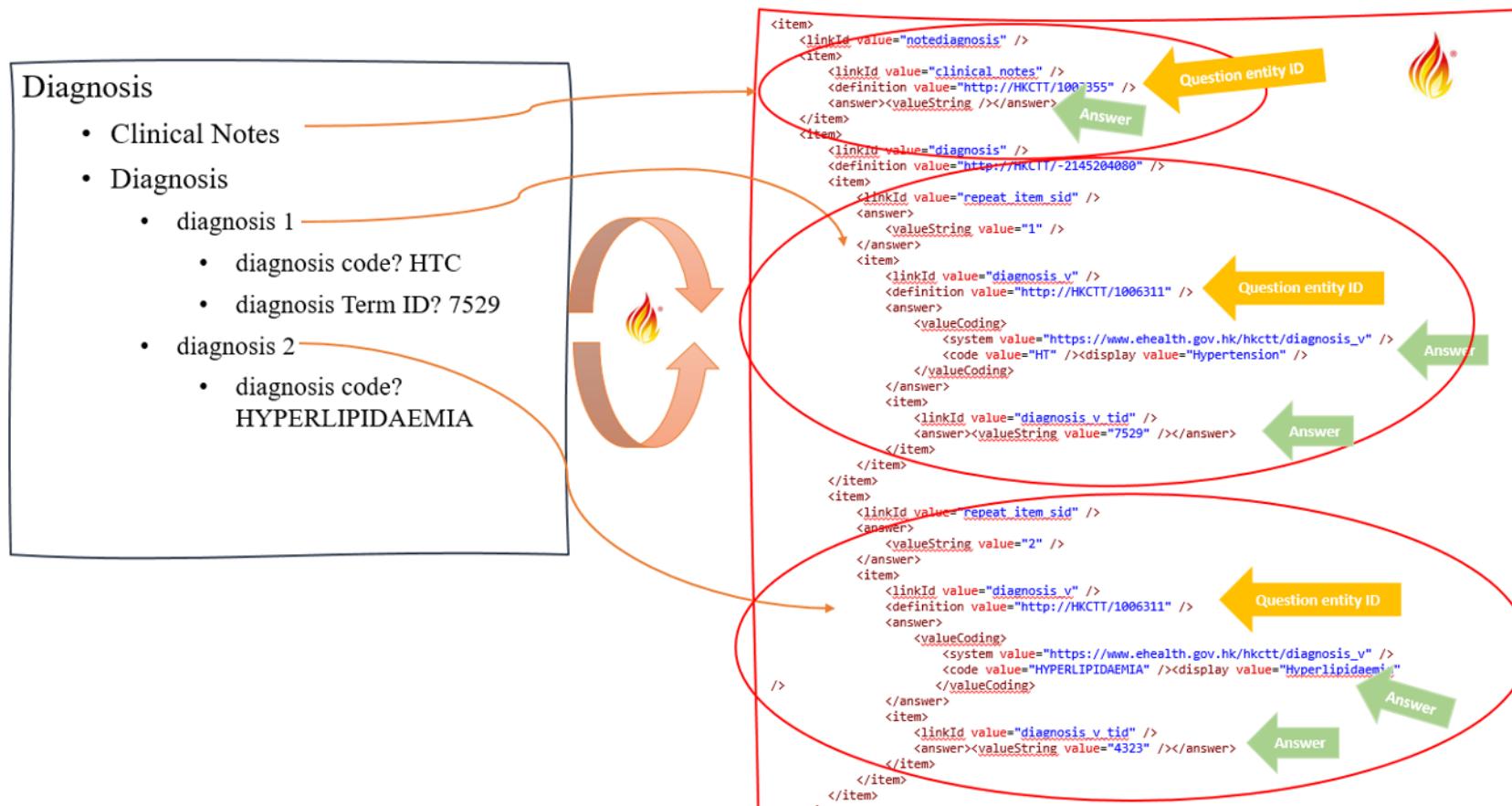
- Systolic blood pressure? 118
- Diastolic blood pressure? 88



```
<item>
  <linkId value="assessment" />
  <item>
    <linkId value="systolic_bp" />
    <definition value="http://HKCTT/102215" />
    <answer>
      <valueString value="118" />
    </answer>
  </item>
  <item>
    <linkId value="diastolic_bp" />
    <definition value="http://HKCTT/102214" />
    <answer>
      <valueString value="88" />
    </answer>
  </item>
</item>
```



# Diagnosis sample on GOPC PPP



## Further example:

- Screening Result sample in CDCC

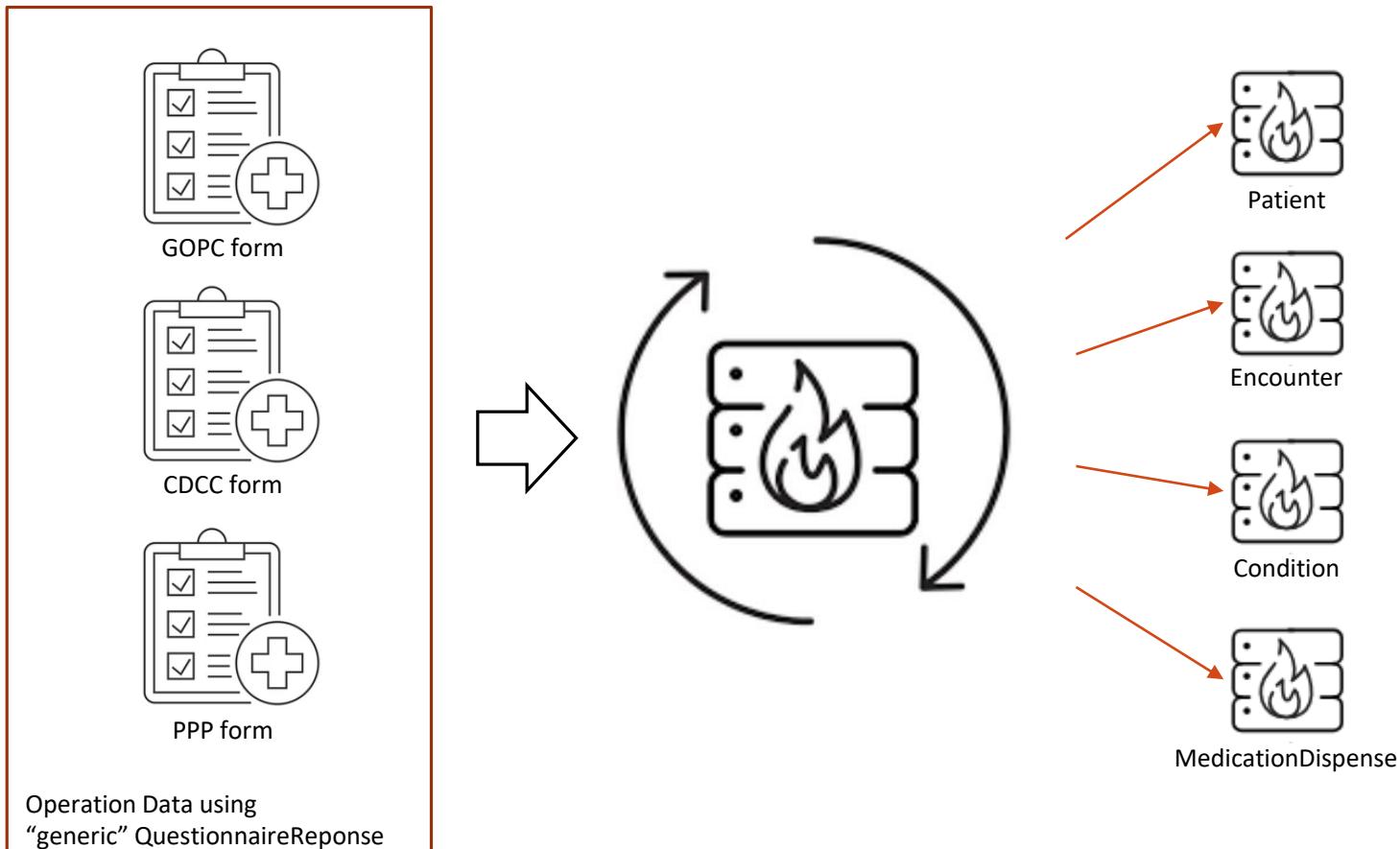
```
[{"linkId": "screeningResult",
"item": [
{
"linkId": "htScreening",
"definition": "https://ehealth.gov.hk/FHIR/HKCTT/-10000069",
"answer": [
{
"valueString": "HT"
}
]
},
{
"linkId": "dmScreening",
"definition": "https://ehealth.gov.hk/FHIR/HKCTT/-10000070",
"answer": [
{
"valueString": "DM"
}
]
},
{
"linkId": "hyperlipidaemia",
"definition": "https://ehealth.gov.hk/FHIR/HKCTT/-10000071",
"answer": [
{
"valueString": "YES"
}
]
}
],
```

# What if present in “Condition” resource

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```
  "code": {
    "coding": [
      {
        "system": "https://ehealth.gov.hk/FHIR/ICD10-2010",
        "code": "E78.5",
        },
        "display": "Hyperlipidemia, unspecified"
      },
      {
        "system": "https://ehealth.gov.hk/FHIR/HCP/local/diagnosis",
        "display": "Hyperlipidemia",
        }
    ],
    "coding": [
      {
        "system": "https://ehealth.gov.hk/FHIR/HKCTT",
        "code": "4323",
        },
        "display": "HYPERLIPIDEMIA"
      },
      {
        "system": "https://ehealth.gov.hk/FHIR/HCP/local/diagnosis",
        "display": "Hyperlipidemia",
        }
    ]
  },
```

# “Generic” vs “Specific”



# Challenge

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# Specifications

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- Specifications can be found at
  - <https://github.com/hl7hongkong/HL7-Hong-Kong-FHIR-Connectathon-202405/>

The screenshot shows a GitHub repository page for the "HL7-Hong-Kong-FHIR-Connectathon-202405" project. The repository is public and has 2 commits from MichaelCheung-FHIR. The README file contains the text: "Third Connectathon of HL7 HK FHIR® Connectathon Series 2023-2024".

Code Issues Pull requests Actions Projects Security Insights

main 1 Branch 0 Tags Go to file Code

MichaelCheung-FHIR	Add event documents	9dbd893 · 51 minutes ago	2 Commits
Part_1_Problem	Add event documents	51 minutes ago	
Part_2_Procedure	Add event documents	51 minutes ago	
Presentation	Add event documents	51 minutes ago	
README.md	Add event documents	51 minutes ago	

README

Third Connectathon of HL7 HK FHIR® Connectathon Series 2023-2024

# Exercise

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- Following the instructions at the GitHub
  - Submit the answers via
    - Fork the repository by pull request and update the related files
    - Google Form
  - <https://forms.gle/X37mZ7LYfSmZP7eC7>

# Format of the exercise

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- Based on the scenario, select the correct answer (multiple choice), e.g.
  - Find out the best way to represent Level 3 'Recognised Terminology'
  - How many resources entries for multiple records case
- Find out the data value from the “Procedure” sample
- Fill in the “Condition” resource into message template

# Before Discussion: Developer Portal (Launched)

The screenshot shows the eHealth homepage with a red box highlighting the 'Healthcare provider and professional' link in the top navigation bar. Another red box highlights the 'Resources' link in the main menu. A large red arrow points from the 'Resources' link down to the 'Self-service eHealth data sharing' section on the page below.

The screenshot shows the Developer Portal homepage with a red box highlighting the 'Home' link in the top navigation bar. Below it, a section titled 'Self-Service eHealth Data Sharing' features a large blue button labeled 'Get Started'. To the right is an illustration of a person working at a computer. Below this are four numbered steps: Step 1 (Learn to Implement Data Sharing), Step 2 (Self-Service Testing), Step 3 (Data Compliance Test), and Step 4 (Connect to eHRSS).

<https://www.ehealth.gov.hk/developer/self-service-ehealth-data-sharing/>

# Open Discussion

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# Closing remarks

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By Mr Pascal Tse (Vice Chairman, HL7 Hong Kong)

# Connectathon Series 2023 - 2024

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## Third FHIR Connectathon

### Topics: Problem, Procedure

- Part 1: Face to face Session (6 May 2024)
- Part 2: Online Follow-up Meetings

Zoom Sessions	Time
(1) May 13, 2024	Time: 7pm
(2) May 17, 2024 (optional)	Time: 7pm

What's next?

# Proposed Schedule of Connectathon

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	Date	Topics
1	Nov 2023	Patient Encounter, Medication, GOPC PPP data download
2	Feb 2024	Allergy/ADR, Immunisation
3	6 May 2024	Problem, Procedure
4	Jul – Aug 2024	Clinical Note / Summary, Investigation report, Referral, Medical Certificate
5	Sep – Oct 2024	Laboratory, Radiology
6	Nov – Dec 2024	Chinese Medicine

See you soon

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