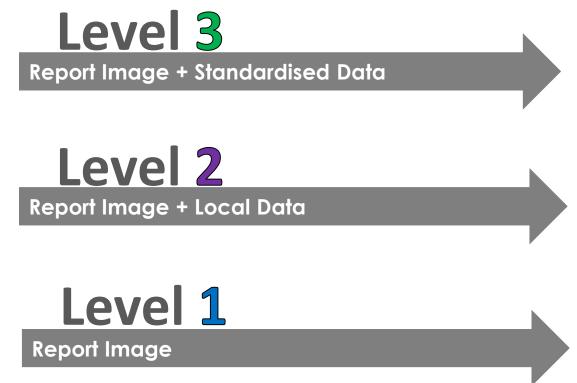


Introduction on Laboratory Data Standards

Laboratory Record Standards and Data Sharing Approaches









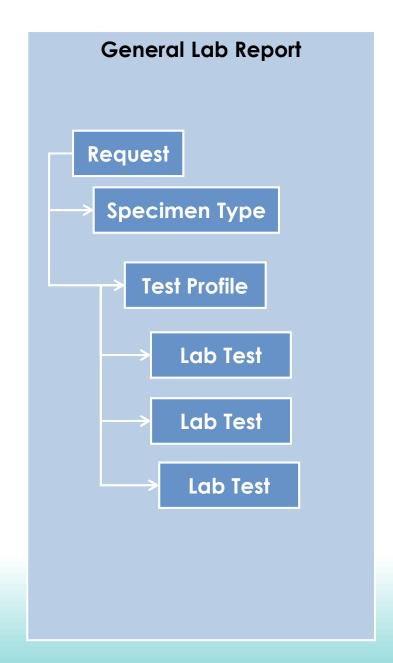
General Lab

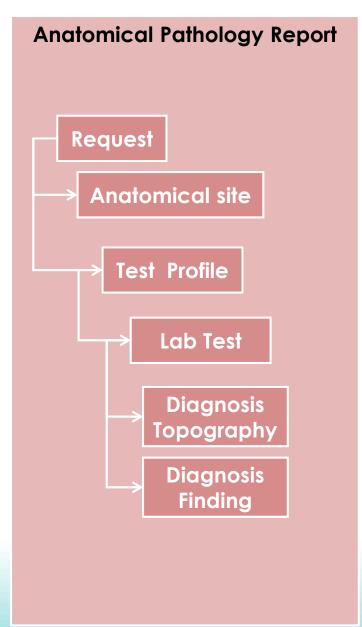
Microbiology

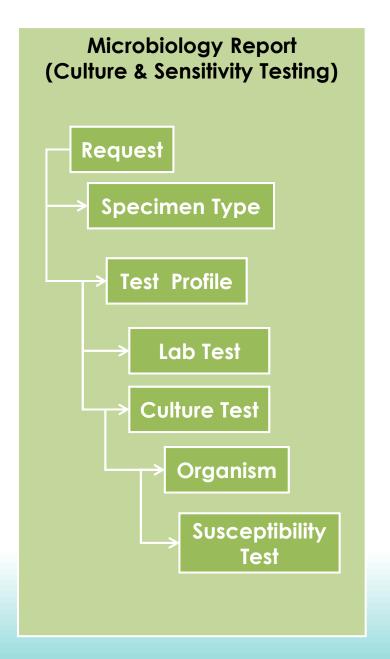
Anatomical Pathology

Lab Record Standards

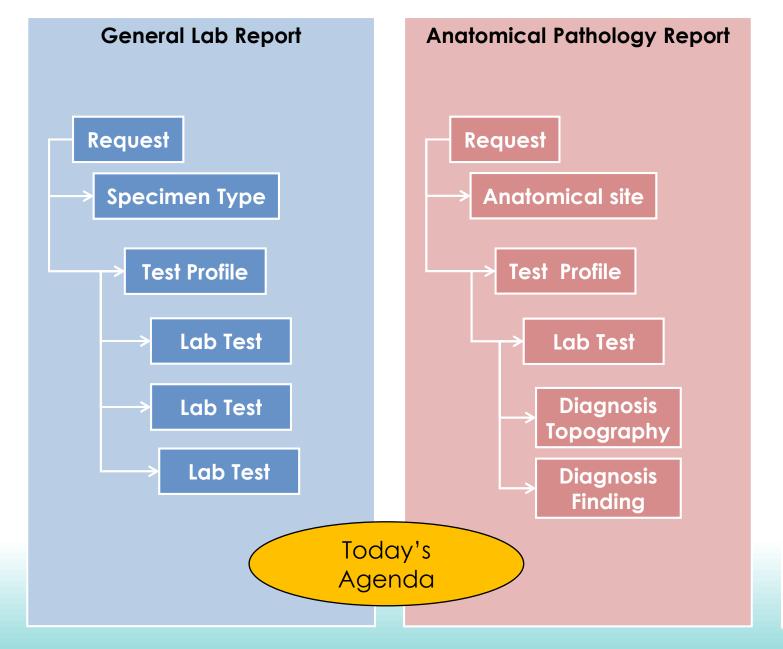
Tailored Record Standards for Varied Lab Reporting Models

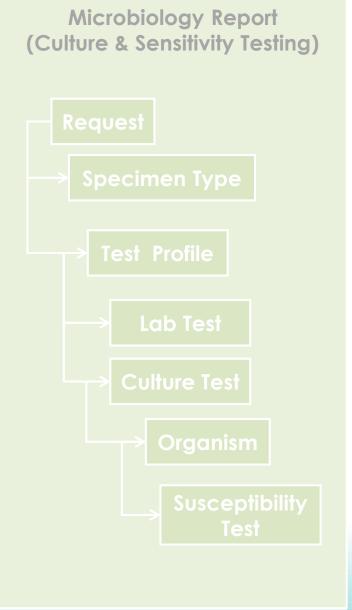






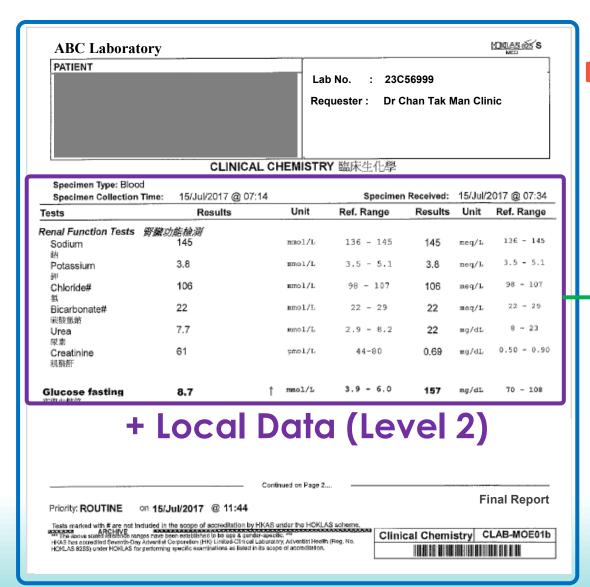
Tailored Record Standards for Varied Lab Reporting Models





Data Sharing = Report Image

Structured Data
 (Local Data / Standardised Data)



Report Image (Level 1)

Map to

eHR Recognised Terminology

+ Standardised Data (Level 3)

eHR Recognised Terminology)

for Standardising Laboratory Data

International Reference Terminology



Hong Kong Clinical Terminology Table

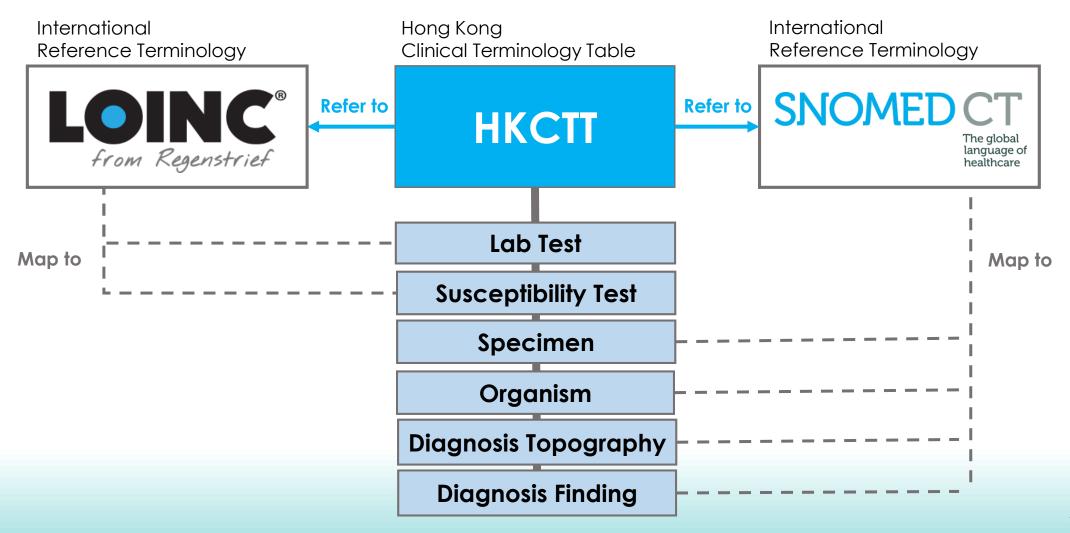


International Reference Terminology



eHR Recognised Terminology)

for Standardising Laboratory Data



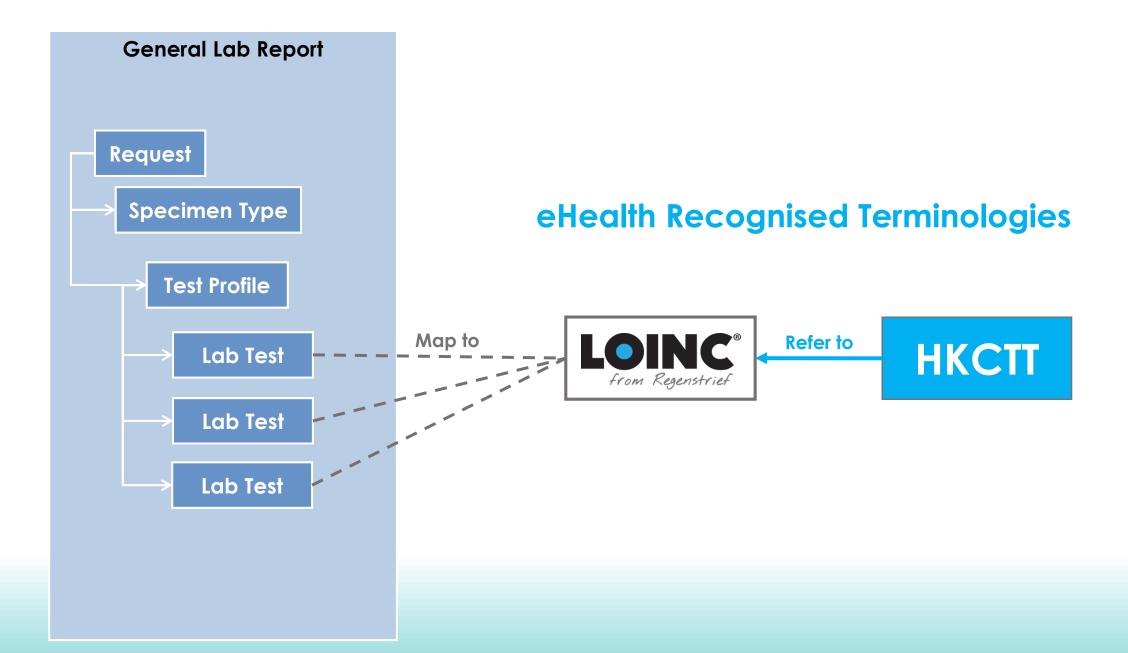


General Laboratory Data Sharing

LABGEN Dataset Highlight

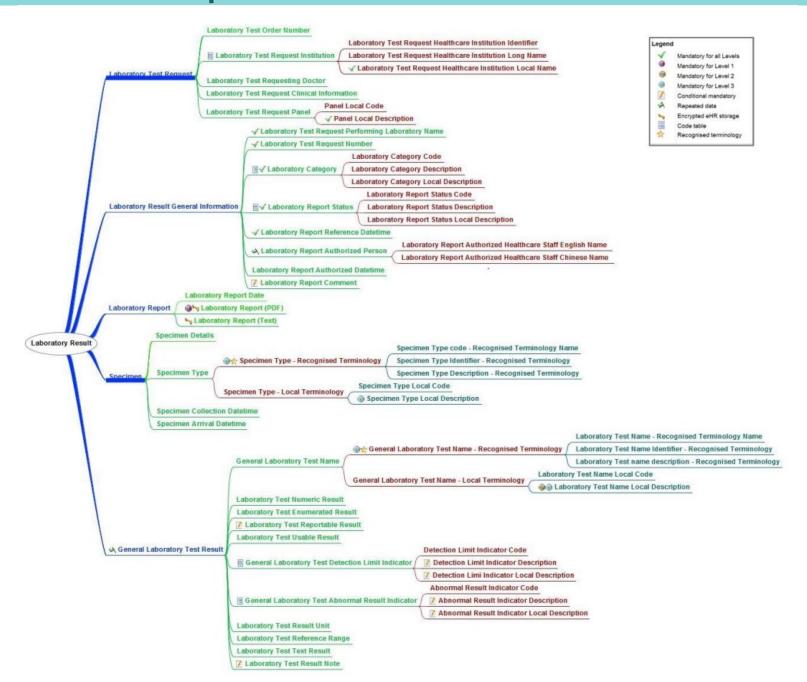
General Lab Data Model & Terminology Binding





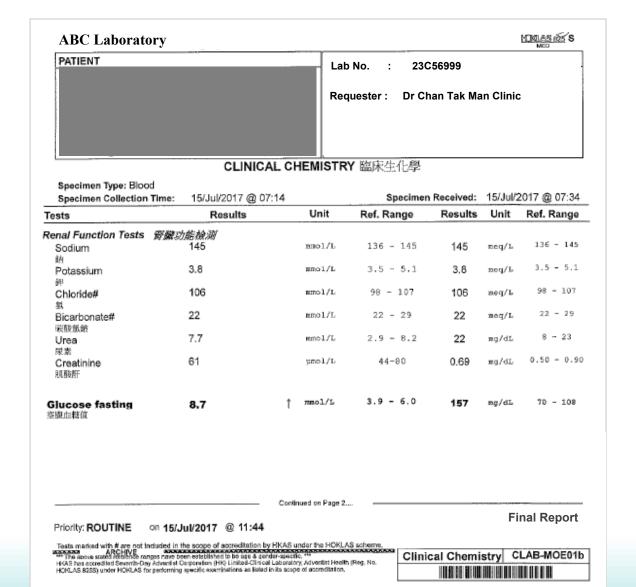
LABGEN Dataset Mindmap





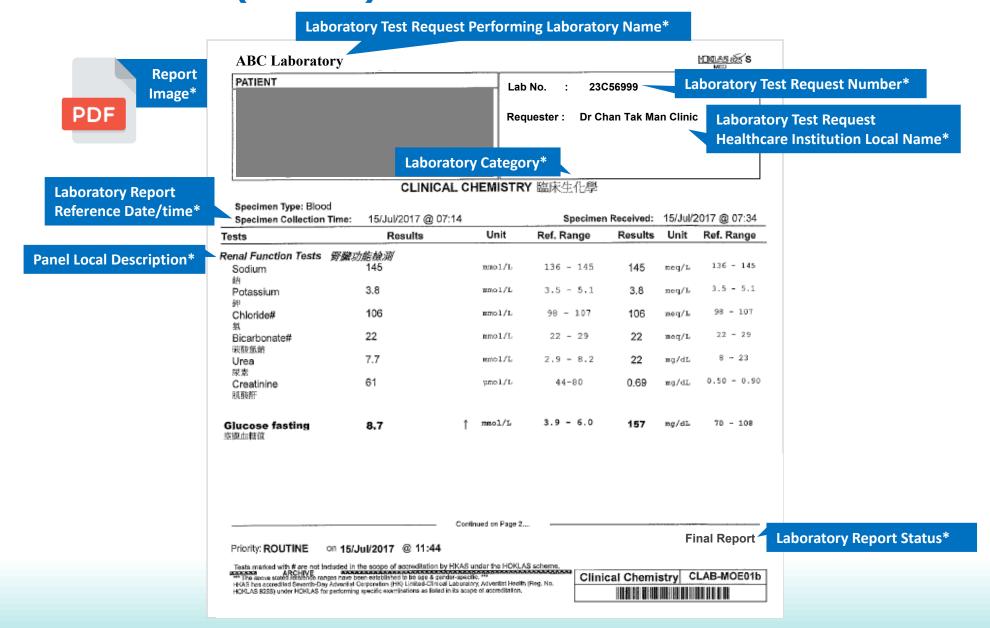
LABGEN - Share PDF (Level 1)





LABGEN - Share PDF (Level 1)

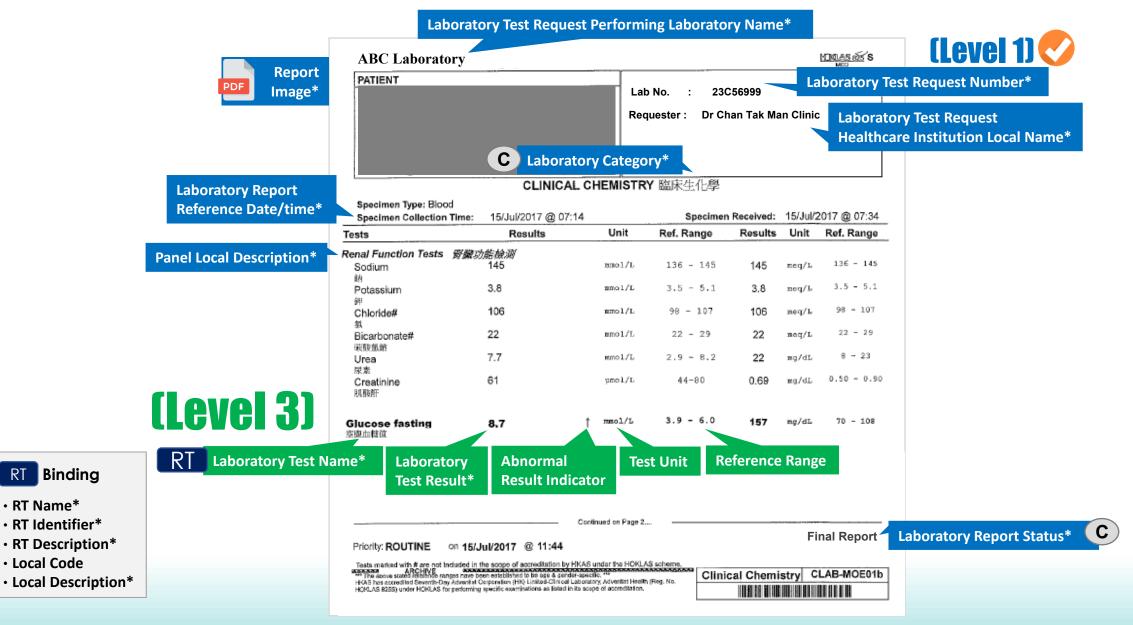


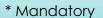


¹²

LABGEN – Share PDF & Standardized Data (Level 3)







RT Name*

Local Code



LABGEN - Share PDF (Level 1)

Example

8088450656:12345678900000000306

23C56999

ABC Laboratory

Dr Chan Tak Man Clinic

Renal Function Test, Glucose

15/07/2023 07:14

Clinical Chemistry

Final Report



- Laboratory test order
 - Format for e-Referral consent: <Referring HCP ID>:<Referral document reference number>
- **Laboratory Test Request Number**
- Laboratory Test Request Performing Laboratory Name
- Laboratory Test Request Healthcare Institution Name
- **Panel Local Description**
- Laboratory Report Reference Date/time
 - Specimen collection / arrival / registration
- **Laboratory Category**
- **Laboratory Report Status**
- Report Image









LABGEN – Share PDF & Standardized Data (Level 3)



RT Name

RT Identifier 14771-0

Fasting glucose [Moles/volume] in Serum or Plasma RT Description

Local Description

Laboratory Test Result

Reportable/ Numeric/ Enumerated/ Text/ Usable

Test Unit

Abnormal Result Indicator ©

Reference Range

Glucose fasting

LOINC

Example

8.7

mmol/L

Н

3.9 - 6.0



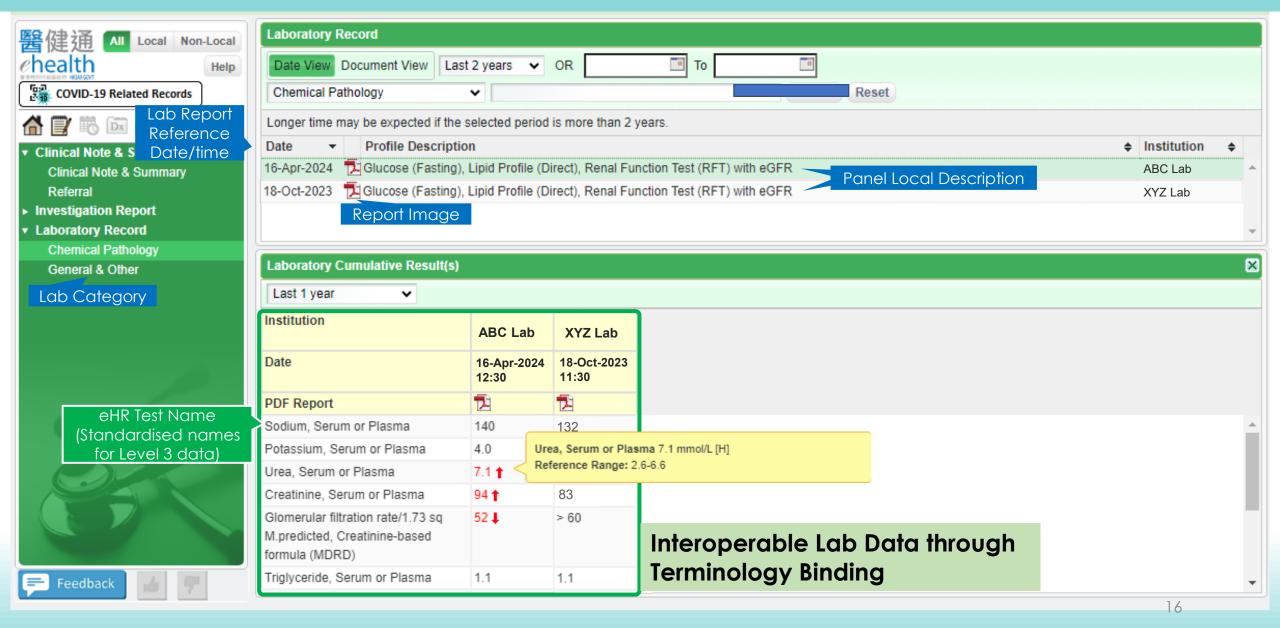






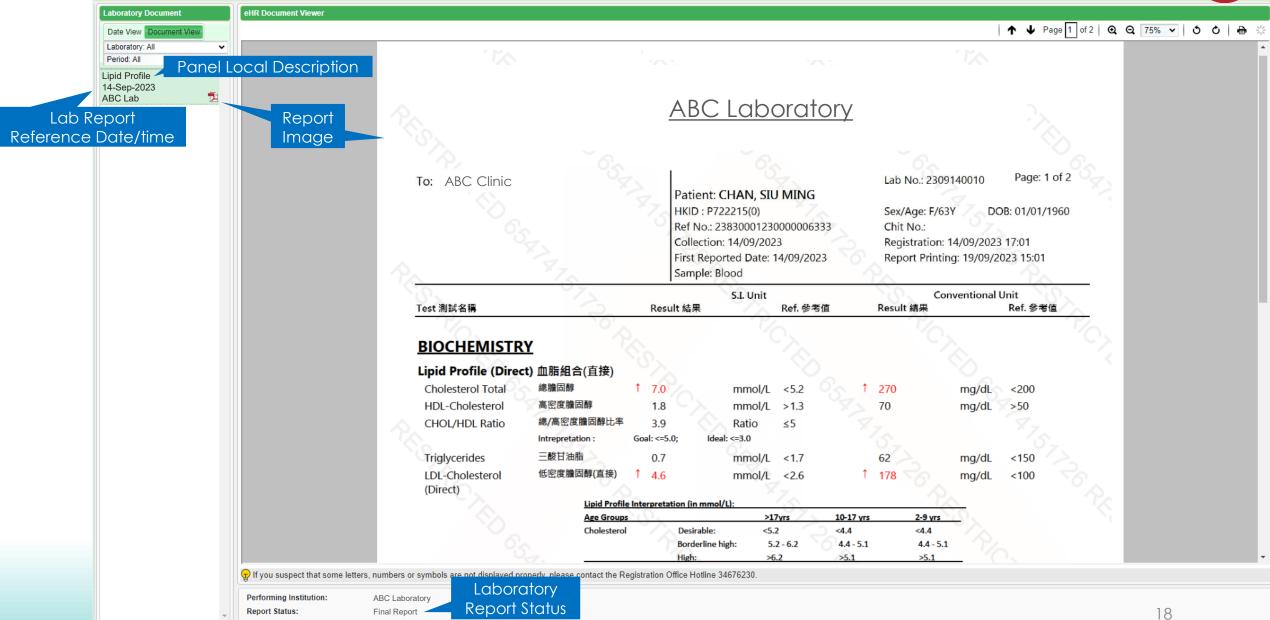
Standardised Lab Data to Provide Cumulative View for Continuous Patient Care across different Healthcare Providers





Lab Report Image in eHR Viewer





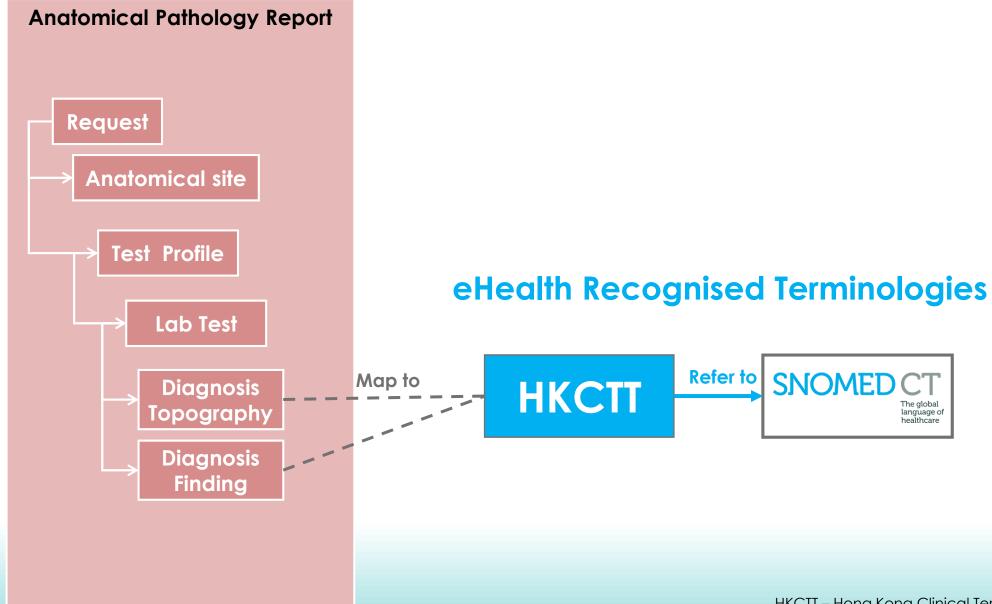


Anatomical Pathology Data Sharing

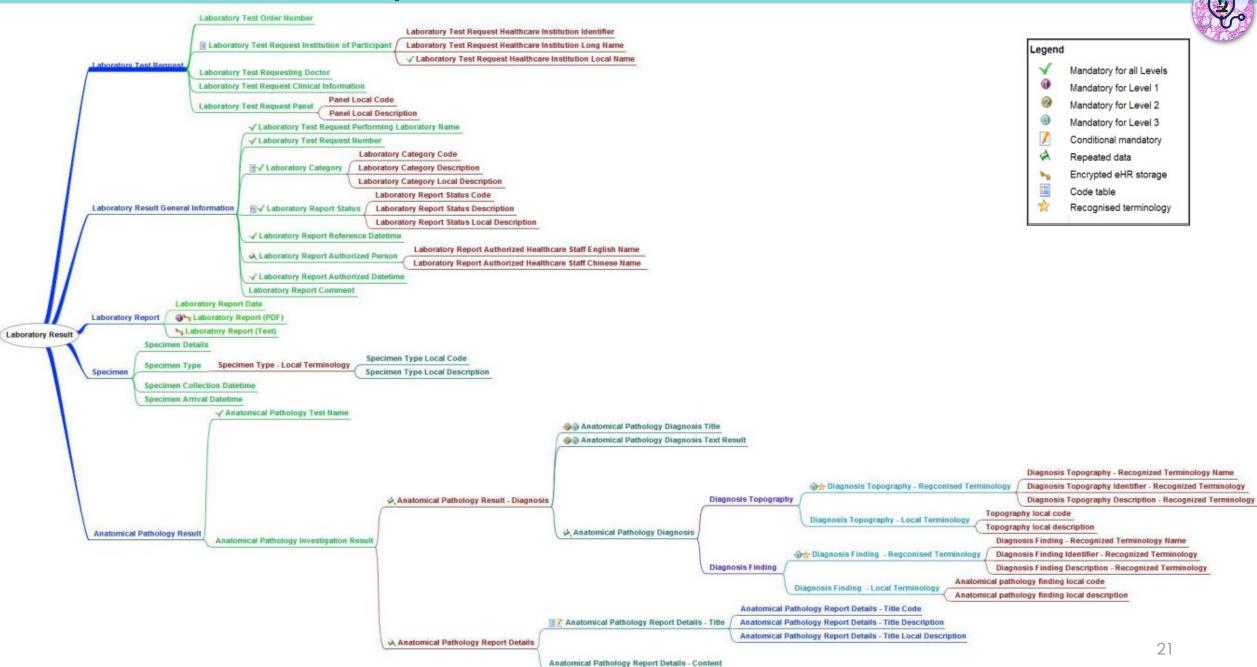
LABAP Dataset Highlight

Terminology Binding to Anatomical Pathology Data





LABAP Dataset Mindmap



LABAP - Share PDF (Level 1)



ABC Laboratory

HKID No: *PRC17782564

me: LABAP TEST USER 1

DOB: 02/01/1991 Requesting clinic: Dr CHAN Medical Centre
Report To: Dr CHAN Medical Centre
Requesting doctor: Dr CHAN Tai Man

Date Collected: 10/11/2017

Date & Time Rec'd: 10/11/2017 14:00

PMI No.: 8000461909

CIMS Ix No.: DH1711102966671 Reference: PRCI778256419836

Clinical Summary & Diagnosis:

Lumps at face, with discharge and foul smell, suspected malignancy

Histology Report - Final Report

GROSS EXAMINATION:

 $1 \ \mathrm{small}$ piece of tissue measuring $3 \mathrm{x} 10 \mathrm{mm}$ was received. Bisected and all embedded in $2 \ \mathrm{blocks}$.

MICROSCOPIC EXAMINATION:

The slide shows a hyperplastic epidermis with channels containing brightly eosinophilic elastic fibers and basophilic debris. The adjacent dermis contains foci of foreign body cells. Special stains for micro-organisms (PAS and GMS) are negative

DIAGNOSIS:

SKIN, biopsy - SUBACUTE DERMATITIS.

****** End of report *******

Authorized by: Dr WONG Yee San

Checked by:

Report date & time: 13/11/2017 14:29 Printed on: 13/11/2017 14:29



Page No.: 1/1

17AH-004311

Lab No.:

22

LABAP - Share PDF (Level 1)

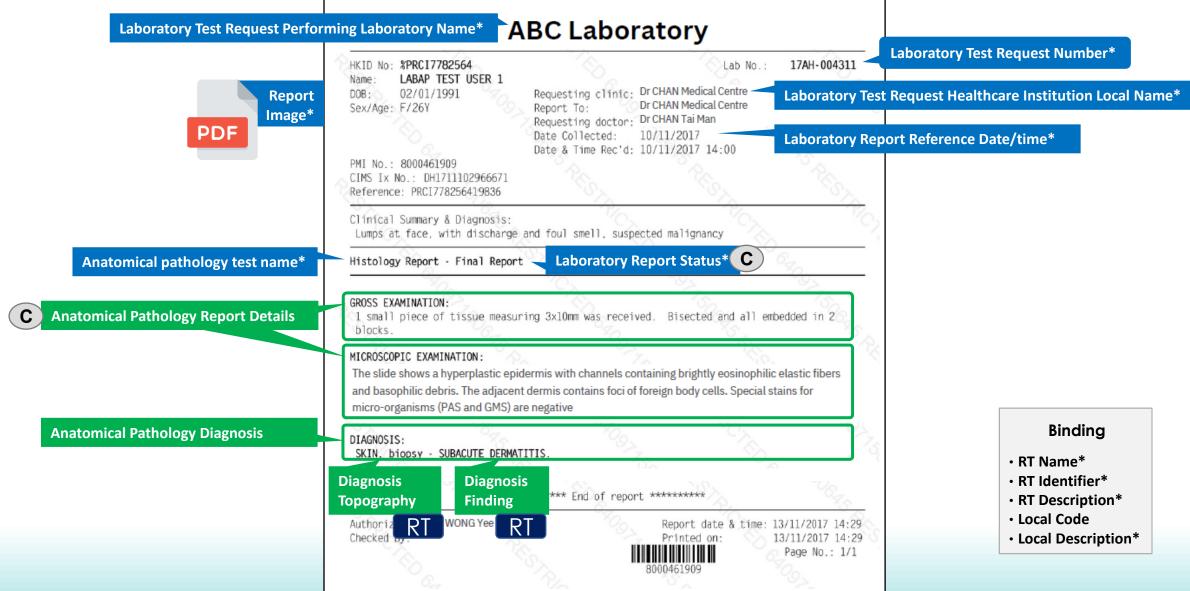




* Mandatory

LABAP – Share PDF (Level 1) & Standardized Data (Level 3)





LABAP - Share PDF (Level 1)



Laboratory test request performing laboratory name

■ Laboratory test request healthcare institution local name

Laboratory test request number

Anatomical pathology test name

Specimen details

■ Laboratory Report Reference Date/time

Specimen collection / arrival / registration

■ Laboratory report authorization datetime

Laboratory report date

Laboratory Report Status C

☑ Laboratory report (PDF)

Example

ABC Laboratory

Dr Chan Medical Centre

17AH-004311

Histology Report

Lump at face

10/11/2017

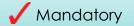
13/11/2017 14:29

13/11/2017 14:29

Anatomical Pathology

Final Report









LABAP – Share PDF & Standardized Data (Level 3)



Anatomical Pathology Diagnosis Title

Anatomical Pathology Diagnosis Text Result

Anatomical Pathology Report Details - Title code ©

Anatomical Pathology Report Details - Title description

Anatomical Pathology Report Details - Title local description

Anatomical Pathology Report Details - Content

Example

DIAGNOSIS:

SKIN, biopsy - SUBACUTE **DERMATITIS**

GROSS

Gross Examination

GROSS EXAMINATION:

1 small piece of tissue measuring 3X10mm was received. Bisected and all embedded in 2 blocks.











LABAP – Share PDF & Standardized Data (Level 3)

☑Diagnosis Topography **RT**

RT Name

RT Identifier

RT Description

Local Identifier

Local Description

Diagnosis Finding RI

RT Name

RT Identifier

RT Description

Local Identifier

Local Description

Example

HKCTT

8002974

Skin structure

T-0100,05,001

SKIN

HKCTT

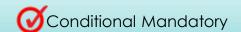
44378

Subacute dermatitis

DD-00014,01,001

SUBACUTE DERMATITIS

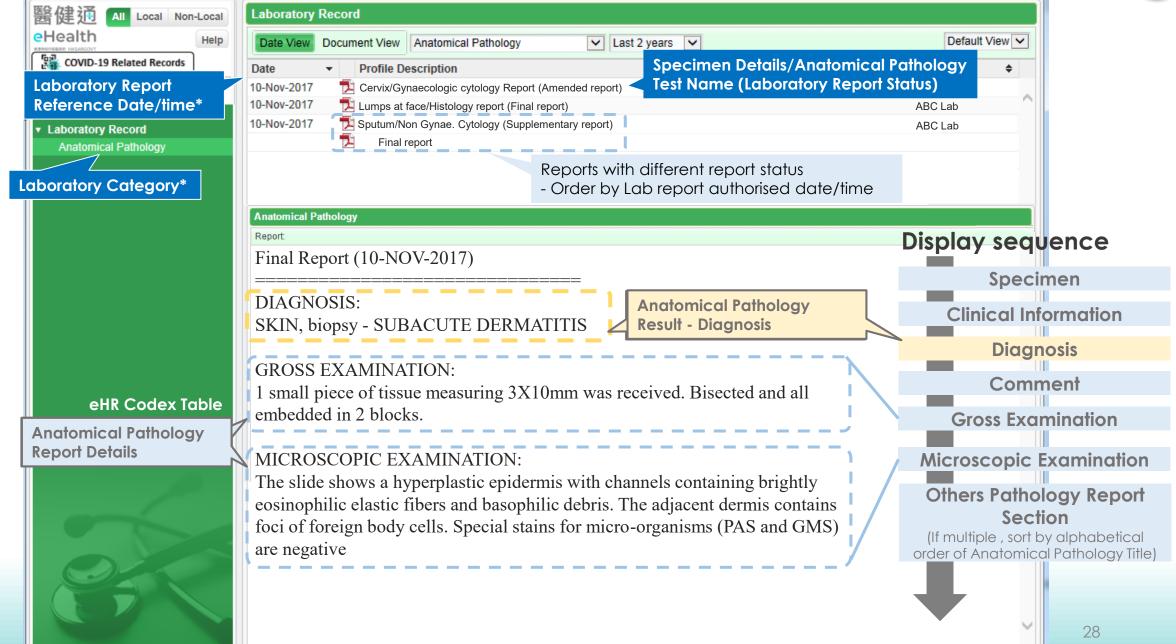






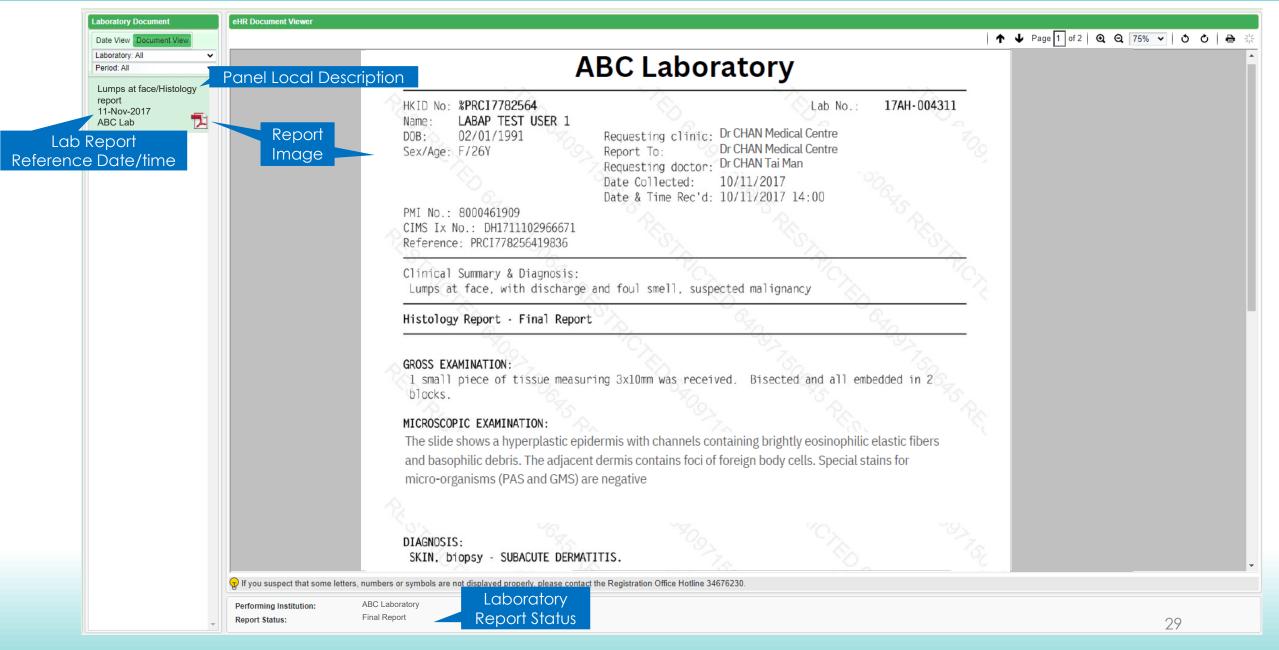
Anatomical Pathology Records in eHR Viewer





Lab Report Image in eHR Viewer





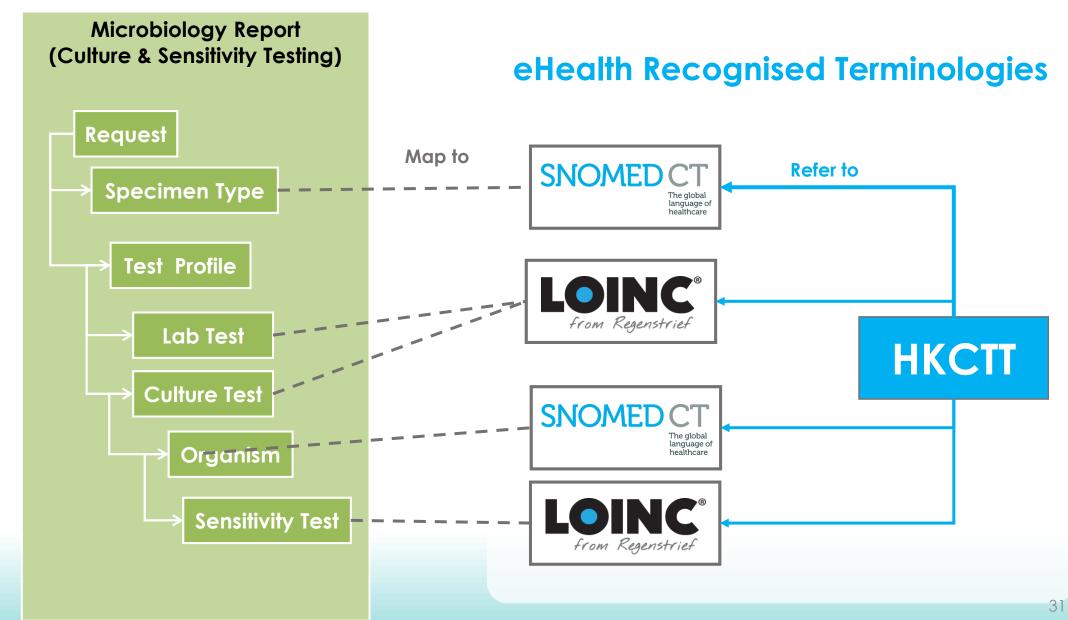


Microbiology (Culture & Sensitivity Test) Data Sharing

LABMB Dataset Highlight

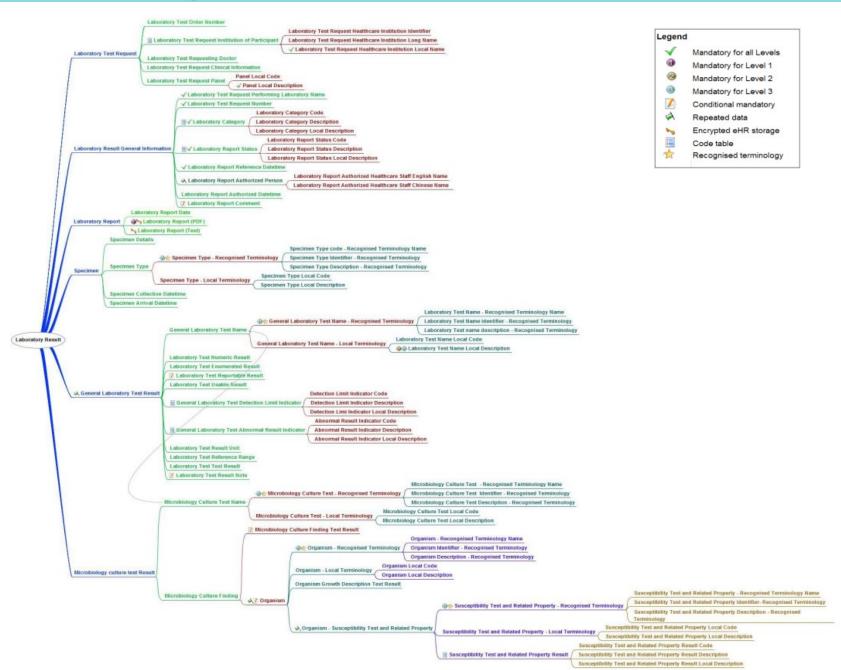
Microbiology (Culture & ST) Data Model & Terminology Binding





LABMB Dataset Mindmap





LABMB - Share PDF (Level 1)

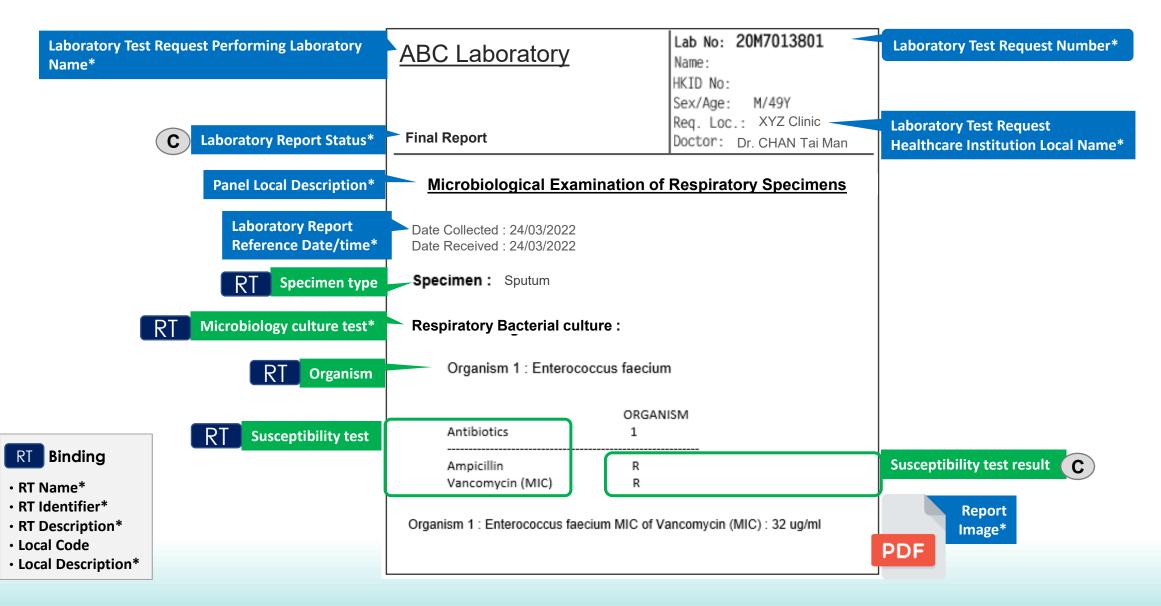


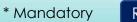
Laboratory Test Request Performing Laboratory Name* C Laboratory Report Status*	ABC Laboratory Final Report	Lab No: 20M7013801 Name: HKID No: Sex/Age: M/49Y Req. Loc.: XYZ Clinic Doctor: Dr. CHAN Tai Man	Laboratory Test Request Number* Laboratory Test Request Healthcare Institution Local Name*
Panel Local Description*	Microbiological Examination of Respiratory Specimens		
Laboratory Report Reference Date/time*	Date Collected : 24/03/2022 Date Received : 24/03/2022		
	Specimen : Sputum		
	Respiratory Bacterial culture :		
	Organism 1 : Enterococcus faecium		
	ORGA Antibiotics 1	ANISM	
	Ampicillin R Vancomycin (MIC) R		
	Organism 1 : Enterococcus faecium MIC of Vancomycin (MIC) : 32 ug/ml		Report Image*

* Mandatory Data

LABMB – Share PDF (Level 1) & Standardized Data (Level 3)









LABMB - Share PDF (Level 1)



Panel Local Description

- Specimen Type
- ☑Laboratory Report Reference Date/time
 - Specimen collection / arrival / registration
- **■** Laboratory Category ©
- Laboratory Report Status ©
- **☑**Report Image

Example

Microbiological Examination of Respiratory Specimens

Sputum

24/03/2022 10:45

Microbiology & Virology

Final Report



LABMB – Share PDF & Standardized Data (Level 3)



Example

Specimen type RI

RT Name HKCTT

RT Identifier 5700284

Sputum RT Description

Sputum **Local Description**

 Microbiology Culture Test Name / Laboratory Test Name RT

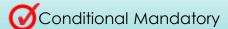
> LOINC RT Name

> RT Identifier 32355-0

Bacteria identified in Specimen by RT Description Respiratory culture

Local Description Respiratory Bacterial culture:







LABMB – Share PDF & Standardized Data (Level 3)



Example

☑Organism **RI**

RT Name

RT Identifier

RT Description

Local Description

Susceptibility Test RI

RT Name

RT Identifier

RT Description

Local Description

Susceptibility Test Result ©

HKCTT

5000968

Enterococcus faecium

Enterococcus faecium

LOINC

18864-9

Ampicillin [Susceptibility]

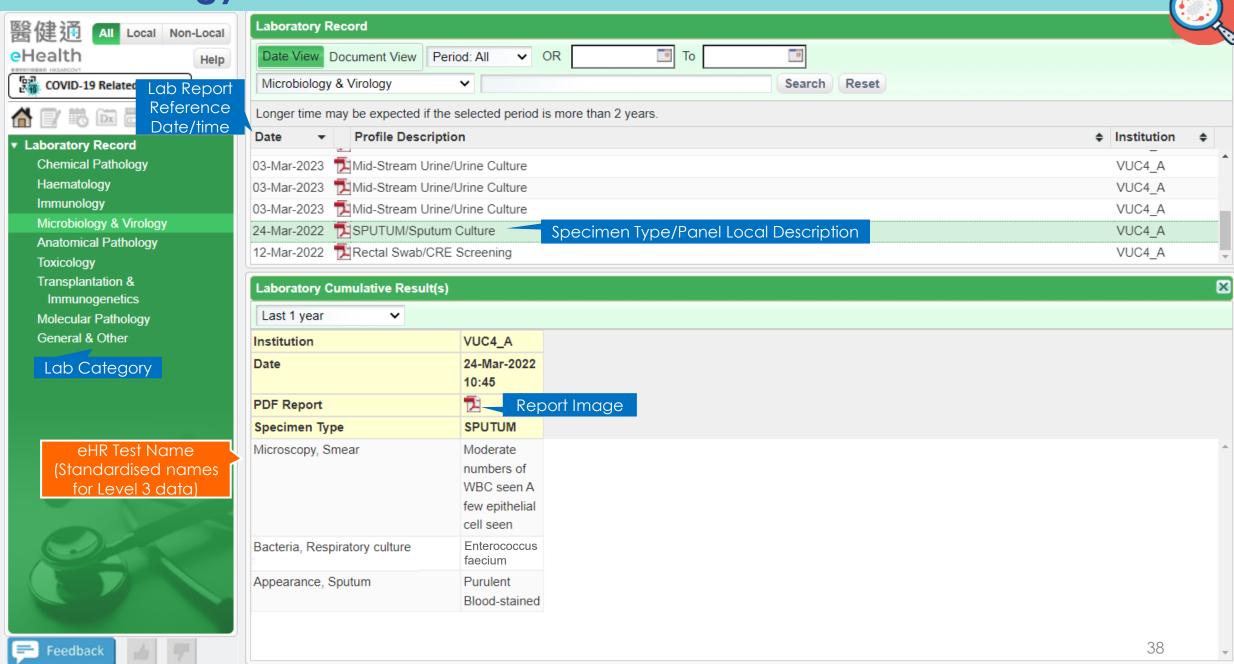
Ampicillin

R

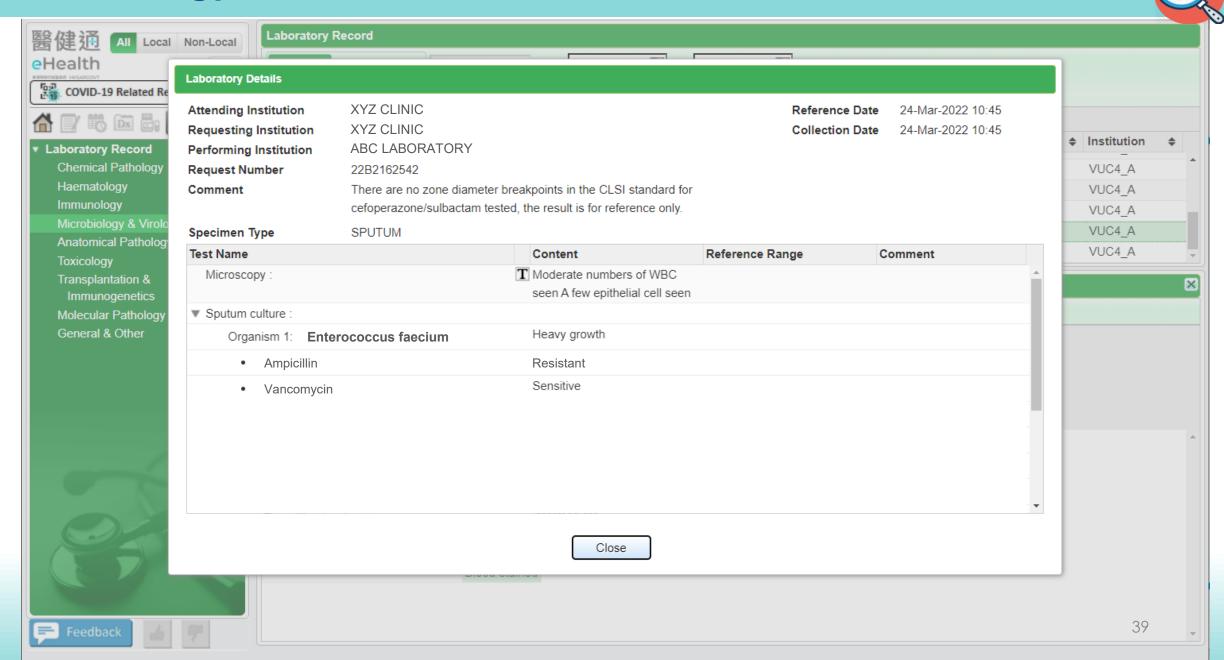




Microbiology Records in eHR Viewer



Microbiology Culture Results in eHR Viewer



Strategy for Laboratory Data Sharing



Checklist - Lab Data Sharing to eHealth





Terminology Mapping Strategy

1. To identify structured data for mapping





3. To dedicate resources on terminology maintenance





Medical Lab Experts

is the

Links to terminology eLearning:





eHR Common 300 Laboratory Tests



chealth eHR Common Laboratory Test List

389 laboratory LOINC terms are defined in eHR Common Laboratory Test List.

The list is based on the study of 16,658,509 laboratory test data which were shared by healthcare providers (HCPs) to eHR Sharing System in 2 weeks of year 2021.

Top 389 LOINC terms were ranked with 97.1% coverage of total HCPs shared laboratory test data volume.

The list is governed by eHR Information Standards Domain Group on Laboratory Records.

LOINC Terms of Use

http://loinc.org/terms-of-use



eHR Common Laboratory Test List (as at Nov 2021)

Rank	LOINC	LOINC Description	eHR Description	eHR Laboratory Category	
1	14682-9	Creatinine [Moles/volume] in Serum or Plasma Creatinine, Serum or Plasma		Chemical Pathology	
2	2951-2	Sodium [Moles/volume] in Serum or Plasma	Sodium, Serum or Plasma	Chemical Pathology	
3	2823-3	Potassium [Moles/volume] in Serum or Plasma	Potassium, Serum or Plasma	Chemical Pathology	
4	22664-7	Urea [Moles/volume] in Serum or Plasma	Urea, Serum or Plasma	Chemical Pathology	
5	718-7	Hemoglobin [Mass/volume] in Blood	Haemoglobin, Blood	Haematology	
6	30428-7	MCV [Entitic volume]	Erythrocyte mean corpuscular volume (MCV)	Haematology	
7	28539-5	MCH [Entitic mass]	Erythrocyte mean corpuscular haemoglobin (MCH)	Haematology	
8	26453-1	Erythrocytes [#/volume] in Blood	Erythrocytes, Blood	Haematology	
9	26464-8	Leukocytes [#/volume] in Blood	Leukocytes, Blood	Haematology	
10	20570-8	Hematocrit [Volume Fraction] of Blood	Hematocrit (HCT), Blood	Haematology	
11	26515-7	Platelets [#/volume] in Blood	Platelets, Blood	Haematology	
12	28540-3	MCHC [Mass/volume]	Erythrocyte mean corpuscular haemoglobin concentration (MCHC)	Haematology	
13	1742-6	Alanine aminotransferase [Enzymatic Alanine aminotransferase, activity/volume] in Serum or Plasma Serum or Plasma		Chemical Pathology	
14	30385-9	Erythrocyte distribution width [Ratio]	ibution width [Ratio] Erythrocyte distribution width (RDW)		
15	1751-7	Albumin [Mass/volume] in Serum or Plasma	Albumin, Serum or Plasma	Chemical Pathology	
16	6768-6	Alkaline phosphatase [Enzymatic activity/volume] in Serum or Plasma	Alkaline phosphatase, Serum or Plasma	Chemical Pathology	
17	2885-2	Protein [Mass/volume] in Serum or Plasma	Protein, Serum or Plasma	Chemical Pathology	
18	14631-6	Bilirubin.total [Moles/volume] in Serum or Plasma	Bilirubin, Serum or Plasma	Chemical Pathology	
19	5909-7	Blood smear finding [Identifier] in Blood by Light microscopy	Smear finding, Blood, Microscopy	Haematology	
20	10834-0	Globulin [Mass/volume] in Serum by calculation	Globulin, Serum, Calculated	Chemical Pathology	
21	28542-9	Platelet mean volume [Entitic volume] in Blood	Platelet mean volume (MPV), Blood	Haematology	
22	26474-7	Lymphocytes [#/volume] in Blood	Lymphocytes, Blood	Haematology	
23	26484-6	Monocytes [#/volume] in Blood	Monocytes, Blood	Haematology	
24	26499-4	4 Neutrophils [#/volume] in Blood Neutrophils, Blood Haemat		Haematology	
25	26449-9	9 Eosinophils [#/volume] in Blood Eosinophils, Blood Haema		Haematology	
26	26444-0	O Basophils [#/volume] in Blood Basophils, Blood Haematolo		Haematolog/y3	

Page 2 of 20

How to map lab test to



LOINC code 14328-9: Leukocytes [Presence] in Sputum by Light microscopy



COMPONENT (ANALYTE)

The substance or entity being measured or observed.

e.g. Leukocytes



PROPERTY

The characteristic or attribute of the analyte.

e.g. Presence



TIME

The interval of time over which an observation was made.

e.g. Point in time



SYSTEM (SPECIMEN)

The specimen or thing upon which the observation was made.

e.g. Sputum



SCALE

How the observation value is quantified or expressed: quantitative, ordinal, nominal.

e.g. Ordinal



METHOD

OPTIONAL A high-level classification of how the observation was made. Only needed when the technique affects the clinical interpretation of the results.

e.g. Light Microscopy

Same Component, Different LOINC Concepts

COMPONENT (ANALYTE)	PROPERTY	TIME	SYSTEM (SPECIMEN)	↓1 9 SCALE	U e METHOD	
COMPONENT (ANALITE)	Presence or	THAL	3131EM (SI ECIMEN)			
Leukocytes	Threshold	Point in time	Sputum	Ordinal	Light Microscopy	
	< 14328-9 > Le	ukocytes [Presenc	e] in Sputum by L	ight microscopy		
Leukocytes	Number concentration	Point in time	Blood	Quantitative		
	< 26464-8 > Leukocytes [#/volume] in Blood					
Leukocytes	Morphology	Point in time	Bone marrow	Nominal		
< 11157-5 > Leukocytes [Morphology] in Bone marrow						
Leukocytes	Number = Count/Time	24 hours	Urine sediment	Quantitative	Microscopy	
< 11157-5 > Leukocytes [Morphology] in Bone marrow						

https://loinc.org/

LOINC Mapping Example

est 測試名稱		Result 結果	S.I. Unit
Glucose (Fasting)	葡萄糖(空腹)	4.7	mmol/L
LOINC Code 14771-0 Description Fasting glu	cose [Moles/volume]	in Serum or Plasr	ma
HbA1c (IFCC)*	糖化紅蛋白(IFCC)	36	mmol/ mol
LOINC Code 59261-8 Description Hemoglobi	n A1c/Hemoglobin.tot	al in Blood by IFC	C protocol
HbA1c (NGSP)*	糖化紅蛋白(NGSP)	5.4	%
LOINC Code 4548-4 Description Hemoglobi	n A1c/Hemoglobin.tot	al in Blood	

To Download HKCTT Lab Terms For Standardised Data Preparation

警链通 chealth	Clinical Administr	ration Standards	Download Information	UPPPDOCTOR022 UPPPDOCTOR022 🖂 🗚 Logout
			eHR Recognised Terminologies	
HKCTT for CI	MS Adaptation			
Release Date	HKCTT Version	Engine Version	Remarks	Download
04-Oct-2023	2023.10.04_707 (1.0.78)	1.X		Download
17-Jan-2014	2014.01.17_33 (0.0.1)	0.X	No further update of offline HKC	TT data. Download
НКСТТ				
Release Date	Version	Nature		Download
04-Oct-2023	2023.10.04_708	All natures		Download
04-Oct-2023	2023.10.04_704	Diagnosis, Procedure		Download
04-Oct-2023	2023.10.04_705	Laboratory Test, Organism, Specimen, Anatomical Pathology Terms		Terms <u>Download</u>
04-Oct-2023	2023.10.04_706	Pharmaceutical Product, Drug related Substances, Drug related Qualifier		ed Qualifier <u>Download</u>
21-Oct-2022	2022.10.21_678	Allergens		<u>Download</u>
21-Oct-2022	2022.10.21_679	ADR Causative Agents		Download
21-Oct-2022	2022.10.21_680	Vaccines		Download
21-Oct-2022	2022.10.21_681	Prescribed Drugs		Download
21-Oct-2022	2022.10.21_682	Dispensed Drugs		Download
10-Feb-2022	2022.02.10_656	中醫病名,中醫辨證,中醫治法,中醫療法		Download
10-Feb-2022	2022.02.10 657	中藥產品		Download

Question & Answer



Thank You



eHR Data Compliance Testing

- Step 1: Engage & Pre-assessment
 - Data field & codex mapping
 - Terminology mapping
 - **Step 2: Technical readiness**
 - IT technical testing
 - Business case testing
- Step 3: Upload & Post-implementation Review

eHR Codex Table – Laboratory Category

Laboratory category

Purpose: To indicate the performing laboratory category

Term ID	eHR Value	eHR Description	Definition
9050067	CHEM	Chemical Pathology	Chemical Pathology Laboratory
9050170	HAEM	Haematology	Haematology Laboratory
9050190	IMMUN	Immunology	Immunology Laboratory
9050266	MICRO	Microbiology & Virology	Microbiology and Virology Laboratory
9050013	PATH	Anatomical Pathology	Anatomical Pathology Laboratory
9050443	TRL	Toxicology	Toxicology Laboratory
9050446	TI	Transplantation & Immunogenetics	Transplantation and Immunogenetics Laboratory
9050272	MOLPATH	Molecular Pathology	Molecular Pathology Laboratory
9050147	GEOT	General & Other	General Laboratory and Other Laboratory







eHR Codex Table – Laboratory Report Status

Laboratory report status

Purpose: To indicate the laboratory report reporting status

Term ID	eHR Value	eHR Description	Definition
9050361	Р	Provisional/Preliminary report	A provisional report is issued when provisional or partial results become available and report is submitted to eHR. A final report will always follow after the provisional report.
9050137	F	Final report	A completed report for the laboratory request.
9050010	A	Amended report	An Amended report is issued when the final report of diagnosis or test result(s) have been changed or amended. Amended report includes information with the latest submitted provisional report/final report/supplementary report.
9050427	S	Supplementary report	A supplementary report is issued when additional information is available when provisional/ final/ amended report has been submitted to eHR.
9050470	U	Unspecified report status	Laboratory report status cannot be provided.







eHR Codex Table - Abnormal Result Indicator

Abnormal result indicator

Purpose: To indicate the laboratory test numeric result that is above or below the reference range of the test

Term ID	eHR Value	eHR Description
9050244	L	Low
9050174	Н	High





eHR Codex Table – Susceptibility Test and Related Property Result

Susceptibility test and related property result

Purpose: To indicate the result of antibioitc susceptibility test and related property of the isolated organism

Term ID	eHR Value	eHR Description
9050402	S	Sensitive
9050200	I	Intermediate
9050378	R	Resistant
9050353	Р	Positive
9050285	N	Negative
9050193	U	Indeterminate
9050521	SDD	Susceptible Dose Dependent



eHR Codex Table – Anatomical Pathology Report Structure

Anatomical pathology report structure table

Purpose: To describe the anatomical pathology report structure in section

Term ID	eHR Value	eHR Description
9050077	CLIN	Clinical Information
9050420	SPEC	Specimen
9050160	GROSS	Gross Examination
9050000	MICRO	Microscopic Examination
9050083	COMM	Comment
9050319	ОТН	Other Pathology Report Section

