eHR Sharable Data

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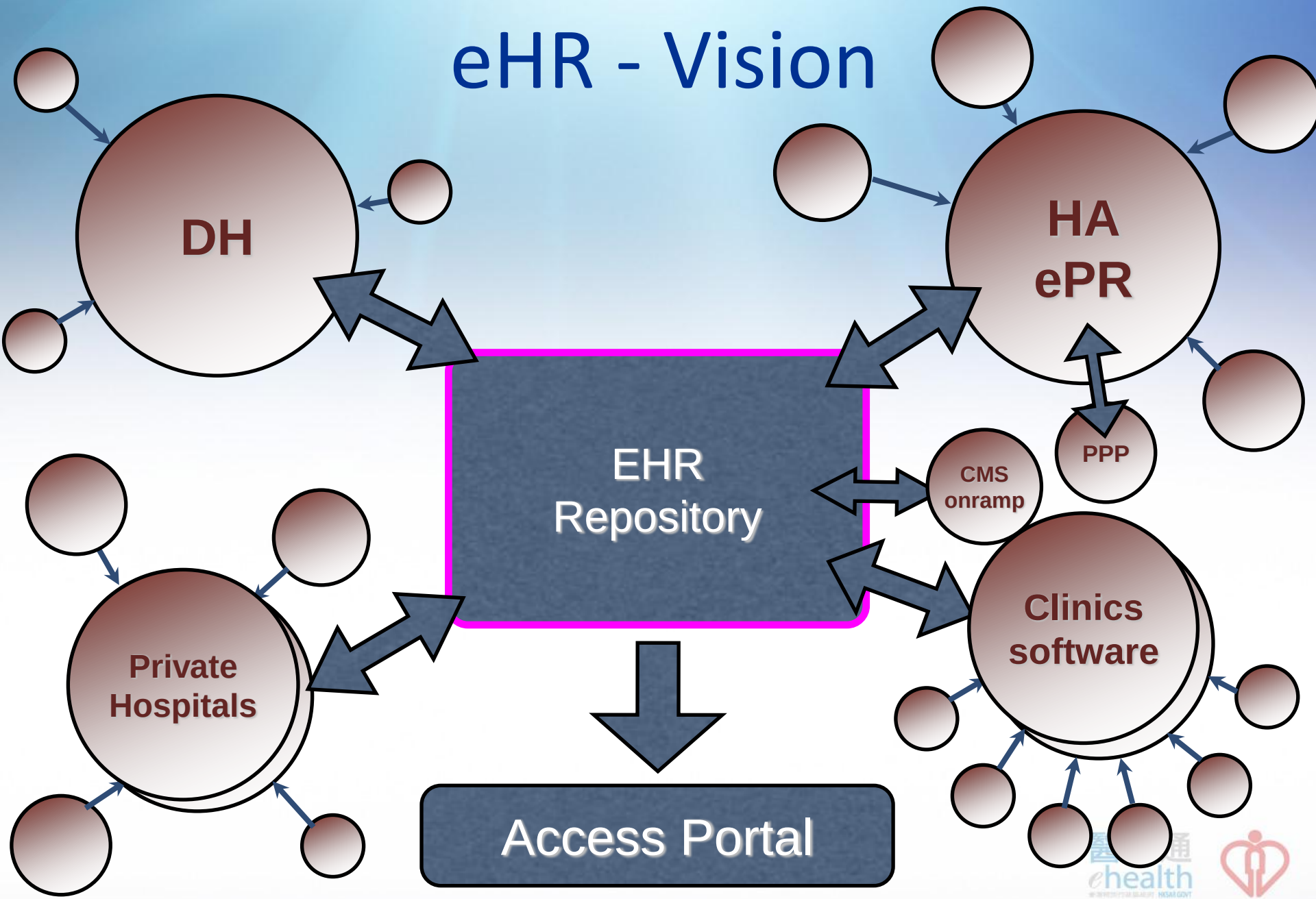
eHR - Vision


DH
HA ePR
EHR Repository
PPP
CMS onramp
Private Hospitals
Clinics software
Access Portal

Standardisation for eHR

- Ensure accurate interpretation of health data by all parties
- Support reuse of data
- Reduce duplicated efforts in data entry
- Facilitate interoperability of systems for data captured at different platforms
- Improve efficiency of healthcare services
- Assist in protection of public health

Information Architecture

Every medical fact has a concept

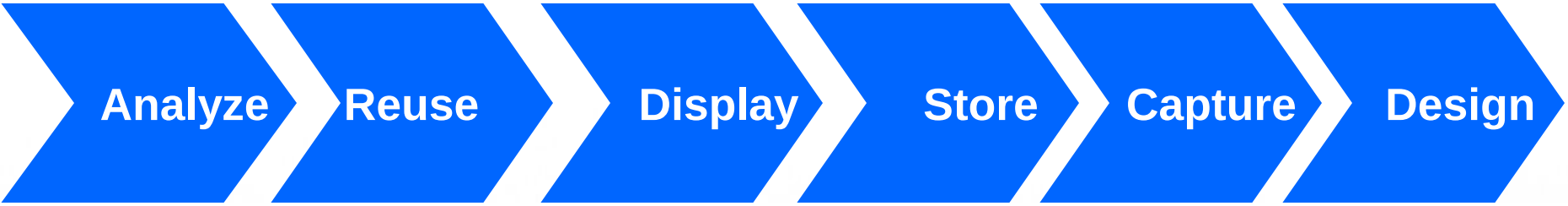
What the data means

Every medical fact has a context

How data should be interpreted

Every medical fact has a presentation

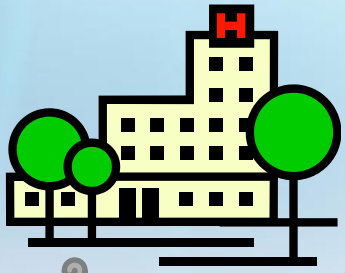
How data are organized & presented



Standards for eHR

- Identification
  - Registry
  - Healthcare provider
  - Healthcare staff
- eHR content
- Terminology
- Message standard

Standards Compliance



Automated paper

1

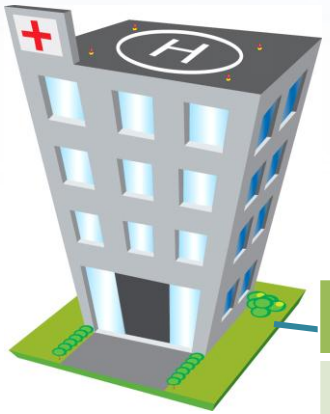
Problem : diab. mellitus

3

Diagnosis

3983	Diabetes Mellitus

Fully Interoperable eHR



2

Diagnosis

DM

Data Integration

醫健通 ehealth 香港特別行政區政府 HKSAR GOVT

eHR Content Standards Guidebook

HKCTT (Diagnosis)	
3983	Diabetes Mellitus
3985	Type II Diabetes Mellitus
3987	Type I Diabetes Mellitus

Phased Approach – A Proposal

eHR Section	Level 1	Level 2	Level 3
Healthcare Recipient			
Encounter			
Referral			
Clinical note / summary			
Adverse reaction / allergy			
Clinical alert			
Problem			
Procedure			
Birth record			
Assessment / physical exam			
Social history			
Past medical history			
Family history			
Drug – prescription record			
Drug – dispensary record			
Immunization			
Clinical request			
Diagnostic test result – Laboratory			
Diagnostic test result – Radiology			
Diagnostic test result – Other investigation			
Care & treatment plan			

Key : Phase 1 | Phase 2 | Phase 3 | Phase 4 | Phase 5

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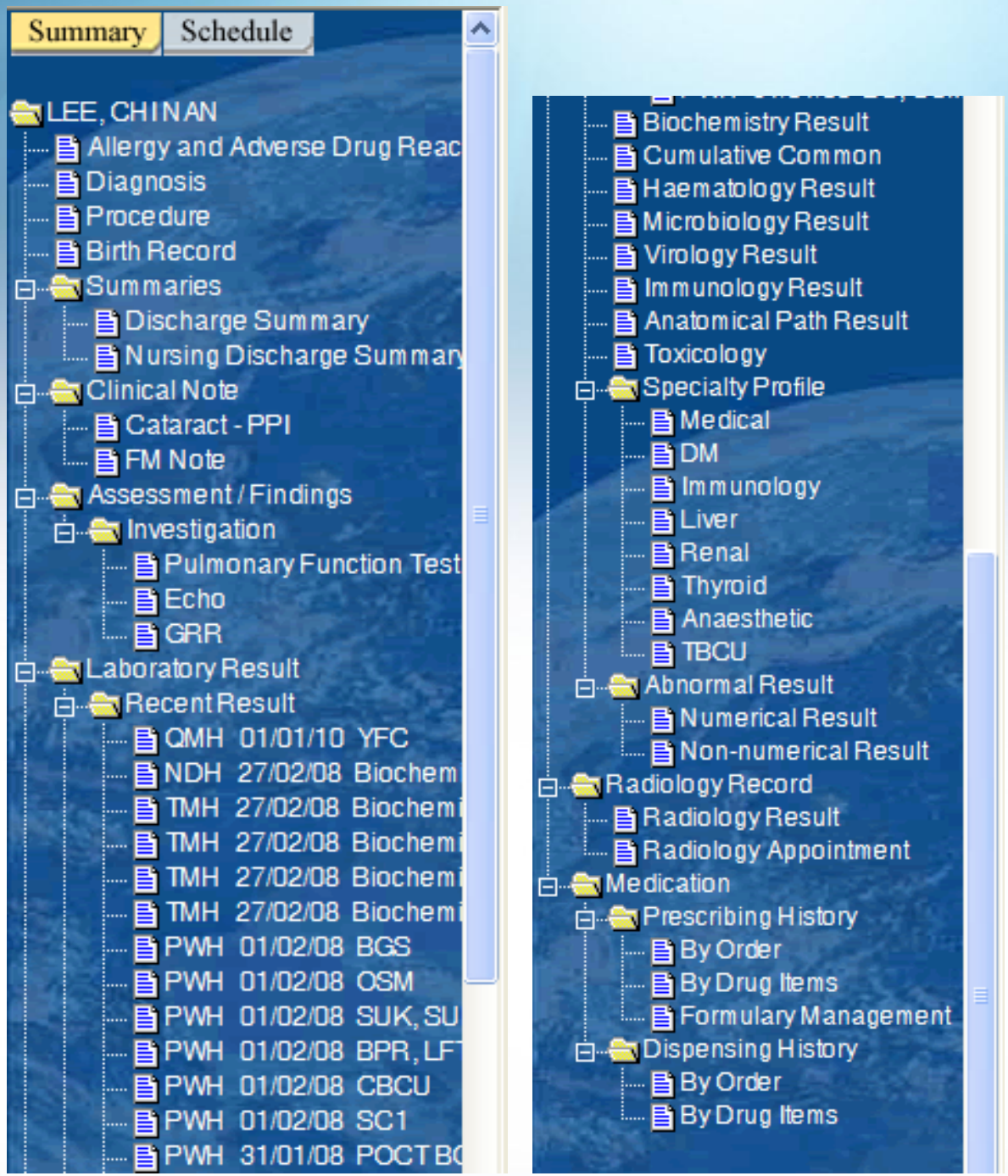

eHR Phase 1

Based on PPI-ePR

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eHR Implementation – Phase 1

eHR Section	Level 1	Level 2	Level 3
Healthcare Recipient			
Encounter			
Referral			
Clinical note / summary			
Adverse reaction / allergy			
Clinical alert			
Problem			
Procedure			
Birth record			
Assessment / physical exam			
Social history			
Past medical history			
Family history			
Drug – prescription record			
Drug – dispensary record			
Immunization			
Clinical request			
Diagnostic test result – Laboratory			
Diagnostic test result – Radiology			
Diagnostic test result – Other investigation			
Care & treatment plan			

Workflow to Prepare Domain Dataset

Develop initial set of eHR content standards based on local / international standards

Gap analysis: HA-ePR, eHR on-ramp, eHR adaptation, proposed eHR viewer

Consult Domain Groups, Expert advisory group

Briefing & consult local healthcare providers

Endorsement : Working Group on eHR Content & Information Standards (early 2013)

Hong Kong eHR Standards

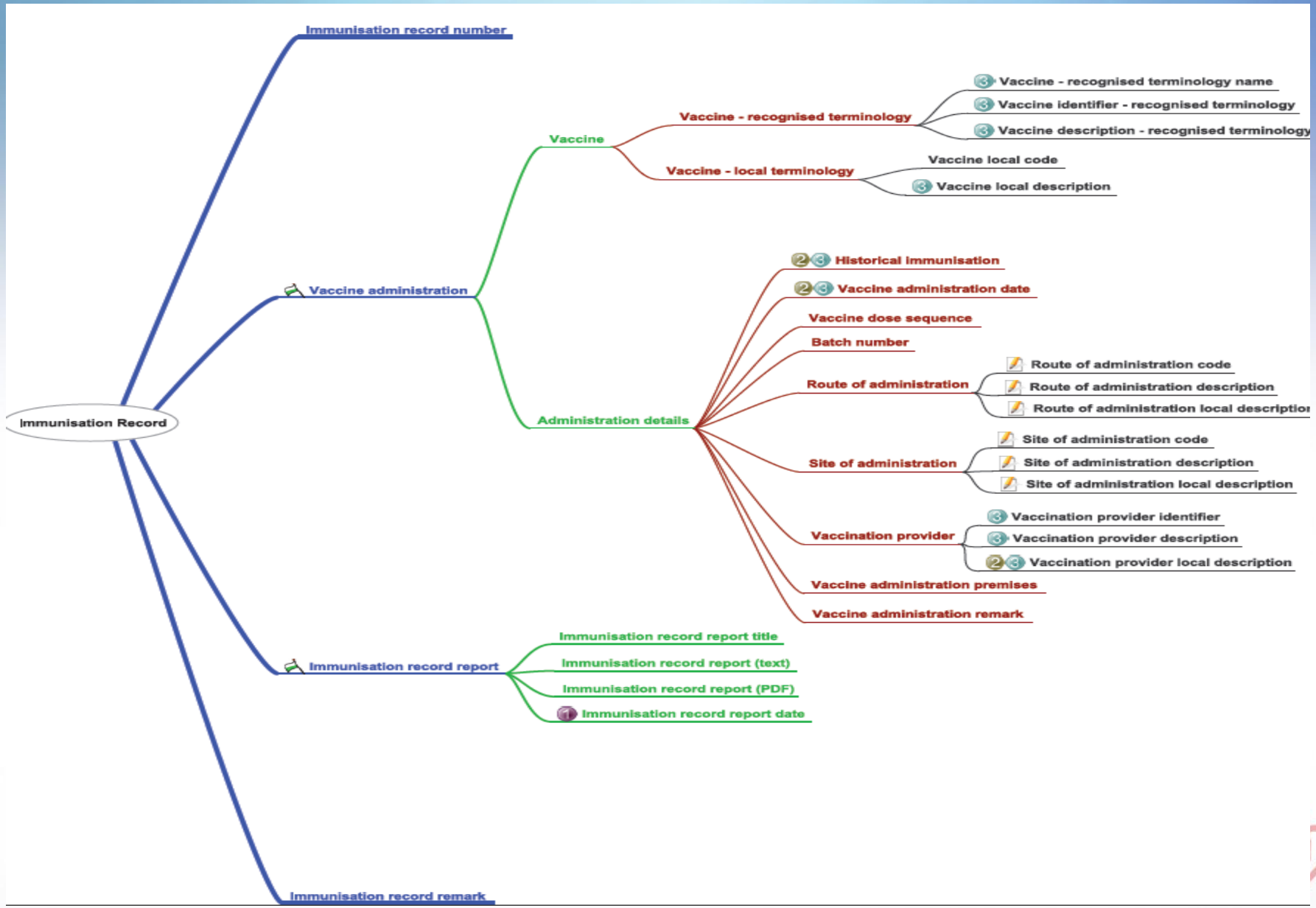
eHR Standards Guide

- eHR Content Standards Guidebook
- eHR Data Interoperability Standards

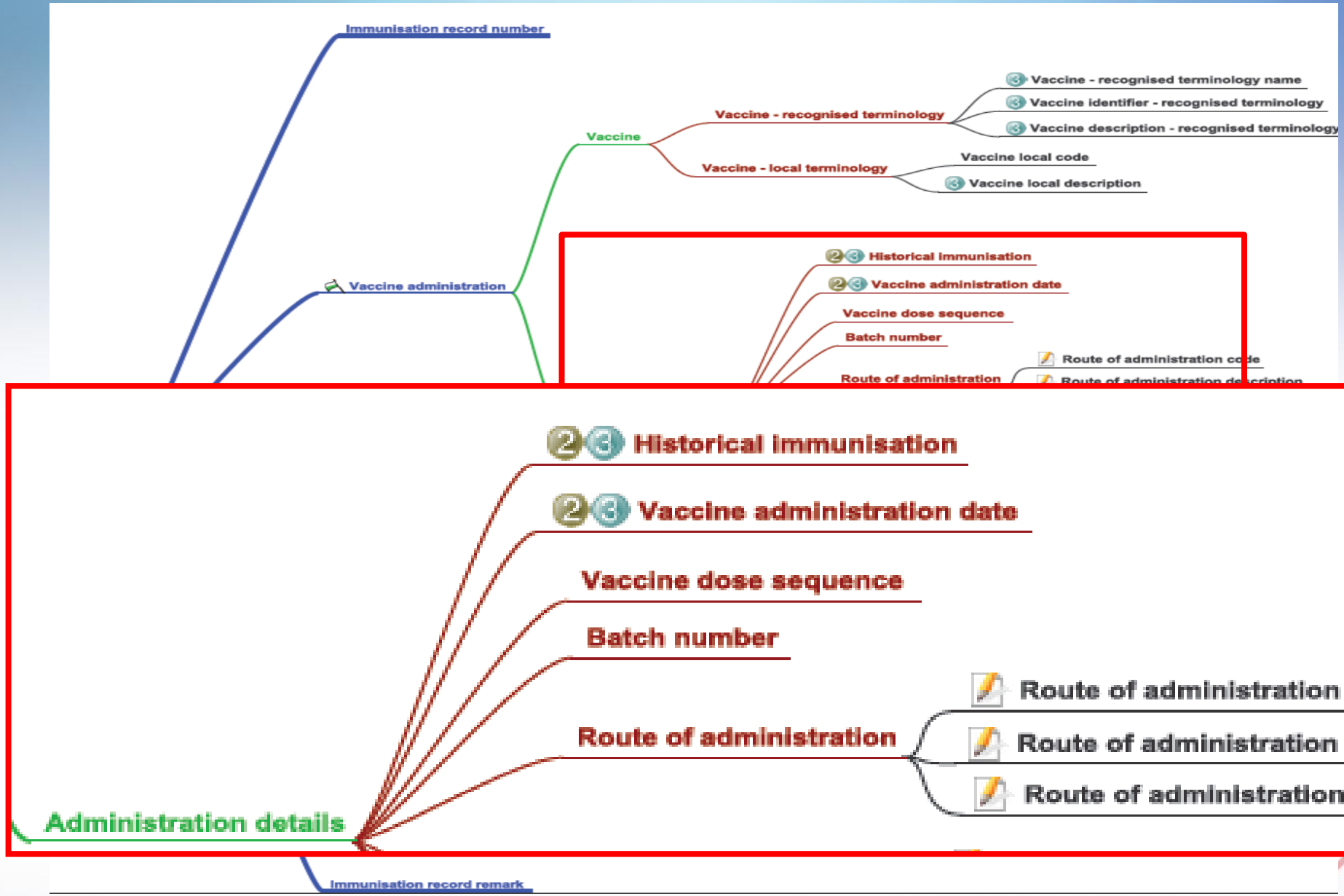
References

- ASTM
  - E1384 Content & structure of electronic health record
  - E2369 Continuity of care record (CCR)
- HL7 standards
- SNOMED CT
- HA data structure for electronic patient record (ePR)

Immunisation Dataset



Immunisation Dataset



Legend

 Mandatory for all Levels

 Mandatory for Level 1

 Mandatory for Level 2

 Mandatory for Level 3

 Conditional mandatory

 Repeated data

 Encrypted eHR storage

 Code table

 Recognised terminology

Data Schema

Entity Name	Entity ID	Definition	Data Type (code)	Data Type (description)	Validation Rule	Repeated Data	Code Table	Remark	Data Requirement (Certified Level 1)	Data Requirement (Certified Level 2)	Data Requirement (Certified Level 3)	Example (Certified Level 1)	Example (Certified Level 2)	Example (Certified Level
Immunisation record number	1001804	A unique identifier for each vaccine administration record defined by individual institution	ST	String					O	O	O	5805 0000 XXXX	5805 0000 XXXX	5805 0000 XXXX
Vaccine - recognised terminology name	1001808	Terminology name that is recognised by the eHR Information Standards Office for vaccine	CE	Coded Element		y	Vaccine - recognised terminology name		N/A	N/A	M	N/A	N/A	CPP
Vaccine identifier - recognised terminology	1001809	A unique identifier of individual vaccine in the "Vaccine list"	CE	Coded Element		y	Vaccine list		N/A	N/A	M	N/A	N/A	01891
Vaccine description - recognised terminology	1001810	Name of individual vaccine in the "Vaccine list"	CE	Coded Element		y	Vaccine list		N/A	N/A	M	N/A	N/A	MMR II
Vaccine local code	1001806	A unique identifier issued to the vaccine defined by individual institution	ST	String		y			N/A	O	O	N/A	MMR	MMR II
Vaccine local description	1001807	The description of the vaccine defined by individual institution	ST	String		y			N/A	M	M	N/A	MMR	MMR II
Historical immunisation	1001814	Immunisation administered previously by other providers. All historical immunisation data should be based on the immunisation record documented by previous healthcare providers who gave the vaccine to the person.	CE	Coded Element		y	Yes No Unspecified		N/A	M	M	N/A	No	Unspecified
Vaccine administration date	1001805	The date on which the vaccine is given	TS	Time Stamp		y			N/A	M	M	N/A	1/11/2009	1/11/2009
Vaccine dose sequence	1001812	Immunisation dose in series, booster	ST	String		y			N/A	O	O	N/A	1st dose	2nd dose
Batch number	1001811	Batch number for drug product as assigned by the drug manufacturer	ST	String		y			N/A	O	O	N/A	09-33344-XX098	09-33355-XX099
Route of administration code	1001816	The path by which a drug / substance is taken into the body	CE	Coded Element		y	Route of drug administration table		N/A	N/A	N/A or M if [Route of administration description] is given	N/A	N/A	IM
Route of administration description		Description of the path by which a drug / substance is taken into the body, defined by eHR	ST	String		y			N/A	N/A	N/A or M if [Route of administration code]	N/A	N/A	Intramuscular
Route of administration local description		Description of the path by which a drug / substance is taken into the body, defined by individual institution	ST	String		y			N/A	O	O or M if [Route of administration code] is given	N/A	IM	Intramuscular
Site of administration code	1001817	Code of the body site where the drug / substance is given	CE	Coded Element		y	Site of drug administration		N/A	N/A	N/A or M if [Site of administration description] is given	N/A	N/A	LT
Site of administration description		Description of the body site where the drug / substance is given, defined by eHR	ST	String		y			N/A	N/A	N/A or M if [Site of administration code] is given	N/A	N/A	Left Thigh
Site of administration local description		Local description of the body site where the drug / substance is given, defined by individual	ST	String		y			N/A	O	O or M if [Site of administration code]	N/A	L Thigh	Lt Thigh

Data Schema

Entity Name	Entity ID	Definition	ata ype ode)	Data Type (description)	Validation Rule	Repeated Data	Code Table	Remark	Data Requirement (Certified Level 1)	Data Requirement (Certified Level 2)	Data Requirement (Certified Level 3)	Example (Certified Level 1)	Example (Certified Level 2)	Example (Certified Level
mmunisa on record number	1001804	nique identifier for each vac administration record defined dividual institution	ST						O	O	O	5805 0000 XXXX	5805 0000 XXXX	5805 0000 XXXX
Vaccine - recognise terminolog	1001808	Terminolog that is recognised by information Standa for vaccine	CE	Coded Element		y	terminology name			N				
Vaccine Ide recognised terminology	1001809	A unique identifier of individ vaccine in the "Vaccine list"		Coded Element		y	Vaccine list		N/A					
Vaccine desc recognised terminology	1001810	Name of individual vaccine in the "Vaccine list"	CE	ent						N				ll
Vaccine local	906	A unique identifier issued to the vaccine defined by individual institution	ST	String						O				ll
Vaccine local description		The description of the vaccine defined by individual institution	ST	String						M				R II
Historical Immunisation		mmunisation administered viously by other providers. All orical immunisation data d be based on the	CE	Coded Element						M	M	N/A	No	Unspecified
Vac adm						y			N/A	M	M	N/A	1/11/2009	1/11/2009
Vac seq						y			N/A	O	O	N/A	1st dose	2nd dose
Bat						y			N/A	O	O	N/A	09-33344-XX098	09-33355-XX099
Rou adm				nent		y	Route of drug administration table		N/A	N/A	N/A or M if [Route of administration description] is given	N/A	N/A	IM
Rou admini description		the body, defined by eHR				y			N/A	N/A	N/A or M if [Route of administration code]	N/A	N/A	Intramuscular
Route of administration local description		Description of the path by which a drug / substance is taken into the body, defined by individual institution	ST	String		y			N/A	O	O or M if [Route of administration code] is given	N/A	IM	Intramuscular
Site of administration code	1001817	Code of the body site where the drug / substance is given	CE	Coded Element		y	Site of drug administration		N/A	N/A	N/A or M if [Site of administration description] is given	N/A	N/A	LT
Site of administration description		Description of the body site where the drug / substance is given, defined by eHR	ST	String		y			N/A	N/A	N/A or M if [Site of administration code] is given	N/A	N/A	Left Thigh
Site of administration local description		Local description of the body site where the drug / substance is given, defined by individual	ST	String		y			N/A	O	O or M if [Site of administration code]	N/A	L Thigh	Lt Thigh

Entity Name

Name of data field, e.g.
- [Date of birth]
- [Report title]

Entity ID
- Unique identifier for each Entity
- Issued by eHRISO

Definition
- Definition of the entity

Data Schema

Entity Name	Entity ID	Definition	Data Type (code)	Data Type (description)	Validation Rule	Repeated Data	Code Table	Remark	Data Requirement (Certified Level 1)	Data Requirement (Certified Level 2)	Data Requirement (Certified Level 3)	Example (Certified Level 1)	Example (Certified Level 2)	Example (Certified Level
Immunisation record number	1001804	A unique identifier for each vaccine administration record defined by individual institution		String					O	O	O	5805 0000 XXXX	5805 0000 XXXX	5805 0000 XXXX
Vaccine - recognised terminology name	1001808	Terminology name that is recognised by the eHR Information Standard vaccine		Coded Element		y	Vaccine recognised terminology name		N/A	N/A				
Vaccine identifier - recognised terminology	1001809	A unique vaccine	CE	Coded Element		y	Vaccine list							
Vaccine description - recognised terminology	1001810		CE	Coded Element		y	Vaccine list							
									N/A					
									N/A					
									N/A					
									N/A					
									N/A					
									N/A	N/A	M if [Route of administration description] is given			
									N/A	N/A	N/A or M if [Route of administration code]	N/A	N/A	Intramuscular
									N/A	O	O or M if [Route of administration code] is given	N/A	IM	Intramuscular
Site of administration code									N/A	N/A	N/A or M if [Site of administration description] is given	N/A	N/A	LT
Site of administration description		Description of the body site where the drug / substance is given, defined by eHR	ST	String		y			N/A	N/A	N/A or M if [Site of administration code] is given	N/A	N/A	Left Thigh
Site of administration local description		Local description of the body site where the drug / substance is given, defined by individual	ST	String		y			N/A	O	O or M if [Site of administration code]	N/A	L Thigh	Lt Thigh

Data Type (code) / (description)

Data storage format

Code	Description	Definition
CE	Coded element	Coding systems/tables specified by eHR project
ED	Encapsulated data	Encapsulated data, e.g. PDF document
ST	String data	Text data upto 1,000 characters
TS	Time stamp	• Date and time • Permits varying degrees of granularity from days, hours, to decimal seconds
TX	Text	Text data upto 65536 characters, for display purpose

Repeated Data

Whether multiple entry for same entity is allowed

Section	Entity	Repeated data
Healthcare Recipient	Date of birth	N
Prescription Record	Prescribed drug	Y

Data Schema

Entity Name	Entity ID	Definition	Data Type (code)	Data Type (description	Validation Rule	Repeate Data	Code Table	Remark	Data Requirement (Certified Level 1)	Data Requirement (Certified Level 2)	Data Requirement (Certified Level 3)	Example (Certified Level 1)	Example (Certified Level 2)	Example (Certified Level
Immunisation record number	1001804	A unique identifier for each vaccine administration record defined by individual institution	ST	String					O	O	O	5805 0000 XXXX	5805 0000 XXXX	5805 0000 XXXX
Vaccine - recognised terminology name	1001808	Terminology name that is recognised by the eHR information Standards Office for	CE			y	Vaccine - recognised terminology name			N/A	M	N/A	N/A	CPP
						y	Vaccine list		N/A			N/A	N/A	01891
						y	Vaccine list							
						y								
						y								
						y	Yes No Unspecified							
Vaccine administration date	1001805	The date on which the vaccine is given	TS	Time Stamp		y								
Vaccine dose sequence	1001812	Immunisation dose in series, booster	ST	String		y								
Batch number	1001811	Batch number for drug product as assigned by the drug manufacturer	ST	String		y								
Route of administration code	1001816	The path by which a drug / substance is taken into the body	CE	Coded Element		y	Route of drug administration table							
Route of administration description		Description of the path by which a drug / substance is taken into the body, defined by eHR	ST	String		y								
Route of administration local description		Description of the path by which a drug / substance is taken into the body, defined by individual institution	ST	String		y					administration code] is given			
Site of administration code	1001817	Code of the body site where the drug / substance is given	CE	Coded Element		y	Site of drug administration		N/A	N/A	N/A or M if [Site of administration description] is given	N/A	N/A	LT
Site of administration description		Description of the body site where the drug / substance is given, defined by eHR	ST	String		y			N/A	N/A	N/A or M if [Site of administration code] is given	N/A	N/A	Left Thigh
Site of administration local description		Local description of the body site where the drug / substance is given, defined by individual	ST	String		y			N/A	O	O or M if [Site of administration code]	N/A	L Thigh	Lt Thigh

Validation Rules

For data quality, e.g.

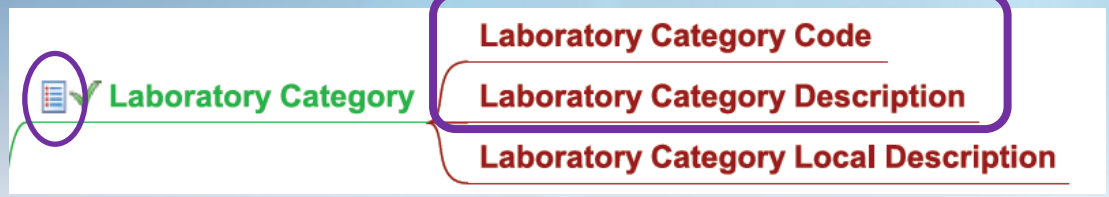
- Section : Birth Record
- Entity : [Apgar Score]
- Validation : value is 0 to 10

Code Table

- Name of the code table from which the data value for a particular entity is referenced to
- In Codex – around 50 tables

Section	Entity	Code Table
Healthcare Recipient	Sex	Sex
Encounter	Specialty	Specialty

Code Tables



Laboratory Category Table

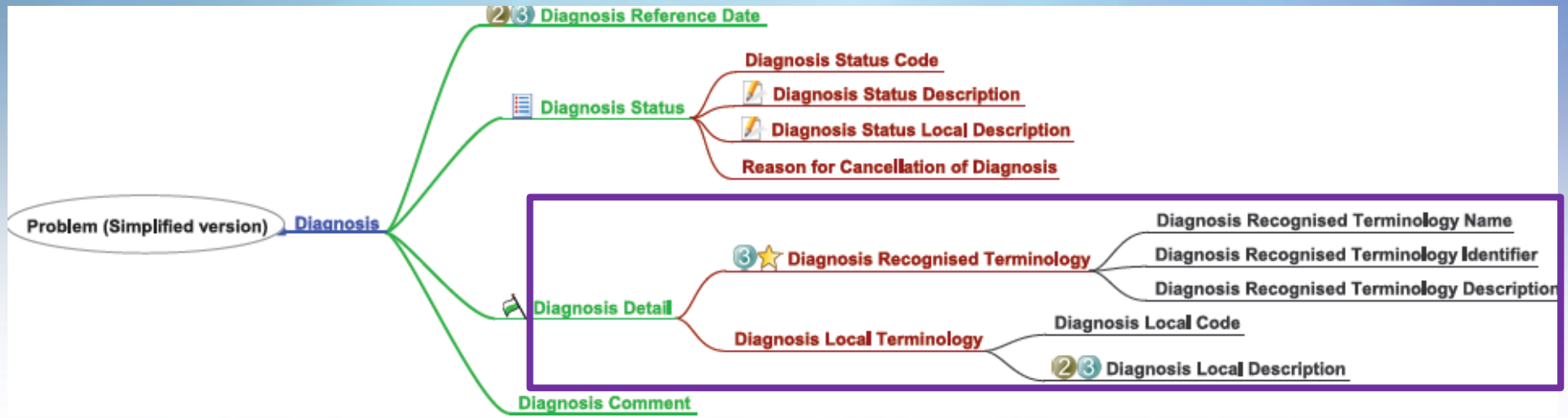
TermID	eHR Value	eHR Description
To be assigned	CHEM	Chemical Pathology Laboratory
	HAEM	Haematology Laboratory
	IMMUN	Immunology Laboratory
	MICRO	Microbiology Laboratory
	VIRO	Virology Laboratory
	PATH	Anatomical Pathology Laboratory
	TRL	Toxicology Reference Laboratory
	BLDBK	Blood Bank
	T&I	Transplantation & Immunogenetic Laboratory
	MOLPATH	Molecular Pathology Laboratory
	LAB	Clinical Laboratory

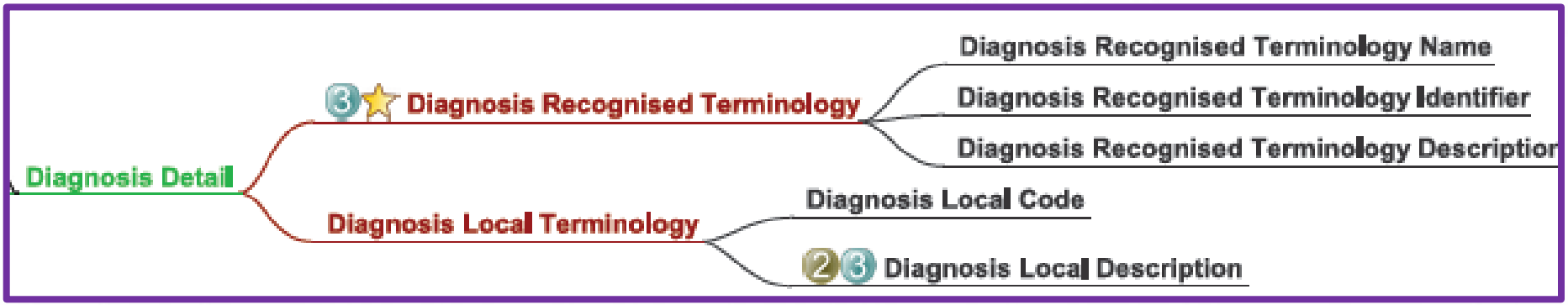
Laboratory	Certified Level	Laboratory Category Code	Laboratory Category Description	Laboratory Category Local Description
A	Level 2	---	---	Chem
B	Level 3	Chem	Chemical Pathology Laboratory	ChemPath
C	Level 3	HAEM	Haematology Laboratory	Haematology Laboratory

Recognised Terminologies for eHR

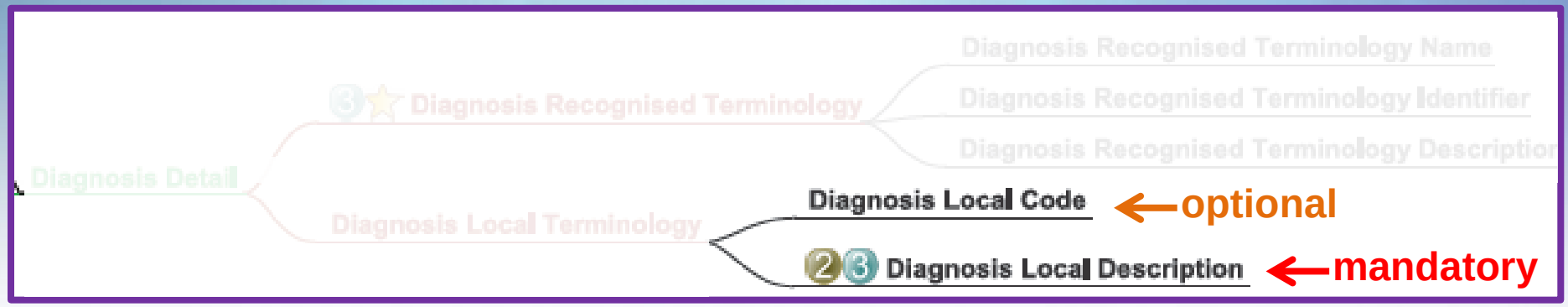
- Registered Pharmaceutical Products
- Hong Kong Clinical Terminology Table (HKCTT)
- International Classification of Diseases, 10th Revision (ICD 10)
- International Classification for Primary Care, 2nd Edition (ICPC2)
- Logical Observations, Identifiers Names and Codes (LOINC)
- Systematized Nomenclature of Medicine, Clinical Terms (SNOMED CT)

Set of 5


Problem (Simplified version)
Diagnosis
Diagnosis Reference Date
Diagnosis Status
Diagnosis Status Code
Diagnosis Status Description
Diagnosis Status Local Description
Reason for Cancellation of Diagnosis
Diagnosis Detail
Diagnosis Recognised Terminology
Diagnosis Recognised Terminology Name
Diagnosis Recognised Terminology Identifier
Diagnosis Recognised Terminology Description
Diagnosis Local Terminology
Diagnosis Local Code
Diagnosis Local Description
Diagnosis Comment

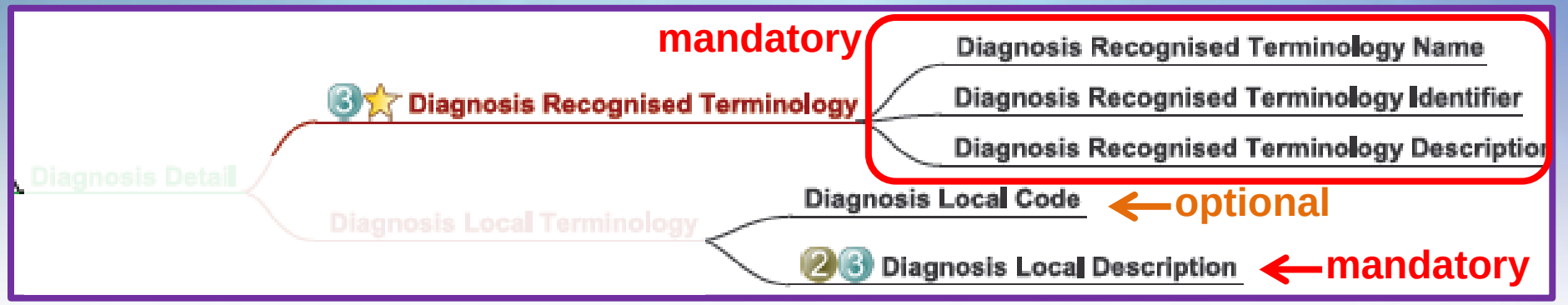

Diagnosis Detail
Diagnosis Recognised Terminology
Diagnosis Recognised Terminology Name
Diagnosis Recognised Terminology Identifier
Diagnosis Recognised Terminology Description
Diagnosis Local Terminology
Diagnosis Local Code
Diagnosis Local Description

Set of 5
Diagnosis – Level 2 Compliance



Example	Diagnosis Local Code	Diagnosis Local Description
1	----	Haemorrhoid
2	HM	Hemorrhoid
3	123	Piles

Set of 5
Diagnosis – Level 3 Compliance



Example	Rcg T Name	Rcg T ID	Rcg T Des	Local Code	Local Description
1	SNOMED CT	233604007	Pneumonia	----	Pneumonia
2	ICD 10	J18.9	Pneumonia	PN	Pneumonia
3	HKCTT	8471	Pneumonia	123	Chest infection
4	HKCTT	8471	Pneumonia	---	Pneumonia

Data to eHR

For displaying data in eHR viewer

For grouping data in eHR viewer / secondary use of eHR data

Declared Standard Level	Unstructured data	Local structured data		Recognised structured data			
	PDF, Free Text	Local Code	Local Description	Types	Recognised Terminology Name	Recognised Code	Recognised Description
1	Mandatory	NA	NA	---	NA	NA	NA
2	Optional	Optional	Mandatory	---	NA	NA	NA
3	Optional	Optional	Mandatory	Recognised Terminology	Mandatory	Mandatory	Mandatory
				Code Tables	---	Mandatory	Mandatory

If data is required, local description must be sent to eHR, but local code is optional.

When sending local description to eHR :

- Send local term if map local table to standard one
- Send term of the recognised terminology if adopt recognised terminology in local system directly

Data Schema

Entity Name	Entity ID	Definition	Data Type (code)	Data Type (description)	Validation Rule	Repeated Data	Code Table	Remark	Data Requirement (Certified Level 1)	Data Requirement (Certified Level 2)	Data Requirement (Certified Level 3)	Example (Certified Level 1)	Example (Certified Level 2)	Example (Certified Level
Immunisation record number	1001804	A unique identifier for each vaccine administration record defined by individual institution	ST	String					O	O	O	5805 0000 XXXX	5805 0000 XXXX	5805 0000 XXXX
Vaccine - recognised terminology name	1001808	Terminology name that is recognised by the eHR Information Standards Office for vaccine	CE	Coded Element		y	Vaccine - recognised terminology				M	N/A	N/A	CPP
Vaccine identifier - recognised terminology	1001809	A unique I... vaccine...										N/A	N/A	01891
Vaccine description - recognised terminology	1001810	Nam... "Va...										N/A	N/A	MMR II
Vaccine local code	1001806	A u... vac... Ins...										N/A	MMR	MMR II
Vaccine local description	1001807	Th... def...										N/A	MMR	MMR II
Historical immunisation	1001814	Imm... pre... his... sh... Imm... do... he... the...										N/A	No	Unspecified
Vaccine administration date	1001805	Th... gi...										N/A	1/11/2009	1/11/2009
Vaccine dose sequence	1001812	Imm... bo...										N/A	1st dose	2nd dose
Batch number	1001811	Ba... as... ma...										N/A	09-33344-XX098	09-33355-XX099
Route of administration code	1001816	Th... su...										N/A	N/A	IM
Route of administration description		De... a d... the...										N/A	N/A	Intramuscular
Route of administration local description		De... a d... the... Insti...										N/A	IM	Intramuscular
Site of administration code	1001817	Code... drug /										N/A	N/A	LT
Site of administration description		Description of the body site where the drug / substance is given, defined by eHR	ST	String		y			N/A	N/A	N/A or M if [Site of administration code] is given	N/A	N/A	Left Thigh
Site of administration local description		Local description of the body site where the drug / substance is given, defined by individual	ST	String		y			N/A	O	O or M if [Site of administration code]	N/A	L Thigh	Lt Thigh

Data Requirement

Whether data is required for the certified level as indicated by the healthcare provider

- M – mandatory
- O – optional
- NA – not applicable

Section	Entity Name	Certified Level	Data Requirement
Healthcare Recipient	Sex	3	Mandatory
Birth Record	Apgar Score	2	Optional
Immunisation Record	Vaccine Name	1	Not applicable

Thank You