

"Updates on Drug Records on Electronic Health Record (eHR) System" 23 Jan 2013



Development on HK-wide

eHR Drug Standards

Approach Adopted

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eHR Drug Standards

What do we want to achieve?

1	Standardisation of drug terminologies
2	Inter-operability
3	Support electronic health record
4	Pave way for future decision-support
5	Improved quality of care and patient safety

Extracted from Drug Seminar Nov 2010

In eHR, we need standardisation of drug terminologies



Different terms for the same concept



In 2010 - eHR to adopt SNOWMED as standard for Medication Terminology Table (MTT)

SNOMED CT (Pharmaceutical product





International Release

Generic product concept tables in HK MTT **SNOMED CT Intl** Ingredient **Pharmaceutical Product** concept tables HAS_ACTIVE_INGREDIENT Therapeutic VTM Is equiv to Moiety **SNOMED CT** IS_A VTM +Route IS_A IS_A VTM+Route +form IS_A Generic Is equiv to VMP Product **SNOMED CT**

These tables and the relationships are in compliance with the SNOMED model and allows future mapping from HKMTT to SNOMED concepts.

eHR's MTT Co-Production Model with DH



The concept tables should support the co-production mechanism from DH's Drug Compendium

eHR's MTT Co-Production Model with DH



The concept tables should support the co-production mechanism from DH's Drug Compendium

eHR's MTT Co-Production Model with DH + suppliers



What approach has been taken to build, develop and maintain the HKMTT for eHR?

- Standardisation of drug terminologies
- Interoperability
- Support electronic health record
- Pave way for future decision-support
- Improved quality of care and patient safety



Build, develop and maintain the HKMTT – 3 aspects

Data Content Preparation

How, by whom and when ?

Exercise dans Exerci

HK reg Actual Medicinal Product

Ancobon (5-flucytosine) oral capsule 500 mg

Zovirax Cold Sore Cream (acyclovir) topical cream 5 %

Super-E (d-alpha-tocopherol) oral capsule 200 internaional unit

Novorapid (insulin aspart human) subcutaneous injection, cartridge 1
Tental (oxpentifylline) oral controlled-release tablet 400 mg
Predfoam (prednisolone (as sodium metasulphobenzoate)) rectal foa
Infloran (lactobacillus acidophilus + bifidobacterium bifidum) oral caj
Infloran (lactobacillus acidophilus + bifidobacterium bifidum) oral caj
Nicotinell (nicotine) buccal chewing gum (nolacrilex) 2 mg (fruit)

41459 APT-Amoxycillin (amoxycillin (as trihydrate)) oral capsule 250 mg 59660 Blackmores Vit D3 (cholecalciferol) oral capsule 1000 international u

41418 Acyclovir Stada (acyclovir) topical cream 5 %

Zovirax (acyclovir) eye ointment 3 %

45083 Ametop (amethocaine) topical gel 4 %

Cusiviral (acyclovir) eye ointment 3 %

39546 amoxycillin (Bright Future) oral capsule 250 mg

51979

47049

44713

44957

59660 55341

1.

Content Governance

How to ensure quality and compliance to international standards ?



Building the Technical Infrastructures

What supporting technical infrastructures are required ?

2.

HKMTT

HK reg 51979 41418 47049 17375	g: Actual Medicinal Product Ancobon (5-flucytosine) oral capsule 500 mg 8 Acyclovir Stada (acyclovir) topical cream 5 % 2 Zovirax Cold Sore Cream (acyclovir) topical cream 5 % 5 Zovirax (acyclovir) eye ointment 3 %	Data Conte	nt Preparation	ı	
1 44713 1 44957 2 45083 3 39546 4 41459 9 59660	3 Cusiviral (acyclovir) eye ointment 3 % Super-E (d-alpha-tocopherol) oral capsule 200 internaional unit Ametop (amethocaine) topical gel 4 % amoxycillin (Bright Future) oral capsule 250 mg APT-Amoxycillin (amoxycillin (as trihydrate)) oral capsule 250 mg Blackmores Vit D3 (cholecalciferol) oral capsule 1000 international u	How, by whom and when ?			
3 55341 3 05569 1 33470 4 52336 5 52336 3 47289	Novorapid (insulin aspart human) subcutaneous injection, cartridge 1 Trental (oxpentifylline) oral controlled-release tablet 400 mg Predfoam (prednisolone (as sodium metasulphobenzoate)) rectal foa Infloran (lactobacillus acidophilus + bifidobacterium bifidum) oral caj Nicotinell (nicotine) burcal chewing zum (nolacrilex) 2 mg (fruit)	Phase 1	Phase 2	Phase 3	Phase 4

4-Phase Data Developmental Approach

1	De		
	1.	eHR and DH have an agreed set of	
		critical data elements	
	2.	DH-DC to collect essential data	
		elements from certificate holders of	
		registered pharmaceutical products	
	3.	Email excel spreadsheets from DH to	
		eHRO	



Pharmaceutical Companies / Manufacturers/ certificate holders





from DH

Agreed set of critical data elements





Pharmaceutical Companies / Manufacturers/ certificate holders



Agreed set of critical data elements





Content Governance

How to ensure quality and compliance to international standards ?

Governance Structure for HKMTT



Medication Terminology Table Content Governance Committee

Composition of Members

Registration Body	Drug Office, Department of Health, HKSAR Government		
HealthTerminologists	eHR-Information Standard Office		
Doctors	Medical Council of Hong Kong Dental Council of Hong Kong		
Pharmacists	Pharmaceutical Society of Hong Kong		
Nurses	Nursing Council of Hong Kong		
Health Informaticians	eHR (HA-HI, HA-CPO), representatives from eHR FG (MOE App) and eHR FG (Drug Checking System)		

HKMTT Editorial Rules Contents

Section	Content	Description	
1	Introduction	Foreword, background, scope, purpose and governance structure	
2	HKMTT model	MTT schema design	The Design
3	HKMTT components	What is HKMTT concepts? What are the HKMTT concepts	
4	Product concepts	Formal definitions Rules and style Technical specifications	Technical
5	Substance and Qualifier concepts	Formal definitions Rules and style Technical specifications	uetans
6	Appendices	General expression rules Auxiliary concepts : reference and populated list	Series of appendices

HKMTT Editorial Rules

Purpose :

Governs how concepts are populated and maintained in MTT

To be **compiled by eHR-ISO** MTT data maintenance officer, and **endorsed by Content Governance Committee**;

Overall status :

Started since :Sep 2010

Version : **V.0.9** Pages : **152**

Chapters : 6 chapters completed:

- 1. Introduction
- 2. HKMTT model
- 3. HKMTT components
- 4. Product Concepts
- 5. Qualifier Concepts
- 6. Appendices (rules and populated qualifier

concepts

HKMTT Editorial Rules Draft Version 0.9 (as of today)

Hong Kong Medication Terminology Table (HKMTT)

Editorial Rules

[Draft]

Version 0.9

October 2012

MTT Editorial Rules Draft Review Mechanism



Schedule of MTT draft Editorial Rules Releases



1.1 Fore

Foreword

Terminologies are medical terms and concepts used to describe, classify and code the data elements and data expression languages and syntax that describe the relationships among terms/concepts [1]. They are used to record clinical information; to facilitate the storage of clinical information; to support sharing and reuse of clinical information; to support efficient query formulation; to create a natural language output from manual structured input; and to support the application of decision support algorithms [2]. Standard terminology is the foundation for supporting the development of an interoperable electronic health record (eHR) and it ensures the shared health data can be accurately interpreted, and thus can be reused to improve care delivery and optimize workflow. Standard terminology also supports disease surveillance to improve population health; generates medical knowledge to facilitate decision support and health services planning.

P. 6

1.4 Development Process

The concept model design was developed and has undergone review and refinements by the eHR Information Standard Domain Group for Drug Records, with modifications in response to feedback from and consultation with members of the group, comprising of representatives from the Department of Health HKSAR, public hospitals, private hospitals, professional bodies and the eHealth Record Office.

The development of product and qualifier concepts in HKMTT has been staged into four phases:

Phase 1: the initial concept model design, formal definition of data set and the co-production model between the Department of Health and eHealth Office
Phase 2: preparation, verification and import of product data by the Department of Health and its import by phases into the MTT data preparation framework
Phase 3: mapping of the initial standardization data to SNOMED-CT
Phase 4: Technical development of the DH-CPP to MTT Co-Production Interface and the eHR Information Architecture Management System



Chapter 4 : The HKMTT Components

4

The HKMTT Components

The HKMTT has conceptually been designed to encompass eight distinct "product" concepts, each containing a set of attributes, and each involves in a defined relationships (or associations, in technical point of view) with concepts (see section 5.14 for more information on MTT relationships). As described in section 3, the 8 levels product concepts are:

- •Virtual Therapeutic Moiety (VTM)
- •Routed Virtual Therapeutic Moiety (VTM+Route)
- •Virtual Therapeutic Moiety Routed Dose Form (VTM+Route+Form)
- •Virtual Medicinal Product (VMP)
- •Trade Names (TradeName)
- •Routed Trade Names (TradeName+Route)
- •Trade Name Routed Dose Form (TradeName+Route+Form)
- •Actual Medicinal Product (AMP)

Fully Specified Name Definit	ition and fishes
To be completed	
Portscool Term Cofficition a	and Rules
To be completed	
Alassame Definition and R	
To be consisted	
Shortname Definition and B	and a second
To be completed	
4 The HKMTT Co	omponents
Vistual Therapeutic M Rooted Vistual Therapeutic M Rooted Vistual Therapeutic M Vistual Therapeutic M Vistual Medicinal Prod Trade Names (Todden Trade Name Strate D Trade Name State D	serv (HTM) water Kinge (HTM Hause) hang hauted (book farm (HTM-kinuterForm) ded (MMP) Tenthisees House) to foruit (Tenthisees House) to foruit (Tenthisees House)
 Adus Nedional Prod 	
4.1 Product Type	
Pharmaceutical products in regulated and registrable to Person Delivance (Cap. 13) granularities, including the B	Suded in the rollsal set of HEMIT's defined as all medicanal propertitions that a UNA time group Department of Health, under the regulation of the Hearmany and 10. These preparations will samy a defined set of attributes that confers saying level following critical data:
HK Registration number	
Virtual Therapeutic Moletty	
harsten 6.7	

eHR ISO

HKMTT Editorial Rules [Draft]

Formal definition

4.5 Virtual Medicinal Product (VMP)

4.5.1 Virtual Medicinal Product Definition

A Virtual Medicinal Product (VMP) is the abstract concept representing the properties of one or more clinical equivalent Trade Products (Actual Medicinal Products (AMP)). The VMP describes a generic product without supplier or trade name information. Equivalent AMPs are defined as those product with the same base active ingredient (with our without the salt, whichever is therapeutically significant), same strength, dose form, and adminstrable unit type (i.e. same combination of dose unit concepts associated), and being quantitatively bioequivalent.

A new VMP will be created for each different strength of a registered pharmaceutical product. If an existing generic product has a change of ingredient, such that it does not conform to the ingredients of the original VMP, then a new VMP will be created for the new product. The existing VMP may have its status changed if no bioequivalent AMP exists. In addition, all VMP concepts will have relationships to all of their active ingredients, as identified by the "has_active_ingredient" relationship.

Drug VMPs will usually follow the format of Drug Name + Route + Dose Form + Strength. Examples of VMP concepts FSNs and PTs:

Fully Specified Name	Preferred Term
cephalexin oral capsule 250 mg (product)	cephalexin oral capsule 250 mg
calcium carbonate oral chewable tablet 1 g (product)	calcium carbonate oral chewable tablet 1 g
betamethasone (as valerate) topical cream 0.1 % (product)	betamethasone (as valerate) topical cream 0.1 %

Each Chapter begins with a formal definition of the concept.

Progress of briefing Editorial Rules draft with DG members

V	V	V	V
DG8 7 MAR 2012	DG9 29 MAY 2012	DG10 30 AUG 2012	DG11 27 NOV 2012
The design Introduction to MTT Concept model components	Technical details of concept creation in MTT How HK Product concepts are created	Technical details of concept creation in MTT How Qualifiers concepts are created	Specific editorial rules Capitalisation rules Ingredient naming conventions Strength expression rules Qualifier tables Population methods and examples



Building the Technical Infrastructures

What supporting technical infrastructures are required ?



Extracted from "Update on HK Drug standards – 7th DH-HA Liaison Meeting



The scope of eHR MTT table is to maintain standardised terminology to cover all Hong Kong registered pharmaceutical products.



In eHR Office, a terminology database is being developed to maintain all HKMTT and its mapping data to SNOMED CT.



The Data Interface of Registered Pharmaceutical Products (DiRPP) is being built as a direct data channel from DH to eHR Information Standard Office. The data received at eHR Office will be sent into a concept submission page ("the InBox") of the **Information Architecture Management System (eHR-IAMS)**



IAMS provides data maintenance facility for the Pharmacist to import the Pharmaceutical Product data into MTT, and data maintenance in adherence to the MTT Editorial Rules.



Editorials and carefully pre-defined system logics are implemented into the system which helps to automate the building of MTT concept, maintaining their defining attributes and relationships building.



MTT concepts in eHR-IAMS will also be mapped to SNOMED CT core in Phase 3 of the data preparation process.

The ultimate aim of MTT data is to provide standard drug terminologies for eHR Medication record (Prescribing & Dispensing) sharing

What approach has been taken to build, develop and maintain the HKMTT for eHR?

- Standardisation of drug terminologies
- Interoperability
- Support electronic health record
- Pave way for future decision-support
- Improved quality of care and patient safety

Practical Usage of MTT

Medication Terminology Table

IS_A

IS A

IS_A

Supporting local Interoperability & drug record sharing between different systems / service providers

according to their drug data table structure. This mapping allows communication with eHR.

HKMTT is provided in 2 Data Service modes : (i) direct adaptation of eHR Applications (which has all medication-related functions supported by MTT); or (ii) by subscribing and maintaining the MTT data content via HKCTT Data download and mapping to local drug information.

Future Usage of MTT

Summary

What approach has been taken to build, develop and maintain the HKMTT for eHR?

- Collaborative approach
- Standandised approach
- Interoperable approach
- Sharable data approach
- Better patient and medication safety approach
- Timely approach

