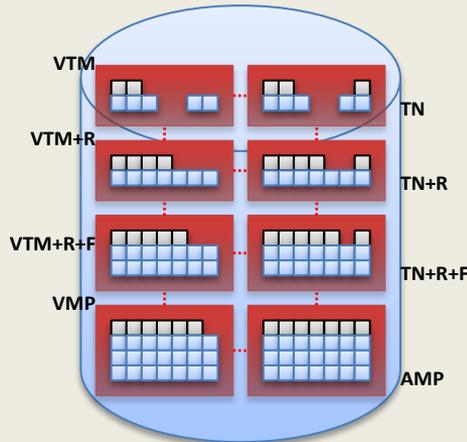


# Application of eHR Drug Standards in eHR CMS Adaptation and Structured Alert Module

Connie Lau  
Pharmacist  
Hospital Authority

# The uses of Hong Kong Medication Terminology Table (HKMTT)

HKMTT is the HK-wide eHR Drug standards to identify the registered pharmaceutical products used in Hong Kong.



HKMTT high level model

Which activities can HKMTT be applied to ?

**Drug records sharing**

**Prescribing**

**Dispensing**

**Drug allergy documentation**

**Medication decision support**

**This Session**

# Structured Alert Adaptation Module

- To enhance the capability of private hospitals to:
  - capture patients' allergy record
  - share these records with the future eHR system
- eHR Office has developed:
  - Structured Alert Adaptation Module (SAAM)
- Private hospitals can adopt SAAM by integrating them into their own eMR systems.

# Documenting an allergen using Structured Alert Adaptation Module



CHAN, SIU MAN (陳少曼)

HKIC: UH987654(1)

DOB: 24-May-1958

Age: 54 years

Ward: 5A-X12

Hospital No.: 456789

## Allergy / Adverse Drug Reaction / Alert

Allergy ? Add

No Known Drug Allergy

### New Allergy Details

Allergen / Allergen Group:

Multiple-Ingredients products

**Drug Allergy**

Adverse Drug Reaction ? Add

**Adverse Drug Reaction**

Alert ? Add

**Clinical Alert**

The screen dump of SAAM.

# Documenting an allergen using Structured Alert Adaptation Module

HKIC: UH987654(1)

DOB: 24-May-1958

Age: 54 years

Ward: 5A-X12

Hospital No.: 456789

## Allergy / Adverse Drug Reaction / Alert

### Allergy ?

 No Known Drug Allergy

Documenting Allergen...

**Aspilets (aspirin)**

### New Allergy Details

 Allergen / Allergen Group: 

#### Level of Certainty

 Certain  Suspected

#### Clinical Manifestation

- |   |  |
|---|--|
| <input type="checkbox"/> Allergic contact dermatitis  | <input type="checkbox"/> Fibrosing alveolitis          |
| <input type="checkbox"/> Allergic rhinitis            | <input type="checkbox"/> Fixed eruptions               |
| <input type="checkbox"/> Anaphylaxis                  | <input type="checkbox"/> Generalised liver damage      |
| <input checked="" type="checkbox"/> <b>Angioedema</b> | <input type="checkbox"/> Haemolytic anaemia            |
| <input type="checkbox"/> Aplastic anaemia             | <input type="checkbox"/> Photosensitivity              |
| <input type="checkbox"/> Asthma                       | <input type="checkbox"/> Pruritis                      |
| <input type="checkbox"/> Atopic dermatitis            | <input type="checkbox"/> Rash                          |
| <input type="checkbox"/> Cholestasis                  | <input type="checkbox"/> Serum sickness                |
| <input type="checkbox"/> Eczema                       | <input type="checkbox"/> Stevens-Johnson Syndrome      |
| <input type="checkbox"/> Erythema multiforme          | <input type="checkbox"/> Toxic erythema                |
| <input type="checkbox"/> Erythema nodosum             | <input type="checkbox"/> Urticaria                     |
| <input type="checkbox"/> Erythroderma                 | <input type="checkbox"/> Manifestation uncertain       |
| <input type="checkbox"/> Exfoliative dermatitis       | <input type="checkbox"/> Others (Please specify below) |
| <input type="checkbox"/> Fever                        |  |

#### Additional Information

----- Please specify additional information if necessary -----

### Adverse Drug Reaction ?

Add

Specifying Clinical Manifestation...

**Angioedema**

### Alert

Add

It is the screen dump of SAAM. In this example, the allergen '**Aspilets (aspirin)**' can be picked up from the allergen list and therefore, can be documented structurally.

# Documenting an allergen using Structured Alert Adaptation Module

HKIC: UH987654(1)

DOB: 24-May-1958

Age: 54 years

Ward: 5A-X12

Hospital No.: 4

## Allergy / Adverse Drug Reaction / Alert

Allergy ? Add

Aspilets (aspirin)

Adverse Drug Reaction ? Add

Alert Add

## New Allergy Details

Allergen / Allergen Group:

hydr

Multiple-Ingredient products



- hydralazine hydrochloride
- hydrochlorothiazide
- hydrocortisone
- hydrocortisone (as sodium succinate)
- hydrocortisone acetate
- hydrogen peroxide
- hydroxocobalamin
- hydroxycarbamide
- hydroxychloroquine sulfate
- hydroxyzine hydrochloride
- acebutolol (as hydrochloride)
- alfentanil (as hydrochloride)
- alfuzosin hydrochloride
- aluminium hydroxide
- aluminium hydroxide dried
- amantadine hydrochloride
- ambroxol hydrochloride
- amiloride hydrochloride
- aminophylline (as dihydrate)
- amiodarone hydrochloride
- amitriptyline hydrochloride
- amorolfine (as hydrochloride)
- amoxicillin (as trihydrate)

Structured Free Text Imported free text data Deleted  
\*Match found

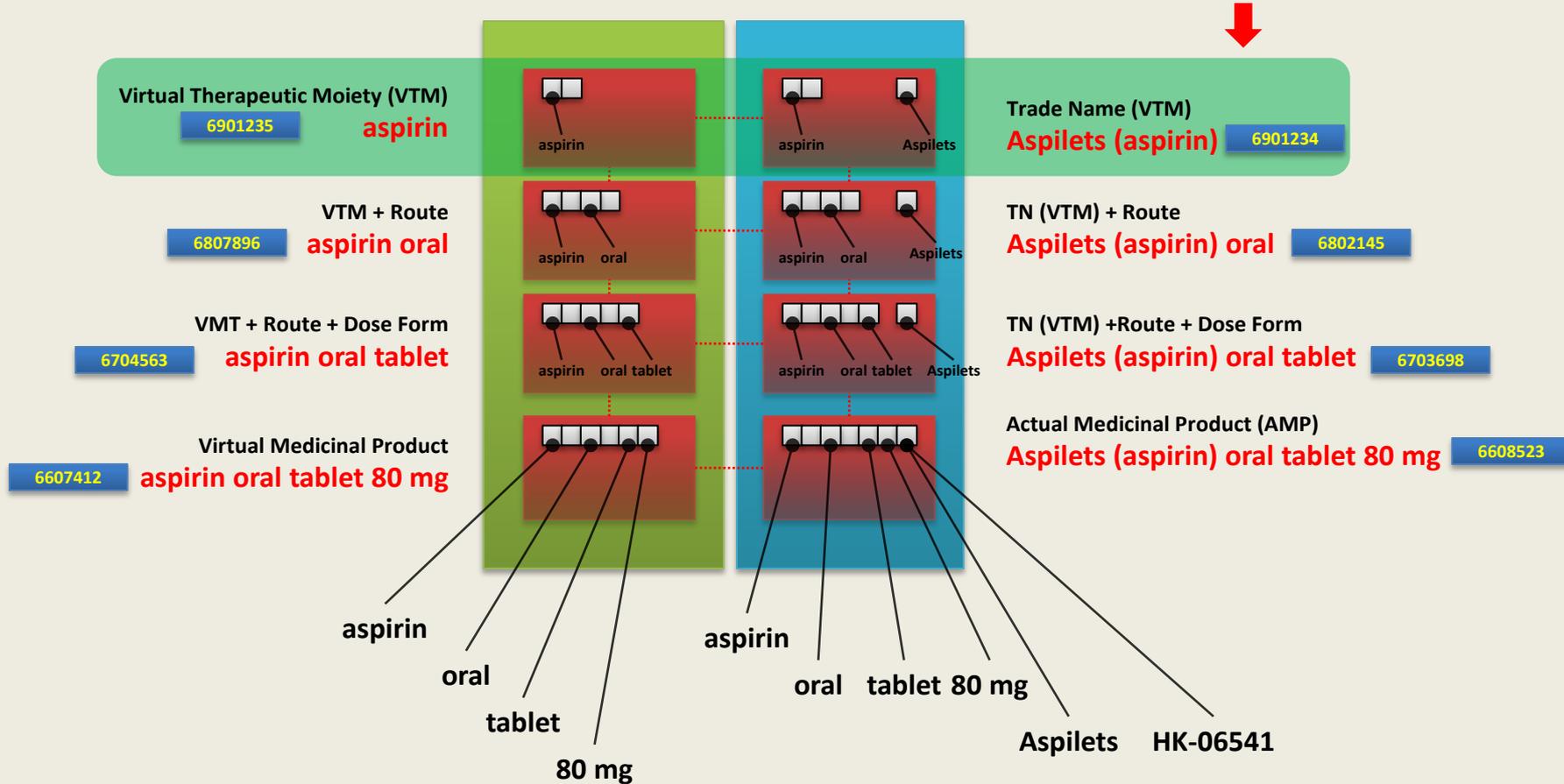
Log Print Close

# The allergen list in the eHR Structured Alert Adaptation Module comes from HKMTT

## HKMTT example - Aspilets®

### Hong Kong Medication Terminology Table (HKMTT)

Collected into allergen list



The top level adopted for allergen list - Why?

- Information on ingredients of the allergen is sufficient for drug allergy checking
- Trade name is used to assist the doctors in searching the allergen

# Drug nomenclatures



CHAN, SIU MAN(陳小曼)

HKIC: UH987654(1)

DOB: 24-May-1958

Age: 54 years

Ward: 5A-X12

Hospital No.: 789456

## Allergy / Adverse Drug Reaction / Alert

- Allergy ? Add
- Aspilets (aspirin)
  - Augmentin ⓘ
  - T4 (levothyroxine sodium)
  - benzhexol hydrochloride ⓘ
  - co-trimoxazole ⓘ

## Adverse Drug Reaction ? Add

## Alert Add

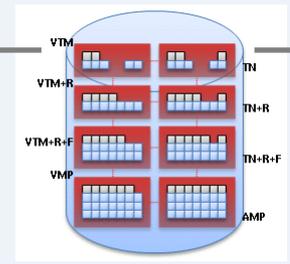
### New Allergy Details

Allergen / Allergen Group:

Multiple-Ingredients products



International Nonproprietary Name (INN)



Trade name, e.g.



### Abbreviation

T4 (levothyroxine sodium)

### Former British National Name (BAN)

benzhexol hydrochloride ⓘ

INN = trihexyphenidyl hydrochloride

### Other commonly used name

co-trimoxazole ⓘ

co-trimoxazole (sulfamethoxazole + trimethoprim)

Structured Free Text Imported free text data Deleted

Log Print

Cancel Close

Drug allergy: *Brofen*

Drug allergy: *Seprím, Cotrimoxazole*

Drug allergy: *Biogesic, Panadol*

What's Brofen?  
Is it Brufen?

What's Biogesic?

Seprím = Septrín  
= cotrimoxazole ???



# Structural input checking



CHAN, SIU MAN(陳小雯)

HKIC: UH987654(1)

DOB: 24-May-1958

Age: 54 years

Ward: 5A-X12

Hospital No.: 787878

## Allergy / Adverse Drug Reaction / Alert

Allergy ? Add

- Brufen (ibuprofen)
- Panadol (paracetamol)
- Septrin ?

Adverse Drug Reaction ? Add

Alert Add

### New Allergy Details

Allergen / Allergen Group:

brofen

Multiple-Ingredients products

**Did you mean *ibuprofen* ?**

- ibuprofen
- baclofen
- ketoprofen
- Brufen (ibuprofen)
- Nurofen (ibuprofen)
- Bronal (levodropropizine)
- Bifen (ibuprofen)
- Batrafen (ciclopirox)
- brofen (Drug)(Free Text)
- brofen (Non-Drug)(Free Text)



Drug allergy: *Brofen*

Structured ■ Free Text ■ Imported free text data ■ Deleted ✚  
\*Match found

Log Print Close

Cancel

# Duplication checking

Drug allergy: *Biogesic, Panadol*

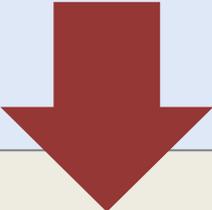
**F** CHAN, SIU MAN(陳小雯)  
HKIC: UH987654(1)      DOB: 24-May-1958      Age: 54 years      Ward: 5A-X12      Hospital No.: 7

**Allergy / Adverse Drug Reaction / Alert**

**Allergy ?**  **New Allergy Details**

Brufen (ibuprofen)  
Septrin ⓘ  
Panadol (paracetamol)

Allergen / Allergen Group: biogesic  Multiple-Ing  
Biogesic (paracetamol) products



**Allergy / Adverse Drug Reaction / Alert**

**Allergy ?**  **New Allergy Details**

Brufen (ibuprofen)  
Septrin ⓘ  
Panadol (paracetamol)

Allergen / Allergen Group: biogesic  Multiple-Ing  
products

**Warning**

 An Allergy Record "Panadol (paracetamol)" for this Allergen already exists.

Please consider updating the existing record as necessary.



**Hospital A**

eHR SAAM

At a Glance: Medication Overview  
 CHAN, BU MANDE, J (E)  
 (MCC: US0878947) DOB: 24-Sep-1958 Age: 44 years Weight: 54.412 Hospital ID: 70845

Alerts / Adverse Drug Reaction Alert  
 New Allergy Details  
 Name:  Allergy:   Publicly Reportable  
 Severity:   Publicly Reportable  
 Onset Date:   Publicly Reportable  
 Adverse Drug Reaction:



**Hospital B**

Local system

Allergy  
 Allergen / Allergen Group Clinical Manifestation Additional Information Level of Certainty  
 ACEZOLAMIDE Urinary Certain  
 SULPHONAMIDES Purpuric Certain  
 CODEINE PHOSPHATE Rash Certain  
 CODEINE PHOSPHATE Rash Manifestation uncertain Suspected  
 MOPHRINE SULPHATE Rash Manifestation uncertain Suspected  
 SULPHONAMIDES Rash Manifestation uncertain Incidence happened again age Suspected

Adverse Drug Reaction  
 Adverse Drug Reaction Additional Information Level of Severity  
 Add  
 Add  
 Add




**Hospital C**

Local system

Treatment (Sarabhai, Anam - 07/07/2009 08:09 AM, LP-H&A)  
 PL Info Encounter Physical  
 Rx Order Add | Allergies | Education | Assessment | Pop Up  
 Hypertension | Other

Control Name: Paracetamol 500mg Tablets  
 Start: Creator: 20 MS Tablet 1 tablet Orally Once a day 30 days(1) 20

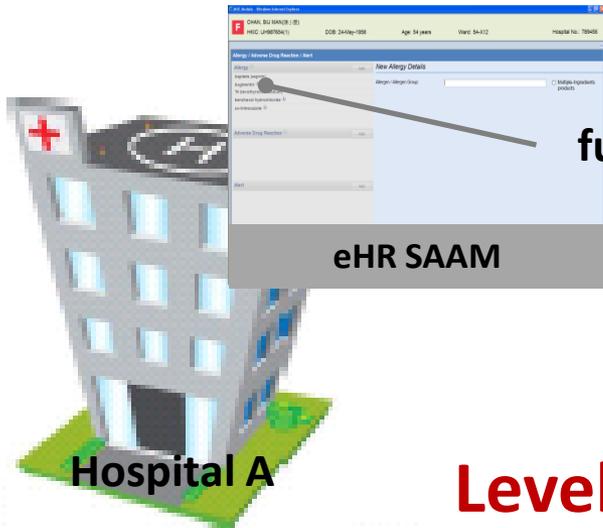
Lab	Reference	Diagnostic Imaging	Notes	Prescriptions	Reference

Data submitted to eHR sharing platform

**Level 3:** Coded information with full HK and international interoperability

**Level 2:** Non-coded text information

Patient allergy record is one of the sharable data in the eHR



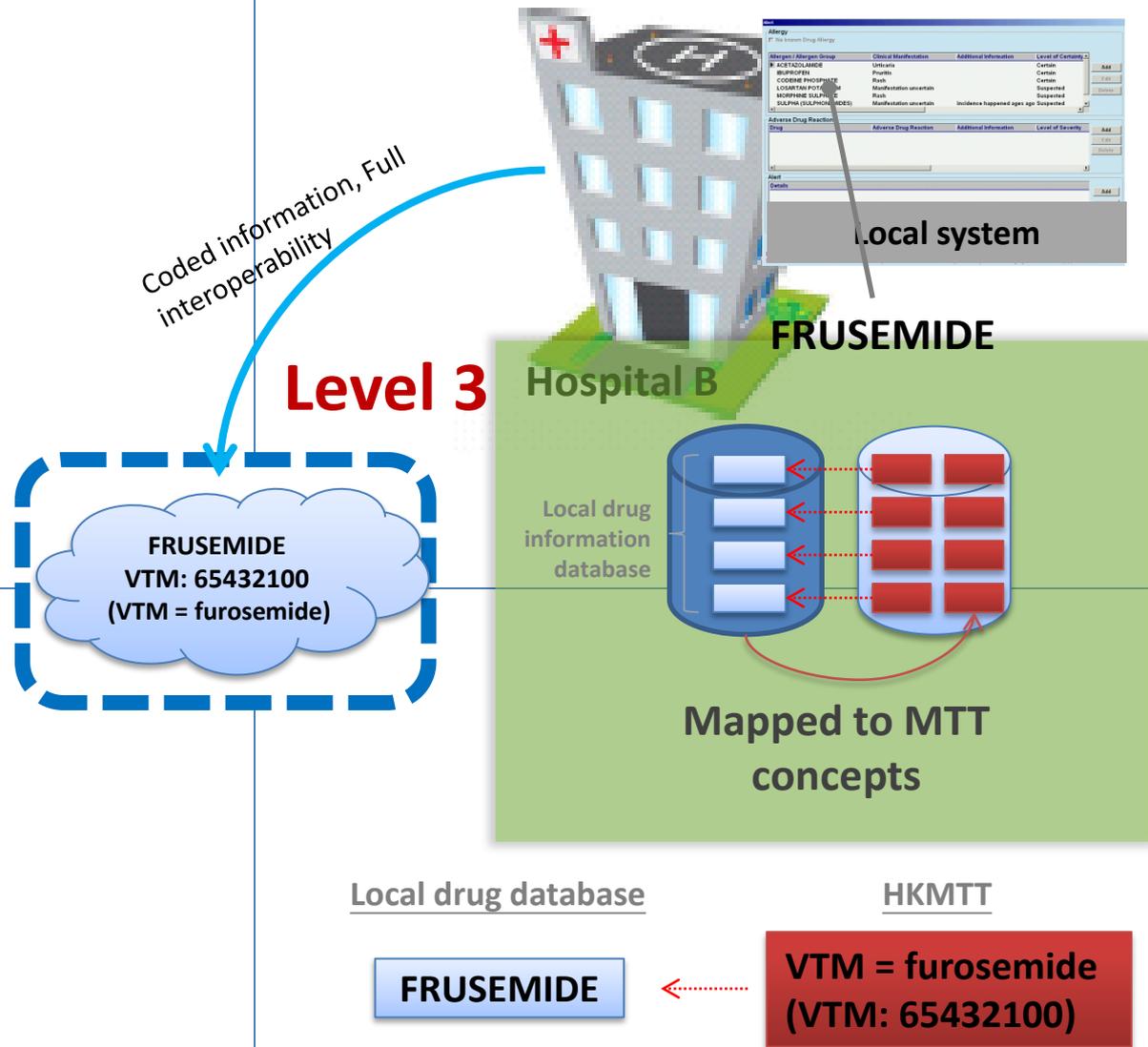
furosemide

**Level 3**

Full interoperability



The allergy record is captured by the eHR Structured Alert Adaptation Module



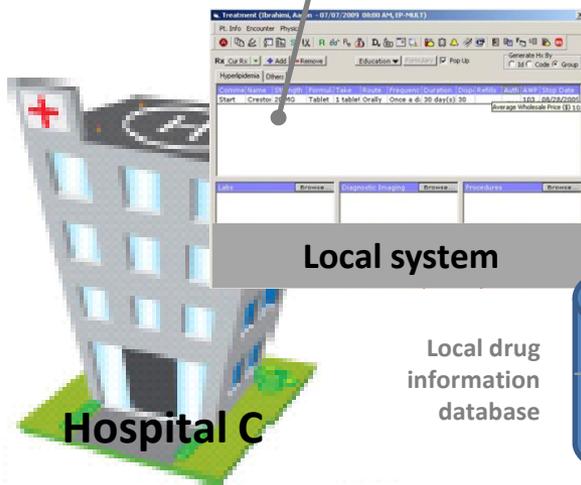
The allergy record is captured by the local developed system in which the drug database is mapped to HKMTT.

Lasix



Level 2

non-coded text information



Local drug  
information  
database



No mapping

The allergy record is captured by the local developed system.



**Hospital A**

**eHR SAAM**

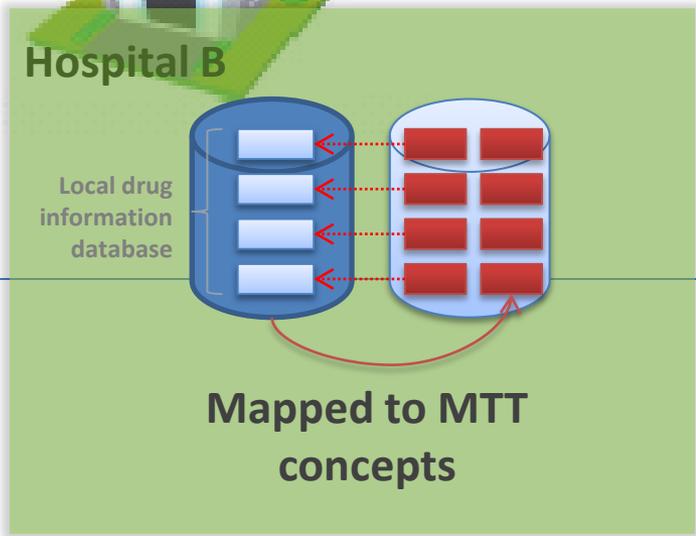
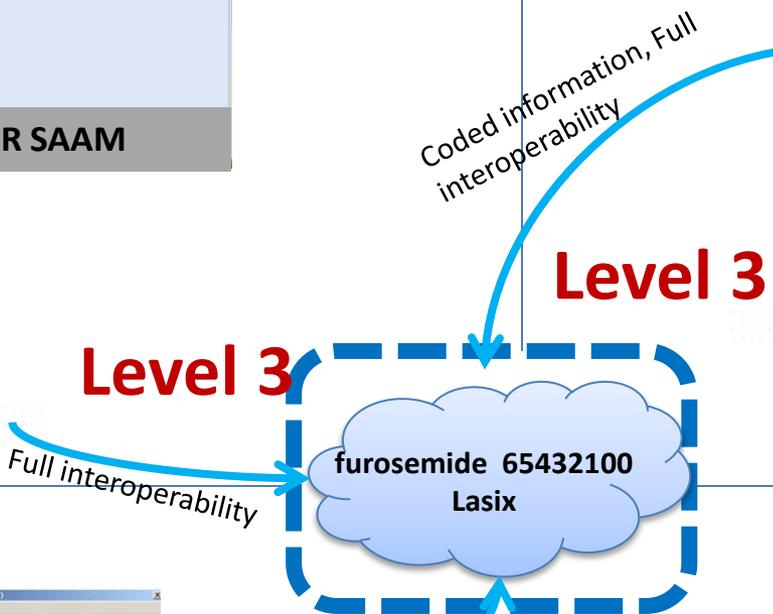
Screen capture of an eHR interface showing patient information: OSMAN, BU MANDER, (M) DOB: 24/09/1958, Age: 55 years, Weight: 54.412, Height: 165. Screenshot of the 'Allergy / Adverse Drug Reaction' section with a 'New Allergy Details' form.



**Hospital B**

**Local system**

Screen capture of a local system interface showing an 'Allergy' table with columns: Allergen / Adverse Drug Group, Clinical Manifestation, Additional Information, Level of Certainty. Rows include ACEZOLAMIDE, SULPHURIC, CODEINE PHOSPHATE, LORAZEPAM POTASSIUM, MORPHINE SULPHATE, and SULPHON (SULPHONAMIDES). Below is an 'Adverse Drug Reaction' table with columns: Adverse Drug Reaction, Additional Information, Level of Severity.




**Hospital C**

**Local system**

Screen capture of a local system interface showing a 'Treatment' window with details for 'Furosemide 20 MG Tablet'. Below is a 'Local drug information database' (blue cylinder) with the text 'No mapping' below it.

The eHR sharing platform is able to group the level 3 allergy record.

CHAI YIM MAN (陳玉文)

HKIC: UH987654(1)

DOB: 24-May-1958

Age: 54 years

Ward: 5A-X12

Hospital No.: 456789

# Who are the users of the Structured Alert Adaptation Module developed by eHR Office?

Allergy / Adverse Drug Reaction / Alert

Allergy

Add

New Allergy Details

 No Known Drug Allergy

Allergen / Allergen Group:

 Multiple-Ingredients products**Currently,**

**Evangel Hospital, Precious Blood Hospital and St. Teresa's Hospital**  
are applying the SAAM in their own eMR system.

**More is coming.....****Canossa Hospital****Department of Health****Hong Kong Adventist Hospital****Tsuen Wan Adventist Hospital****Union Hospital**

Adverse

Alert

Structured Alert Module - Match found

Log

Print

Close

17

Cancel

# Implementation of the Structured Alert Adaptation Module

1. Work out the implementation plan that fits for local hospital
2. On-site training



3. On-site support



# Summary

- **What's** Structured Alert Adaptation Module?
  - Developed by eHR Office
  - To **capture electronic allergy record** and **share** these records with the future eHR system
- **How's** Structured Alert Adaptation Module?
  - **HKMTT** data is applied
  - **User-friendly** and **smart searching function**
- **Approach** of allergy record sharing
  - **Level 3**: Structured Alert Adaptation Module/ mapping with HKMTT
  - **Level 2**: local developed recording system

**Thank you.**