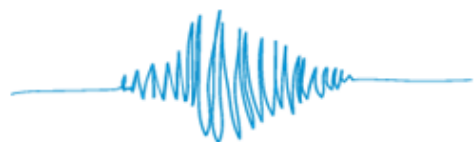


A Dose syntax for community medication?

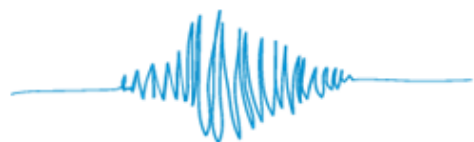
Dr Ian McNicoll
SCIMP
HANDIHealth
openEHR

SCIMP/SNUG conference Sept 2015



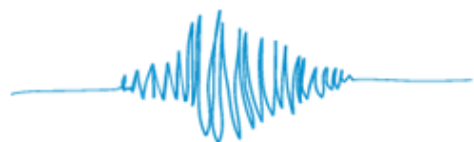
Community medication stakeholders

- GPs
- Nursing
- Mental health teams,
- Pharmacy
- Secondary care inpatients
- Secondary care outpatients
- Nursing homes
- Unscheduled care
- Patients
- GP prescriptions
- anticipatory care supply
- repeat dispensing
- transitions of care
- own supply
- patient access
- patient-led reconciliation



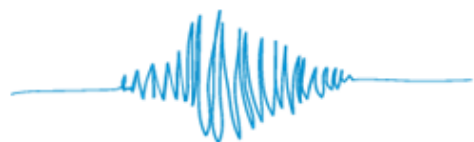
Current position

- No clear visibility of other prescribers actions
- Patient often only the knows the whole picture
- No clear governance
- Non- standardised representation of medication between systems



What's the solution?

- 'Closing the Loop' commission
 - 'patient medication record'
 - 'community' record
- Inpatient prescribing excluded other than at transitions of care



Supported Meds Reconciliation

eMedicines Reconciliation Form - Version 1.0

CHI Number: 0101011016

Patient Name: Mickey Mouse

DOB: 01/11/2001



Hospital Name: Southern General	
Patient Details	
Name:	Mouse, Mickey
Address:	257 GARDEN AVENUE BONNYBRIDGE FALKIRK
Postcode:	PA41 1YW
CHI Number:	0101011016
CRN:	
Sources Checked	
ECS	<input checked="" type="checkbox"/> Patient <input checked="" type="checkbox"/> Carer
Relative	<input type="checkbox"/> GP Surgery <input type="checkbox"/> GP Printout
Patients own drugs	<input type="checkbox"/> Other <input checked="" type="checkbox"/>
Other	details of other source here....

Date Started	Drug	Formulation	Dose	Frequency
10/10/2008	SALMETEROL cfc free inh 25micrograms/actuation	1 120 dose inhaler	INHALE 2 DOSES TWICE DAILY	INHALE 2 DOSES TWICE DAILY
15/09/2009	GABAPENTIN caps 300mg	56 capsule(s)	TAKE ONE 3 TIMES/DAY Instalments: D	isp weekly
24/11/2010	CITALOPRAM tabs 20mg	28 tablet(s)	ONE IN THE MORNING	ONE IN THE MORNING
		20mg	MORNING	

Amended

EHR

Danish single medication record database

The diagram illustrates the flow of medication data between Primary Care and Hospital systems. It features a central screenshot of the OPUS Medication Record interface, showing a patient's medication list with columns for drug name, dose, frequency, and status. Red arrows indicate the flow of data between the Primary Care (GP) and Hospital (Specialist) systems.

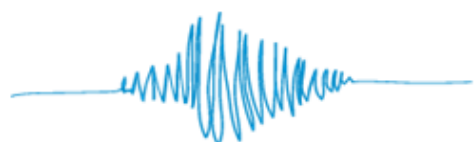
Primary Care (GP): Represented by a blue circle with a doctor and patient icon. It is the source of the initial medication record.

Hospital (Specialist): Represented by a blue circle with a doctor and patient icon. It receives medication data from Primary Care and updates it.

OPUS Medication Record Interface: The central screenshot shows a patient's medication list with columns for drug name, dose, frequency, and status. The interface includes tabs for Medicinkort, Ordination, Register, Medication, Reception, Receipt, and Oph./Giv. The patient's name is Surcek, Sule, and the date is 25.08.2009 13:52.

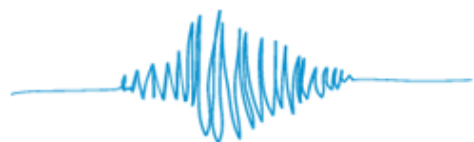
Medication List (from screenshot):

Lægemiddel	Dosis	AV	T	Lægemiddel	Dosis	Enk.	AV	T
Metformin "Actavis", tablet, filmovertr. 500 mg	1 stk morgen og aften	oral	F	Metformin "Actavis", tablet, filmovertr. 500 mg		stk.	oral	F
Kalsred, depottabletter 750 mg	1 stk morgen, middag, aften og nat	oral	F					
Simvastatin "Alternova", tablet, filmovertr. 40 mg	1 stk aften	oral	F	Simvastatin "Alternova", tablet, filmovertr. 40 mg		stk.	oral	F
Simvastatin mod forhøjet kolesterol								
Finer, tablet, filmovertr. 500 mg	2x2x2x2	stk.	oral	Finer, tablet, filmovertr. 500 mg		stk.	oral	F
Simvastatin 12,5/75, tabletter 50 mg + 12,5 mg	1x0+1x0	stk.	oral	Simvastatin 12,5/75, tabletter 50 mg + 12,5 mg		stk.	oral	F



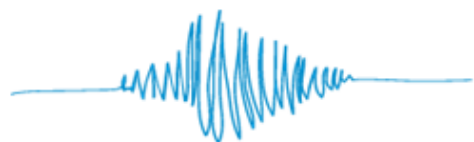
The interoperability challenges

- How do we resolve the ‘wicked’ interoperability issues?
 - Standardised, computable ‘medication models’
 - ‘Medication event’ vs. ‘Medication statement’
 - Product vs. dose based prescriptions
 - Computable dose amounts / timings’



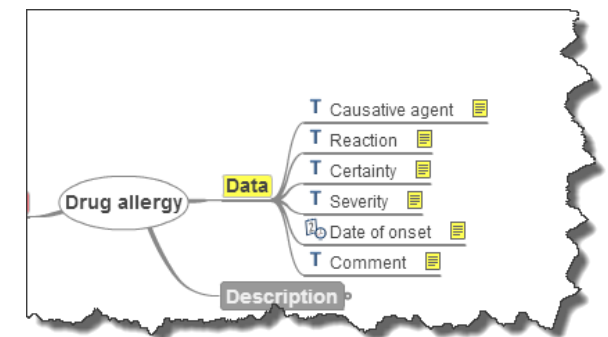
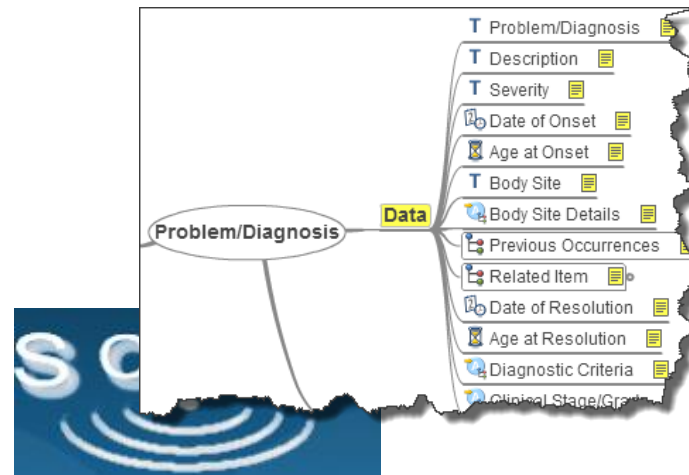
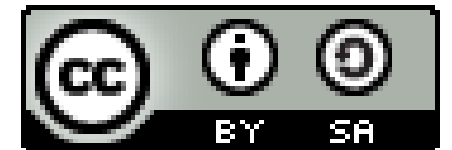
NHSS Medication Models

- Based on GP2GP medication models
 - merge in requirements for
 - ECS / KIS / ePharmacy / SCI-GW
 - Other UK models : SCR, IHR, EPS2
 - Aligned with PRSB / RCP Headings
- Can we persuade systems suppliers to adopt?

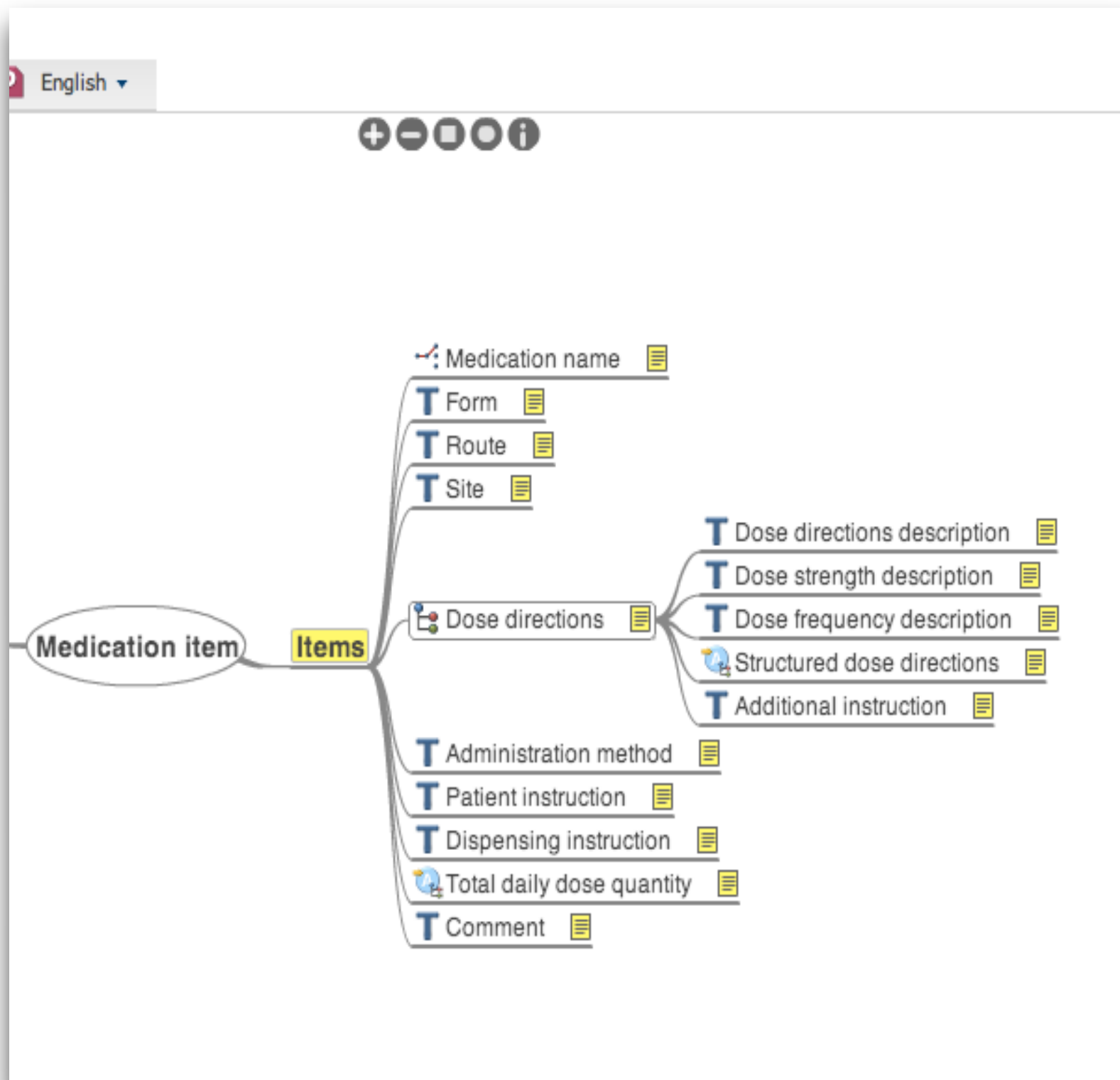


open, shared data models - 'Archetypes

- Clinically-led + collaboratively authored
 - open-source 'crowd-sourcing' methodology
 - Shared open repository 'CC-BY-SA' licence
- Agility in response to continually changing clinical demand
 - Clear ownership, change request mechanism
 - Tight version control



GP2GP 'medication item' archetype



Medications and medical devices	
Subheadings	Clinical description
Medication name	May be generic name or brand name (as appropriate).
Medication form	Eg capsule, drops, tablet, lotion etc.
Route	Medication administration description (oral, IM, IV, etc): may include method of administration, (eg, by infusion, via nebuliser, via NG tube) and/or site of use, (eg, 'to wound', 'to left eye', etc).
Dose	This is a record of the total amount of the active ingredient(s) to be given at each administration. It should include, eg, units of measurement, number of tablets, volume/concentration of liquid, number of drops, etc.
Medication frequency	Frequency of taking or administration of the therapeutic agent or medication.
Additional instructions	Allows for: * requirements for adherence support, eg, compliance aids, prompts and packaging requirements * additional information about specific medicines, eg where specific brand required * patient requirements, eg, unable to swallow tablets.
Do not discontinue warning	To be used on a case-by-case basis if it is vital not to discontinue a medicine in a specific patient scenario.
Reason for medication	Reason for medication being prescribed, where known.

Product vs dose based prescribing

Product:

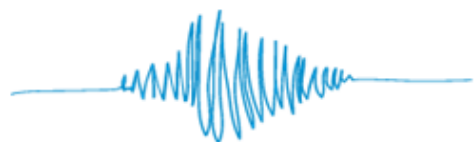
paracetamol 500 mg tablets – oral – DOSE take 2 – four times a day
VMP from Drug Dictionary Dose Syntax compliant coded data

...can be determined by a computer as equivalent to:

Dose:

paracetamol – oral – tablets – DOSE 1000 mg – four times a day
VTM from Drug Dictionary Dose Syntax compliant coded data

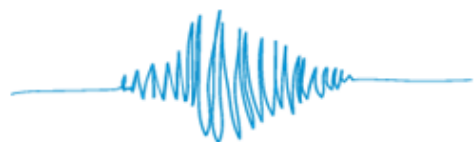
- Unavoidable
 - due to difference in the process of inpatient vs. outpatient prescribing



Dose syntax??

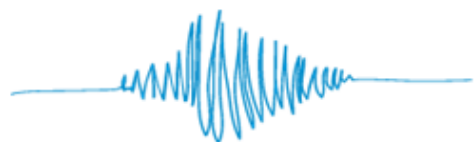
- How can we capture a prescription like ...

“Paracetamol 8mg/500mg/5ml oral suspension 5-10mls 4-6hourly for 7 days for pain, maximum 40mls daily”
- that makes the drug name, dose amount, timing and maximum dosage computable



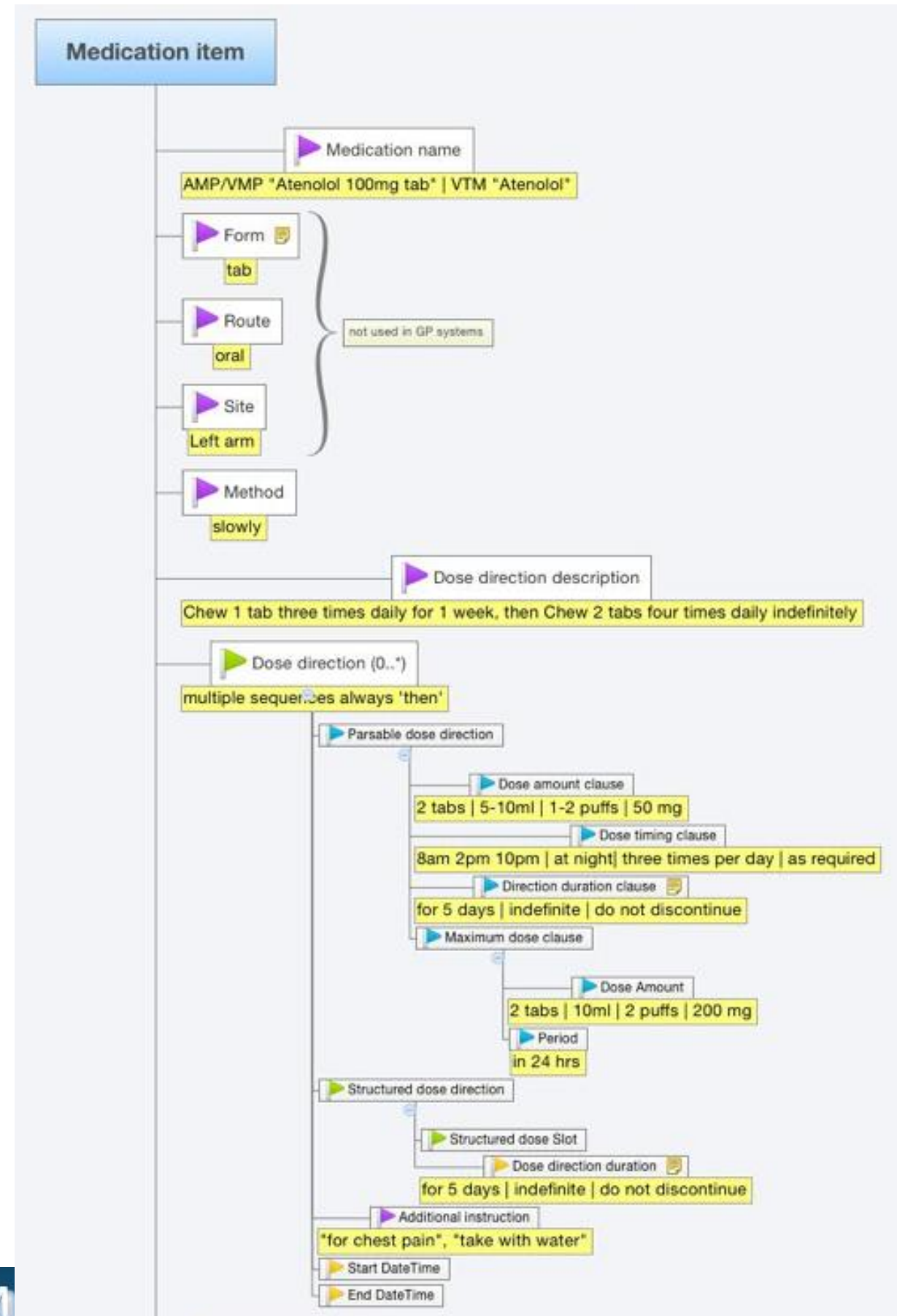
Dose syntax - aims

- GP, outpatient, community, transitions of care prescriptions
 - support automated medicines reconciliation at transitions of care
 - calculate Total Daily Dose for quality assessment purposes
 - explore usage as data entry method
- Out of scope
 - inpatient prescriptions
 - complex GP prescriptions
 - patient usage instructions 'before meals, 'take with water'



Archetype + Dose syntax

- Proposed solution is a mix of archetype' structural model + parsable syntax which carries dose amount + timing
- “10mg td”
- “3 n”



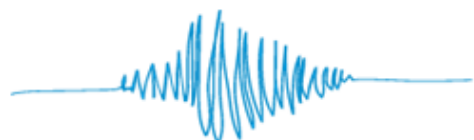
Examples I

Atenolol 40mg tablets one tablet in the morning

```
{  
  "Medication Name": "Atenolol 40mg tabs"  
  "Parsable dose direction": "1 m"  
}
```

Atenolol – oral - 40mg in the morning

```
{  
  "Medication Name": "Atenolol 40mg tabs"  
  "Route": "oral"  
  "Parsable dose direction": "40mg m"  
}
```



IDCR/Ripple Transfer of Care Summary

[-] < Medication and medical devices

[-] < Current medication

[-] Medication statement [0..*]

T Medication name [1..1]

-> Form **T** Terminology subse OR **T**

-> Route **T** Terminology subse OR **T**

T Dose amount description

T Dose timing description

T (Additional instruction)

T Monitoring [0..*]

T Course status

T Indication

T Comment / recommendation [0..*]

[-] First authorised

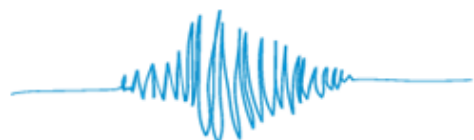
[-] Date first authorised

> Last administered

> Changed

> Last dispensed

> Discontinued





EhrScape Home Demo API Explorer Documentation Community

Mary Wilkinson
July 1, 1976 (38y 5m) • F
1234567

Kardio • N3C-11/1 • 14-Nov-2014 • 12
2008 Chronic heart disease
Acute exacerbation

Reference weight: 100 kg All routes

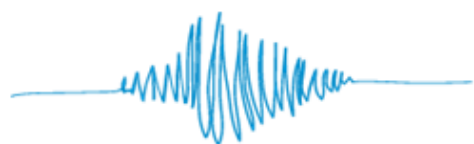
Allergies
Allergy to **penicilin**.
Date of onset: 22.05.1982

	04:00	08:00	12:00	16:00	20:00	00:00	04:00
Wednesday 28 January 2015							
azee 500 mg DOSE 1-1-2-2 mg – 4X per day – When needed – Intracervical							
Beclometasone (Beclometasone 100micrograms/dose breath actuated inhaler CFC free) DOSE 200 microgram/2 dose – 2X per day – Inhalation							
Co-amoxiclav (Co-amoxiclav 500mg/125mg tablets) DOSE 1 tablet – 3X per day – Oral							
Dopamine (Dopamine 200mg/5ml solution for infusion pre-filled syringes) RATE 10 ml/h – DOSE 2.5 mg/kg/h – CONTINUOUS INFUSION – Intravenous				10 ml/h			
Gliclazide (Gliclazide) DOSE 120 mg – Morning – Oral							

Mohammed Hussain @EPSPHarmacist · Oct 23
The Meds rec tool would've been right up @HospChiefPharm street!

@NHSOpenSource #innovation
Like the @NHSSCR link

Hide photo

The image shows a hand pointing at a tablet screen. The screen displays a "Medication Reconciliation" interface with several tabs: "Last Discharge", "Medication", "Medication History", and "Prescribed Medications". Each tab shows a list of medications with details like name, dose, and frequency. The "Medication" tab is currently selected, showing a list of medications including "Levomepromazine 250microgram / Ethopropazine 100microgram tablets".

openEHR

Ripple IDCR demo

rippleosi.org



Patient Summary

Contacts

Problems / Diagnosis

Allergies

Medications

Orders

Results

Procedures

Referrals

Appointments

Transfer of Care

Care Plans

MDT

Tags

COX, Ivor (Mr)Gender: **Male** Born: **20-Sep-2015** NHS No.: **9999999000**

Address: **6948 Et St., Halesowen,**
Worcestershire, VX27 5DV

Phone: **(011981)**
32362

GP Details:

PAS No.:

Medications

Filter...

Name	Dose Amount	Source
Paracetamol	1g	openehr
Salbutamol 100micrograms/dose breath actuated inhaler CFC free!	two tablets	openehr
Atorvastatin	400mg	openehr
Ibuprofen	80000g	openehr
Claritin	10mg	openehr

+ Create

Medication

Name:

Salbutamol 100micrograms/dose breath
actuated inhaler CFC free!

Dose

two tablets

Amount:

Dose Directions:

2 puffs as required for wheeze

Dose

Morning before breakfast

Timing:

Route:

inhalation

Start

01-Feb-2012

Date:

Start

05:19 PM

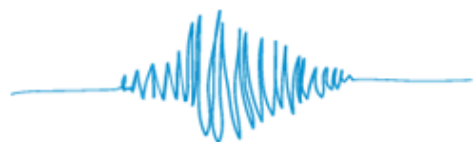
Time:

Terminology:

SNOMED-CT

Source:

openehr



openEHR

