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Bahmni Project Demo

Prescription Clinical Decision Support based on the SNOMED Drug Model

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The Bahmni Project

- Open source suite of clinical systems
- 500+ sites. 50+ countries. 4K+ users. 2M+ patient records
- Clinical tool based on OpenMRS



A screenshot of the Bahmni website homepage. The top navigation bar includes links for HOME, PRODUCT, GET STARTED, ABOUT US, DONATE, COMMUNITY, and CONTACT US. The main content area features a central announcement: "Bahmni announced as the Winner of the Open Source Creation category at the Future Of Government Awards 2023!". Below this, there are logos for Future of Government Awards, public.digital, AWS INSTITUTE, and UN DP. A "READ THE PRESS RELEASE" button is positioned below the logos. The main heading is "HOSPITAL SYSTEM FOR LOW RESOURCE SETTINGS". Below this heading are four colored boxes: "Improve" (orange) for patient care, "Inform" (green) for decision-making, "Configure" (teal) for workflow, and "Engage" (maroon) for community. At the bottom, a paragraph states: "Bahmni is an easy-to-use EMR & hospital system. It combines and enhances existing open source products into a single solution."



The Bahmni Project

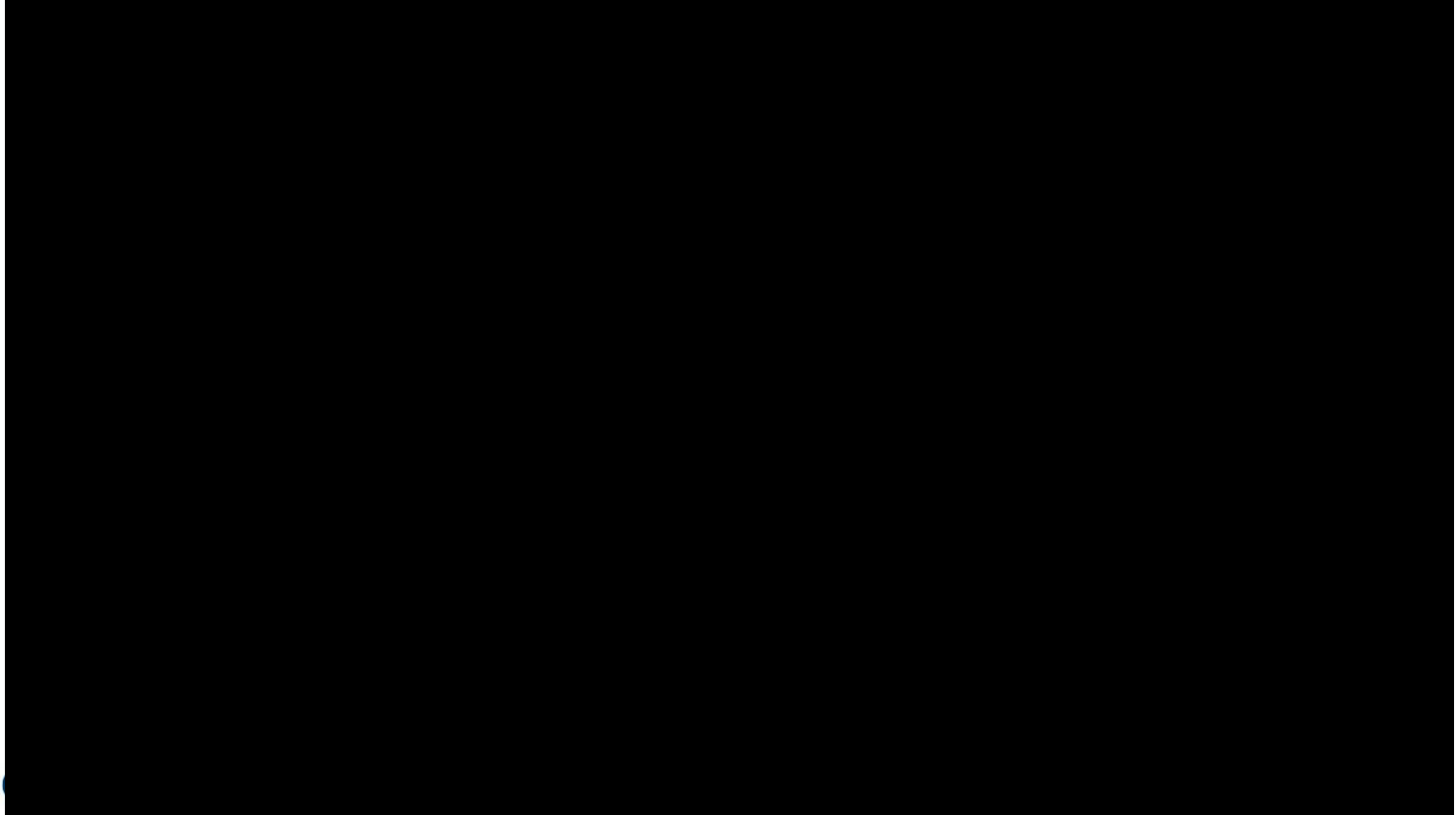


SNOMED International Collaboration with Bahmni Coalition

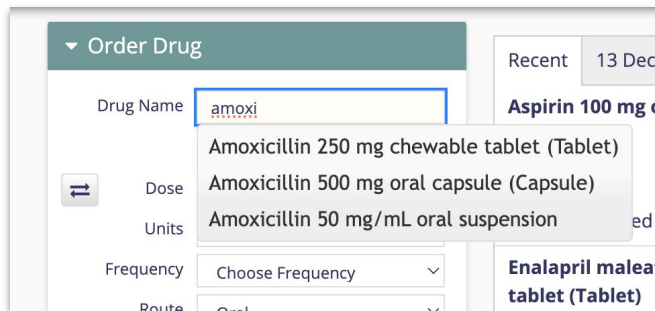
- Adding best practice SNOMED support in Bahmni / OpenMRS
 - Provide implementation support
 - Help designing overall terminology extension strategy
 - Provide open source tools: Snowstorm Lite, CDS Server
 - Funding open source development teams
- Demonstrating the benefits of SNOMED in settings with constrained resources
 - Typically there are no national dictionaries, drug extensions, access to vendors support or knowledge bases, low technical capabilities, etc.



Bahmni Demo



Prescription in the Bahmni Project



Order Drug

Drug Name: amoxi

Dose: [input]

Units: [input]

Frequency: Choose Frequency

Route: [input]

Recent: 13 Dec

Aspirin 100 mg c

Amoxicillin 250 mg chewable tablet (Tablet)

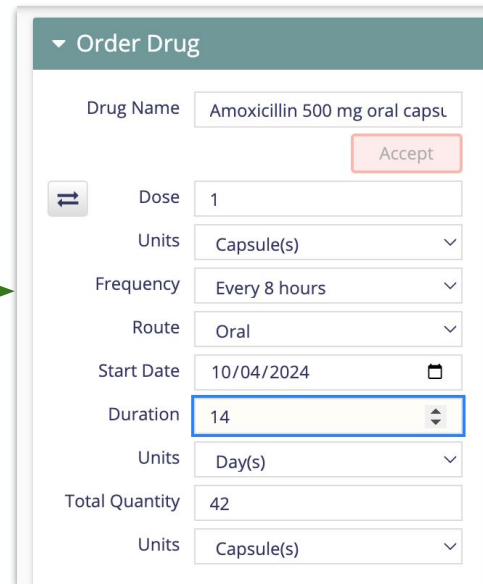
Amoxicillin 500 mg oral capsule (Capsule)

Amoxicillin 50 mg/mL oral suspension

Enalapril malea

tablet (Tablet)

The local list of generic drugs was mapped to
SNOMED CT Clinical Drugs
(Based on the WHO Essential Medications List)



Order Drug

Drug Name: Amoxicillin 500 mg oral capsu

Accept

Dose: 1

Units: Capsule(s)

Frequency: Every 8 hours

Route: Oral

Start Date: 10/04/2024

Duration: 14

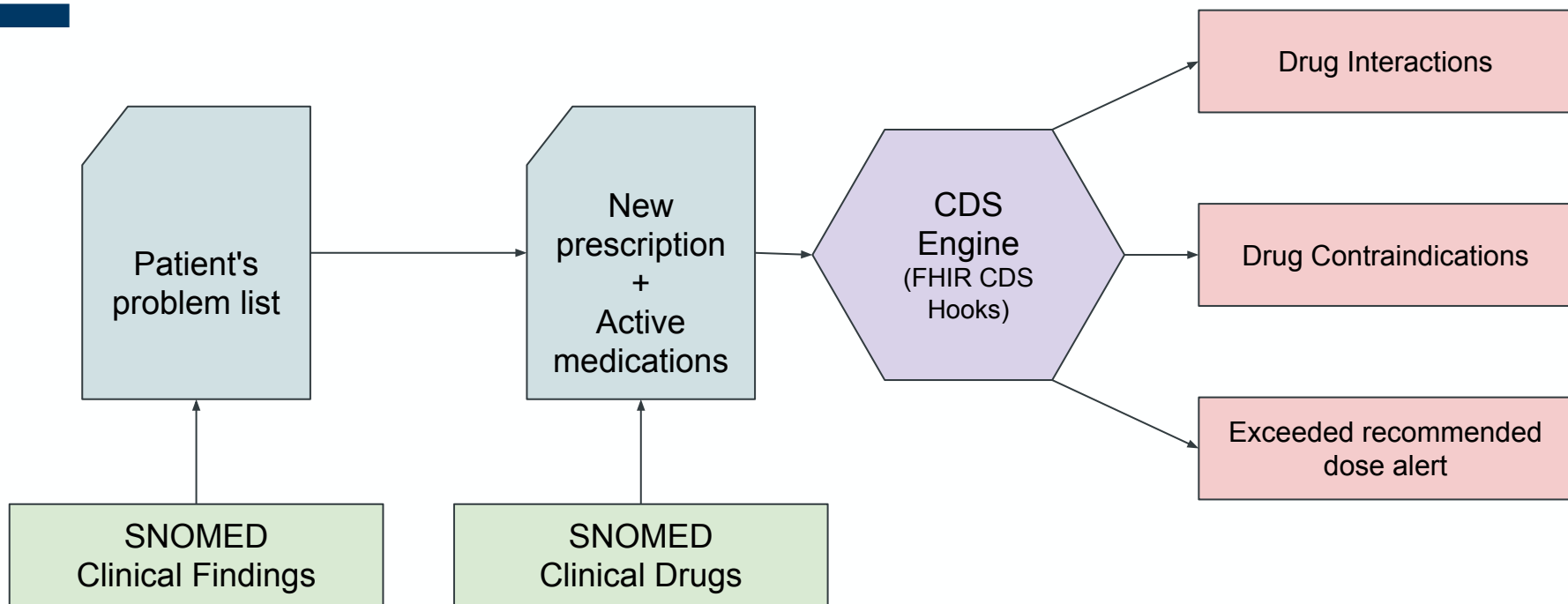
Units: Day(s)

Total Quantity: 42

Units: Capsule(s)

Prescription instructions are captured in
the Bahmni Information Model

Use case for prescription CDS



Knowledge bases

A particular challenge for an open source project aimed for LMICs.
Difficult to depend on knowledge bases vendors.

Possible solutions:

- Find public domain databases
- Provide the format so that implementers develop their own knowledge bases relevant to local use cases

In this demo:

- Drug - Condition (contraindications): local list
- Drug - Drug (interactions): local list
- Maximum recommended dose: computed from ATCs DDDs



Dose alerts knowledge base

- This a safety rule, intended to detect atypical dosages that may be the result of data entry errors, focus on extreme cases
- A license for ATC was obtained for the demo project
- ATC drugs were mapped to SNOMED Substances
- DDDs were extracted
- Rules have been set up as:
 - $\text{Dosage} > \text{DDD} * 2 = \text{Warning}$
 - $\text{Dosage} > \text{DDD} * 4 = \text{Critical}$

ATC code	Name	DDD	U	Adm.R	Note
C07AB03	<u>atenolol</u>	75	mg	O	
		75	mg	P	



Dose alerts knowledge base

385268001 |Oral dose form (dose form)|

ATC code	Name	DDD	U	Adm.R	Note
C07AB03	<u>atenolol</u>	75	mg	O	
		75	mg	P	

387506000 |Atenolol (substance)|

258684004 |milligram (qualifier value)|

4 ✕ 318420003 |Product containing precisely atenolol 50 milligram/1 each conventional release oral tablet (clinical drug)|

200 mg a day > 75 mg * 2 DDD →

Warning

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International

Thank You

Implementation Support Team