

HL7 CDS Project Update

Virtual Medical Record (vMR)

Clinical Genomics
HL7 Phoenix
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Discussion Topics

⇒ Virtual Medical Record (vMR) Update

- Levels of Clinical Decision Support
- Work Completed
- vMR Business Use Cases
- vMR Data Inputs/Outputs
- vMR Issues

vMR Project Goals

Create an HL7 vMR data model *recommendation* and *implementation guide*, based on the HL7 v. 3 RIM, which is capable of supporting clinical decision support for “Chronic Disease Management” at the point of care.

- ~ Utilize existing HL7 data models as the basis for developing the vMR recommendation.
- ~ Develop vMR concept capable of supporting Level 3 CDS “Computer-Interpretable Guidelines”.

3 Levels of Clinical Decision Support

(Source: UK National Design Authority)

Computer-Enabled

LEVEL 1

- **Information Support**

Clinical user must navigate paper-based information & ascertain what content is relevant.

LEVEL 2

- **Action Rules**

Clinical user supported by electronic data validation, clinical alerts & reminders.

LEVEL 3

- **Computer-Interpretable Guidelines**

Clinical content is customized to individual patients or clinical trial subjects. Also referred to as integrated care pathways.

LEVEL 1

Information Support

Clinical user must navigate text-based information and ascertain what content is relevant.

Clinician Accesses Information



Info
Button

EHR
Electronic
Health
Record

Knowledge Databases

Online
Text

- Clinical Guidelines
- Quality Measures

*For Chronic Disease
Management*

Alternative:
Paper copies of Guidelines &
Quality Measures posted in
exam room for reference

Patient Accesses Information



Menu
Option

PHR
Personal
Health
Record

Knowledge Databases

Online
Text

Patient Level
Information on
Diseases/Symptoms

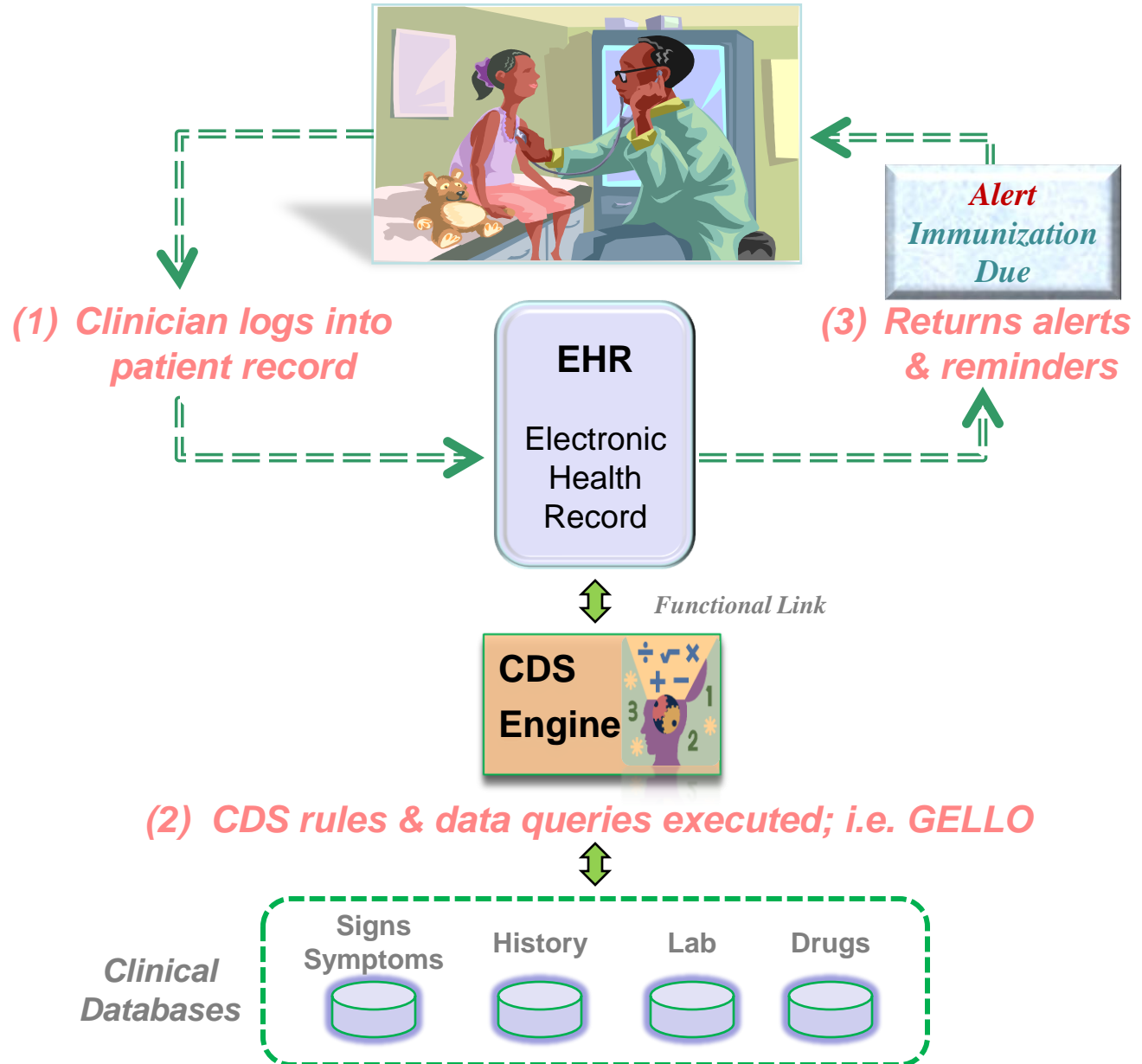
i.e. WebMD

Clinical Alerts & Reminders

LEVEL 2

Action Rules

Clinical user supported by electronic data validation, clinical alerts and reminders

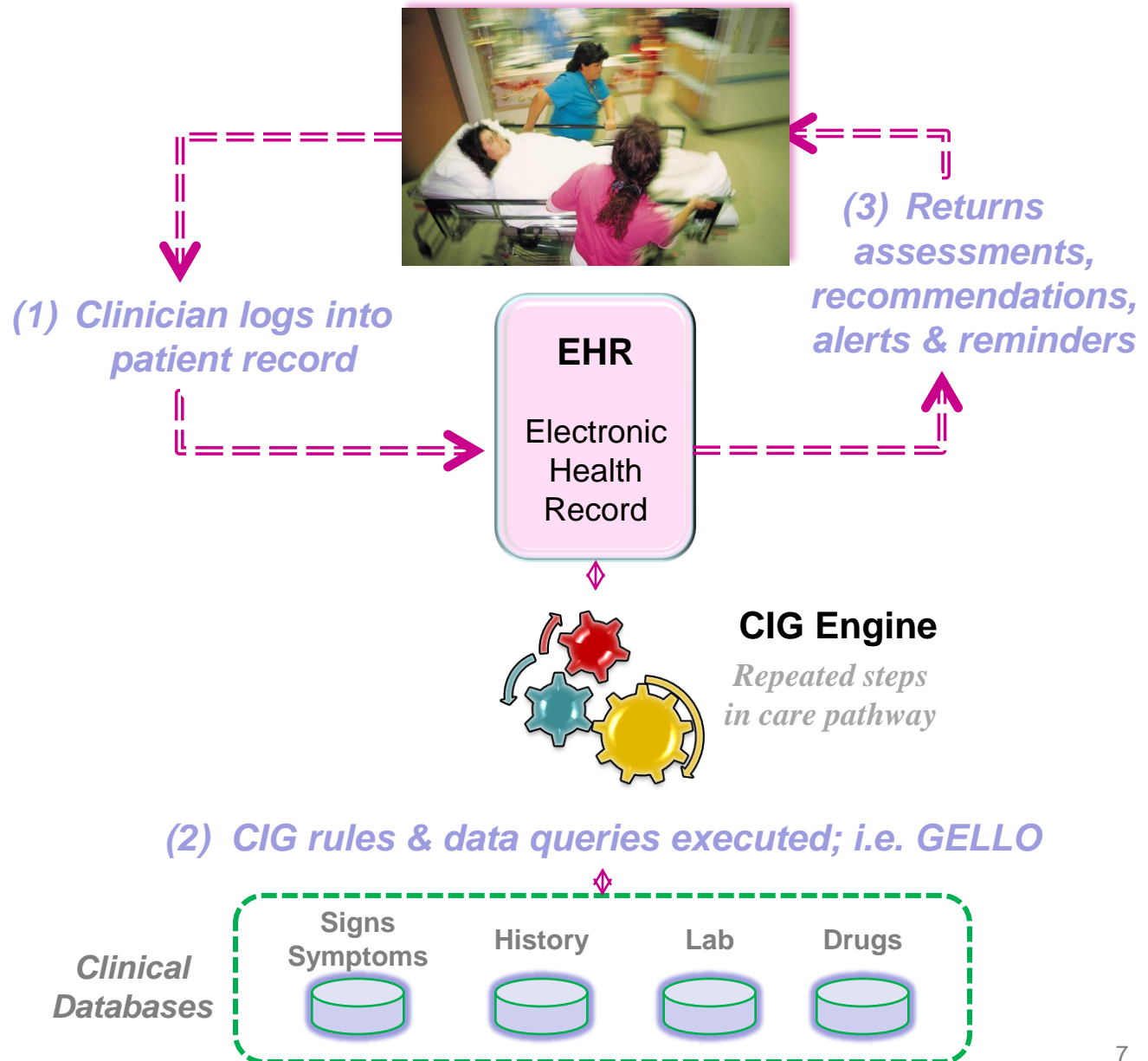


Computer-Interpretable Guidelines

LEVEL 3

Computer Interpretable Guidelines

Clinical content is customized to individual patients or clinical trial subjects. Also referred to as integrated care pathways.



vMR Work Completed

⇒ Since HL7 San Antonio:

- Project endorsed by HL7 Technical Division.
- Bi-monthly work group teleconferences.
- Continued industry outreach.
- Joint HL7 work sessions: Patient Care; Orders & Observations; Clinical Genomics.
- Business use case development: Diabetes Type 2; Hypertension; Breast Cancer; Asymptomatic Cerebral Aneurysm.
- EU @neurIST pilot project; New Zealand pilot project.

vMR Business Use Cases

Includes Safety Case; Synopsis; Storyboard & Activity Diagram

⇒ Type 2 Diabetes Screening & Management

Routine visit to family physician begins process of CDS screening for Diabetes based on patient history of “gestational diabetes”. Use case provides perspective into how the collection of family history, testing results, and specialist evaluations are supported by CDS assessment services.

⇒ Hypertension

During routine visit to family physician regarding family planning, elevated Systolic BP is noted. CDS service recommends Cardiovascular Risk Assessment, including the collection of family history, lab testing, and repeat BP measurements. As additional patient information is recorded in the EHR, the CDS assessment service returns a “Hypertension” determination with risk factors and recommendations for treatment plan options, including lifestyle modification, drug therapy, and regular pregnancy tests.

vMR Business Use Cases – *continued*

⇒ Breast Cancer with Genetic Extension

Routine visit to family physician begins process of CDS screening for Familial Breast Cancer Risk based on patient gender and age. CDS steps support evaluation of clinical, familial and genomic risk factors. Follow-up interventions are customized to individual risk and other factors.

⇒ @neurIST Asymptomatic Cerebral Aneurysm

This BUC describes:

- (a) CDS steps to be followed in assessing and treating a patient with an unruptured cerebral aneurysm identified while the patient is being treated in the ER for a head injury.
- (b) CDS process and IT components of a vMR/GELLO pilot to be implemented within 5 European Union countries within the next 18 months.

Note: @neurIST Board of Directors approval required before BUC can be published.

vMR Data Input / Output Elements

Identified from BUC s defined to date

⇒ *To be aligned to HL7 Data Models
through joint work group efforts*

vMR CDS “Inputs” - 1	Business Use Cases				HL7 Data Models
	<i>Diabetes</i>	<i>Hypertension</i>	<i>Breast Cancer</i>	<i>Asymptomatic Cerebral Aneurysm</i>	
Patient - Identifier	X	X	X	X	
Patient - Gender	X	X	X	X	
Patient - Date of Birth	X	X	X	X	
Patient – Height; Weight; Blood Pressure; Waist Circumference	X	X	X	X	
Patient - Race	X		X	X	
Patient - Ethnicity	X		X	X	
Patient – Symptoms	X		X	X	
Patient – Diagnoses	X	X	X	X	
Patient – Diagnostic Testing		X	X	X	
Patient – Lab Testing	X	X	X	X	
Patient – Genetic Lab Testing			X	X	

vMR CDS “Inputs” - 2	Business Use Cases				HL7 Data Models
	<i>Diabetes</i>	<i>Hypertension</i>	<i>Breast Cancer</i>	<i>Asymptomatic Cerebral Aneurysm</i>	
Patient - Radiology Tests	X	X	X	X	
Patient – Surgeries	X		X	X	
Patient - Medications	X	X	X	X	
Patient - Pregnancy Status	X		X	X	
Patient – Menopausal Status	X		X	X	
Patient – Wish to have additional children	X		X	X	
Patient – Smoking Status		X	X	X	
Family History of Disease:	X	X	X	X	
- Relative Id	X	X	X	X	
- Relative Type	X	X	X	X	
- Relative Diagnosis	X	X	X	X	
- Age of Onset	X	X	X	X	
- Age at Death	X	X	X	X	

vMR CDS “Inputs” - 3	Business Use Cases				HL7 Data Models
	<i>Diabetes</i>	<i>Hypertension</i>	<i>Breast Cancer</i>	<i>Asymptomatic Cerebral Aneurysm</i>	
Clinical Examination – Assessment / Observation Description	X			X	
Clinical Examination – Assessment / Observation Recommendation	X			X	
Answers to Risk Assessment Questionnaires	X	X	X	X	
Request for CDS Risk Assessment			X		
CDS Recommended Action Confirmed Or Declined	X	X	X	X	

vMR CDS “Outputs”- 1	Business Use Cases				HL7 Data Models
	<i>Diabetes</i>	<i>Hypertension</i>	<i>Breast Cancer</i>	<i>Asymptomatic Cerebral Aneurysm</i>	
Patient – Identifier	X	X	X	X	
Risk Assessment Questions & Potential Responses	X	X	X	X	
CDS Alert	X		X	X	
CDS Risk Determination:	X	X	X	X	
- Risk Assessment Score		X	X	X	
- Supporting Arguments	X	X	X	X	
- Provenance for Argument	X	X	X	X	
CDS Recommendation:	X	X	X	X	
- Supporting Arguments	X	X	X	X	
- Argument Pros & Cons	X	X	X	X	
- Provenance for Argument		X	X	X	
CDS Recommended Action (Dynamically Generated Order Set)		X		X	
EG State Audit File	X	X	X	X	

vMR Issues

- ⇒ **Which HL7 v.3 message/s should be reviewed as basis for vMR?**
- ⇒ **Specifically, message/s capable of transmitting clinical, family history and genomics information together?**
- ⇒ **Transmission of high volumes of genomic information (@neurIST BUC).**