CDSC Knowledge Management Portal

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KM Portal Team Lead
Overview

- KM Portal Components
- KTS Knowledge Model
- Critical KM Portal Requirements
- Search & Retrieve Functionalities
- Metadata
- Loadable Documents
- Examples of Documents
- KM Portal Live Demonstration
CDSC KM Portal Components

- The CDSC KM Portal is a combination of 3 components:
  - Virtual collaboration space (EMC-Documentum eRoom),
  - Content Management and Publishing Services (EMC-Documentum CMS and Web Publisher)
  - Clinical Decision Support Library - a document repository for sharing Clinical Decision Support content
Knowledge translation & specification levels

Level 1
Unstructured
Format: .jpeg, .html, .doc, .xls
+ metadata

derived from

Level 2
Semi-structured
Format: xml
+ metadata

derived from

Level 3
Structured
Format: xml
+ metadata

derived from

Level 4
Machine Execution
Format: any
+ metadata
Critical KM Portal Requirements

• Versions – display all valid versions of any given spec level
• Levels – display all valid and available levels of content
• Relatedness – display “derived” from relationships among different levels of a knowledge specification
• Metadata – enables search by keyword and by filters that are applied in the publishing process
Search & Retrieve Functionality

• Search
  – Filter based search (Metadata search)
  – Key word search (free-text search)
  – Combination of Keyword and Filter Search
  – Search within the search results

• View
  – View document using native editors
  – View previous version(s) of document
  – View the metadata of each document
  – View the “derived from” document
  – View “children of” documents (future)
Metadata

- Content Type (ex. Alert)
- Clinical Domain (ex. Dermatology)
- Specification Level (ex. Semistructured)
- Clinical Information System (ex. Meditech) [Level 4 only]
- Contributing Entity (ex. Regenstrief)
- Patient Population (ex. Pediatric)
- Intended Recipient Role (ex. Pharmacist)
Types of Loadable Documents

• Level 1
  – Unstructured (human readable guideline)
• Level 2
  – Semi-structured (XML)
• Level 3
  – Structured (XML)
• Level 4
  – Executable: content executed by or imported into a system
  – Exportable: content exported from a system
  – Description: content describes an implementation
  – Illustration: content illustrates an implementation
Major Goal in the Treatment of Diabetes in the Non-Pregnant Adult: Control the ABCs (A1c, Blood Pressure, Cholesterol)

A. A1c: Patients and providers should seek to achieve an A1c goal as close to the normal range (<6.1%) as possible, recognizing the important and increasing risks related to hypoglycemia as mean plasma glucose declines. Treatment change should be strongly considered when A1c ≥7%.

- Diabetic patients should have their HgbA1c measured biannually, more frequently if their diabetes is not well controlled or if there has been a recent change in treatment.

B. Blood pressure ≤130/80 mmHg

C. Cholesterol (Lipids)
   - LDL <100 mg/dl in patients >40 years or in adults 30-40 years with additional risk factors for vascular disease
   - LDL <70 mg/dl in patients with co-existing, or extensive risk factors for vascular disease (when reaching that goal is practical)
   - HDL >40 mg/dl
   - Triglycerides <150 mg/dl (consider therapy when >200 mg/dl)
Module 1: ASSESS

Description: Rules for monitoring HgbA1c

Recommendation 1.1: OverdueA1c

Description: HgbA1c should be monitored biaannually

Scenario: OverdueA1c
Most recent HgbA1c NOT < 6 months old

Recommended Action(s):
Order HgbA1c now

Recommendation 1.2: HighA1cMonitoring

Description: For poorly controlled diabetic patients, HgbA1c should be monitored more frequently than biaannually

Scenario: High A1c between 3 and 5 months old
Most recent HgbA1c between 3 and 5 months old which is > 9.0

Recommended Action(s):
Order HgbA1c now
**Recommendation 1.1: OverdueA1c**

**Description:** HgbA1c should be monitored biannually

**Recommendation Scenario:** OverdueA1c
Description: No HgbA1c result within last 6 months
Expression: HgbA1cResults6months->isEmpty()

**Data mapping:**
- HgbA1c results in last 6 months - The set of all HgbA1c results within the last 6 months
  - Lab Type: HgbA1c Code: x111 Code System: 2.16.840.1.113883.6.1
  - Status: completed Code: completed Code System: 2.16.840.1.113883.5.14
  - Expression: Let month : CodedValue = Factory.CodedValue("SNOMED-CT", "258706009") in patient laboratoryResult->select(resultType.codeSystem = "LOINC" and resultType.code = "x111" and resultStatus.codeSystem = "Local" and resultStatus.code = "Completed" and resultDateTime.occurredWithin(6, month))
  - Set(LaboratoryResult) HgbA1cResults6months

**Recommendation Action(s):** Order HgbA1c now

**Message Request**
- **Target:** Physician
  - Patient is overdue for HgbA1c (rec 6 months)

**Procedure Request**
- **Category:** Lab test (x346 - 2.16.840.1.113883.6.96)
  - **Type:** HgbA1c (x344 - 2.16.840.1.113883.6.1)
  - **Implementation time:** 5 days

**Message Request**
- **Target:** Patient
  - Hemoglobin A1c (Hbg A1c) is a blood test that measures your average blood sugar levels over the previous three months. Most people with diabetes have an Hgb A1c test every 6 months. If it's been more than 6 months since your last test, you may want to discuss Hgb A1c testing with your doctor.
<eAnnotations source="ilog.rules.base_type">
    <details key="baseType" value="model.brl.ActionRule"/>
</eAnnotations>

<name>OP0000009_Consider Anti-platelet therapy (Not on antiplatelet_Contraindications present)</name>

<uuid>_qJy1sIznEd6ZxdxFwkJG2cQ</uuid>

<locale>en_US</locale>

<definition><![CDATA[if it is not true that thePatient has Active Clinical State with code "108972005", code system is SNOMED, qualifier name "57646009", qualifier name code system is SNOMED, qualifier value "18629005" and qualifier value code system is SNOMED and thePatient has Active Clinical State with code "108972005", code system is SNOMED, qualifier name "410536001", qualifier name code system is SNOMED, qualifier value "405177001" and qualifier value code system is SNOMED then declare 'theaction' as an action; set theaction to a new empty Action of theRecommendation with rulename "OP0000009", rule package "Anti-platelet Therapy Rules", version "1", guideline "Anti-platelet", operator "and"; add Message Request with the Message "Patient has CAD or equivalent, consider starting anti-platelet therapy, but potential contraindications exist." and Target Code "309343006" to the Request List of theaction; add Message Request with the Message "Because you have diabetes or heart disease, you might benefit from aspirin or other similar medications to prevent heart attacks and strokes, but there may be a good reason why your doctor has not prescribed it. If you are not taking aspirin regularly, you may want to discuss whether or not you should take aspirin with your doctor." and Target Code "116154003" to the Request List of theaction; declare 'the RequestList' as a request list; set 'the RequestList' to add new RequestList; set the operation of 'the RequestList' to "or"; add Substance Administration Request with product code "C0004057", route "C38288", alternative text "Start aspirin" to 'the RequestList'; add Substance Administration Request with product code "C0070166", route "C38288", alternative text "Start clopidogrel" to 'the RequestList'; add Knowledge Asset Request with title "Help me choose: Anti-platelet" and Knowledge Asset Request with title "Help me choose: Anti-platelet", identifier "http://Help me choose: Anti-platelet", identifier type "URL", knowledge resource type "308910008", alternative text "" to theaction;]]>]]></definition>

<status>deployable</status>
Project: ECRSRules

Package: /Anti-platelet Therapy Rules

Name: OP0000009_Consider Anti-platelet therapy (Not on antiplatelet_Contraindications present)

Documentation:
This rule fires if the patient is not currently on anti-platelet therapy and contraindications (allergies and problems) are present. Rules will fire if pt on warfarin and platelet

Definition:
if it is not true that thePatient has Active Clinical State with code "197200", code system is SNOMED, qualifier name code system and thePatient has Active Clinical State with code "108972006", code system is SNOMED, qualifier name "410530", qualifier name code system is SNOMED then declare 'theaction' as an action;
set theaction to a new empty Action of theRecommendation with idname "OP0000009", rule package "Anti-platelet Therapy Rules", version "1", guideline "add Message Request with the Message "Patient has CAD or other, consider starting anti-platelet therapy in the potential contraindications exist."
Target add Message Request with the Message "Because you have heart disease, you might benefit from aspirin or other similar medications to prevent heart attacks. If you are not taking aspirin regularly, you may discuss whether or not you should take aspirin with your doctor."
Target Code "116154003" to the declare 'the RequestList' as a request list;
set 'the RequestList' to add new RequestList;
set the operation of 'the RequestList' to 'add';
add Substance Administration Request with product code "C004057", route "C38288", alternative text "Start aspirin" to 'the RequestList';
add Substance Administration Request with product code "C0070166", route "C38276", alternative text "Start clopidogrel" to 'the RequestList';
add 'the RequestList' to request lists of theaction;
add Knowledge Asset Request with title "Help me choose: Anti-platelet", identifier "Help me choose: Anti-platelet", identifier type "URL", knowledge res

Properties:
status deployable
priority
Last Changed By amanda
Last Changed On Oct 30, 2009 12:34:24 PM
Locale English (United States)
expirationDate
effectiveDate
Active True
Group
Created By eucene
# Nephros and Gerios Dosing Information: Enterprise Medication Content

**October 2009**

Synopsis: This document contains drugs which trigger a message which suggests appropriate drug substitutions, adjusted doses and/or adjusted frequencies, based upon CrCl (Nephros) and/or age (Gerios).

<table>
<thead>
<tr>
<th>Roll Up #</th>
<th>Drug (Rollup) Name</th>
<th>Route</th>
<th>Type</th>
<th>Pflag</th>
<th>CrCl Trigger (cc/min)</th>
<th>Dose List</th>
<th>Frequency</th>
<th>Max. Dose</th>
<th>Min. Dose</th>
<th>Pff.Dose</th>
<th>Substitute Meds</th>
<th>Preferred</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>ACETAMINOPHEN</td>
<td>PO</td>
<td>Nephros</td>
<td>Nephros</td>
<td>15</td>
<td>325 MG, 325-650 MG, 650 MG, 650-1000 MG, 650-1300 MG, 1000 MG,</td>
<td></td>
<td>Q8H</td>
<td>1000 MG</td>
<td>325 MG</td>
<td>325 MG</td>
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<td></td>
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<tr>
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<td>Nephros</td>
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<td>650 MG,</td>
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<td>Q6H</td>
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<td></td>
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<tr>
<td>6</td>
<td>ACETAMINOPHEN ORAL LIQUID</td>
<td>PO</td>
<td>Nephros</td>
<td>Nephros</td>
<td>15</td>
<td>325 MG, 650 MG, 650-1300 MG,</td>
<td></td>
<td>Q8H</td>
<td>650-1300 MG</td>
<td>325 MG</td>
<td>325 MG</td>
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<td>7</td>
<td>ACETAMINOPHEN ORAL LIQUID</td>
<td>PO</td>
<td>Nephros</td>
<td>Nephros</td>
<td>50</td>
<td>650 MG,</td>
<td></td>
<td>Q6H</td>
<td>650 MG</td>
<td>650 MG</td>
<td>650 MG</td>
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<td>ACETAMINOPHEN SUPPLEMENT</td>
<td>PR</td>
<td>Nephros</td>
<td>Nephros</td>
<td>15</td>
<td>650 MG,</td>
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<td>Q8H</td>
<td>650 MG</td>
<td>650 MG</td>
<td>650 MG</td>
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<td></td>
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<td>Q6H</td>
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<td>10</td>
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<td>Q8H</td>
<td>1000 MG</td>
<td>325 MG</td>
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</table>
# Anti-platelet rules

<table>
<thead>
<tr>
<th>Conditions</th>
<th>On Antiplatelet?</th>
<th>Contra-indication to antiplatelet?</th>
<th>On 1</th>
<th>On 2</th>
<th>On 3</th>
<th>Off 1</th>
<th>Off 2</th>
<th>Off 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antiplatelet Therapy H, O</td>
<td>Patient is not on anti-platelet therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antiplatelet Therapy O</td>
<td>Patient is not on anti-platelet therapy, potential contraindications are</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Prov/Pt Messages</td>
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<tr>
<td>Antiplatelet Therapy O</td>
<td>Patient is on anti-platelet</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reasons for On and Off:**

- **On:**
  - Because you have diabetes or heart disease, you might benefit from aspirin or other similar medications to prevent heart attacks and strokes. If you are not taking aspirin regularly, you may want to discuss whether you should take aspirin with your doctor.
  - Because you have diabetes or heart disease, you might benefit from aspirin or other similar medications to prevent heart attacks and strokes. If you are not taking aspirin regularly, you may want to discuss whether you should take aspirin with your doctor.
  - You are currently taking aspirin or a similar medication to prevent future heart attacks or strokes. Be sure to talk with your doctor if you are having trouble taking this medicine as prescribed or if you think you are having side effects from it.

- **Off:**
  - Y
  - N
  - N

**Follow-up:**

See logic for follow-up.

Display "Print CareNotes for all newly started or adjusted medications"
Cardiac Surgery Admission and Pre-Op - BWH

Admit to: ICU; Condition: Stable; Diagnosis: test.
Allergies: Penicillin (Dystonia, Itching, Rash). NSP's (tol Intolerance).
VS q8h.

Activity: Tol Intolerance.

Diet: Regular.

IV:

Cath HO for T > 101, SBP > 160, SBP < 90, HR > 100, HR < 60.

Distress/In/SOB

Pre-Op:

Marlux Tablets Quick Dissolve/Cheawable 1-2 MB PO Q6H
PRN Upset Stomach

Colace (Docusate Sodium) 100 mg PO Q6H

Milk of Magnesia (Magnesium Hydroxide) 30 Milliliters PO QD
PRN Constipation

Order EKG:
CDSC KM Portal
Live Demonstration
A document is imported into Web Publisher and Metadata is tagged here:
Here we assign level, and derived from link –
It’s a free text field, must cut/past unique object name,
would have preferred a more automated approach, but this
would have doubled the budget.
Below is a click-through legal agreement covering IP and Indemnification.
In addition to key word search, one can enter multiple of the following filters – or – after keyword search, filter the search return based on the metadata categories below.
Here we can see that diabetes returns multiple documents.
Scrolling down, multiple levels and types are retrieved.
Opening details link exposes more information and any derived-from relationships, here a Level 3 is derived from a Level 2.
Above is a Level 3, displayed with a style sheet
That level 3 was derived from this level 2
Above one can set date parameters. Below is a search return for Pharmacy CDS,
Below is the level 4, an export, of PHS geriatric dosing decision tables. We share this within Partners Healthcare so that our Meditech/Siemens sites, that cannot consume our service, can leverage the information and build it into their respective environments.

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<th>Min. Dose</th>
<th>Pfr. Dose</th>
<th>Subst Meds</th>
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<tr>
<td>2070</td>
<td>ACETAMINOPHEN</td>
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<td>Gerios</td>
<td>Nephros</td>
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<tr>
<td>W/CODEINE 15MG</td>
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<td></td>
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<tr>
<td>8</td>
<td>ACETAMINOPHEN</td>
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<td>Nephros</td>
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<td>1/4 TAB</td>
<td>1 TAB</td>
<td>1 TAB</td>
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</table>
We can search by “document level” to see, for example, only Level 4 documents.