HL7 Virtual Medical Record for Clinical Decision Support (vMR-CDS) Templates, Release 1
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U.S. Realm Informative Specification

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Listed below are the primary authors of this document.

Name	Organization
David Shields	University of Utah
Kensaku Kawamoto	University of Utah
Claude Nanjo	Cognitive Medical Systems
Victor Lee	Zynx Health Incorporated
Robert McClure	MD Partners, Inc.
Mark Roche	Roche Consulting Inc.
David Tao	ICSA Labs (a division of Verizon)
Bryn Rhodes	Veracity Solutions
Aziz Boxwala	Meliorix

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Name	Organization
Austin Kreisler	Science Applications International Corporation (SAIC)
Anthony Julian	Mayo Clinic
Calvin Beebe	Mayo Clinic
Dale Nelson	Lantana Consulting Group
Jean-Henri Duteau	Duteau Design Inc.
John Quinn	Health Level 7 International
Kai Heitmann	Heitmann Consulting and Services
Keith Boone	GE Healthcare
Ken McCaslin	Quest Diagnostics, Incorporated
Ken Rubin	HP Enterprise Services
Lloyd McKenzie	Gordon Point Informatics Ltd.
Lorraine Constable	Constable Consulting Inc.
Lynn Laasko	Health Level 7 International
Patricia Van Dyke	Moda Health
Paul Knapp	Knapp Consulting Inc.
Ron Parker	Canada Health Infoway
Woody Beeler	Beeler Consulting LLC

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1.0 INTRODUCTION

A Virtual Medical Record (vMR) is a data model for representing the data that are analyzed and/or produced by clinical decision support (CDS) engines. The purpose of the vMR effort is to define a standard vMR that (i) can be used across CDS implementations and (ii) is simple and intuitive for a typical CDS knowledge engineer to understand, use, and implement.

This specification defines vMR templates that constrain the base vMR model to facilitate semantic interoperability, similar to how Consolidated Clinical Documentation Architecture (C-CDA) templates constrain the base CDA model. The vMR templates are informed by the templates defined for the C-CDA and Quality Reporting Document Architecture (QRDA) standards.

1.1 Purpose

The purpose of this specification is to define a set of templates for the vMR.

1.2 Methodology

This specification leverages a template development methodology that is being defined by the HL7 Templates Work Group. This project is informed by, and contributing to, the specification of this template development methodology by the HL7 Templates Work Group.

1.3 Intended Audience

The intended audience for this implementation guide is CDS implementers.

1.3.1 REQUISITE KNOWLEDGE

Knowledge of the HL7 vMR Logical Model, Release 2, Version 2.0 is a prerequisite.

1.3.2 REFERENCED STANDARDS

The templates are defined in the context of the following specification:
- HL7 vMR Logical Model Release 2, Version 2.0

For documentation on the meaning of vMR model elements, as well as examples, please refer to the HL7 vMR Logical Model specification, as well as the HL7 vMR XML specification.

1.4 Organization of this Specification

This specification defines a set of vMR templates and provides a narrative explanation of a sample template.

1.5 Definitions and Acronyms

Term	Definition
C-CDA	Consolidated Clinical Document Architecture
CDS	Clinical Decision Support
OID	Object Identifier
QRDA	Quality Reporting Document Architecture
vMR	Virtual Medical Record

2.0 vMR TEMPLATES

The vMR templates are defined in the accompanying Excel spreadsheets. Also, XML instance examples of select templates are available in the accompanying supplemental files.

Of note, we anticipate the development of vMR templates to be an ongoing, iterative process. In particular, the templates listed in Section 2.2 have been identified as potentially being useful and are under consideration for future addition to the vMR templates. Moreover, the potential leveraging of detailed clinical models within vMR templates is under investigation.

2.1 Overview of Templates

As a matter of explanation, each template contains the following information:
- Various meta-data about the template, including template name, OID, description, effective date, status, version, and expiration date
- Data expected to be included in the vMR if no constraints are specified
    o For example, the SimpleLabResult template specifies that if no constraints are specified, all lab results available up to the current time should be provided
- Constraints that may be specified to restrict the data that are provided using the template
    o For example, the SimpleLabResult template specifies that restricting the search back period is allowed using the observationEventTime. This would allow, for example, a CDS service provider to specify that only lab results from the past 1 year are needed.
    o Similarly, the SimpleLabResult template specifies that restricting the data according to the observationFocus is allowed. This would allow, for example, a CDS service provider to specify that only Hemoglobin A1c and LDL cholesterol lab results are needed.
    o The approach to these constraints is specified in the vMR Logical Model within the CDS Input Specification component of the model.
- For each included vMR data element, the following constraints are specified. Note that many of these constraints are defined in Chapter 2 of HL7 Version 3's Refinement, Constraint and Localization Release 2 specification.
    o The data element's path in the vMR data model
    o The data element's cardinality
    o Whether the data element is mandatory (i.e., must be present in instances and be non-null)
        ▪ Because there are no nullFlavors in the vMR, a data element is always mandatory if the cardinality is 1..X, and always non-mdantory if it is 0..X
    o The data element's conformance
        ▪ R means required. This conformance requirement is placed on a data element when that at least one of the following conditions apply:
            • Cardinality is 1..X
            • Cardinality is 0..X, but it may be conditionally required based on other content within the template

- Cardinality is 0..X, but is required when the data is available
  - Whether the data element has a fixed value in all instances
  - Whether the data element has an ad-hoc constraint, which means that it has a constraint that depends on other content within the template
  - The data element's data type
  - A narrative specification of further constraints, in particular value restrictions
  - Comments, including in particular any deviation from C-CDA or QRDA value restrictions. C-CDA and QRDA templates were explicitly reviewed in the development of vMR templates to maximize semantic interoperability.

2.2 Additional Templates Under Review and/or Development

The following templates have been identified as being potentially useful for CDS and are currently under review and/or development. Those who are interested in contributing to the continued development of vMR templates and their associated value sets are encouraged to contact the CDS Work Group through its HL7 list-serv.

- Templates for images and imaging results, including as a part of an encounter
- Templates related to performance on quality measures
- Templates related to results returned by a CDS service
- Templates related to quality measurement and continuity of care
- Templates for clinical assessments (e.g., for nursing documentation of the skin, stool, wound, etc.)
- Templates to support handling of unvalidated data, where there is no authenticator
- Templates to support indicating that the data was authored from a device
- Templates to support orders, such as for medication orders, lab orders, and respiratory care orders
- Additional templates to support proposals
- Enhancements to problem templates to allow prioritization of active problems for a patient within a given context, such as by a CDS system. Also, enhancements to enable identification of the clinical domain and user expertise of those who identify each active problem.
- Enhancements to immunization-related templates, for example, to enable expressing the following:
  - The patient does not need a vaccination of a certain type because of reason X
  - The patient has completed a vaccination series, is immune against disease X, and no further doses are needed
  - The vaccination protocol