



## ***Clinical Data Definitions***

[www.tolvenhealth.com](http://www.tolvenhealth.com)

[www.tolven.org](http://www.tolven.org)

<http://wikiHIT.org>

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# *Agenda*

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- Purpose of the Clinical Data Definition project
- Clinical Data Definition constructs
  - Associated standards
  - Templated Reference Information Model
- Example of the approach
- Participants
- Summary

# *Why Clinical Data Definitions*



- A fundamental need to accurately describe data in the healthcare and life-science environment
  - Transactional and analytic
- Need to support meaningful data storage and exchange
- Alternative approaches to creating Clinical Data Definitions
  - Proprietary or copyrighted development
  - Proprietary knowledge or codes
  - Not compliant with existing healthcare standards
  - Require users to purchase a tool set to develop/edit

# *Clinical Data Definitions*

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- Clinical data definitions are **not** a replacement for
  - Concept codes
  - Concept maps
  - UMLS or other terminologies

→ *Clinical data definitions leverage terminologies*
- Clinical data definitions are **not** a replacement of informatics standards, such as
  - HL7 RIM, C-DISC, IHE, HL7 messaging or BRIDG

→ *Clinical data definitions use informatics standards*

# *Clinical Data Definitions*

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- Existing healthcare standards provide
  - Abstract concepts (e.g., HL7 RIM, C-DISC and IHE)
  - Structures for data exchange (e.g., HL7, IHE and X12)
  - Structures for organization (e.g., CCR, CDA and CCD)
- Existing standards do not define content
- Clinical Data Definitions define
  - A specific instance of an object (e.g., Pulse)
  - Primary attribute and data types (e.g., Rate)
  - Constraints (e.g., Beats per Minute)
  - Terminology (e.g., UMLS code or other code translation)

# ***Clinical Data Definitions***

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- Common methodology for representing data
- Enables a message or document to contain
  - Defined content that is semantically interoperable
  - Re-usable data across business processes
  - Coded data that can support rules and workflow
- Simplifies the building and maintenance of
  - Simple data objects (e.g., a clinical finding)
  - Complex data collection (e.g, assessments and CRFs)
  - Rules and workflow

# Example CDD: Blood Pressure

## Description

Blood pressure is the pressure exerted by the blood at right angles to the walls of the blood vessels. Blood pressure values are universally stated in millimetres of mercury (mmHg).

<b>Short Name</b>	BP
<b>Long Name</b>	Blood Pressure - Complete
<b>TemplateID</b>	
<b>UMLS Concept Code</b>	C0436781
<b>Synonym</b>	O/E-blood pressure reading NOS; O/E - blood pressure; O/E - BP reading; On examination - blood pressure reading NOS (context-dependent category); On examination - blood pressure reading NOS (finding)
<b>Type</b>	Observation
<b>Revision</b>	11008

## Relationships

Type	Category or CDD	Cardinality	Rule
Contains	Blood Pressure - Systolic	0..1	
Contains	Blood Pressure - Diastolic	0..1	

## Attributes

Attribute	Value	Cardinality	Data Type
Device	Name or Code	0..1	CD
	Lying	C0444334	
	Reclining		
	Sitting	C0277814	
	Standing	C0231472	

## Description

The diastolic pressure is a component of the complete blood pressure and is defined as the lowest pressure (at the resting phase of the cardiac cycle). Values are universally stated in millimeters of mercury (mmHg).

<b>Short Name</b>	Diastolic Pressure
<b>Long Name</b>	Blood Pressure - Diastolic
<b>Template ID</b>	
<b>UMLS Concept Code</b>	C0436794
<b>Synonym</b>	O/E - Diastolic BP reading; On examination - Diastolic BP reading (context-dependent category); On examination - Diastolic BP reading (finding)
<b>Type</b>	Observation
<b>Revision</b>	6954

Attribute	Value	Cardinality	Data Type
Value	Diastolic Pressure	01/01/08	PQ

On one attribute shown for Blood Pressure to simplify slide and because of space available on slide. Blood Pressure has many attributes see [http://www.wikihit.org/wiki/index.php/Blood\\_Pressure\\_-\\_Complete](http://www.wikihit.org/wiki/index.php/Blood_Pressure_-_Complete)

# *Clinical Data Definition Process*



- Developed using public wiki
  - [www.wikiHIT.org](http://www.wikiHIT.org)
- Community Validation
- Transformed into XML representations
  - Constrained templates
- Available for implementation in any platform
- Vendor neutral

# XML Example

```
<relationship name="systolic" direction="OUT" typeCode="COMP" >
  <act xsi:type="Act" classCode="OBS" moodCode="EVN">
    <!--templateId>urn:wikihit-org:PATIENT-ACT:0</templateId-->
    <code>
      <CD codeSystemName="UMLS" codeSystemVersion="2006AC" code="C0017594"/>
    </code>
    <title>
      <ST>Systolic BP</ST>
    </title>
    <observation>
      <value>
        <label>Systolic</label>
        <PQ>
          <value>0</value>
          <unit>mm/Hg</unit>
        </PQ>
      </value>
    </observation>
  </act>
</relationship>
```

## ***Participants***

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- Provider organizations
- Research centers
- Medical institutes
- Federal agencies
- Commercial software companies

## *Future Development*

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- End user tool for the development and management of Clinical Data Definitions
  - Remove the need to learn wiki mark-up language
  - Ensure compliance with standards
  - Engage clinicians and domain experts in the process
- Publish definitions to public wiki for
  - Community validation
  - Community commentary
  - Free download
- Change management through CVS

## *Summary*

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- Clinical Data Definitions are a fundamental requirement for health informatics
- Collaborative development of CDD will
  - Accelerate the development process
  - Ensure commonality and compliance with standards
  - Encourage public comment
  - Prevent multiple standards developing
  - Support clinical and research data management
- Creative commons approach is essential for adoption