



**PHIN VOCABULARY ACCESS AND
DISTRIBUTION SYSTEM (VADS)
CODE SYSTEM REPRESENTATION IN
PHIN VADS**

**Version 1.0
1/30/2009**

Centers for Disease Control and Prevention



Table of Contents

Code System Representation in PHIN VADS	1
LOINC	1
SNOMED CT	2
FIPS 10-4 (Country)	3
ISO 3166-1 (Current Countries)	4
ISO 3166-3 (Obsolete or Retired Countries)	5
ISO 3166-2 (Country Subdivision)	5
ISO 639-2 (Language)	6
ICD-10 (WHO)	6
ICD-9 CM Volume 1 & 2 (Disease Classification)	7
ICD-9 CM Volume 3 (Procedure Classification)	8
EPA SRS (Chemicals)	9
National Drug Code (NDC) – FDA DRLS (Drug Product)	10
Healthcare Provider Taxonomy (HCPT)	11
Healthcare Service Location (HL7 v3)	11
NAICS (Industry)	12
SIC (Industry- 1987)	13
LanguaL (Food)	13
Vaccine Manufacturer (MVX)	14
MIME Media Type (IANA)	14
NDF-RT (Drug Classification)	15
CDC Notifiable Event (Disease / Condition)	16
Health Level 7 – Version 3 (HL7 V3)	16
SOC 2000 (Occupation)	17
PHIN QUESTIONS	18
Race & Ethnicity (CDC)	19
RxNorm (Clinical Drug)	19
FIPS 5-2 (State)	21
UMLS	21
FDA UNII	22
UCUM	22
USGS-GNIS (Cities)	23
CVX (Vaccine Names)	25

Code System Representation in PHIN VADS

PHIN VADS contains several standard code systems. Each Standards Determining Organization (SDO) represents its data using proprietary attribute names and data types. PHIN VADS has standardized the attribute names and provides a consistent representation of all the SDO code system concepts via PHIN VADS user interface.

This document illustrates examples of SDO code system concept representation in PHIN VADS and provides search tips for each code system. The vocabulary implementation issues associated with each code system are addressed by portraying the mapping of the local code system concept to the standard code system concept present in the value set.

LOINC

Laboratory Observation Identifiers Names and Codes.

- HITSP / CHI recommended standard for Lab test names
- LOINC generally used for Observation Identifiers or Question identifier
- HL7 2x / CDA usage: Most often used in OBX-3 Observation Identifier for 2.x messaging or Observation.Code in CDA.
- LOINC Support / Tutorials are available from the LOINC website
- *PHIN VADS representation of LOINC Code System :*
 - Concept Name :
 - Short Name for Lab LOINC concepts
 - Fully Specified Name (concatenation of 6 LOINC Axes with colon as delimiter) without HL7 restricted characters.
 - “^” replaced by “@”
 - “&” replaced by “and”
 - Preferred Concept Name:
 - Fully specified Name – Concatenation of 6 LOINC Axes with colon as delimiter (May cause some issues if passed in the HL7 message because of the escape characters such as “^” and “&” present in LOINC)

Representation of a Clinical LOINC Concept in PHIN VADS

Code System Information

Code System Name	LOINC
Code System Code	PH_LOINC
Code System OID	2.16.840.1.113883.6.1
HL7 Table 0396 Code	LN

Code System Concept Details

Code System Concept Code	8339-4
Code System Concept Name	Body weight@at birth:Mass:Pt:@Patient:Qn:Measured
Code System Preferred Concept Name	Body weight^at birth:Mass:Pt:^Patient:Qn:Measured

Representation of a Lab LOINC Concept in PHIN VADS

Code System Information

Code System Name	LOINC
Code System Code	PH_LOINC
Code System OID	2.16.840.1.113883.6.1
HL7 Table 0396 Code	LN

Code System Concept Details

Code System Concept Code	41991-1
Code System Concept Name	SARS-CoV IgM Ser Ql EIA
Code System Preferred Concept Name	SARS coronavirus Ab.IgM:ACnc:Pt:Ser:Ord:EIA

SNOMED CT

Systematized Nomenclature of Medicine--Clinical Terms

- HITSP/ CHI recommended standard for Lab Test Results (Organism), Clinical Finding (Disease, Signs, Symptoms), Clinical Procedure (Surgical Operations), Context and/or Modifiers (History, Family History, Rule out)
- SNOMED generally used for answers or observation results
- HL7 / CDA usage: Most often used in OBX-5 or Observation.Value
- SNOMED support can be obtained from IHTSDO / National Library of Medicine (UMLS)
- *PHIN VADS representation of SNOMED CT Code System:*
 - Concept Code: Concept ID (Numerical ID) from SNOMED CT
 - Alternate Designation Code: Legacy Alphanumeric Code
 - Concept Name: Fully Specified Name from SNOMED CT
 - Preferred Concept Name: Preferred concept name from SNOMED CT
 - Alternate Designations: Synonyms from SNOMED CT
 - Relationships: Only hierarchical (parent-child) relationships from SNOMED CT.

Code System Information

Code System Name	SNOMED-CT
Code System Code	PH_SNOMED-CT
Code System OID	2.16.840.1.113883.6.96
HL7 Table 0396 Code	SCT

Code System Concept Details

Code System Concept Code	103429008
Code System Concept Name	Enterohemorrhagic Escherichia coli, serotype O157:H7 (organism)
Code System Preferred Concept Name	EHEC, serotype O157:H7

Relationships (parent-child)

Concept Code	Code System Concept Name	Relationship Type
116395006	Enterohemorrhagic Escherichia coli (organism)	Parent concept
407166006	Escherichia coli, serotype O157 (organism)	Parent concept

Concept Alternate Designations

SDO Designation ID	Concept Designation Description	Status
1218990011	E. coli O157:H7	Current
1218991010	Escherichia coli O157:H7	Current
167044012	Escherichia coli, serotype O157:H7	Retired
167045013	Escherichia coli, serotype O157:H7	Retired
2475158019	Enterohemorrhagic Escherichia coli, serotype O157:H7	Current
L-15611	L-15611	Current

Associated Value Sets

Microorganism

FIPS 10-4 (Country)

Federal Information Processing Standards (FIPS) are publicly announced standards developed by the United States Federal government for use by all non-military government agencies and by government contractors. Many FIPS standards are modified versions of standards used in the wider community (ANSI, IEEE, ISO, etc.)

- FIPS 10-4 is mainly used for the countries that are not found in ISO 3166-1 (Current Country Codes) or ISO 3166-3 (Obsolete or Historical Countries). It is also used for representing the U.S. Outlying Territories and Minor Islands that are not found in ISO.
- ISO is still the primary code system that needs to be used for representing the countries.
- FIPS 10-4 Country Codes and ISO 3166-1 (2 character codes) may collide and never use them together in a value set.
- FIPS 10-4 and ISO Country codes are mainly used for the value sets such as Birth Country where the concepts need to have the current and obsolete countries. Birth Country value set uses 3 character ISO Country Codes and 2 character FIPS 10-4 (country).
- It is not recommended to create a value set with ISO 2-Character Country Codes and FIPS 10-4 codes, which are also 2 character codes.

Code System Information

Code System Name	Country (FIPS 10-4)
Code System Code	PH_Country_FIPS_10-4
Code System OID	2.16.840.1.114222.4.5.300
Table 396	FIPS10_4

Code System Concept Details

Code System Concept Code	FQ
Code System Concept Name	Baker Island
Code System Preferred Concept Name	Baker Island

ISO 3166-1 (Current Countries)

International Organization for Standardization (ISO) 3166-1 is the primary standard code system for current countries.

- ISO 3166-1 Codes System can be used for Address, etc.
- ISO moves the retired or obsolete countries from ISO 3166-1 to ISO 3166-3 (Obsolete Country Code system)
- 3 Character ISO 3166-1 codes are used as a concept codes
- 2 character and 3 character ISO 3166-1 are free (Users need not have license to use them).
- 2 character ISO 3166-1 codes are available in the metadata (Alternate Designations)
- Numerical concept code from ISO 3166-1 are also available in the metadata (Alternate Designations)
- HL7 OID registry has recently retired the Code System OID (2.16.1) and registered a new code system OID that was issued by ISO mentioned below.
- ISO 3166-1 concept names have special characters which may need to be imported into a spreadsheet or database as Unicode characters.

Code System Information

Code System Name	Country (ISO 3166-1)
Code System Code	PH_Country_ISO_3166-1
Code System OID	1.0.3166.1
Table 396	ISO3166_1

Code System Concept Details

Code System Concept Code	USA
Code System Concept Name	UNITED STATES
Code System Preferred Concept Name	UNITED STATES

Concept Alternate Designations

SDO Designation ID
840
US

ISO 3166-3 (Obsolete or Retired Countries)

International Organization for Standardization (ISO) 3166-3 contains obsolete or retired countries from ISO 3166-1 that are moved into this code system and are assigned a 4 character ISO code.

- ISO 3166-3 code system is mainly used for creating the value sets such as Birth Country in which the historical or retired countries are also needed.
- ISO 3166-3 retired countries are not used for address.
- PHIN VADS may not have a complete list of ISO 3166-3 codes. Please check with ISO.
- ISO newsletter may need to be used to get the complete list of ISO 3166-3 codes.
- HL7 OID registry has recently retired the old Code System OID (2.16.3) and registered a new code system OID that was issued by ISO.

Code System Information

Code System Name	Obsolete Country Codes (ISO 3166-3)
Code System Code	PH_Country_ISO_3166-3
Code System OID	1.0.3166.3
Table 396	ISO3166_3

Code System Concept Details

Code System Concept Code	SUHH
Code System Concept Name	U.S.S.R.
Code System Preferred Concept Name	U.S.S.R.

ISO 3166-2 (Country Subdivision)

International Organization for Standardization (ISO) 3166-2 contains country subdivision codes that have a prefix of the 2 character ISO 3166-1 country code.

- 2 character ISO 3166-1 country code is present in the metadata.
- Preferred concept name has been created by concatenating the ISO 3166-2 country subdivision concept name and 2 character ISO 3166-1 country code as a suffix.
- Country Subdivision type (Province, State) is available in the metadata.
- ISO 3166-1 concept names have special characters which may need to be imported into a spreadsheet or database as Unicode characters.

- HL7 OID registry has recently retired the Code System OID (2.16.2) and registered a new code system OID that was issued by ISO.

Code System Information

Code System Name	ISO 3166-2 Country Subdivision
Code System Code	PH_CountrySubdivision_ISO_3166-2
Code System OID	1.0.3166.2
Table 396	ISO3166_2

Code System Concept Details

Code System Concept Code	AU-QL
Code System Concept Name	Queensland
Code System Preferred Concept Name	Queensland, AU

Property Name	Concept Definition	Property Value
ISO3166-1Alpha-2Code	ISO 3166-1 Alpha-2 Code.	AU
SubDivisionCategory	ISO 3166-2 Subdivision Category information.	state

ISO 639-2 (Language)

International Organization for Standardization (ISO) 639 is the set of international standards that lists short codes for language names

- Alpha-3 codes are used as the concept code
- US Library of congress provides support and updates.

Code System Information

Code System Name	ISO 639-2 Language
Code System Code	PH_Language_ISO_639-2_Alpha3
Code System OID	2.16.840.1.113883.6.100
Table 396	ISO6392

Code System Concept Details

Code System Concept Code	eng
Code System Concept Name	English
Code System Preferred Concept Name	English

ICD-10 (WHO)

The **International Statistical Classification of Diseases and Related Health Problems** 10th Revision (**ICD-10**) is a coding of diseases and signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or diseases, as classified by the World Health Organization (WHO).

- PHIN VADS uses the “Cause of Death” (mortality) ICD-10 subset from the CDC NCHS (National Center for Health Statistics)
- This is not an American version of ICD-10
- ICD-10 CM may become a mandate in 2011.

Code System Information

Code System Name	International Classification of Diseases revision 10 (ICD 10 - WHO)
Code System Code	PH_DiseaseClassification_ICD-10_WHO
Code System OID	2.16.840.1.113883.6.3
Table 396	I10

Code System Concept Details

Code System Concept Code	J10.0
Code System Concept Name	Influenza with pneumonia, influenza virus identified
Code System Preferred Concept Name	Influenza with pneumonia, influenza virus identified [J10.0]
Code System Concept Status	Published
Date Created	
Date Revised	02/17/2005
Definition	

ICD-9 CM Volume 1 & 2 (Disease Classification)

The International Classification of Diseases, Ninth Revision, Clinical Modification (**ICD-9-CM**) is based on the World Health Organization's Ninth Revision. Volumes 1 and 2 contain diseases.

- Centers for Medicare & Medicaid Services (CMS) distribute the ICD-9 CM codes without a decimal that are used for electronic communication.
- PHIN VADS provides the ICD-9 CM code with decimals in the metadata as “Concept Alternate Designation Code”
- Preferred concept name is made from the concatenation of “Concept Name” and “ICD-9 CM code with decimals”
- ICD-9 CM Disease and Procedure code system used to have a single code system OID two years ago. CMS has decided to split the ICD-9 CM disease and procedure as two different code systems. HL7 OID registry has retired the old code system OID for ICD-9 CM and provides two code system OID for ICD-9 CM
- ICD-9 CM for the next fiscal year is usually published in summer (June or July) and the new version of ICD-9 CM becomes effective on October 1st, 2008.
- Please contact CDC PHIN Vocabulary Services at PHINVS@CDC.GOV, if you need more information about the current and next fiscal year’s ICD-9 CM value sets.

Code System Information

Code System Name	ICD-9-CM, Volume 1&2
Code System Code	PH_DiseaseClassification_ICD-9CM
Code System OID	2.16.840.1.113883.6.103
Table 396	I9CDX

Code System Concept Details

Code System Concept Code	4870
Code System Concept Name	INFLUENZA WITH PNEUMONIA
Code System Preferred Concept Name	INFLUENZA WITH PNEUMONIA [487.0]

Concept Alternate Designations

SDO Designation ID	Concept Designation Text
487.0	487.0

ICD-9 CM Volume 3 (Procedure Classification)

The International Classification of Diseases, Ninth Revision, Clinical Modification (**ICD-9-CM**) is based on the World Health Organization's Ninth Revision. Volume 3 contains procedures.

- Centers for Medicare & Medicaid Services (CMS) distribute the ICD-9 CM codes without a decimal that are used for electronic communication.
- PHIN VADS provides the ICD-9 CM code with decimals in the metadata as “Concept Alternate Designation Code”
- Preferred concept name is made from the concatenation of “Concept Name” and “ICD-9 CM code with decimals”
- ICD-9 CM Disease and Procedure code system used to have a single code system OID two years ago. CMS has decided to split the ICD-9 CM disease and procedure as two different code systems. HL7 OID registry has retired the old code system OID for ICD-9 CM and provides two code system OID for ICD-9 CM
- ICD-9 CM for the next fiscal year is usually published in summer (June or July) and the new version of ICD-9 CM becomes effective on October 1st, 2008.
- Please contact CDC PHIN Vocabulary Services at PHINVS@CDC.GOV, if you need more information about the current and next fiscal year's ICD-9 CM value sets.

Code System Information

Code System Name	ICD-9 CM, Volume 3
Code System Code	PH_ProcedureClassification_ICD-9CM
Code System OID	2.16.840.1.113883.6.104
Table 396	I9CP

Code System Concept Details

Code System Concept Code	7499
Code System Concept Name	CESAREAN SECTION NOS
Code System Preferred Concept Name	CESAREAN SECTION NOS [74.99]

Concept Alternate Designations

SDO Designation ID	Concept Designation Text
74.99	74.99

EPA SRS (Chemicals)

Environmental Protection Agency (EPA) Substance Registry System (SRS) provides an EPA identifier for the concepts related to chemicals.

- EPA SRS provides the CAS # in the metadata
- CAS # should not be used in any HL7 messages or any communication between two systems because it requires license.
- CAS # could be used in the repository or standalone system.
- For more information about the usage of EPA SRS internal identifier and CAS #, please contact EPA SRS
- PHIN VADS is planning to provide a hyperlink to the EPA SRS for each of the chemicals, which will allow the users to view the detailed metadata including the synonyms from the EPA SRS.

Code System Information

Code System Name	EPA SRS
Code System Code	PH_EPA_SRS
Code System OID	2.16.840.1.113883.6.275
Table 396	EPASRS

Code System Concept Details

Code System Concept Code	1008
Code System Concept Name	Formaldehyde
Code System Preferred Concept Name	Formaldehyde

Property Name	Concept Definition	Property Value
CASNumber	CAS Number	50-00-0
RegistryName	Registry Name	Formaldehyde

National Drug Code (NDC) – FDA DRLS (Drug Product)

NDC code system contains the concepts with the complete NDC number as well as just the labeler code concepts representing the drug manufacturers

- NDC number is a 10 digit, 3 segment number
 - 1st segment – labeler code assigned by FDA
 - 2nd segment – product code assigned by the firm (strength, dosage and formulation)
 - 3rd segment – package code assigned by the firm (package size and types)
- Concept Name in PHIN VADS for the NDC Code System:
 - Concept name could be just the drug manufacturer's name, if the concept code is just the labeler code.
 - Concept with complete NDC number as the concept code will have the concept name using the syntax mentioned below:
"TRADENAME [PACKSIZE, PACKTYPE]"
- Preferred Concept Name
 - Preferred concept name could be just the drug manufacturer's name, if the concept code is just the labeler code.
 - Concept with complete NDC number as the concept code will have the preferred concept name as "Trade Name" from the NDC listings table.
- FDA NDC website can provide more detailed information about the NDC database and its usage.

** NDC Example showing just the labeler code which is being used in the value set "Drug Manufacturer (NDC)"

Code System Information

Code System Name	NDC-FDA Drug Registration and Listing System
Code System Code	PH_FDA_DRLS
Code System OID	2.16.840.1.113883.6.69
Table 396	NDC

Code System Concept Details

Code System Concept Code	000002
Code System Concept Name	ELI LILLY AND CO
Code System Preferred Concept Name	ELI LILLY AND CO

** NDC Example showing the complete NDC number (Labeler code-product code-package code).

Code System Concept Details

Code System Concept Code	000002-1046-01
Code System Concept Name	HUMULIN INJECTION [1 X 10 ML, VIAL]
Code System Preferred Concept Name	HUMULIN INJECTION

Property Name	Property Value
ListingSeqNo	244888
Strength	70;30
Unit	ML;ML
RXOTC	O

Healthcare Provider Taxonomy (HCPT)

The **Health Care Provider Taxonomy** code set is an external nonmedical data code set designed for use in an electronic environment.

- PHIN VADS does not contain the hierarchical relationships for the Healthcare provider taxonomy concepts
- Visit Washington Publishing Company for detailed metadata including the definition of these provider concepts.
- HCPT is updated once a year and is released before the fiscal year in summer (June / July) and the new version becomes effective when the fiscal year starts on October 1st.
- Please contact CDC PHIN Vocabulary Services at PHINVS@CDC.GOV, if you need more information about the current and next fiscal year's Healthcare Provider Taxonomy value sets.

Code System Information

Code System Name	Healthcare Provider Taxonomy (HIPAA)
Code System Code	PH_HealthcareProviderTaxonomy_HIPAA
Code System OID	2.16.840.1.113883.5.53
Table 396	HCPT

Code System Concept Details

Code System Concept Code	111NI0900X
Code System Concept Name	Internist
Code System Preferred Concept Name	Internist

Property Name	Concept Definition	Property Value
ProviderTaxonomyType	Provider Taxonomy Type	Individual or Group

Healthcare Service Location (HL7 v3)

Healthcare Service Location code was developed by CDC's National Healthcare Safety Network

- HL7 has adopted this code system and is available in the HL7 RIM database as one of HL7 V3 code system.
- Please contact CDC NMSN program or CDC PHIN Vocabulary Services at PHINVS@CDC.GOV for the support.

Code System Information

Code System Name	Healthcare Service Location (HL7)
Code System Code	PH_HealthcareServiceLoc_HL7_V3
Code System OID	2.16.840.1.113883.6.259
Table 396	HSLOC

Code System Concept Details

Code System Concept Code	1030-6
Code System Concept Name	Surgical critical care unit
Code System Preferred Concept Name	Surgical critical care unit
Code System Concept Status	Published
Date Created	
Date Revised	08/26/2008
Definition	A setting for critical care of patients with surgical conditions.

NAICS (Industry)

The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

- PHIN VADS contains the complete 2007 NAICS code system
- Many of the concept names are similar especially for the concepts with 5 or 6 digit NAICS codes.
- Concept name represents the native NAICS concept name
- Preferred Concept Name has been created to provide unique representation by concatenating the NAICS concept name and NAICS concept code (within brackets)
- U.S. Census Bureau provides the mapping between NAICS 2007 and NAICS 2002. It also provides mapping between NAICS and SIC (1987). SIC stands for Standard Industrial Classification
- Ask Dr.NAICS website from US Census Bureau provides FAQ about the NAICS codes as well as the mapping information.
- Detailed definition for these NAICS codes can also be found from the NAICS website.

** Example showing the two NAICS codes having the same concept names and the preferred concept name providing unique description of the NAICS concept.

Concept Code	Concept Name	Preferred Concept Name
11115	Corn Farming	Corn Farming [11115]
111150	Corn Farming	Corn Farming [111150]

Code System Information

Code System Name	Industry (NAICS)
Code System Code	PH_Industry_NAICS
Code System OID	2.16.840.1.113883.6.85
Table 396	NAICS

Code System Concept Details

Code System Concept Code	111150
Code System Concept Name	Corn Farming
Code System Preferred Concept Name	Corn Farming [111150]

SIC (Industry- 1987)

The Standard Industrial Classification was replaced by the North American Industry Classification System (NAICS) starting in 1997, but several data sets are still available with SIC-based data. Both SIC and NAICS classify establishments by their primary type of activity.

- NAICS is the recommended standard for the industry related concepts
- SIC 1987 is still being used by few industries and some of the CDC programs collect the SIC 1987 information especially for the occupational or environment related diseases (e.g. Lead Poisoning)
- U.S. Census Bureau provides the mapping between the SIC 1987 codes and the NAICS 2002 and NAICS 2007
- Preferred Concept Name has been created to provide unique representation by concatenating the SIC concept name and SIC concept code (within brackets)
- Department of Labor or OSHA website can provide more detailed information including the definition

Code System Information

Code System Name	Industry (SIC)
Code System Code	PH_Industry_SIC_1987
Code System OID	2.16.840.1.113883.6.232
Table 396	SIC

Code System Concept Details

Code System Concept Code	0115
Code System Concept Name	Corn
Code System Preferred Concept Name	Corn [0115]

LanguaL (Food)

The LanguaL code system is mainly used for the food related concepts.

- LanguaL has been jointly developed by FDA and European Food Consortium / organization (EuroFIR).
- LanguaL's website will provide the multilingual representation of LanguaL Classification System
- LanguaL Thesaurus can be navigated hierarchically from the LanguaL website.
- PHIN VADS provides the basic LanguaL concept information that is needed for the HL7 messaging.
- LanguaL Website also provides more metadata including the definition for the food classification concepts

Code System Information

Code System Name	LanguaL
Code System Code	PH_LanguaL
Code System OID	2.16.840.1.113883.4.291
Table 396	LANGUAL

Code System Concept Details

Code System Concept Code	A0211
Code System Concept Name	FROZEN YOGURT (US CFR)
Code System Preferred Concept Name	FROZEN YOGURT (US CFR)

Vaccine Manufacturer (MVX)

CDC's National Immunization Program maintains the Manufacturer of Vaccine code system that has been integrated into HL7 2.5 tables.

- Vaccine Manufacturer code system has active and inactive concepts
- Vaccine Manufacturer value set has only the active concepts

Code System Information

Code System Name	Manufacturers of vaccines (MVX)
Code System Code	PH_ManufacturersOfVaccinesMVX_CDC_NIP
Code System OID	2.16.840.1.113883.12.227
Table 396	MVX

Code System Concept Details

Code System Concept Code	MSD
Code System Concept Name	Merck & Co., Inc.
Code System Preferred Concept Name	Merck & Co., Inc.

MIME Media Type (IANA)

- Internet Assigned Numbers Authority provides the detailed Multipurpose Internet Mail Extensions.

- PHIN VADS provides the following subsets as value sets:
 - Media Type
 - Media Sub-types

Code System Information

Code System Name	MIME Media Type IANA
Code System Code	PH_MIME_MediaType_IANA
Code System OID	2.16.840.1.113883.6.10
Table 396	MEDIATYPE

Code System Concept Details

Code System Concept Code	audio
Code System Concept Name	audio
Code System Preferred Concept Name	audio

NDF-RT (Drug Classification)

- National Drug Formulary Reference Terminology maintained by Veteran Affairs (VA) is mainly used for classifying the drugs.
- NDF-RT code system source is from UMLS.
- NDF-RT code system source obtained from National Cancer Institute may have been modified by FDA for using them in the Structured Product Labeling (SPL)
- NDF-RT code system is mainly used to code the properties of the drugs such as:
 - Mechanism of Action
 - Physiological Effect
 - Structural Class
- NDF-RT code system also provides a good knowledgebase to provide the relationship between the disease and the drugs which are not represented in PHIN VADS but can be obtained from UMLS.
- PHIN VADS provides only the hierarchical relationships (parent-child).
- PHIN VADS provides a metadata about the type of NDF-RT concept (Hierarchical Term, Ingredient, Disease, etc.)
- Public health uses mainly the hierarchical term in the value sets.

Code System Information

Code System Name	NDF-RT (Drug Classification)
Code System Code	PH_NDF-RT
Code System OID	2.16.840.1.113883.3.26.1.5
Table 396	NDFRT

Code System Concept Details

Code System Concept Code	C8652
Code System Concept Name	[AM100] CEPHALOSPORINS
Code System Preferred Concept Name	[AM100] CEPHALOSPORINS [Hierarchical Term]

Property Name	Concept Definition	Property Value
NDF-RT Term Type	NDF-RT Term Type provides information about the type of NDF-RT concept or domain	Hierarchical Term

Relationships (parent-child)

Code System Code	Code System Concept Name	Relationship Type
PH_NDF-RT	[AM101] CEPHALOSPORINS, 1ST GENERATION	Parent of C8652
PH_NDF-RT	[AM102] CEPHALOSPORINS, 2ND GENERATION	Parent of C8652
PH_NDF-RT	[AM103] CEPHALOSPORINS, 3RD GENERATION	Parent of C8652
PH_NDF-RT	[AM104] CEPHALOSPORINS, 4TH GENERATION	Parent of C8652
PH_NDF-RT	[AM000] ANTIMICROBIALS	Child of C8652

CDC Notifiable Event (Disease / Condition)

- CDC authors the Notifiable Event code system which has the current as well as the retired (historical) notifiable conditions
- Nationally Notifiable Disease Surveillance System (NNDSS) uses these codes mainly to report the Nationally Notifiable Infectious Disease
- CDC Notifiable Event code system also contains the concepts that are notifiable only at the state level
- CDC NNDSS and CSTE provide an annual list of Nationally Notifiable Infectious Disease in January. This subset is also commonly referred as NND or NNID.
- PHIN VADS provides a metadata that would indicate if the disease or condition is nationally reportable.

Code System Information

Code System Name	Notifiable Event (Disease/Condition) Code List
Code System Code	PH_NotifiableEvent_Disease_Condition_CDC_NNDSS
Code System OID	2.16.840.1.114222.4.5.277
Table 396	NND

Code System Concept Details

Code System Concept Code	10220
Code System Concept Name	Tuberculosis
Code System Preferred Concept Name	Tuberculosis

Property Name	Concept Definition	Property Value
NNIDReportableToTheNNDSS	Nationally Notifiable Infectious Disease reportable to Nationally Notifiable Disease Surveillance System.	Nationally Reportable

Health Level 7 – Version 3 (HL7 V3)

- HL7 V3 Code systems are integrated into the HL7 RIM repository.

- HL7 V3 concepts are mainly used by the implementation guides using CDA and HL7 V3 based messaging guides.
- Some of the HL7 V3 code system concepts are also being used in the HL7 2.5 messaging guides (e.g. Observation Method, Null Flavor)
- HL7 does not provide mapping between the HL7 2.5 and HL7 V3 concepts.
- Null Flavor concepts (Unknown, Other) are not included in the HL7 V3 code systems other than in the Null Flavor Code System
- PHIN VADS value set uses the null flavor concepts from HL7 v3 code system if it is not being provided in the HL7 2.x code system. Many of the HL7 2.x code system explicitly include the null flavor concepts.

Code System Information

Code System Name	Observation Method (HL7)
Code System Code	PH_ObservationMethod_HL7_V3
Code System OID	2.16.840.1.113883.5.84
Table 396	OBSMETHOD

Code System Concept Details

Code System Concept Code	0003
Code System Concept Name	HLAR agar test
Code System Preferred Concept Name	HLAR agar test
Code System Concept Status	Published
Date Created	
Date Revised	08/26/2008
Definition	<p>Susceptibility, High Level Aminoglycoside Resistance agar test</p>

SOC 2000 (Occupation)

The 2000 Standard Occupational Classification (SOC) system is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of over 820 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 23 major groups, 96 minor groups, and 449 broad occupations. Each broad occupation includes detailed occupation(s) requiring similar job duties, skills, education, or experience.

- Standard Occupation Codes is the classification system for the occupation
- Preferred Concept Name has been created to provide unique representation by concatenating the SOC concept name and SOC concept code (within brackets)
- Department of Labor's Bureau of Labor and Statistics provides detailed description for each of the SOC codes.

Concept Code	Concept Name	Preferred Concept Name
17-2010	Aerospace Engineers	Aerospace Engineers [17-2010]
17-2011	Aerospace Engineers	Aerospace Engineers [17-2011]

Code System Information

Code System Name	Occupation (SOC 2000)
Code System Code	PH_Occupation_SOC_2000
Code System OID	2.16.840.1.113883.6.243
Table 396	SOC

Code System Concept Details

Code System Concept Code	17-2020
Code System Concept Name	Agricultural Engineers
Code System Preferred Concept Name	Agricultural Engineers [17-2020]

PHIN QUESTIONS

CDC maintains the legacy Public Health Information Network Questions that are used as the data element identifier in the HL7 messaging implementation guides.

- PHIN questions provides the following metadata:
 - Data Type (Coded, Text, Date)
 - Suggested Value Set (Answer list)
- PHIN Questions value sets are created for each of the HL7 Message Implementation guides.
- PHIN Questions would be used primarily in the OBX-3 as an observation identifier in the HL7 2.x messages.
- Please contact CDC Vocabulary Services team at PHINVS@CDC.GOV for more information / support for PHIN Questions.

Code System Information

Code System Name	PHIN Questions
Code System Code	PH_PHINQuestions_CDC
Code System OID	2.16.840.1.114222.4.5.232
Table 396	PHINQUESTION

Code System Concept Details

Code System Concept Code	CRS097
Code System Concept Name	Where was the disease acquired?
Code System Preferred Concept Name	Where was the disease acquired?
Code System Concept Status	Published
Date Created	07/11/2008
Date Revised	
Definition	General location of where the mother acquired rubella

Property Name	Concept Definition	Property Value
SuggestedDataType	Suggested Data Type	Coded
SuggestedValueSetCode	SuggestedValueSetCode	PHVS_DiseaseAcquiredJurisdiction_NND

Race & Ethnicity (CDC)

- HL7 has adopted the CDC's Race & Ethnicity code system for the US Realm.
- CDC Race and Ethnicity code system has been developed by CDC mainly for using them in the electronic data exchange such as HL7 messaging.
- CDC National Center for Health Statistics provides the Subject Matter Expertise as well as support for this code system along with CDC PHIN Vocabulary Services program.
- Detailed documentation regarding the development of CDC Race & Ethnicity and data collection methods are available from the CDC PHIN Website (Standards section).
- CDC Race & Ethnicity provides a nice hierarchy for navigating the Race & Ethnicity concepts which will be very useful for data aggregation as well as for developing the subsets (value sets) such as Race Category, Ethnic Groups, etc..

Code System Information

Code System Name	Race & Ethnicity - CDC
Code System Code	PH_RaceAndEthnicity_CDC
Code System OID	2.16.840.1.113883.6.238
Table 396	CDCREC

Code System Concept Details

Code System Concept Code	1002-5
Code System Concept Name	American Indian or Alaska Native
Code System Preferred Concept Name	American Indian or Alaska Native

Property Name	Concept Definition	Property Value
HierarchicalCode	Hierarchical Code	R 1

Relationships (parent-child)

Code System Code	Code System Concept Name	Relationship Type
PH_RaceAndEthnicity_CDC	American Indian	Parent of 1002-5
PH_RaceAndEthnicity_CDC	Alaska Native	Parent of 1002-5
PH_RaceAndEthnicity_CDC	Race	Child of 1002-5

RxNorm (Clinical Drug)

RxNorm, a standardized nomenclature for clinical drugs, is produced by the National Library of Medicine (NLM).

- *Clinical drug* is a pharmaceutical product given to (or taken by) a patient with a therapeutic or diagnostic intent. In RxNorm, the name of a clinical drug combines its ingredients, strengths, and form.
- RxNorm provides normalized names for clinical drugs and links its names to many of the drug vocabularies commonly used in pharmacy management and drug interaction software, including those of First Databank, Micromedex,

MediSpan, Gold Standard Alchemy, and Multum. By providing links between these vocabularies, RxNorm can mediate messages between systems not using the same software and vocabulary.

- PHIN VADS does not contain the entire RxNorm code system with all the mapping and relationships.
- PHIN VADS contains only the concepts that are tagged as “Semantic Clinical Drug (SCD) or “Semantic Clinical Drug Form”.
- RxNorm updates are available weekly which could be obtained from the UMLS (Unified Medical Language System) website managed by National Library of Medicine (NLM).
- NLM provides a browser “RxNav” which would be extremely useful for searching the RxNorm concepts as well as navigating the RxNorm concepts by Brand Name or Ingredient. RxNav can be accessed from the desktop using the link <http://mor.nlm.nih.gov/download/rxnav/>
- RxNav uses the data from the UMLS website and installs just the software on the user’s system.

** Example of RxNorm concept “Semantic Clinical Drug” (Drug Name, Dose, Unit and Form)

Code System Information

Code System Name	RxNorm
Code System Code	PH_RxNorm
Code System OID	2.16.840.1.113883.6.88
Table 396	RXNORM

Code System Concept Details

Code System Concept Code	252822
Code System Concept Name	Amoxicillin 1000 MG Oral Capsule
Code System Preferred Concept Name	Amoxicillin 1000 MG Oral Capsule [SCD]

Property Name	Concept Definition	Property Value
RxAUI	RxAUI	1286151
RxNormTermType	RxNormTermType	Semantic Clinical Drug

** Example of RxNorm concept “Semantic Clinical Drug Form” (Drug name with Form).

Code System Concept Details

Code System Concept Code	370578
Code System Concept Name	Amoxicillin Oral Capsule
Code System Preferred Concept Name	Amoxicillin Oral Capsule [SCDF]

Property Name	Concept Definition	Property Value
RxAUI	RxAUI	1575542
RxNormTermType	RxNormTermType	Semantic Clinical Drug Form

FIPS 5-2 (State)

Federal Information Processing Standards Publications (FIPS PUBS) are issued by the National Institute of Standards and Technology after approval by the Secretary of Commerce pursuant to Section 111(d) of the Federal Property and Administrative Services Act of 1949, as amended by the Computer Security Act of 1987, Public Law 100-235. FIPS 5-2 provides codes for the identification of the States, the District of Columbia and the Outlying Areas of the United States, and Associated Areas. FIPS 5-2 state code system has 2 character alphabetic code as well as the 2 character numerical code.

- PHIN VADS uses the numerical code as the concept code which is widely used by most of the demographic or GPS systems. Numerical codes are also used as a prefix for the FIPS county code.
- PHIN VADS provides the 2 character alpha code in the metadata
- USGS GNIS provides the FIPS 5-2 state code in the metadata

Code System Information

Code System Name	FIPS 5-2 (State)
Code System Code	PH_State_FIPS_5-2
Code System OID	2.16.840.1.113883.6.92
Table 396	FIPS5_2

Code System Concept Details

Code System Concept Code	13
Code System Concept Name	Georgia
Code System Preferred Concept Name	Georgia

Concept Alternate Designations

SDO Designation ID	Concept Designation Text
GA	GA

UMLS

UMLS stands for Unified Medical Language System, which is being maintained by National Library of Medicine and provides mapping between the various standard vocabularies.

- PHIN VADS uses UMLS Concepts in the value set only if the SDO vocabularies did not have the concept.
- UMLS Concept Unique Identifier (CUI) is being used as the concept code
- PHIN VADS has only very few UMLS concepts that are being used in the value set.
- Use the UMLS website for downloading the entire UMLS.
- UMLS also provides a tool “Metamorphosys” which allows to subset the vocabularies needed for your organization.
- UMLS has rich synonyms and language variants which are used in the natural language processing.
- UMLS uses the Semantic Group and Semantic Type to classify the UMLS concepts from various vocabularies.

Code System Information

Code System Name	UMLS
Code System Code	PH_UMLS
Code System OID	2.16.840.1.113883.6.86
Table 396	UML

Code System Concept Details

Code System Concept Code	C0021568
Code System Concept Name	Insect Bites and Stings
Code System Preferred Concept Name	Insect Bites and Stings

FDA UNII

FDA Unique Ingredient Identifier (UNII) has been recommended by HITSP and CHI as the code system for identifying the drug ingredients.

- PHIN VADS allows to browse or search the entire UNII code system
- FDA UNII may be released every 3 months.
- Please contact FDA CDER for more information regarding this code system.

Code System Information

Code System Name	Unique Ingredient Identifier (UNII)
Code System Code	PH_UNII_FDA_SRS
Code System OID	2.16.840.1.113883.4.9
Table 396	FDAUNII

Code System Concept Details

Code System Concept Code	804826J2HU
Code System Concept Name	AMOXICILLIN
Code System Preferred Concept Name	AMOXICILLIN

UCUM

The Regenstrief Institute has developed a code system “Unified Code for Units of Measure” (UCUM) and syntax for representing the units of measure related concepts.

- UCUM units are commonly used in HL7 2.x message especially in the OBX-6 or in HL7 v3 messages for the data type PQ / PQR.
- UCUM code system provides only the atomic units and provides the syntax for creating the pre-coordinated units of measure concepts (UCUM expression)
- PHIN VADS has included the UCUM atomic concepts as well as the UCUM expression in the UCUM code system
- UCUM expression concepts are commonly used clinical units of measure concepts developed by HL7 Vocabulary Technical Committee

- UCUM code system metadata provides the dimension for the units of measure concepts which may be used during the units of measure conversion (e.g. pound to kilogram)
- PHIN VADS preferred concept name uses the fully specified name providing the kind of quantity information within brackets along with the UCUM concept name.
- For more detailed implementation of the UCUM code system, please visit the UCUM website.

Code System Information

Code System Name UCUM - Unified Code for Units of Measure
Code System Code PH_UnitsOfMeasure_UCUM
Code System OID 2.16.840.1.113883.6.8
Table 396 UCUM

Code System Concept Details

Code System Concept Code mg/kg
Code System Concept Name MilliGramsPerKiloGram [Mass Ratio Or Mass Fraction Or Mass Content Units]
Code System Preferred Concept Name MilliGrams Per KiloGram [Mass Ratio Or Mass Fraction Or Mass Content Units]

Property Name	Concept Definition	Property Value
Dimension	UCUM Dimension.	1
KindOfQuantity	UCUM Metadata - Kind of Quantity.	Mass Ratio Or Mass Fraction Or Mass Content Units
UCOMUnitConceptType	UCUM Unit Concept Type attribute tells if the concept was atomic UCUM concept or UCUM expression.	UCUM Expression

**Example of UCUM concepts with kind of quantity information provided within brackets.

Concept Code	Concept Name	Preferred Concept Name
[degF]	degree Fahrenheit	degree Fahrenheit [temperature]
Cel	degree Celsius	degree Celsius [temperature]
deg	degree	degree [plane angle]

USGS-GNIS (Cities)

The United States Geological Survey (USGS) maintains the Geographic Name Information System for identifying the concepts related to a geographical location.

- GNIS codes are used in most of the GPS systems
- GNIS Codes are used in PHIN VADS mainly for identifying the cities (Populated places).
- GNIS replaces the previously used FIPS 55-3 code system
- USGS website provides a more detailed metadata including the mapping to FIPS code system concepts.
- USGS GNIS Feature ID is used as the concept code for USGS GNIS concepts
- PHIN VADS uses a fully specified name as the preferred concept name using the following syntax: "USGS location name, 2 character FIPS State code and FIPS County name"

- PHIN VADS also provides the FIPS metadata using FIPS codes as well as FIPS concept names.
- Please see the search tips mentioned below for the USGS GNIS concepts.

Code System Information

Code System Name	U.S. Board on Geographic Names (USGS - GNIS)
Code System Code	PH_USGS_GNIS
Code System OID	2.16.840.1.113883.6.245
Table 396	USGSGNIS

Code System Concept Details

Code System Concept Code	351615
Code System Concept Name	Atlanta
Code System Preferred Concept Name	Atlanta, GA, Fulton

Property Name	Concept Definition	Property Value
FIPS_County_Code	FIPS_County_Code	13121
FeatureID_State_CountyCode	FeatureID_State_CountyCode	351615, 13, 121
FeatureID_State_County_NameAndCode	FeatureID_State_County_NameAndCode	Atlanta, GA, Fulton [351615, 13, 121]

** Example below illustrates the search of “Atlanta” concept with many matches. Users may want to use the State or County name in the search to get a narrowed search results.

Concept Code	Concept Name	Preferred Concept Name
1064351	Atlanta	Atlanta, OH, Pickaway
1372354	Atlanta	Atlanta, TX, Cass
1530562	Atlanta (historical)	Atlanta (historical), WA, Skagit
1657962	Atlanta	Atlanta, CA, San Joaquin
196046	Atlanta	Atlanta, CO, Baca
216021	Atlanta	Atlanta, DE, Sussex
217573	Atlanta Estates	Atlanta Estates, DE, Sussex
2345899	Atlanta Downtown Post Office	Atlanta Downtown Post Office, GA, Fulton
2345918	Atlanta Station Number 4 Fire Station	Atlanta Station Number 4 Fire Station, GA, Fulton
2346288	Atlanta Central City Post Office	Atlanta Central City Post Office, GA, Fulton
326161	Atlanta Junction	Atlanta Junction, GA, Floyd
331614	East Atlanta	East Atlanta, GA, DeKalb
332512	North Atlanta	North Atlanta, GA, DeKalb
351615	Atlanta	Atlanta, GA, Fulton
396057	Atlanta	Atlanta, ID, Elmore

CVX (Vaccine Names)

The CDC's National Immunization Program (NIP) maintains the vaccine names and has been integrated into HL7 2.5 tables.

- Vaccine Names code system has active and inactive concepts
- Vaccine Names value set has only the active concepts
- CDC NIP website also provides mapping between CVX and the CPT (Common procedural Terminology) codes.

Code System Information

Code System Name	Vaccines administered (CVX)
Code System Code	PH_VaccinesAdministeredCVX_CDC_NIP
Code System OID	2.16.840.1.113883.12.292
Table 396	CVX

Code System Concept Details

Code System Concept Code	03
Code System Concept Name	measles, mumps and rubella virus vaccine
Code System Preferred Concept Name	MMR