

**Consolidated Health Informatics**  
**Standards Adoption Recommendation**  
**Demographics**

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## Summary

### **Domain: Demographics**

### **Standards Adoption Recommendation: Health Level Seven<sup>®</sup> (HL7<sup>®</sup>) Version 2.4+**

#### **SCOPE**

The standard, as identified in the following section of this document, will be used to set the requirements for collecting and storing specific patient demographic data, to be used for various purposes, primarily that of unique patient identification.

#### **RECOMMENDATION**

Health Level Seven<sup>®</sup> (HL7<sup>®</sup>), Version 2.4 and higher. This recommendation complies with the OMB's Race and Ethnicity standards for reporting.

#### **OWNERSHIP**

Health Level Seven<sup>®</sup> (HL7<sup>®</sup>) holds the copyright, <http://www.hl7.org/>

#### **APPROVALS AND ACCREDITATIONS**

HL7<sup>®</sup> is an ANSI-accredited Standards Developing Organization. This standard has been approved by full organizational ballot voting.

#### **ACQUISITION AND COST**

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## Part I – Team & Domain Scope Identification

### Target Vocabulary Domain

*Common name used to describe the clinical/medical domain or messaging standard requirement that has been examined.*

Demographic Information

*Describe the specific purpose/primary use of this standard in the federal health care sector (100 words or less)*

The standard, as identified in the following section of this document, will be used to set the requirements for collecting and storing specific patient demographic data, to be used for various purposes, primarily that of unique patient identification. Through later research, demographic information can serve as an important component in the identification of health trends within various segments of the population and can focus on these demographic groups to recognize reactions to specific health care regimens and clinical trials. The collected information can be used to track the elimination of health disparities, a high priority initiative for many government departments and agencies, such as the Department of Health and Human Services.

**Sub-domains** *Identify/dissect the domain into sub-domains, if any. For each, indicate if standards recommendations are or are not included in the scope of this recommendation.*

Domain/Sub-domain	In-Scope (Y/N)
Patient Care (Patient and Clinical Management)	Y
Financial / Billing	Y
Legal and Regulatory Concerns (including Records Management)	Y
Research	Y
Communication	Y

**Information Exchange Requirements (IERS)** *Using the table at appendix A, list the IERS involved when using this vocabulary.*

Customer Demographic Data
Beneficiary Financial / Demographic Data
Beneficiary Tracking Information

**Team Members** *Team members' names and agency names with phone numbers.*

Name	Agency/Department
<b>Elizabeth Franchi (team lead)</b>	<b>Department of Veterans Affairs, Veterans Health Administration</b>
Jorge Ferrer	Department of Health and Human Services, Centers for Medicare and Medicaid Services
Mike Fitzmaurice	Department of Health and Human Services, Agency for Health Research and Quality
Jason Goldwater	Department of Health and Human Services, Centers for Medicare and Medicaid Services
Marjorie Greenberg	Department of Health and Human Services, Centers for Disease Control and Prevention
Matt Greene	Department of Veterans Affairs, Veterans Health Administration
Mary Hamilton	Department of Health and Human Services, Centers for Disease Control and Prevention
Liz Ortuzar	Department of Health and Human Services, Food and Drug Administration
Nancy Orvis	OASD(HA)/TRICARE Management Activity Department of Defense

**Work Period** *Dates work began/ended.*

Start	End
Friday, February 21, 2003	Wednesday, April 30, 2003

## Part II – Standards Adoption Recommendation

**Recommendation** *Identify the solution recommended.*

Health Level Seven<sup>®</sup> (HL7<sup>®</sup>), Version 2.4 and higher . This recommendation complies with the OMB's Race and Ethnicity standards for reporting.

**Ownership Structure** *Describe who “owns” the standard, how it is managed and controlled.*

Headquartered in Ann Arbor, MI, Health Level Seven<sup>®</sup> (HL7<sup>®</sup>) is a not-for-profit volunteer organization. Its members-- providers, vendors, payers, consultants, government groups and others who have an interest in the development and advancement of clinical and administrative standards for healthcare—develop the standards. Like all ANSI-accredited Standards Development Organizations (SDOs), HL7<sup>®</sup> adheres to a strict and well-defined set of operating procedures that ensures consensus, openness and balance of interest. HL7<sup>®</sup> develops specifications, the most widely used being a messaging standard that enables disparate healthcare applications to exchange key sets of clinical and administrative data. Members of HL7<sup>®</sup> are known collectively as the Working Group, which is organized into technical committees and special interest groups. The technical committees are directly responsible for the content of the standards. Special interest groups serve as a test bed for exploring new areas that may need coverage in HL7<sup>®</sup>'s published standards.

**Summary Basis for Recommendation** *Summarize the team's basis for making the recommendation (300 words or less).*

The approach of this workgroup was as follows:

- Performed comprehensive review of standards and early elimination of any that did not properly meet the immediate demographic requirements for the data elements or concepts identified as patient demographics
- Developed checklist of data elements needed for proper demographics collection and unique patient identification
- Performed a comparison of each standard against this checklist
- Selected the standard that best met the overall requirements identified, along with recommendations for filling any gaps

**Conditional Recommendation** *If this is a conditional recommendation, describe conditions upon which the recommendation is predicated.*

This recommendation is made without conditions. The workgroup identified gaps and areas of needed improvement in the standard that would improve utility, these can be found in the “Gaps” section, Part III.

### **Approvals & Accreditations**

Indicate the status of various accreditations and approvals:

Approvals & Accreditations	Yes/Approved	Applied	Not Approved
Full SDO Ballot	Yes		
ANSI	Yes, ANSI-accredited Standards Developing Organization		

**Options Considered** *Inventory solution options considered and summarize the basis for not recommending the alternative(s). SNOMED must be specifically discussed.*

SNOMED CT <sup>®</sup>
MEDRA.
X12
ASTM E1384

### **Current Deployment**

***Summarize the degree of market penetration today; i.e., where is this solution installed today?***

HL7<sup>®</sup> is used in many places as the messaging standard for health care data. Furthermore, HL7<sup>®</sup> has a great deal of support in the user community and 1999 membership records indicate over 1,600 total members, approximately 739 vendors, 652 healthcare providers, 104 consultants, and 111 general interest/payer agencies. HL7<sup>®</sup> standards are also widely implemented, though complete usage statistics are not available. In a survey of 153 chief information officers in 1998, 80% used HL7<sup>®</sup> within their institutions, and 13.5% were planning to implement HL7<sup>®</sup> in the future. In hospitals with over 400 beds, more than 95% use HL7<sup>®</sup>. As an example, one vendor has installed 856 HL7<sup>®</sup> standard interfaces as of mid 1996. It is the proposed message standard for the Claims Attachment transaction of the Administration Simplification section of the Health Insurance Portability and Accountability Act (HIPAA). Anecdotal information indicates that the major vendors of medical software, including Cerner, Misys (Sunquest),

McKesson, Siemens (SMS), Eclipsys, AGFA, Logicare, MRS, Tamtron, IDX (Extend and CareCast), and 3M, support HL7<sup>®</sup>. The most common use of HL7<sup>®</sup> is probably admission/discharge/transfer (ADT) interfaces, followed closely by laboratory results, orders, and then pharmacy. HL7<sup>®</sup> is also used by many federal agencies including VHA, DoD and CDC, hence federal implementation time and cost is minimized. The widespread and long-standing use of HL7<sup>®</sup> leads to the team conclusion that this is a strong recommendation.

***What number or percentage of federal agencies have adopted the standard?***

Many federal agencies, several of which are represented within the CHI group, have adopted this standard for messaging.

***Is the standard used in other countries?***

Yes, Argentina, Australia, Canada, China, Czech Republic, Finland, Germany, India, Japan, Korea, Lithuania, The Netherlands, New Zealand, Southern Africa, Switzerland, Taiwan, Turkey and the United Kingdom are also part of HL7<sup>®</sup> initiatives.

***Are there other relevant indicators of market acceptance?***

This standard is so widely accepted that any of those that have been iterated should be acceptable.

## Part III – Adoption & Deployment Information

*Provide all information gathered in the course of making the recommendation that may assist with adoption of the standard in the federal health care sector. This information will support the work of an implementation team.*

### **Existing Need & Use Environment**

*Measure the need for this standard and the extent of existing exchange among federal users. Provide information regarding federal departments and agencies use or non-use of this health information in paper or electronic form, summarize their primary reason for using the information, and indicate if they exchange the information internally or externally with other federal or non-federal entities.*

- Column A: Agency or Department Identity (name)  
 Column B: Use data in this domain today? (Y or N)  
 Column C: Is use of data a core mission requirement? (Y or N)  
 Column D: Exchange with others in federal sector now? (Y or N)  
 Column E: Currently exchange paper or electronic (P, E, B (both), N/Ap)  
 Column F: Name of paper/electronic vocabulary, if any (name)  
 Column G: Basis/purposes for data use (research, patient care, benefits)

<b>Department/Agency</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
Department of Veterans Affairs	Y and N	Y	Y	B		Patient care
Department of Defense	Y	Y	Y	B		
HHS Office of the Secretary						
Administration for Children and Families (ACF)						
Administration on Aging (AOA)						
Agency for Healthcare Research and Quality (AHRQ)						
Agency for Toxic Substances and Disease Registry (ATSDR)						
Centers for Disease Control and Prevention (CDC)						
Centers for Medicare						



and Medicaid Services (CMS)						
Food and Drug Administration (FDA)						
Health Resources and Services Administration (HRSA)						
Indian Health Service (IHS)						
National Institutes of Health (NIH)						
Substance Abuse and Mental Health Services Administration (SAMHSA)						
Social Security Administration						
Department of Agriculture						
State Department						
US Agency for International Development						
Justice Department						
Treasury Department						
Department of Education						
General Services Administration						
Environmental Protection Agency						
Department of Housing & Urban Development						
Department of Transportation						
Homeland Security						

**Number of Terms**

*Quantify the number of vocabulary terms, range of terms or other order of magnitude.*

***How often are terms updated?***

The terms can be reviewed several times a year as requested.

**Range of Coverage**

***Within the recommended vocabulary, what portions of the standard are complete and can be implemented now? (300 words or less)***

Please refer to the attached spreadsheet file for the standards coverage.

**Acquisition**

***How are the data sets/codes acquired and use licensed?***

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**Cost**

***What is the direct cost to obtain permission to use the data sets/codes? (licensure, acquisition, other external data sets required, training and education, updates and maintenance, etc.)***

HL7<sup>®</sup> sells hard and computer readable forms of the various standard versions, cost from \$50 - \$500 depending on specific standard and member status. Draft versions of standards are available to all from their website. No specific cost is associated with using the standards.

Training is offered through HL7<sup>®</sup> and others are varying costs from several hundred to several thousand-dollars/per person. Consultation services are available at standard industry cost for training, update instillation and maintenance.

**Systems Requirements**

***Is the standard associated with or limited to a specific hardware or software technology or other protocol?***

No

**Guidance**

***What public domain and implementation and user guides, implementation tools or other assistance is available and are they approved by the SDO?***

HL7<sup>®</sup> is in widespread use and has many implementation guides and tools, some in the public domain and some accessible by authorized personnel or organizations. Please refer to [www.hl7.org](http://www.hl7.org) for more details.

***Is a conformance standard specified? Are conformance tools available?***

A standard is not specified. Conformance tools are not available through the SDO, but private sector tools do exist.

**Maintenance**

***How do you coordinate inclusion and maintenance with the standards developer/owners?***

Voluntary upgrade to new versions of standards, generally by trading partner agreement. Messages are transmitted with version number and use of prior versions is generally supported for a period of time after introduction of a new one.

***What is the process for adding new capabilities or fixes?***

Continual review of in-use requirements of standard at organization meetings held three times/year.

***What is the average time between versions?***

Various, but approximately annually.

***What methods or tools are used to expedite the standards development cycle?***

None. Occurs at meetings held three times/year and in the workgroups between meetings. Standards development can be quite lengthy.

***How are local extensions, beyond the scope of the standard, supported if at all?***

Yes, but not encouraged (Z segment)

**Customization**

*Describe known implementations that have been achieved without user customization, if any.*

None.

*If user customization is needed or desirable, how is this achieved? (e.g, optional fields, interface engines, etc.)*

**Mapping Requirements**

*Describe the extent to which user agencies will likely need to perform mapping from internal codes to this standard.*

*Identify the tools available to user agencies to automate or otherwise simplify mapping from existing codes to this standard.*

**Compatibility**

*Identify the extent of off-the-shelf conformity with other standards and requirements:*

Conformity with other Standards	Yes (100%)	No (0%)	Yes with exception
NEDSS requirements	<b>X</b>		
HIPAA standards	<b>X</b>		
HL7 <sup>®</sup> 2.4 and higher	<b>X</b>		

**Implementation Timeframe**

*Estimate the number of months required to deploy this standard; identify unique considerations that will impact deployment schedules.*

Any estimate would differ by agency, due to the legacy systems currently in place that are using older versions of HL7<sup>®</sup>. The group agrees that implementation for new development would occur in FY04, with version 2.4 as the target. In order to determine the compatibility of the two standards, use cases need to be done, to look at if all intended uses of patient demographics are being addressed.

*If some data sets/code sets are under development, what are the projected dates of completion/deployment?*

## **Gaps**

### ***Identify the gaps in data, vocabulary or interoperability.***

Marital status: The available values should be re-examined due to the many overlaps currently in the standard. One recommendation is to make it similar to the ASTM standard.

Gender: The selections within this data element need to be more restrictive, such as three selections instead of five, at least for demographic purposes. These could include Male, Female, and Unknown for humans\*.

Insurance Status: This data element and its associated values should be added.

Living Status: This data element should be considered for those situations when information related the presence of another individual in a residence is needed to determine the supervisory care needed. Such information is also becoming more necessary where homelessness needs to be considered or tracked. ASTM has this data element for tracking whether a patient lives alone or with someone.

It is also recommended that a separate group maintain a mapping to X12.

Any other required federal standards that should emerge will require a harmonization between HL7<sup>®</sup> and the new required standard.

\*The group did not expand the gender category into gender identification and chromosomal sex. Of note - that level of specificity is not available in the HL7<sup>®</sup> tables. In addition HL7<sup>®</sup> has a separate field for gender status. Upon satisfactory listing of these distinct vocabulary tables the gender section could be considered for adoption.

Please refer to the attached spreadsheets for more detailed identification of gaps within HL7<sup>®</sup> as identified by the working group.

**Obstacles*****What obstacles, if any, have slowed penetration of this standard? (technical, financial, and/or cultural)***

With numerous systems currently deployed throughout the government, the cost to convert to a new version of HL7<sup>®</sup> is high. Furthering the difficulties are the legacy issues that still need to be addressed. There will always be mapping issues and conflicts due to the merging of these with HIPAA demographics.

While the team supports the use of HL7<sup>®</sup> messaging standards for clinical transactions, it notes that a large gap exists between the message standard and the ability to understand and use the contents of the message. Version 2.x HL7<sup>®</sup> messages are currently implemented with a high degree of variability in content of the elements. Some of this difference relates to the use of local codes or non-standard use of publicly available codes and some involves subtle differences in the interpretation of the element's meaning. Version 3 of HL7<sup>®</sup> has a goal of increasing the ability to understand a received message by addressing these two broad issues through the use of an XML message structure and a Reference Information Model (RIM), though this has not been demonstrated. The CHI Council needs to realize that the acceptance of the message standard without standardization of code sets between users will not result in increased interoperability and a large gap will exist.

Appendix A**Information Exchange Requirements (IERs)**

<b>Information Exchange Requirement</b>	<b>Description of IER</b>
Beneficiary Financial / Demographic Data	Beneficiary financial and demographic data used to support enrollment and eligibility into a Health Insurance Program.
Beneficiary Inquiry Information	Information relating to the inquiries made by beneficiaries as they relate to their interaction with the health organization.
Beneficiary Tracking Information	Information relating to the physical movement or potential movement of patients, beneficiaries, or active duty personnel due to changes in level of care or deployment, etc.
Body of Health Services Knowledge	Federal, state, professional association, or local policies and guidance regarding health services or any other health care information accessible to health care providers through research, journals, medical texts, on-line health care data bases, consultations, and provider expertise. This may include: (1) utilization management standards that monitor health care services and resources used in the delivery of health care to a customer; (2) case management guidelines; (3) clinical protocols based on forensic requirements; (4) clinical pathway guidelines; (5) uniform patient placement criteria, which are used to determine the level of risk for a customer and the level of mental disorders (6) standards set by health care oversight bodies such as the Joint Commission for Accreditation of Health Care Organizations (JCAHO) and Health Plan Employer Data and Information Set (HEDIS); (7) credentialing criteria; (8) privacy act standards; (9) Freedom of Information Act guidelines; and (10) the estimated time needed to perform health care procedures and services.
Care Management Information	Specific clinical information used to record and identify the stratification of Beneficiaries as they are assigned to varying levels of care.
Case Management Information	Specific clinical information used to record and manage the occurrences of high-risk level assignments of patients in the health delivery organization..
Clinical Guidelines	Treatment, screening, and clinical management guidelines used by clinicians in the decision-making processes for providing care and treatment of the beneficiary/patient.

Cost Accounting Information	All clinical and financial data collected for use in the calculation and assignment of costs in the health organization .
Customer Approved Care Plan	The plan of care (or set of intervention options) mutually selected by the provider and the customer (or responsible person).
Customer Demographic Data	Facts about the beneficiary population such as address, phone number, occupation, sex, age, race, mother's maiden name and SSN, father's name, and unit to which Service members are assigned
Customer Health Care Information	All information about customer health data, customer care information, and customer demographic data, and customer insurance information. Selected information is provided to both external and internal customers contingent upon confidentiality restrictions. Information provided includes immunization certifications and reports, birth information, and customer medical and dental readiness status
Customer Risk Factors	Factors in the environment or chemical, psychological, physiological, or genetic elements thought to predispose an individual to the development of a disease or injury. Includes occupational and lifestyle risk factors and risk of acquiring a disease due to travel to certain regions.
Encounter (Administrative) Data	Administrative and Financial data that is collected on patients as they move through the healthcare continuum. This information is largely used for administrative and financial activities such as reporting and billing.
Improvement Strategy	Approach for advancing or changing for the better the business rules or business functions of the health organization. Includes strategies for improving health organization employee performance (including training requirements), utilization management, workplace safety, and customer satisfaction.
Labor Productivity Information	Financial and clinical (acuity, etc.) data used to calculate and measure labor productivity of the workforce supporting the health organization.
health organization Direction	Goals, objectives, strategies, policies, plans, programs, and projects that control and direct health organization business function, including (1) direction derived from DoD policy and guidance and laws and regulations; and (2) health promotion programs.
Patient Satisfaction Information	Survey data gathered from beneficiaries that receive services from providers that the health organization wishes to use to measure satisfaction.



Patient Schedule	Scheduled procedure type, location, and date of service information related to scheduled interactions with the patient.
Population Member Health Data	Facts about the current and historical health conditions of the members of an organization. (Individuals' health data are grouped by the employing organization, with the expectation that the organization's operations pose similar health risks to all the organization's members.)
Population Risk Reduction Plan	Sets of actions proposed to an organization commander for his/her selection to reduce the effect of health risks on the organization's mission effectiveness and member health status. The proposed actions include: (1) resources required to carry out the actions, (2) expected mission impact, and (3) member's health status with and without the actions.
Provider Demographics	Specific demographic information relating to both internal and external providers associated with the health organization including location, credentialing, services, ratings, etc.
Provider Metrics	Key indicators that are used to measure performance of providers (internal and external) associated with the health organization.
Referral Information	Specific clinical and financial information necessary to refer beneficiaries to the appropriate services and level of care.
Resource Availability	The accessibility of all people, equipment, supplies, facilities, and automated systems needed to execute business activities.
Tailored Education Information	Approved TRICARE program education information / materials customized for distribution to existing beneficiaries to provide information on their selected health plan. Can also include risk factors, diseases, individual health care instructions, and driving instructions.