Standardized Terminologies Used in the Learning Health System

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Learning Objectives

At the completion of this session, the learner will:

• Describe standards necessary for the electronic health record and the Learning Health System

• Identify at least four reasons for using a standardized terminology in health care

• Describe the benefits of using a standardized terminology in documenting patient response

• Describe the relationship between the terminologies mandated through legislation and ANA recognized terminologies
Standards Specified by Legislation

• HIPAA 1996
  – Code sets: ICD-9 and moving to ICD-10 in 2014, CPT, RxNorm, SNOMED CT, LOINC
  – Transactions: HL7, X12
• MMA 2003
  – Confirmed HIPAA code sets
  – Transactions: HL7, X12, NCPDP
• HITECH of ARRA 2009
  – Confirmed HIPAA code sets, exploring ICF and other niche code sets (such as race, gender, etc.)
  – Confirmed transaction standards
• ACA 2011
  – Confirmed HIPAA code sets
  – Confirmed transaction standards
  – Added Operating Rules for transactions
A Learning System for the U.S.
Interface and Reference Terminologies

• Interface terminology supplies the terms used by clinicians as they talk about clinical concepts or the set of terms displayed in an electronic health record for the clinicians to use.
• Theses terms need to be link/mapped to a standard reference terminology to achieve the benefits of using standardized terminologies for interoperability.
• Examples of interface terminology: NANDA, local expressions and preferences.
• Examples of reference terminologies: ICD-9-CM, LOINC, SNOMED CT.
ICD-9-CM and ICD-10-CM

WHO Collaborating Center for the Classification of Diseases for North America

- Established in 1974 at the National Center for Health Statistics (NCHS)
- WHO is a specialized agency of the United Nations
- Its responsibilities include the International Classification of Diseases
- This is performed in conjunction with collaborating centers, established primarily on the basis of language, in North America (NCHS), England, Australia, Paris, Nordic countries, Moscow, Beijing, Caracas, Sao Paulo and Kuwait. Other countries, such as Japan, have recognized ICD offices
ICD-9-CM and ICD-10-CM/ICD-10-PCS

- ICD-9-CM is a medical disease classification used in the US as a billing classification
  - [http://www.cdc.gov/nchs/icd/icd9cm.htm](http://www.cdc.gov/nchs/icd/icd9cm.htm)
- In 2014 all healthcare services that receive Medicare and Medicaid reimbursement will be required to submit ICD-10-CM OR 1CD-10-PCS codes
  - [http://www.cdc.gov/nchs/icd/icd10cm.htm](http://www.cdc.gov/nchs/icd/icd10cm.htm)

• Developed by the American Medical Association

• Adopted by CMS and most insurance companies as reimbursement codes
RxNorm

- Developed by the National Library of Medicine to be a standard for representing drug information in EHRs
  - 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, and Multum.
  - Mediates messages between systems not using the same software and vocabulary.
  - Includes the National Drug File - Reference Terminology (NDF-RT) from the Veterans Health Administration.
    - Used to code clinical drug properties, including mechanism of action, physiologic effect, and therapeutic category.

Systematic Nomenclature of Medicine—Clinical Terms (SNOMED CT)

- Developed and released by the International Health Terminology Standards Development Organization
  - http://www.ihtsdo.org/snomed-ct
- Patient-centric, Interprofessional clinically focused terminology
- Developed to be used in EHRs for data entry and retrieval
- Optimized for clinical decision support and data analysis
- USA has a free use license managed by the National Library of Medicine
The Axes of SNOMED CT—Provides the Syntax for the Concepts

Clinical Finding
- Finding (Swelling of arm)
- Disease (Pneumonia)
Procedure/intervention (Biopsy of lung)
Observable entity (Tumor stage)
Body structure (Structure of thyroid)
Organism (DNA virus)
Substance (Gastric acid)
Pharmaceutical/biologic product (aspirin)
Specimen (Urine specimen)

Physical object (Suture needle)
Physical force (Friction)
Events (Disease outbreak)
Environments/geographical locations (Intensive care unit)
Social context (Organ donor)
Situation with explicit context (family history of heart disease)
Staging and scales (Braden Scale)
Attribute (Controlled temperature)
Qualifier value (Bilateral)
Linkage concept (has reason)
SNOMED CT Browser and Subsets

• CliniClue is a free browser that allows you to view SNOMED CT
  • http://www.cliniclue.com/software
  • There are several hundred thousand concepts in SNOMED CT so a browser is necessary

• Problem list subsets for Meaningful Use
CliniClue Browser for SNOMED CT
IHTSDO Nursing Special Interest Group

• A community of practice for the nursing profession, supporting worldwide nursing participation in the development, validation, uptake, implementation, and correct use of SNOMED CT and related products.
• Participation is welcome from anyone interested in ensuring that SNOMED CT supports nursing requirements for electronic documentation and communication of patient care in any setting
• Join the SIG: [http://www.ihtsdo.org/about-ihtsdo/governance-and-advisory/working-groups/special-interest-groups](http://www.ihtsdo.org/about-ihtsdo/governance-and-advisory/working-groups/special-interest-groups)
• Meets in person once a year at the annual meeting
• Meets monthly by webinar
  • Information for attendance is posted at their web site above
Logical Observation Identifiers Names and Codes (LOINC®)

- Developed by the Regenstrief Institute and supported by the National Library of Medicine
- Provides a standard set of universal names and codes for identifying individual laboratory and clinical results.
  - Used in clinical observations and scales, e.g., Morse Falls Risk, Clinical Care Classification goals
- Nursing Consultant: Susan Matney, PhDc, RN, FAAN
  - Chairs the Nursing SIG
- http://www.loinc.org
<table>
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<th>Score</th>
<th>LOINC</th>
<th>Component</th>
<th>Property</th>
<th>Timing</th>
<th>System</th>
<th>Scale</th>
<th>Method</th>
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<tbody>
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<td>37.50</td>
<td>59461-4</td>
<td>Morse Fall risk level</td>
<td>Find</td>
<td>Pt</td>
<td>^Patient</td>
<td>Ord</td>
<td>Morse Fall Scale</td>
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<tr>
<td>37.50</td>
<td>59460-6</td>
<td>Morse Fall risk total</td>
<td>Num</td>
<td>Pt</td>
<td>^Patient</td>
<td>Qn</td>
<td>Morse Fall Scale</td>
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<td>27.23</td>
<td>57254-5</td>
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<td>Find</td>
<td>Pt</td>
<td>^Patient</td>
<td>Norm</td>
<td>QASIS-C</td>
</tr>
</tbody>
</table>

59461-4  Morse Fall risk level Morse Fall Scale

NORMATIVE ANSWER LIST  (LL905-1)

<table>
<thead>
<tr>
<th>SEQ#</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No Risk (MFS Score 0 - 24)</td>
</tr>
<tr>
<td>2</td>
<td>Low Risk (MFS Score 25 - 45)</td>
</tr>
<tr>
<td>3</td>
<td>High Risk (MFS Score 50+)</td>
</tr>
</tbody>
</table>

Search functionality online; but also publishes a free browser—RELMA, http://www.ihtsdo.org/about-ihtsdo/governance-and-advisory/working-groups/special-interest-groups
National Committee on Vital and Health Statistics (NCVHS)

- Serves as the statutory public advisory body to the Secretary of Health and Human Services in the area of health information
- Provides advice and assistance to the Department
- Serves as a forum for interaction with interested private sector groups on a variety of key health data issues
- Accelerates the evolution of public and private health information systems
  - Uniform shared data standards
  - Protecting privacy, confidentiality, and security
- Advises on implementation HIPAA, MMA, ACA
Meetings are open to public and broadcast on the Internet

- [www.ncvhs.hhs.gov](http://www.ncvhs.hhs.gov)
- Hears testimony on selected topics
  - Testimony is invited
  - Open microphone time at every hearing
- Sends letters of recommendation concerning health information technology to the Secretary of the Department of Health and Human Services
Office of the National Coordinator for Health Information Technology (ONC)

- NCVHS recommended to HHS that this office be established
- ONC is the major influencer in achieving the vision of the EHR and the Nationwide Health Information Network (NwHIN).
- Established by President Bush to support the adoption of healthcare IT in this country.
- Supported by President Obama and given a larger budget in HITECH
- http://healthit.hhs.gov
The HIT Policy Committee will make recommendations to the National Coordinator for Health Information Technology on:

- a policy framework for the development and adoption of a nationwide interoperable health information infrastructure
- including standards for the secure and private exchange of patient medical information
- ARRA 2009 requires recommendations on standards, implementation specifications, and certifications criteria in eight specific areas.

http://www.healthit.gov/policy-researchers-implementers/health-it-policy-committee
HIT Standards Committee: Advisory to ONC

- Charged with making recommendations to the ONC on
  - Standards
  - Implementation specifications, and
  - Certification criteria for the electronic exchange and use of health information.
- Focus on the policies developed by the Health IT Policy Committee’s eight areas.
- While developing, harmonizing, or recognizing standards and implementation specifications, the Health IT Standards Committee will also provide for the testing of the same by the National Institute for Standards and Technology (NIST).
- [http://www.healthit.gov/policy-researchers-implementers/health-it-standards-committee](http://www.healthit.gov/policy-researchers-implementers/health-it-standards-committee)
Ways to Participate

• Dial into the meetings
  • If there is an open microphone time, testify
  • If feedback is requested, respond!!!!!!
  • Send in testimony you feel is pertinent and relevant
  • Attend meetings in person, if possible, or by Internet
  • Seek nomination to HIT Policy, HIT Standards, or their work groups
• Support the Alliance for Nursing Informatics
  • All nursing informatics organizations belong and they have a process for rapid turn-around of testimony and comments
• [http://www.allianceni.org](http://www.allianceni.org)
Unified Medical Language System (UMLS)

- Rosetta Stone was critical to the translation between and among ancient languages
- UMLS functions in this capacity
  - Developed by the National Library of Medicine
  - [http://www.nlm.gov/research/umls](http://www.nlm.gov/research/umls)
- Has a metathesaurus that provides a crosswalk between concepts in different terminologies
Unified Medical Language System (UMLS)

Developed by the National Library of Medicine

A compilation of a number of classifications and code sets
Has a metathesaurus that provides a crosswalk between concepts in different systems
Provides support for Medline literature searches
Is NOT a clinical coded language
Accurate Terminology Mapping

- Health Information Technology and Health Data Standards at NLM
- Go to the web sites of the terminologies to learn more
- Validate the terminology mapping
Information System Architecture

• To realize the value of standardized terminologies you need
  • Transaction and Message standards
  • HL7, X12, NCPDP
  • Terminology engine also known as a terminology server
Common Terminology Engine

- Allows for the definition of terms and relationships, which can then be used for the definition of clinical protocols, clinical applications, quality reporting and research
- Allows for transformation and abstraction of data
- Contains all the clinical concepts needed for healthcare delivery, measurement, and research
Architecture Framework for Clinical Information Systems

- Performance Reporting
- Administrative Systems
- Analytical Data Repository
- Workflow Engine
- Clinical Decision Support (Evidence Based Guidelines)
- Clinical Systems
- Clinical Data Repository
- Clinician Workstation
- Terminology Infrastructure (Data and Information)
- Rules Engine
- Terminology Engine

QSEN Nursing Informatics Deep Dive
A Last Thought: Terminology is a Technology

For technology to work in health care so that it assists us in delivering quality care, the following technologies must exist

• Hardware
• Software
• Messages
• Terminology that represents knowledge!
Discussion Questions

1. How does federal legislation impact standardized health care terminologies?
2. Describe the role of LOINC and SNOMED in coding data for health IT.
3. How can you influence or participate in the activities of standard development and federal regulation?
4. Give a brief description of each of the mandated code sets for HIPAA, MMA, HITECH and ACA. Why were they chosen?
5. Why is the UMLS important?
6. Describe a terminology engine and how terminologies are processed for the clinician to use.
7. Why is terminology a technology?
Teaching Methods and Strategies

• Lecture
  – Describe the process used to implement national terminology requirements: HIPAA, meaningful use, NCVHS, and ONC.

• Discussion Board
  – Use the questions from the previous slide.

• Journal
  – Have student keep a journal of where standardized terminologies are used when they are in clinical rotations.
  – Write reflections on their response to using and seeing used the various terminologies they learn about in class.

• Activity
  – Have students download the browsers and explore the terminologies; could be linked to a quality exercise by looking at the terminology needed for quality metrics.
  – Develop a slide presentation on one of the mandated terminologies.
Questions?