National Nursing Informatics
Deep Dive Program

Identifying Nursing’s Unique Contribution to
Patient Outcomes Through Standardized
Terminologies

Part 4

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Driven to Discover℠
Objectives: Overview

• Compare standards in general life and need for nursing standardized terminologies
• Describe the similarities and differences in the American Nurses Association recognized nursing terminologies and data sets.
• Discuss the benefits of using standardized nursing terminologies.
• Provide resources and tools for teaching nursing terminologies aimed at prelicensure nursing students.
Key Messages

• Nursing terminologies are essential to communicate nursing practice and patient outcomes in a consistent way
• Interprofessional health care requires all disciplines to be represented – including nursing standardized data
• Discovery of new knowledge that includes nursing requires standardized nursing and interprofessional data
• All health care settings should implement an ANA recognized nursing terminology
  • When exchanging information – LOINC should be used for assessments and SNOMED CT for problems, interventions, and outcomes
• Sharable and comparable nurse-sensitive data is essential for comparison of evidence-based practices across organizations and their outcomes
Common Daily Standards

• Standards - rules, guidelines, consensus or characteristics about services, products, processes, or systems

• Types of standards
  • Measurements – time, distance, temperature, speedometers
  • Financial - ATM, accounting conventions
  • Construction (building, electrical, plumbing)
  • Technology – computers, modems, IV pumps
  • Airway frequencies for ham radios, radio, TV, air traffic, etc.
  • Privacy and security
  • Education – curriculum, student grading, licensure, certification

• Standards are important for clear communication, safety, consistency, and promotion of research and development
Classification – Terminology - Nomenclature

• System of names or terms, organized by rules for a particular purpose

• May include
  • Term
    • Conceptual Definition
    • Code to represent the “thing”

• Different ways to represent the organization
  • Hierarchy

Vegetables
  Cabbage
    Red Cabbage  Brussel sprouts  Kolrabi
# Common Medical Standards

<table>
<thead>
<tr>
<th>Category</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diseases</td>
<td>ICD-9-CM; SNOMED CT; ICD-10-CM</td>
</tr>
<tr>
<td>Procedures</td>
<td>CPT, HCPCS, ICD-9 (10), SNOMED-CT</td>
</tr>
<tr>
<td>Medications</td>
<td>RxNorm, NDF-RT, NDC</td>
</tr>
<tr>
<td>Laboratory orders/ results</td>
<td>LOINC</td>
</tr>
<tr>
<td>Vital Signs</td>
<td>LOINC</td>
</tr>
<tr>
<td>Images</td>
<td>DICOM</td>
</tr>
<tr>
<td>eClinical Quality Measures</td>
<td>LOINC (assessments), SNOMED-CT (problems, interventions)</td>
</tr>
<tr>
<td>Health Information Exchange</td>
<td>HL7</td>
</tr>
</tbody>
</table>
Until lions have their historians, tales of the hunt shall always glorify the hunters. ~African Proverb

If we cannot name it [nursing], we cannot control it, teach it, finance it, research it, or put it into public policy. – N. Lang
• Medicine

• Nursing
• Medicine

• Nursing
• Medicine
• Nursing

Medications

[Image of a patient in a hospital bed]

[Image of a nurse]

[Image of a stethoscope]
• Medicine

• Nursing

Medications

Fruits and vegetables
• Medicine

• Nursing
What do nursing terminologies represent?

• Diagnosis & treatment of human responses to actual or potential health problems
• Bio-psycho-social-cultural-social-spiritual phenomenon
• Context of care
• Client
• Many specialties, settings
• Local to global
Nursing Minimum Data Set (NMDS)

# Nursing Management Minimum Data Set (NMMDS) (Workforce Data)

## Environment
1. Facility Unique Identifier
2. Nursing Delivery Unit/Service
3. Patient/Client Population
4. Volume of Nursing [Care] Delivery Unit/Service
5. Method of Care Delivery
6. Client Accessibility
9. Autonomy
10. Accreditation/Certification/Licensure

## Nurse Resources
13. Staffing
14. Satisfaction
19. Nurse Demographics
20. Clinical Mental Workload
21. Environmental Conditions
22. EHR Implementation Stages

## Deprecated Data Elements
7. Clinical Decision Making Complexity
8. Environmental Complexity
11. Management Demographic Profile
12. Staff Demographic Profile

## Financial Resources — Not updated
15. Payer Type
16. Reimbursement
17. Nursing Delivery Unit/Service Budget
18. Expenses

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# ANA Recognized Nursing Terminologies

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC</td>
<td>Clinical Care Classification</td>
<td><a href="http://www.sabacare.com/">http://www.sabacare.com/</a></td>
</tr>
<tr>
<td>LOINC</td>
<td>Logical Observation Identifiers Names and Codes</td>
<td><a href="http://loinc.org/">http://loinc.org/</a></td>
</tr>
<tr>
<td>NIC</td>
<td>Nursing Intervention Classification</td>
<td><a href="http://www.nursing.uiowa.edu/cncce/nursing-interventions-classification-overview">http://www.nursing.uiowa.edu/cncce/nursing-interventions-classification-overview</a></td>
</tr>
<tr>
<td>NOC</td>
<td>Nursing Outcome Classification</td>
<td><a href="http://www.nursing.uiowa.edu/cncce/nursing-outcomes-classification-overview">http://www.nursing.uiowa.edu/cncce/nursing-outcomes-classification-overview</a></td>
</tr>
<tr>
<td>SNOMED-CT</td>
<td>Systematized Nomenclature of Medicine Clinical Terms</td>
<td><a href="http://www.ihtsdo.org/">http://www.ihtsdo.org/</a></td>
</tr>
</tbody>
</table>
Standardized Terminologies

1973 NANDA
1975 Omaha System
1973

1985 NMDS
1988 PNDS
1988 CCC
1989 ICNP
1994 LOINC
2000 SNOMED-CT
1987 NIC
1989 NMMDS
1991 NOC
1996 ABC Codes
2000
Health Information Exchange

Nursing Diagnoses
- PNDS
- CCC
- ICNP
- PNDS

Nursing Interventions
- SNOMED CT
- NANDA
- Omaha System
- NIC
- NOC

Nursing Outcomes
- Omaha System
- SNOMED CT

Nursing Assessments
- LOINC
- SNOMED CT - Answer

Nursing Minimum Data Set
Benefit of Standardized Language

• Collect & analyze uniform information about nursing’s contribution to patient care
• Build nursing data in data warehouses
• Improve nursing care through outcome evaluation
• Build evidence for expert practice
• Assist administrators in planning more effectively for staff and equipment services
• Provide information for the formulation of organizational and public policy concerning health

C-CDA for Transitions of Care

- Consolidated Clinical Document Architecture (C-CDA)
- Important for hand-offs of current problems/S&S as well as planned care
- Data standards are specified for US e.g.
  - SNOMED-CT for problems and procedures (interventions)
  - LOINC for assessments
  - RxNorm for medications
  - Etc
Vision for Nursing Data in a Clinical Data Warehouse

Clinical Data NMDS

Other Data Sets

Management Data NMMDS

Continuum of Care
Teaching Tools & Resources
Report on Terminology

- Purpose: Describe the nursing terminologies to be familiar with these
- Students select/ assigned/ sign up for a terminology
- Describe the purpose of the terminology
- Provide a brief history of the terminology
- Identify any information systems that include the terminology for practice
- Identify three studies using the terminology
- Reflect on your impression about the usefulness of the terminology for practice

AAN\Description and Purpose of ANA Recognized Nursing Terminologies.docx
Care Planning & Case Studies

• Use case studies and write a brief care plan using a nursing terminology
  • Problem
  • Intervention
  • Expected outcome

• Resource for case studies
  • Actual student experiences
  • Omaha System Website – 8 case studies
  • Student text book (website resources)

• What did students learn (ease of use, ability to find terms, user friendliness, recommendations for the future)
Standards Websites

• National Library of Medicine (NLM) – UMLS Metathesaurus (Unified Medical Language System)
  • http://www.nlm.nih.gov/research/umls/

• Health Information Technology and Health Data Standards - NLM
  • http://www.nlm.nih.gov/healthit.html

• Office of the National Coordinator (ONC)
  • http://www.healthit.gov/providers-professionals/standards-interoperability
Welcome to the UTS

The UMLS Terminology Services (UTS) allows you to:

- New to the UMLS? [Start here]
- Read up on individual sources in the [Source Documentation]
- Review training materials with links to the Webcasts, Tutorials, and short Quick Tours
- See the [UMLS Homepage]

- Query data remotely via Web Services (see API Documentation)
- Complete UMLS Annual Report and SNOMED CT® Affiliate Reports

UMLS Terminology Services (UTS) provide both web interfaces as well as Web Services to search and retrieve UMLS data.

We welcome you to [contact us] with your comments and suggestions to improve the UTS.
Sherlock Holmes

- Break students up into groups of 4-5
- They can use websites, books, articles, UMLS
- Use a case study and have students extract or determine problems, interventions, and outcomes
- Each person in the group (or group of students) selects a terminology
  - Omaha System, CCC, ICNP, [NANDA, NIC, NOC], SNOMED-CT, LOINC, PNDS
- Students find the concepts (or not) in their terminology
- Have them write (or report in class) – what terminology, purpose, structure, number of concepts, findings
- Compare results – name of term, definition
- Discuss their experience – what did they learn, what do they recommend for practice in the future
Creative Videos

• Have students select a nursing terminology
• Create a video demonstrating knowledge of the terminology
  • https://www.youtube.com/watch?v=fXe6hxG2h9M
• Identify key points to cover in the video
  • What is it?
  • Purpose
  • Example of terms, definitions, codes
  • Structure
  • References for use in practice/ research
Create Puzzles to Match

• http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp?campaign=flyout_teachers_puzzle_crisscross

Puzzle Example
Teaching Resources: Streaming Video

1. https://www.youtube.com/watch?v=g7D6pm_bLyU
2. https://www.youtube.com/watch?v=ppQsD4ciwwU
3. https://www.youtube.com/watch?v=RK_8mzzYKwM
4. https://www.youtube.com/watch?v=wrye21wx4t4
5. https://umconnect.umn.edu/p80637886/
6. https://www.youtube.com/watch?v=6vSbqCHuUh8#t=29

1. Data standards
2. Nursing terminologies
3. Omaha System - Basics
4. Introduction to CCC
5. Nursing data sets and terminologies
6. LOINC Introduction
Big Data and Nursing

• Extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.
Healthcare Databases

- **CMS** – Center for Medicare & Medicaid
- **NIH** - Clinical Translational Science Award
- **PCORnet** – Patient centered outcomes research
- **Commercial** – Optum Labs Research Collaborative

- 2 billion data points per year
- 62 medical research institutions in 32 states
- 11 Clinical research networks & 18 patient powered networks
- 150 million lives, 3200 data points per life, over 20 years.
Compare and Share Data

Conduct research and investigate:

• Impact of nursing interventions on performance measures such as clinical and administrative outcomes.

Image by http://qsen-evidencebasedpractice.wikispaces.com/file/view/ebp.gif/220328596/246x222/ebp.gif
A Call To Action

• Nurses strongly support the harmonization of standards needed in products that enable the movement of electronic health information from one entity to another.

• Despite these efforts, a lack of standardization and integration within key technologies such as electronic health records (EHR) and administrative systems persists and prevents information exchange, quality measurement, research, and the expansion of data-based, knowledge driven solutions for the delivery of health care.

• No more evident is this than in Nursing where after decades of implementing EHR’s nurses still cannot consistently use electronically collected data to conduct research or report quality and patient safety outcomes.

Regulatory Requirements, Confidentiality, and Clients Right to Privacy

Protected Health Information

Ethics

Information Security

HIPAA
Health Information Exchange

Electronic health information exchange (HIE) allows doctors, nurses, pharmacists, other health care providers and patients to appropriately access and securely share a patient’s vital medical information electronically—improving the speed, quality, safety and cost of patient care.

http://www.healthit.gov/providers-professionals/health-information-exchange/what-hie
Three Key Forms of Health Information Exchange

• **Directed Exchange** – ability to send and receive secure information electronically between care providers to support coordinated care

• **Query-based Exchange** – ability for providers to find and/or request information on a patient from other providers, often used for unplanned care

• **Consumer Mediated Exchange** – ability for patients to aggregate and control the use of their health information among providers

http://www.healthit.gov/providers-professionals/health-information-exchange/what-hie
Personal health information (PHI), also referred to as protected health information:

- demographic information
- medical history
- test and laboratory results
- insurance information
- other data that is collected by a health care professional to identify an individual and determine appropriate care.

http://searchhealthit.techtarget.com/definition/personal-health-information
HIPAA Guidelines and Training

In order to be in compliance with the new HIPAA privacy regulations, every University of Minnesota student, faculty member, researcher, and staff person are required to complete four online courses about privacy and data security. Everyone will need to complete the following five courses:
  • The Video Awareness course
  • Data Security in Your Job
  • Securing your Computer Workstation
  • Using University Data
  • Securing Health Data
Information Security

1. Use a password or other user authentication
2. Install and enable encryption
3. Install and activate remote wiping and/or remote disabling
4. Disable and do not install or use file sharing applications
5. Install and enable a firewall
6. Install and enable security software
7. Keep your security software up to date
8. Research mobile applications (apps) before downloading
9. Maintain physical control
10. Use adequate security to send or receive health information over public Wi-Fi networks
11. Delete all stored health information before discarding or reusing the mobile device
Questions?
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