HIMSS AsiaPac 15
DIGITAL HEALTHCARE WEEK

6 Sep: CPHIMS Exam • 7-9 Sep: Conference & Exhibition •
10 Sep: Masterclass Workshops (HL7, ICNP) & Hospital Tour
Marina Bay Sands, Singapore

SMART Healthcare
transforming how we manage health

International Classification for Nursing Practice (ICNP®) masterclass

10 September 2015

HIMSS AsiaPac15
DIGITAL HEALTHCARE WEEK

HIMSS AsiaPac15 Conference & Exhibition
6-10 September 2015, Marina Bay Sands, Singapore

Organised by: HIMSS Asia Pacific

Nursing counts: using ICNP to evidence the contribution of nurses

Nick Hardiker & Amy Coenen
International Council of Nurses (ICN)

Overview

- Motivation, development and delivery of ICNP
    - Background
    - Development
    - Delivery
    - Maintenance
- Case study: nationwide use of ICNP-enabled nursing information systems
- Implementation and exploitation of ICNP
    - Implementation
    - Harmonisation
    - Next steps

Background

The International Council of Nurses (ICN)

- A federation of more than130 national nurses associations representing more than 16 million nurses worldwide

- Operated by nurses and leading nursing internationally since 1899

- Its purpose is to represent nursing worldwide, advancing the profession and influencing health policy

Wellcome Images

Hospital statistics

- 'In attempting to arrive at the truth, I have applied everywhere for information, but in scarcely an instance have I been able to obtain hospital records fit for any purposes of comparison' (p 176)

    Nightingale F. Notes on Hospitals. 3rd Edition. London: Longman, Green, Longman, Roberts, and Green, 1863

ICN eHealth Programme

- Transforming nursing through the visionary application of information and communication technology

- 25 years in the making

- Announced at the ICN Conference 2011 in Malta

http://www.icn.ch/what-we-do/ehealth/

A personal vision

- eHealth systems are in routine use to parallel other aspects of contemporary life

- Data is available and routinely used/exploited for the benefit of patients and those caring for them

- People are actively working on continually improving how things are i.e. advancing together the art/science of nursing informatics

eHealth

New ICN position statement

- The right to connect via information and communications technology

    – ICT can improve access to good healthcare, address inequalities in its provision and help citizens take a more active role

Why ICN eHealth?

- Worldwide proliferation of ICT

- ICN informs, supports and advocates for nursing and its members

- eHealth threads through ICN processes and products

- ICT in health care provides new opportunities, not least equity and improved access
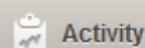
ICN eHealth workstreams

- Connecting Nurses

- ICN Telenursing Network

- International Classification for Nursing Practice (ICNP®)
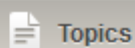
Connecting nurses

- A forum for expert healthcare professionals from around the world to share their ideas, advice and innovations
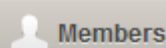
Information Shareapy

- A patient education service for nurses and midwives to share, via a dedicated and moderated social network, links to high quality, reputable health resources with their patients, families, friends or colleagues

ormation-shareapy.com/topics/85/activity

information shareapy

information shareapy

Activity | Topics | Members | Search | Home | My Shareapy | FAQ | Log out

Pain Management

Track

Hello, **Nicholas**

view profile

Following: **3** Followers: **7**

Your Contributions

You've added **19 resources**

Add Resource

⊕ Get our bookmarklet

| Activity | My Likes | My Posts |

Posted 17 days ago by **Robert Fraser** :

Opioid Overdose Toolkit

Facts for community members, first respondders, prescribers, patient and family members.

Flag as inappropriate   ▤ Comment (0) ⇄ Repost (0) ♥ Like (2) ↪ Share

Posted 6 months ago by **Adrienne Huston** :

The British Pain Society - Pain scales in multiple languages

Flag as inappropriate   ▤ Comment (0) ⇄ Repost (0) ♥ Like (0) ↪ Share

Posted 6 months ago by **Robert Fraser** :

Opioid Pain Medicines

Great information on pain medications for patients1 From the Institute for Safe Medication Practices

Flag as inappropriate   ▤ Comment (0) ⇄ Repost (1) ♥ Like (3) ↪ Share

Posted about 1 year ago by Scott Emory Moore :

Most Active Members

SIDIIEF - Secrétariat International Des Infirmières Et Infirmiers De L'espace Francophone
4 Resources

Robert Fraser
2 Resources

Scott Emory Moore
2 Resources

Care Challenge

- A contest that highlights nursing innovations and helps to put them into practice

- There have been two winning entries this year. The authors have chosen a professionally produced video displaying their project as means of support from Connecting Nurses

cial Isolation for Our Reside... +

care-challenge.com/en/ideas/reducing-social-isolation-for-our-residents-in-long-term-care-via-skype-a-best-practice | care challenge

care challenge

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connecting nurses

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Practice

General Nursing

Reducing Social Isolation for Our Residents in Long Term Care via Skype, a Best Practice

by Lorraine B. - La France | Ste. Anne de Bellevue, Canada

Goal: Reduce social isolation and promote intergenerational communication through the use of technology.

1 Comments 💬　　　💙 12　　Like

Share Innovation:

f t e

ICN Telenursing Network

- Global resource for sharing knowledge and expertise around telehealth and telecare

- Launched in 2009

- 296 members in 65 countries

- Membership open to all

International Classification for Nursing Practice (ICNP®)

HIMSS AsiaPac15
DIGITAL HEALTHCARE WEEK

SMART Healthcare
transforming how we manage health

Nursing is…

- Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles
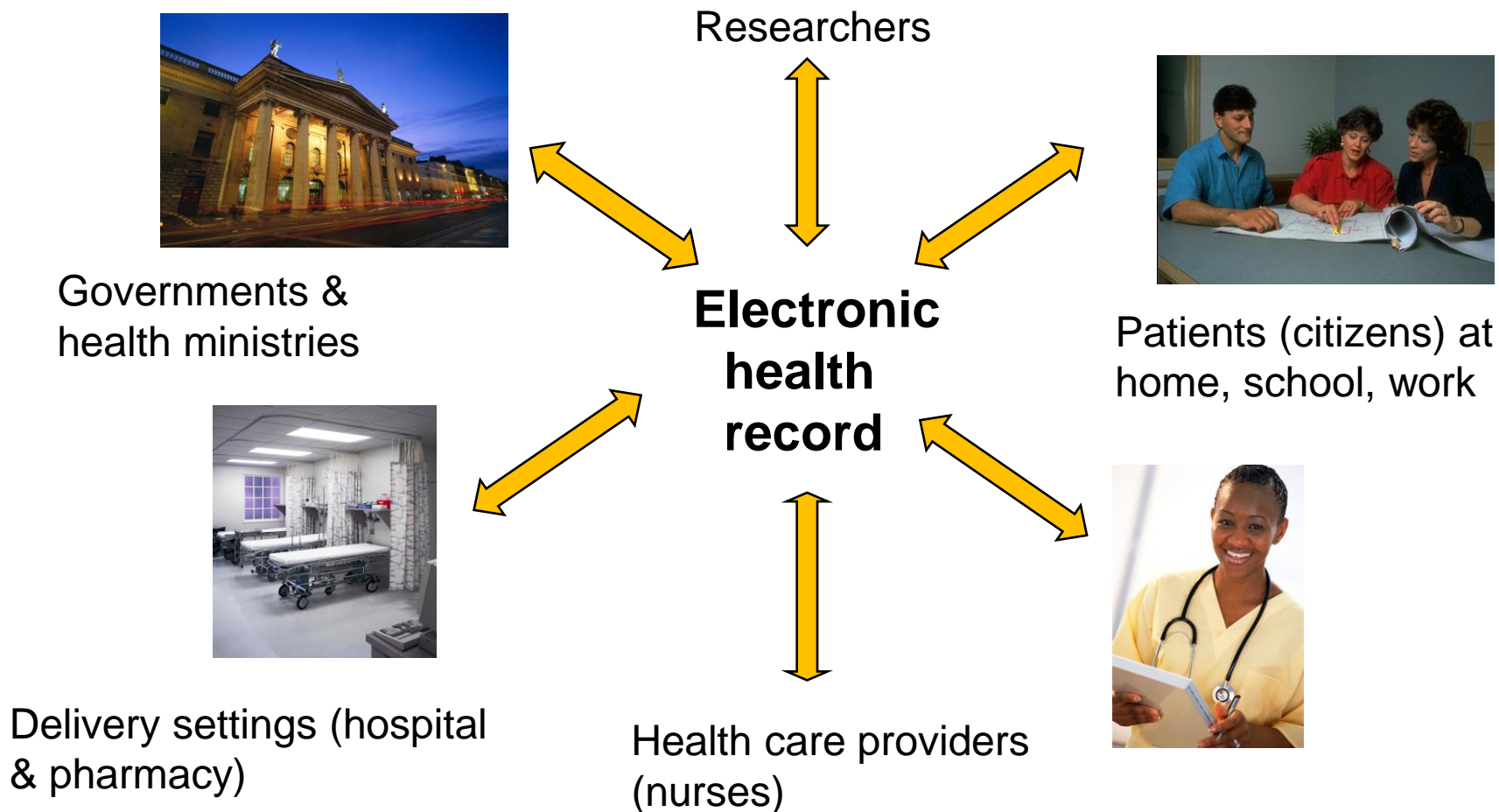
www.icn.ch

Electronic health record (EHR)

- A longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting

- Spans episodes of care encounters, across settings and time

- The EHR should automate and streamline the clinician's workflow

HIMSS, 2010

Systems integration & data sharing using the electronic health record

Researchers

Governments & health ministries

Patients (citizens) at home, school, work

Electronic health record

Delivery settings (hospital & pharmacy)

Health care providers (nurses)

EHR is a GOAL for the FUTURE

- Improve patient care through access to data, information, and knowledge

    – Across delivery settings

    – Across all users (including professionals and patients)
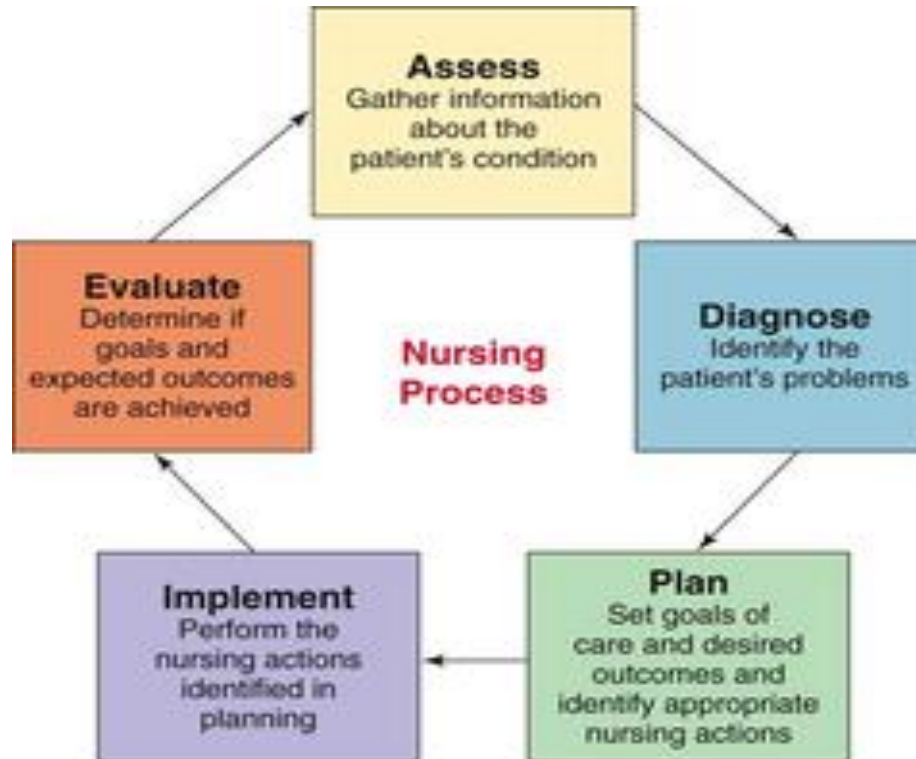
    – Across time

EHR COMPONENTS - examples

- Nursing
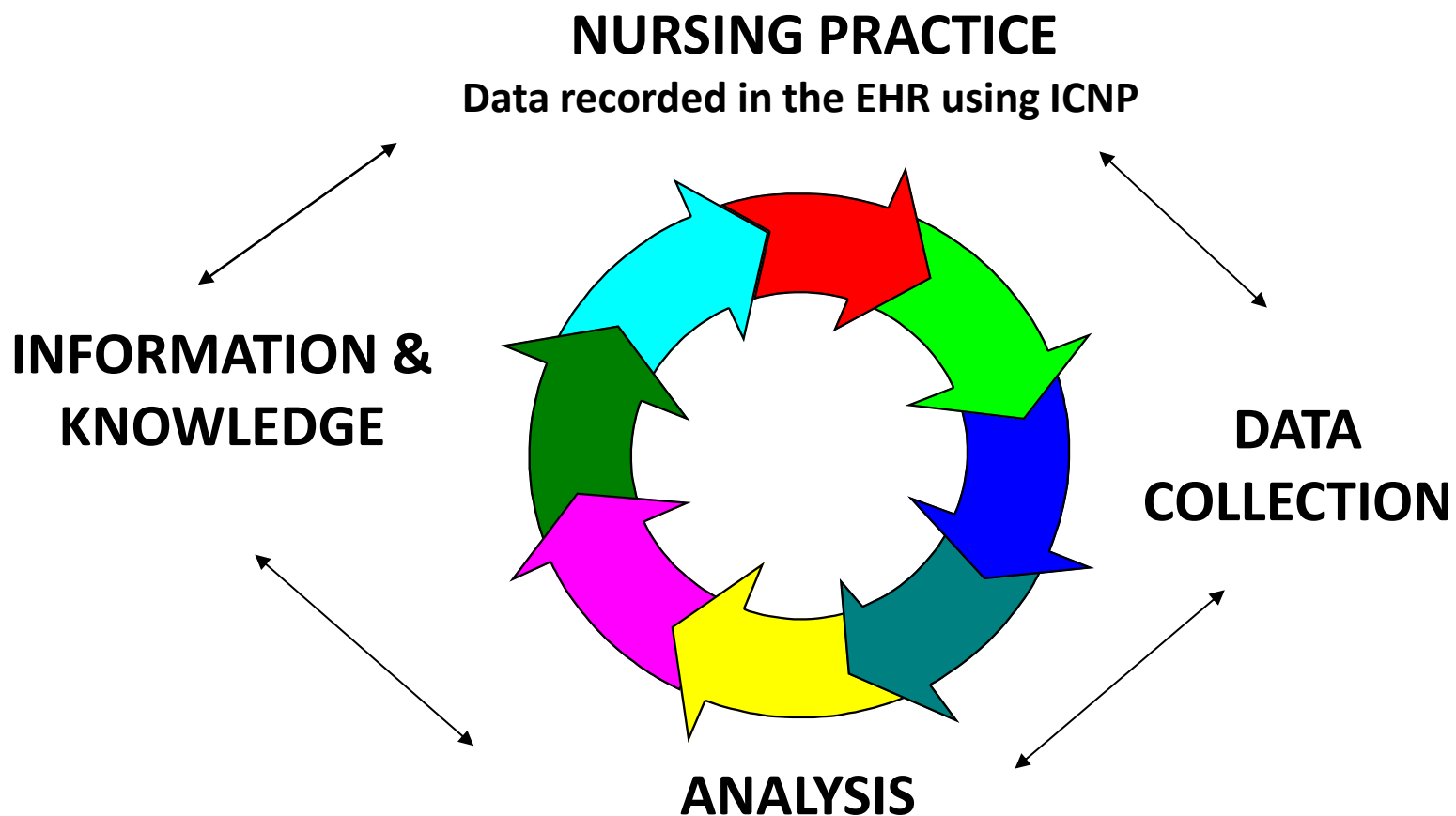
- Medicine

- Other disciplines/professions

- Laboratory

- X-Ray & Diagnostics Tests

- Medication

- Other

Nursing Process

Activity

- *What data and information do nurses need? What data should nurses contribute to and manage in the EHR?*

Nursing Minimum Data Set

- Nursing Diagnoses

- Nursing Interventions

- Nursing Sensitive Outcomes (Goals or Expected Outcomes)

- Nurse Intensity/Patient Acuity

Examples of medical data and nursing data

Medical Diagnosis
Fractured hip

- Nursing Diagnoses
- Pain
- Incontinence
- Decreased mobility
- Confusion
- Wound
- Risk for pressure ulcer
- Inadequate sleep

Medical Treatments
Replacement
Pinning

- Nursing Interventions
- Teaching about pain control
- Preventing pressure ulcer
- Wound care

(Baernholdt and Lang, 2003)

ICNP

- ICN has supported ICNP since 1989

- A standardised terminology used to represent nursing diagnoses, interventions and outcomes

Activity

- *Why do we (you) need an international nursing terminology?*

ICNP

- [Norma Lang interview](#)

ICNP Definition

- The International Classification for Nursing Practice (ICNP), a product of the International Council of Nurses (ICN), is a **formal terminology**. It provides a **dictionary of terms and expressive relationships** that nurses can use to **describe and report their practice in a systematic way**. The resulting information is used reliably to support care and effective decision-making, and inform nursing education, research and health policy

ICNP Vision

- ICNP is an integral part of the global information infrastructure, informing health care practice and policy to improve patient care worldwide

ICNP Strategic Goals

- To serve as a major force to articulate nursing's contribution to health and health care globally

- To promote harmonization with other widely used classifications and the work of standardization groups in health and nursing

Activity

- *What are the benefits of an international nursing terminology?*

ICNP Benefits

- Establishes an international <u>standard</u> to facilitate description and comparison of nursing practice

- Serves as a <u>unifying</u> nursing language system for international nursing based on state-of-the-art terminology standards

- Represents nursing concepts used in <u>local, regional, national and international practice, across specialties, languages and cultures</u>

- Generates <u>information about nursing practice that will influence</u> decision-making, education and policy in the areas of patient needs, nursing interventions, health outcomes, and resource utilization

- Facilitates the development of <u>nursing data sets used in research</u> to direct policy by describing and comparing nursing care of individuals, families and communities world wide

- Improves <u>communication</u> within the discipline of nursing and across other disciplines

- Encourages nurses to <u>reflect</u> on their own practice and influence improvements in quality of care

Activity

- *What are the desirable characteristics of an international nursing terminology?*

- *You should assume content coverage*

ICNP Characteristics

- Reliable
    - Compliance with international standards
    - Quality improvement process
    - A formal infrastructure that facilitates cross-mapping and allows output in multiple formats

ICNP Characteristics

- Easy to understand
    - Ongoing focus on pre-formed (pre-coordinated) statements
    - Increasing numbers of catalogues (subsets tailored for specific purposes)
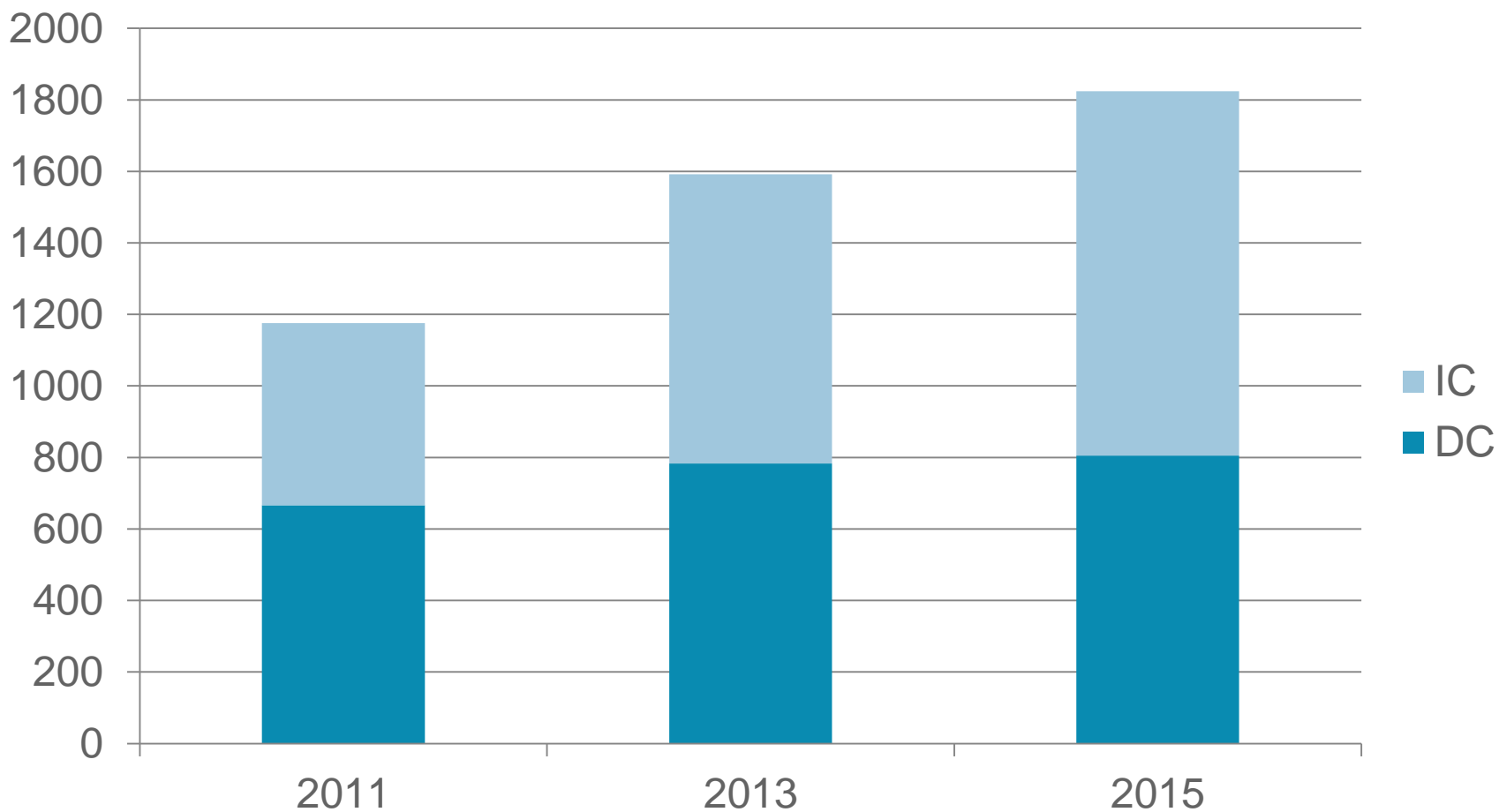   - Available in 17 different languages

- Brazilian Portuguese
- Chinese (Simple)
- Chinese (Traditional)
- English
- Farsi (Persian)
- French
- German
- Indonesian

- Italian
- Japanese
- Korean
- Norwegian
- Polish
- Portuguese
- Romanian
- Spanish
- Swedish

ICNP Characteristics

- Internationally-recognised
    - Recognised by a number of National Nurses Associations
    - A Related Classification in WHO-FIC
    - Harmonisation/collaboration agreements with other standards development organisations

Vital statistics

- 2013

  - 783 pre-coordinated diagnosis and outcome statements (15% increase from 2011)

  - 809 pre-coordinated intervention statements (50% increase from 2011)

- 2015

  - 805 pre-coordinated diagnosis and outcome statements (3% increase from 2013)

  - 1019 pre-coordinated intervention statements (26% increase from 2013)

  - The 2015 release comprises over 4000 elementary and pre-coordinated concepts

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Activity

- *http://www.icn.ch/ICNP-Browser-NEW.html*

- *Explore ICNP, change from English to another language, look at different views (List, Hierarchy, Axis), and move up and down the hierarchy using parents and children*

Discussion

Development

ICNP β-2

ACTION	TARGET	MEANS
Injecting	Glass eye	Hypnosis
Interviewing	Medicine	Syringe
Treating	Person	

Injecting + Medicine
Injecting + Glass Eye
Injecting + Hypnosis
Injecting + Syringe
Injecting + Medicine + Hypnosis
Injecting + Medicine + Syringe
Injecting + Glass Eye + Hypnosis
Injecting + Glass Eye + Syringe
Medicine + Hypnosis
Medicine + Syringe
Glass Eye + Hypnosis
Glass Eye + Syringe
Treating + Medicine
Treating + Glass Eye

Treating + Hypnosis
Treating + Syringe
Treating + Medicine + Hypnosis
Treating + Medicine + Syringe
Treating + Glass Eye + Hypnosis
Treating + Glass Eye + Syringe
Injecting
Treating
Hypnosis
Syringe
Medicine
Glass Eye

File   Edit   View   Subsets   Restrict   Language   Tools   Help
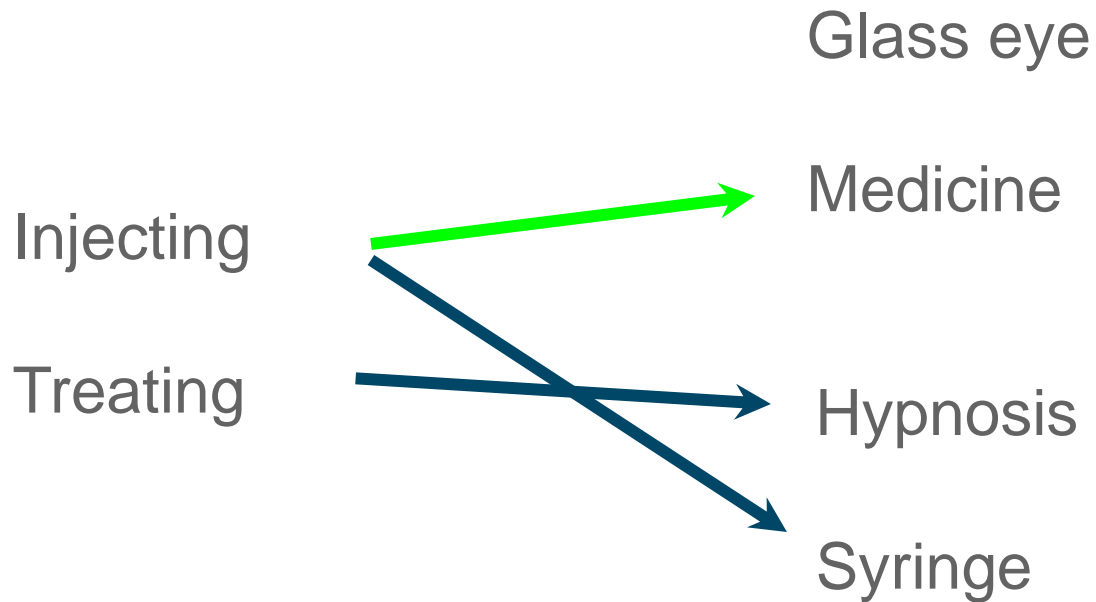
ConceptId   22298006

Description Id   37436014

myocardial infarction

Clinical finding

---

myocardial Identica

Hierarchy   Subtype hierarchy

Detail   Distributed relationships

P 22298006   myoc

C 57809008   myocardial disease
  C 22298006   myocardial infarction
    C 194815007   aborted myocardial infarction
    C 57054005   acute myocardial infarction
    C 394710008   first myocardial infarction
    C 42531007   microinfarct of heart
    C 371068009   myocardial infarction with complication
    C 314207007   non-Q wave myocardial infarction
    C 1755008   old myocardial infarction
    C 194797009   other specified anterior myocardial infarction
    C 129574000   postoperative myocardial infarction
    C 233843008   silent myocardial infarction
    C 194856005   subsequent myocardial infarction
    C 34644005   true posterior wall infarction

ConceptStatus **Current**
Fully defined by ...
  116680003   Is a
    D 57809008   myocardial disease
  Group
    116676008   Associated morphology
      D 55641003   infarct
    363698007   Finding site
      D 74281007   myocardium structure
Qualifiers
  246100006   Onset
    385315009   sudden onset
    61751001   gradual onset
  246112005   Severity
    272141005   severities
  246456000   Episodicity
    288526004   Episodicities
  260908002   Course
    288524001   courses
Legacy codes
  SNOMED: D3-15000
  CTV3ID: X200E

Project   Edit   Window   OWL   Wizards   Code   Help

OWLClasses   Properties   Forms   Individuals   Metadata

Subclass Relationship

Asserted Hierarchy
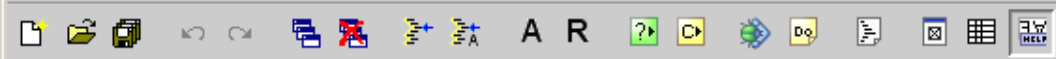
- Characteristic
  - Role
  - State
  - Status
    - Ability
      - AbilityToAdjust
      - AbilityToCommunicate
      - AbilityToManageRegime
      - AbilityToPerform
      - AbilityToPerformHealthMaintenance
      - AbilityToPerformHomemaking
      - AbilityToPerformParenting
      - AbilityToPerformSelfBathing
      - AbilityToPerformSelfDiversion
      - AbilityToPerformSelfDressing
      - AbilityToPerformSelfFeeding
      - AbilityToPerformSelfGrooming
      - AbilityToPerformSelfToiletting
      - AbilityToPerformSelfTransfer
      - AbilityToProtect
      - AbilityToSocialize
      - AbilityToSwallow
      - AbilityToThrive
      - AbilityToWalk
      - Fertility
      - Mobility
    - AcceptanceOfHealthStatus
    - Achievement
    - Alertness
    - Appetite
    - Balance
    - BodyPosition
    - CardiacOutput
    - Comfort
    - Consciousness

AbilityToWalk   (type=owl:Class)   + − F T

Name

AbilityToWalk

rdfs:comment

Annotations

Property	Value	Lang

Asserted Inferred

Asserted Conditions

NECESSARY & SUFFICIENT

Ability
∃ isStatusAppliedTo WalkingAct   ≡

NECESSARY

Prope isStatusAppliedTo

Disjoi

○ Logic View   ○ Properties View

7-axis model

- Action

- Client

- Focus

- Judgement

- Location

- Means

- Time

Natural language (speech and text)

- Main currency for clinical information

- Expressive

- Familiar...

...but complex and difficult to analyse, manipulate and reuse

Finding the incidence of heart disease

✓ angina pectoris

✓ mitral stenosis

X angina pectoris ruled out

X family history of heart disease

- Dog for sale. Will eat anything. Especially fond of children

- Undeletable

- Un-deletable

- Undelet-able

Terminology systems

- A terminology system relates concepts of a particular subject field among themselves and to their linguistic designations (CEN)

- Ruth Hargreaves is 64 years old. She has been married for 40 years. Her only child lives abroad. She usually looks after her husband, who has had Multiple Sclerosis for 12 years, helping him in and out of the bath and on and off the toilet. Ruth herself has had heart failure for some time; she had a heart attack five years ago. Recently she has been complaining that she cannot catch her breath. She finds it hard to clean, cook, look after her husband, get up and down stairs. Her neighbour who helped her with day-to-day tasks has recently moved away. Ruth tends not to look after her own health and tends to overdo things. She takes diuretics (water tablets) but since a recent bout of 'flu she hasn't been taking her medicine as regularly as she should.

Activity

- *Capture in a **single** word or phrase the most important aspect of the Ruth Hargreaves story*

- Ruth Hargreaves is 64 years old. She has been married for 40 years. Her only child lives abroad. She usually looks after her husband, who has had Multiple Sclerosis for 12 years, helping him in and out of the bath and on and off the toilet. Ruth herself has had heart failure for some time; she had a heart attack five years ago. Recently she has been complaining that she cannot catch her breath. She finds it hard to clean, cook, look after her husband, get up and down stairs. Her neighbour who helped her with day-to-day tasks has recently moved away. Ruth tends not to look after her own health and tends to overdo things. She takes diuretics (water tablets) but since a recent bout of 'flu she hasn't been taking her medicine as regularly as she should.

Proliferation of terminologies

- Many tasks, many users

- Health care changes constantly

- Health care is very 'big'

- For a particular purpose it is easy to build your own

- Terminologies are getting bigger, more numerous, more complex

Terminologies within UMLS

- AI/RHEUM, 1993
- Alternative Billing Concepts
- Alcohol and Other Drug Thesaurus, 2000
- Beth Israel Vocabulary, 1.0
- Canonical Clinical Problem Statement System, 1999
- Clinical Classifications Software, 2003
- Current Dental Terminology (CDT), 4

- COSTAR, 1989-1995

- Medical Entities Dictionary, 2003

- Physicians' Current Procedural Terminology, 2004

- Physicians' Current Procedural Terminology, Spanish Translation, 2001

- CRISP Thesaurus, 2004

- COSTART, 1995

- Diseases Database, 2000

- German translation of ICD10, 1995

- German translation of UMDNS, 1996

- DSM-III-R, 1987

- DSM-IV, 1994

- DXplain, 1994

- Gene Ontology, 2004_03_02

- HCPCS Version of Current Dental Terminology (CDT), 4
- HCFA Common Procedure Coding System, 2004
- HCPCS Version of Current Procedural Terminology (CPT), 2004
- Health Devices Alerts, 1999
- Home Health Care Classification, 2003
- Health Level Seven Vocabulary, 1998-2002
- ICPC2E-ICD10 relationships from Dr. Henk Lamberts, 1998
- Health Product Comparison System, 1999
- ICD10, 1998
- ICD10, American English Equivalents, 1998
- International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification, January 2000 Release
- International Statistical Classification of Diseases and Related Health Problems, Australian Modification, Americanized English Equivalents, 2000
- ICD10, Dutch Translation, 200403
- ICD-9-CM, 2004
- International Classification of Primary Care, 1993
- International Classification of Primary Care 2nd Edition, Electronic, 2E, Dutch Translation, 200203
- International Classification of Primary Care 2nd Edition, Electronic, 2E, 200203
- International Classification of Primary Care, Version 2-Plus, 2000

- ICPC, Basque Translation, 1993
- ICPC, Danish Translation, 1993
- ICPC, Dutch Translation, 1993
- ICPC, Finnish Translation, 1993
- ICPC, French Translation, 1993
- ICPC, German Translation, 1993
- ICPC, Hebrew Translation, 1993
- ICPC, Hungarian Translation, 1993
- ICPC, Italian Translation, 1993
- ICPC, Norwegian Translation, 1993
- International Classification of Primary Care, Version 2-Plus, Americanized English Equivalents, 2000
- ICPC, Portuguese Translation, 1993
- ICPC, Spanish Translation, 1993
- ICPC, Swedish Translation, 1993
- Online Congenital Multiple Anomaly/Mental Retardation Syndromes, 1999
- Library of Congress Subject Headings, 1990
- LOINC 2.12
- MEDLINE (1994-1998)
- McMaster University Epidemiology Terms, 1992
- Master Drug Data Base, 2003_03
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), American English Equivalents, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), Dutch Edition, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), American English Equivalents with expanded abbreviations, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), with expanded abbreviations, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), French Edition, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), German Edition, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), Portuguese Edition, 7.0
- Medical Dictionary for Regulatory Activities Terminology (MedDRA), Spanish Edition, 7.0
- MEDLINE (1999-2004)
- Online Mendelian Inheritance in Man, 1993
- Multum MediSource Lexicon, 2004_03
- Micromedex DRUGDEX, 2001-08
- Medical Subject Headings, MSH2004_2003_12_12
- Czech translation of the Medical Subject Headings, 2004
- Nederlandse vertaling van Mesh (Dutch translation of MeSH), 2004
- Finnish translations of the Medical Subject Headings, 2004

Multiple nursing terminologies
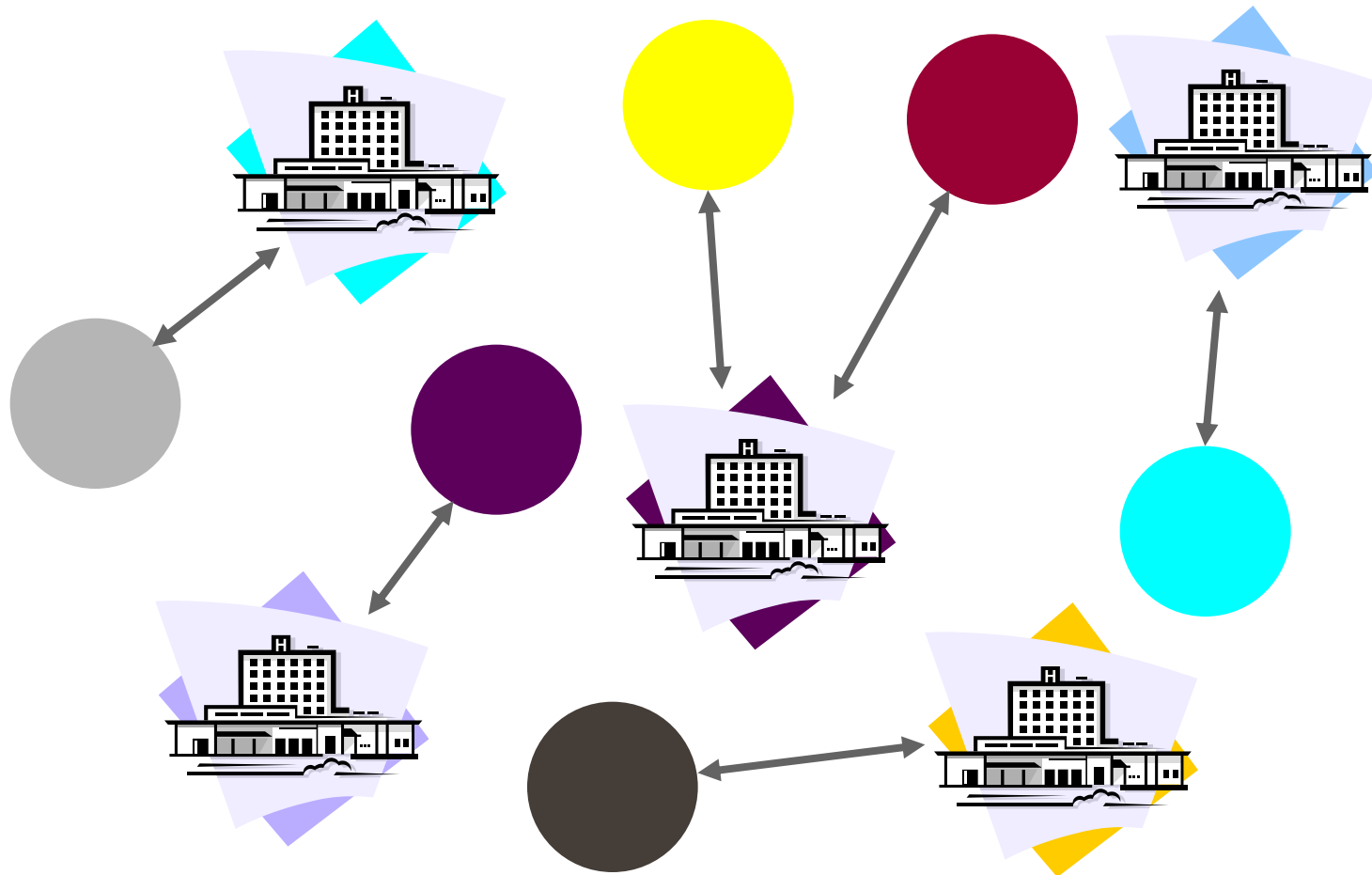
Diverse overlapping systems

Endotracheal extubation

Positioning endotracheal tube

Removing endotracheal tube
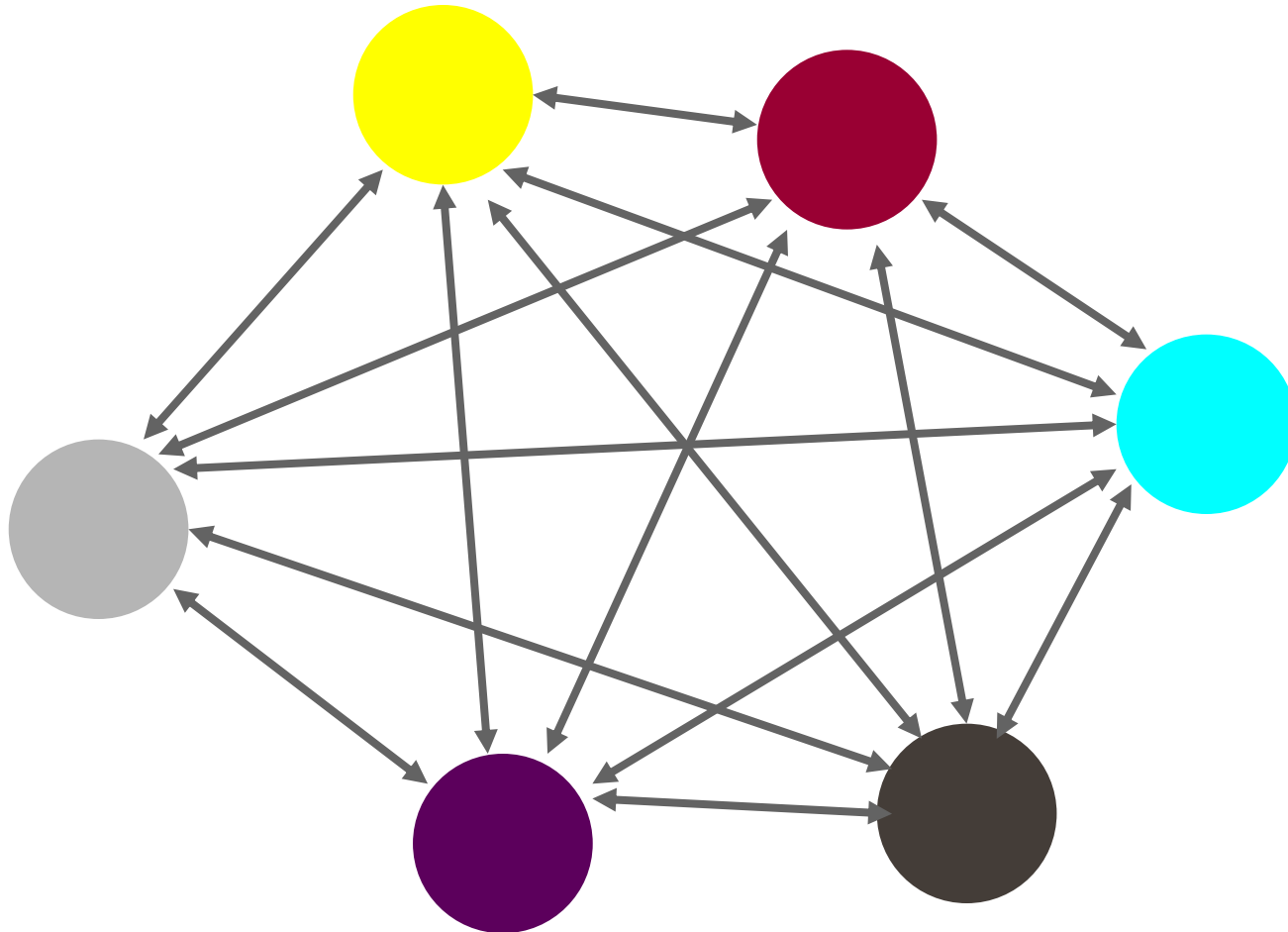
A solution?

Classification

Of
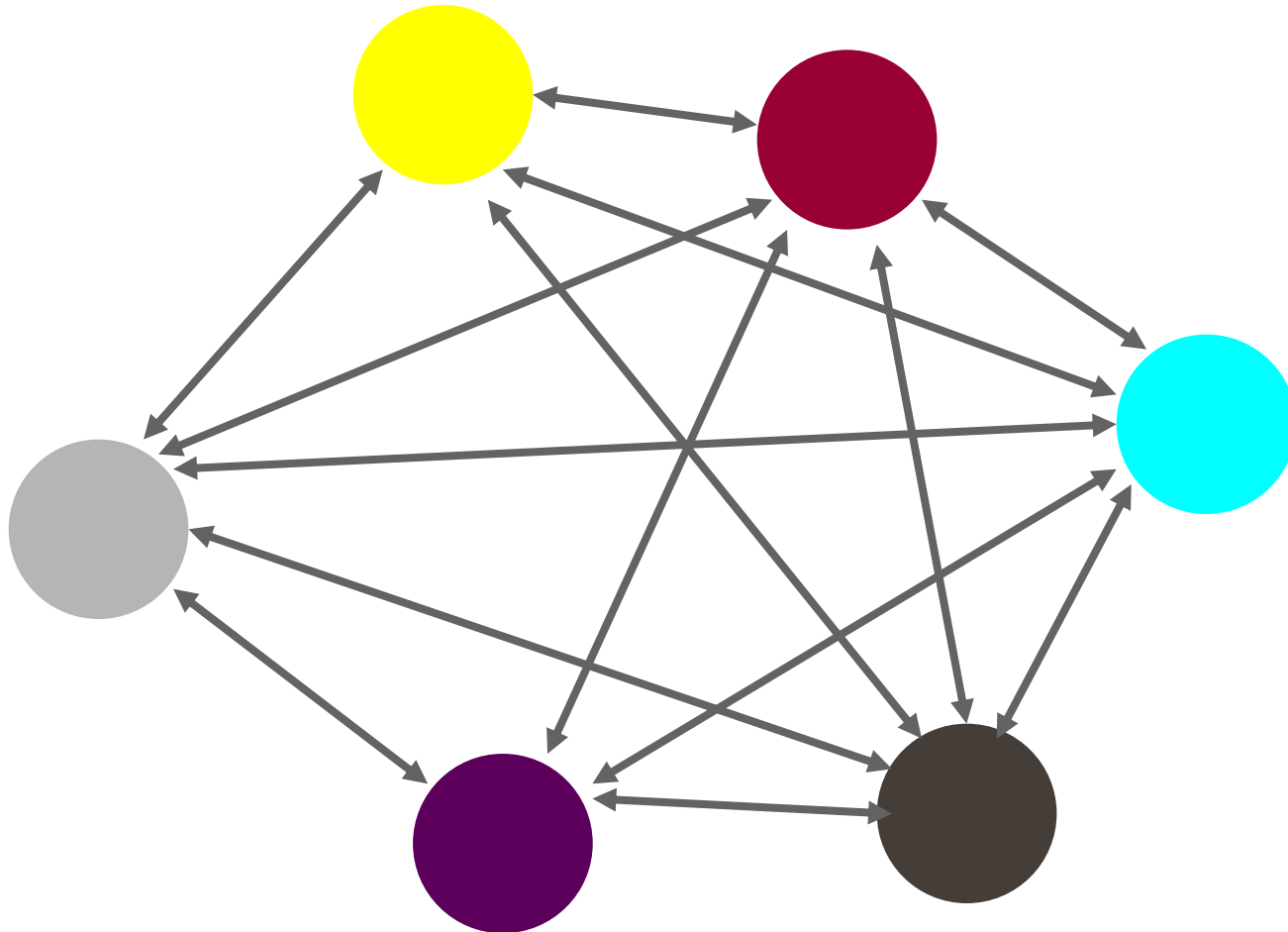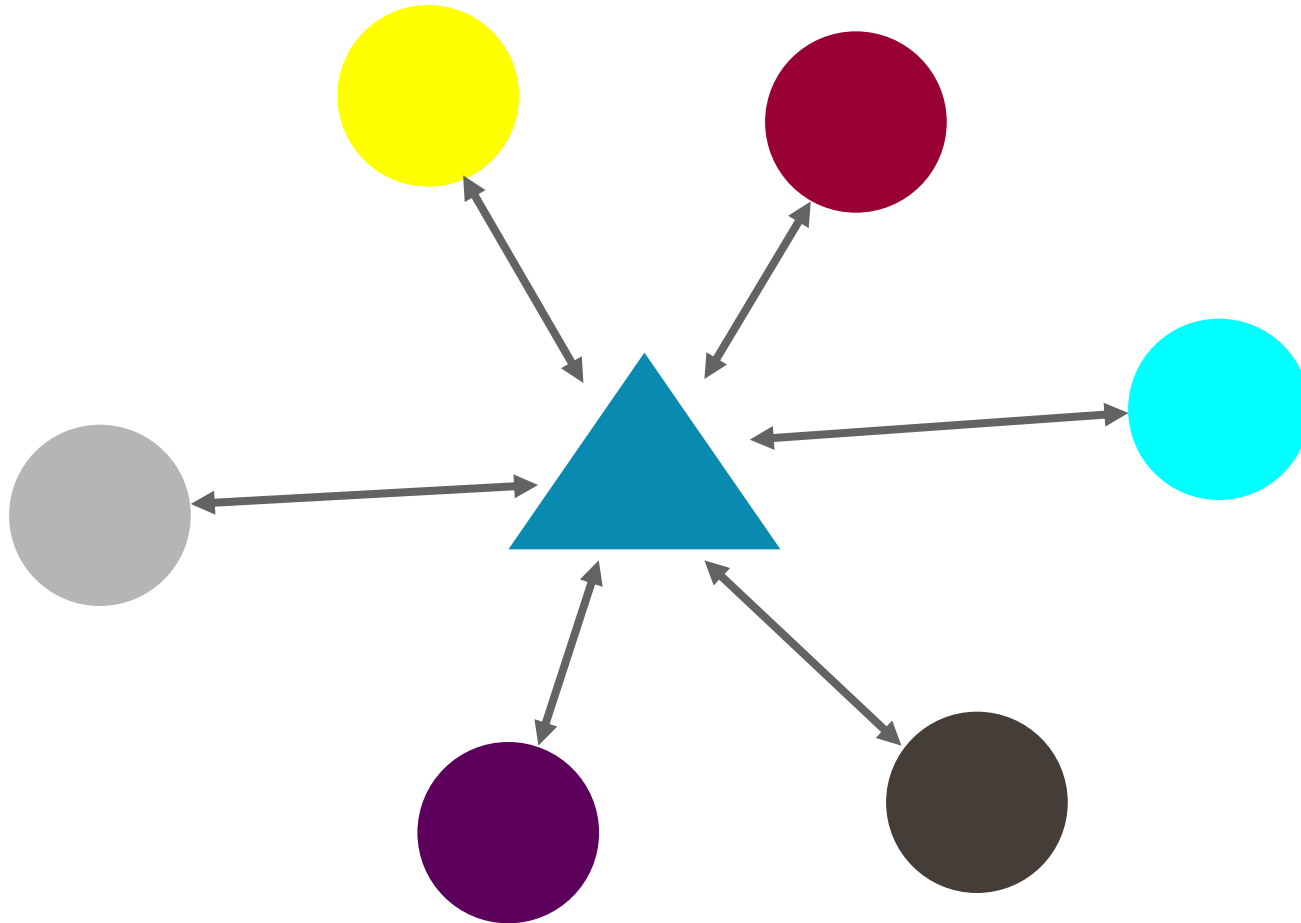
Nursing

Reference terminologies

- Terminologies with reference properties

    – SNOMED® Clinical Terms (SNOMED® CT)

    – The International Classification for Nursing Practice (ICNP®)
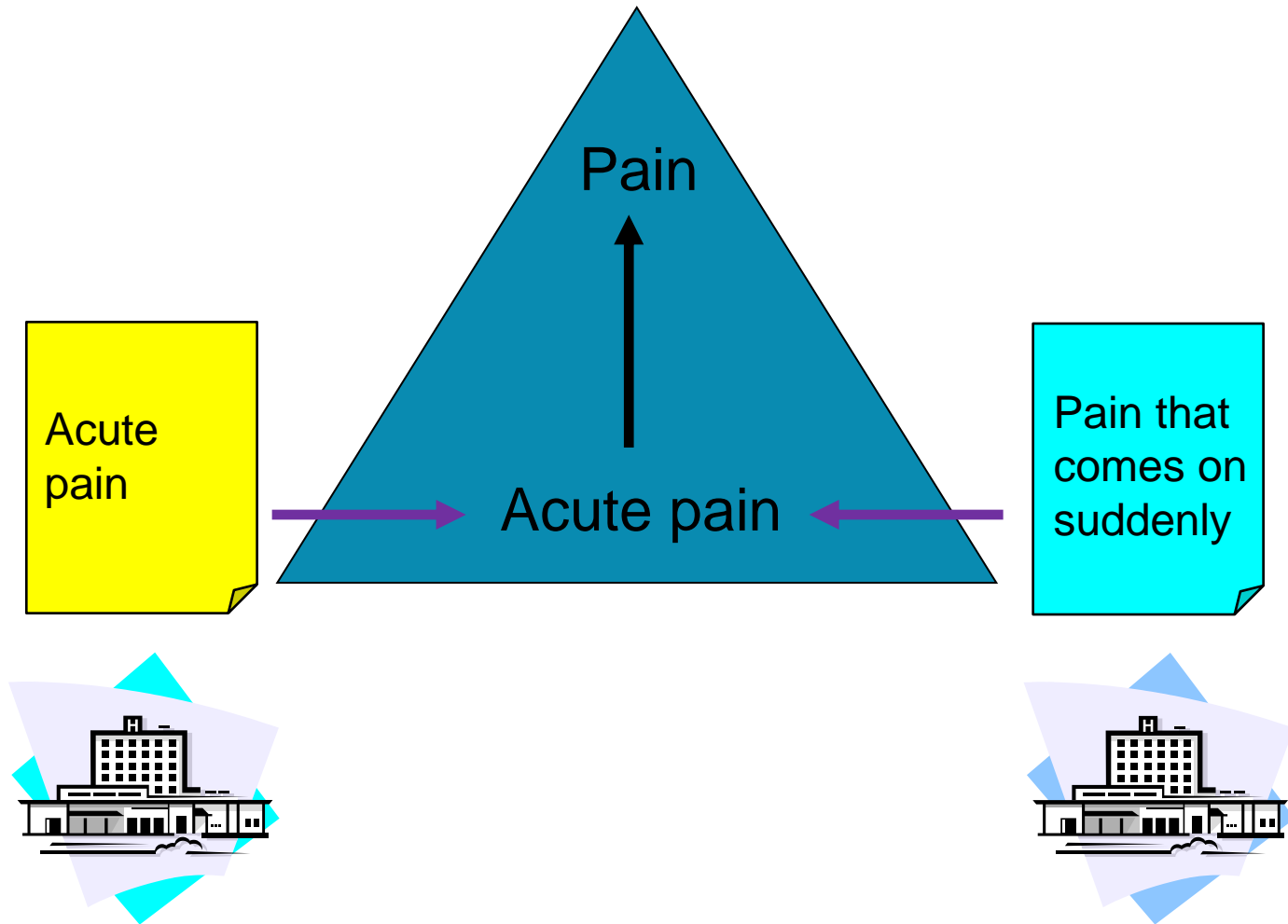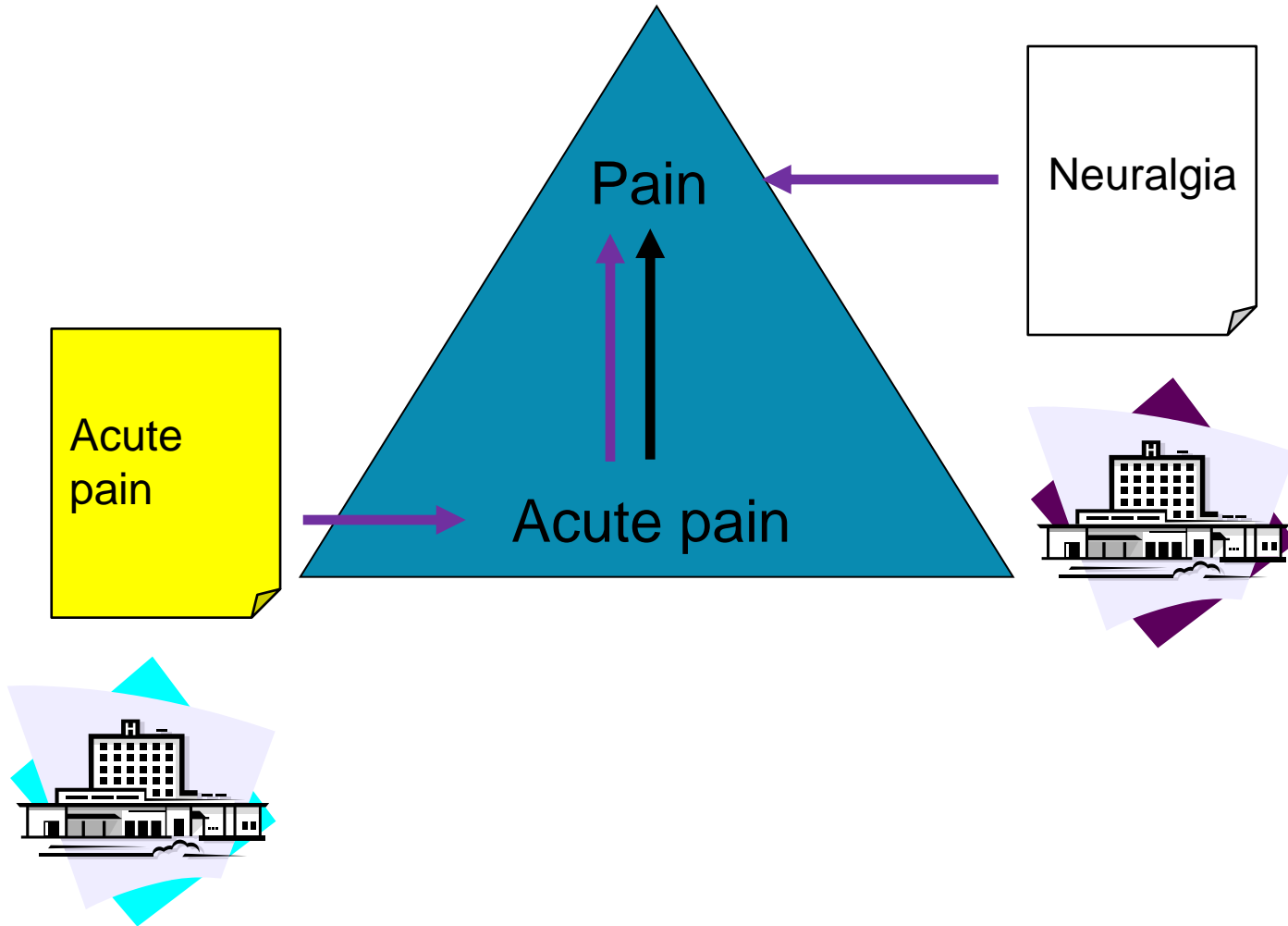
A unifying framework in practice

- As a unifying framework ICNP® should be able to:
  - handle a range of nursing terminologies
  - determine any relationships/mappings between them
    - the same entities
      - 'Acute pain'
        - » *is equivalent to*
      - 'Pain that came on suddenly'

          | Equivalence |

    - entities with more/less detail
      - 'Acute pain'
        - » *is a child of*
      - 'Pain'

          | Subsumption |

Bladder washout

Action

    Performing

        Irrigating

            IrrigatingBladder

          PerformingOnBladder

BodyPart

    UrinaryBladder
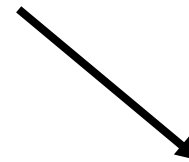
Bladder irrigation
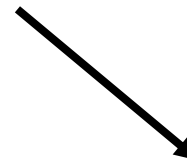
Bladder procedure
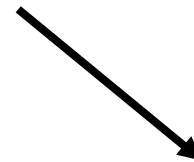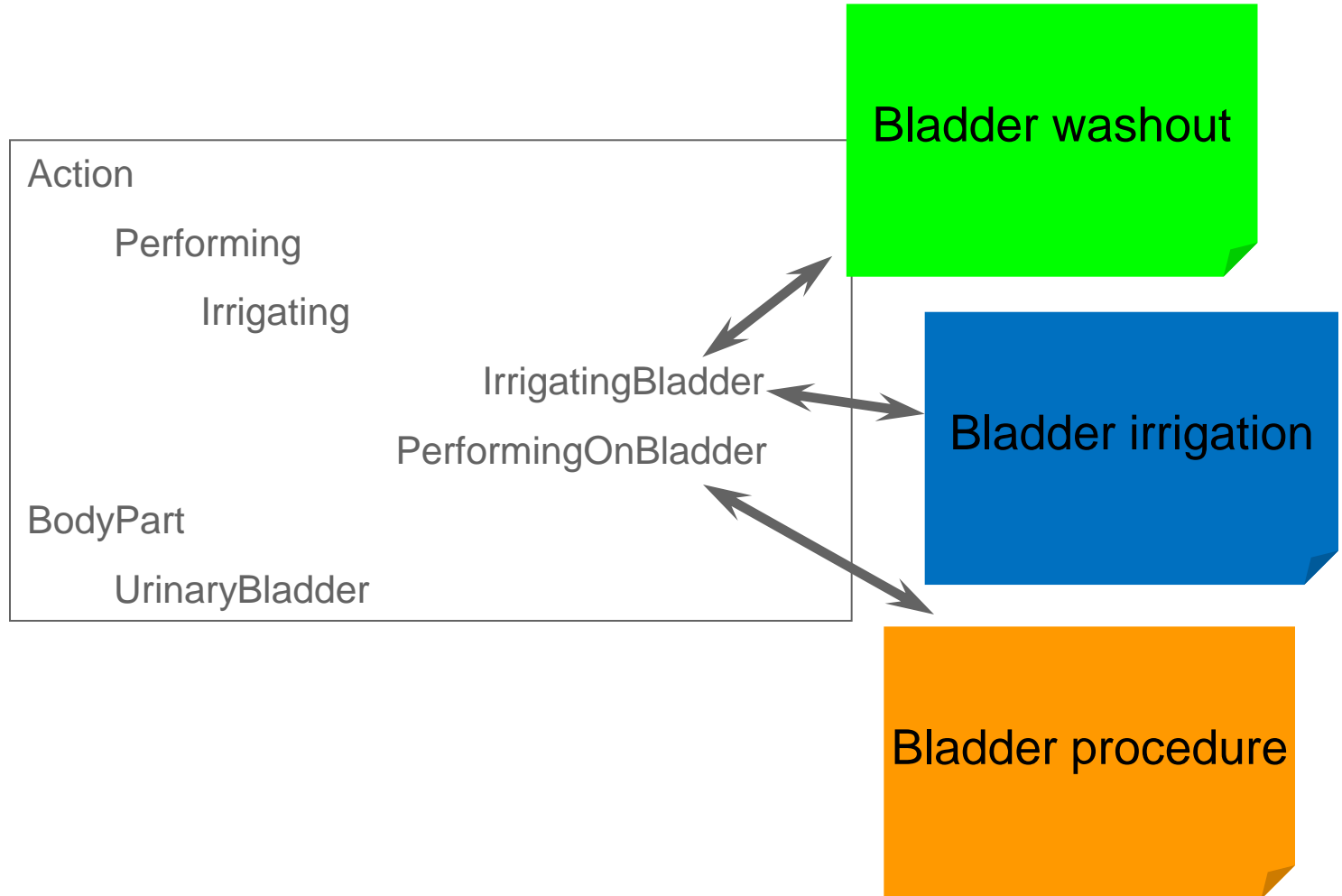
Before

Action

    Performing

        Irrigating

            IrrigatingBladder

        PerformingOnBladder

BodyPart

    UrinaryBladder

After

Action

    Performing

        Irrigating

            IrrigatingBladder

        PerformingOnBladder

            IrrigatingBladder

BodyPart

    UrinaryBladder

How?

- The primitive *Irrigating* is a child of *Performing*

- Both 'act on' *Urinary Bladder*

- We overlooked the fact that *IrrigatingBladder* SHOULD BE a child of *PerformingOnBladder*

- Software can use the semantic information we provide to help manage the terminology

Pain

↑

Acute pain

Gall stone

↕

Cholelithiasis

Dog

🚫

Mammal

Cat

🚫

Dog
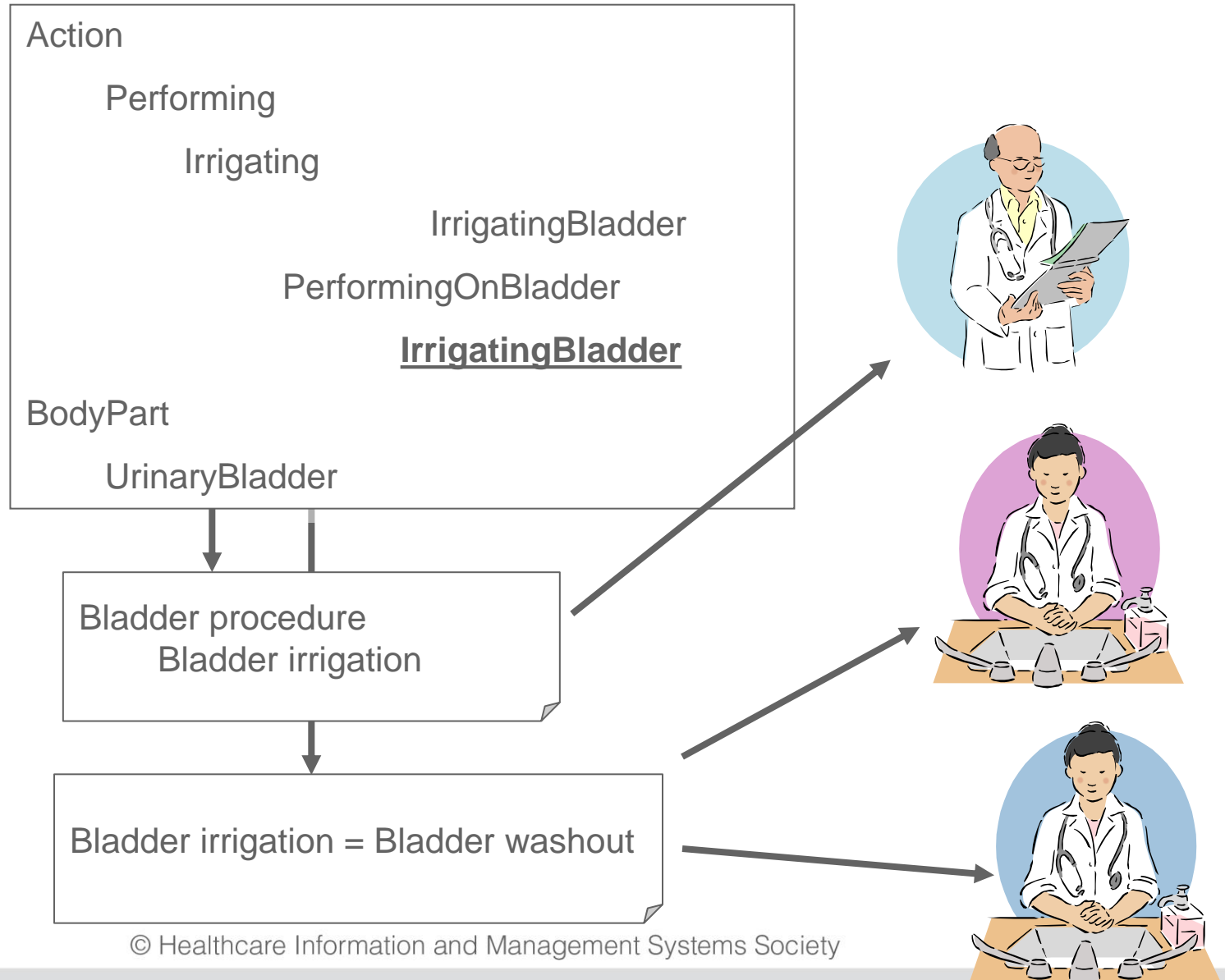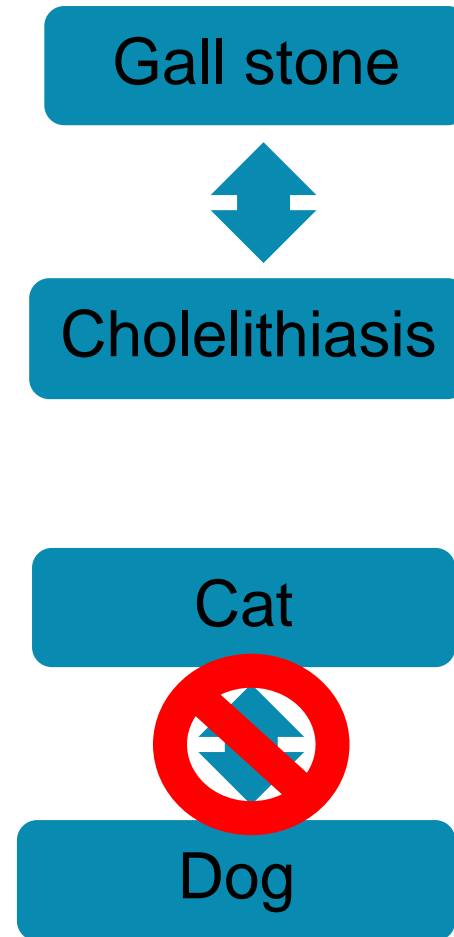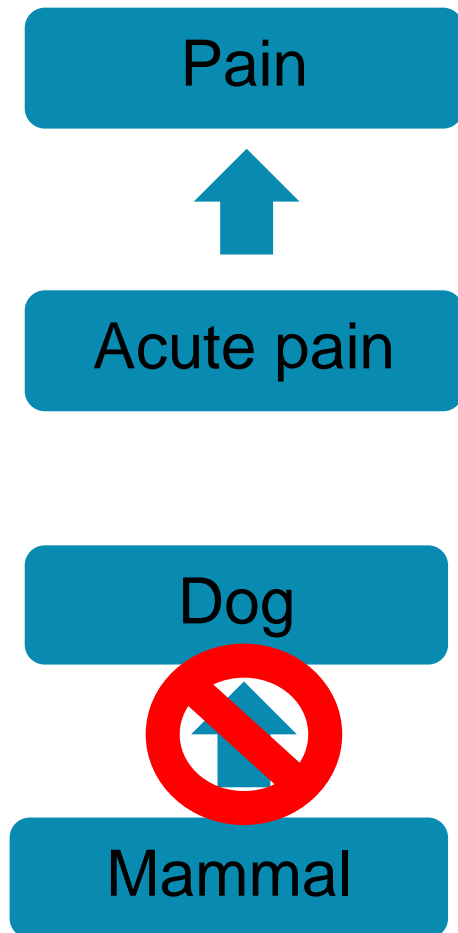
OWL demonstration

- Demo

Translation of ICNP

- A Translation Agreement should be signed with ICN

- Use a systematic and fully-documented process to provide evidence for the validity of the translation

- Assign one or more nurses as members of the translation team

- Assign nurses with substantial knowledge of English and the target language in the translation process

- Consider involving linguistic experts in the translation process

- Use the most current (English) version of ICNP® as the source for translation. Other translations of the current version could assist the translators, if the target languages are similar

- Assure cross-cultural equivalence of concepts. Word-for-word or etymological equivalence is not adequate for ICNP® translation

- Avoid terms or concepts that cannot be clearly defined or are open to wide interpretation

- Avoid ambiguous terms that have more than one meaning

- Use specific terms or concepts rather than general terms

- Avoid colloquial phrases, jargon, metaphors and idiomatic expressions. If these must be used to represent nursing practice in the target language, give examples of their use in context

- Report identification of jargon or other colloquial expressions in the source ICNP® to ICN. If appropriate, jargon in the source ICNP® can be translated into words with a similar meaning in the target language

- Determine culturally adapted translations for culturally laden terms

- If there is no appropriate term in the target language, translate the source term into a set of words using the definition (e.g. the source term "stress incontinence" can, in Portuguese, be "abdominal pressure associated incontinence")

- A set of words in the source ICNP® may be translated into one word in the target ICNP® if semantically equivalent

- Gerund forms in ICNP® can be translated to an infinitive verb in the target language, e.g. ("observing" may be translated into "observe" in the target language)

- If there are a variety of prefixes or suffixes for the same noun, adjective or verb (depending on gender, singular or plural, nominative, accusative or genitive), translate into a neutral term where possible

- Plural words in the source ICNP® can be translated into singular words if the target language does not distinguish between singular and plural

- If there are different terms in the source ICNP® with the same meaning in the target language, translate to one term in the target language (e.g. in Korean, 'altering' and 'changing' have the same meaning)

- Word order may need to be different between the source ICNP® and the target language (e.g. a term with modifier cannot be translated in the same order in Korean and English)

- Validity testing should be conducted in the field to refine the translation of ICNP®

- Validity testing is done to assess and assure the quality and comparability of ICNP®, while increasing its application in actual nursing practice

- Throughout the translation process, ICNP® concepts may be identified for submission to ICN for addition, modification or retirement. The ICNP® review process should be used for this purpose

Discussion

Delivery

Activity

- *What would be the best way to deliver ICNP?*

Release format

a. Entities table (labeled asserted.csv)

b. Hierarchy table (labeled inferred.csv)

c. Changes table (labeled editorial_changes.csv)

d. Inactivated entities table (labeled inactivated.csv)

e. Replacement entities table (labeled replaced.csv)

f. New entities table (labeled new.csv)

Types of Representation	Data Elements														
	Concept Code	Knowledge Name	Preferred Term	Description	Axis	Originating Version	Old code	Subset: catalogue	Synonym	Changes	Rationale for changes	Parent code	Parent Preferred Term	Target terminology code	Target concept name
Internal Deliverables															
OWL representation: Asserted	X	X	X	X	X	X	X	X	X	X	X				
OWL representation: Inferred	X	X	X	X	X	X	X	X	X	X	X				
Entities table: Asserted	X	X	X	X	X	X	X	X	X	X	X				
External Deliverables: Public Use															
OWL representation: Asserted	X	X	X	X	X	X									
Entities table: Asserted	X	X	X	X	X	X									
Hierarchy table: Inferred	X		X									X	X		
New entities table	X	X	X	X	X	X									
Replaced entities table	X	X	X	X	X	X	X								
Inactivated entities table		X	X		X		X								
Editorial changes table	X		X		X										
Roots table	X														
Catalogues (PDF version)	X		X												
Translated entities table: Asserted (17 languages)	X	X	X	X	X	X									
External Deliverables: U.S. National Library of Medicine															
Entities table: Asserted for DC and IC only	X		X		X										
Entities table: Inferred for DC and IC only	X		X		X							X	X		
Cross-mapping between ICNP (DC and IC) and SNOMED CT	X		X											X	X

ICNP release files

- [Tabular format](#)
- [OWL](#)

Licensing

- Owned and copyrighted by ICN

- Facilitating access to ICNP® and promoting its use

- Commercial, for-profit, use requires an ICNP® Licensing & Distribution Agreement, and a fee

- Non-commercial, non-profit use requires an Agreement for Non-commercial Use of ICNP® (as part of download) but no fee

- Other applications, e.g. government use, will be negotiated on a case-by-case basis

- Licensing of ICNP is non-exclusive

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Fees for commercial use (USD)

Size of Company	Annual Revenue	ICNP® Licensing Fee (2 year)
Small	< $25,000,000	$ 5,500
Medium	$25, 000,000 – 50,000,000	$11,000
Large	> $50,000,000	$22,000

Note that there are no additional costs for numbers of users, translations, releases during the licensing period

Discussion

Maintenance

Activity

- *How should ICN decide what to include in ICNP?*

Submissions to ICNP
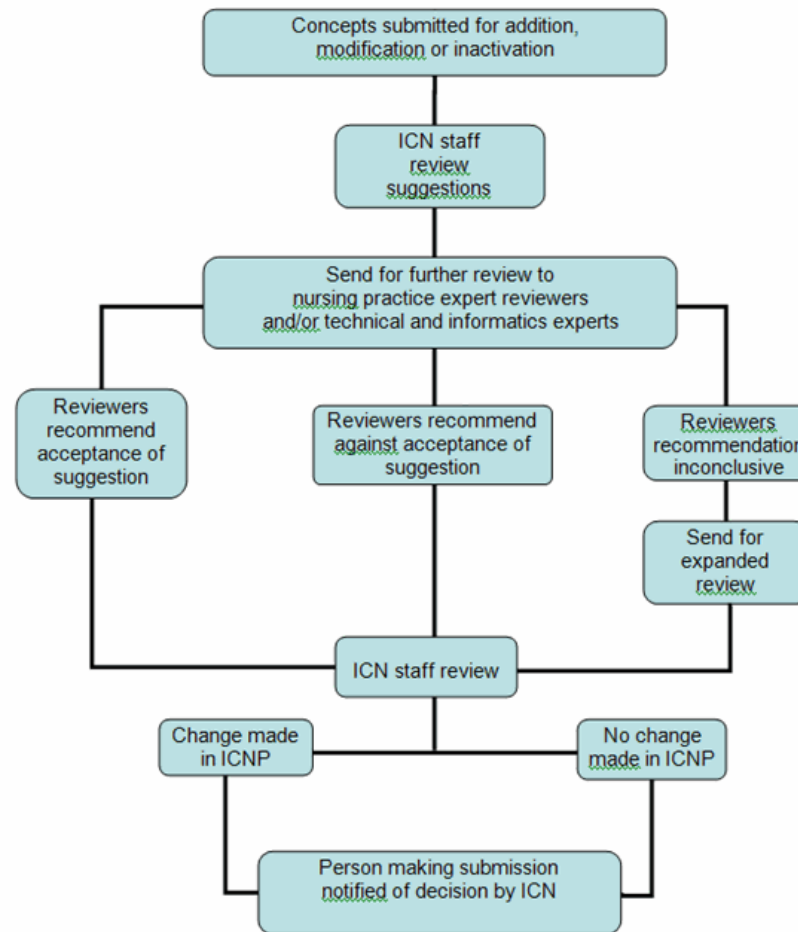
Changes to ICNP

- No changes allowed to derived representations

- Changes to OWL file (by ICN staff only)

  - Delete (inactivate)

  - Make minor amendments (change)

  - Add

  – Many changes require inactivation (with replacement as appropriate) of a class or property

  – Minor changes to terms, descriptions, capitalisation, punctuation, spelling or style that do not affect the underlying meaning of a component are permitted and represent the majority of changes

  – Changes are logged as OWL annotations (and in an 'Inactivated entities tracker' as appropriate)

Evaluation criteria for new proposals

- Within the dynamic domain of nursing

- Not redundant (If the concept is redundant it will be reviewed for use as a synonym. If the concept is retained as a synonym, a preferred term would be identified)

- Expressed in a clinically relevant way via use case

- A Use Case to describe reuse of a concept (e.g. quality reporting, decision support)

- Consider level of granularity needed for reuse

- Congruent with scientific knowledge

- Note supporting evidence, e.g. clinical trials, validation study, literature review

- Not inconsistent with the ICNP® structure

- Avoid negation

Discussion

Case study: nationwide use of ICNP-enabled nursing information systems

- Background research began in 1996 at ESEP (Porto School of Nursing) in Portugal

- 3 hospital wards (Medical, ICU, Coronary Care)

  – 60 nurses

- Action-research project

  – Analysis of 1800 clinical records

  – Impact on documentation with the introduction of nursing terminology

    - Expressiveness

    - Time spent

- Specification of a new data model

- Development of nursing information system (SAPE) in collaboration with the Ministry of Health's Informatics Department

- Prototyping, testing, dissemination

- Replication in primary care (in 3 health centres)

- Now used in approximately 90% of public hospitals and health centres

  - Approximately 50 000 nurses

- Well-received as it provided an opportunity to make visible the contribution of nurses to care

A year of nursing interventions in one region (6.6m!)

	Intervention	Hospital	Community	Total	%
1	Monitoring blood pressure	260652	86832	347484	5,26%
2	Monitoring heart rate	274268	64981	339249	5,14%
3	Assessing pain	252392	3796	256188	3,88%
4	Environmental safety management	252609	2284	254893	3,86%
5	Monitoring body temperature	243122	743	243865	3,69%
6	Motivating patient for self-turning	236949	3202	240151	3,64%
7	Monitoring blood oxygen saturation	175180	1503	176683	2,68%
8	Maintaining bed rail	166976	559	167535	2,54%
9	Positioning patient	165594	1689	167283	2,53%
10	Monitoring blood glucose	131576	12934	144510	2,19%

Comparing practice across settings

Hospital	Community
Monitoring heart rate	Supervising adherence to immunization regime
Monitoring blood pressure	Assisting the patient with positioning
Environmental safety management	Monitoring weight
Acessing pain	Surveillence of wound dressing
Monitoring body temperature	Monitoring blood pressure
Motivating patient for self turning	Monitoring height
Monitoring blood oxygen saturation	Calculating body mass index
Maintaining bed rail	Planning immunization regime
Positioning patient	Monitoring heart rate
Monitoring blood glucose	Teaching about vaccine

Discussion

Implementation

Implementation

- Practical use at point of care

  – A degree of national endorsement in Portugal, Poland, Norway, Canada, USA

  – Commercial agreements with software suppliers in Norway, USA, Portugal

- Catalogue development and translation activity

- Individual and collaborative R&D projects

- ICN Accredited Centres for ICNP® Research & Development

- ICNP Technical Implementation Guide

ICNP Technical Implementation Guide

- Applications that use ICNP

- Approaches to implementation

- Structure and content of ICNP

- ICNP in health records

- Change management

Applications that use ICNP

- Clinical recording
  – As an interface terminology
  – As a reference terminology
  – Alone or in combination
- Data retrieval, aggregation and analysis
  – Need for a robust information model (and queries that can be run against this model)
  – The generic relation facilitates the consistent aggregation of data
- Indexing and decisions support
  – Activation of CCDSS protocols
  – Context-sensitive access to ICNP-indexed reference books
- Terminology tools
  – Browsers
  – Authoring ICNP

Approaches to implementation

- Scope of ICNP

  – All nursing diagnoses and all nursing interventions

- Clinical context for ICNP entities

  – General contextual information should be provided by an information model (e.g. the fact that a particular diagnosis is a goal or outcome or that an intervention is a planned intervention)

- Extent of ICNP implementation

  – Pre-coordinated only, post-coordinating only, a mixture

  – Sets of pre-coordinated entities form terminologies in their own right (e.g. IC/DC, catalogues)

  – Post-coordination is possible but must be locally-defined (note that this may impact on data analysis)

Structure and content of ICNP 1

- Technical overview
  - Entities
  - Labels
    - Knowledge names, preferred terms synonyms
  - Codes
  - (Descriptions)
  - Derivative products
    - Catalogues, 7-axis model
  - Related products
    - Translations, mappings
  - Formal OWL model

Structure and content of ICNP 2

- Release files

    - a. Entities table (labeled asserted.csv)

    - b. Hierarchy table (labeled inferred.csv)

    - c. Changes table (labeled editorial_changes.csv)

    - d. Inactivated entities table (labeled inactivated.csv)

    - e. Replacement entities table (labeled replaced.csv)

    - f. New entities table (labeled new.csv)

    - Plus README, LICENSE and roots.csv

ICNP in health records

- ICNP does not provide instance-level data

  – Date, time, points on a numerical scale, specified people

- ICNP does not provide contextual information

  – History of, planned, goal, outcome

  – DC and IC are not confined to diagnosis and intervention sections of health records

Change management

- Many changes require inactivation and replacement

- Minor editorial changes are permitted if they do not affect underlying meaning

- New releases of ICNP should normally be replaced in entirety

  - Note that translation is an ongoing process
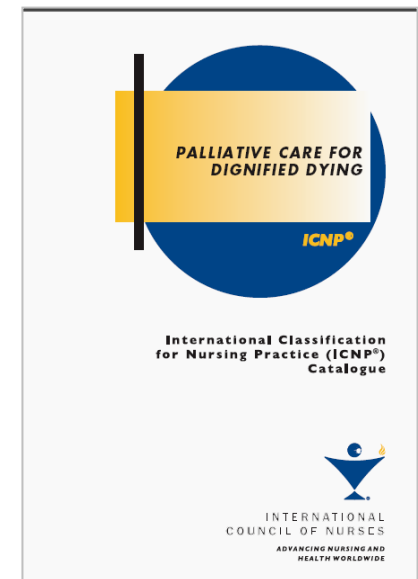
Primary use of clinical data

- Facilitating communication

- Providing a record of care

- Acting as an aide memoire

Focus for ICNP®

- Using ICNP® to provide raw data for primary use

  - Catalogues

  - Clinical Care Classification

  - <u>SNOMED® CT</u>

ICNP Catalogues

- Clinically relevant subsets of ICNP concepts (and other relevant concepts) for:

  – Nurse documentation at the point of care

  – Data are coded and stored in retrievable manner for reuse, such as decision support and research

PALLIATIVE CARE FOR DIGNIFIED DYING

ICNP®

International Classification for Nursing Practice (ICNP®) Catalogue

INTERNATIONAL COUNCIL OF NURSES
ADVANCING NURSING AND HEALTH WORLDWIDE

ICNP Catalogues

- Partnering with patients to promote adherence

- Palliative care

- Community nursing dataset

- Canadian Health Outcomes for Better Information and Care (CHOBIC)

- Total-hip surgery

- Neonate (special care) nursery

- Nursing Care of Children with HIV/AIDS (U.S.A.)

- Medication management with community-dwelling older adults

- Acute adult mental health

- Paediatric pain management

- Pressure ulcer prevention

- Prevention of falls and falls injuries

- Smoking cessation

- Breastfeeding support

- Clinical care classification nursing diagnoses

- SNOMED-CT & ICNP nursing diagnoses equivalency table

- Prenatal Nursing Care (under development by Lin Liu, Visiting Scholar)
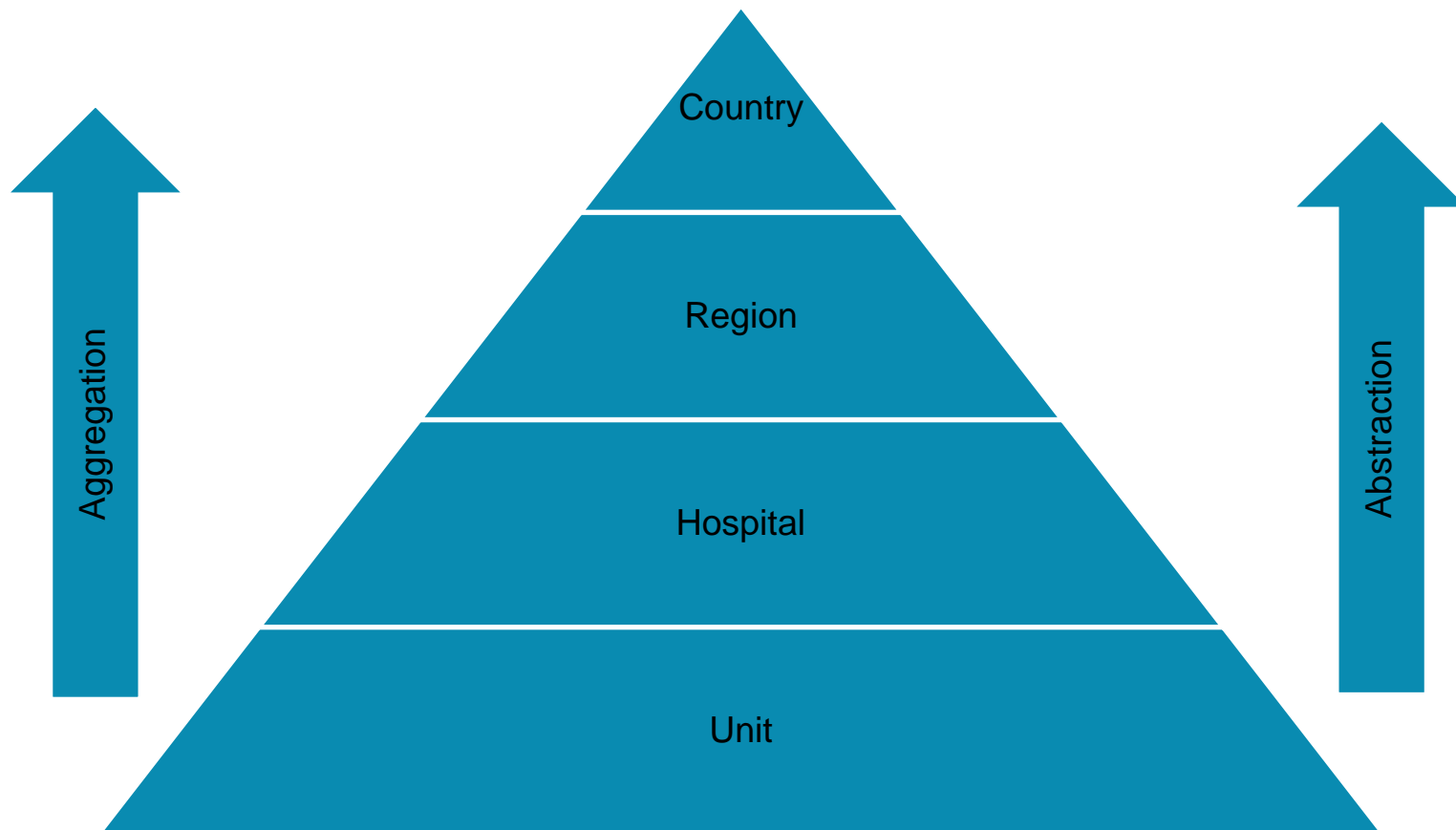
Examples of secondary use

- Mortality and morbidity reporting

- Public health surveillance

- Clinical audit

- Research

- Hospital financing

Focus for ICNP®

- Using the International Classification for Nursing Practice (ICNP®) to provide raw data for secondary use

  - Hierarchisation

  - Belgian Nursing Minimum Data Set (B-NMDS)

  - International Classification of Health Interventions (ICHI)

Activity

- *How would/will you implement ICNP?*

- *You should focus on motivation, application and approach to implementation*

Discussion

Harmonisation

Harmonisation

- CCC
  - Mapping and integration
- SNOMED CT
  - Mapping and content development
- International Classification of Health Interventions
  - Evaluation of content coverage and content development

Harmonisation

- Harmonisation agreement in place with Sabacare Inc. (CCC)
  - Equivalency tables
  - Using CCC 21 framework (21 Care Components) to organise ICNP nursing diagnoses, outcomes and interventions
- ICNP is a related classification in the WHO Family of International Classifications (ICD, ICF, ICHI)
  - ICN provided nursing content submission to International Classification of Health Interventions (ICHI)
- Collaboration agreement in place with IHTSDO
  - First IHTSDO product released May 2015: Terminology Preview of Nursing Problem Subset (over 500 SNOMED CT concepts with ICNP source, required ICN submission of over 120 new concepts to IHTSDO)
  - Approximately 480 new interventions added to SNOMED CT

Examples of new ICHI content

- 67 new interventions
    - Managing enteral feeding
    - Genetic counselling
    - Managing pain
    - Measuring fluid intake
    - Education about medication
    - Service planning
    - Fertility counseling

- 7 new targets
    - Functions related to fertility
    - Functions related to pregnancy
    - Parent-child relationships
    - Growth maintenance functions
    - Artificial body structure: Other stoma
    - Genome
    - Whole person

Examples of new SNOMED CT content

- Treating injury
- Teaching about fall prevention
- Supporting dignified dying
- Screening child development
- Reporting test result
- Reinforcing adherence
- Referring to family therapy
- Providing privacy
- Promoting use of glasses
- Nephrostomy care
- Monitoring pain
- Managing anxiety
- Implementing safety regime

- Fluid therapy
- Facilitating drug abuse recovery
- Encouraging rest
- Diabetic ulcer care
- Counselling about fears
- Collaborating with social worker
- Assisting with mobility
- Assessing skin integrity
- Assessing attitude toward disease
- Assessing ability to walk
- Administering antipyretic

Examples of missing content in SNOMED CT (diagnoses)

- Effective Cardiac Function

- Able To Participate In Care Planning

- Caregiver Able To Perform Caretaking

- Effective Recovery from Abuse

- Effective Continuity Of Care

- Improved Nutritional Status

- Improved Self Control

- Reduced Distortion In Thinking

- No Aggressive Behaviour

- Family Able To Participate In Care Planning

- Diet Tolerance

- Effective Response To Therapy

- No Fall-Related Injury

- Knowledge Of Patient Controlled Analgesia

- No Medication Side Effect

Activity

- *Should this content be included in SNOMED CT?*

Examples of missing content in SNOMED CT (diagnoses)

- Effective Cardiac Function

- Able To Participate In Care Planning

- Caregiver Able To Perform Caretaking

- Effective Recovery from Abuse

- Effective Continuity Of Care

- Improved Nutritional Status

- Improved Self Control

- Reduced Distortion In Thinking

- No Aggressive Behaviour

- Family Able To Participate In Care Planning

- Diet Tolerance

- Effective Response To Therapy

- No Fall-Related Injury

- Knowledge Of Patient Controlled Analgesia

- No Medication Side Effect

Discussion

Next steps

Next steps for ICNP®

- Reassert ICNP as a key component of the global informatics infrastructure

    - Pan-European collaborative project

- Routine biennial release (with early release for commercial partners and translators)

- Implementation

    - Facilitate translation

    - Continue development and publication of catalogues

    - Complete mapping to SNOMED® CT and other terminologies

    - Foster further commercial partnerships

- Dissemination

    - Easier distribution

    - Presentations and publications

    - Positions, eHealth Bulletin, web pages

Discussion

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