ICNP Catalogues for Supporting Nursing Content in Electronic Health Records

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Abstract. The purpose of this study was to describe sets of nursing concepts including, for example, nursing diagnoses and interventions, which are knowledge-based and clinically relevant to support nursing practice. Health information systems using the International Classification for Nursing Practice (ICNP[®]) provide a platform for standardized nursing documentation for patients' health care, clinical decision support, and repositories for re-use of clinical data for quality evaluation, research, management decisions and policy development. Clinically relevant sets of ICNP concepts can facilitate implementation of health information systems for nursing. Descriptive analysis was used to examine the types of, and relationships among, existing nursing content sets. Findings included the need for various types of content sets, as represented in ICNP catalogues, for nursing documentation. Five types of ICNP Catalogues included Care Plans, Order Sets, Clinical Templates, Nursing Minimum Data Sets, and Terminology Subsets.

Keywords. ICNP, nursing terminologies, nursing documentation, decision support, electronic health record

Introduction

From its inception, the aims of developing the International Classification for Nursing Practice (ICNP[®]) were to support standardized nursing documentation and to have documentation data which could be used to study nursing diagnoses, nursing interventions and client outcomes for evidence supporting best practice, healthcare management decisions, and policy development. Each biennial release of ICNP since the release of Version 1.0, in 2005, has had an increased number of nursing diagnosis, outcome, and intervention statements [1]. The ICNP diagnosis, outcome and intervention statements are composed using the ISO reference terminology model for nursing [2] and primitive concepts from the ICNP 7-axis model [3]. With the increase of pre-coordinated statements, it is no longer necessary for every ICNP user to develop local, post-coordinated statements using concepts from the ICNP 7-axis model. More research is needed to develop and disseminate pre-coordinated sets of concepts to assist users in the implementation of ICNP.

Because ICNP is a complex and large terminology, clinical users agree that they are better served with subsets of the terminology that can be used for nursing documentation in the care setting [4]. Nurses who choose to use ICNP in care settings

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have contributed to the development of clinically relevant sets of diagnosis, outcome and intervention statements for a variety of health priorities and delivery settings. Projects have addressed health priorities such as pain or adherence, diseases (eg, HIV/AIDS, depression), care specialties (eg, palliative care) and care settings (eg, neonatal nursery) [1].

A study by Coenen and Kim [1] examined the use of a model to develop ICNP subsets and compared content across three ICNP catalogues. Although the three ICNP subsets studied were different by topic (*eg, Palliative Care* [5], *Adherence to Treatment* [6], and *Nursing Sensitive Outcomes* [7]), there were overlapping concepts across the subsets. Half of the concepts in two ICNP catalogues (*Palliative Care* and *Adherence to Treatment*) were the same. A number of variations across the three subsets were identified, such as size and scope of the topic and context of care (eg, hospital, home care). The study supported the conclusion that subset development can proceed using many different perspectives and processes, recognizing that there will be overlap of content across catalogues. Ongoing ICNP research and development has shown the need for understanding multiple types and uses of these sets of nursing content to advance the development of ICNP and to assure that nurses have the tools and resources needed for the electronic health record. An added result of the ongoing development is the continued growth of the ICNP terminology.

The purpose of this study was to describe (a) the existing types of content sets, and (b) the relationships among nursing content sets that used ICNP concepts. Descriptive analysis was used to analyze and organize types of content sets. Similarities and differences among the types of content and the purposes of various sets assisted in early categorization of these sets. In addition, efforts were made to describe the sets in relation to each other by shared content and by clinical associations or patterns of use by nurses. This study's findings will direct further development of ICNP catalogues as resources for nurses.

1. Methods

1.1 Sample

The sample included content sets using ICNP that were accessible to the researchers. For this study, nursing content sets were defined as clinically relevant sets of concepts including, but not limited to, nursing assessment findings, nursing diagnoses, nursing interventions, and patient outcomes. All sets included some ICNP concepts with their unique identifiers. Fifty-five nursing content sets were identified for analysis.

1.2 Analysis

Descriptive analysis was used to explore types and patterns among the nursing content sets. Types of sets were initially categorized by purpose and content sources. Identifying patterns among nursing content sets involved examination of the overlap of content, granularity of content, and the intended use in practice. The authors used an iterative type process exchanging findings back and forth between researchers. Analysis was carried out until a consensus was reached among the researchers.

2. Results

A total of 55 content sets using ICNP were collected. An initial clustering of sets was conducted based on the use of ICNP. Five content sets used ICNP concepts exclusively, while 50 used ICNP along with concepts from other sources such as other standard terminology content (eg, SNOMED-CT); demographic content (eg, age); and local source content.

Analysis by type of ICNP concept identified differences. For example, some sets used combinations of ICNP nursing diagnoses, interventions and outcomes (n = 9) while others used only diagnoses and outcomes (n = 2) or only interventions (n = 44). The two sets that used only diagnoses and outcomes also included value sets. The value sets were ranking scores for severity or ability for each diagnostic or outcome concept. For example, "ability to manage medication regime" (10029272, ICNP) had a range from 1 to 5 (none to independent) for the assessed score recorded by the nurse.

All of the different content sets had the shared purpose of supporting nursing documentation through the application of a standard terminology. Additionally, all content sets were intended to reflect evidence based practice. Sources of evidence included national practice guidelines, national data sets for nursing, and expert opinion. Three of the sets were designed for national data collection, either for all patients receiving nursing care across multiple delivery settings (n = 2) [7, 8] or for data collection in one health sector (community nursing) (n = 1) [9].

The relationships among the nursing content sets were more difficult to describe than the characteristics. As expected, there was overlap of concepts across all the clinical nursing sets. It was noted that some of the sets had a clear clinical relationship, (eg, *total hip replacement surgery care* and *fall prevention for hospitalized patient*). The content set for *fall prevention* would be applicable across multiple patients and settings, including those undergoing surgery such *as total hip replacement surgery*. Another approach to examining relationships among sets was by patterns of use in practice, eg, assessment is followed by diagnoses and the continued steps of the nursing process. Content sets also would relate to each other based on patient population (eg, pediatric) and care delivery settings (eg, children's hospital). The analysis of relationships among nursing content sets revealed nested and parallel association patterns.



Figure 1. ICNP Catalogues.

Based on this preliminary analysis, a recommendation for a candidate clustering of five types of ICNP Catalogues was proposed for further research. The five types of ICNP Catalogues, or clinical nursing content sets, are displayed in Figure 1. They include: Care Plans, Order Sets, Clinical Templates, Nursing Minimum Data Sets, and Terminology Subsets. Describing the boundaries of each type of ICNP Catalogue was beyond the scope of this study.

3. Discussion

The results of this study provided a preliminary grouping of nursing content sets for ongoing development of ICNP. The idea of ICNP Catalogues is to provide the needed subsets of content for nurses to document their practice. Based on this study, it is evident that many types of Catalogues are needed.

This study provides a starting point for further examination and testing of types of ICNP Catalogues. Definitions and further delineation of each type is needed. Examining the ICNP Catalogue types in relation to the content sets of other disciplines could assist in designing integrated, multidisciplinary electronic health record systems.

Identifying redundant concepts across subsets can reduce barriers and improve ease of implementation in electronic health records. Clinically relevant relationships among subsets can facilitate more user-friendly implementation, such as nesting or parallel associations, in practice applications for nurses.

Further testing is essential to determine user needs for tools and resources, such as content subsets. ICNP and associated products such as ICNP Catalogues are available on a web-based platform, ICNP C-Space, in a variety of formats [10]. The findings from the study also contribute to further advancements in the use of C-Space for subset development, clinical validation, international validation, and distribution of ICNP.

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