Nursing Informatics

Entry-to-Practice Competencies for Registered Nurses

CASN ACESI

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Acknowledgements

Generating Momentum to Prepare Nursing Graduates for the Electronic World of Health Care Delivery **project Competency Development Working Group:**

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Background

The Canadian Association of Schools of Nursing received funding from Canada Health Infoway to promote the development of a culture within nursing education in Canada that embraces the integration of nursing informatics in curricula and professional practice. Nursing informatics is defined as a "science and practice [which] integrates nursing, its information and knowledge, and their management, with information and communication technologies to promote the health of people, families and communities worldwide" (IMIA, 2009).

The specific objectives of this project are threefold: 1) To promote a national dialogue among nurse educators, informatics experts, and nursing students on integrating nursing informatics into entry-to-practice competencies; 2) To increase the capacity of Canadian nurse educators to teach nursing informatics; and 3) To engage nursing's key stakeholders in developing nursing informatics outcome-based objectives for undergraduate nursing curricula. To achieve these objectives CASN formed a Task Force comprised of nurse educators and practitioners with expertise in nursing informatics, employers, nursing students, and representatives from other relevant national provincial/territorial associations.

The first activity of this project was to delineate the list of nursing informatics competencies that all registered nurses should possess upon graduating from an undergraduate nursing program in Canada. Members of the Task Force with experience in competency development formed the Competency Development Working Group. This working group engaged in a multi-step, iterative process to develop the entry-to-practice nursing informatics competencies that registered nurses need upon entry to the health system workforce.

Methods

An initial set of nursing informatics competencies was drafted by the Competency Development Working Group based on an extensive review of both academic and grey literature from national and international sources, as well as the existing provincial and national regulatory competencies. The Competency Development Working Group used the most comprehensive up-to-date competency lists, with relevance to the Canadian context, as their key resources in the development of draft competencies. Key resources included competencies published by Staggers, Gassert, and Curran (2001), Technology Informatics Guiding Educational Reform (2007), the American Association of Colleges of Nursing (2008), and the Canadian Nurses Association (2010). Thirty draft competencies and foundational skills acquired by students before entering university emerged from this first step in the competency development process.

The initial draft competencies were presented at a National Stakeholder Symposium attended by over 50 nursing informatics experts from across Canada. The feedback from the Symposium attendees was carefully reviewed and a second draft of the document was developed, consisting of 20 competencies. An online questionnaire was developed to gather a second round of feedback on the revised draft. This was sent to the Deans and Directors of CASN member schools, the stakeholders who had attended the National Symposium, and the CASN Education Committee. The revised draft of competencies was also presented to Canada Health Infoway's Nursing Reference Group and at the 2012 CASN Nursing Research Conference for feedback. The feedback obtained indicated widespread support for the content of the competencies but included suggestions for refining their organization and presentation. As a result, the Competency Development Working Group used this feedback to produce a third draft.

In the final stages of the development of this document, the Competency Development Working Group reviewed the *National Competencies in the Context of Entry Level Registered Nurse Practice*. These competencies, set out by the 10 provincial regulators, describe what newly graduated nurses are expected to demonstrate in practice (CNO, 2009). The group determined that the CASN-*Infoway* competencies align well with the relevant competencies in the national document. The CASN-*Infoway* competencies were then reviewed and finalized by the full project Task Force.

Foundational Information and Communications Technologies (ICTs) Skills

The use of ICTs has become routine in the lives of most Canadians. Thus, it is to be expected that upon entering an undergraduate program, nursing students will possess the foundational skills listed below. Typically, nursing students would have gained these skills through elementary and secondary level education, and though life experiences (e.g., online banking, e-mail dialogue, social media, etc.). **Although it is anticipated that nursing students will be competent in these areas, if that is not the case, universities and colleges typically have ICTs support available to all students** (e.g., school libraries, IT Help Services desks, school-run ICTs workshops, etc.).

Device Use

- Demonstrates basic skills with ICTs components (e.g., features of personal computers, hand held devices, tablets, workstations, modems, Bluetooth-enabled devices, keyboarding, use of peripheral devices including printers, USB flash drives, CD-ROMs, uploading and downloading data, Online Collaborative Learning, smart phones, mouse and touchpad interchangeably, etc.).

- Uses intranet and extranet networks to navigate systems (e.g., access to shared file servers, virtual private networks, World Wide Web, cloud computing, browsers).

Application Use

- Uses electronic communication (e.g., email to create, send, respond, attach and receive attachments).

- Is familiar with the use of multimedia presentations (e.g., videos, podcasts, blogs, YouTube, etc.).

- Uses word processing, spreadsheets and presentation graphics (e.g., document, spreadsheet, slideshow creation, etc.).

- Navigates primary operating systems (e.g., Windows to manage files, determine active printers, access installed applications, create and delete files, etc.).

- Uses technology for self-directed learning.

- Is familiar with social networking applications (e.g.,Twitter, Facebook, LinkedIn, etc.).

Preamble

The following nursing informatics competencies are expected to have been acquired by registered nurses over the course of their undergraduate education. **A competency is a complex know-act based on combining and mobilizing internal resources (knowledge, skills, attitudes) and external resources to apply appropriately to specific types of situations (Tardif, 2006).**

CASN has defined three entry-to-practice nursing informatics competencies under the domains of *information and knowledge management*, *professional and regulatory accountability*, and *use of ICTs*. Each competency is accompanied by a list of indicators. Indicators are assessable and observable manifestations of the critical learnings needed to develop the competency (Tardif, 2006). An over-arching competency has been penned, which captures the essence of all three domains.

These nursing informatics competencies and indicators are intended to provide direction for curriculum development. The competencies should build on, and not replace other curriculum elements. The competencies incorporate the minimum knowledge and skills new registered nurses require to practice in an increasingly technology-enabled environment.

Overarching Competency

Uses information and communication technologies to support information synthesis in accordance with professional and regulatory standards in the delivery of patient/client care.

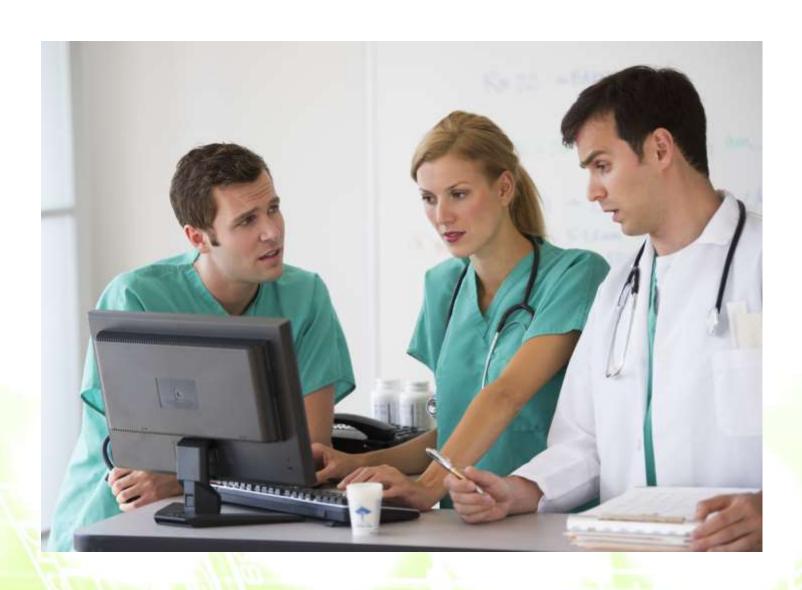**Uses relevant information and knowledge to support the delivery of evidence-informed patient care.**

- Performs search and critical appraisal of on-line literature and resources (e.g., scholarly articles, websites, and other appropriate resources) to support clinical judgement, and evidence-informed decision making.

- Analyses, interprets, and documents pertinent nursing data and patient data using standardized nursing and other clinical terminologies (e.g., ICNP, C-HOBIC, and SNOMED-CT, etc.) to support clinical decision making and nursing practice improvements.

- Assists patients and their families to access, review and evaluate information they retrieve using ICTs (i.e. current, credible, and relevant) and with leveraging ICTs to manage their health (e.g. social media sites, smart phone applications, online support groups, etc.).

- Describes the processes of data gathering, recording and retrieval, in hybrid or homogenous health records (electronic or paper), and identifies informational risks, gaps, and inconsistencies across the healthcare system.

- Articulates the significance of information standards (i.e. messaging standards and standardized clinical terminologies) necessary for interoperable electronic health records across the healthcare system.

- Articulates the importance of standardized nursing data to reflect nursing practice, to advance nursing knowledge, and to contribute to the value and understanding of nursing.

- Critically evaluates data and information from a variety of sources (including experts, clinical applications, databases, practice guidelines, relevant websites, etc.) to inform the delivery of nursing care.

Uses ICTs in accordance with professional and regulatory standards and workplace policies.
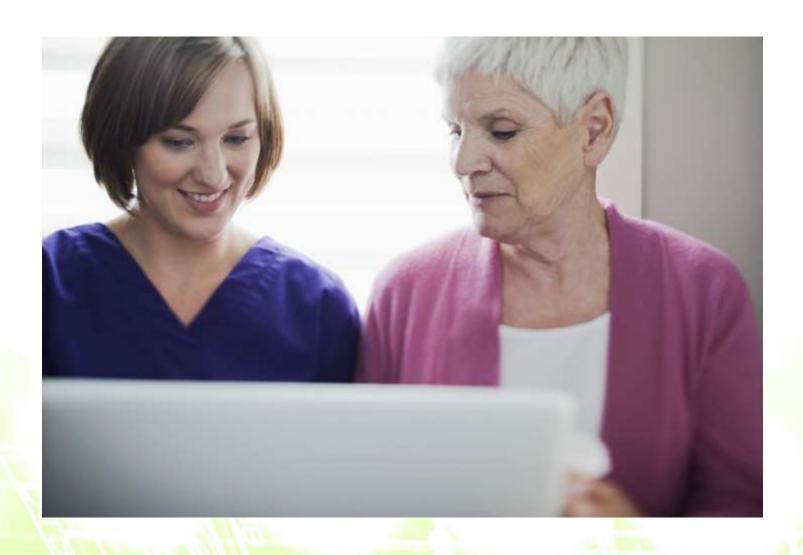
Indicators

- Complies with legal and regulatory requirements, ethical standards, and organizational policies and procedures (e.g. protection of health information, privacy, and security).

- Advocates for the use of current and innovative information and communication technologies that support the delivery of safe, quality care.

- Identifies and reports system process and functional issues (e.g. error messages, misdirections, device malfunctions, etc.) according to organizational policies and procedures.

- Maintains effective nursing practice and patient safety during any period of system unavailability by following organizational downtime and recovery policies and procedures.

- Demonstrates that professional judgement must prevail in the presence of technologies designed to support clinical assessments, interventions, and evaluation (e.g., monitoring devices, decision support tools, etc.).

- Recognizes the importance of nurses' involvement in the design, selection, implementation, and evaluation of applications and systems in health care.

Uses information and communication technologies in the delivery of patient/ client care.

Indicators

- Identifies and demonstrates appropriate use of a variety of information and communication technologies (e.g., point of care systems, EHR, EMR, capillary blood glucose, hemodynamic monitoring, telehomecare, fetal heart monitoring devices, etc.) to deliver safe nursing care to diverse populations in a variety of settings.

- Uses decision support tools (e.g. clinical alerts and reminders, critical pathways, web-based clinical practice guidelines, etc.) to assist clinical judgment and safe patient care.

- Uses ICTs in a manner that supports (i.e. does not interfere with) the nurse-patient relationship.

- Describes the various components of health information systems (e.g., results reporting, computerized provider order entry, clinical documentation, electronic Medication Administration Records, etc.).

- Describes the various types of electronic records used across the continuum of care (e.g., EHR, EMR, PHR, etc.) and their clinical and administrative uses.

- Describes the benefits of informatics to improve health systems, and the quality of interprofessional patient care.

List of Acronyms

C-**HOBIC** – Canadian Health Outcomes for Better Information and Care

CASN – Canadian Association of Schools of Nursing

EHR – Electronic Health Record

EMR – Electronic Medical Record

ICNP – International Classifications of Nursing Practice

ICTs – Information and Communication Technologies

PHR – Personal Health Record

SNOMED-**CT** – Systematized Nomenclature of Medicine – Clinical Terms

Glossary of Terms

TERM	DEFINITION
Canadian Health Outcomes for Better Information and Care (C-HOBIC)	An initiative to introduce systematic, structured language to admission and discharge assessments of patients receiving acute care, complex continuing care, long-term care, or home care. This language can be abstracted into provincial databases or EHRs.
Competency	A complex know-act based on combining and mobilizing internal resources (knowledge, skills, attitudes) and external resources to apply appropriately to specific types of situations.
Decision Support Tools	Tools used for enhancing health-related decisions and actions with pertinent, organized clinical knowledge and patient information to improve health and healthcare delivery.
Electronic Health Record (EHR)	A record available electronically to authorized health care providers and the individual anywhere, anytime in support of high quality care. The record provides each individual in Canada with a secure and private lifetime record of their key health history and care within the health system.
Electronic Medical Record (EMR)	A record specific to a clinician's (e.g. physician) practice or organization. It is the record that clinicians maintain on their own patients, and which detail demographics, medical and drug history, and diagnostic information such as laboratory results and findings from diagnostic imaging. It is often integrated with other software that manages activities such as billing and scheduling.
Health Information Systems (HIS)	A combination of vital and health statistical data from multiple sources, used to derive information and make decisions about the health needs, health resources, costs, use, and outcome of health care.
Indicators	Assessable and observable manifestations of the critical learnings needed to develop the competency.
Information and Communication Technologies	Encompasses all those digital and analogue technologies that facilitate the capturing, processing, storage, and exchange of information via electronic communication.
International Classifications of Nursing Practice (ICNP®)	The ICNP® is a unified nursing language system. It is a compositional terminology for nursing practice that facilitates the development of, and cross-mapping among, local terms and existing terminologies.
Messaging Standards	Standards for the exchange, integration, sharing, and retrieval of electronic health information in a consistent manner to support clinical practice and the management, delivery, and evaluation of health services.
Nursing Informatics	A science and practice [which] integrates nursing, its information and knowledge, and their management, with information and communication technologies to promote the health of people, families and communities worldwide.
Personal Health Record (PHR)	A complete or partial health record under the custodianship of a person(s) (e.g. a patient or family member) that holds all or a portion of the relevant health information about that person over their lifetime
Standardized Nomenclature of Medicine – Clinical Terms (SNOMED-CT)	Asystematically organised computer processable collection of clinical terms providing codes, terms, synonyms and definitions covering diseases, findings, procedures, microorganisms, substances, etc. It allows a consistent way to index, store, retrieve, and aggregate clinical data across specialties and sites of care.
Standardized Clinical Terminology	Terminology required directly or indirectly to describe health conditions (e.g. symptoms, complaints, illness, diseases, disorders, etc.), and healthcare activities. Used in medical records, clinical communication, and medical science.
Standardized Nursing Terminology	A classification system which allows for the standardized collection of essential nursing data. The collected data are meant to provide an accurate description of the nursing process used when providing nursing care. This allows for the analysis and comparison of nursing data across populations, settings, geographic areas, and time.
Interoperable Electronic Health Records	This system will allow authorized health care professionals to view and, in some cases, to update a patient's essential health information. Interoperable refers to a system that has the ability to work with other systems or products. If they weren't part of an interoperable electronic health record (iEHR), the registries, diagnostic imaging, drug information, and laboratory information systems would be unable to send or receive information from health care professionals.

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CASN
ACESI

Canadian Association
of Schools of Nursing

Association canadienne des
écoles de sciences infirmières