

Pharmacy **INFORMATICS**



Entry-to-Practice **COMPETENCIES** for **PHARMACISTS**



ASSOCIATION OF FACULTIES
OF PHARMACY OF CANADA



Canada Inforoute
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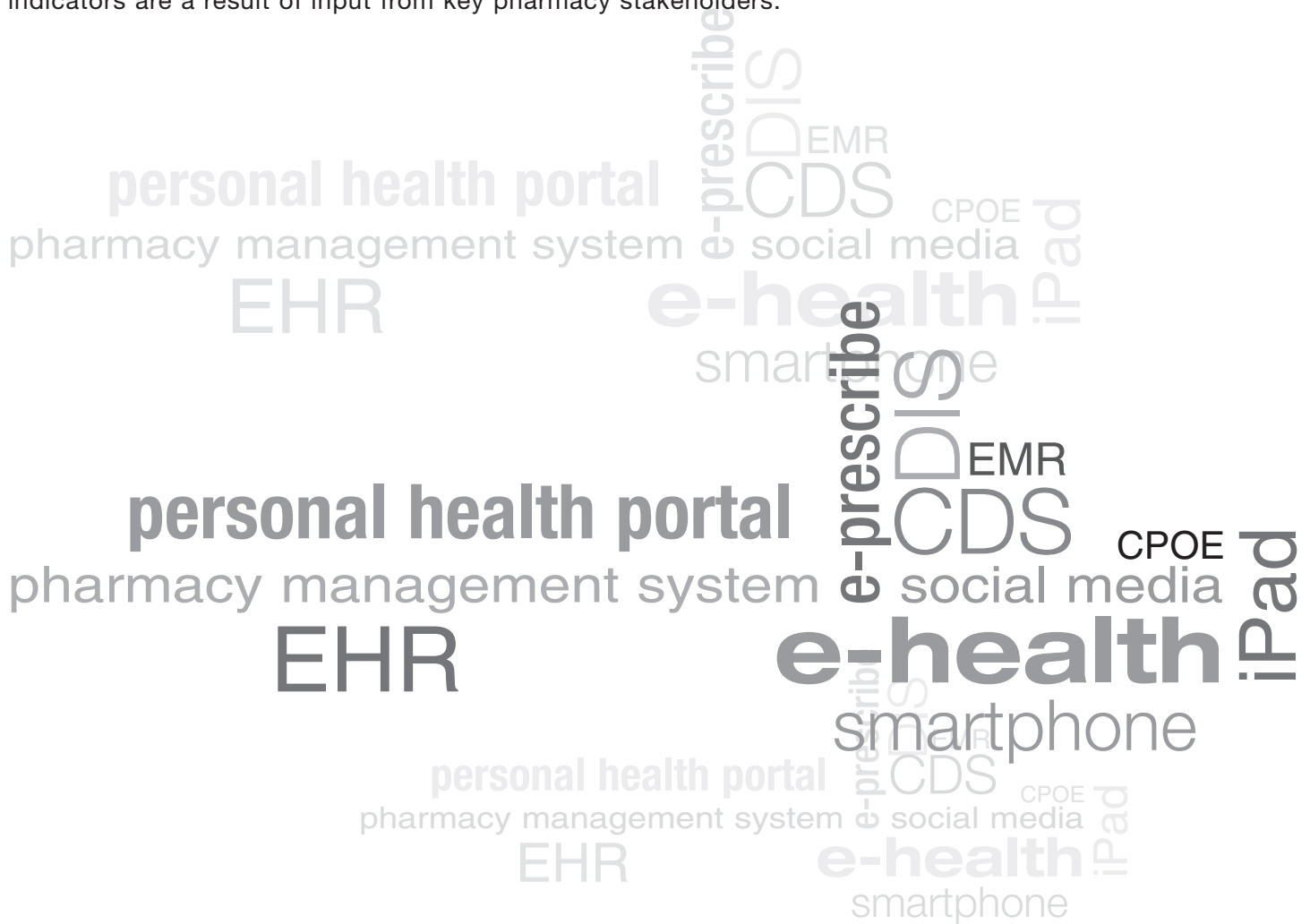
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INTRODUCTION

Pharmacy practice continues to change from a drug distribution focus to expanded scopes of practice with a major emphasis on improving patient care and health outcomes. Information and information technology needs are also evolving to enable and support this change. Optimized use of health and pharmacy information, as well as information technology is a critical success factor for this shift. While Canadian pharmacy faculties currently provide education on information and information technology, few have dedicated courses and materials about this important topic.

The Association of Faculties of Pharmacy of Canada (AFPC) and Canada Health Infoway (Infoway) have partnered together to develop a national on-line, competency based, educational program to help prepare undergraduate pharmacy students in optimizing the use of Information and Communication Technologies (ICT).

The first phase of the project was to develop and validate a competency framework related to use of ICT by graduates of first pharmacy professional degree programs. The following competencies and competency indicators are a result of input from key pharmacy stakeholders.



METHODS

An initial draft set of entry to practice competencies for pharmacy students enrolled in first professional degree programs in Canada was developed through the following process:

1. Literature review for competency statements and frameworks
2. Review of existing, validated, relevant competency frameworks including:
 - Canadian Association of Schools of Nursing (CASN, 2012)
 - Association of Faculties of Pharmacy of Canada (AFPC, 2010)
 - COACH (Canada's Health Informatics Association, 2009)
 - Building Core Competencies in Pharmacy Informatics (Fox, Thrower, Felkey 2010, American Pharmacists Association)
 - American Medical Informatics Association (AMIA, 2012)
3. Compilation of a hybrid set of competencies and competency indicators felt to be relevant to the project
4. Consideration of pharmacy-specific context and modification of competencies where appropriate

A survey was created to determine the relevance and priority of each indicator. A link to the survey was distributed to the following key pharmacy stakeholders with the expectation that the survey would be forwarded to their respective constituents by a branching technique:

- Project Steering Committee
- AFPC Councilors
- NAPRA
- PEBC
- CPhA
- Infoway Pharmacist Reference Group
- PEP Canada Committee
- CSHP
- CSHP Pharmacy Informatics Specialty Network

Survey participants were asked to:

1. Determine the content validity of each competency (and accompanying indicator) statement and,
2. Prioritize the competencies (and indicators) to drive the next phase of program design and development.

FOUNDATIONAL SKILLS

It is expected that students will possess these foundational skills prior to entering an undergraduate pharmacy program.

DEVICE USE

- F1.** Demonstrates basic skills with ICT 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, smart phones, mouse and touch-pad interchangeably, etc.)
- F2.** Uses intranet and extranet networks to navigate systems (e.g., access to shared file servers, virtual private networks, World Wide Web, cloud computing, browsers)
- F3.** Uses electronic communication (e.g. email to create, send, respond, attach and receive attachments)
- F4.** Is familiar with multimedia presentations (e.g. videos, podcasts, blogs, YouTube, etc.)
- F5.** Uses word processing, spreadsheets and presentation graphics (e.g. document, spreadsheet, slideshow creation, etc.)
- F6.** Navigates primary operating systems (e.g. Windows and Apple to manage files, determine active printers, access installed applications, create and delete files, etc.)
- F7.** Uses technology for self-directed learning (e.g. learning management systems)

APPLICATION USE

- F3.** Uses electronic communication (e.g. email to create, send, respond, attach and receive attachments)
- F8.** Is familiar with social networking applications (e.g. Twitter, Facebook, LinkedIn, etc.)



INTRODUCTION to COMPETENCIES & INDICATORS

The following informatics competencies are expected to have been acquired by pharmacy students over the course of their undergraduate education.

These pharmacy informatics competencies and indicators were prepared to guide development of the AFPC - Infoway national on-line educational program to help prepare undergraduate pharmacy students in optimizing the use of Information and Communication Technologies (ICT).

A competency is a complex “know-act” based on combining and mobilizing internal resources (knowledge, skills, and attitudes) and external resources to apply appropriately to specific types of situations. (Tardiff, 2006). Indicators are assessable and observable manifestations of the critical learnings needed to develop the competency.



COMPETENCIES & INDICATORS

COMPETENCY #1: INFORMATION AND KNOWLEDGE MANAGEMENT

Uses relevant information and knowledge to support the delivery of evidence-based patient care

- 1.1 Performs search, retrieval, and critical appraisal from a variety of sources (including scholarly articles, websites, clinical applications, practice guidelines, and experts) to support clinical judgement
- 1.2 Uses audience-appropriate communication and language to present information and convey concepts
- 1.3 Assesses the key attributes of data and information (e.g. quality, accuracy, integrity, timeliness, appropriateness), their limitations within the context of intended use (e.g. clinical and analytical uses), and their impact on knowledge creation and use
- 1.4 Facilitates appropriate consumer use of health information and related technologies by assisting patients and their families to access, review and evaluate information they retrieve for currency, credibility and relevance, and with leveraging ICTs to manage their health (e.g. Personal Health Records, social media sites, smart phone applications, online support groups, etc.)
- 1.5 Promotes an information culture by encouraging and facilitating appropriate uses of information and knowledge
- 1.6 Recognizes commonly used formats (e.g. SOAP notes), templates, structures (e.g. patient charts) and methods (e.g. digital, manual) for recording and communicating clinical data and how these are incorporated into system and application use
- 1.7 Understands data interrelationships and dependencies among the various health information systems (e.g. decision support systems, electronic health records, computerized provider order entry, etc.)
- 1.8 Recognizes need for interoperable health records (medications, diagnoses, care plans) across the healthcare system and uses information standards (i.e. messaging standards and standardized clinical terminologies) to enable this goal

COMPETENCIES & INDICATORS...CONTINUED on PAGE 7

COMPETENCIES & INDICATORS...CONTINUED from PAGE 6

- 1.9** Utilizes ICTs (e.g. email, social media) appropriately in communicating with patients in compliance with legal, privacy, and regulatory requirements
- 1.10** Describes the processes of data gathering, recording and retrieval, in hybrid or homogenous health records (electronic or paper format) and identifies benefits, risks, gaps, and inconsistencies across the healthcare system
- 1.11** Analyses, interprets, and documents pertinent health, pharmacy, and patient data using standardized clinical terminologies to support clinical decision making and collaborative patient-centred care
- 1.12** Understands need for interoperability of health records and data exchange and its impact on collaborative patient-centred care
- 1.13** Demonstrates understanding of health information terminology (e.g. classifications, vocabularies, nomenclature, abbreviations, acronyms, etc.) and standards, and their appropriate use

COMPETENCY #2: PROFESSIONAL AND REGULATORY ACCOUNTABILITY

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

- 2.1** Complies with legal and regulatory requirements, ethical standards, and organizational policies and procedures (includes protection of health information and maintaining privacy, and ensuring security e.g. collection, use, disclosure, access to, protection, and destruction of health information)
- 2.2** Demonstrates an understanding of: (i) Current legislation; (ii) Professional, ethical, and legal obligations; (iii) Guidelines relating to privacy, confidentiality, and security of health information
- 2.3** Maintains effective pharmacy practice and patient safety during any period of system unavailability
- 2.4** Recognizes the importance of commitment by health care professionals, vendors, organizations, governments, business enterprises (pharmacies), and institutions in the optimization of applications and systems in health care as a platform for integrated, collaborative, patient-centred care

- 2.5 Reports system process and functional issues (e.g. error messages, misdirections, device malfunctions, etc.) according to organizational policies and procedures
- 2.6 Participates in assessment of health technologies and understands decision making and analytical frameworks for the use of current information and communication technologies that support the delivery of safe, quality care

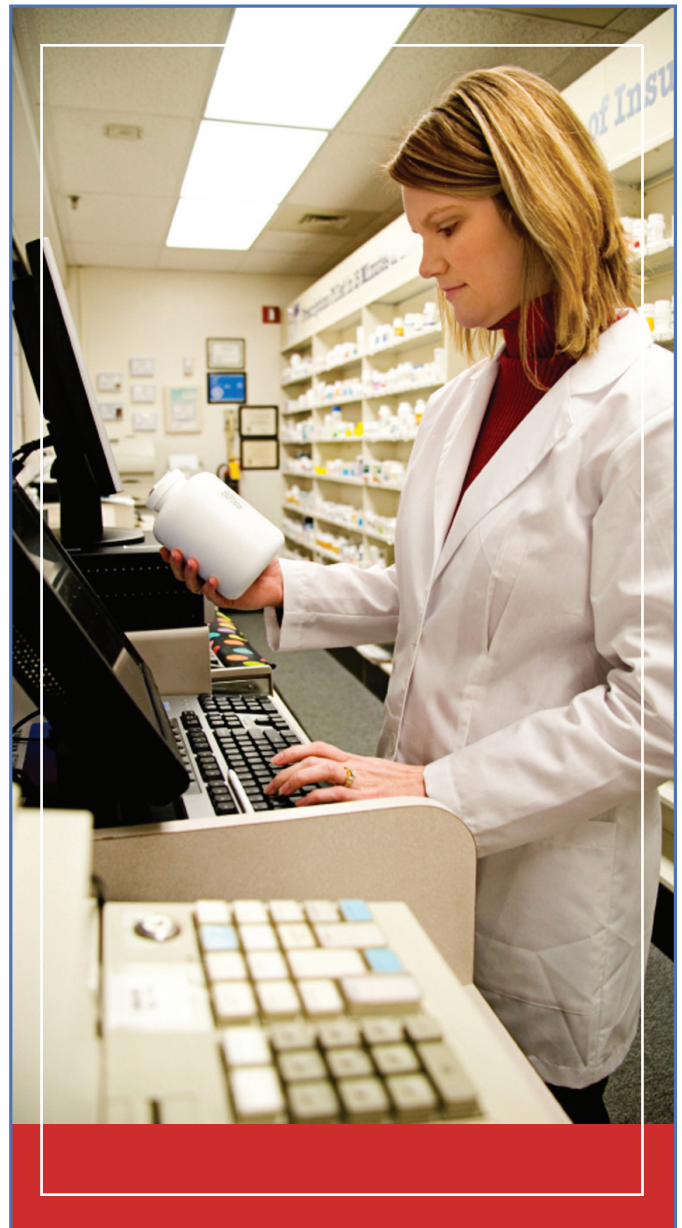
COMPETENCY #3: INFORMATION AND COMMUNICATION TECHNOLOGIES

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

- 3.1 Demonstrates efficient and responsible use of clinical decision support tools (e.g. clinical alerts and reminders, critical pathways, clinical practice guidelines, etc.) to assist clinical judgement and safe patient care
- 3.2 Documents patient care activities in a timely, retrievable, usable manner for access by other care providers, and in the interest of patient care outcomes and safety
- 3.3 Uses ICTs in a manner that supports (i.e. does not interfere with) the pharmacist-patient relationship and those with colleagues; undertakes face-to-face communication strategies when warranted
- 3.4 Demonstrates use of a variety of information and communication technologies (e.g. Pharmacy Information Systems, telepharmacy, EHR, EMR, point of care systems) to deliver collaborative patient-centred care to diverse populations in a variety of settings
- 3.5 Actively makes their expertise available to others and willingly agrees to share relevant information, using language that is context appropriate
- 3.6 Identifies the various components of electronic records used across the continuum of care (e.g. EHR, EMR, PHR, etc.) and their clinical, administrative and research uses
- 3.7 Evaluates the factors critical to safe and efficient medication distribution systems including pharmacy layout / design, workflow, technology and automation

COMPETENCIES & INDICATORS...CONTINUED on PAGE 9

- 3.8** Commits to the benefits of informatics to improve patient outcomes, health care quality benchmarks, and the quality of interprofessional patient care
- 3.9** Describes the structure and key elements of computerized provider order entry and electronic prescribing processes
- 3.10** Explains technologies and systems used to automate the medication delivery process and impact on patient safety
- 3.11** Understands key information technology concepts, principles and components (e.g. networks, storage devices, operating systems, information retrieval, data warehousing, application, firewalls, etc.) and their interrelationships
- 3.12** Distinguishes between telehealth, telemedicine and telepharmacy, provides examples of each, and discusses benefits and issues inherent in these health delivery models



GLOSSARY

COMPETENCY	<ul style="list-style-type: none">– a complex “know-act” based on combining and mobilizing internal resources (knowledge, skills, and attitudes) and external resources to apply appropriately to specific types of situations.
DECISION SUPPORT TOOLS	<ul style="list-style-type: none">– 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)	<ul style="list-style-type: none">– a record of an individual’s key health history and care, available electronically to authorized health care providers in support of high quality patient care.
ELECTRONIC MEDICAL RECORD (EMR)	<ul style="list-style-type: none">– an electronic patient record specific to a clinician’s (e.g. physician) practice or organization.
INDICATOR	<ul style="list-style-type: none">– assessable and observable manifestation of the critical learnings needed to develop a competency
INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)	<ul style="list-style-type: none">– encompasses all digital and analog technologies that facilitate the capturing, processing, storage and exchange of information via electronic communication.
PHARMACY INFORMATICS	<ul style="list-style-type: none">– use and integration of data, information, knowledge, technology and automation for the purpose of improving health outcomes
PERSONAL HEALTH RECORD (PHR)	<ul style="list-style-type: none">– 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 a lifetime.

REFERENCES:

Entry to Practice Competencies for Nurses (CASN-Infoway, 2012)

Educational Outcomes Extracted from: First Professional Degree Programs in Pharmacy (AFPC, June 2010)

SELECTED Health Information Professional Core Competencies (Version 2.0, March 2009) COACH

Informatics Competency Statements (Building Core Competencies in Pharmacy Informatics) (Fox, Thrower & Felkey, 2010)

American Medical Informatics Association (AMIA), 2012

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