CONSUMER HEALTH SOLUTIONS:
A TEACHING AND LEARNING RESOURCE FOR NURSING EDUCATION

CASN ACESI

Canada Health Infoway | Inforoute Santé du Canada

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Background

In 2011, the Canadian Association of Schools of Nursing (CASN) embarked on an initiative in partnership with Canada Health Infoway (*Infoway*) to foster a culture in nursing education that embraced digital health. This project was supported by *Infoway* as part of its national *Clinical Engagement Strategy - Next Generation Strategy* designed to ensure that clinicians are ready to practice in, and gain value from, a technology enabled environment when they graduate. This initiative also promoted the development and integration of core informatics competencies related to the use of technology in practice into the curricula/educational processes of the faculties of medicine, nursing and pharmacy across Canada.

The first step was to create national, consensus-based entry-level competencies for registered nurses in the area of nursing informatics. The resulting document, *Nursing Informatics Entry-to-Practice Competencies for Registered Nurses* (2012), identifies the knowledge, skills, and attitudes that all nurses should acquire upon completion of a baccalaureate degree in Canada.

To support nursing faculty in teaching the competencies and integrating them into curricula, CASN created the *Nursing Informatics Teaching Toolkit* (2013). This Toolkit contains detailed information on digital health as it relates to each of the three competency domains: information and knowledge management, professional and regulatory accountability, and use of information and communication technologies (ICTs). For each domain, the Toolkit includes practical teaching tools including PowerPoint presentations, case studies, and discussion/test questions.

In 2013*, Infoway* built on the *Clinicians-in-Training* initiative and evolved the *Clinical Engagement Strategy – Next Generation Strategy* to create faculty peer leader networks across Canada to support and mentor colleagues in the academic community. The peer leader networks were designed to offer faculty a collaborative and engaging approach to support change management. The goals were to foster curricular incorporation of emerging consumer health solutions in alignment with core informatics competencies, promote the use of existing tools and resources in the field, and advance the integration of interprofessional practice in relation to digital health.

As a result, CASN launched a second national project related to digital health in nursing education within *Infoway's* faculty peer leader framework. A group of ten digital health champions were selected to be faculty peer leaders to work with their nurse educator colleagues to share information, collaborate on teaching strategies, and develop methods for integrating digital health into the nursing curriculum. As part of the project, CASN created this document offering nursing faculty information and learning resources on Consumer Health Solutions (CHS), a burgeoning area of digital health that is becoming increasingly important in nursing care of patients.

Consumer Health Solutions: A Teaching And Learning Resource For Nursing Education

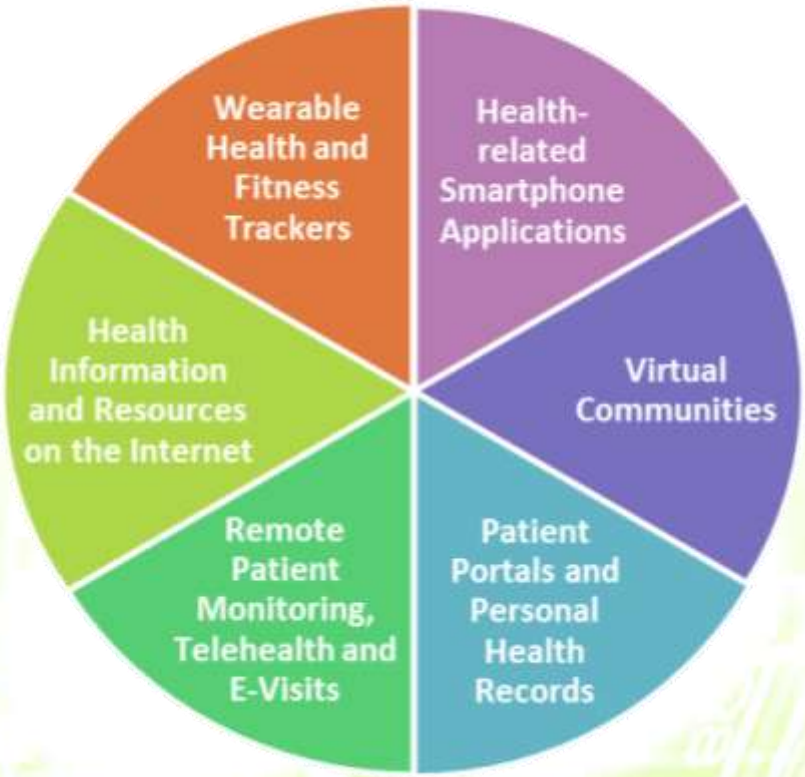
Purpose and Intended Audience

The *Consumer Health Solutions: A Teaching And Learning Resource For Nursing Education* (CHS resource) is intended to support the integration of digital health content into undergraduate nursing education, as outlined by the CASN *Entry-to-Practice Nursing Informatics Competencies for Registered Nurses*. The CHS resource is a companion document to the *Nursing Informatics Teaching Toolkit*. (The Competencies and the Toolkit are both available at www.casn.ca.) Some examples of the use of CHS can be found in the Toolkit. However, as this area of digital health has expanded significantly, and as it is critical to nursing care, CASN saw the need to create a specific resource on CHS. This document, like the earlier Toolkit, has been created primarily to assist nursing faculty in integrating and teaching CHS-related content in their courses. The CHS resource may also be helpful to nursing students at all levels, direct care nurses, nurses in government and policy roles, and educators of other health professional groups.

Resource Organization

Following a section introducing consumer health solutions in nursing, the resource is organized into six sections, each detailing a key area of CHS. CASN's faculty peer leaders determined the most relevant components of CHS for nursing practice and education today, and categorized these based on the streams of CHS programs that *Infoway* has identified as integral to the faculty peer leader initiative. (Canada Health Infoway, 2015). (Figure 1). The six key areas guided the CHS content selected for inclusion in this resource.

Figure 1. Areas of consumer health solutions



Four areas of CHS may be used by individuals with or without the involvement of a health professional: Finding health information and resources on the internet, using wearable health and fitness trackers, health-related smartphone apps and virtual communities. Nurses and other health professionals have recognized that these tools can be used for health promotion and self-care. By becoming involved, nurses are finding new ways of delivering supportive, patient-centered care. Nurses may also be able to assist individuals with accessing high quality products and promote safer use. The other two areas, remote patient monitoring, telehealth and e-visits, and patient portals and personal health records, are forms of CHS where nurses and other health professionals typically introduce the solution and involved in its use.

Each section of the CHS resource includes background information on the specific type(s) of CHS being discussed and a variety of learning activities that can be used to teach nursing students about it. As noted, CASN has defined three competencies related to nursing informatics/digital health. The learning activities address the indicators of these competencies, which are listed in Table 1.

Table 1. CASN nursing informatics competencies and indicators

1. INFORMATION AND KNOWLEDGE MANAGEMENT: Uses relevant and information to support the delivery of evidence-informed patient care.	
1.1	Performs search and critical appraisal of online literature and resources (e.g., scholarly articles, websites, and other appropriate resources) to support clinical judgement, and evidence-informed decision making.
1.2	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.
1.3	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.).
1.4	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.
1.5	Articulates the significance of information standards (i.e., messaging standards and standardized clinical terminologies) necessary for interoperable electronic health records across the healthcare system.
1.6	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.
1.7	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.

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 (e.g., protection of health information, privacy, and security).
2.2	Advocates for the use of current and innovative information and communication technologies that support the delivery of safe, quality care.
2.3	Identifies and reports system process and functional issues (e.g., error messages, misdirections, device malfunctions, etc.) according to organizational policies and procedures.
2.4	Maintains effective nursing practice and patient safety during any period of system unavailability by following organizational downtime and recovery policies and procedures.
2.5	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.).
2.6	Recognizes the importance of nurses' involvement in the design, selection, implementation, and evaluation of applications and systems in health care.
3. INFORMATION AND COMMUNICATION TECHNOLOGIES: Uses information and communication technologies in the delivery of patient/client care	
3.1	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.
3.2	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.
3.3	Uses ICTs in a manner that supports (i.e., does not interfere with) the nurse-patient relationship.
3.4	Describes the various components of health information systems (e.g., results reporting, computerized provider order entry, clinical documentation, electronic Medication Administration Records, etc.).
3.5	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.
3.6	Describes the benefits of informatics to improve health systems, and the quality of interprofessional patient care.

For each section of CHS resources, multiple learning activities have been developed to support the integration of these activities in a variety of learning environments and at specified levels of a nursing program. In addition, a list of key concepts and learning outcomes have been developed for the learning activity. The indicators to which the activity relates are also included (Table 2). A glossary of terms has been included at the end of the document with definitions of key concepts identified in the resource.

Table 2. Template for CHS teaching activities

<table>
<tr><th colspan="3">Consumer Health Solution Type</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
One of the following environments is suggested for each activity: classroom, clinical, lab, or assignment.

Target Students
Approximate level in the education program to integrate the activity is identified.
Key Concepts
Concepts that are covered through the use of the activity are listed. All concepts are defined in the glossary.

Indicators
Each learning activity is related to one or more indicator of the competency statements. Most activities address multiple indicators and cross all three competencies. The specific indicators are identified.</td><td>A brief description of the activity is provided. Parts of the activity (e.g., scenarios) are not provided in full, as educators are encouraged to adapt the activities for their courses.

Evaluation Suggestions
Methods for evaluating the learning outcomes are provided.
Resources
The CASN Entry-to-Practice Nursing Informatics Competencies and the Nursing Informatics Teaching Toolkit are baseline reference material for this document. Other resources that detail specific information related to each activity are provided for reference or direct use in the learning activity.</td><td>The anticipated learning outcomes of the learning activity are listed.</td></tr>
</table>

Introduction: Consumer Health Solutions and Nursing

"Consumers have become empowered, clients have become consumers and health care providers find new roles added to their existing ones as care is increasingly centered on and driven by the client" (Lober & Flowers, 2011).

Rapid advances in ICTs have led to changes in how care is delivered by all health professionals. Nursing has evolved as a result of these advances, and they are transforming how nurses interact with patients and their colleagues in the health care system. Examples include the transition to point of care systems such as primary and acute care information systems and electronic health records (EHRs), access to evidence-based information through online databases, and the use of clinical alerts and reminders to enhance patient safety. These changes have created opportunities for nurses to explore new ways to deliver care and new ways to maintain a strong connection with their patients. Thus far, components of digital health used in the delivery of care are largely "provider-centered". Despite the emphasis on patient-centered care, health professionals have been the gate keepers to patient data, health information, and more. Technology, however, is creating "empowered consumers of health care" (Lober & Flowers, 2011). As it continues to evolve, individuals are becoming more and more involved in using and advocating for health-based ICTs.

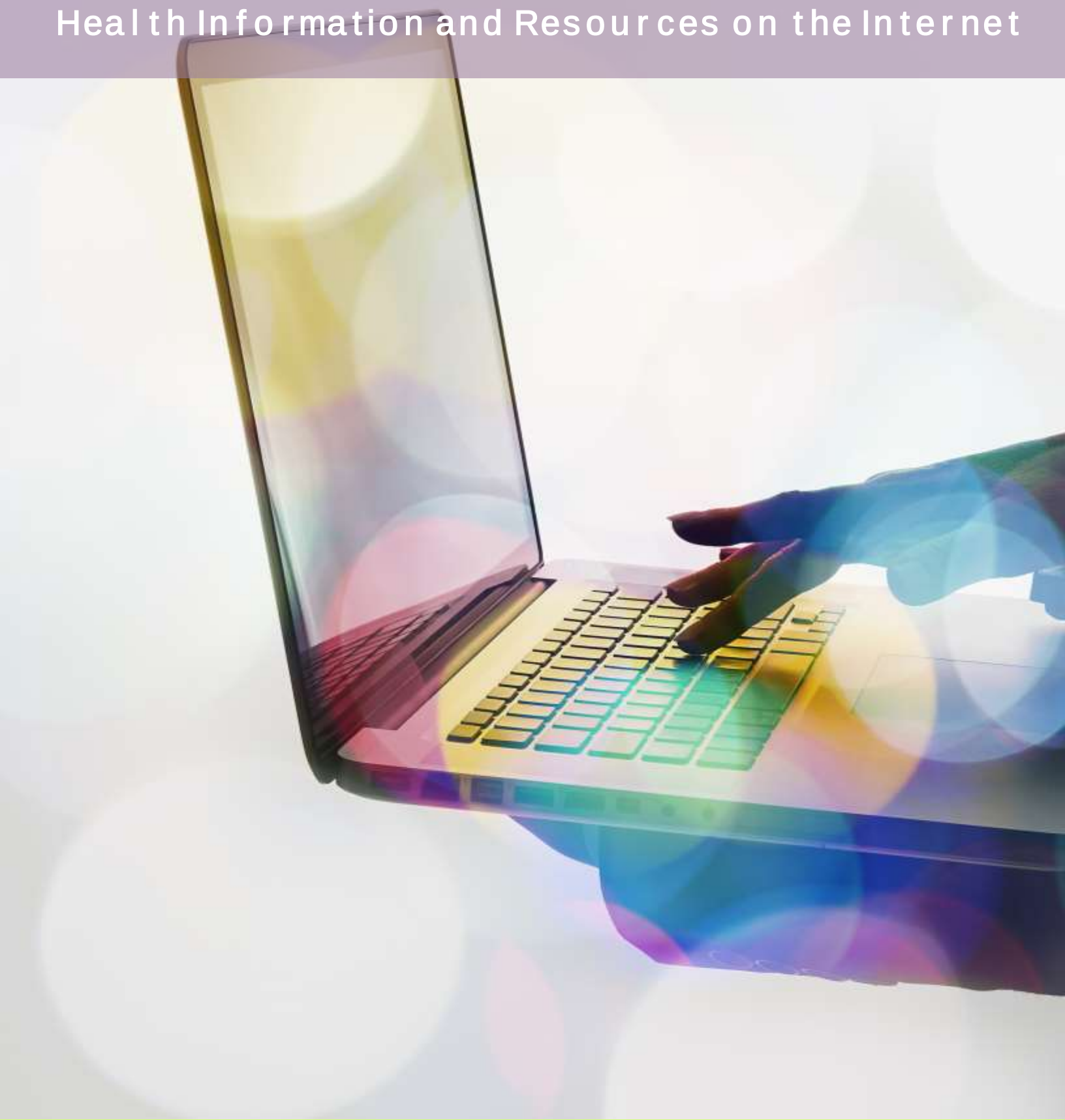
Consumer health solutions (CHS) encompass all health information and communication technologies that can be used by individuals to manage, monitor, access and share their personal health-related data.

Consumer health solutions (CHS), a bourgeoning area of digital health, reflect this growth in patients' use of health technologies. CHS encompasses all health ICTs that can be used by individuals to manage and monitor their health and access and share their personal health-related data. Some aspects of CHS were created and driven by health care providers, and are being integrated into the Canadian health care system. Examples include remote patient monitoring, personal health records, the use of email to converse with a healthcare provider, and online booking of medical appointments (Canada Health Infoway, 2015).

Consumer interest in CHS appears to outpace their current availability: 2,500 Canadians surveyed about the future of health care indicated considerable interest in using CHS to access health care providers and prescriptions. For instance, 79% said they would email their physician, and 80% said they would use an online prescription refill service (PwC, 2014). In 2014, however, only 10% of Canadians had emailed health care providers, refilled prescriptions, or booked an appointment online (Zelmer & Hagens, 2014). Other types of CHS are not tethered to health care providers, such as the use of health care apps on smartphones or the retrieval of health information online, and are more easily accessible to individuals.

As with the introduction of all ICTs into health care environments, it is important that CHS be integrated into nursing practice in ways that maximize the benefits and minimize the risks. Nurses, and other care providers, have raised concerns about the use of CHS, including possible gaps in care when technology is used to connect with patients, the security of electronic messaging between patients and care providers, the quality of information clients can access online, and the possibility it will increase workloads. Though limited research exists, early findings have shown that despite some challenges, the use of CHS does benefit users (Zelmer & Hagens, 2014). CHS offer unique ways to encourage individuals to engage with and become active participants in their own health care, and must be understood by nurses who have the responsibility of supporting, educating, and counselling patients.

Section 1:
Health Information and Resources on the Internet



1.1 Context

The internet is unquestionably the most widespread and popular manner in which individuals are using ICTs to manage their health. One report estimated 86% of adults had searched for health information online but only 28-41% shared this information with their primary care providers (Weber et al., 2008). Asking patients what online information and resources they have found, used, or may use has become an important component of nursing assessments.

Health information websites enable users to get answers to their health-related questions instantaneously. Of the wide variety of websites in existence, some are considerably more reliable than others. Currently, there is little to no regulatory oversight monitoring the quality of information being shared across this platform. As a result, there may be issues with the quality of information retrieved as many sites contain information that is not credible or authoritative. Users may be unable to differentiate between quality websites and those offering unsubstantiated information. Relying on poor information found online can lead to unintended negative consequences such as ignoring potentially serious symptoms, self-misdiagnosis resulting in fear or mistreatment, dangerous drug interactions, and so on (Weber et al., 2008; Benigeri & Pluye, 2003). Additionally, even when health information and resources accessed on the internet are retrieved from quality, reliable sites, the users may have difficulties understanding the information and using it correctly (Benigeri & Pluye, 2003).

Health professionals worldwide are collaborating on the creation of a system for disseminating quality health information on the internet. Health On the Net (HON) is a non-governmental organization that has created a system for evaluating websites with health information and provides approved websites with a code they can display to demonstrate they have been certified (Health On the Net, 2014). Nurses have a primary role in patient education and must ensure that patients are aware of the limitations of information found online. Individuals should be counselled regarding reputable sources (e.g., the Canadian Cancer Society, Health Canada) and sources that have the HON code displayed. In addition, nurses should educate patients on how to question the quality of the information they are accessing online (CASN, 2013).

The use of the internet for health information and resources cannot be discussed without mentioning social media. Social media provides a method of rapid, worldwide, ongoing communication and engagement. Many individuals use social media to share personal information and experiences or for advocacy purposes. The Ice Bucket Challenge for amyotrophic lateral sclerosis (ALS) is a recent example of the intersection between individuals, health care, and social media. In this awareness building and fundraising campaign, individuals shared videos on social media of themselves pouring buckets of ice water over their heads, challenging others to do the same and make a donation to the ALS Association. The Ice Bucket Challenge raised $115 million USD in a period of six weeks for the ALS Association (ALSA, 2016).

Many organizations and care providers are harnessing social media to spread quality information quickly. The @HealthCanada twitter feed contains information about product recalls, medication safety, and vaccines, and @WHO tweets about biosurveillance, country health reports, and emerging global health issues.

Nurses are using Twitter and other social media platforms to engage in discussions about their practice or research, for advocacy purposes, and to share information. While social media presents opportunities to create local and global conversations and communities focused on nursing practice, nurses must remain vigilant in protecting the privacy of their patients, and acting in accordance with professional and regulatory standards. Patients who receive health information when using social media must be aware of the potential for poor quality information to be spread through these channels and the importance of discriminating between good and poor sources.

1.2 Teaching Activities: Health Information and Resources on the Internet

<table>
<tr><th colspan="3">Health Information and Resources on the Internet</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)

Assignment

Target Students

Year 1

Key Concepts

Information literacy;
Health literacy

Indicators

1.1, 1.3, 1.7
2.2
3.3, 3.6</td><td>Developing health literacy concepts

Create an assignment for students with a focus on information literacy in the context of chronic disease management. As part of the assignment, students should perform an internet search and locate two websites providing information about a chronic disease. Faculty should provide students with criteria to use when evaluating websites. Nurses' responsibilities in promoting health literacy with internet-based resources should also be discussed.
Ask students to consider how their approach should differ when comparing workplace use of ICTs with personal use. For example, ask students to briefly describe a) historically how they went about finding online information for personal use, and b) how as student nurses they make decisions about whether or not information is credible and valuable.

Evaluation Suggestions

Scholarly paper, test questions

Resources

Canadian Public Health Association. (n.d.). Evaluating health information online. Retrieved from http://www.cpha.ca/en/programs/portals/h-l/web.aspx</td><td>Describes the differences between information literacy and health literacy.

Describes how to critically evaluate health information and resources found on the internet.

Recognizes the role of nurses in developing health literacy in patients.</td></tr>
</table>

Health Information and Resources on the Internet		
Activity Overview	**Learning Activity Description**	**Learning Outcomes**
Learning Environment(s) Clinical **Target Students** Years 3 and 4 **Key Concepts** Health literacy; Patient education	**Evaluation of a website (*search like you care*):** Provide resources for students related to evaluating websites for client education. There are several tools that can be used, such as those used by the HON Code or health libraries across Canada (see Resources below). You may have the students evaluate websites related to a specific area of clinical practice. Students can report their evaluations back to the clinical group and whether they would recommend the website to clients and their families, explaining why or why not. If possible, have students review criteria with their clients when they are seeking health information on the internet. **Evaluation Suggestions** Observation of group discussion, demonstration via simulation, observation in a clinical setting. **Resources**	Describes the benefits and challenges of accessing health information and resources on the internet. Demonstrates how to evaluate health information and resources found on the internet. Describes patient education as it relates to health literacy.
Indicators 1.1, 1.3, 1.7 2.1, 2.2, 2.5, 2.6 3.3, 3.6	Dalhousie University. (n.d.). *6 Criteria for websites*. Libraries. Retrieved from http://libraries.dal.ca/using_the_library/evaluating_web_resources/6_criteria_for_websites.html Dalhousie University. (n.d.). *Types of URLs: Quick guide to analyzing websites by their addresses*. Libraries. Retrieved from http://libraries.dal.ca/using_the_library/evaluating_web_resources/types_of_urls.html Health on the Net Foundation. (2013). *The HON code of conduct for medical and health web sites (HONcode).* Retrieved from https://www.hon.ch/HONcode/Conduct.html Health on Net Foundation. (2015). *Medical information you can trust.* Retrieved from http://www.healthonnet.org	

Section 2:
Health-related Smartphone Applications

2.1 Context

As of 2014, 57% of Canadians owned a smartphone (CIRA, 2014), all of which come preloaded with programs designed to support the use of smartphone applications (apps). Since their debut in 2008, millions of apps have been developed and there are now more than 165,000 health-related apps on the market (Murphy, 2015).

Apps currently enable self-monitoring, symptom management, and data tracking, and act as aggregators of information. While these are valuable tools, nurses and other health professionals have identified some issues with health-related apps. Apps provide a platform for companies to engage with consumers. Lupton and Jutel (2015) noted in a study of self-diagnosis apps that companies may use them to lead consumers to purchase other products (e.g., medications, medical devices, etc.). The validity of the information disseminated by the apps may also be an issue. While apps may contain warnings and may advise users to seek medical help, their messaging and visual images are focused on client empowerment. For example, the Best Android Symptom Checker has a "Virtual Nurse" who helps individuals decide if they need to see a physician. Another concern that has been identified is the security of personal data collected by different apps (Lupton & Jutel, 2015).

Despite these issues, reliable and valid health-related apps can and do support clients in managing their health regardless of their proximity to nurses and other care providers, and their ability to access care. For example, medication compliance failure is a common problem that often leads to poor patient outcomes and is costly to the health care system. Dayer and colleagues (2003) identified three medication-adherence apps that had features desired by both consumers and providers, including compliance with privacy legislation, support for entries from providers, inclusion of multiple medications, capability to track missed doses, medication instructions, and an option for cloud data storage.

One app developed to support self-care related to diabetes management is Bant. Bant users can capture their blood glucose levels which can then be communicated to a smartphone using Bluetooth technology. The data is stored securely and allows individuals to track their blood glucose levels, diet, medications, and activities over time. Other functions include setting reminders and connecting with others using the app (University Health Network, 2011).

The most common theme in research published on health-related apps is that more research is necessary to determine how and when these apps should be utilized (Dayer et al., 2003; Lupton & Jutel, 2015; Ozdalga, Ozdalga, & Ahuja, 2012; Dennison, Morrison, Conway, & Yardley, 2013). Health-related apps are currently not regulated in Canada and there is no official oversight of the app market. The most comprehensive list of approved applications is produced by the Food and Drug Administration (FDA). The FDA assesses all apps against the same guidelines used for all medical devices and updates the list of approved medical apps as needed (FDA, 2014).

Nurses have a role to play in ensuring that consumers are accessing reliable and valid health-related apps, and in educating clients on assessing the quality of the apps they are using. Nurses can also contribute to the void of research on client use of apps. Though it has not reached the point where apps are consistently being recommended by nurses, it is certainly a future possibility. Clients will continue to press for low cost, mobile options that help support their health.

2.2 Teaching Activities: Health Related Smartphone Applications

<table>
<tr><th colspan="3">Health-related Smartphone Applications</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Classroom

Target Students
Years 1 and 2

Key Concepts
Health-related smartphone applications;
Personal health information;

Indicators
1.1,1.3,1.7
2.1,2.2,2.5, 2.6
3.1, 3.2, 3.3</td><td>Be smart in selecting apps for health care

Have students read the InfoLAW on Mobile Health care apps and answer the following questions:
1. What are 5 risks of using mobile apps?
2. What are 5 best practices for the use of mobile health-related apps?

Have students provide at least one app that would be appropriate to use with fellow nurses or clients. Keep an ongoing list and share with the group.

Evaluation Suggestions
Scholarly paper, appropriateness of mobile health care apps added to group list, test questions

Resources
Canadian Nurses Protective Society. (December 2013). InfoLAW: Mobile Health care Apps. Retrieved from http://www.cnps.ca/upload-files/pdf_english/mobile_healthcare_apps.pdf</td><td>Defines health-related smartphone applications.

Describes benefits and risks in using health-related smartphone applications.

Recognizes the lack of regulations for health-related smartphone applications.

Describes privacy concerns related to documenting personal health information in health-related smartphone applications.</td></tr>
</table>

<table>
<tr><th colspan="3">Health-related Smartphone Applications</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Classroom

Target Students
Years 1 and 2

Key Concepts
Health-related smartphone applications;
Health promotion

Indicators
1.3, 1.7
2.1, 2.2, 2.5, 2.6
3.1, 3.3, 3.6</td><td>How is the public using health-related smartphone applications?

Provide students with the article Health-e-Apps: A project to encourage effective use of mobile health applications (Ho, 2013). Ask students to survey how many of their peers, nursing faculty, or even neighbours in their community use these tools. What motivates them to use these applications? Do they share the information they track with their health care professional, why or why not? Students engage in class discussion about the benefits and challenges associated with the use of mobile health applications.

Evaluation Suggestions
Observation of group discussion

Resources
Ho, K. (2013). Health-e-Apps: A project to encourage effective use of mobile health applications. BC Medical Journal, 55(10) 458-460. Retrieved from http://www.bcmj.org/newsnotes/health-e-apps-project-encourage-effective-use-mobile-health-applications</td><td>Defines health-related smartphone applications.

Describes how to engage clients in discussions about the benefits and risks of health-related smartphone applications.

Describes ways to leverage health-related smartphone applications to promote health.</td></tr>
</table>

<table>
<tr><th colspan="3">Health-related Smartphone Applications</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)

Lab

Target Students

Years 2 and 3

Key Concepts

Privacy breach;
Personal health information;
Workplace integration

Indicators

2.1, 2.2, 2.3, 2.5, 2.6
3.1, 3.2, 3.3</td><td>Prioritizing safety with device use in the workplace

Have students read the infoLAW Mobile Devices in the Workplace (CNPS). Students should be able to answer the following questions:
1. What are the risks associated with using mobile devices in the workplace?
2. What is the number one safeguard in preventing a privacy breach?
3. How can nurses clean their mobile devices?
4. What precautions would you use if you were implementing mobile device use on your unit?
In the laboratory, have students act out a simulation of using their mobile device in the workplace. Students should demonstrate infection control procedures when bringing a device into a client's room, and describe to the client the safeguards that have been put into place to protect against a privacy breach.

Evaluation Suggestions

Demonstration via simulation, test questions

Resources

Canadian Nurses Protective Society. (November, 2013). InfoLAW: Mobile devices in the workplace. Retrieved from http://www.cnps.ca/upload-files/pdf_english/mobile_devices.pdf

CHICA-Canada (2012). Infection prevention and control related to electronic (IT) devices in healthcare settings. Retrieved from http://www.ipac-canada.org/pdf/Electronic_Devices_Practice_Recommendations-2012.pdf</td><td>Describes the risks of using mobile devices in the workplace.

Defines a privacy breach.

Identifies the possible safeguards that may be used to prevent a privacy breach.

Describes the infection control procedures for mobile devices.

Recognizes the workplace integration steps that should be taken before mobile device use can occur on units.</td></tr>
</table>

Section 3:
Wearable Health and Fitness Trackers

3.1 Context

Wearable health and fitness trackers (wearables) represent a relatively new form of CHS. They refer to commercial devices (e.g., Fitbit®, Apple® Watch) that monitor health and fitness activities such as heart rate, calories, diet, steps taken, etc. Wearables are an example of person driven health care initiatives that allow the user to take an active role in their health and support lifestyle changes. Much of the current research has focused on the reliability and validity of the measures, but there are studies such as one by deBruin (2008) that investigates whether wearables are a feasible health monitoring system. However, further research is needed to determine the efficacy of different interventions utilizing wearable technology within different health contexts.

Creators of wearable devices have faced criticism related to the lack of device regulation and compliance with privacy legislation. Wearable technological devices for chronic illness management and monitoring are being developed and are likely to have a meaningful impact on health care delivery. While the implications of wearables for nursing practice are still unknown, nurses should be sensitive to the potential effects such devices may have on their patients.

3.2 Teaching Activities: Wearable Health and Fitness Trackers

<table>
<tr><th colspan="3">Wearable Health and Fitness Trackers</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Assignment
Target Students
Years 2 and 3
Key Concepts
Wearable health and fitness trackers;
Health promotion;
Health management</td><td>Student project – wearables: current trends and uses

Provide an overview of wearable health and fitness trackers to the class. Assign students the following project:
Interview someone in the community who is consistently using a wearable device. Students may also choose to answer the questions themselves if they have/use a wearable. Ask questions pertaining to the frequency of use, types of usage, type(s) of data collected, whether information has been shared with a nurse or other care provider, impact on health, impact on management of existing conditions etc. Document interview findings and compare to existing peer-reviewed and news sources on this subject. Make conclusions related to the effectiveness of the wearable in the current situation and future considerations for the subject.

Evaluation Suggestions
Written assignment, classroom presentation
Resources</td><td rowspan="2">Defines wearables.

Describes different types of wearables.

Discusses the implications of data collection through wearables for patients and health care providers.

Discusses implications of wearables for health promotion and management.</td></tr>
<tr><td>Indicators
1.3, 1.7
2.1, 2.2
3.3, 3.6</td><td>Orange Healthcare. (2014). Wearable Tech [Infographic]. Retrieved from http://healthcare.orange.com/eng/news/latests-news/2014/infographic-wearable-tech-boom-in-healthcare

Articles:

Skiba, D. J. (2014). Emerging technologies center: The connected age and wearable technology. Nursing Education Perspectives, 35(5), 346.

American Sentinel University (2015). Is wearable technology the future of nursing? Nurse Together. Retrieved from http://www.nursetogether.com/wearable-technology-future-nursing

Tepper, J. (2015, November 9). Hiring digital experts can help improve healthcare quality. Retrieved from http://www.huffingtonpost.ca/dr-joshua-tepper/digital-wearable-technology-healthcare_b_8118992.html

HCA Healthcare (2014, February 24). The Future of HCA Nursing - Wearable Technology Vision. Retrieved from https://www.youtube.com/watch?v=L9FJOmM-f7E</td></tr>
</table>

Wearable Health and Fitness Trackers		
Activity Overview	**Learning Activity Description**	**Learning Outcomes**
Learning Environment(s) Classroom **Target Students** Years 3 and 4 **Key Concepts** Wearables; Data; Security; Digital divide **Indicators** 1.3, 1.7 2.1, 2.2 3.3, 3.6	**Future possibilities for wearables in health care** Ask students to research wearables in health care, and bring one journal article and one substantive news article to class for discussion. (May also include option to search websites for examples). In the following class, hold a group discussion on the findings of the students' research. Address the pro-wearables views related to health promotion and management, and concerns they may have come across (e.g., the digital divide, security). **Evaluation Suggestions** Observation of group discussion **Resources** Vecchione, A. (2012, June 1). *Health-monitoring devices market outpaces telehealth*. Retrieved from http://www.informationweek.com/mobile/health-monitoring-devices-market-outpaces-telehealth/d/d-id/1104636 Borycki, E. M., Househ, M. S., Kushniruk, A. W., Nohr, C., & Takeda, H. (2011). Empowering patients: making health information and systems safer for patients and the public. Contribution of the IMIA health informatics for patient safety working group. *Yearbook of Medical Informatics*, *7*(1), 56-64.	Defines wearables and describe different types of wearables. Describes the benefits and challenges of data collection for patients and health care team members. Identifies concerns related to the use of wearables.

Section 4:
Virtual Communities

4.1 Context

Virtual communities offer patients and their families an avenue for sharing information and experiences, garnering peer support, and advocating with others for their health-related needs. Consumers led the creation of virtual communities, but health professionals have recognized that these communities may enhance patient outcomes, and have become actively involved in creating and participating in them. Being a part of a virtual community can result in positive outcomes such as improved emotional well-being, a sense of control over one's health and feelings of empowerment, and increased knowledge about one's health (Wicks et al., 2010).

Online support networks (SNs) are one type of highly used virtual community, and number in the tens of thousands. In 2004, Yahoo! Groups counted nearly 25,000 electronic support groups among its health and wellness tags (Eysenbach, 2004). Some SNs exist primarily to share information and research while others exist to connect people experiencing similar health issues who are looking to share stories, information, and experiences. These groups are usually created by patients or by members of their families (van Uden Kraan et al., 2010). Top reasons for belonging to such groups include the access to an abundance of information, connections with peers, and the fact that interactions are anonymous (Colineau & Paris, 2010).

The traditional user-created SNs have evolved over time as individuals, health professionals, and organizations have found different ways of connecting virtually. PatientsLikeMe was created to support users trying to achieve their best health outcomes by learning from each other. When using this online platform, users are matched based on their demographics and a clinical profile so that they can engage with others in similar situations (Wicks et al., 2010). Another example of how SNs are evolving with health-care provider input is the creation of Brain Talk Communities by Massachusetts General Hospital. Brain Talk Communities provide an online point for virtual communities focused on different neurological conditions to connect. Having a reputable central online location provided makes it easier for individuals with rare conditions to connect. Additionally, these communities are designed and built based on requirements dictated by the users (Lester, Prady, Finegan, & Hoch, 2004).

Other types of virtual communities are built around connecting patients and health professionals, and focus less on peer-to-peer interactions. Cancer Chat Canada organizes groups of cancer patients and their families to hold weekly online chat sessions led by counsellors. The Comprehensive Health Enhancement Support System (CHESS) was created by the University of Wisconsin for HIV-positive individuals. CHESS contains information posted by health professionals, some of the client's personal health information, peer-to-peer discussion forums and opportunities to connect with care providers. According to Winkelman and Choo (2003) this type of virtual community allows patients and clinicians to learn from and about one another, creating an environment supportive of patient-centered care.

The greatest concern that nurses may have with virtual communities is the potential exposure to false information and unregulated care (Winkelman & Choo, 2003). Despite this risk, virtual communities are opportunities for users to find support and empowerment.

4.2 Teaching Activities: Virtual Communities

<table>
<tr><th colspan="3">Virtual Communities</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Classroom

Target Students
Years 2 and 3

Key Concepts
Virtual communities;
Online support networks;
Personal health information

Indicators
1.1, 1.3, 1.7
2.2, 2.6
3.1, 3.3, 3.6</td><td>Virtual communities, with and without provider involvement

Provide an overview of virtual communities, from the creation of online support networks, to the opportunities identified for the involvement of nurses and other health professionals. Ask students to research two examples of virtual communities, one with health care provider participation and one without. Students should consider the following questions:
1. Who are the participants in the virtual community?
2. What is the purpose of the community?
3. What benefits might the individual experience by participating?
4. Are there any risks?
5. What is the health care provider contributing to the community?
After considering these questions, students should consider the future of the virtual communities they have identified, describing how each could be improved.

Evaluation Suggestions
Written assignment, test questions

Resources
Van der Eijk, M., Faber, M. J., Aarts, J. W., Kremer, J. A., Munneke, M., & Bloem, B. R. (2013). Using online health communities to deliver patient-centered care to people with chronic conditions. Journal of Medical Internet Research, 15(6), e115. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3713879/</td><td>Defines virtual communities.

Defines an online support network.

Identifies benefits and risks of participating in a virtual community.

Identifies the key differences between virtual communities with and without provider participation.</td></tr>
</table>

<table>
<tr><th colspan="3">Virtual Communities</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Clinical

Target Students
Years 2 and 3

Key Concepts
Peer-to-Peer virtual communities;
Online support networks;
Privacy and confidentiality
Patient data

Indicators
1.1, 1.3, 1.7
2.2, 2.6
3.1, 3.3, 3.6</td><td>Would you recommend a virtual community?

ICTs have provided new opportunities for people with similar health situations to connect outside the traditional in-person support groups. Ask students to think about a patient they have encountered in their clinical rotation and to look up virtual communities that may exist to support this patient. Students should observe a sample of these communities, the functions of each one, and the benefits and challenges associated with these communities. Students should consider if they would recommend to their patient that they join the community, and how they would support the patient in their use of the community. These findings can be discussed in the next rotation.

Evaluation Suggestions
Observation of group discussion

Resources
Van der Eijk, M., Faber, M. J., Aarts, J. W., Kremer, J. A., Munneke, M., & Bloem, B. R. (2013). Using online health communities to deliver patient-centered care to people with chronic conditions. Journal of Medical Internet Research, 15 (6), e115. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3713879/</td><td>Describes the benefits of peer-to-peer virtual communities.

Describes privacy and confidentiality issues related to peer -to-peer virtual communities.

Discusses the implications of having patient data available online.

Discusses the implications of receiving health care advice in a virtual community.</td></tr>
</table>

<table>
<tr><th colspan="3">Virtual Communities</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)

Classroom learning activity

Target Students

Years 3 and 4

Key Concepts

Virtual communities;
e-Patients

Indicators

1.1, 1.3, 1.7
2.1, 2.2, 2.5
3.1, 3.3, 3.6</td><td>e-Patient role play

As an introduction to the activity, show students a TED Talk by Dave deBronkart: “e-Patient Dave”. Dave joined a virtual community where he connected with other cancer patients that recommended a therapy that worked to manage his cancer. Prepare different scenarios for students to role play, examples may include:
1. The patient has been recommended additional testing to confirm his diagnosis by individuals in the virtual community. The nurse should explain why these tests are unnecessary in this specific case.
2. The patient has found information about a treatment in his/her virtual community. The nurse should explain why this treatment was not the first choice of the health care team, and then follow up with the patient’s physician.
3. The patient has found a therapy through a virtual community that they would like to try. This therapy may offer several benefits to the patient, and will not interfere with the current treatment regimen.
The goal of this exercise is to prepare students to work with patients by respecting their involvement in care, reviewing their information and concerns, and responding respectfully and appropriately.

Evaluation Suggestions

Demonstration via simulation, reflection paper

Resources

deBronkart, D. (December 2011). Meet e-Patient Dave. Retrieved from https://www.ted.com/talks/dave_debronkart_meet_e_patient_dave?language=en#t-217455</td><td>Defines an e-Patient.

Identifies benefits and risks of participating in a virtual community.

Demonstrates ways to engage effectively with patients.

Describes when/how to engage other members of the health care team.</td></tr>
</table>

Section 5:
Remote Patient Monitoring, Telehealth and E-Visits

5.1 Context

In this section, different modalities for connecting patients and health care providers using ICTs are described. The term remote patient monitoring (RPM) refers to the delivery of health care outside of the traditional care setting by connecting patients with care providers using a variety of technologies, including videoconferencing and wearable devices. The information gathered through RPM allows clinicians to determine the next steps in the plan of care. Currently, thousands of Canadians are enrolled in almost twenty RPM programs across the country, with a growing enrollment rate of 15-20% per year (Canada Health Infoway, 2013). Often the use of RPM is clinician-led, and targets patients who require regular monitoring by nurses or other health professionals.

Nurses have found that RPM can safely eliminate some in-person visits and benefits patients by saving them time and money. One nurse commented that, "It does not reduce client contact – but it does identify when I need to see the patient. … It gives them freedom to take their own blood pressure and go about their lives instead of waiting for us to do it for them" (Carlisle, 2012).

Some types of RPM programs have been developed to address a common chronic illness such as British Columbia's BreatheWELL program for individuals with Chronic Obstructive Pulmonary Disease (COPD). Participants in this program are visited by registered nurses who provide the patients with strategies for managing their COPD, and who are able to develop flare-up treatment action plans and deploy monitoring devices, as they deem necessary (Fraser Health, 2011).

Even in acute cases, RPM may be used to provide care that benefits both patient and health professional. One example involving the use of an app connected to a web portal comes from a preliminary study at the Women's College Hospital (WCH) in Toronto, Ontario. The WCH offers a breast reconstruction surgery that women from all over the province travel to receive. Following surgery 30 patients used an app called Mobile QoC Health Inc. to submit photos and questionnaires that surgeons would access in a web portal, in addition to attending two in-person visits (one and four weeks post-op). Patients indicated satisfaction with the app, as did the surgeons. The researchers are conducting a larger randomized control trial, in order to gather more information patient satisfaction and cost effectiveness. The researchers have recommended that similar studies be undertaken with different patient populations (Armstrong, Coyte, Bhatia, & Semple, 2015). Other examples come from the use cardiovascular electronic implanted devices, which can be monitored by health professionals for arrhythmias in real time, which in turn can prevent unnecessary clinic visits (Health Quality Ontario, 2012). A study involving 99 individuals with implantable defibrillators found that patients who were involved in remote monitoring (n=33) were at an 86% reduced risk of experiencing a clinical adverse event. There were no differences between the two groups who experienced adverse events related to their devices, underscoring the need for some follow up visits (De Ruvo et al., 2011). Even in complex cases, RPM has the potential to improve outcomes for users. Dialysis patients with up to four comorbidities who used a combination of remote monitoring devices and telehealth with clinical nurse specialists experienced a reduction in unexpected medical events and behavioural changes (Berman et al., 2011).

Telehealth refers to a connection between an individual and health care provider who are in different locations. The term can refer to an initial connection to determine whether an in-person visit is required, or for ongoing patient monitoring. A regular phone call or videoconference may be used to create the connection. Some examples of how telehealth is being used include completing a patient assessment using questioning and visual cues during a videoconference, listening to heart and lung sounds using a digital stethoscope, and working with patients on wound care using a camera (Dansky, Yant, Jenkins, & Dellasega, 2003).

E-visits are another mode of communication allowing health care providers to engage with their patients. By using emails and texts in addition to videoconferencing, patients can connect with the health care team at any time wherever they may be.

RPM, telehealth, and e-visits have many positive implications for nursing practice and patient care. It can reduce costs associated with travel and reduce lengths of stay, provide early detection and assessment of chronic care issues, and alert providers and or family members of potential risks (Raatikainen, Uusimaa, van Ginneken, Janssen, & Linnaluoto, 2008). More research is needed to determine the best ways RPM can be used in the provision of safe and patient-centered care, and nurses play a key role in contributing to these studies and programs.

Concerns over the effect of technology on nursing care, especially surrounding the nurse-patient relationship, are not new. These concerns grow when the interaction between the patient and nurse are occurring by distance with the help of technology. Touch and physical closeness are eliminated and body language may become more challenging to assess. These concerns highlight the importance of the nurses' competence in the area of digital health. Nurses should be comfortable with the technologies they are using, so that they are able to focus on the patient and not the technology being used to support the interaction (Henderson, 2006). In a paper examining the ethical considerations for the use of telehealth, Demerisi, Oliver, and Coutney (2006) discuss telehealth's potential to reach underserviced populations and supplement in-person visits. The authors caution that this requires vigilance by nurses in ensuring that telehealth visits are used appropriately after thorough consideration of the patient's needs.

5.2 Teaching Activities: Remote Patient Monitoring, Telehealth and E-Visits

<table>
<tr><th colspan="3">Remote Patient Monitoring, Telehealth, & E-Visits</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Classroom

Target Students
Years 1 and 2

Key Concepts
Remote patient monitoring;
Telehealth;
E-Visits

Indicators
1.3
2.1, 2.2, 2.6
3.1, 3.3, 3.6</td><td>Activity: matching – remote patient monitoring, telehealth, or e-visits?

Define the term e-visits, telehealth, and RPM for students. Provide students with a worksheet with 10 unique patient situations (1-2 sentences). Students should decide if they would use RPM, telehealth, or an e-visit with each patient. A follow up group discussion should occur while taking up the activity.

Evaluation Suggestions
Group discussion, test questions

Resources
Canada Health Infoway. (2014). Connecting patients with providers: A Pan-Canadian study on remote patient monitoring Executive Summary. Retrieved from https://www.infoway-inforoute.ca/en/component/edocman/resources/reports/benefits-evaluation/1890-connecting-patients-with-providers-a-pan-canadian-study-on-remote-patient-monitoring-executive-summary?Itemid=101</td><td>Defines remote patient monitoring.

Defines telehealth.

Defines e-visits.

Describes when RPM, telehealth and e-visits should be used.</td></tr>
</table>

<table>
<tr><th colspan="3">Remote Patient Monitoring</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Classroom

Target Students
Years 1 and 2

Key Concepts
Remote patient monitoring;
Remote patient monitoring programs;
Remote patient monitoring devices

Indicators
1.3
2.1, 2.2, 2.6
3.1, 3.3, 3.6</td><td>Remote patient monitoring: how is it currently being used?

Define the term remote patient monitoring for students, and provide some examples of how RPM is being used in Canada today. (Optional: Show the video of Dr. Leo Picard discussing his experience with remote patient monitoring). Ask students to look up examples in the news media of RPM (broadly, or a specific technology). Based on the article, students should write a 1-2 page assignment on the news article using peer-reviewed sources. The paper should address the type of RPM found in the article with research on its current use, effectiveness, benefits, and considerations for client safety.

Evaluation Suggestions
Written assignment, classroom discussion, test questions

Resources
Canada Health Infoway. (2014). Connecting patients with providers: A Pan-Canadian study on remote patient monitoring Executive Summary. Retrieved from https://www.infoway-inforoute.ca/en/component/edocman/resources/reports/benefits-evaluation/1890-connecting-patients-with-providers-a-pan-canadian-study-on-remote-patient-monitoring-executive-summary?Itemid=101

Ontario Telehealth Network. (2015). Telehome care for chronic conditions: Living well at home Retrieved from https://www.youtube.com/watch?v=zXtF47XC0Hg</td><td>Defines remote patient monitoring.

Demonstrates familiarity with different RPM technologies and programs.

Describes the benefits of RPM.

Describes client safety and privacy measures that should be taken when using RPM technologies.</td></tr>
</table>

<table>
<tr><th colspan="3">Telehealth</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)

Classroom learning activity

Target Students

Years 2 and 3

Key Concepts

Telehealth

Indicators

1.3
2.1, 2.6
3.1, 3.3, 3.6</td><td>Telehealth role play

Show students the video “What is Telehealth and how can it help me?”. Break students into groups of 4-6. Provide the entire class with the following background information: One member of the group is an RN working in a care facility. One member of the group will be a client who lives 500 km away. The other members of the group will be responsible for observing the interaction between the RN and the patient. Each group will be provided with a different scenario of the patient’s condition. The assignment between classes will be to conduct a visit using Skype or FaceTime. The RN and the patient should be in different locations, with other members of the team observing each student. The RN should videoconference the patient, and the patient should respond as directed by the role play. The RN should perform an assessment and decide on next steps with the patient. Following the exercise, the group should meet to discuss the results of the role play, noting the differences between an in-person and telehealth assessment and care planning, and the nurse-patient relationship. At the next class, the group will be asked the present their findings.

Evaluation Suggestions

Classroom presentation, test questions

Resources

Canada Health Infoway. (2015). Reducing hospital visits with remote patient care. Retrieved from https://www.infoway-inforoute.ca/en/component/edocman/resources/videos/telehealth/2613-reducing-hospital-visits-with-remote-patient-care?Itemid=101

Canada Health Infoway. (2014). Connecting patients with providers: A Pan-Canadian Study on remote patient monitoring Executive Summary. Retrieved from https://www.infoway-inforoute.ca/en/component/edocman/resources/reports/benefits-evaluation/1890-connecting-patients-with-providers-a-pan-canadian-study-on-remote-patient-monitoring-executive-summary?Itemid=101</td><td>Defines telehealth and telemedicine.

Describes the differences between an in-person assessment and a telehealth assessment.

Identifies how the nurse-patient relationship is affected when using telehealth.</td></tr>
</table>

<table>
<tr><th colspan="3">Remote Patient Monitoring & E-Visits</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)
Clinical

Target Students
Years 3 and 4

Key Concepts
Remote patient monitoring;
Remote patient monitoring devices;
Patient education

Indicators
1.2, 1.3, 1.4, 1.5, 1.6
2.1, 2.2, 2.3, 2.4, 2.5, 2.6
3.1, 3.3, 3.4, 3.5</td><td>Brainstorming: When should nurses and other clinicians use remote patient monitoring?

Define the terms remote patient monitoring and e-visits for students. Ask students to consider a client they have recently encountered during their clinical rotation. Have students consider a form of RPM that would meet the needs of their patients. Engage students in a discussion on what technology is available, how they would work with their patient to establish its use, how information would be communicate and documented, and what ongoing considerations they would have to make when monitoring their patient remotely (e.g., e-visit or in-person appointment).

Evaluation Suggestions

Group discussion, reflection paper

Resources

Gheorghiu, B. (2014, July 2). Remote Patient Monitoring could improve the quality of life for patients. Retrieved from http://infowayconnects.infoway-inforoute.ca/2014/07/02/remote-patient-monitoring-could-improve-the-quality-of-life-for-patients/</td><td>Defines remote patient monitoring.

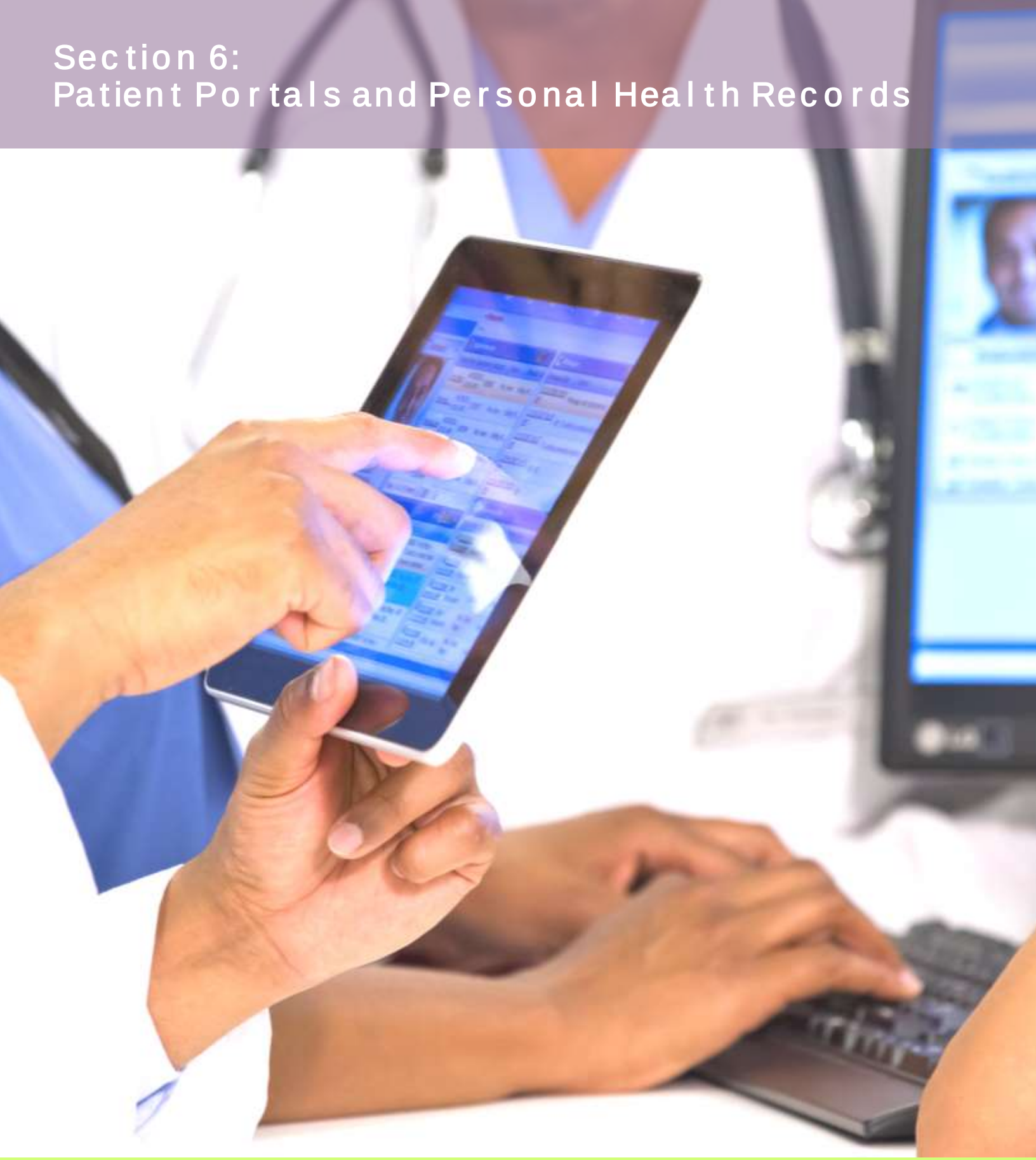
Describes remote patient monitoring devices and their use.

Identifies patient education needs prior to establishing RPM.

Explains how data from devices can be transmitted and documented.

Defines an e-visit.</td></tr>
</table>

Section 6:
Patient Portals and Personal Health Records



6.1 Context

The terms personal health records (PHRs) and patient portals are sometimes used interchangeably. Though similar, there are differences between the two: PHRs are typically owned and operated by patients while patient portals are usually tethered to an electronic health record (EHR) allowing patients to communicate with providers and view health information (e.g., lab results, appointments) online.

Some of the functions that patient portals offer consumers are access to various types of personalized information (e.g., lab results), the opportunity to correct errors and add information, the ability to schedule and manage appointments, and request prescription refills. Portals may offer patients access to some or all elements of their medical records including their history, allergies, immunizations, medications, etc. Portals may also include personalized self-management and educational tools. Some benefits that may result from the use of patient portals are increased patient involvement in care-related decisions, increased communication with health professionals, adherence to behavioural changes and medications, and better management of care during transitions (Shaw & Ferranti, 2011). Patient portals can be especially useful for persons who are engaged in long-term treatment, are consistently undergoing tests, require multiple medications, or who need to communicate consistently with nurses and other members of their care team. It can be affirming for individuals to track their progress over time (Cahill, Gilbert, & Armstrong, 2014).

Nurses and other clinicians have expressed concerns about different elements of patient portals, and discussions continue about how they can best be used in the provision of patient care. Nurses and physicians have had concerns about patients accessing laboratory results on such portals, due to the potential for results to be misinterpreted. Following implementation of a patient portal at a National Cancer Center in New York, however, more than half the nurses (55%) agreed that once lab results have been interpreted by a physician, patients should have access to them (Rodriguez, Thom & Schneider, 2011).

Other concerns include an increase in workload and the security of information contained in portals. As far as workload is concerned, however, in one implementation study, 78% of nurses indicated it had decreased or stayed the same (Rodriguez, Thom, & Schneider, 2011). Possible concerns may arise in the future regarding the proliferation of patient portals; the ever-increasing number of portals may overwhelm the individual as they work to manage their health information.

Patient portals offer a more secure medium for exchanging information then e-mail, even with added security measures. Overall, the benefits offered by portals to users, including convenient access to their care providers, appear to out-weigh potential downfalls.

6.2 Teaching Activities: Patient Portals and Personal Health Records

<table>
<tr><th colspan="3">Patient Portals and Personal Health Records</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)

Assignment

Target Students

Years 2 and 3

Key Concepts

Personal health records; Electronic health records

Indicators

1.3, 1.4
2.1, 2.6
3.1, 3.5</td><td>Make your own personal health record

Provide students with an overview of personal health records. Ask students to complete a written assignment on this topic. This assignment should address the following questions:
1. What is a PHR? How does a PHR differ from an EHR and EMR?
2. In what context(s) is it best used?
3. How would you educate a patient around using a PHR?
4. What are some benefits and challenges of PHR use?
In the assignment, the student should also create their own PHR template.

Evaluation Suggestions

Writing assignment, test questions

Resources

Canada Health Infoway. (2013). Understanding the differences between EHRs, EMRs and PHRs. Retrieved from https://www.infoway-inforoute.ca/en/what-we-do/digital-health-and-you/understanding-ehrs-emrs-and-phrs</td><td>Defines a PHR.

Explains what a PHR commonly contains, and defines appropriate use of PHRs.

Describes the benefits and challenges of PHR use.

Describes client education around PHR use.</td></tr>
</table>

<table>
<tr><th colspan="3">Patient Portals and Personal Health Records</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)</td><td rowspan="6">Patient Portals: classroom debate

Direct students to find information on patient portals found in the news or other non-peer reviewed sources. Break students into two groups for a debate on patient portals. Students should be required to present their arguments from the point of view of a registered nurse. Students should be instructed that their arguments should be based on research studies found in academic journals. The debate should be formally structured, with an opportunity for each side to present their arguments, and form rebuttals. If possible, ask graduate students to act as a judging panel.</td><td rowspan="6">Defines patient portals and e-viewers.

Describes what information is commonly available in patient portals.

Identifies benefits of patient portal use to clients and RNs.

Identifies challenges to clients and RNs in using patient portals.</td></tr>
<tr><td>Classroom</td></tr>
<tr><td>Target Students</td></tr>
<tr><td>Years 2 and 3</td></tr>
<tr><td>Key Concepts</td></tr>
<tr><td>Patient portals;
E-views;
Patient data</td></tr>
<tr><td>Indicators</td><td>Resources</td></tr>
<tr><td>1.1, 1.4
2.1, 2.2, 2.3, 2.4, 2.5, 2.6
3.1, 3.5, 3.6</td><td></td></tr>
</table>

<table>
<tr><th colspan="3">Patient Portals and Personal Health Records</th></tr>
<tr><th>Activity Overview</th><th>Learning Activity Description</th><th>Learning Outcomes</th></tr>
<tr><td>Learning Environment(s)

Classroom

Target Students

Years 3 and 4

Key Concepts

Personal health records;
Electronic health records;
Patient portals</td><td>Advocating for the use of patient portals

For this activity, students should already be familiar with the different types of electronic health records and client portals. Students should be placed in groups to work together to create an elevator speech. (An example template for creating an elevator speech is listed in the Resources section). The group should prepare this speech as though speaking to their nurse manager to advocate for the use of one of the following: electronic health records, electronic medical records, personal health records, or patient portals.

Resources</td><td rowspan="2">Define EMRs, EHRs, PHRs and patient portals.

Differentiate between the different types of electronic records.

Describe the benefits of EMRs, EHRs, PHRs, and patient portals.</td></tr>
<tr><td>Indicators

1.4, 1.5
2.2, 2.6
3.5, 3.6</td><td>Template for creating an elevator speech: Canada Health Infoway. (2013) A Framework and toolkit for managing eHealth change. P. 80

Hodge, T. (2011, April 7). EMR, EHR, and PHR – Why all the confusion? Canada Health Infoway. Retrieved from http://infowayconnects.infoway-inforoute.ca/2011/04/07/emr-ehr-and-phr-why-all-the-confusion/</td></tr>
</table>

Glossary of Terms

Consumer Health Solutions	Consumer health solutions (CHS) encompass all health information and communication technologies that can be used by individuals to manage, monitor, access and share their personal health-related data.
Digital Divide	Refers to the population gaps related to who has or has no access to information and communication technology (ICT) (OECD, n.d.).
e-Patients	An individual who fully participates in his or her healthcare; described as "equipped, enabled, empowered or engaged" (Society for Participatory Medicine, 2014).
e-Views	Applications (e.g., portals) allowing patients to access and view their personal health information.(Canada Health Infoway, 2015).
e-Visits	A secure, two-way digital communication between health providers and their patients that includes emails, text messaging and video conferencing and enables patients to communicate with their health care team from wherever they are, and in a way that is convenient for both the patient and the provider (Canada Health Infoway, 2015).
Electronic Health Records (EHR)	An electronic health record (EHR) is a secure, integrated collection of a person's encounters with the health care system; it provides a comprehensive digital view of a patient's health history (Canada Health Infoway, 2013).
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 details 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 (Canada Health Infoway, 2013).
Health Literacy	The ability to access, understand, and act on information for health. Health professionals, such as nurses, play a key role in developing health literacy skills by providing clear and accurate information to clients (Health Literacy Council of Canada, 2011).
Health Management	A system of preventive medicine that takes into account the individual as a whole.
Health Promotion	The process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions (World Health Organization, 2015).
Information Literacy	The ability to seek out information when there is a need, find high quality sources, and apply them appropriately.

Online Support Networks	Internet-based communities of clients with similar health issues that provide support. They can be used to share experiences, resources and research related to shared concerns.
Patient Data	Information about an individual patient, which may be relevant to decisions about current or future health or illness.
Patient Education	An individualized, systematic, structured process to assess and impart knowledge or develop a skill in order to effect a change in behaviour. The goal is to increase comprehension and participation in the self-management of health care needs (UTMB, 2014).
Patient Portals	A secure online website that connects patients with their electronic health record allowing them to access personal health information from anywhere, at any time.
Personal Health Information	personal health information means identifying information about an individual in oral or recorded form, if the information: relates to the physical or mental health of the individual, including information that consists of the medical history of the individual's family; relates to the providing of health care to the individual, including the identification of a person as a provider of health care to the individual; is a plan of service within the meaning of the Long-Term Care Act, 1994 for the individual; relates to payments or eligibility for health care in respect of the individual; relates to the donation by the individual of any body part or bodily substance of the individual or is derived from the testing or examination of any such body part or bodily substance; is the individual's health number; or identifies an individual's substitute decision-maker (Information and Privacy Commissioner of Ontario, 2004).
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 his or her lifetime (Canada Health Infoway, 2013).
Privacy and Confidentiality	The right of individuals to determine how, when, to whom and for what purposes any personal information will be divulged.
Privacy Breach	Occurs when there is "unauthorized access to or collection, use, or disclosure of personal information". Such activity is "unauthorized" if it occurs in contravention of applicable privacy legislation, such as PIPEDA, or similar provincial privacy legislation. Some of the most common privacy breaches happen when personal information of customers, patients, clients, or employees is stolen, lost, or mistakenly disclosed (Office of the Privacy Commissioner of Canada, 2008).

Remote Patient Monitoring (RPM)	Delivery of health care to a patient's home, made possible by connecting the patient and a health care provider through a technology device. The patient and clinicians works together to maintain and improve the patient's health and wellness needs, using RPM technology to monitor the patient remotely (Canada Health Infoway, 2016).
Security	In the health context it requires that "a health information custodian shall take steps that are reasonable in the circumstances to ensure that personal health information in the custodian's custody or control is protected against theft, loss and unauthorized use or disclosure and to ensure that the records containing the information are protected against unauthorized copying, modification or disposal" (Personal Health Information Protection Act, 2004).
Telehealth	"The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities" (World Health Organization, 2010).
Virtual Communities	An online community of individuals who share common ideas, interests or experiences. In the context of consumer health solutions, they can include communities comprised of patients and health care providers.
Wearable Health and Fitness Trackers	Technological tools that can be used by users to track and monitor health and fitness related data (e.g., sleep, steps, heart rate, etc.).

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