



CANADIAN NURSES ASSOCIATION  
ASSOCIATION DES INFIRMIÈRES ET INFIRMIERS DU CANADA

# E-NURSING STRATEGY

## FOR CANADA



Canadian Nurses Association

October 2006

[www.cna-aiic.ca](http://www.cna-aiic.ca)

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The contribution of Barbara LaPerrière to this work as a researcher and writer is acknowledged and greatly appreciated.

# Building the E-Nursing Strategy: Overview of the Process



## Background

The Canadian Nurses Association (CNA) received funding from the First Nations and Inuit Health Branch (FNIHB) of Health Canada for a two-year project (2004-2006) to develop a nursing portal to support the ongoing competence and professional development of nurses in Canada. A portal is a single-access gateway or entry point to a collection of resources and services via the Internet.

As part of the Canadian Nurses Portal Project and to prepare nurses and the nursing environment for the Canadian Nurses Portal, now called NurseONE, CNA committed to creating an e-nursing strategy for Canadian nurses. While nurses have been able to take advantage of an expanding variety of information and communication technologies (ICTs), what is missing is a comprehensive, forward-looking, coordinated and collaborative strategy. Canadian leaders in nursing informatics have envisioned such a plan for a number of years, calling it a nursing informatics strategy. Their work informed much of the initiative to develop an e-nursing strategy.

The purpose of the e-nursing strategy is to guide the development of ICT initiatives in nursing to improve nursing practice and client outcomes. The strategy is intended to:

- consider nurses in all domains of practice – clinical practice, education, research, administration and policy;
- identify what nurses need, take advantage of existing quality products and programs, and reduce duplication of effort;
- benefit individual nurses and their clients, employers, nursing professional and regulatory organizations and the nursing profession as a whole, nationally and around the world.

The term *e-nursing* has been used in this work to refer to the incorporation of ICT into nursing. It puts emphasis on the electronic part of nursing to ensure that nurses get up to speed with ICT. The strategy aims to fully integrate ICT so that it becomes recognized as one of many everyday tools used in practice – and within a few years, the “e” part of the term will disappear.

CNA also undertook to develop an e-learning strategy to guide medium- and long-term goals for the education component of the portal (see Part 2 of the consultation document *Supporting the Professional Practice of Canadian Nurses Through Information and Communication Technology*, included in this publication). This part of the strategy report will guide the development of educational resources on the portal-related needs of individual nurses, employers and nursing professional and regulatory organizations.

## Building the Strategy

### Working Groups

CNA established two working groups, the e-nursing strategy working group and the education working group, to begin to build the e-nursing and e-learning strategies. First, the working groups considered the health-care and electronic environments that will influence how the strategy will be developed and implemented.

The e-nursing strategy working group discussed the priority issues facing nurses now and in the long term and identified the following seven key results expected when the strategy is implemented:

1. Nurses will integrate ICT into their practice to achieve good client outcomes.
2. Nurses will have the required information and knowledge to support their practice.
3. Human resources planning will be facilitated.
4. New models of nursing practice and health services delivery will be supported.
5. Nursing groups will be well connected.
6. ICT will improve the quality of nurses' work environments.
7. Canadian nurses will contribute to the global community of nursing.

Working group members identified actions needed over the next five years to achieve these results and specified how the portal could support these actions. They assigned responsibility for the actions to particular groups or organizations, while recognizing that several groups or organizations will need to work together to achieve the desired outcomes.

The education working group began its work by clarifying that the education component of the portal is expected to:

- provide nurses direction to existing educational resources that meet their needs;
- provide nurses with educational offerings developed specifically for the portal; and
- provide opportunities for connections among communities of nurses.



Working group members identified the information and education needs of nurses that could be met by the portal, educational products and tools that could be offered through the portal and environmental factors that would enable users to access educational products and tools effectively.

The issues identified and strategies proposed by both working groups are summarized in the consultation document *Supporting the Professional Practice of Canadian Nurses Through Information and Communication Technologies*, which is included in this publication.

## **Consulting with the Nursing Community**

In the fall of 2005, CNA circulated the consultation document in English and French to a wide range of stakeholders, seeking their feedback on the strategies. CNA also asked them for assistance in identifying priorities for CNA action and actions for their own organizations. Respondents were provided with consultation feedback questions for the two parts of the document: Part 1 (An E-Nursing Strategy for the Profession) and Part 2 (An E-Learning Strategy Within the Portal). Feedback was received from 15 organizations and individuals, including CNA member colleges and associations, provincial/territorial governments, regional health authorities and specialty nursing groups.

### *Feedback on the E-Nursing Strategy*

Respondents generally supported the expected results of the strategy and emphasized the importance of nurses having timely, accessible, evidence-based information to improve client outcomes and patient safety. Many recognized that the successful incorporation of ICT into nursing will benefit not only the nursing profession, but the health-care system as a whole.

The majority of portal-related actions recommended for CNA over the next two years focused on five areas: marketing, advocating for access, ensuring sustainability, developing partnerships and implementing the project.

Most recommendations for CNA regarding the integration of ICT into nursing in general were centered on:

- advocating for nurses' access to ICT and the resources required to integrate ICT into nursing practice;
- supporting the development and implementation of nursing informatics competencies among the competencies required for entry-to-practice and continuing competence; and
- advocating for the involvement of nurses in decision-making about information technology and information systems.

Recommended actions by other partners involved:

- governments (demonstrate buy-in and commit to education, training and infrastructure, where needed);
- educators (develop and implement curricula that incorporate informatics competencies in basic and graduate education); and
- nursing regulatory bodies (review entry-level and continuing competencies related to ICT).

*Feedback on the E-Learning Strategy Within the Portal*

Respondents identified ease of access to current information to support quality nursing practice as the main advantage of the portal's education component. Ease of access is important for all nurses, at home and abroad, and especially for nurses working in relative isolation (i.e., not only geographically but also in nursing specialties). Ease of access means that nurses will have access to information *when they need it* and that navigation tools will be user-friendly.

When asked what learning need the portal could address, respondents most frequently mentioned the need for evidence-based information and research, both national and international, in all domains of nursing. This need includes best practice and clinical practice guidelines and instruction on how to apply them.

Specific and generic education for particular practice settings is also needed (e.g., specialty-specific knowledge) as is education related to professional practice (e.g., understanding the code of ethics, current legislation, health policy, diversity, and change and conflict management).

The most frequently identified education products and tools that should be offered online were (in no order of importance):

- an up-to-date inventory of educational programs, educational institutions, workshops and conferences;
- online databases, journals, textbooks, *CPS*;
- tutorials providing basic computer skills and search and appraisal training;
- online courses, including self-directed learning modules in specific areas of practice;
- current information on timely topics, best practices, competencies; and
- a 24-hour helpline.

Nurses reported two main barriers to incorporating ICT in their work: a lack of comfort with and knowledge about computers and the Internet, and a lack of access to computers and the Internet at work and at home. Access problems may involve a lack of appropriate hardware, software, Internet access, IT training, support and time from administration to use ICT as part of nursing practice.

A more detailed analysis of the input received during the consultation phase is included in a later section of this document.

## Putting the Strategy Together

Staff advisers and members of the e-nursing strategy working group analyzed the responses to the consultation and followed up with electronic and teleconference discussions. Based on this consultation and the strong direction that has emerged, CNA has developed a comprehensive, forward-looking and collaborative strategy to guide the development of ICT initiatives that support the professional practice of nurses in Canada.

The goal of the strategy is to enable nurses to benefit from all development in ICT to improve nursing practice and client outcomes. Within the next decade, we expect that terms such as e-health and e-nursing will no longer be heard because electronic means of managing information and communication will be the norm.

The strategic directions for this initiative became clearer and clearer with each discussion. Participants became more convinced of the need to advocate for the integration of ICT into nursing and clearly outlined the three strategic directions:

1. access
2. competencies
3. participation

The strategic partnerships must involve nurses in all areas of practice – clinical care, education, research, administration, policy – and health-care partners from other disciplines and from leaders in all areas of health service delivery.

The action plan to promote this strategy was conceived by the e-nursing strategy working group to be very broad:

- CNA will disseminate the three-point strategy in numerous ways.
  - A brochure describing the strategy, entitled *Better Health Care, Better Patient Outcomes: The Promise of E-Nursing*, has been distributed to all participants at the association's biennial convention and will be distributed at events throughout the next biennium. (The text follows in this publication).
  - This report, *E-Nursing Strategy For Canada*, will be available on the website and promoted to members and health-care partner organizations.
- The themes of the strategy will be integrated into the association's policy documents and will provide background for collaboration with key nursing and health partner organizations at all levels. Significant discussions are anticipated with the partner organizations identified in the consultation document.

- This report will also inform the ongoing development of NurseONE, the Canadian nurses' portal, which is acknowledged to be a new and transformative tool, supporting nursing practice of the future.

The process has come to one level of closure with the formalization of this strategy. The main documents and processes used to build the strategy are included in this publication.

But the process will continue as CNA seeks the active involvement of nurses in clinical practice, nurse educators and researchers, nursing organizations, health-care employers and administrators, and governments to ensure that nursing will make its best contribution to the future health-care of Canadians – in a health-care system that uses ICT effectively to optimize our use of precious resources and provide the highest quality of care possible.

# Better Health Care, Better Patient Outcomes: An E-Nursing Strategy

(Canadian Nurses Association, June 2006)



## The Evolution of Health Care and Nursing

Nursing has evolved dramatically in recent years. Many of the changes have been driven by advances in information and communications technology (ICT).

The electronic tools now at nurses' disposal are radically improving their ability to efficiently and accurately assess and treat their patients.

ICT is no longer an add-on to traditional methods of health care, but rather an integrated, integral part of practice. As Canada seeks to maintain its leadership position in the health-care field, and to continuously improve the effectiveness of the health-care system, it will be important for nurses to improve their competencies and their use of ICT in their own practice.

*ICT is no longer an add-on to traditional methods of health care, but rather an integrated, integral part of practice.*

## Smarter Decision-Making

ICT initiatives such as electronic health records, telehealth, databases, e-mail and Internet resources enhance the decision-making process. They give nurses access to timely, evidence-based and expert information, enabling them to make swifter, better-informed judgments on behalf of their patients. The result is safer patient care and better health outcomes.

## Strategic Directions

Following in-depth analysis of the changing health-care environment and consultation with nurses across the country, the Canadian Nurses Association has defined three directions for an e-nursing strategy that will guide Canada forward and ensure positive change.

### Access

Nurses can only reap the full benefits technology resources have to offer if they seek them out and incorporate them into their daily practice. As such, access to ICT must be improved. Health-care organizations must acknowledge this need and take the steps necessary to facilitate connectivity – by extending broadband infrastructure to ensure wider access to the Internet, and by acquiring computers, personal digital assistants (PDAs) and other necessary hardware and software.

Health-care organizations are beginning to acknowledge the necessity of providing nurses with access to ICT that supports nursing care, yet the implementation of such tools needs to be accelerated.

## Competency

Understandably, technology can be intimidating, particularly for nurses who have been practising for years without it. And yet, as ICT has advanced, it has become more user-friendly, making the experience of engaging with it simpler.

Development and ongoing use of ICT skills are key to improving nurses' competencies. It is necessary that ICT competencies be embedded in undergraduate and graduate nursing curricula and in continuing education.

## Participation

ICT has tremendous potential to improve the practice of nursing, if applied in appropriate, useful ways. Nurses' insights into how this technology can enhance care are invaluable. As *knowledge workers* in this technological age, it is essential that nurses play an increased role in the development of ICT solutions. By communicating changes and needs in their practice settings, they can ensure the right ICT tools are selected and implemented for maximum patient benefit.

*As knowledge workers in this technological age, it is essential that nurses play an increased role in the development of ICT solutions.*

## Importance of Collaboration

If Canadian health-care organizations are to truly benefit from what ICT has to offer, nurses must be actively involved in the related decision-making and development. They must seek out opportunities to provide input, and administrators must welcome that input.

## Strategic Partnerships

Collaboration among the following groups will be critical in advancing the e-nursing strategy.

### Nurses in Clinical Practice

- Participate in ICT initiatives, identify needs and evaluate possible solutions
- Increase competence in use of ICT
- Access multiple sources of information for evidence-based practice

### Employers and Administrators

- Recognize ICT as a tool of professional nursing practice
- Support involvement of nurses in ICT initiatives
- Encourage adoption of ICT that supports nursing practice

### **Federal, Provincial and Territorial Ministries**

- Ensure participation of nurses in planning and decision-making related to ICT
- Ensure broadband access is available to all Canadian nurses

### **Nursing Organizations – Professional Associations, Regulatory Bodies and Unions**

- Provide leadership for nurses' involvement in ICT
- Recognize ICT competencies as part of entry-level and continuing competence requirements

### **Educators and Researchers**

- Incorporate ICT competencies into curricula
- Develop research programs to optimize nurses' use of ICT

NurseONE / INF-Fusion, is a personalized, interactive web-based resource to help nurses in Canada and around the world manage their careers, connect with colleagues and health-care experts, and access information to support their nursing practice. This Internet portal is a significant development in CNA's e-nursing strategy for Canada.

The Canadian Nurses Association calls on nurses in all areas of practice to work with our health-care partners in ongoing partnerships that ensure nursing will make its best contribution to the future health-care of Canadians. We must all work toward a health-care system in Canada that uses ICT optimally and effectively to provide the highest quality of care possible.



# Supporting the Professional Practice of Canadian Nurses Through Information and Communication Technologies

## CONSULTATION DOCUMENT

(Canadian Nurses Association, November 2005)



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## Introduction

*Information and communication technologies have changed the way Canadians interact with each other, share information, study and conduct business.*

Information and communication technologies (ICTs) – technologies used to handle information and facilitate communication<sup>1</sup> – have changed the way Canadians interact with each other, share information, study and conduct business. Nurses in Canada, as in other countries, have risen to the challenge of new technology. Today, nurses work in a variety of e-health programs such as tele-triage. They access online libraries and databases of clinical practice guidelines from computers in their workplaces. Nurses in specialized areas of practice now interact with their peers in discussion groups over the Internet. Nurses are also involved in standards development for the implementation of electronic health records (EHRs) and many nursing educational programs are now offered online.

In recent years there has been an explosion in health-care knowledge globally. Nurses,<sup>2</sup> as the largest group of knowledge workers in health care,<sup>3</sup> must rely on a broad range of information sources and extensive clinical knowledge to support their decisions. In today's health-care environment, nurses are required to be "flexible, innovative and 'information literate' professionals, able to solve complex client problems by utilizing the best available evidence" (Shorten, Wallace, & Crookes, 2001, p.86).

Patient safety is fundamental to nursing care. To provide safe, high quality care, nurses must integrate new health-care knowledge into their practice. Through life-long learning, nurses must work to maintain their competence in their area of practice. They must be able to access information on best practices from expert nurses and other professionals nationally and internationally. Nurses need resources to be available 24 hours a day, seven days a week, whenever and wherever they are working or living. Many nurses practise in remote and isolated regions where accessing needed information and resources is difficult.

*To provide safe, high quality care, nurses must integrate new health-care knowledge into their practice.*

In every practice setting, nurses must be able to operate in an electronic environment where fast, efficient communication is key (First Nations and Inuit Health Branch, Health Canada, 2003). Nurses must accomplish this in a health-care environment that is becoming more complex and stressful. There is a shortage of nurses, clients have greater needs and higher expectations of care, and workloads are increasing. Added to this, new technologies are constantly being introduced, and there is an emphasis on controlling costs.

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<sup>1</sup> ICTs are the building blocks of a networked world, one in which people are connected together for communication and other information sharing. ICTs include telecommunications technologies that support communication across distances through telephone, cable and radio signals. ICTs also include digital technologies like computers, information networks and software. (*Harvard Law*, n.d.)

<sup>2</sup> *Nurses* refers to registered nurses (RNs), registered psychiatric nurses (RPNs), and licensed practical nurses (LPNs). In Ontario, the title for a licensed practical nurse is registered practical nurse. Registered practical nurses are referred to as LPNs in this document.

<sup>3</sup> In 2003, there were 241,342 RNs, 5,107 RPNs and 63,138 LPNs working in Canada. RPNs are regulated only in British Columbia, Alberta, Saskatchewan and Manitoba (CIHI, 2004).

## Canadian Nurses Portal Project

The Canadian Nurses Association (CNA) has received funding from the First Nations and Inuit Health Branch (FNIHB) of Health Canada for a two-year project (2004-2006) to develop a nursing portal to support the ongoing competence and professional development of nurses in Canada.

A portal is a single access gateway or entry point to a collection of resources and services, usually via the Internet. A portal has been described as “a high-traffic, broadly appealing website with a wide range of content, services and vendor links. It acts as a value-added middleman by selecting the content sources and assembling them together in a simple-to-navigate (and customize) interface for presentation to the end user” (Industry Canada, 2004).

As part of the Canadian Nurses Portal Project (CNPP) and to prepare nurses for the Canadian Nurses Portal (the portal), CNA committed to creating an “e-nursing” strategy for Canadian nurses. While nurses are currently able to take advantage of an expanding variety of ICTs, what is missing is a comprehensive, forward-looking, coordinated and collaborative strategy to guide the development of ICT initiatives in nursing. Nursing informatics specialists have been recommending such a strategy for a number of years.

The goal of the e-nursing strategy is to enable nurses to benefit from all developments in ICTs to improve nursing practice and client outcomes. One way that actions identified in the strategy will be carried out is through the portal.

CNA also undertook to develop an e-learning strategy to guide medium- and long-term goals for the education component of the portal. The strategy will address the education-related needs of individual nurses, employers and nursing professional and regulatory organizations.

CNA established two working groups to begin to build the e-nursing and e-learning strategies. The e-nursing strategy working group comprises nurse leaders and experts in nursing informatics; the education working group includes nurse educators and experts in electronic learning. (See Appendix A for a list of working group members.) In beginning their work, the working groups considered the electronic environment that will influence development and implementation of the strategies.

*Canada is viewed as a leader in both the development and application of ICTs and is committed to bringing the benefits of technology and an information society to people not only in Canada but around the world.*

## The Current Electronic Environment

There are many exciting developments in today’s electronic world and nurses need to be part of them. Canada is viewed as a leader in both the development and application of ICTs and is committed to bringing the benefits of technology and an information society to people not only in Canada but around the world (Government of Canada, 2003). Despite the incredible scope and success of ICTs, access to information and knowledge has not been uniform across the world, creating what is referred to as the digital divide.

In the 1990s, the federal government made a commitment to transform Canada into one of the most electronically connected nations in the world. Every school, library and community was connected to the Internet through programs such as Computers for Schools, SchoolNet and the Community Access Program. Canadians have taken to the Internet: about two-thirds of the population were Internet users in 2004. Of those users, about 66 per cent were estimated to have broadband access (Internet World Stats, 2005). Broadband networks allow data to be transferred faster as they can carry many kinds of signals at once (*Harvard Law*, n.d.). The goal of the government is to provide every community with broadband access so all Canadians can participate in activities such as telehealth, distance education and e-commerce (Government of Canada, 2003). In May 2005, the government announced that broadband, or high-capacity Internet, would be extended to several First Nations, northern and rural communities (Industry Canada, 2005).

In addition to making Canada the most connected country in the world, the federal government aims to be a model in using the Internet to provide government services. By doing this, the government hopes to encourage more Canadians and businesses to use the Internet (GPC Canada, 2000). In 2004, for the fourth consecutive year, Canada's e-government program ranked number one in the world, setting the standard for other countries (Gordon, n.d.).

E-health is another important aspect of the current environment that is influencing nursing. E-health refers most broadly to the use of ICTs in the delivery of health care (Oh, Rizo, Enkin, & Jadad, 2005). E-health involves applications such as electronic health records (EHRs), telehealth<sup>4</sup> and Internet-based health information (Government of Canada, 2003).

In 2001, Canada Health Infoway was created. Infoway is a federally funded, independent, not-for-profit corporation with federal, provincial and territorial government partners. Its main priority has been the development of EHRs. Adopting a system of accessible and secure EHRs is viewed as key to creating a health-care network that is client-focused, integrated, responsive and safe (Alvarez, 2004).

In 2004, Infoway began to take a more proactive approach to its telehealth initiatives, especially in rural and remote areas. Only 15 per cent of the more than 4,200 rural and remote communities in Canada are estimated to have telehealth coverage of any kind. ICTs in telehealth applications allow for data to be accessed from a remote source, sharing of health information to support clinical decision-making and access by health-care professionals to resources that help them maintain the knowledge and skills required to practise safely (Canada Health Infoway, 2004).

Some experts believe that e-health is at least 10 years behind other information management intense sectors such as banking. Despite this lag, ICTs are considered key to addressing challenges to Canada's health-care system such as geography, shortages of health-care professionals and increasing costs (Alvarez, 2002). For a summary of selected federal initiatives related to e-government and e-health, see Appendix C.

*Some experts believe that e-health is at least 10 years behind other information management intense sectors such as banking. Despite this lag, ICTs are considered key to addressing challenges to Canada's health-care system such as geography, shortages of health-care professionals and increasing costs.*

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<sup>4</sup> Telehealth is "the use of information and communications technology to deliver health and health-care services and information over large and small distances" (Industry Canada, 1997 cited in CNA, 2005d).

Portal development is also playing a key role in our electronic environment. In the last few years, there has been a rapid growth in the number of portals available to nurses and other health-care professionals, which offer links to employment opportunities, library resources, health-care news, educational programs, events calendars, shopping and other resources. They have been set up by individuals, commercial enterprises such as publishing companies and educational institutions, among others. Nursing and other health-care professional organizations have only recently begun to establish portals. Typically, these portals have a portion of the site that only members can access, and they are set up to enable users to purchase goods online in a secure environment.

In Canada, both the Canadian Pharmacists Association and the Canadian Medical Association have established portals. Nursing professional associations around the world, including the Irish Nurses Organisation, Organización Colegial de Enfermería in Spain and the Royal College of Nursing in the United Kingdom, are developing portals for their members.

## **Consultation Process**

CNA is consulting with nurses and key informants across the country to refine the e-nursing and e-learning strategies. This document forms the basis for the consultation that is taking place in the fall of 2005.

### **Note to Reviewers:**

The document is divided into two main sections. Part 1 is concerned with an e-nursing strategy for the profession which addresses broad ICT needs, including the portal. Part 2 deals with an e-learning strategy that is specific to the education component of the portal. A glossary of acronyms and definitions is provided (Appendix B).

Nursing needs to appropriately incorporate ICTs into all aspects of the profession for better client and system outcomes. As CNA develops the portal, it needs to ensure that nurses and the practice environment are ready to incorporate the wealth of knowledge it will make available. Not everything can be done at once. Your input is needed to help CNA establish priorities in the actions needed to achieve the results identified in the strategies.

Questions are presented at the end of each section to guide your response.

## Part 1: An E-Nursing Strategy for the Profession

### Background

The purpose of the e-nursing strategy is to guide the development of ICT initiatives in nursing so that nursing practice and client outcomes are improved. Canadian leaders in nursing informatics have envisioned such a plan for a number of years, calling it a nursing informatics strategy. Their work forms the basis of much of the current initiative to develop an e-nursing strategy (Canadian Nursing Informatics Association [CNIA], 2003).

The e-nursing strategy must consider nurses in all domains of practice – clinical practice, education, research and administration. It should identify what nurses need, take advantage of existing quality products and programs, and reduce duplication of effort. As well, it should indicate how different aspects of the plan will fit together. The strategy should provide for bilingual resources to support the professional development of nurses across Canada. The strategy should ultimately benefit individual nurses and their clients, employers, nursing professional and regulatory organizations and the nursing profession as a whole, nationally and around the world. It can provide direction over time as new challenges are presented in the health-care system and may need to be revisited as developments take place in the electronic environment surrounding nursing.

The term *e-nursing* is being used in this work to refer to the use of ICTs in nursing. It puts emphasis on the electronic part of nursing to ensure that nurses will get up to speed with ICTs. The goal is that within a few years the “e” part of the term will disappear as ICTs are recognized as an essential part of nursing.

The e-nursing strategy working group discussed the priority issues facing nurses now and in the long term. Members identified seven key results expected when the strategy is implemented. The expected results are:

1. Nurses will integrate ICTs into their practice to achieve good client outcomes.
2. Nurses will have the required information and knowledge to support their practice.
3. Human resources planning will be facilitated.
4. New models of nursing practice and health services delivery will be supported.
5. Nursing groups will be well connected.
6. ICTs will improve the quality of nurses’ work environments.
7. Canadian nurses will contribute to the global community of nursing.

Working group members identified actions needed over the next three to five years to achieve these results. Some activities are currently under development or will be implemented in the future as part of the portal. Although responsibility for each action has been assigned to a particular group or organization, it is expected that



several groups and organizations will need to work together to achieve the desired outcomes. The list of actions presented in each section is not complete. At the present time, the actions focus on *what* needs to happen, rather than *how*. Prioritizing actions is part of the consultation process.

*1. Nurses will integrate ICTs into their practice to achieve good client outcomes*

Nurses believe that the quality of nursing care is higher when information technology is used effectively (*Building the future*, 2005b). To take full advantage of the current electronic environment, nurses need up-to-date equipment, access to ICTs and the competencies to use the technologies. Equipment such as computer terminals on hospital units, laptops for community health nurses and personal digital assistants (PDAs) for charting at the bedside must be valued by nurses and employers. These types of equipment must be considered as tools of professional practice just like stethoscopes and glucometers. There must be sufficient equipment to provide adequate access for all nurses in the practice setting. Nurses need access to ICTs at home, in the workplace and in educational institutions.

Today, access to computers and to the Internet in some regions of the country is either non-existent or slow and unreliable. This is frequently the case in rural and remote areas and in some aboriginal communities. This is unfortunate because in these settings nurses need a wide range of knowledge and skills to deal with client situations that are often variable and complex. Rural and remote nurses have little support and few resources (MacLeod, Kulig, Stewart, & Pitblado, 2004).

A study by Estabrooks and her colleagues (2003) sheds light on some of the barriers faced by nurses in accessing practice knowledge via the Internet. Nurses may find it difficult to find concise, relevant and credible health information on the Internet to apply in their practice. They may not have adequate access to the Internet in the workplace if administrators do not believe that access is a priority for nurses, or that time spent on the Internet is important in contributing to evidence-based practice. Nurses' work may not be flexible enough to allow nurses to schedule time for computer use. Internet resources are frequently presented in the same format as their paper counterparts. Retrieving information from such sources can be difficult for nurses with limited education in research. Nurses are more likely to seek practice information by interacting with colleagues and clients than consulting written sources of information. The study findings suggest that Internet use by nurses could be increased if:

- information on the Internet is more dynamic and relevant to their practice environment;
- administrative support is increased to make computer terminals readily accessible to staff nurses;
- the intellectual (thinking) aspects of nursing practice are valued as highly as the physical (doing) aspects of nursing practice.

The Canadian Nurses Portal Needs Survey conducted recently by CNA in partnership with the Canadian Health Network revealed many positive findings. Of the 1,100 nurses surveyed, 87 per cent access the Internet at home and 73 per cent at work. Of those who have computer access at work (n = 950), 64 per cent have an e-mail account and 70 per cent have the software and hardware they require. There was a fairly high level of agreement about the benefits of the Internet and their proficiency in using the Internet, using the computer for word processing and communicating by e-mail. There was less agreement on being able to trust information found online and about employer encouragement of Internet use (CNA, 2005a).

While having equipment and access is necessary for the effective use of ICTs, it is not always enough. Looking beyond the use of ICTs to access information, there are anecdotal reports of nurses continuing to document in writing and later transferring their notes to the computer, even though they have ready access to the machines. What is preventing nurses from making effective use of ICTs? One obstacle faced by nurses is that ICTs are frequently developed and selected without their input, which means the needs relevant to their particular practice environment are not considered. Nurses end up having to adapt to technology rather than technology adapting to nurses and their needs (Mitchell, 2005).

*One obstacle faced by nurses is that ICTs are frequently developed and selected without their input, which means the needs relevant to their particular practice environment are not considered. Nurses end up having to adapt to technology rather than technology adapting to nurses and their needs.*

Others have expressed concern about the education system as it relates to ICTs. A study by the Canadian Nursing Informatics Association (CNIA) described the situation of undergraduate nursing informatics in Canada. The findings included the following:

- Approximately three-quarters of participating schools of nursing have a culture that supports using ICT in teaching and learning.
- Approximately two-thirds of the schools have a curriculum vision or design that includes nursing informatics competencies but that do not have explicit outcomes.
- Approximately three-quarters of the schools integrate nursing informatics throughout undergraduate curriculum, but do not know exactly where or how many hours are devoted to nursing informatics.
- Basic computer education is more available than education on use of computers in nursing.
- There is little electronic connection between education and clinical services settings except for e-mail (CNIA, 2003).

New direction is needed to ensure that education prepares nurses for practice that incorporates ICTs. Richards suggested that “the computer literate nurse will have knowledge, and as a result, power and influence.” She added that the “Net nurse” of the future, as a knowledge worker, will be characterized by “creativity, innovation, and practical know-how” (Richards, 2001, p.367). Bill Gates has advised that the Internet has changed the notion of power coming through knowledge to the idea that real power comes from sharing knowledge (Bill Gates new rules, 1999). To achieve

this potential, nurses need to develop competencies in nursing informatics.<sup>5</sup> Several recent initiatives have identified what knowledge, skills, judgment and attitudes are required and have proposed educational curricula in nursing informatics (Mitchell, 2005; Nagle, 2001; Covey, Zitner, & Bernstein, 2001). For example, Mitchell (2005) identified competencies needed in the following areas: computer skills, computer knowledge, informatics skills, informatics knowledge and informatics judgment and attitude.

Recent nursing graduates are likely more familiar with ICTs than their colleagues who have been in the workforce longer. To achieve good client outcomes, all nurses must be able to integrate ICTs in their practice.

<b>EXPECTED RESULT #1: Nurses will integrate ICTs into their practice to achieve good client outcomes.</b>		
	<b>Action Needed</b>	<b>Responsibility</b>
<b>1-A</b>	Increase competence in the use of ICTs	Nurses
<b>1-B</b>	Develop and implement curricula that incorporate nursing informatics competencies in basic and graduate education	Nurse Educators/Schools of Nursing/ Nursing Informatics Specialists
<b>1-C</b>	Develop and implement curricula that incorporate nursing informatics competencies in continuing education	Nurse Educators/Schools of Nursing/ Employers/Nursing Informatics Specialists/ Funders
<b>1-D</b>	Recognize nursing informatics competencies among the competencies required for entry-to-practice and continuing competence	Nursing Professional/Regulatory Organizations
<b>1-E</b>	Recognize computers and ICTs as tools of professional nursing practice	Nurses/Nurse Administrators/Employers/ Funders/Unions
<b>1-F</b>	Advocate for nurses' access to ICTs and the resources required to integrate ICTs into nursing practice	Nurses/Nurse Leaders/Unions

<sup>5</sup> "Nursing informatics facilitates the integration of data, information and knowledge to support patients, nurses and other providers in their decision-making and this support can be accomplished using information structures, information processes and information technology" (Staggers & Thompson, 2002, p. 260).

<b>1-G</b>	Ensure that nurses have the necessary hardware, software, access to ICTs and training not only in acute care settings but also in rural and remote areas, public health, long-term care, home and community care	Nurse Administrators/Employers/ Funders/Health-Care Administrators
<b>1-H</b>	Involve nurses in decision-making about information technology and information systems	Nurses/Nurse Administrators/ Employers/Funders
<b>1-I</b>	Adopt an “evergreening” policy to keep hardware and software resources for nurses up to date	Nurse Administrators/Employers/ Funders
<b>1-J</b>	Ensure that broadband access is available to nurses wherever they work in Canada	Governments
<b>1-K</b>	Offer incentives (e.g., tax and other incentives) to promote personal and employer capital investments in hardware and software for nursing professional practice	Governments
<b>1-L</b>	Make apparent the value of nursing informatics in terms of good health outcomes	Nurses/Nurse Leaders/Researchers/ Nursing Professional and Regulatory Organizations

### **What can the portal do?**

The portal will mainly support actions 1-A, 1-B and 1-C by providing nurses with the opportunity to increase their competence in using ICTs by:

- accessing educational programs in nursing informatics;
- receiving online technical support, if required;
- meeting online with communities of nurses interested in nursing informatics.

The portal will help nurses to value ICTs as tools of professional practice (1-E) if its systems:

- give users what they need quickly;
- provide immediate feedback to encourage the user to continue;
- “remember” users, ensuring that they can enter and exit a program as required and do not need to start over each time if work is interrupted;
- remind users of most recent requests;
- include backup systems so programs are not down for long periods of time;
- incorporate e-mail capabilities for forwarding sites, articles, etc.;
- address language capabilities of the user, including language of user and appropriate level of language.

*2. Nurses will have the required information and knowledge to support their practice*

Nurses need a variety of sources of information to better meet client needs. In the 1999 survey on nurses' information needs for the Canadian Nursing Knowledge Network, nurses identified the need for sources and types of information such as experts, online journals and databases, standards of practice, codes of ethics, standard care plans, clinical practice guidelines, government health policy information, links to key nursing websites including nursing provincial/territorial professional and regulatory organizations and international resources, easy to search and understandable information summarizing the most relevant topics in practice settings, legislative issues related to nursing, education courses, events and conferences, discussion groups, chat rooms (MarketLink, 1999).

The Canadian Nurses Portal Needs Survey updates this information. Nurses indicated that they have a high level of interest in the following topics: specific diseases, illnesses or conditions; information about medications; diet, nutrition and fitness; continuing education/courses; and women's health issues. In terms of online tools and resources, they expressed a high level of interest in full-text journals/articles; best practice guidelines; patient education information; the online Compendium of Pharmaceuticals and Specialties (e-CPS); evidence-based practice tools; and MEDLINE database (CNA, 2005a).

*Nurses need all the data and information about their clients where they practise so they can make informed clinical judgments.*

Sometimes nurses need information at the point of care that they can retrieve quickly and in a format they can use. This is referred to as "just enough, just-in-time" information. For example, having a visual flowsheet of the client's previous blood pressure measurements both in-hospital and home and a listing of the client's current medications assists the nurse in making an informed decision about the client's medication requirements. Having quick access at the bedside to the hospital's policy and procedure manual may mean care can be given sooner. Nurses need all the data and information about their clients where they practise so they can make informed clinical judgments.

To improve nursing practice and client outcomes, nurses should use an evidence-based approach to care. This is an approach that incorporates evidence from research, clinical expertise, client preferences and other sources (CNA, 2002b). Nurses can find evidence through the Internet by accessing digital libraries, online journals, clinical practice guidelines, experts and discussion groups. Digital libraries contain collections of documents, databases, journals, publications, CD-ROMs and other resources that can be accessed through a central location.

Clinical practice guidelines<sup>6</sup> are becoming important sources of evidence for developing best practice. Nurses in Canada and internationally are developing, disseminating and using clinical practice guidelines to improve client outcomes and make nursing care more efficient and effective (CNA, 2004c). Nurses are no longer limited by the information they have in their practice setting; their reach is extended

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<sup>6</sup> Clinical practice guidelines, which are also called best practice guidelines, are "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances" (Scottish Intercollegiate Guidelines Network, 2004).

to evidence from around the world. Several organizations<sup>7</sup> have compiled guidelines and other types of research evidence (e.g., systematic reviews of health-care interventions) that are available online to nurses, often on a subscription or membership basis.

Using ICTs to access information can be faster and more reliable than searching for colleagues or leafing through text books. Having a single point of access, such as the portal, to multiple sources of information will save the nurse a tremendous amount of time. Having to access more than one site to obtain the information may be impractical, especially in situations where access to computers is limited and Internet service is slow and unreliable. Having material that has been screened for quality would be a major incentive for accessing the portal. Considering the sheer volume of material online, determining its quality is difficult. In the Canadian Nurses Portal Needs Survey, nurses strongly agreed that they would use a website if they knew that the information on it had been validated by a trusted organization (CNA, 2005a). When nurses are confident about accessing quality information online, they can help their clients do the same. Canadians are using ICTs to gain information so they can participate more actively in their health and health care (International Council of Nurses [ICN], 2003).

*When nurses are confident about accessing quality information online, they can help their clients do the same.*

Creating online content that will continually engage nurses – especially younger nurses used to the fast pace and interactivity of videogames and the immediate availability of information over the Internet – will be a challenge. Use of “rich media,” a combination of moving images (video and animation), graphics, text and sound will result in content that is more dynamic. Getting away from the electronic equivalent of turning pages of text is essential (K & J Consulting Services, Inc., 2005).

<b>EXPECTED RESULT #2: Nurses will have the required information and knowledge to support their practice.</b>		
	<b>Action Needed</b>	<b>Responsibility</b>
<b>2-A</b>	Recognize and value nurses as knowledge workers (see also 6-A)	Nurses/Nurse Leaders/Employers/Unions
<b>2-B</b>	Identify nursing care data and information required to strengthen nursing practice and improve client outcomes and have them available to nurses	Nurses/Nurse Leaders/Employers/ Vendors
<b>2-C</b>	Access multiple sources of data and information to improve nursing practice and evidence-based decision-making (see also 6-B)	Nurses

<sup>7</sup> Examples of such organizations are: Guidelines International Network, The Joanna Briggs Institute, Cochrane Collaboration, Scottish Intercollegiate Guidelines Network, National Institute for Clinical Excellence, RAO Nursing Best Practice Guidelines Program.

<b>2-D</b>	Provide nurses with online access to workplace information (including “just-in-time” information) such as policies and procedures and other sources of information essential for their practice (e.g., clinical practice guidelines)	Nurse Administrators/Employers/ Unions
<b>2-E</b>	Advocate for health information systems that are user-friendly and enable nurses to retrieve individual client data and aggregated data and information in a useful format	Nurses/Nurse Leaders/Nursing Informatics Specialists
<b>2-F</b>	Advocate for development and use of quality criteria for both online content and linkages to other sites	Nurses/Nurse Leaders
<b>2-G</b>	Develop content and products that engage users and meet quality standards for Internet-based materials	Nurse Educators/Vendors
<b>2-H</b>	Develop educational programs that assist nurses to critically analyze nursing literature and other information obtained online	Nurse Educators/Nursing Informatics Specialists
<b>2-I</b>	Help clients and families access and appraise the quality of online information	Nurses

### What can the Portal do?

While many players and organizations must take the lead on these strategies, the portal will make important contributions. By establishing the portal, CNA is demonstrating that it values nurses as knowledge workers (2-A). The results of the Canadian Nurses Portal Needs Survey on nurses’ information needs support action 2-B. The portal will provide nurses with access to multiple sources of information online (2-C, 2-D) such as:

- nursing literature available through online libraries and databases (e.g., nursing research, clinical practice guidelines);
- consultations with experts;
- professional networks;
- educational programs (see Part 2);
- career management tools (e.g., building portfolios, managing stress).

The portal will provide instruction on how to judge the quality of information found online and to evaluate websites (2-F, 2-G, 2-H and 2-I). The content of the portal will be dynamic and encourage nurses to use the site (2-E, 2-G).



### *3. Human resources planning will be facilitated*

Planning for the future nursing workforce in Canada is one of the priority issues facing the nursing profession. The estimated shortage of RNs in Canada is around seven per cent of the current workforce, a percentage that was the highest of the six countries reported in a 2004 study (Simoens, Villeneuve, & Hurst, 2005). The shortage is expected to increase over the next 10 years. Nursing human resources planning cannot take place in isolation; it must take place within a broad health human resources planning framework.

To date, health human resources planning has tended to focus on the supply of health-care providers, that is, how to increase the number of nurses, physicians and other health-care professionals in the system (CNA & Canadian Medical Association [CMA], 2005). Several factors are expected to decrease the size of the nursing workforce and the number of hours worked by nurses. The nursing workforce is aging and, as a result, a greater number of nurses are due to retire (Simoens et al., 2005).

The demand for nursing services is thought to be increasing as a result of several factors, including rising needs because the population is getting older, advances in medical technology and rising consumer expectations (Simoens et al., 2005). More attention needs to be paid to the demand side of planning (CNA & CMA, 2005).

How can ICTs facilitate nursing human resources planning? On the demand side, a needs-based approach to planning takes into account current and future needs for care by examining factors related to demographics (e.g., age, sex), epidemiology (e.g., the prevalence of health conditions), culture and geography (CNA & CMA, 2005). More data from surveys of the population (e.g., census, labour force surveys) are now available to use in planning for nursing services, but these sources are not always being accessed.

Nursing care data are sometimes available electronically at organizational and regional levels. Nursing human resources planning needs to have available comparable nursing care data to collect across care sectors (e.g., hospital, community and home care) and across geographic settings. By identifying the types of nursing interventions and the number of hours of nursing care that lead to good patient outcomes, it will be possible to more accurately predict how many nursing hours, and therefore, how many nurses, will be needed to meet future needs.

A barrier to having comparable nursing care data has been the lack of consistency in the terms used to describe the contribution of nursing to health care. Through the Canadian Standards Association, Canada has adopted ISO 18104, an international standard in health informatics that provides a terminology model for nursing diagnosis, nursing actions and outcomes. Having uniform terminology is an important first step in “creating comparable nursing data across settings and countries. Without such data it is impossible to identify and implement ‘best nursing practices’ ... or determine how scarce nursing resources should be spent” (Saba, Hovenga, Coenen, McCormick, & Bakken, S, 2003). ISO 18104 is based on the International Classification for Nursing Practice (ICNP<sup>®</sup>), a universal language for defining and describing nursing practice.

Another obstacle to planning nursing human resources has been the lack of systems to accurately measure nursing workload. Existing systems have been criticized for being out of date and reflecting the work on the past shift that could be done, not what should be done. Other problems have been identified, including the difficulty in tracking and measuring complexity of care and in taking into consideration the mix of nursing staff on the unit (Hadley, Graham, & Flannery, 2005).

On a positive note, the Nursing and Health Outcomes Project (NHOP)<sup>8</sup> in Ontario has demonstrated that it is possible to collect nursing care data across acute care, long-term care, complex continuing care and home care settings. Data were collected on outcomes which could be linked to some aspect of nursing (e.g., functional status, therapeutic self care, symptoms such as pain, nausea, fatigue and dyspnea, and safety outcomes including falls and pressure outcomes). In the long term, it is expected that the availability of these kinds of data will facilitate planning for nursing services. It is hoped that the electronic collection of nursing care data will be taken up in other parts of the country as well, but this will only be really useful if data can be compared across regions. This takes us back to the need for standardized terminology, described earlier.

*The Nursing and Health Outcomes Project in Ontario has demonstrated that it is possible to collect nursing care data across acute care, long-term care, complex continuing care and home care settings.*

On the supply side, planning must include efforts to increase the number of people going into nursing, reduce the number leaving nursing and make sure the participation and productivity of nurses in the current workforce are the best they can be. Strategies that have been identified include increasing the number of seats at nursing schools, encouraging nurses to re-enter the profession or to return from practising in other countries and facilitating the entry of internationally educated nurses (IENs) to practise in Canada. Strategies to reduce the flow of nurses from the workforce include providing supports to delay retirement of nurses (e.g., reducing the physical workload) and improving the work environment of nurses (see expected result #6). (CNA, 2004d; Simoens et al., 2005).

Governments in Canada have identified immigration as one way to address our nursing shortage. In 2002, the number of internationally educated nurses (IENs) who became licensed to practise in Canada was over 1,800 (Barry, Sweatman, Little, & Davies, 2003). Nursing regulatory bodies in Canada are receiving over 4,000 applications for licensure/registration annually from IENs (Jeans et al., 2005).

IENs interested in becoming licensed in Canadian provinces and territories often face a confusing array of information and requirements (McGuire & Murphy, 2005). Unfortunately about two-thirds of IENs are not successful in becoming licensed, depriving Canada of a source of new recruits (Jeans et al., 2005). Supports are needed, in English, French and other languages, for those individuals who choose to come to work in Canada. IENs need access to a single point of entry to tools and resources that provide information about immigrating to Canada, the different provincial/territorial registration processes, language proficiency, the Canadian Registered Nurse Examination (CRNE) process, the Canadian health-care system and the culture of nursing practice in Canada (CNA, 2005c). Tools and information for nurses coming to work in Canada will be available on the *Going to Canada* website. CNA is developing a series of web-based tools and resources under the trademark

<sup>8</sup> Further information about NHOP is available at <http://www.health.gov.on.ca/english/providers/project/nursing/presentations/presentations.html>. The project name has been changed to Health Outcomes for Better Information in Care.

*LeaRN* to assist nurses in meeting the requirements to be licensed as RNs in Canada and in fitting into the Canadian health-care system.

In 2003, a total of 5,366 RNs and 104 LPNs maintained their Canadian licenses while working outside Canada (Canadian Institute for Health Information [CIHI], 2004). These nurses could benefit from resources to keep them in touch with nursing in Canada and developments in the health-care system here. In time, they may be encouraged to return to practise in Canada.

Finally, an important tool for human resources planning is the creation of unique identifiers<sup>9</sup> for nurses that would be used to track nurses throughout their education and careers. The resulting information would facilitate planning nursing workforce and education requirements. The Canadian Institute for Health Information, the Western Health Information Collaborative, Canada Health Infoway and nursing regulatory bodies have begun work in this area.

<b>EXPECTED RESULT #3: Human resources planning will be facilitated.</b>		
	<b>Action Needed</b>	<b>Responsibility</b>
<b>3-A</b>	Analyze population health surveys and epidemiological data to plan the nursing human resources required to meet current and future health needs of the population	Health Human Resource Planning Bodies/National Health Information Agencies
<b>3-B</b>	Implement ISO 18104 to have comparable nursing care data that can be analyzed at the national level	Health Information Agencies, Employers, Nurse Administrators, Funders, Vendors
<b>3-C</b>	Improve workload measurement systems and ensure that they are integrated with resource tools (e.g., staff scheduling) in all health-care sectors and link with documentation systems such as electronic health records (see also 6-C)	Nurse Leaders/Nurse Informatics Specialists/Vendors

<sup>9</sup> A unique identifier is a non-reused, lifetime number assigned to an individual either on entry into an education program or application for first licensure (*Building the future*, 2005a).

<b>3-D</b>	<p>Collaborate in human resources planning across jurisdictions through the development and use of online databases that allow comparisons to be made between and among provinces and territories and regions and which, among other functions:</p> <ul style="list-style-type: none"> <li>• track migration of nurses to, from and within Canada</li> <li>• indicate availability of nursing education seats by province and territory</li> </ul>	Governments
<b>3-E</b>	Continue to work to develop unique identifiers for nurses in Canada to track them throughout their careers	National Health Information Agencies/Nurse Informatics Specialists/Nursing Professional and Regulatory Organizations
<b>3-F</b>	<p>Use ICTs to support nurses who choose to come to work in Canada by:</p> <ul style="list-style-type: none"> <li>• providing tools and information about nursing practice in Canada to make their entry to practice in Canada easier</li> <li>• providing access to licensure/registration information about nursing in Canada to IENs, embassies and immigration authorities</li> </ul>	IENs/Nursing Professional and Regulatory Organizations/Employers/Unions/Federal, Provincial, and Territorial Governments <sup>10</sup>
<b>3-G</b>	Use ICTs to support nurses re-entering the Canadian nursing workforce	Canadian nurses working outside Canada/Nurses who are not currently practising
<b>3-H</b>	Disseminate research findings on nursing human resources issues	Nurse Researchers

<sup>10</sup> To make advances in this area, a collaborative effort is required. A current example of collaboration is the Internationally Educated Nurses Task Force.

### **What can the portal do?**

The portal can support 3-F by providing tools and information for nurses and by linking to the *Going to Canada* website. It can address 3-G by providing information as well as links to refresher programs for Canadian nurses re-entering the workforce. The portal can serve as a guide to sources of research on nursing human resources issues (3-H) (e.g., the Canadian Health Services Research Foundation, the Nursing Sector Study Corporation).

#### *4. New models of nursing practice and health services delivery will be supported*

New and existing pressures in the health-care system are leading to different ways of practising nursing and delivering health services. These include the need to ensure that Canadians have access to the health-care services they require, to decrease health-care costs and to use the knowledge and skills of all health-care professionals in the best way possible. Nurses – registered nurses, registered psychiatric nurses, licensed practical nurses and nurses in advanced practice – as well as other health-care professionals must be able to work to their full scope of practice, that is, they must be able to carry out all the activities they are educated and authorized through legislation to perform.

In recent years federal, provincial and territorial governments have been promoting primary health care<sup>11</sup> as an approach for improving the health of Canadians and the health-care system, and reducing costs. Nurses have believed for a long time that primary health care is the most effective way to meet the health needs of Canadians (CNA, 2003b) and that they can contribute by being an entry point into the system and by using all their knowledge and skills.

A key ingredient of primary health care is interprofessional and interdisciplinary collaboration. This involves different health professionals or members of the same discipline such as RNs, RPNs and LPNs working together to address the health needs of their clients. Collaboration is viewed as a means to ensure that clients have access to the knowledge and skills of the most appropriate health-care provider (*Building the future*, 2005a; CNA, 2004d). Collaboration in the delivery of health services is encouraged when health professionals share educational activities and when they use the same resources and tools such as EHRs.

Currently, nurses and others are working to integrate the role of the nurse practitioner (NP) into primary health care in the belief that NPs will improve access to care and respond to the desire of nurses and governments to use nurses' knowledge and skills more effectively.

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<sup>11</sup> Primary health care involves a commitment to provide essential health care that is preventive, promotive of health, curative, rehabilitative and supportive. The focus is on promoting health and preventing illness. The five underlying principles usually associated with primary health care are public participation, health promotion, appropriate skills and technology, accessibility and intersectoral collaboration (CNA, 2003b).

*E-health technologies can provide communication links among members of primary health care teams and between providers and clients.*

Canadians expect to be more involved in decisions about their health care (CNA, 2004d). Nurses' collaboration with clients and support of their self-care efforts are other significant elements of a primary health care approach.

E-health technologies such as electronic health records (EHRs), telehealth, secure electronic linkages and electronic health information can be helpful in primary health care. They can provide communication links among members of primary health care teams and between providers and clients, track client outcomes from the health-care services provided, allow health-care providers access to client records from different locations and increase continuity of care (Health Canada, 2004).

In 2003, the average age of an RN employed in nursing in Canada was 44.5 years (CNA, 2004a). Most nurses were educated when the focus of health care was on acute hospital care and not on primary health care. Nurses need to increase and disseminate resources to assist them in practising from a primary health care perspective. For example, nurses must develop competencies in areas such as population health approaches, team building and interdisciplinary collaboration and communication.

More nursing care is now delivered outside the acute care setting in the community. In this setting, the combination and number of regulated (RNs, RPNs and LPNs) and unregulated persons providing nursing care (nursing staff mix) may be different than in the hospital. Technological solutions are required to meet new needs imposed by these models such as supervision at a distance. Mobile devices such as cellular phones and personal digital assistants (PDAs) could be used more to link nurses in the community with their supervisors. There is also a need for shared electronic records for nurses and other health-care professionals that can be accessed from various sites. Videoconferencing is a useful tool for nurses to link with nurse experts and other members of the health-care team for assistance with client assessment.

Nurses are increasingly involved in providing tele-triage (telephone triage) services. One of several telehealth services, tele-triage refers to "the practice of conducting a verbal interview to assess a client's health status and to offer recommendations for treatment and referral" (Coleman 1997, cited in CNA 2005c). Several Canadian provinces have programs in which RNs provide triage services, information on symptom management and general health information. Benefits of tele-triage include making good use of health-care professionals' knowledge and skills, improving access to care, providing education to clients and supporting self-care (CNA, 2005d).

The recent experience with severe acute respiratory syndrome (SARS) was a challenge for all sectors of the health-care system, including public health. What we learned was that governments, health organizations and health-care professions were not well prepared to tackle an emerging infectious disease and that health services delivery has to be done differently. The SARS experience in Toronto, especially the first phase, has been described as a "chaos of communication" (RNAO, 2003, p. 4). Improved communication between personnel in public health agencies and staff in hospitals, long-term care facilities, ambulance services and family physician offices is essential. To protect the public, systems must be in place to distribute reports, advisories, alerts and warnings to health-care professionals as quickly as possible (National Advisory Committee on SARS and Public Health, 2003).

<b>EXPECTED RESULT #4: New models of nursing practice and health services delivery will be supported.</b>		
	<b>Action Needed</b>	<b>Responsibility</b>
<b>4-A</b>	Access a broad range of online resources to support new models of nursing practice and health service delivery	Nurses
<b>4-B</b>	Ensure that nurses stay in the forefront of planning and implementation of electronic health records through involvement with organizations such as Canada Health Infoway	Nurses/Nurse Leaders/Employers/ Nursing Professional and Regulatory Organizations
<b>4-C</b>	Collaborate within and outside nursing to develop and provide educational programs that support new ways of practice (e.g., primary health care, tele-triage, telepractice, interprofessional practice)	Nurse Educators/Nursing Informatics Specialists
<b>4-D</b>	Disseminate more timely information in health-care emergencies and provide the necessary tools to promote effective interprofessional communication	Governments/Employers/Nursing Professional and Regulatory Organizations

### **What can the portal do?**

The portal can mainly support actions 4-A and 4-D by providing up-to-date resources that support new models of practice (e.g., common educational tools for interprofessional practice). It can serve as an important hub for the distribution of health alerts, warnings and advisories in emergency situations.

### *5. Nursing groups will be well connected*

Given the many geographical regions of Canada and the way the nursing profession has organized itself in this country, it is a challenge for nursing groups to work together. In Canada, the three nursing groups – registered nurses, registered psychiatric nurses and licensed practical nurses – are regulated. Provincial or territorial nursing regulatory bodies are mandated by legislation to protect the public and have responsibilities such as setting standards and verifying the competence of their members. There are at least 25 regulatory bodies for nurses in Canada (Jeans et al., 2005). At the national, provincial/territorial, regional and local levels there are both professional nursing associations and nurses' unions. At the national level alone, there are at least 30 nursing groups that are associate members of CNA.

With the increase in nursing knowledge and the changing needs of clients, many different nursing specialty areas have arisen. Some nurses are seeking more formal recognition of their knowledge and skills in their nursing specialty. The CNA Certification Program now certifies nurses in 17 specialties. Nurses are working in advanced nursing practice roles, the most recognized being the clinical nurse specialist and the nurse practitioner.

Recent literature points to the multigenerational nature of the workplace, suggesting that there are now four generations of nurses with different approaches to work. In today's stressful and competitive workplace, misunderstanding that might occur between generations over issues such as maintaining a balance between personal and professional life may be costly to health-care institutions. For example, interpersonal conflict may result in increased absenteeism and decreased quality of care (Boychuk Duchscher & Cowin, 2004).

At many levels, nurses and their associations either exist in silos separate from their counterparts or experience a lack of cohesiveness. In some situations uncertainty about scopes of practice and roles has created tension between RNs and LPNs that has implications for clients as well as nurses. Nurses recognize the need to work together to increase their understanding of each other's roles, responsibilities and scopes of practice (CNA, 2003a).

The current focus on patient safety is prompting nurses to work together in the interest of the public and to take every opportunity to create a culture of safety within the nursing profession. Recently, several nursing organizations have collaborated to develop an evaluation framework to help employers determine how to use their nursing resources most effectively (CNA, the Canadian Practical Nurses Association, the Canadian Council for Practical Nurse Regulators and the Registered Psychiatric Nurses of Canada, 2005).

How can ICTs and the portal help connect Canadian nurses and their organizations?



<b>EXPECTED RESULT #5: Nursing groups will be well connected.</b>		
	<b>Action Needed</b>	<b>Responsibility</b>
<b>5-A</b>	Increase the knowledge nursing groups have of each other and their opportunities for networking	Nurses/Nurse Leaders/Nursing Professional and Regulatory Organizations
<b>5-B</b>	Include nursing partners early in the development of the e-nursing strategy to obtain a broader perspective to guide the development of ICTs in nursing in Canada	CNA
<b>5-C</b>	Take advantage of ICTs as a means to promote collaboration (e.g., in creating new products, responding to issues, sharing resources)	CNA/Nursing Partners/Nurse Leaders/Nursing Professional and Regulatory Organizations
<b>5-D</b>	Take advantage of ICTs to collaborate with other nurses (i.e., online communities of nurses)	Nurses in all domains of practice/ Nurse Leaders

### **What can the portal do?**

The portal can support all of the above actions by being a connector and:

- ensuring access to all interested nursing groups in Canada;
- sharing information across these groups;
- inviting nursing organizations to contribute resources to the portal;
- establishing online communities of nurses for exchange among peers and with experts; and
- providing opportunities for nurses to access tools online that support provincial/territorial continuing competence requirements and, in future, nurses' registration and other processes.

### 6. ICTs will enhance the quality of nurses' work environments

*A quality practice environment has tools to help nurses save time, such as quick access to comprehensive client information and best practice guidelines.*

In today's health-care environment, nurses are experiencing increasing workloads, which are associated with lowered satisfaction and morale, higher rates of absenteeism and threats to quality of care (Canadian Nursing Advisory Committee, 2002). The quality of the environments where nurses work influences client outcomes, nurse satisfaction and the recruitment and retention of nurses. A quality professional practice environment is made up of many different and interrelated elements. In a quality practice environment, the appropriate number and mix of nursing personnel are available so that good client outcomes can be achieved. Nurses have access to the resources they need to provide high quality care. This could include opportunities for continuing education, in-service and mentoring so that nurses obtain and maintain the knowledge and skills needed for their practice.

A quality practice environment has tools to help nurses save time, such as quick access to comprehensive client information and best practice guidelines. Supportive environments have policies that encourage a good work-life balance (CNA, 2001b). Access to appropriate technology is a key element of quality work environments (*Building the future*, 2005a). Students and younger nurses will not want to remain in workplaces where ICTs are not used to capacity. Technology should make documentation of nursing care easier and save time. For example, some nurses have said they must record client immunization information in 10 separate locations on forms, reports and health records. Using technology to generate subsequent records after the nurse enters the first notation into an information system from a computer terminal would be much more efficient. EHRs have the potential to reduce the time nurses spend documenting care. Nurses need to be fully involved in designing EHRs to ensure that they fit with how nurses work. If technology is to liberate nurses, nurses must receive something in return for the time they spend recording or inputting data.

With the downsizing in the 1990s, nursing leadership, another important element in quality work environments, was eroded in many workplaces. Nursing management positions and clinical leadership positions such as clinical nurse specialists and nurse educators were reduced or eliminated (CNAC, 2002). Direct care nurses often felt, and continue to feel, isolated and unsupported. With the pending retirement of so many experienced nurses, novice nurses in the near future may be left without adequate support and supervision in the workplace (CNA, 2004d). Already it is difficult to recruit enough preceptors to assist with clinical education and supervision (see Part 2). Mentoring programs, in which experienced nurses work with their less experienced colleagues, contribute to the professional development of nurses. Mentoring traditionally occurs through face-to-face meetings but is now also taking place over distances using ICTs.

Finally, nurses could benefit from online resources that would make their personal lives easier. This could include access to bookstores, conference registration, travel information and even meal planning guides. Many health-care professionals have expressed the desire to have their professional and personal lives in a better balance (CNA & CMA, 2005).

**EXPECTED RESULT #6:  
ICTs will improve the quality of nurses' work environments.**

	<b>Action Needed</b>	<b>Responsibility</b>
<b>6-A</b>	Recognize and value nurses as knowledge workers (see also 2-A)	Nurses/Nurse Leaders/Employers/Unions
<b>6-B</b>	Access multiple sources of data and information to improve nursing practice, evidence-based decision-making and work-life balance (see also 2-C)	Nurses
<b>6-C</b>	Improve workload measurement systems and ensure that they are integrated with resource tools (e.g., staff scheduling) in all health-care sectors and link with documentation systems such as electronic health records (see also 3-C)	Nurse Leaders/Nurse Informatics Specialists/Vendors
<b>6-D</b>	Contribute to the development of documentation systems (e.g., EHRs) that work better for nurses (e.g., eliminating the need for duplicate documentation).	Nurse Leaders/Nurse Informatics Specialists/Vendors
<b>6-E</b>	Create opportunities for sharing information and knowledge online (e.g., online mentorship programs and meeting places for specialty groups)	Nurse Leaders/Nursing Professional and Regulatory Organizations

**What can the portal do?**

The portal will primarily support actions 6-B and 6-E by providing nurses with multiple sources of information online, including access to mentors and other nursing experts. It can also provide nurses with general types of information (e.g., links to travel and entertainment sites) that would make their lives easier and in turn support their nursing practice. The portal can address 6-A by publicizing success stories about nurse champions and positive practice environments.

*7. Canadian nurses will contribute to the global community of nursing*

Individual Canadian nurses and their professional and regulatory organizations have a history of contributing their professional and technical expertise and resources to support their international nursing partners. Through these partnerships, Canadian nurses share their clinical, administrative, educational, research, regulatory and policy expertise to strengthen the nursing profession internationally (CNA, 2005b). CNA has created partnerships with many national nursing associations over the past 25 years through funding from the Canadian International Development Agency. Nurses from other countries view Canadian nurses as important resources and they subscribe to our nursing journals, contact our experts, attend our conferences and visit our websites.

Partnerships go both ways, and Canadian nurses have learned a great deal about nursing practice from their international partners. Canadian nurses recognize that they cannot work in isolation and that they need to contribute to and learn from global resources. They work with international organizations such as the International Council of Nurses (ICN), the Commonwealth Nurses Federation and the World Health Organization. For example, Canadian nurses have supported ICN’s work on the ICNP® which will enable comparisons of data describing and defining nursing practice across various organizations and health sectors (ICN, 2004b). Canadian nurses work with organizations around the world that compile clinical practice guidelines and other types of research evidence and benefit from learning about initiatives and best practices in other countries such as those concerned with aboriginal health.

<b>EXPECTED RESULT #7: Canadian nurses will contribute to the global community of nursing.</b>		
	<b>Action Needed</b>	<b>Responsibility</b>
<b>7-A</b>	Link to international organizations to contribute to and benefit from global nursing knowledge	Nurses
<b>7-B</b>	Access information about other countries prior to study or practice abroad	Nurses
<b>7-C</b>	Access Canadian resources that support nursing practice	Internationally Educated Nurses
<b>7-D</b>	Promote the international work of nurses and nursing organizations in Canada such as CNA’s international health partnerships	Nurses/Nurse Leaders

### **What can the portal do?**

The portal will support all of the above actions by:

- connecting nurses with other nursing and health-care portals around the world;
- allowing open access to many areas of the portal to facilitate sharing of resources with nurses around the world; and
- publicizing the international work of CNA and other organizations and providing links to international health partners' websites.

## **Consultation Questions for Part 1: An E-Nursing Strategy for the Profession**

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Part 1 is concerned with an e-nursing strategy for the profession that addresses broad ICT needs, including the portal. Many of the actions identified to support the incorporation of ICTs in nursing are beginning already; others are well underway or being planned. Your input is needed to help CNA: (1) establish priorities in the actions needed to achieve the results identified in the strategy; and (2) focus its activities.

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The following results are expected when the e-nursing strategy is implemented:

1. Nurses will integrate ICTs into their practice to achieve good client outcomes.
2. Nurses will have the required information and knowledge to support their practice.
3. Human resources planning will be facilitated.
4. New models of nursing practice and health services delivery will be supported.
5. Nursing groups will be well connected.
6. ICTs will improve the quality of nurses' work environments.
7. Canadian nurses will contribute to the global community of nursing.

**A. What other results will be gained from successfully incorporating ICTs into nursing?**

**B. What 3-5 actions related to the portal would you recommend CNA act on over the next 2 years?**

**C. What 3-5 actions related to the integration of ICTs into nursing in general would you recommend CNA act on over the next 2 years?**

**D. What 3 actions by other partners should be acted on over the next 2 years?**

**E. Other comments**

## Part 2: An E-Learning Strategy Within the Portal

### Background

Exciting educational opportunities for Canadian nurses are happening online. Nurses in the emergency department at the Izaak Walton Killam Health Centre in Halifax participated in a web-based course to support a change in practice, the adoption of a new scale to assess level of client acuity (Curran-Smith & Best, 2004). Athabasca University offers both baccalaureate and master's programs in nursing online. Nurses at Mount Sinai Hospital in Toronto access electronic nursing resources on their desktops, including electronic full-text journals and a networked version of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) (Kendall et al., 2003). Given the explosion of health-care knowledge, nurses must rely on a broad range of information and education resources to support their clinical practice.

Electronic or e-learning, which has its roots in distance education, involves learning that takes place through the use of ICTs. E-learning methods may include the following.

- Computer-based training
- Web-based lectures and presentations
- Virtual classrooms in which learners are logged on to an online classroom environment at different times (asynchronous) or at the same time (synchronous) as the learning activities are happening
- Online access to:
  - just-enough, just-in-time information, advice, learning experiences and software tools to enable expert job performance;
  - information presented in organizational knowledge bases (FNIHB, 2003).

Canada is recognized as a world leader both in providing high quality nursing education programs and in developing and using ICTs. The nursing profession in Canada can capitalize on this expertise when developing the portal. CNA has brought together a working group of nurse educators and experts in electronic learning to begin to build the e-learning strategy for the education component of the portal. This section presents a brief overview of the environment in which the strategy is being developed and an outline of the preliminary work on the strategy.

### Current Trends in Nursing Education in Canada

Several developments in nursing education will have an impact on the strategies identified for the portal. In most provinces a baccalaureate degree is now required for entry to practice as an RN. Increasing numbers of nurses are pursuing graduate education at the master's and doctoral level. In 1981, 10.1 per cent of RNs employed in nursing in Canada reported a baccalaureate degree as the highest level of education

attained in nursing (CNA, 1993). By 2003, this percentage had risen to 28.6 per cent. The percentage of RNs with master's preparation increased from 1.6 per cent in 1999 to 2.1 per cent in 2003 (CNA, 2004a). In the academic year 2003-2004, approximately 5,535 students were enrolled in post-RN baccalaureate programs, representing a large group of continuing education and, potentially, online learners (CNA & the Canadian Association of Schools of Nursing [CASN], 2005a).

Nurses are becoming knowledgeable and skilled in the use of technology and are demanding educational programs they can access wherever they are and that fit with their work and personal commitments. Nursing education programs need to be as flexible as possible while maintaining high quality. Flexibility in the delivery of educational programs is required at all levels – baccalaureate, master's, doctoral, specialty and continuing education (CNA & CASN, 2004a). Canadian universities and colleges are responding to nurses' needs for programs that are offered either entirely or in part through distance education using ICTs. Several centres are undertaking significant work in e-learning, including Athabasca University, Dalhousie University, University of Calgary, University of Ottawa (includes French language programming) and the University of Victoria.

Continuing education programs for RNs, RPNs and LPNs are currently offered by universities and colleges, health-care facilities, nursing professional organizations and private vendors. Such programs may be available for nurses in areas of practice involving many nurses, but not for nurses in fields in which there are fewer nurses. Nurses in smaller provinces and in the territories may be disadvantaged when it comes to access to continuing education because it is in the larger provinces that the majority of courses are offered. There is a need for co-ordination to ensure that all Canadian nurses have access to continuing education. Flexibility is also needed in continuing education programs as the nursing workplace now includes four generations of nurses who have differing attitudes to life-long learning, the use of technology and other aspects of professional practice (Boychuk Duchscher & Cowin, 2004).

In rural and remote Canada, nurses need a broad range of knowledge and skills in work settings where practice is often variable and complex and where there are few resources and little support. Nurses working in rural and remote settings, including those working in aboriginal communities, have an urgent need for professional supports and continuing education using ICTs (MacLeod, Kulig, Stewart, & Pitblado, 2004).

Education is needed to support new models of nursing practice and health services delivery that are evolving in response to pressures within the health-care system. For example, nurses who provide tele-triage, one of the telehealth services, require basic and continuing education programs to prepare and support them for their role. Interprofessional and interdisciplinary collaboration are key ingredients of primary health care and new models for many professions. Health-care professionals, including nurses, can be supported through shared education as well as with tools such as EHRs.

Recruiting preceptors is increasingly challenging. Preceptorship pairs a nursing student or new graduate with an experienced nurse to facilitate the integration of nursing theory with clinical practice. The shortage of nurses, the increased

*Nurses working in rural and remote settings, including those working in aboriginal communities, have an urgent need for professional supports and continuing education using ICTs.*



complexity of care and workload, and the lack of rewards for senior nurses accepting the responsibilities of being a preceptor are some of the issues that threaten this important model for clinical education and supervision (Ryan-Nicholls, 2004). ICTs could lighten the load of preceptors by providing access at the point of care for preceptors and students or new graduates to a variety of clinical information, resources such as assessment guidelines, video clips of nursing skills and health-care facility policies and procedures.

There is pressure on undergraduate programs to expand the number of seats in order to educate more nurses for the workforce, baccalaureate as entry to practice is becoming the norm, and the number of graduate programs is increasing. There are currently not enough doctoral students to meet the needs of schools across Canada both for new faculty and to fill the gap created by those who will soon retire. In 2003, 42 per cent of faculty members at Canadian schools of nursing were 50 years and older (CNA & CASN, 2005b). In addition, it has become increasingly difficult to find clinical placement opportunities for nursing students.

## **Issues and Challenges Related to the Education Component of the Portal**

### *E-learning readiness*

The successful implementation of an e-learning strategy to support nurses and their practice through the portal hinges in part on the readiness of nurses to adopt ICTs and use them on an ongoing basis to access the resources they require. Readiness involves nurses having access to ICTs and the competencies to use the technologies. Recent nursing graduates are likely more familiar with ICTs than their colleagues who have been in the workforce longer. Young technology-savvy people bring an expectation of e-learning with them into the workplace (Murray, 2001). Issues of access and competency are discussed in more detail under expected results #1 and #2 in Part 1.

### *Life-long learning and continuing competence*

To keep current in their area of practice, nurses must engage in life-long learning and reflective practice and integrate learning into their nursing practice (CNA & CASN, 2004b). E-learning is becoming an important mechanism to support life-long learning. It is not enough simply to provide learning opportunities; nurses need time to take advantage of them. Continuing professional development must be recognized by employers and others as part of “the cost of doing business” in health care (CNA & CMA, 2005).

*Continuing professional development must be recognized by employers and others as part of “the cost of doing business” in health care.*

In an increasing number of provinces and territories, the nursing regulatory body is mandated by legislation to develop, maintain and monitor a continuing competence program for its members. Nursing regulatory bodies have collaborated to develop a flexible national approach to continuing competence to maintain high standards of nursing care across the country and to make it easier for nurses to move across provincial and territorial borders. Continuing education has been one of the most common methods to date through which nurses maintain their competence (CNA, 2000).

### *Practice support*

ICTs allow for learning to be more a part of work and support “just-enough, just-in-time learning” delivery. In the workplace, nurses are often looking for “bites” or “chunks” of learning (called “learning objects” in the information technology world), often focused on skill development. Using ICTs, nurses are able to access multiple sources of information to support evidence-based practice, including digital libraries, online journals, clinical practice guidelines,<sup>12</sup> experts and discussion groups. Digital libraries contain collections of documents, databases, journals, publications, CD-ROMs and other resources that can be accessed through a central location via the Internet. Many nurses need assistance in using these online resources effectively. In general, such support is difficult to find.

*ICTs allow for learning to be more a part of work and support “just-enough, just-in-time learning” delivery.*

Often there is a limited amount of clinical education available at the point of care, whether that is a hospital unit or a community setting; however, the possibilities are endless. A nurse on a medical unit could use his personal digital assistant (PDA) to view a short educational segment on the heparin lock procedure for care of clients with central venous catheter lines. In a northern nursing station, a new nurse might access a short video online that presents strategies for caring for a client with dementia in an isolated setting. Two nurses at a long-term care facility might use the computer terminal in the nursing station to learn about values around end-of-life issues for people from different cultures. They could then discuss how to apply this new knowledge with particular clients on their unit. Nurses want to keep learning. Nurses who have access to professional development opportunities are generally more satisfied with their jobs.

The results of the Canadian Nurses Portal Needs Survey will be used to ensure that the portal will meet the educational needs of nurses across the country. (See Part 1 under expected result #1)

Despite the advantages of e-learning, organizations may face barriers to implementing e-learning in the workplace. Barriers include:

- cost of developing, purchasing and maintaining e-learning programs;
- lack of time for employees to devote to workplace learning and for employers to develop and maintain e-learning programs; and
- inability to find appropriate content or content suitable for an e-learning environment.

Ways to overcome these barriers have been identified such as building a learning culture within the organization and partnering with other businesses and educators to save time and money and share expertise (Murray, 2001).

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<sup>12</sup> See discussion on clinical practice guidelines under expected result #2 in Part 1.

### *New technologies*

Nurses have become familiar with many different ICTs, such as e-mail, the Internet, chat rooms, audio and videoconferencing. Other technologies have the potential to strengthen the effectiveness of e-learning.

- “Rich media” uses moving images (video and animation), graphics, text and sound elements, resulting in content that is more dynamic (K&J Consulting Services, Inc., 2005).
- Virtual reality is a technology that produces tools that simulate real world situations (e.g., inserting intravenous lines or conduct assessments on virtual anatomical models) (Simpson, 2002). Use of simulation technology could expand clinical educational experiences (*Building the future*, 2005a).
- 3D virtual instructors can demonstrate procedures, answer questions and monitor students’ performance, helping to bridge the gap between machine and student (Jiman, 2002).
- Blogs<sup>13</sup> are forums in which, for example, clinical educators encourage students to post entries about their clinical experience. Students can read each other’s blogs as part of group work or electronic discussions (Maag, 2005).
- Wikis, a newer technology, take blogs a step further by increasing interactivity and allowing students to edit each other’s work (Kinzie, 2005).
- Mobile technology involving equipment such as cellular telephones and PDAs allows students to communicate with their teachers in the university from off-site locations by delivering messages and digital photos via the mobile device. As well, teachers can use this technology to supervise at a distance (Alamäki & Seppälä, 2002).

What about the future? Perhaps hand-held or wearable computers will combine the present functions of telephones, web browsers and audio and visual recorders and players that will allow nurses to access more information. Nurses may be able to carry out real conversations with their PDAs that will respond to their verbal requests. With new display technology, nurses may be able to interact with someone who appears to be right across the table but in fact is physically located in another country (Williams, 2002).

### *The role of educators*

The e-learning environment has the potential to increase collaborative work between learners and educators as the role of the educator changes from “expert” to “facilitator” (Hootstein, 2002; Woodill, 2004). Others have described this change as a move from “teacher push” to “learner pull” (The Learning Federation, 2002).

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<sup>13</sup> The term *blog* is a contraction of *web* and *log*. “Blogs are best thought of as a way to present information to the world or to a select group. The traditional blog is written in the form of an online diary and includes the writer’s thoughts on a subject, links to interesting information and often pictures. The writer may post a new item several times a day, or a few times a year. ... Traditionally blogs have been created by one author and represent one author’s views, although there are some group blogs” (Wood, 2005).

Educators, as facilitators, have four aspects to their role. As *instructors*, they serve as consultants, guides and resource providers and foster a learner-centred environment by, for example, providing timely feedback through e-mail correspondence. As *social directors*, educators help learners work together and develop a sense of community by encouraging a high degree of interactivity and participation with tools such as e-mail, listservs, newsgroups, chat rooms and conferencing. Educators in the *manager* role take on organizational responsibilities such as developing course study guides. As *technical assistants*, they help learners become comfortable with systems and software (Hootstein, 2002).

Current educators will need support in adopting these roles and will benefit from working in partnership with vendors, software engineers and people who can provide technical assistance.

#### *Assessing e-learning opportunities*

With all the new technological developments, it seems difficult to believe that, according to some people, e-learning so far has failed to live up to its potential. One reason for this is the boredom factor as “there is usually nothing to do but read, look and take a multiple choice test. There are usually no instructional activities that deeply engage the mind of the learners and ‘interactivity’ mostly consists of turning from one screen to another” (Woodill, 2004, p. 4).

As with more traditional learning, it is important to understand the underlying values and philosophies in e-learning. One view of learning is the constructivist philosophy. In this view, it is believed that people learn better through experiences that are meaningful and relevant to them and which they themselves can direct. These ideas should be taken into consideration when designing e-learning activities and programs (Doiron & Isaac, 2002).

Some experts recommend that e-learning incorporate valuable aspects of off-line learning such as interaction among and between students and teachers and support for this interaction (Murray, 2003). Others see the value in blended learning in which learning takes place through a combination of methods such as face-to-face classroom learning, online e-learning and self-directed learning.

Determining the quality of learning objects, educational courses and programs offered online is a challenge for nurses, for administrators who have to select and fund education programs for nursing staff and for educators who are providing or plan to provide e-learning opportunities. This challenge stems from the sheer volume of courses available, unfamiliarity with the way they are delivered and lack of information about the educational institution offering the program (ICN, 2004a).

In selecting online courses, nurses need to learn about areas such as course content, quality of the content, expertise of the author, course format, length of course/amount of content, evaluation methods and consistency with learning styles. Some work has been done in identifying criteria for each area. For example, under course format, nurses could consider whether the course includes Internet links, discussion forums or any electronic presentation to enhance communications. They could determine if vignettes requiring critical thinking, case studies or other decision-making activities are included (Stoten, 2004).

### *Evaluation of e-learning*

“While the word e-learning automatically raises expectation of learning, learning only takes place under the right conditions” (Woodill, 2004, p.6). Research on how learners view online education is increasing. While many nurses enrolled in a web-based post-diploma course found the experience highly satisfactory, there can be challenges such as insufficient time and access to computers in the workplace. To make the learning experience positive, nurses require advanced preparation in terms of computer skills and information about hardware and software. They also benefit from ongoing interaction with their teachers and support from their employers (Atack & Rankin, 2002).

It is not yet certain if the use of electronic media actually leads to similar or better learning outcomes as those obtained in traditional classroom face-to-face learning situations. The effectiveness of e-learning in many fields has tended to be measured in terms of the enthusiasm and promise it generates, rather than gains in academic performance or overall intellectual growth (Whelan and Plass, 2002).

Research studies comparing the outcomes of online and face-to-face methods are beginning to appear in the nursing literature. There were no differences in learning outcomes, as measured by instructor-developed examinations, in graduate nursing students who took a pharmacology course either via a web-based course or in the classroom (Bata-Jones & Avery, 2004). There were also no significant differences in end-of-course evaluations and course grades between students enrolled in a diploma-to-baccalaureate degree program who took the course online and those who attended classroom sessions (Zucker & Asselin, 2003).

The promise of e-learning is great. It has the potential to increase access to learning, to make learning more individualized, to take advantage of new technologies that engage the learner and to stimulate collaboration among learners and between learners and educators (Whelan & Plass, 2002). More rigorous research on the outcomes of e-learning is essential to ensure that e-learning results in increased knowledge and skill.

## **Building the E-Learning Strategy for the Education Component of the Portal**

The education working group began the work of developing the strategy by clarifying expectations for the education component of the portal and identifying a preliminary list of nurses’ education needs and the programs, tools and environment required to address them.

### *Clarifying expectations*

The portal will:

- provide nurses direction to existing educational resources that meet needs;
- provide nurses with educational offerings developed specifically for the portal (e.g., special real time lectures); and
- provide opportunities for connections among communities of nurses.

To meet these expectations, CNA will need to work to clearly identify the educational needs of nurses. CNA will need to identify gaps in meeting these needs, make these gaps known to potential partners and invite partners to work with the portal team to fill in the gaps.

The portal will bring added value to the education of nurses by making education more accessible. It is anticipated that the portal will be a cost-effective way to deliver education. The portal will be a centralized first place where nurses will go to and it will direct users to an array of resources. The portal will allow for:

- sharing of information (e.g., best practices, just-in-time information such as health alerts);
- connecting people (e.g., nurses with each other, educational institutions with clinical practice specialists);
- co-ordinating efforts in the education field to maximize expertise, reduce duplication and better identify gaps;
- supporting a broad range of audiences (e.g., nurses re-entering the workforce, new graduates, “float” nurses; internationally educated nurses; nurses working with clients and families to access and appraise online information; employers, nursing professional and regulatory bodies);
- accommodating different learning styles and time limitations; and
- cost savings through economies of scale.

The vision for the education component of the portal in ten years includes the following:

- The use of the portal has increased within the nursing community; nurses think of the portal first as the place to go for information and practice support.
- Communities of nurses across Canada are users of the portal.
- Educational resources from institutions and practising nurses are shared through the portal – everyone contributes to and accesses learning object repositories.
- Nurses are valued as knowledge workers.
- Continuing education is valued by nurses, employers, the public and governments.
- Portal technology permits personalization to address individual needs and allows nurses to go in and out of educational programs as needed.
- Wireless technology is everywhere.
- Access to the portal is expanded to the international community.
- The portal is a site for interdisciplinary and interprofessional collaboration.
- Nurses have hardware and software at the point of care to access the portal.

- Digital divides in various sectors (e.g., urban/remote, developed/developing countries) are reduced.
- Learner assessment and evaluation is done differently, not relying on paper and examinations.
- Human interaction in learning is still valued.

#### *Identifying information and education needs*

In considering what initiatives could be undertaken on the portal, the following **needs** were identified:

- educational activities to satisfy requirements for re-certification in CNA specialty areas
- in-service education, both generic and specific to the needs of particular practice settings
- competencies (integrated knowledge, skills, judgment and attributes) required of nurses in any setting such as documentation, communication, leadership
- evidence-based research
- clear understanding of the health-care system (e.g., “primary care” versus “primary health care”)
- diversity issues (e.g., culture, ethnicity, religion, gender, relationships among professions, organizational culture)
- non-traditional health care (mixing “western” and “non-traditional” approaches) and evaluation of these approaches
- critical appraisal of research and what is found on websites (with links only to credible evidence-based sites)
- guide to assessing applicability of best practice guidelines to one’s own practice
- rights and responsibilities (e.g., labour rights, working environment)
- culture of safety and risk management
- learning styles and teaching strategies

There is a need for **educational products** such as these:

- self-assembled learning packages for specialty certification
- up-to-date inventory of programs for nurses at educational institutions
- computer skills training
- generic, general interest and career material (e.g., courses on stress management and building portfolios)
- list of clinical experts willing to be contacted

- online databases such as publications, online journals, best practice guidelines, *CPS*
- analyses of health agendas of political parties
- education on ethical issues

**Tools** such as the following are required:

- tutorial providing basic training in computer skills and online applications
- 24-hour help line
- educators' tools to set up online programs (e.g., WebCT, Blackboard)
- software applications that:
  - give users what they need quickly;
  - provide immediate feedback to encourage the user to continue;
  - incorporate simple greetings;
  - “remember” users, ensuring that they can enter and exit a program as required and do not need to start over each time if work is interrupted;
  - remind users of most recent requests;
  - include backup systems so programs are not down for long periods of time;
  - incorporate e-mail capabilities for forwarding sites, articles etc.; and
  - address language capabilities of the user, including language of user and appropriate level of language.

For users to effectively access the educational products and tools, **the environment surrounding the education component of the portal** would include the following:

- encouragement of nurses to be inquiring by affording nurses opportunities to share with and receive feedback from colleagues
- elimination of barriers to nurses' use of Internet (e.g., suspiciousness of Internet use by some managers)
- recognition of the users' need for privacy (e.g., through secure access)
- valuing of the Internet as a professional tool
- heavier weighting to the knowledge component of what nurses do (need to convince employers and nurses of this)
- recognition of draining nature of nurses' work, especially shift work
- timely response to questions posted by nurses
- acknowledgement that continuing competence is an ongoing part of practice, not just a “tick the box” exercise



- recognition of work and professional boundaries, including the different perspectives among various generations of nurses that may lead to conflict on the unit if not acknowledged

*Preliminary action plan*

The education working group identified a preliminary set of actions required to ensure successful implementation of the education component of the portal. Some activities are already underway, others are being planned.

<b>PRELIMINARY ACTIONS for implementation of the education component of the portal</b>		
	<b>Action Needed</b>	<b>Results/Proposed Activities</b>
<b>1.</b>	<p>a. Confirm the audiences for the educational resources on the portal</p> <p>b. Develop campaigns to reach selected audiences</p>	<p>a. Primary audience is Canadian and international nurses. Other, or more specific, audiences include the following:</p> <ul style="list-style-type: none"> <li>• major employers, including academic health science centres</li> <li>• unions</li> <li>• governments</li> <li>• nursing professional and regulatory bodies</li> <li>• executive nurses</li> <li>• national/provincial/territorial nursing networks</li> <li>• Canadian Association of Schools of Nursing and schools of nursing</li> <li>• Canadian Health Services Research Foundation</li> <li>• Public Health Agency of Canada</li> <li>• private industry (e.g., software, textbooks, etc.)</li> </ul> <p>b. Engage “early adopters” first (e.g., nurses who already use ICTs for education and who embrace life-long learning).</p> <p>Get other groups on side such as informed opinion leaders within organizations, nurse executive leaders, educators and students within educational institutions and clinical facilities, administrators and employers, nursing regulatory bodies, national nursing interest and specialty groups, and nursing unions.</p>

2.	Establish partnerships and criteria for selecting partners	<p>Criteria could require partners to:</p> <ul style="list-style-type: none"> <li>• Be organizations, not individuals, who participate through contractual arrangements</li> <li>• Bring something tangible (e.g., funding, expertise) to the partnership</li> <li>• Benefit from participation in the portal</li> <li>• Participate in decision-making about the educational content of the portal, but not on policy direction.</li> </ul>
3.	Identify priorities of nurses for education online	Develop criteria and processes for selecting what education needs will be addressed through the portal. This will involve assessing the needs of nurses and employers.
4.	Develop inventories of currently available online educational offerings	Ongoing
5.	Develop criteria for selection of educational offerings to be included in or linked to the portal	Ongoing
6.	Receive permission to provide links from the portal to other sites	Ongoing
7.	Identify opportunities for the portal to contract for continuing and specialty education programs from external sources	Ongoing
8.	Actively seek funding for start up of education component programs	Ongoing

## **Consultation Questions for Part 2: An E-Learning Strategy Within the Portal**

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Part 2 is concerned with an e-learning strategy that is specific to the education component of the portal. Some identified actions are already underway; others are being planned. Your input is needed to help CNA: (1) establish priorities in the actions needed to develop the education component of the portal and (2) focus its activities.

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- A. What will be the main advantages of the education component of the portal for nurses?**
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- B. What are the most important learning needs that the portal could address?**
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- C. What are the most important educational products and tools to offer online?**
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- D. What will be the main barriers for nurses in taking advantage of the education component of the portal?**
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- E. Other comments**

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## Appendix A: Working Group Members (2005)

### E-Nursing Strategy Working Group

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## Appendix B: Glossary of Acronyms and Definitions

Acronyms	
CASN	Canadian Association of Schools of Nursing
CeBI	Canadian e-Business Initiative
CIDA	Canadian International Development Agency
CIHI	Canadian Institute for Health Information
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CMA	Canadian Medical Association
CNA	Canadian Nurses Association
CNIA	Canadian Nursing Informatics Association
CNPP	Canadian Nurses Portal Project
CPhA	Canadian Pharmacists Association
CRNE	Canadian Registered Nurse Examination
EHR	Electronic Health Record
FNIHB	First Nations and Inuit Health Branch
HIDH	Health and Information Highway Division
ICN	International Council of Nurses
ICT	Information and Communication Technology
IDRC	International Development Research Centre
IEN	Internationally Educated Nurse
ISO	International Organization for Standardization
OLT	Office of Learning Technologies
NP	Nurse Practitioner
PDA	Personal Digital Assistant
RCN	Royal College of Nursing

RNAO	Registered Nurses' Association of Ontario
SARS	Severe Acute Respiratory Syndrome
SIGN	Scottish Intercollegiate Guidelines Network
UN	United Nations
WG	Working Group

<b>Definitions</b>	
Applications	Software programs developed to meet specific user needs, such as MS Project, PowerPoint or a Palm-based patient record system (CNA, 2004b).
Broadband	A high-capacity Internet connection, capable of supporting full-motion, real-time audio and video applications (Industry Canada, 2005).
Clinical Practice Guidelines	Systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances (SIGN, 2004). Clinical practice guidelines are also known as best practice guidelines.
Competency	The integrated knowledge, skills, judgment and attributes required of a registered nurse to practise safely and ethically in a designated role and setting.
Continuing Education	Any program or course or conference beyond the level of education that is required for entry into the profession of nursing. It consists of experiences undertaken by nurses to enhance competencies (knowledge, skills, attitudes and judgments) related to specific areas of practice (CNA, 2001a).
Data	Discrete observations that are not interpreted, organized or structured (e.g., age) (CNA, 2001c).
Digital	Information expressed in binary patterns of zeros and ones. Information in digital form can be distributed, copied, stored or manipulated in many different ways without loss of quality (Sookman, 2003, p.101).

Digital Divide	The division that exists between those who have integrated Information and Communication Technologies (ICT) into their lives and others, who for various reasons are least likely to have access to computers and to benefit from ... technology (Adapted from OLT, 2003).
Digital Libraries	Collections of documents, databases, journals, publications, CD-ROMs and other resources that can be accessed through a central location via the Internet (CNA, 2004b).
Distance Learning	Where learning and teaching towards specific outcomes, professional and/or academic takes place regardless of time and geography of the learner and the teacher (ICN, 2004a, p. 5).
e-Commerce	Electronic exchange of goods and services via the Internet (CNA, 2004b).
e-Learning Tools	Various software tools and applications that support online learning activities such as e-books, clinical guidelines, simulated exams, databases, web conferencing and discussion forums (CNA, 2004b).
Electronic Health Record	A longitudinal collection of personal health information of a single individual, entered or accepted by health-care providers, and stored electronically. The record may be made available at any time to providers, who have been authorized by the individual, as a tool in the provision of health-care services. The individual has access to the record and can request changes to its content. The transmission and storage of the record is under strict security. (Federal/Provincial/Territorial Advisory Committee on Health Infostructure cited in CNA, 2002a).
Emergency Alerts	Warnings or advisories of real or potential harm or the need to be vigilant or take action to prevent adverse effects (CNA, 2004b).
Emergency Preparedness Tools	Resources and tools available to assist in dealing with emergencies such as natural disasters, accidents, and criminal or terrorist acts (CNA, 2004b).

Information	Data that has been interpreted, organized or structured to provide meaning to the data (e.g., prevalence of patient falls by nursing unit by month – this year compared to last year). Also, the generic term for the separate concepts of data, information and knowledge (CNA, 2001c).
Information and Communications Technologies (ICTs)	Technologies used to handle information and facilitate communication.
Knowledge	The synthesis of information to identify relationships that provide further insight to an issue or subject area (CNA, 2001c).
Nursing Informatics	Nursing informatics facilitates the integration of data, information and knowledge to support patients, nurses and other providers in their decision-making and this support can be accomplished using information structures, information processes and information technology (Staggers & Thompson, 2002, p. 260).
Portal	A single access gateway or entry point to a collection of resources and services, usually via the Internet (CNA, 2004b).
Telehealth	The use of information and communications technology to deliver health and health-care services and information over large and small distances (Industry Canada cited in CNA, 2005d).
Virtual	A word used to describe a scenario where electronic means are used to simulate a traditional (physical) way of doing things (Flexibility Ltd., n.d.).

## Appendix C: Selected Federal Government E-Government and E-Health Initiatives

### E-Government

The main pillar of the e-government strategy is the **Government On-Line Initiative** that aims to “use information and communication technology to provide Canadians with enhanced access to improved citizen-centred, integrated services, anytime, anywhere and in the official language of their choice” (Government of Canada, 2004b). It is expected that by 2005 more than 130 of the most frequently used government services will be available on the Internet (Government of Canada, 2004a). Of the 63.41 per cent of the Canadian population who are regular Internet users, 79 per cent have used e-government (Gordon, n.d.).

Canadians can access federal government services through the **Canada Site** portal ([www.canada.gc.ca](http://www.canada.gc.ca)). In addition to links to department and agency websites, the site includes government announcements, online forms and services and government contacts. Through the **Aboriginal Canada Portal** ([www.aboriginalcanada.gc.ca](http://www.aboriginalcanada.gc.ca)), six national aboriginal organizations and several Government of Canada departments and agencies are working together with other partners to make progress in increasing connectivity for Aboriginal Peoples in Canada and closing the digital divide. The site is a gateway to a vast array of information about health, housing, business, employment, communities, culture and other topics.

In 1996, the federal government established the **Office of Learning Technologies** (OLT) within Human Resources Development Canada (now Human Resources and Skills Development Canada) as a partner in building a culture of lifelong learning. The OLT works to raise awareness of the opportunities, challenges and benefits of technology-based learning and to act as a catalyst for innovation in the area of technology-enabled learning and skills development (Office of Learning Technologies, 2003).

**CANARIE Inc.** is a not-for-profit corporation funded by Industry Canada to “facilitate the development and use of next-generation research networks and the applications and services that run on them” (CANARIE, 2004). CA\*net 4, Canada’s research and innovation network, was developed and is operated by CANARIE. One key application program of the network is e-learning, a program which aims to encourage the development and use of broadband applications in education and training. More than 130 universities and colleges and 12 hospitals are connected to CA\*net 4. An example of a recent project in e-learning supported by CANARIE is the development of a Pan-Canadian Health Informatics Collaboratory, an interactive virtual learning environment where professionals, educators and students meet online to share course materials and work and learn in teams (CANARIE, 2004).

CANARIE has recommended that a pan-Canadian e-learning strategy is needed to obtain the maximum benefits of e-learning efforts and has proposed the following vision to underpin the strategy.



An e-learning society is one in which:

- **anytime, anyplace, lifelong learning** is facilitated by widely accessible e-learning and supports a civil society;
- **high quality e-learning content** is universally available through shared repositories overcoming the barriers of opportunity, resource capacity, and accessibility;
- **ubiquitous broadband networks**, complete with appropriate tools, applications and standards, provide access to rich e-learning opportunities for all Canadians; and
- **Canada is internationally recognized** for its excellence in e-learning technologies, expertise and standards-based content (CANARIE, 2002).

Federal government departments and agencies such as **Industry Canada**, the **International Development Research Centre** and the **Canadian International Development Agency** (CIDA) use their experience and expertise to help developing countries realize the potential of ICTs for economic, social and political development (Public Works and Government Services Canada, 2003).

## E-Health

The **Health and Information Highway Division** (HIDH) is Health Canada's focal point for e-health issues. It is working to promote the development of a pan-Canadian infostructure that will avoid a cross-country patchwork of health-care solutions and ensure strategic deployment of resources.

The federal government is involved in the development and maintenance of several health portals. The **Canada Health Portal** ([www.chp-pcs.gc.ca](http://www.chp-pcs.gc.ca)), which is situated on the Canada Site, is a gateway to access authoritative and trusted information on health matters and services from multiple sources. The Public Health Agency of Canada supports the **Canadian Health Network** ([www.canadianhealthnetwork.ca](http://www.canadianhealthnetwork.ca)), a national, non-profit, bilingual web-based health information service on 27 key health topics and population groups. To ensure that information is timely, accurate and relevant, resources are evaluated through a quality assurance process.



# Supporting the Professional Practice of Canadian Nurses Through Information and Communication Technologies

## **ANALYSIS OF RESPONSES TO CONSULTATION DOCUMENT**

(Canadian Nurses Association, February 2006)



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## Introduction

The Canadian Nurses Association (CNA) has received funding from the First Nations and Inuit Health Branch of Health Canada for a two-year project (2004-2006) to develop a nursing portal to support the ongoing competence and professional development of nurses in Canada. The Canadian Nurses Portal will become the primary Internet site for nurses in Canada as they increasingly integrate evidence into practice for better health outcomes.

In the fall of 2005, CNA prepared a draft document entitled *Supporting the Professional Practice of Canadian Nurses Through Information and Communication Technologies*. The document describes the many partners and strategies that can help shape a supportive environment for nurses to take full advantage of the portal. CNA circulated this document in English and French to a wide range of stakeholders, seeking their feedback on the strategies. CNA also asked them to help identify priorities for CNA action and actions for their own organizations. Respondents were provided with consultation feedback questions for the two parts of the document: Part 1 (An E-Nursing Strategy for the Profession) and Part 2 (An E-Learning Strategy Within the Portal).

Feedback was received from 15 organizations and individuals, including:

- six CNA member colleges and associations;
- two provincial/territorial governments;
- two regional health authorities;
- one provincial health information organization;
- the Canadian Nursing Informatics Association;
- the Canadian Nursing Students' Association;
- the Canadian Association of Schools of Nursing; and
- one nurse expert in nursing informatics.

An additional territorial government indicated it was unable to respond to the consultation questions but expressed its support in principle for the idea of improving access to knowledge and of enabling education for the health workforce. With the exception of one response in French, all feedback was received in English.

This paper presents an analysis of the input received from the consultation.

## **Analysis of Responses to Consultation Questions for Part 1: An E-Nursing Strategy for the Profession**

The consultation document began by presenting for respondents the results expected when the e-nursing strategy is implemented. Specific questions followed.

The following results are expected:

1. Nurses will integrate ICT into their practice to achieve good client outcomes.
2. Nurses will have the required information and knowledge to support their practice.
3. Human resources planning will be facilitated.
4. New models of nursing practice and health services delivery will be supported.
5. Nursing groups will be well connected.
6. ICTs will improve the quality of nurses' work environments.
7. Canadian nurses will contribute to the global community of nursing.

### **Other Expected Results From Successful Incorporation of ICTs Into Nursing**

Most respondents elaborated on the expected results delineated in the consultation document rather than proposing new outcomes. There was a great deal of support for expected results #1 (*Nurses will integrate ICTs into their practice to achieve good client outcomes*) and #2 (*Nurses will have the required information and knowledge to support their practice*). Respondents emphasized the importance of nurses having timely, accessible, evidence-based information to improve client outcomes and patient safety.

Others suggested that, in addition to improved client outcomes, the successful incorporation of ICT into nursing will benefit the profession and the health-care system as a whole. Potential benefits include the following:

- Nurses will be on par with other health-care professionals in terms of their informatics competencies, thereby enabling them to be key players in the development and implementation of IT initiatives (e.g., electronic health records) in clinical practice settings.
- The strategy will produce a stronger sense of the skills needed to strengthen nursing and encourage innovation.
- Nurses will become leaders in the development of this technology.
- As nurses become expert users of ICT, they will enhance the public image of nursing and increase public confidence.

- Nurses employed in domains other than practice will also have access to the types of information and knowledge they require to contribute to health system effectiveness.
- Communication, collaboration and health information sharing among health-care professionals will improve.
- More opportunities will emerge to work in partnership with professional academic and clinical organizations to assist in knowledge acquisition, sharing, development and distribution.

A number of respondents identified the potential benefits for nursing research, including providing nurses with the opportunity to research topics of interest, stimulating new research and supporting knowledge exchange. Respondents also mentioned the dissemination of research literature and diffusion of findings into practice. One respondent cautioned that expected result #6 (*ICTs will improve the quality of nurses' work environments*) is too idealistic.

## **Recommended Portal-Related Actions for CNA Over the Next Two Years**

The majority of actions recommended for CNA focused on five areas: marketing the portal, advocating for access to the portal, ensuring sustainability of the portal, developing partnerships and implementing the portal.

### *Marketing the portal*

CNA should develop a plan to market the portal and its benefits to nurses, employers, governments, educators and others. For example, many nurses at the point of care are not aware of the initiative. CNA needs to explain clearly the uniqueness of the portal in relation to other systems to which nurses currently have access. CNA must also identify financial partners and clarify whether the costs of accessing the portal will be the responsibility of nurses through their associations or individually. CNA needs to develop a compelling and realistic vision for the project to create broad understanding and buy-in. The portal will continue to improve as a product as more people and groups begin to use it.

### *Advocating for access to the portal*

CNA should work with employers, governments, educational institutions and others to ensure that all nurses, including those in rural and remote areas and internationally educated nurses, have access (including broadband access) to the portal. For example, employers must value this initiative to provide funding for infrastructure, equipment, training and required privileges for nurses to access the portal. The portal may require additional software or executable files to be downloaded and installed in workplace PCs (hospital networks and firewalls may not allow access to the portal).

### *Ensuring sustainability of the portal*

CNA should develop a sustainability plan for the portal to ensure ongoing funding and support to keep it efficient, current and effective. Once the portal is introduced, nurses will not want to give it up for lack of funding.

### *Developing partnerships*

CNA should facilitate collaboration and partnerships with various organizations (e.g., educational institutions, content providers). Respondents considered it important to involve partners early in the e-nursing strategy. CNA should establish a clearly articulated product line and corresponding client base (e.g., those nursing groups that will be interested in participating in the portal).

### *Implementing the portal*

CNA should ensure that there is an evaluation plan, provide opportunities for feedback on the portal and consider pilot sites and demonstration projects to help evaluate the portal's ability to better inform nurses.

Other recommended actions for CNA included:

- promoting nursing informatics competencies among the competencies required for entry-to-practice and continuing competence;
- developing trust-building measures such as policies regarding security of information and privacy; and
- cataloguing available nursing care data and information sites and databases to identify any gaps in the information requested by nurses.

Several respondents did not identify actions for CNA but rather specified what content should be available on the portal (see Most Important Education Products and Tools to Offer Online).

## **Recommended Actions for CNA Over the Next Two Years Related to the Integration of ICTs Into Nursing in General**

The majority of recommendations related to the integration of ICT into nursing in general focused on three CNA actions.

- Advocate for nurses' access to ICT and the resources required to integrate ICT into nursing practice. This action should include lobbying governments and employers to ensure that nurses have the required hardware and software, access (including broadband access) to the Internet, education on nursing informatics and time and support to use ICT in the workplace, including at the point of care.
- Support the development and implementation of nursing informatics competencies as among the competencies required for entry-to-practice and continuing competence.
- Advocate for the involvement of nurses in decision-making about information technology and information systems.



Other recommended actions for CNA included the following:

- Promote the recognition of ICT as a tool of professional nursing practice.
- Promote nursing informatics in the nursing community and educate nurses on the benefits and use of ICT.
- Seek partners who are working on similar and complementary initiatives (e.g., Centre for Health Evidence at the University of Alberta), planning and implementing electronic health records (e.g., Canada Health Infoway) and creating e-learning partnerships (e.g., publishers).

## **Recommended Actions by Other Partners Over the Next Two Years**

Most recommendations for actions involved governments, educators and nursing regulatory bodies.

- Federal/provincial/territorial governments should demonstrate buy-in and commit to education, training and infrastructure, where needed.
- Educators need to develop and implement curricula that incorporate nursing informatics competencies in basic and graduate education, be active promoters of ICT in nursing, lead by example and link their institutions' websites to the portal. Partners should work closely with the Canadian Association of Schools of Nursing to ensure the integration of ICT competencies into core curricula.
- Nursing regulatory bodies should review entry-level and continuing competencies related to ICT, provide links to their websites on the portal and assist with communication and marketing strategies for the portal.

Action for partners:

- Decide how to participate in the portal.
- Identify potential successes and challenges in using the portal.
- Collaborate more with each other.
- Promote involvement of nurses in decision-making about ICT.
- Determine who is going to cover the costs of the portal.

## **Other Comments**

Respondents provided several additional comments about the draft e-nursing strategy in Canada. Many of the comments focused on the need for more information regarding the portal, including clarifying the following:

- What is the value added by the portal beyond resources already available to nurses through other sources such as educational institutional libraries?
- Who will be the users and how might the content need to be altered depending on the user (e.g., registered nurses, licensed practical nurses, registered psychiatric nurses)?

- What is the portal policy on content language?
- What is the process for validation of information?
- How will the portal be implemented and evaluated to ensure successful integration of each of its components?
- What will be the role of CNA and provincial/territorial regulatory bodies related to information and resources on the portal?
- What will be the costs for the portal's maintenance and technical support of the site (which may affect the resources available to the user)?
- What will be CNA's role in getting other partners to act on the strategies presented?

It was also suggested that a more concise version of the e-nursing strategy should be prepared.

## **Analysis of Responses to Consultation Questions for Part 2: An E-Learning Strategy Within the Portal**

### **Main Advantages of the Education Component of the Portal for Nurses**

Respondents identified ease of access to current information to support quality nursing practice as the main advantage of the portal's education component. Ease of access is important for all nurses, at home and abroad, and especially for nurses working in relative isolation (i.e., not only geographically but also in nursing specialties). Ease of access also means that nurses will have access to information *when they need it* and that navigation tools will be user-friendly.

Respondents identified a number of resources that nurses would want easy access to, including:

- information about educational offerings (either through the portal or through links from the portal), experts willing to mentor, the CNA Certification Program;
- continuing competence support systems;
- tutorials offering basic training in computer skills;
- centralized, evidence-based information;
- practice support (e.g., inventory of practice exemplars, best practice guidelines);
- literature reviews to aid researchers; and
- career planning, learning packages and web-based lectures and presentations.

(See also section on online education products and tools)

Other identified advantages of the portal's education component included:

- improved translation, dissemination and exchange of knowledge;
- the opportunity to connect nurses in similar specialties/areas of practice and bridge disciplines;
- the portal's ability to accommodate different learning styles;
- affordability;
- more opportunity for nurses to build IT skills; and
- a mechanism to creatively address the dwindling supply of faculty resources.

### **Most Important Learning Needs the Portal Could Address**

When asked what learning need the portal could address, respondents most frequently mentioned the need for evidence-based information and research, both national and international, in all domains of nursing. This need includes best practice and clinical practice guidelines and instruction on how to apply them.

Specific and generic education for particular practice settings is also needed (e.g., specialty-specific knowledge, pharmacotherapeutics, education in critical care and other areas that are not part of basic education). In addition to clinical education, nurses require educational activities related to professional practice (e.g., understanding the code of ethics, current legislation, health policy, diversity and change and conflict management). For nurses who are not computer literate or who are fearful of technology, the portal could open the door for their access to credible, timely information. Nurses need to develop nursing informatics competencies.

Other learning needs included:

- information that has been screened for validity and quality;
- skills to critically appraise research;
- knowledge and skills for maintaining competence and certification; and
- opportunities to learn from the experience and expertise of others.

The portal could be a cost-effective alternative to more traditional options.

## **Most Important Education Products and Tools to Offer Online**

The most frequently identified education products and tools were (in no order of importance):

- an up-to-date inventory of educational programs, educational institutions, workshops and conferences;
- online databases, journals, textbooks, *CPS (Compendium of Pharmaceuticals and Specialties)*;
- tutorials providing basic computer skills and search and appraisal training;
- online courses, including self-directed learning modules in specific areas of practice;
- current information on timely topics, best practices, competencies; and
- a 24-hour helpline.

Among other recommended education products and tools were:

- tools for continuing competence requirements;
- links to other nurses;
- lists of clinical experts and mentors;
- career development resources;
- discussion groups on professional issues;
- tools that allow the user to provide feedback to the portal; and
- easy-to-use interactive tools such as videoconferencing.

## **Main Barriers for Nurses in Taking Advantage of the Education Component of the Portal**

Nurses reported two main barriers to incorporating ICT in their work: a lack of comfort with and knowledge about computers and the Internet, and a lack of access to computers and the Internet at work and at home. Access problems may involve a lack of appropriate hardware, software, Internet access, IT training, support and time from administration to use ICT as part of nursing practice.

Other frequently mentioned barriers were time constraints in the use of ICT at work, a lack of value placed on the use of ICT by nurses, employers and others (“A nurse sitting down is a nurse doing nothing.”), a lack of awareness of the portal and its offerings, and cost.

Among other barriers identified were:

- the overwhelming amount of information provided on the portal that nurses would have to consider;
- the need to evaluate web-based resources for meeting educational needs; and
- the wide range of learning styles and needs that may not be addressed by the portal.

## **Other Comments**

While the “one stop” idea is a positive one, CNA needs to address how the portal will differ from the many options for online information/journals and educational programs currently available to nurses. Students and other nurses would like to support the portal but they need to be shown how it will be relevant to them, considering the vast amount of accessible, free information online. For example, broad linkages to employment and regulatory sources might appeal to students.

Respondents provided cautionary notes about the portal, indicating that it is just one of many flexible learning options. Some noted that it may be difficult for the portal to meet immediate information needs. Also, educational programs linked to the portal must be recognized by nursing regulatory bodies.

In addition, there is no clear plan for financing the portal operations or research and development activities so that the portal will continue to provide current, updated learning opportunities.

## **General Comments**

One respondent indicated that more discussion is needed to clarify CNA’s role in ensuring that the “needed actions” identified in the document are addressed. Others noted the importance of remembering that the portal is a tool to get something done. They indicated that the first priority is to focus on what needs to be done and then ask where the portal fits into this plan.

Respondents noted in this and other sections that the consultation document presented a very comprehensive e-nursing strategy, outlining what is required to move forward with incorporating ICT into all aspects of nursing practice.





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