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Health Informatics and Nursing in Canada

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Introduction

Nursing's role in managing information in health service organizations and care facilities in Canada is similar to that of other developed countries. The Canadian Nurses Association (CNA) has taken the position that "registered nurses and other stakeholders in health care delivery require information on nursing practice and its relationship to client outcomes. A coordinated system to collect, store and retrieve nursing data in Canada is essential for health human resource planning, and to expand knowledge and research on determinants of quality nursing care.... CNA believes that registered nurses should advocate and lead in implementing the collection, storage and retrieval of nursing data at the national level." (Canadian Nurses Association, 2001, November) The Canadian Nurses Association, the provincial and territorial nurses associations and nursing informatics interest groups across Canada have been instrumental in supporting nurses' involvement with innovations in health informatics by disseminating information and promoting standards and ethics in the development of nursing informatics. Current applications of nursing informatics cover many kinds of clinical, education, administrative, research and health care systems initiatives (e.g. telehealth, electronic health records, decision support systems, workload measurement, virtual education).

Nevertheless, the focus of nursing informatics in Canada is on the role of nursing within health care organizations. In most health care organizations, nurses manage both patient care and patient care units within the organization. Usually nurse clinicians manage patient care and nurse managers administer the patient care units within the organization. Therefore, for some time, nursing's role in the management of information has been considered to include both the information necessary to manage patient care using the nursing process and the information necessary for managing patient care units within the organization.

With regard to the nursing management of patient care, nursing practice is information intensive. Nurses constantly handle enormous volumes of patient care information. In fact, nurses constantly process information mentally, manually and electronically. Nurses have long been recognized as the interface between the patient and the health care organization. Like nurses in other countries, Canadian nurses integrate information from many diverse sources throughout the organization to provide patient care and to coordinate the patient's contact with health care services and facilities. In addition, they manage patient care information for purposes of providing nursing care to patients. For almost 40 years it has been widely recognized that nurses spend enormous amounts

of time engaged in information handling; the seminal study, in three New York hospitals, found that registered nurses spend from 36 to 64% of their time on information handling, with those in administrative positions spending the most time (Jydstrup & Gross, 1966). Nurses must be able to manage and process nursing data, information, and knowledge to support patient care delivery in diverse care delivery settings (Graves & Corcoran, 1989). There is an essential linkage among access to information, client outcomes and patient safety. "As Lang has succinctly and aptly described the present situation: If we cannot name it, we cannot control it, finance it, teach it, research it or put it into public policy" (Clark & Lang N., 1992). Access to information about their practice arms nurses with evidence to support the contribution of nursing to patient outcomes. Outcomes research is an essential foundation for evidence based nursing practice. Evidence based practice is a means of promoting and enhancing patient safety

In the past decade Canadians and their governments have come to the recognition that information systems are a key enabler (and lack of quality information is a key barrier) to health sector reform. Literally every study of health care services in Canada, including such seminal Canadian works as the Hall Commission (Royal Commission on Health Services (Hall Commission), 1964) and the Lalonde Report (Lalonde, 1974), has pointed out the importance of good information to manage health care systems. Overarching concern about the effectiveness and efficiency of the Canadian health care systems, beginning in the mid 1980's, lead to a growing recognition that health information in Canada was in a sorry state. As shown in Table 1, over the a five year period, the need for better information with which to manage the health care systems in Canada and the health of Canadians became an increasing national priority and a consistent theme of the various federal and provincial studies of the Canadian health systems (Advisory Committee on Health Human Resources, 2000, October; Clair, 2000, December; Fyke, 2001, April; Mazankowski, 2002, January; National Forum on Health, 1997, February; Romanow, 2002, November; Standing Senate Committee on Social Affairs Science and Technology (Chair: The Honourable Michael J.L. Kirby), 2002, October)

The inevitable conclusion is that information and information management will become increasingly important in the future. The health and safety of Canadians requires that information related to the nursing contribution to patient care is available in local and national EHRs and abstracted data sets. Thus, the data elements from which this information is derived must be collected and stored in a retrievable format in the Electronic Health Records of Canadians.

**Table 1: Summary Of Relevant Information Related Recommendations
From Federal And Provincial Reports**

Author	Title	Date	Website (URL)	Relevant Recommendations
National Forum on Health	Volume I -Canada Health Action: Building on the Legacy The Final Report of the National Forum on Health	February, 1997	http://www.nfh.sc.gc.ca/publicat/finvol1/1trans.htm	<ul style="list-style-type: none"> • A national population health data network should be established, linking provincial and territorial agencies and a national agency. In creating this network, the Ministers of Health must ensure that . . . standards (technical as well as operational) . . . are addressed. . . . • Provincial and territorial agencies should be mandated to develop and maintain a standardized set of longitudinal data on health status and health system performance and to advocate for, and advance, a population health agenda. • A National Population Health Institute should be founded as soon as possible. Its mandate should be to aggregate and analyze data; develop data standards and common definitions; report to the public on national health status and health system performance; and act as a resource for the development and evaluation of public policy • implementation of electronic health record.
Advisory Committee on Health Human Resources	The Nursing Strategy for Canada	October 2000	www.hcsc.gc.ca/english/for_you/nursing/index.htm	<p>STRATEGY 3</p> <p>The federal/provincial/territorial governments encourage the efforts of the Canadian Institute for Health Information (CIHI) and other organizations to develop the information required for the effective planning and evaluation of nursing resources.</p> <p><i>Key Points:</i></p> <ul style="list-style-type: none"> • Data on all nursing groups is required. • Activities will include the identification of information needs, development of new data standards and databases, and implementation in the provinces and territories by data suppliers (e.g. relevant licensing authorities, employers and educational facilities). • Consideration should be given to the development and implementation of a unique identifier for all nurses. <p>Lead Responsibility: ACHHR / CNAC / CIHI</p> <p>Timelines: 2000 – 2003</p>
Michel Clair	<i>Commission d'étude sur les services de santé et les services sociaux</i>	December 2000	www.cessss.gouv.qc.ca	Integrated information networks to access patient data via smart cards.
Kenneth J. Fyke	Caring For Medicare Sustaining A Quality	April 2001	www.health.gov.sk.ca/info_center/pub_commission_on_medicare-bw.pdf	<p>RECOMMENDATION FOR GETTING RESULTS</p> <p>To sustain a quality health system:</p> <ul style="list-style-type: none"> • Continuing development of performance indicators;
	System			<ul style="list-style-type: none"> • Annual reports on the health system; <p>RECOMMENDATION IN SUPPORT OF CHANGE</p> <p>To support the proposed changes to the health system in Saskatchewan recommends:</p> <ul style="list-style-type: none"> • Co-ordinated human resources planning and management on a provincial basis; • Investments in information systems including the development of an Electronic Health Record.
Don Mazankowski	A Framework for Reform Report of the Premier's Advisory Council on Health	January 8, 2002	www.gov.ab.ca/home/health_first/documents_maz_report.cfm	<p>Invest in technology and establish an electronic health record.</p> <ul style="list-style-type: none"> - implementing electronic health records, establishing a debit-style electronic health card and providing long-term funding for technology <p>Put better incentives in place for attracting, retaining, and making the best use of health providers.</p> <ul style="list-style-type: none"> - developing a comprehensive workforce plan, improving workforce morale, implementing alternative ways of paying physicians, and encouraging health providers to implement new ways of delivering services <p>Make quality the top priority for Alberta's health system. Set standards, measure results, and hold people accountable for achieving better outcomes in health.</p> <ul style="list-style-type: none"> - establishing a permanent, arms length Outcomes Commission to measure results, track outcomes and report to Albertans
The Standing Senate Committee on Social Affairs, Science and Technology <i>Chair: The Honourable Michael J.L. Kirby</i>	The Health of Canadians – The Federal Role Final Report Volume Six: Recommendations for Reform (The Kirby Report)	October, 2002	www.parl.gc.ca/37/2/parlbus/com/mbus/senate/com-e/soci-e/rep-e/repoct02vol6-e.htm	<p>Section 10.2 Electronic Health Records</p> <ul style="list-style-type: none"> • Defines and identifies benefits of EHR. • Recommends additional funding for Canada Health Infoway Inc. to achieve Pan-Canadian EHR in the amount of amount to \$2 billion over a five-year period, or an annual allocation of \$400 million. <p>Section 10.3 Evaluation of Quality, Performance and Outcomes</p> <ul style="list-style-type: none"> • CIHI has a credible history in collecting standardized data and developing indicators for the health care system. Its work has been developed through a cooperative process involving various jurisdictions and multiple stakeholders. . . . Furthermore, CIHI has already established credible mechanisms for reporting to the public. • Canadian Council on Health Services Accreditation (CCHSA), has built a solid foundation on the basis of a voluntary accreditation process for health care institutions. The Committee learned that its strength derives from its primary focus on continuous quality improvement, a strength that should be preserved. • The federal government provide additional annual funding of \$50 million to the Canadian Institute for Health Information. In addition, an annual investment of \$10 million should be provided to the Canadian Council on Health Services Accreditation. This new federal investment will help establish a national system of evaluation of health care system
				performance and outcomes, and hence facilitate the work of the National Health Care Commissioner.

**Table 1: Summary Of Relevant Information Related Recommendations
From Federal And Provincial Reports**

(continued)

Author	Title	Date	Website (URL)	Relevant Recommendations
Roy J. Romanow	Building on Values: The Future of Health Care in Canada	November 28, 2002	www.healthcarecommission.ca/	<p>RECOMMENDATION 2: A Health Council of Canada should be established by the provincial, territorial and federal governments to facilitate co-operation and provide national leadership in achieving the best health outcomes in the world. The Health Council should be built on the existing infrastructure of the Canadian Institute for Health Information (CIHI) and the Canadian Coordinating Office for Health Technology Assessment (CCOHTA).</p> <p>RECOMMENDATION 3: On an initial basis, the Health Council of Canada should:</p> <ul style="list-style-type: none"> • Establish common indicators and measure the performance of the health care system; • Establish benchmarks, collect information and report publicly on efforts to improve quality, access and outcomes in the health care system; • Coordinate existing activities in health technology assessment and conduct independent evaluations of technologies, including their impact on rural and remote delivery and the patterns of practice for various health care providers. <p>RECOMMENDATION 8: A personal electronic health record for each Canadian that builds upon the work currently underway in provinces and territories.</p> <p>RECOMMENDATION 9: Canada Health Infoway should continue to take the lead on this initiative and be responsible for developing a pan-Canadian electronic health record framework built upon provincial systems, including ensuring the interoperability of current electronic health information systems and addressing issues such as security standards and harmonizing privacy policies.</p> <p>RECOMMENDATION 27: Working with the provinces and territories, the Health Council of Canada should establish a national framework for measuring and assessing the quality and safety of Canada's health care system, comparing the outcomes with other OECD countries, and reporting regularly to Canadians.</p>

National Health Information Context Canadian Institute for Health Information

The establishment of the National Health Information Council in the late 1980's lead to the National Task Force on Health Information, also known as the Wilk Task Force, which presented comprehensive goals and a strong vision for a nationwide health information system (National Task Force on Health Information, 1990, November). Subsequently, the recommendations of the Wilk Task Force (National Task Force on Health Information, 1991) resulted in the merger of four existing entities to create the Canadian Institute for Health Information (CIHI) in 1992 (Canadian Institute for Health Information, 2002; Project Team for the Planning of the Canadian Institute for Health Information, 1991, December). CIHI is an independent, national, not for profit organization, established jointly by federal and provincial/territorial ministers of health,

During the decade of its existence CIHI has become an acknowledged and trusted source of quality, reliable and timely aggregated health information for use in understanding and improving the management of the Canadian health systems and the health of the population of Canada.

Canada Health Infoway Inc.

As CIHI, and its various aggregated databases, evolved and matured, their focus was on health indicators and population health as well as information to manage the health care system. The health care community came to realize that there was still limited information available to support decision making related to clinical care of individuals and groups of patient/clients of the health systems. The need for a pan-Canadian electronic health record gradually emerged during the later half of the 1990's beginning with the report of the National Forum on Health (National Forum on Health, 1997, February). The recommendations in this report resulted in the commitment in October, 2000 by the federal government of \$500 million to support the development and

coordination of pan-Canadian health information systems necessary to achieve an Electronic Health Record. This funding was recognition by federal, provincial and territorial governments of the potential of information and communications technologies to improve the efficiency, cost-effectiveness, access, quality and safety of health services in Canada. The Federal/Provincial/Territorial Advisory Committee on Health Infrastructure (Advisory Committee on Health Infrastructure, 2001, November) set its top priority on the development of electronic health records (EHR) and telehealth. It identified the need to begin working immediately on the building blocks for the next stages in development of EHRs.

Canada Health Infoway Inc. (Infoway) was incorporated in January 2001 and began its first year of operation in April, 2001. The Infoway Mission (Canada Health Infoway Inc., 2005) is "Fostering and accelerating the development and adoption of electronic health information systems with compatible standards and communication technologies on a pan-Canadian basis with tangible benefits to Canadians. Infoway will build on existing initiatives and pursue collaborative relationships in pursuit of its mission."

The emerging pan-Canadian EHR will ultimately incorporate data related to patient assessment and interventions contributing to patient outcomes and providers' patterns of practice. It is imperative that nursing assessments, interventions and practice patterns are included in the EHR because nursing is the single largest group of health care providers.

Standards Council of Canada

The Canadian Advisory Council (CAC) on Health Informatics (Z295) advises the Canadian Standards Association (CSA). CSA is accredited by the Standards Council of Canada (SCC) as the Standards Development Organization that advises SCC on matters related to Health Informatics Standards. SCC is the official Canadian member of International Standards Organization (ISO). The CAC/Z295 provides representation on behalf of Canada at the ISO's Technical Committee 215 on Health Informatics Standards

where CAC/Z295 representatives speak on behalf of Canada. The CAC/Z295 has a dual role: first, to provide technical input to SCC on the Canadian perspective on Health Informatics standards development internationally and secondly to provide advise to SCC through CSA on appropriate health information standards for use in Canada as National Standards of Canada. The goal of the CAC/Z295 is to harmonize national health information standards with international. The CAC/Z295 has two co-chairs one responsible for Canada's international participation in health informatics standards development at ISO TC 215 and one responsible for coordinating domestic health informatics standards activities. Members of CAC/Z295 represent key stakeholder groups in the area of health information and health informatics in Canada, and reflect a balance of interest from industry, governments, users and general interest groups. These members have an obligation to consult widely within their respective constituencies with a view to having the greatest possible input to both domestic standards work and Canadian input to international standards development. (Hannah, 2004)

Obstacles to Effective Nursing Management of Information in Canada

In Canadian health care delivery organizations, like hospitals and health care agencies in other countries, the major obstacles to more effective nursing management of information are: the sheer volume of information, the lack of access to modern information handling techniques and equipment, and the inadequate information management infrastructure. The volume of information that nurses manage on a daily basis, either for patient care purposes or organizational management purposes, is enormous and continuing to grow. Nurses continue to respond to this growth with incredible mental agility. However, human beings do have limits and a major source of job dissatisfaction among Canadian nurses is information overload resulting in information induced job stress.

Antiquated manual information systems and outdated information transfer facilities are information redundant and labour intensive processes, to say nothing of an inappropriate use of an expensive human resource, that is to say nursing time and energy. Modern information transfer and electronic communication systems allow rapid and accurate transfer of information along electronic communication networks. Yet, the nursing contribution to patient care is not even on the radar screen for the pan-Canadian EHR or any provincial EHR. Nursing documentation is being captured in some regional or facility based patient records e.g. the Integrated Cancer Care Network of the Alberta Cancer Board, St John Regional Hospital.

Software and hardware for modern electronic communication networks are only two aspects of an information infrastructure. The other major aspect is lacking in most hospitals and health services organizations, that is, the absence of appropriate infrastructure to facilitate information management. Infrastructure includes but is not limited to: data management policies and procedures, methods for data stewardship and custodianship, user training and information management support staff. Support staff are necessary to support nurses in appropriately analyzing and interpreting aggregated information.

Issues related to Effective Nursing Management of Information

Primary among the nursing issues related to information management in Canada is the lack of adequate educational programmes in information management techniques and strategies for nurse clinicians and nursing managers. At the time of writing, there are only a few pre-service nursing education programmes in Canada offering a course in modern information management

techniques and strategies related to nursing. At a minimum, such a programme must include advanced study of information management techniques and strategies such as information flow analysis, the use of spreadsheets, databases and word processing packages. Ideally such courses would also introduce concepts and provide hands-on experience related to the use of patient care information systems.

Another major issue is that nursing is frequently under represented in the decision making related to health information systems and EHRs in Canada. Regrettably, even when the opportunity is available, many senior nurse managers fail to recognize the importance of this activity and opt out of the process. They then complain when the systems do not meet the needs of nursing. Canadian senior nursing executives must recognize the importance of allocating staff and money to participate in the strategic planning process and policy making for information systems and EHRs in their organizations, provinces and national organizations. Leaders in provincial and federal EHR and health information systems initiatives must also recognize the importance of nursing input into the strategic planning process and decision/policy making related to such initiatives. In any Canadian health care delivery organization, nurses are the single largest group of professionals using a patient care information system or EHR and nursing represents the largest part of the budget. Nursing, therefore, represents the single largest stakeholder group in Canada related to either patient care information systems or EHRs.

Nurses have been involved in the management of nursing information since the initial systems for gathering minimum uniform health data which can be traced back to systems devised by Florence Nightingale over a century ago (Verley, 1970). This early role in the management of nursing information began to change dramatically with the introduction of computers into health care and nursing environments. The role evolved as nurses became more involved in the selection and utilization of information systems. These developments have been well documented elsewhere (K. J. Hannah, Ball, & Edwards, 1999; Verley, 1970) along with detailed information on the nursing responsibilities, roles and contributions to the selection and implementation of information systems in health care organizations. The issues for nurses no longer relate to computers or management information systems but rather information and information management. The computer and its associated software are merely tools to support nurses as they practice their profession. Far too much attention has been directed to the technology rather than its content. Current health information systems do little to assist nurses in their real role, which is providing nursing care. Canadian nurses must be able to manage and process nursing data, information and knowledge to support patient care delivery in diverse care delivery settings. In order to accomplish this goal, Canadian nurses are increasingly focusing on the contents (the data) contained in information systems instead of being distracted by the glamour and romance of the technology.

Unfortunately, despite Nightingale's early attempts to develop a nursing database, at the present time, in Canada, the only nursing data element that is collected and stored nationally is nursing human resource data. Even these are rudimentary and of questionable comprehensiveness. No other nursing generated data are captured provincially or nationally for use in decision making related to health policy or resource allocation. Nurses in Canada who have developed a heightened awareness of the importance of collection, storage and retrieval of nursing data have recognized these data gaps. In 1990, attention began to be directed at initiating the process by which the nursing profession in Canada will begin to address the essential data needs of nurses in all practice settings in Canada (Canadian Nurses Association, 1990, June).

The patient discharge abstracts prepared by medical records departments across Canada currently contain no nursing patient care delivery information. The abstracts therefore fail to acknowledge the contribution of nursing during the patient's stay in the hospital. This is important because the abstracts are used by many agencies for a variety of purposes including funding allocation and policy making. Presently, much valuable information is being lost. This information is important in determining the actual costs of hospitalization and the effectiveness of nursing care in achieving appropriate patient outcomes.

At a time when considerable emphasis is being placed on the development of a national health database in Canada, it is important that a minimum number of essential nursing elements be included in that database. In Canada nurses refer to these nursing data elements as the Nursing Components of Health Information (HI:NC). The nursing profession in Canada has provided leadership in defining appropriate nursing data elements to be included in the national health data base, specifically through the patient discharge abstract. In Canada, there is a need to extend the CIHI Discharge Abstract Database (DAD) to include the use of the Nursing Components of Health Information. Thus, the salient issue in information management for nurses in Canada is that of the capture, use, and aggregation of nursing data elements that are essential for collection and storage in EHRs and national health database(s). These data elements must reflect the data that nurses use to build information that is the foundation for clinical judgement and management decision making in any setting where nursing is practiced and thus the contribution that nurses and nursing care make to the health and wellness of Canadians. The remainder of this article focuses on the issue of defining standards for data essential to the practice of nursing

Canadian Initiatives Directed at the Development of Nursing Components of Health Information (HI:NC)

In Canada nurses are in the fortunate position of recognizing the need for nursing data elements at the time when the national health infrastructure is under development. The challenge for nurses is to capitalize on this timing and speak with one voice to promote the inclusion in the CIHI DAD and the Infoway EHR of those data elements required by nurses in Canada. To prevent nurses in Canada from losing control of nursing data, nurses must take a proactive stance and mobilize resources to ensure the development and implementation of a national health data base and a pan-Canadian EHR that is congruent with the needs of nurses in all practice settings in Canada. Some initiatives intended to promote the vision, of nursing data integrated into the pan-Canadian EHR and national health data base, are in progress.

Building on work of our U.S. colleagues on the NMDS, and in response to contextual factors influencing nursing in Canada, nurses in Canada have recognized the importance of the collection and storage of essential data elements (Canadian Nurses Association, 1990, June). Under the leadership of the Canadian Nurses Association, nurses have more than 15 year of experience in initiatives directed at building awareness and consensus regarding the definition and coding of these essential nursing components of health information (Canadian Nurses Association, 1990, June). Nurses built consensus (Canadian Nurses Association, 1993a, 1993b, 2001, April, 2001, November) on the five essential nursing components of health information:

- **Client status** is broadly defined as a label for the set of indicators that reflect the phenomena for which nurses provide care, relative to the health status of clients (McGee,

1993). Although client status is similar to nursing diagnosis, the term client status was preferred because it represents a broader spectrum of health and illness. The common label "client status" is inclusive of input from all disciplines. The summative statements referring to the phenomena for which nurses provide care (i.e. nursing diagnosis) are merely one aspect of client status at a point in time, in the same way as medical diagnosis.

- **Nursing interventions** refer to purposeful and deliberate health affecting interventions (direct and indirect), based on assessment of client status, which are designed to bring about results which benefit clients (Alberta Association of Registered Nurses (AARN), 1994).
- **Client outcome** is defined as a "clients' status at a defined point(s) following health care [affecting] intervention" (Marek & Lang, 1993). It is influenced to varying degrees by the interventions of all care providers.
- **Nursing intensity** "refers to the amount and type of nursing resource used to [provide] care" (O'Brien-Pallas & Giovannetti, 1993)
- **Primary Nurse identifier** is a single unique lifetime identification number for each individual nurse. This identifier is independent of geographic location (province or territory), practice sector (e.g. acute care, community care, public health) or employer.

It is essential in Canada that the nursing data elements constitute one component of fully integrated health information data, e.g. the CIHI DAD (Canadian Institute for Health Information, 2002) or an EHR such as that being developed under the leadership of Infoway. Therefore, the five nursing data elements were identified collectively as the Nursing Components of Health Information (Health Information: Nursing Components, HI: NC) (Canadian Nurses Association, 1993b).

Identifying those data elements that represent the most important aspects of nursing care is only the first step. In Canada, nurses faced an immediate challenge to determine the most effective and efficient means to collect and code data elements that reflect nursing practice. To collect the data reflecting nursing contributions within the larger health information system, "there is a need for consistent data collection using standardized languages to aggregate and compare data" (Canadian Nurses Association, 1998).

A number of nursing informatics leaders representing CNA supported International Classification for Nursing Practice® (ICNP®) in principle as the most universal, generic and comprehensive foundational classification system for nursing at the time. Regrettably, CIHI's investigation of the version of ICNP® available at the time (the early Beta Version) revealed that the lack of a coding structure was a significant barrier to implementation at that time. This barrier has now been eliminated in ICNP® Version 1 released by the International Council of Nurses in 2005. Another barrier was the apparent lack of awareness and consensus among nurses about the need for and importance of capturing nursing data nationally. As discussed in the following paragraph, the second barrier has been substantially reduced since the CIHI analysis of ICNP® in 1999.

In March 2000, CNA completed a discussion paper (Canadian Nurses Association, 2000), which proposed that registered nurses in Canada support ICNP®, in principle, as the foundational classification system for nursing practice in Canada. Responses and feedback received from the consultation related to this discussion paper indicated strong support from CNA's member jurisdictions for investigating how ICNP® might be adapted for use in Canada (Canadian Nurses Association, 2001, April). The result was the

CNA Position Statement: Collecting Data to Reflect the Impact of Nursing Practice (Canadian Nurses Association, 2001, November)

In Canada nurses have come to recognize the need to incorporate the Nursing Components of Health Information into the national health information infrastructure (national data bases and EHR) as federal and provincial health information systems are being re-structured. As nurses in Canada pursue the development of the nursing components of health information (HI:NC), several issues germane to the development of minimum data sets emerge. The first need is to ensure that data are available, reliable, valid and comparable, i.e. data standards are established. To this end the Canadian Nurses Association has endorsed the ICNP® for use in Canada and participated actively in the development of ISO 18104 Reference Terminology Model for Nursing (International Standards Organization, 2003) and its subsequent adoption as a National Standard of Canada in 2005.

To ensure that nursing data are incorporated into the national health infrastructure, nurses must participate in the design, standards development and pilot studies to ensure that EHRs and health information systems capture the data that are essential to reflect the contribution of nursing to health care in Canada. It is also important to define the scope of the compiled data set to ensure that only those essential data elements (HI:NC) are collected and to avoid proliferation of data. In addition it is essential to widespread use by educating nurses to ensure the quality and consistency of the nursing data that are collected.

Implications of the Nursing Components of Health Information (HI:NC)

In the absence of a national system for the collection, storage and retrieval of nursing data elements it is evident that much valuable information is being lost. In Canada, as in other countries, this information is important to demonstrate the contribution nursing makes to the care of the patient and to demonstrate the cost effectiveness of nursing care (H. H. Werley, Devine, Zorn, Ryan, & Westra, 1991; Harriet H. Werley & Lang, 1988). As we move away from nursing specific models of patient care delivery to models that focus on the patient emphasizing collaboration of disciplines, multi-skilling of health care providers, standardization of care and streamlining of documentation through charting by exception; it is imperative that nurses be able to articulate what is and is not nursing's role. Furthermore, nurses will be asked to demonstrate nursing's contribution to patient care in terms of outcome measures that are objective and measurable. Nurses require nursing data to identify outcomes of nursing care, defend resource allocation to nursing and justify new roles for nursing in the health care delivery system (Gallant, 1988; McPhillips, 1988; H. H. Werley et al., 1991). Similarly, nurses need to understand and value nursing data so that in the selection and implementation of information systems for their organizations, nurse administrators insist that they or their designate play a major role and that nursing data needs are incorporated into the selection and implementation criteria. For greater detail on selection and implementation the reader is referred to (K. J. Hannah, Ball, & Edwards, 2005).

While on the one hand we must preserve our professional nursing identity, Canadian nurses must balance this against professional ghettoization. The collection and storage of essential nursing data elements that are not integrated as components of a national EHR and national patient care data sets will serve to ghettoize nursing especially in a socialized health care system such as Canada's. This is dangerous at a time when significant emphasis is being placed on multidisciplinary collaboration, Patient-Focused Care, and patient outcomes. In Canada, contributions to national health data base are voluntary rather than legislated and the elements are established by

consensus rather than by legislation. In view of priorities in Canadian health care as well as the culture of negotiation and consensus, the nursing participation in the determination of the integrated data elements could not be clearer.

Nurse clinicians need to know what nursing elements are essential for archival purposes so that nursing documentation is inclusive of these elements. With the move toward standardization of care through the use of care maps it is essential that outcomes of nursing care are determined and included in the care maps. As health care organizations embrace the concept of charting by exception in an effort to decrease the valuable hours spent by health care workers in documentation nurses must be sure that those tools that outline the inherent patient care delivered are not devoid of nursing contribution to patient care. For in the absence of data that reflects nursing activities there is no archival record of what nurses do, what difference nursing care makes or why nurses are required. At times of fiscal restraint objective nursing data is required to substantiate the contribution of nursing to patient care, the role of nurses and the nurse patient ratios required in the clinical setting.

Nurse researchers need a data base of essential data elements to facilitate the identification of trends related to the data elements for specific patient groups, institutions, or regions; and to assess variables on multiple levels including institutional, local, regional, and national (Werley & Lang, 1988). The collection and storage of essential nursing data elements will facilitate the advancement of nursing as a research-based discipline (H. H. Werley & Zorn, 1988). Nurse educators need these essential nursing data elements to develop nursing knowledge for use in educating nurses and to facilitate the definition of the scope of nursing practice (McCloskey, 1988).

Finally, the definition of nursing components of health information is essential to influence health policy decision making. Historically health policy has been created in the absence of nursing data. At a time when we are in the midst of profound health care reform it is essential that nurses demonstrate the central role of nursing services in the restructuring of the health care delivery system.

Conclusion

It is clear that a priority for nursing in Canada is the inclusion in electronic health records and national health data sets of the nursing components of health information that have been identified, those essential nursing data elements that must be collected, stored and retrieved from a national health information data base. Nursing leaders must respond to the challenge to identify those data essential for the management of patient care and patient care units. The nursing components of health information have the potential to provide nurses with the data required to build information for use in reshaping nursing, as a profession prepared to respond to the health needs of Canadians in the twenty-first century. However, the window of opportunity to have nursing data elements included in a national data set is narrowing. We must ensure that the vision of nursing components in our national health information system becomes a reality for nursing in Canada.



Please see following page for references.

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