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Building the Future: An integrated strategy for nursing human resources in Canada

RESEARCH SYNTHESIS REPORT

Research Synthesis Report

This report is part of an overall project entitled **Building the Future: An integrated strategy for nursing human resources in Canada.**

Building the Future: An integrated strategy for nursing human resources in Canada - Research Synthesis report of research findings

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Preface

This research report is the final synthesis of Phase I, *Building the Future: An integrated strategy for nursing human resources in Canada*. The goal of the project was to create an informed, long-term strategy to ensure that there is an adequate supply of skilled and knowledgeable nurses to meet the evolving health care needs of all Canadians. Through surveys, interviews, literature reviews, and other research, *Building the Future* provides the first comprehensive report on the state of nursing human resources in Canada to date. The project has the following two phases.

Phase I: Research about the nursing labour market in Canada was conducted in stages. Reports were released as research work was completed in order to share interim findings and recommendations with the nursing sector. This final report outlines the findings of all the research at the conclusion of this phase.

Phase II: A pan-Canadian strategy will be developed in consultation with government and non-government stakeholders that builds on the findings and recommendations presented at the completion of Phase I.

To oversee such a complex project, the Nursing Sector Study Corporation (NSSC) was created in 2001. The Management Committee of NSSC comprised representatives of the signatories to the contribution agreement with the Government of Canada and other government groups.

The multi-stakeholder Steering Committee for the project comprised approximately 30 representatives from the three regulated nursing groups (licensed practical nurses, registered nurses, and registered psychiatric nurses), private and public employers, unions, educators, health researchers, and federal, provincial and territorial governments. The Steering Committee guided the study components and approved the study deliverables including all the technical reports.

Members of the Management Committee and the Steering Committee represent the following organizations and sectors.

Aboriginal Nurses Association of Canada
Association of Canadian Community Colleges
Canadian Alliance of Community Health Centre Associations
Canadian Association for Community Care
Canadian Association of Schools of Nursing
Canadian Federation of Nurses Unions
Canadian Healthcare Association
Canadian Homecare Association
Canadian Institute for Health Information
Canadian Nurses Association
Canadian Practical Nurses Association
Canadian Union of Public Employees
Health Canada
Human Resources and Skills Development Canada
National Union of Public and General Employees
Nurse educators from various institutions
Ordre des infirmières et infirmiers auxiliaires du Québec
Ordre des infirmières et infirmiers du Québec
Professional Institute of the Public Service of Canada
Registered Psychiatric Nurses of Canada
Representatives of provincial and territorial governments
Service Employees International Union
Task Force Two: A human resource strategy for physicians in Canada
Victorian Order of Nurses Canada

Together, we are committed to building a better future for all nurses in Canada and a better health system for all Canadians.

Executive Summary

This report is the final Research Synthesis of Phase I of the project, *Building the Future: An integrated strategy for nursing human resources in Canada*. The goal of the project was to create informed, long-term strategies toward ensuring adequate supply of skilled and knowledgeable nurses to meet the evolving and changing health care needs of all Canadians. Through surveys, interviews, literature reviews, and other research methods, this project provides the first comprehensive account of the state of nursing human resources in Canada to date. The study included three nursing groups: licensed practical nurses (LPNs), registered nurses (RNs), and registered psychiatric nurses (RPNs).

Building the Future has two distinct phases. In Phase I, research about the nursing labour market in Canada was composed of 15 separate research steps conducted by a large team of researchers. Research reports were released upon completion of the work in order to share interim findings and recommendations (the 13 technical reports are listed in Appendix E). This Research Synthesis report outlines the findings of all 15 research steps undertaken in Phase I. In Phase II, a national strategy will be developed in consultation with government and non-government stakeholders, building on the findings and recommendations of Phase I.

To oversee such a complex project, the Nursing Sector Study Corporation (NSSC) was created in 2001 with both Management and Steering Committees. The Steering Committee, comprising key stakeholders/representatives from the three regulated nursing groups (LPN, RN and RPN), employers, unions, educators, health researchers, and federal, provincial and territorial governments, guided the project and approved the deliverables, including the research reports. The project was designed to gain acceptance among all stakeholders and ultimately help policy makers coordinate nursing human resource planning with federal, provincial and territorial governments.

This Research Synthesis report has been organized into three main sections: introduction, methods, and findings. The key constructs of the Health Human Resources Planning (HHRP) Conceptual Framework, developed by O'Brien-Pallas, Tomblin Murphy, Birch & Baumann (2001), were used to organize and present the findings.

Introduction: The labour market in nursing has fluctuated over the years from periods of over supply to serious shortages. Today, quality of patient care across Canada is seriously threatened as a nursing shortage challenges all health care sectors. Massive restructuring of our health care system, undertaken to contain costs, has impacted negatively on nurses, the largest group of health care providers. Increases in workload, non-nursing duties, overtime, use of unregulated health care providers, patient acuity, as well as casualization of the nursing workforce, massive layoffs, a wage and compensation freeze, and a decline in the number of senior nursing positions along with the aging of the nursing workforce has created an untenable crisis. Nursing leaders are urging immediate action to address these critical nursing resource issues in order to retain nursing as a viable health care profession in Canada and to secure the health and well-being of Canadians.

Methods: A variety of methods were used within the research steps, including literature reviews, focus groups, interviews, surveys, and secondary data sources. Quantitative data were analyzed using SPSS 12.0 for Windows. Descriptive statistics were used to summarize data as appropriate. Responses were analyzed by nursing group (LPN, RN, and RPN), age cohort, sector (community health services, hospital, long-term care, and other) and province/territory. Multivariate analysis was conducted to examine the "effects" of several variables on select outcome variables. Linear regression and logistic regression models were used; only predictors with *p-values*[1] less than 0.05 were discussed. Qualitative data were categorized, coded and analyzed using Microsoft Excel, content analysis and ethnographic methods. Ethics approval was obtained from the Ethics Review Board at the home institutions for the lead researchers for each step report.

Findings: The findings described in this synthesis report are only a brief overview of the key findings of each research step. In Step 1, a comprehensive inventory of current research was created, and barriers to efficient, reliable labour market information were identified. The researchers found it a challenge to identify ongoing research in nursing human resources, particularly work presently funded in Canada. Studies that were located focused primarily on RNs, with very few studies relating to LPNs and even fewer relating to RPNs. Timely access to evidence was limited since most research is not published until several months after completion. Information about current research activities was located in the grey literature, often accessed from the Internet. Data from the Internet, however, may be posted and removed at the discretion of the Web site owners, vary widely in quality and are seldom peer-reviewed.

Needs of health populations and impact on nursing care delivery: Population health characteristics reflect the complex and diverse characteristics of the individuals and are influenced by a number of factors and determinants of health. For human resource planning, the changing levels of need for health care services were examined. In Step 9, evidence of improvements in health and reductions in risks to health in the Canadian population over the last decade were identified. Data related to trends in health care resources, however, were restricted to Ontario because of limitations in data from other provinces. Hospital restructuring initiatives have led to inadequate numbers of nurses in acute care hospitals to provide the required increased level of care. Findings from Step 3 reinforced the lack of accessible data relating to workload, productivity, and staffing mix in most provinces/territories, which cannot then be compiled for national studies. Furthermore, there was a paucity of data available for areas outside of the acute care sector.

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[1] **P-value**: The p-value is the probability that the observed association occurred by chance and it can be calculated from a statistical test. The p-value of 0.05 is customarily treated as a "border-line acceptable" level. If the p-value is less than 0.05, it means that the observed association is not likely to be due to chance. In other words, a true association must exist between the variables. This observed association is then considered "statistically significant", or "significant". If the p-value is greater than 0.05, it indicates that the observed association may be attributable to chance. In this case, the observed association is treated as "not significant".

Production of nurses: In Step 8, nurse production, to involve both university education and on-the-job training, was examined. Current educational programs, student enrolments, future enrolment plans, available resources, and access to clinical placements and teachers were described. Only one of three RPN education programs responded; therefore, there are no reported findings relating to RPN education. Enrolment increases in LPN programs were predicted to end in 2004-2005 because of financial constraints. Half of the LPN programs reported they do not have sufficient resources for their current enrolments. LPN schools were able to find faculty members with required credentials to fill vacant positions; the favoured credential being a baccalaureate degree in nursing. The average retention rate in the LPN schools was approximately 70%, with a wide range of 20-100%. There were very few Aboriginal students and the percentage of male students was 12%.

RN programs face similar challenges in that 60% of the schools reported insufficient resources for the number of students currently enrolled. Participation rates by Aboriginal students and men were low. Retention rates were also low. Lack of clinical placements in acute care and community care continue to limit the schools' capacity to expand their enrolments. Shortages in faculty prepared at the Master and PhD levels persist because of limited enrolments in Canadian graduate nursing programs. Simulation results in Step 3 further showed that adding new nurses by increasing training seats takes years before a substantial impact on supply is recognized. The focus needs to be on retention of nurses instead of just increasing the number of seats. Complicating this situation is the fact that nurses are older when they graduate than they were 10 to 20 years ago, as suggested in Step 6, resulting in a reduced number of available years in the workforce.

In terms of nurse production, this research also explored continuing education arrangements for practicing nurses. Unfortunately, as indicated in the Step 5 Nurses' Union report, many nurses reported a lack of educational support in the workplace due to scheduling conflicts and availability of replacement staff. In both Steps 5 and 13, the provision of technology training to LPNs and RNs enhanced their use of technological applications and improved their perceptions of work satisfaction.

Supply of nurses and career patterns/paths: Supply reflects the actual number, type, and geographic distribution of providers available to deliver health services at a given point.

The total number of RNs employed in nursing increased slightly over the last five years with 230,957 RNs employed in nursing in 2002 compared to 227,814 in 1998, representing participation rates of 89.4% in 1998 to 90.7% in 2002 (RNDB, CIHI, 2003). While there was a modest growth of nurses in practice, the aging of the workforce over the next four years will have a significant impact on the supply of RNs. In Step 6, the aging of the nursing workforce was evident in that over 70% of nurses surveyed were 40 years of age or older. By 2006, Canada could lose approximately 30,000 practicing RNs if nurses retire at age 65. However, if RNs were to retire at the age of 55, 64,000 RNs would be lost (O'Brien-Pallas, Birch, Tomblin Murphy & Alkins, 2003). This would have a serious impact on the ability of the Canadian health care system to meet patient needs.

Unfortunately, reliable data sources for LPNs and RPNs overtime were not available. In the future, however, the Canadian Institute for Health Information databases for these two nursing groups will be expanded. There were 60,123 LPNs employed in nursing in this country with the highest proportion working in Ontario (36.9%), followed by Quebec (24.2%) (LPNDB, CIHI, 2003b). In the Western provinces, there was a total of 5,132 RPNs employed in psychiatric nursing with the greatest proportion employed in British Columbia (42%) followed by Alberta (21.1%) (RPNDB, CIHI, 2003c).

Steps 11, 12 and 14 examined trends and policy issues relevant to the migration of nurses to and from Canada. Again, information was very limited, particularly in relation to LPNs and RPNs. Trends in world migration showed a global market that flowed from less to more developed regions and a nursing labour market characterized by shortages in all but a few Asian and European countries. An accumulative migration of nurses to Canada, particularly in certain provinces, was evident with 6.9% (15,847) of RNs and only 1.6% of LPNs internationally educated (CIHI, 2003b) and an increase in nurse immigration from 1999-2002. Inter-provincial mobility increased between 1990 and 1997, with Alberta, British Columbia, Nova Scotia, and Ontario having the highest immigration rates. The majority of nurse migrants were less than 25 years of age. In 2001, the majority of all three nursing groups continued to be employed in their province of graduation (RNs 86.7%, LPNs 92% and RPNs over 80%). Addressing the shortage of nurses by recruitment alone may be feasible for those provinces with sufficient financial resources to attract nurses from other provinces or countries. Such a strategy, however, is neither sustainable nor ethical.

Nurses reported that they relocated to other jurisdictions because of: availability of full-time employment opportunities; greater income and benefits; expectation of better working conditions; and improved chances for personal/professional growth. Retirement, the relocation of a spouse, and other family-related reasons were also important factors. Higher salary was not reported as a major reason for migration. However, migration rates were highest in provinces where nurses receive the most pay.

Step 3 focused on the supply of nurses through an empirical analysis and simulation of demographic scenarios. For each of the three nursing groups, the workforce has a higher proportion of nurses in the older age groups, a problem shared across the country. This was described as a “demographic time bomb”. Consistent with these Step 3 results is the demographic data from Step 6, with over 70% of the sample 40 years of age or older. Declines in workforce size in the next 10 to 20 years are almost certain given this aging workforce.

Incentives for a nursing career were examined in Step 7 and Step 15. Incentive factors that encourage nurses to enter nursing identified in Step 7 through primary data were: the desire to help people; diverse work opportunities; opportunities for career advancement; continuing education; and, job security. In Step 15, the primary reasons for choosing a career in nursing identified through the literature were the desire to care for others and the images of nurses portrayed by the media. Step 7 identified barriers to entering nursing to include: cost of tuition; living expenses and books; personal and family responsibilities; and accessibility of the programs. Major disincentives to a nursing career were: the low status of the nursing profession; low levels of autonomy and decision-making;

controversy over degree- and diploma-prepared nurses; wage compression; increasing litigation; increased risk to nurses' health; and nurse abuse (Steps 15 and 7).

Management of nurses: Management and organizational characteristics influence the amount and quality of care provided, provider health and satisfaction, and costs associated with the delivery of services. Chief Executive Officers (CEO) in Canadian health care organizations were affected by nursing shortages. In Step 5, while RN shortages were most commonly reported, many CEOs indicated they were experiencing multiple occupational group (LPN, RPN) shortages simultaneously. To cope with the tight labour market, nursing staff were over-utilized, a practice also identified by Senior Nurse Managers (Step 5 – SNM). There was more use of technology by LPNs and RNs when organizations identified improvement of quality of care as a priority in management decisions. However, when organizations set cost restraints as a priority, there was less use of technology by LPNs and RNs (Step 13). Furthermore, in organizations with a Chief Nursing Officer (CNO) who had control of the nursing budget, nurses accessed technology and training more than in organizations in which the CNO did not have controlof the budget.

Workplace environment:

Safety: In Step 5 (Union), nurses voiced concerns about the lack of safety in the work environment, which included equipment that was not always in working order, potentially dangerous situations, and violence. According to Step 6, nurses were less likely to experience violence in the workplace when there were more human resources to support patient care, when they worked with more effective leadership, when they worked less overtime, and when they experienced fewer shift changes.

Technological changes: According to Step 13, regardless of the type of technologies, older nurses used them less and felt less confident in using them. However, older nurses did not resist the use of technology, and age did not affect how nurses perceived the efficiency of information or diagnostic/therapeutic technologies. Degree-prepared nurses accessed different types of technologies more than nurses with diploma/certificates. Confidence levels, ratings of efficiency and adequacy of training, however, were not associated with educational level.

Staffing and skill mix: According to Step 5 (Union), the continued increases in the utilization of unregulated providers were a concern for nurses. RNs expressed concerns about the lack of clinical preparation and competency of newly graduated nurses. Furthermore, when mentoring was inadequate or unavailable, nurses expressed concerns that patient care was threatened. The quantitative measures of the necessary conditions for work effectiveness in Step 6 supported the qualitative responses from the focus group sessions in Step 5. Inadequacies in terms of resources (equipment, supplies) and workplace support from ineffective nursing managers were also reported in Step 6. In addition, there were comments in the nurse union focus group discussions relating to poor working relationships between RNs and LPNs.

Workload and the Nursing Work Index (NWI): According to the Senior Nurse Managers report (Step 5), the lowest nurse to patient ratio (i.e., fewer nurses per patient) was in the long-term care sector. In this sector, LPN, RN, and RPN caseloads were so large that they could only direct and delegate functions of care to be completed by unregulated workers.

Relationships between NWI sub-scales from the results of the Nursing Occupational Group survey were examined (Step 6). Nurses in all groups who worked in hospitals and in direct care scored low in the NWI and Conditions of Work Effectiveness Questionnaire (CWEQ), and were less satisfied with their current work. Empowerment was most strongly related to the autonomy, control over practice environment, and leadership in the NWI sub-scales. Links also existed between empowerment and job satisfaction and improved nurse-physician relationships.

1. Introduction

The nursing labour market has exhibited a cyclical pattern marked by periods of very low unemployment, during which employers have had difficulty recruiting adequate numbers of nurses to meet health care needs. Today, quality nursing care across Canada is seriously threatened as the nursing shortage continues to challenge all health care sectors. Since the late 1980s, provinces and territories across Canada have been engaged in a massive restructuring of their health care system. Funding cuts resulted in major changes in the ways health care organizations deliver their services and have negatively impacted health care workers. Impacts on nursing, the largest group of health care providers, have included: massive layoffs; increases in non-nursing duties; increases in the use of unregulated health care providers; increases in patient acuity; increases in task-oriented patient care; escalation in the casualization of the nursing workforce; a wage and compensation freeze; and, declines in the number of senior nursing positions. Nursing leaders are urging immediate action to address these critical nursing resource issues in order to retain nursing as a viable partner in the delivery of health care in Canada and to secure the health and well being of Canadians.

Nursing human resource planning has traditionally been carried out by federal, provincial and territorial governments by introducing short-term planning initiatives rather than pan-Canadian coordinated long-term strategies. Early in 1999, in an effort to address the growing number of nursing human resources issues, professional nursing organizations, unions and employers entered into discussion with federal, provincial and territorial governments and with Health Canada and Human Resources and Skills Development Canada (HRSDC). In September 1999, the nursing stakeholders commissioned an analysis of the current nursing labour market in Canada. The nursing labour market included three regulated nursing occupational groups: licensed practical nurses (LPNs), registered nurses (RNs), and registered psychiatric nurses (RPNs). As well as identifying a significant lack of available health human resource data on LPNs and RPNs, the internal report “The Nursing Labour Market in Canada: Review of the Literature” highlighted issues that influence future health service requirements of Canadians. These issues included: emerging and new threats to health; continuing advances in technology; trending in delivery of health services coupled with population demographics; and, growing interest in global labour mobility.

On November 29, 1999, based on the literature review findings that were presented, the nursing stakeholders endorsed proceeding with a sector study as the important next step to more fully investigate the knowledge, skills and abilities be required to position nursing to meet the future health needs of Canadians. The Nursing Sector Labour Market Study was deemed a critical step toward developing a long-term strategy to address nursing human resources. As part of HRSDC’s (Human Resources and Skills Development Canada) Sectoral Partnership Initiative, the nursing sector labour market study used a cooperative approach among stakeholder groups to build a common view on the solutions to key health human resource issues.

A national Steering Committee comprised of representatives from the key stakeholder organizations, including the three regulated nursing groups (LPN, RN and RPN), private and public employers, unions, educators, health researchers, and federal, provincial and territorial governments, oversaw and directed the Nursing Sector Labour Market Study.

A Stakeholder Advisory Group was also established and included interested stakeholders (including representatives from consumer groups). This advisory group was consulted to provide input and feedback on study progress at selected milestones.

1.1. Overall project goal and objectives

The overall goal of *Building the Future: An integrated nursing human resource strategy* was to produce an integrated labour market strategy for the three regulated nursing occupational groups (LPN, RN and RPN) within the context of the future health needs of Canadians and a sustainable health care human resources plan. The following objectives were developed to help achieve this goal:

- To provide labour market information to address the current and future supply of the three regulated nursing occupational groups (LPN, RN, and RPN).
- To conduct a comprehensive analysis of the long-term human resource issues and challenges facing the nursing occupational groups in each of the main employment sectors (acute care, long-term care, community care, home care, research and education, and private and government settings) while also considering the changes underway in primary health care and the overall health care system.
- To examine the application of nursing knowledge, skills, and competencies of the three regulated nursing occupational groups within the context of the health needs of the population.
- To provide the necessary information and recommended actions to support the development and implementation of a Canada-wide integrated nursing human resource strategy that would reflect the geographic (urban, rural, northern and remote), cultural and financial characteristics across this country.

The sector study was designed to have acceptance among all stakeholders and facilitate the coordination of human resource policies in the health care sector with those of federal, provincial and territorial governments. By identifying appropriate utilization patterns for nursing human resources, yielding information pertinent to the issue of career path and mobility of nurses, and providing guidance toward the formation of quality work environments, this study will contribute to the basis for a stabilizing the nursing labour market, which will ultimately lead to the improvement of the health of Canadians.

1.2. Structure of the project (Phase I and II)

The project components were arranged under two phases – a study phase (Phase I), and a strategy formation and implementation phase (Phase II). In Phase I, a comprehensive analysis of the nursing labour market was undertaken based on the most accurate data available, some of which was collected by surveying and/or interviewing nurses, nursing employers, and nursing students. This Research Synthesis report outlines the findings of all 15 research steps undertaken in Phase I that culminated into 13 technical reports. See Appendix E for a complete listing of the technical reports.

Phase II involves a systematic strategy development process based on the findings originating from Phase I. The strategy development process is structured to provide effective input from stakeholders in the nursing sector, including provincial and territorial governments.

A national Steering Committee composed of stakeholder representatives from the three regulated nursing groups (LPN, RN and RPN), private and public employers, unions, educators, health researchers, and federal, provincial and territorial governments guided the study components and approved study deliverables including all reports. The Steering Committee convened to discuss the researchers' progress and build consensus on the human resource challenges identified through the course of Phase I. See Appendix A for a list of the Steering Committee members.

A Management Committee, comprising representatives of the signatories to the contribution agreement and governmental groups, was established to oversee the project, administer the contribution agreement and provide supervisory responsibility over the project manager, secretariat and consultants. See Appendix B for a list of the Management Committee members.

The secretariat provided administrative support to the project's committees and project manager, as well as budget management and communication support to the project. The project manager was responsible for implementing and monitoring the terms of reference and the day-to-day activities of the project, including working closely with the research consultants, throughout the study phase.

Various task-specific ad hoc working groups, comprising subject matter experts and/or interested stakeholders, were identified by the Steering Committee. These groups were responsible for providing input to the research team in order to ensure the research, methodology, and deliverables were representative of stakeholder input.

1.3. Research team

Research team members were responsible for the completion of each research step report (Table 1 outlines the research members for each step). The research project management team members were as follows:

Project Leadership - **Linda O'Brien-Pallas** RN PhD is a Professor at the Faculty of Nursing, University of Toronto, Toronto, Ontario, and cross-appointed to the Department of Management, Policy and Evaluation, Faculty of Medicine, University of Toronto. Dr. O'Brien-Pallas is Canadian Health Services Research Foundation (CHSRF)/Canadian Institutes of Health Research (CIHR) National Chair in Nursing Human Resources and Co-principal Investigator of the Nursing Health Services Research Unit, Faculty of Nursing, University of Toronto. Dr. O'Brien-Pallas had first accountability for the overall project and provided leadership and direction to the research team.

Project Leadership - **Gail Tomblin Murphy** RN, PhD is an Associate Professor, School of Nursing, Faculty of Health Professions and Department of Community Health and Epidemiology, Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia and a Co-investigator at the Nursing

and Health Services Research Unit at the University of Toronto. Dr. Tomblin Murphy has recently been appointed by CIHR and CHSRF as the Science Lead Health Human Resources (HHR). The focus of the position is on ambassadorship in representing CHSRF/CIHR and the Health Services Policy Research community of researchers and decision makers in the area of HHR research.

Project Management – **Marcia Luba** M.Ed and **Sara White** MA provided day-to-day in-house project management at the University of Toronto site. Marcia Luba was integral to the start-up of the project and survey development and distribution. Sara White managed the project timelines with researchers; provided quality control of processes; assisted with revisions to each research step and the final research report of Phase I; and, managed the project budget in collaboration with Dr. O'Brien-Pallas.

Laureen Hayes RN, EdD and **Cheryl McCulloch** RN, PhD are acknowledged for their editorial assistance during the development of reports and quality control aspects of the study

Table 1. Lead Researchers and Co-Investigators

Lead Researcher	Description of Research	Research Team
Dr. Tomblin Murphy	Review of concurrent research into nursing labour market topics	Dr. Tomblin Murphy
Dr. Kephart	Development of simulation model of the nursing labour market	Dr. O'Brien-Pallas, Dr. Tomblin Murphy
Dr. O'Brien-Pallas	Survey of Chief Executive Officers	Dr. O'Brien-Pallas, Dr Tomblin Murphy, I. Andress, S. White, Dr. Hayes and M. Luba
	Focus groups of working nurses	Dr. Hayes, J.L McGrath, Dr. O'Brien-Pallas
	Survey of Senior Nurse Managers who are employers of the nursing groups	Dr. O'Brien-Pallas, Dr. Tomblin Murphy, Dr. Laschinger, S. White, B. Milburn
Dr. O'Brien-Pallas	Survey of nursing occupational groups (LPN, RN, RPN)	Dr. O'Brien-Pallas, Dr. Tomblin Murphy, Dr. Laschinger, S. White, Dr. Wang, Dr. McCulloch

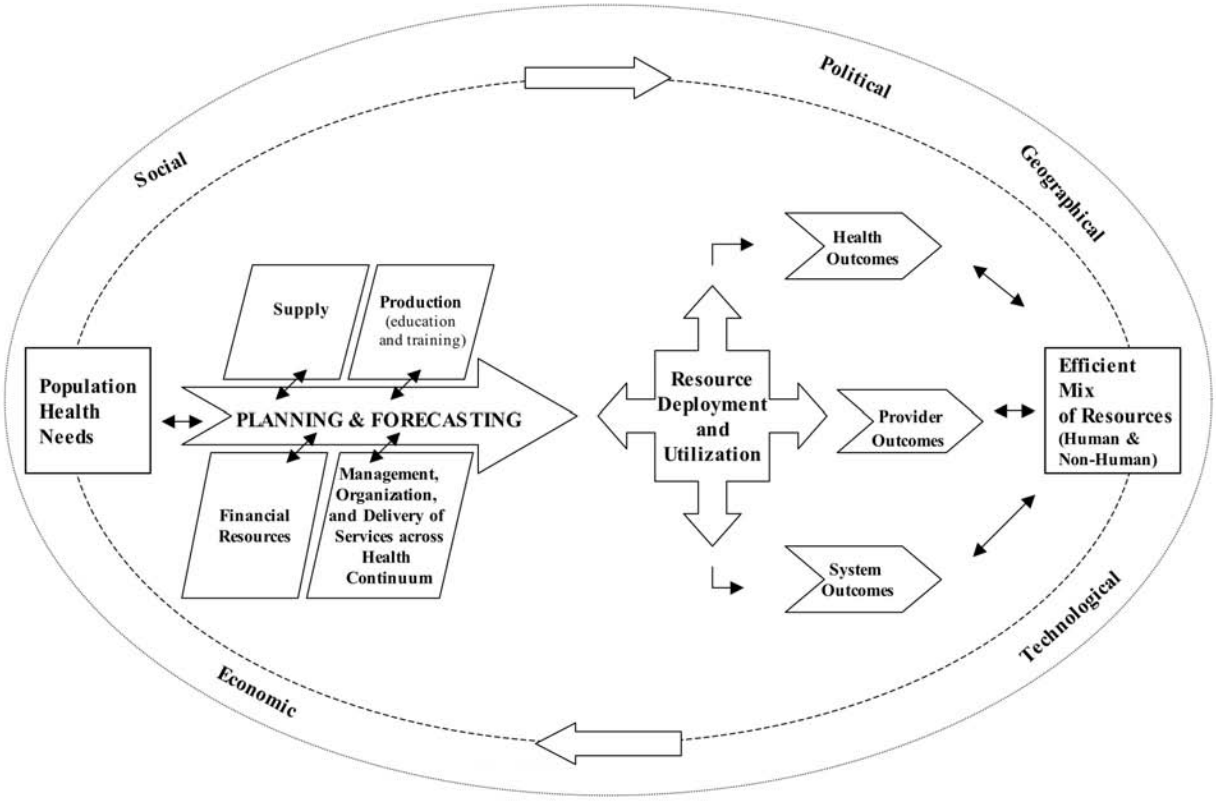
Lead Researcher	Description of Research	Research Team
Ann Higgins	Focus groups and survey of nursing students	A. Higgins, Dr. Kolotylo, Dr. Blythe, Dr. Baumann
Dr. Pringle	Review of nursing education and assessment of capacity	Dr. Pringle, L. Green, S. Johnson
Dr. Birch	Analysis of how changing health care needs contribute to changing patterns of nursing care delivery	Dr. S Birch, D. Tomson, Dr. Li, C.Wu
Dr. O'Brien-Pallas	Analysis of career patterns	Dr. O'Brien-Pallas, Dr. Tomblin Murphy, Dr. Laschinger, S. White, Dr. Wang, Dr. McCulloch
Dr. Baumann	Review of international literature	Dr. Baumann, Dr. Blythe, Dr. Kolotylo, J. Underwood
Dr. Baumann	Analysis of inter-provincial mobility	Dr. Baumann, Dr. Blythe, Dr. Kolotylo, J. Underwood
Dr. Wang	Examination of technological change	Dr. Wang, Dr. Nagle, Dr. Li, C. Wu
Dr. Baumann	Analysis and review of immigration and emigration trends	Dr. Baumann, Dr. Blythe, Dr. Kolotylo, J. Underwood
Dr. McGillis Hall	Estimation of the 'Human Capital Equation'	Dr. Pink, Dr. Donner
Dr. O'Brien-Pallas	Draft Research Synthesis report	Dr. O'Brien-Pallas, Dr. Tomblin Murphy, and the Research Team
Dr. O'Brien-Pallas	Final Research Synthesis report	Dr. O'Brien-Pallas, Dr. Tomblin Murphy, and the Research Team

1.4. Explanation of how the Research Synthesis report is structured

The Research Synthesis report is organized in three main sections: introduction, summary of the methods, and findings. Through discussion with the Steering Committee, it was agreed that the following conceptual elements would be used to organize and present the findings: health needs of the population; production of nurses; supply of nurses and career patterns; management of nurses; workplace environment; utilization of nurses; and, outcomes for patients, nurses and the system. These organizing components are based on the key constructs of the Health Human Resources Planning (HHRP) Conceptual Framework developed by O'Brien-Pallas, Tomblin Murphy, Birch & Baumann (2001).

The framework is designed to include the essential elements of health human resource planning in a way that captures the dynamic interplay among a number of factors that have previously been conceptualized in isolation of one another (O'Brien-Pallas, 2002). The framework provides researchers and planners with a guide to decision-making that takes account of current circumstances (e.g., supply of workers) as well as those factors which need to be accounted for in making predictions about future requirements (e.g., fiscal resources, changes in worker education and training). This open-system framework considers factors that, though important in the HHR planning process, have not always been included in the analyses to date. These factors include social, political, geographic, economic, and technological factors. At the core of the framework is the recognition that health human resources must be matched as closely as possible to the health care needs of the population (O'Brien-Pallas, 2002). Figure 1 provides a pictorial view of this framework.

Figure 1. Health Human Resources Planning Conceptual Framework[2]



[2]O'Brien-Pallas, Tomblin Murphy Birch,, & Baumann, 2001 (adapted from O'Brien-Pallas & Baumann, 1997)

2. Methods

A variety of methods were used in the Nursing Sector Labour Market Study to collect, analyze and interpret data. These methods included: literature reviews, focus groups, interviews, surveys, and analyses of secondary data sources. Ethics approval was obtained from the Ethics Review Board at the home institutions for the lead researchers for each step of the study (University of Toronto, McMaster University, and Dalhousie University).

Quantitative data was analyzed using SPSS 12.0 for Windows. Descriptive statistics were used to summarize data. Qualitative data was categorized, coded and analyzed using Microsoft Excel, content analysis and ethnographic methods. Data were analyzed by nursing group (LPN, RN, and RPN), sector (community health services, hospital, long-term care, regional health authority, and others) and province, depending on the level of measurement available per variable.

2.1. Literature reviews

Literature reviews were conducted by developing a classification framework to facilitate a systematic and standardized collection of information on research relevant to topics related to the nursing labour market. Although this framework was used to identify research in the nursing labour market sector it was not designed to appraise the uncovered literature. Selection criteria or classification frameworks were not applied prior to the review of the sources because many research steps were exploratory.

Electronic grey literature was also reviewed to capture recent nursing labour market sector studies and nursing strategies developed federally, provincially and territorially. Grey literature was of interest because of its potential as a source of credible information that can be accessed quickly and inexpensively, and its ability to familiarize the research team with ongoing developments in the field.

The keywords used for many of the searches were a compilation of terms agreed to by the Steering Committee very early in the process. Other searches began with broad keywords followed by additional keywords that emerged from some of the searches. Copernic 2001, a software program, was used to carry out network searches by simultaneously consulting the most appropriate search engines of the Internet. Systematic Internet searches were conducted on an ongoing basis to locate Web sites with Nursing Labour Market Sector Study-related grey literature. The information was retrieved, assessed, summarized, and then listed by provincial/territorial jurisdiction and topic. Moreover, Internet searches were carried out using advanced search strategies and a range of search engines, namely Google, Alta Vista, Metacrawler, Dogpile, Northern Light, Debriefing, Savvy Search, and Hotbot.

2.1.1. Limitations of the literature reviews

There are three specific limitations to the literature reviews conducted for this project. First, grey literature is not well covered by the usual electronic databases or standard publication channels and so it is less readily identified and accessed than conventionally published literature (Isenberg, 1999; Soule & Ryan, 1995). Material on the World Wide Web is frequently posted and removed at the discretion of site owners with little record of its existence. Second, while thousands of health-related organizations

generate literature, only a fraction of that literature is of interest to the Health Human Resources Planning (HHRP) community. Third, grey literature varies widely in quality and is seldom peer-reviewed (Soule & Ryan, 1995). These limitations place a significant burden on the traditional collection stage of the research cycle. Hence, those who wish to use grey literature as a source of information must be prepared to expend more resources in collecting and processing it than they would in the case of other published materials (Soule & Ryan, 1995).

2.2. Focus groups

Focus groups were conducted to elicit the perspectives of participants (i.e., gather qualitative data). Information letters were sent to participants to explain the importance of the study and describe how their participation could contribute to the study. A purposive sampling approach was used to obtain volunteers to take part in the focus groups. Focus group coordinators from the target groups (nurse unions) assisted in the organization of the sessions, including obtaining volunteers to take part in the discussions. Each participant signed and returned a consent form and completed a brief demographic profile. A facilitator script was used to guide the focus group sessions and to ensure consistency between facilitators.

Focus groups were used to determine the predominant issues voiced by nursing union members of each of the three regulated nursing groups, and to explore possible provincial/territorial and sector variations. All of the sessions were audio-taped, transcribed, and subsequently analyzed. Inter-rater reliability was tested by having two researchers read the transcriptions independently and then organize the data into thematic categories for preliminary analysis. This step was followed by consultations between researchers for clarification and consensus of emerging issues and themes (i.e., to obtain inter-reliability). Every attempt was made to include responses from each of the nursing groups and responses from nurses working in each of the provinces across Canada.

Focus groups were also used to collect information from the under-represented groups in nursing (Aboriginal, male and African Canadian university and college students who were not pursuing nursing as a career). A different approach was used to recruit this sample than that employed in the unionized group study. Notices were posted in colleges and universities where members of the groups of interest assembled, inviting members of these groups were invited to participate in focus groups. As with other focus group studies, the groups were tape-recorded and the tapes were later transcribed. Focus groups were also used to understand student LPN, RN and RPN's reasons for choosing a nursing career.

2.2.1. Limitations of the focus groups

A potential advantage of this data collection approach is a greater spontaneity in the expression of views than that of alternative methods. However, certain focus group members may be more assertive or articulate than others and as a result their views may dominate, while members of the group who are less self-confident may be inhibited from expressing alternative viewpoints (Henderson, 1995).

While it is not necessarily the intent to have representative samples in focus groups, in this study the atypical (of the general Canadian nursing workforce) sample meant that viewpoints may have been over- or under-emphasized. The sample was atypical in that there were a disproportionately high number of full-time, baccalaureate prepared nurses than is represented in the general Canadian nursing workforce. Moreover, focus groups contained higher percentages of LPN than is currently represented in the nursing workforce. Therefore, care must be taken not to generalize these findings to the general nursing population. Furthermore, given that the target sample comprised members of nursing unions who may have different opinions than that of the general nursing workforce, recommendations were formulated with this consideration in mind.

2.3. Surveys

Surveys were designed to answer the research questions and were informed by both the related literature and current work underway by the researchers involved. Numerous external and internal reviewers across health care sectors and the three nursing occupational groups refined survey questions to ensure their validity. Where consensus was difficult to obtain, a survey sub-committee was struck to address and resolve the issues. In Step 8, tailored versions of the survey were designed for different nursing educational programs. To accommodate any questions or concerns from participants regarding the surveys, an e-mail address and toll-free telephone number were established and made available to participants in both French and English. All inquiries were answered within 24 hours of the communication. Communications were recorded and messages logged to ensure consistent responses and to assess common issues/concerns of participants.

Surveys were pilot tested with a small test sample. Feedback aided in ensuring the validity of the survey questions and helped to clarify, expand upon, reduce in scope and/or omit certain survey items. Additionally, the pilot test helped the researchers test the mechanisms employed for the survey to reach the appropriate target populations. Face validity exercises were completed for all subsequent revisions of survey materials.

To ensure appropriate representation for each survey, membership databases from across Canada were utilized to create a sampling frame. Participating organizations were assured that membership lists would be used solely for developing a sampling frame and destroyed upon completion of the study. Potential sample populations were generated to draw the appropriate sample sizes and samples were stratified by certain criteria depending on the survey (i.e., sector, region, age group, etc.) and then randomly selected. In Step 8, all nursing education programs in Canada were asked to participate. Where appropriate, pilot test responses were added to the final sample.

Surveys were sent out in two to three distribution waves and participants were asked to complete the survey within a specified time. Participants who had not returned their questionnaires within the time frame were sent reminder postcards requesting their participation and the return of the survey within two weeks. If participants misplaced surveys or had questions, they were invited to call the toll-free number to ask questions or obtain a replacement survey package either via postal or electronic mail.

Descriptive analyses were conducted to provide a glimpse of the participants' responses with respect to the survey variables. Multivariable analysis was conducted to examine the "effects" of several variables at the same time on an outcome variable. In this study, ordinary linear regression and logistic regression models were used in the multivariable analysis. Only predictors with *p-value*[3] less than 0.05 were discussed in the findings.

2.3.1. Limitations of the surveys

The main limitation of the surveys was the response rate, regardless of the number of surveys initially sent out. The small rate of return of the questionnaires, particularly in the Senior Nurse Managers (SNM) survey, makes it difficult to generalize results to the population (in this case, nurses and nurse managers). The research team attempted to mitigate this limitation by stratifying the samples. Stratified sampling ensures sufficient representation from smaller groups or regions. Although this yielded a disproportionate number of responses from these groups, it was typically controlled through weighting the responses during analysis; however, this could not be done for the SNM survey due to small sample sizes. Although weighting balances the responses from all groups and regions, there remain potential limitations in the ability to generalize the results.

2.4. Interviews

Interview questions were developed based on the original research questions and related literature. Questions similar to some of the survey questions were used to allow for comparative analyses in the final research report of Phase I. French and English telephone scripts were developed and circulated to the interview team members and reviewed. The scripts were reviewed by the Nursing Sector Study Secretariat and minor modifications were made.

A pilot test was completed by conducting in-person interviews prior to the launch of data collection. The interview survey was revised based on the responses and feedback received from the pilot testing. Revised interview questions were reviewed internally by the research team and externally reviewed by members of the Steering Committee and changes made were integrated into the final interview survey.

Interviews were organized according to a random sample of participants, stratified by province and territory, and included all sectors. A list of potential participants was generated and verified, and the sampling frame was generated. A small group was selected for in-person interviews prior to the telephone interview process in order to establish reliability and validity. Participants were given the interview materials in advance of the interview.

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[3] **P-value**: The p-value is the probability that the observed association occurred by chance and it can be calculated from a statistical test. The p-value of 0.05 is customarily treated as a "border-line acceptable" level. If the p-value is less than 0.05, it means that the observed association is not likely to be due to chance. In other words, a true association must exist between the variables. This observed association is then considered "statistically significant", or "significant". If the p-value is greater than 0.05, it indicates that the observed association may be attributable to chance. In this case, the observed association is treated as "not significant".

The introduction letter, consent form, and interview questions were also made available in French. Each interview package was assigned a research number, matched with a corresponding addressed envelope and mailed. Each of the potential interviewees was subsequently contacted by telephone to confirm receipt of the interview package and to establish a possible interview time. During each interview, the interviewer took notes and tape-recorded the session. All interviews were later transcribed by an external transcriber. A toll-free number and e-mail address were provided to the participants to accommodate any questions or concerns they may have had. All interviewees were oriented to the survey questions, were informed of the interview process, and were advised that they had the right to terminate the interview and withdraw from the data collection process at any time. Participants were assured that their name and the name of their facility/agency would remain confidential.

2.4.1. Limitations of the interviews

Because the interviews were time- and labour-intensive for the participants, the number of respondents choosing to participate was limited. Also, because of restructuring and labour negotiations, many health care managers and executives were unable to secure the time needed to participate in these interviews. This limit resulted in gaps in representation across sectors and regions. Although small sample sizes prevent generalizing these responses to the larger population, a better understanding of the stakeholder perspectives was gleaned via the data collected.

2.5. Secondary Data Sourcing

Data was obtained from existing data sources to aid in answering the research question for many of the steps in the report. Various sources were used including: Statistics Canada, Canadian Institute for Health Information (CIHI), provincial/territorial nursing jurisdictions including provincial/territorial regulatory bodies, and the Canadian Nurses Association (CNA). In all cases, data allowing for the identification of individuals were stripped or suppressed to ensure anonymity. Data was either obtained in an aggregate form with cells fewer than five individuals being suppressed or (for Step 3) the individual-level data were accessed at CIHI to run models and to generate aggregate tables that could be taken away and analyzed at a later time. Data were then analyzed using techniques similar to the surveys or, as in the case of Step 3, run through simulation models to predict outcomes.

2.5.1. Limitations of secondary data

Provincial/territorial nursing regulatory bodies collect selected data on nurses licensed in each province. The data elements collected and the format in which they are collected are not always consistent across Canada. CIHI has agreed with the respective regulatory bodies on certain core data elements they are to submit from registrants. The use of third-party data (such as that from CIHI) does increase the chances of error, with jurisdictional regulatory bodies collecting registration data for administrative purposes and submitting a subset of these data to CIHI for use in the respective databases (RNDB, RPNDB, LPNDB).

3. Overview of Study Findings

In this Research Synthesis report of Phase I, the key findings from the each of the steps of the Nursing Sector Labour Market Study are organized according to the components (themes) of the Health Human Resource Planning Conceptual Framework (O'Brien-Pallas, Tomblin Murphy, Birch & Baumann, 2001). Convenient access to nursing labour market information is important for current and future research and will continue to be a priority as areas respond to new challenges. In Research Step 1, a comprehensive inventory of current research was created, wherein barriers and enablers to efficient, reliable access to labour market information were identified as noted below:

1. Leadership, resources, and mechanisms are required to contribute information about ongoing research.

2. There is generous funding available in federal, provincial, and territorial governments and national and provincial/territorial research funding agencies.

3. Nursing professional associations, unions, and regulatory bodies are interested in learning more about nursing labour market issues and they are also eager to find evidence to drive decision making in the nursing labour market.

4. Many studies go unnoticed if they are not published in scholarly journals or on Internet sites.

5. Many key stakeholders continue to struggle to identify ongoing research studies related to nursing human resources.

6. It is a challenge to identify research related to the nursing labour market sector that is presently funded in Canada. It is also noteworthy that most of the research to date focuses on RNs only with only a few studies related to LPNs and even fewer to RPNs.

7. Most researchers do not publish data, results and recommendations through formal avenues of research publications, such as scholarly journals, until several months after the research has been completed.

8. Current research activities are often recorded in the grey literature, on the Internet for instance, or are discussed in personal communication between stakeholders in the nursing research community.

9. Material on the World Wide Web is frequently posted and removed at the discretion of site owners with little record of its existence.

10. While thousands of health-related organizations generate literature, only a fraction of that literature is relevant to the nursing stakeholder community.

11. Grey literature varies widely in quality and is seldom peer-reviewed.

Given these shortcomings and the fact that many of the research steps involved the use of literature and existing databases, the findings emerging from the research have limitations, in which cases the researchers have indicated where more information is warranted. The findings described in this final report are only a brief overview of the key findings. More in-depth information in any given area is available in the final reports of each of the research steps. These are available at www.buildingthefuture.ca.

3.1. Needs of health population

Population characteristics related to health levels and risks (needs-based factors) reflect the multivariate characteristics of individuals in the population that create the demand for curative as well as preventative health services. Population health needs are not an additive function, and are influenced by several mediating factors (Eyles, Birch & Newbold, 1993) such as actual and perceived population health status, socio-economic status, demographic characteristics, enabling and predisposing factors, and health behaviours (Aday & Anderson, 1974). Health needs are directly or indirectly influenced by social, cultural, political, contextual, geographical, environmental, and financial factors. Population health needs are also influenced by the determinants of health, the collective label given to the multiple factors that are thought to contribute to the health of populations. They include such factors as people's biological endowment and individual responses, the social and physical environment in which they live, the economic conditions (i.e., productivity and wealth) of their society, and the accessibility and quality of their health care system (O'Brien-Pallas, 2002).

For human resource policy planning, it is important to examine how the levels of need for health care services in the population are changing. There is evidence of improvements in health and reductions in risks to health in the Canadian population over the last decade of the twentieth century (Step 9). Indicators of population health by age group and gender for 1991 and 2000 show a picture of improved health over this period. For example, there has been a fairly consistent increase in the number of individuals across all age-gender groups reporting that they do not smoke. Similar trends were observed with a reduction in the reporting of high blood pressure problems, except for older women. The data on morbidity indicates a reduction in smoking, arthritis and heart disease in all age-gender groups but an overall increase in the prevalence of diabetes.

In terms of self-assessed health between 1991 and 2000, a substantial improvement in health was observed among younger age groups, and a greater proportion of individuals reporting their health as fair or poor in the older age groups. Given the absence of any clear trend towards poorer health in the objective-measured indicators of health, this observed lower level of health among the elderly groups might reflect changing expectations about health, which are an important factor in the demand for health care. It is also important to note that improvements in health do not mean that less health care is needed. Even if the level of health care needed for the average 65-year-old citizen is reduced, this has to be considered alongside the increase in the size of the senior population.

Assessment of trends in health care resources was restricted to the province of Ontario because of major limitations in the data for other provinces (Step 9). However, the reductions in the number of acute care beds, average length of stay and perceived shortages are common to many jurisdictions. There was a reduction in the number of beds of almost 20% in acute care hospitals between 1995 and 2001. The rate of increase in inpatient nursing lagged behind the increase in the size of the population and hence nurse-population rates fell. Although nursing input per inpatient episode increased, this increase is associated with major reductions in inpatient episodes. Nursing input per inpatient episode actually fell once allowing for the increasing severity of those patients admitted to the hospital. It may be that the hospital restructuring initiatives in the mid-1990s led to a misallocation of resources. Inadequate numbers of nurses were employed in acute care hospitals to provide the increased intensity of care required to support the policy of bed reductions while striving to continue to meet the health care needs of the population.

Findings from Step 3 reinforce that sources of routine data such as population health needs, workload, productivity, and staffing mix, with the possible exception of population health needs, are poorly developed in most provinces and territories, and certainly cannot be compiled for national studies. Moreover, there is a tremendous paucity of data available outside of the acute care sector.

3.2. Production of nurses

Production involves the education and training of future health care providers. The array of preparatory programs includes both university and college education and on-the-job training. The number of formal positions offered by an educational institution is influenced by financial resources and the designated number of funded places. The link between population health needs and future capacity to meet those needs should be considered in setting production targets for places in any health discipline (O'Brien-Pallas, 2002).

3.2.1. Formal educational capacity

Most of the findings about production of nurses relate to capacity of basic nursing education programs. In Step 8, current educational programs, their current enrolments, future enrolment plans, available resources, and access to clinical placements and teachers are described. Since only one of three RPN schools responded, no findings are reported relating to RPN education.

In terms of LPN programs, the increases in enrolment seen over the last several years will likely end in the 2004-2005 period or at least be greatly reduced because of financial constraints of the schools that limit their ability to hire the faculty and because of the limitations in access to clinical placements. Half the schools report that they do not have sufficient resources for the number of students they currently enrol. The resources in shortest supply are acute care and community placements, faculty to supervise students clinically, and faculty to provide back-up in the absence of teaching staff. With the current resources, there is limited capacity to increase enrolments. However, with increased resources, 50% of schools could increase enrolments from 10-25%, 40% could manage an increase of 50%, and 30% could double their enrolments. The majority of schools are not able to find sufficient faculty members, with credentials they are seeking, to fill the vacant positions.

The average retention rates in the LPN schools are around 70%, but the range is very wide, from 20% to 100%. There are few Aboriginal students in LPN programs and the proportion of men is 12%. RN schools also reported similar challenges, in that 60% of them cited insufficient resources for the number of students currently enrolled. With additional resources, 10% of RN schools could expand their enrolments by 10%, 70% could expand by 25%, 30% could expand by 50%, and 20% could double their enrolments. Participation rates for Aboriginal Canadians and for men are also low given the need for both populations in the health care system. Retention rates are too low within many schools which results in wastage of these schools' resources, creates significant distress for students who withdraw, and unnecessarily reduces the number of potential nurses available to the health care system. Clinical placements in acute care and in the community will continue to be major limitations in the schools' capacity to expand their enrolments. Shortages in faculty in all specialty areas prepared at the levels (Master's and PhD) required by schools will persist because of the limited enrolments in graduate programs across the country.

Simulation results show that adding new nurses by increasing training education seats takes a number of years before it begins to have a substantial impact on supply (Step 3). The cost effectiveness of training and recruitment depends heavily on retention. Low rates of nurse retention in the workforce can erode the gains that were made by increases in supply as a result of more nurse training seats. Complicating these factors is the finding that nurses are graduating at an older age than they were 10 to 20 years ago. On average, LPNs graduating in 1991-2002 were nine years older than those graduating before 1981. RNs and RPNs graduating in 1991-2002 were five years older than RNs and RPNs who graduated in 1981 (Step 6). These changes result in a reduced work life for nurses. Addressing shortage by recruitment alone may be quite feasible for some provinces with sufficient financial resources to attract nurses from other provinces or countries. Such a strategy is neither sustainable nor ethical.

3.2.2. Continuing education

In addition to the initial education and subsequent employment of new nurse graduates, nurse production involves the continuing acquisition and utilization of new skills by practicing nurses. Unfortunately, many nurses report that educational support in the workplace is often lacking as they are often unable to attend in-service sessions due to scheduling conflicts and lack of staff to replace them (Step 5 – Union). One area in particular that requires continuing education is in the application of technological innovations for patient care. Findings show that, regardless of the type of technology, training from employers enhanced nurses' use of technologies and their level of confidence when using them, and helped them to appreciate technology for the efficiency that it brought into their nursing work (Step 13). Findings from both the nurse occupational groups survey (Step 6) and the SNM survey (Step 5), indicated that when LPNs and RPNs received increased provisions for technology training , their use of technological applications was enhanced and their perception of work satisfaction increased. Further studies are needed to understand the discrepancies in the ratings of training education adequacy between the two groups (LPN/RN) so that health organizations can plan effective training programs to meet their needs.

3.3. Supply of nurses and career patterns/paths

Supply reflects the actual number, type, and geographic distribution of regulated and unregulated providers available to deliver health services at a given point in time. Supply is fluid in nature and is influenced by several factors, including the International Labour Organization's (n.d.) Key Indicators of the Labour Market. These include, but are not limited to, participation rates, provider-to-population ratios, demographic and educational characteristics of individual providers, full-time and part-time status, employment sector, underemployment, unemployment, and inactivity. Death, retirement, and emigration and immigration rates influence supply at any given point in time. The role–including scope of practice–undertaken by any regulated provider is determined by licensing/regulation standards of practice. The role of unregulated workers is excluded from licensure/regulation and is generally determined by employers (O'Brien-Pallas, 2002).

3.3.1. Number of nurses per sector and nursing occupational group

The aging of the nursing workforce was apparent in the analysis completed for the nursing occupational groups survey (Step 6). Over 70% of nurses were 40 years of age or older. Males were under-represented in the sample; however, about one-fifth of RPNs were males. Table 2 identifies the age of participants by province, under/over 40, and place of employment, hospital/non hospital.

Table 2: Percentage Distribution of Weighted Sample Response Rates by Nursing Group, Sector Group, and Province/Territory

		BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	YT	NT	NU	CA
LPN	**Hospital**														
	Under 40	27.1	29.1	27.9	27.7	28.6	23.3	35.1	33.8	28.4	30.6	0.0	35.8	.	28.0
	Over 40	72.9	70.9	72.1	72.3	71.4	76.7	64.9	66.2	71.6	69.4	100.0	64.2	.	72.0
	Non-hospital														
	Under 40	25.9	29.9	34.4	25.8	35.7	33.1	36.8	41.8	35.9	37.3	25.6	31.5	.	34.1
	Over 40	74.1	70.1	65.6	74.2	64.3	66.9	63.2	58.2	64.1	62.7	74.4	68.5	.	65.9
RN	**Hospital**														
	Under 40	33.6	40.8	34.5	36.4	36.0	.	42.2	35.5	38.8	55.6	43.3	38.1	38.1	37.2
	Over 40	66.4	59.2	65.5	63.6	64.0	.	57.8	64.5	61.2	44.4	56.7	61.9	61.9	62.8
	Non-hospital														
	Under 40	21.9	22.9	24.2	24.5	27.5	.	25.6	22.6	20.3	31.7	20.1	25.4	18.6	25.4
	Over 40	78.1	77.1	75.8	75.5	72.5	.	74.4	77.4	79.7	68.3	79.9	74.6	81.4	74.6
RPN	**Hospital**														
	Under 40	26.4	22.5	39.8	23.6	.	.	.	.	.	.	.	.	.	26.5
	Over 40	73.6	77.5	60.2	76.4	.	.	.	.	.	.	.	.	.	73.5
	Non-hospital														
	Under 40	24.8	24.5	32.8	19.3	.	.	.	.	.	.	.	.	.	24.7
	Over 40	75.2	75.5	67.2	80.7	.	.	.	.	.	.	.	.	.	75.3

The total number of RNs employed in nursing has increased slightly over the last five years with 230,957 RNs employed in nursing in 2002 compared to 227,814 in 1998 (RNDB, CIHI, 2003a). These figures represent participation rates of 89.4% in 1998 to 90.7% in 2002. These findings show a modest growth of those in practice but the aging of the nursing population over the next four years will have a significant impact on the supply of RNs. It is estimated that by the year 2006, Canada could lose approximately 30,000 RNs if they retire at age 65; however, if RNs retire at 55, that number jumps to 64,000 less RNs in the workforce in Canada (O'Brien-Pallas, Birch, Tomblin Murphy & Alsknis, 2003). This would have a serious impact on our ability to provide RN services to meet patient needs.

Unfortunately, reliable sources for the number of LPNs and RPNs overtime are not available but will be available in the future as the CIHI databases for these occupational groups continue to be reported. Currently there are 60,123 LPNs who are employed in nursing in this country, with the highest proportion working in Ontario (36.9%), followed by Quebec (24.2%) (LPNDB, CIHI, 2003b). In the Western provinces, there is a total of 5,132 RPNs employed in psychiatric nursing. The greatest proportion is employed in British Columbia (42%), followed by Alberta (21.1%).

3.3.2. Immigration and migration trends

Research Steps 11, 12 and 14 examined trends and policy issues relevant to the migration of nurses to and from Canada, using published and grey literature and available databases. While the availability of information was very limited, particularly in relation to LPNs and RPNs, some patterns were noted as described in the following statements:

- Trends in world migration include regional markets, in which richer countries attract migrants, and a global market with flows from less to more developed regions.
- Restructuring occurred in most developed countries and contributed to the current global nursing shortage; the labour market is characterized by shortages in all but a few Asian and European countries.
- The small annual migration of nurses to Canada accumulates over time, particularly in certain provinces. Of the 230,957 Registered Nurses employed in Canada in 2002, 6.9% (15,847) were internationally-educated and accounted for more than 10% of RNs in four jurisdictions: British Columbia, Nunavut, Ontario and the Northwest Territories (CIHI, 2003a). Of the 60,123 LPNs employed in Canada in 2002, only 1.6% of them were internationally-educated, although it is unknown where 26% of LPNs graduated (CIHI 2003b).
- Nurse immigration increased from 1999 to 2002. The 1,528 RNs admitted to Canada in 2001 represented 21.8% of migrants listed with health care occupations. Most of these nurses came from the United Kingdom (UK) and the Philippines.
- Most internationally educated RPNs employed in Canada in 2002 were educated in the UK (CIHI, 2003c). BC admitted the most internationally-educated RPNs of the Western Canadian provinces.

- Most Canadian nurses who migrate go to the United States (US); LPNs migrated to Hong Kong, New Zealand (NZ), and the UK; and RPNs migrated to Australia, NZ, the UK, and Bermuda (Step 11 &14).

Nurses are attracted to Canada by a good standard of living, job opportunities, the lack of strife, the health care system and public education. Migration from Canada in the 1990s was prompted by the unstable labour market at home, enticements offered by US employers, and the expectations of rewarding well-paying jobs outside of Canada. While international recruitment may be a short-term solution, this strategy exacerbates shortages and delays measures to improve employment conditions in host countries.

3.3.3. Inter-provincial mobility

Step 12 involved a study of inter-jurisdictional migration of nursing throughout Canada using published literature, grey literature, statistical data and data from nursing regulatory bodies. Inter-provincial mobility increased between 1990 and 1997, with Alberta, BC, Nova Scotia, and Ontario having the highest immigration rates. The majority of migrants were less than 25 years of age, but some were in the 25-34 age group. Nurses in older age groups tended to remain in their provinces of graduation. In 2001, the majority (86.7%) of RNs in the Canadian workforce continued to be employed in their province of graduation. Regional markets in Atlantic and Western Canada persisted and there was an east-west flow of nurses that continued from previous years. Migration to the Northern territories was high because there is only one school of nursing. More than one quarter of the nurses in the territories came from Ontario (CIHI, 2003a).

There is limited information on the mobility of LPNs and RPNs. The majority of LPNs (92%) and RPNs (over 80%) continued to be employed in their provinces of graduation. The east to west movement of LPNs is similar to that of RNs. There is some indication, based on the number of requests for verification of credentials that the highest numbers of LPN migrants go to BC. The overall inter-provincial migration patterns for RPNs differ somewhat from that of LPNs. RPNs only move within the four Western provinces where their profession is regulated. For RPNs, Alberta and BC attract most of the RPN graduates of Canadian psychiatric nursing programs who do move (CIHI 2003c). There appears to be little migration to Manitoba, but Manitoba graduates express interest in migration to BC and Alberta. Among Canadian RPN graduates employed in 2002, those graduating from Manitoba and Saskatchewan were most likely to be retained in their own province of graduation.

The reasons why nurses move to other jurisdictions include: availability of employment opportunities, such as full-time employment; greater income and benefits; expectation of better working conditions; and, chances for personal/professional growth. Retirement, the relocation of a spouse, and other family-related reasons are also important in inter-jurisdictional mobility. In the 1990s, better salaries were not cited as the major reason for migration. However, there is an established relationship between economic factors such as wages, allowances, and benefits on the one hand and nurses' job satisfaction and retention on the other (Blegen & Mueller, 1987; Shields & Ward, 2001). Salary remains

an important motive for migration. Rates of migration are highest to those provinces where nurses receive higher salaries.

3.3.4. Simulation results

Recognizing that Canada is facing a growing nursing shortage that has become a primary concern for governments, educational institutions, and other health care planners, Step 3 focused on the supply of nurses in the three regulated nursing groups. Through an empirical analysis and simulation of demographic scenarios affecting the future supply of nurses, the simulation model projected the adequacy of future nursing supply at the system level and identified the key factors impacting trends in supply (Step 3). General simulations were used to analyze (a) the relative impact of an aging workforce and rates of recruitment and retention on future workforce size and age distribution, (b) the effect of increasing the number of training seats on supply under different recruitment and retention scenarios, and (c) short- versus long-term effects of changes in the age of retirement. Simulations by province/territory and nursing group were used to examine the effect of alternative retirement scenarios on supply within the next five to 10 years, and to produce new indicators that show what the long-term consequences would be of current patterns of recruitment and retention. The findings indicate that all three of the regulated nursing groups have workforces with a high proportion of nurses concentrated in the older age groups, a problem shared by all regions of the country. The result is described as a "demographic time bomb" with an expected decline in the size of the workforce in all three nursing groups. Consistent with these simulation results are the demographic results of the nurse occupational group survey (NOG - Step 6) that over 70% of the sample was 40 years of age or older. Because of the aging workforce, declines in workforce size in the next 10 to 20 years are almost certain. The ability to address shortages in a nursing group or other health care providers by increasing the scope of practice of nurses is constrained by supply. It is unlikely there will be surplus in any of the three regulated nursing groups. Augmenting requirements for one nursing group with another or augmenting requirements for other health professions with nurses is unlikely to be feasible.

Simulations show that the age structure of the nursing workforce is fully determined by the past history of age-specific rates of entry and exit from the workforce (Step 3). It is unlikely that future age distributions will look anything like the current distributions. Changes in the age of retirement can be a valuable short-term strategy for coping with the current crisis, as delaying retirement can substantially reduce the number of losses from the workforce over the next five to 10 years.

Unless we continue to have shifts in policies and funding for the health care system that create large differences in the labour market experience of nursing cohorts, future age distributions will be younger and will be less concentrated around certain ages. The crisis we are now facing is unique, not a long-term reality of the nursing workforce.

3.3.5. Incentives/disincentives for a nursing career

Incentives for a nursing career were examined using original data (Step 7), and issues were identified from the literature on the benefits of a career in nursing from both the human capital and

financial perspective (Step 15). Step 7 findings based on focus groups, interviews and a survey of nursing students identified a number of factors that encourage nurses to enter nursing: desire to help people; diverse work opportunities; opportunities for career advancement; opportunities for continuing education; and, job security. Facilitators for entering nursing include: advice from family and friends; flexible and interesting program; availability of information on career options; and, advice from other nurses or nursing faculty. The literature review (Step 15) identified the following incentives as relevant for nursing as a career choice in Canada: there are distinctions between incentives of a career in nursing and the incentives regarding choice of an employer; the primary reason for choosing a career in nursing is the desire to care for others; the images of nurses portrayed by the media can influence choosing a career in nursing; gender influences career choices in nursing work; and, the choice of employer is often linked to financial and employee benefits.

Barriers exist for students entering nursing including: cost of books, living expenses and tuition; personal and family responsibilities; and, accessibility of programs (Step 7). The frequency with which all of the factors were rated did not differ substantially among the three groups of nursing students (nursing diploma/degree; practical nursing diploma; psychiatric nursing diploma/degree). The major disincentives to a nursing career relevant for nursing in Canada include: the perceived low status of the nursing profession; poor organizational practices; low levels of autonomy and decision-making; controversy over degree- and diploma-prepared nurses; poor work environment and work conditions; increasing litigation; increased risk to nurses' health; and, nurse abuse (Step 15 and 7). Other relevant issues included: wage compression; nursing as a female-dominated occupation receiving unequal pay for equal work with low and compressed pay scales; outdated compensation models for nursing professionals; a lack of knowledge about compensation and supply and demand; patient/nurse outcomes; nursing care providers other than regulated nurses; and, non-acute care nurses.

3.3.6. Methods for coping in a tight labour market

Methods utilized by Senior Nurse Managers (SNMs) and CEOs to cope with tight nursing labour markets were assessed using original data (Step 5 – SNM & CEO). Strategies employed over the last fiscal year (2002-2003) were measured by: whether or not they were utilized; their degree (on a 4-point Likert scale) of impact on direct nursing care; and, whether the strategy resulted in a positive or negative impact on the health care facility/agency. Nearly all CEOs and SNMs reported utilizing strategies to cope with tight nursing labour market conditions at their health care organization. Most commonly used high-impact strategies included: the over-utilization of nursing staff; the altering of staff mix and increased community-based care; and, increased wait times. Eighty per cent of CEOs reported positive impacts resulting from the over-utilization of nursing staff and all CEOs reported positive impacts for their organizations when altering staff mix and increasing community-based care (Step 5 – CEO). Although SNMs reported utilizing the same high-impact strategies as the CEOs, the effectiveness of these strategies did not match the likelihood of the strategy being used. For instance, even though increased community-based programs were the second most effective strategy to cope with tight nursing labour markets, SNMs only utilized this strategy a quarter of the time in health care organizations across Canada (Step 5 – SNM).

3.4. Management of nurses

Management, organization, and delivery of health services are key variables influencing the delivery of care across the health care continuum. Management and organizational characteristics influence the amount and quality of care provided, provider health and satisfaction, and costs associated with the delivery of services. Organizational characteristics such as structural arrangements, degree of formalization and centralization, environmental complexity, and culture influence the way work gets done and impact on outcomes. In nursing, for example, it has been demonstrated that managerial resource-allocation decisions can have a negative impact on job satisfaction (Blegen, 1993; Kramer & Schmalenberg, 1988) and health (Amick, Kawachi, Coakley, Lerner, Levine & Colditz, 1998; Josephson & Vingard, 1998), as well as on patient outcomes (Aiken, Smith & Lake, 1994; Blegen, Goode & Reed, 1998; Blegen & Vaughn, 1998; Brooten & Naylor, 1995; Kovner & Gergen, 1998), patient satisfaction with the care received (Leiter, Harvie & Frizzell, 1998; McGillis Hall, 2003), levels of productivity (O'Brien-Pallas, Thomson, Alksnis & Bruce, 2001), and the number of visits a client receives in the community (O'Brien-Pallas, Irvine Doran, Murray, Cockerill, Sidani, Laurie-Shaw & Lochhass Gerlach, 2001; O'Brien-Pallas, 2002).

CEOs in Canadian health care organizations are affected by nursing shortages and are important stakeholders in creating a long-term health human resource strategy policy for Canada. At the time of the interviews (Step 5), the majority of CEOs stated they were experiencing nursing shortages. While RN shortages were most commonly reported, many CEOs indicated they were experiencing multiple nursing occupational group (LPN, RPN) shortages simultaneously. Executives had employed an array of strategies to cope with the tight labour market during the 2002/03 fiscal year. Most often nursing staff were over-utilized in order to cope with these pressures, a practice also identified by SNMs (Step 5 – SNM). Aside from being the most practiced strategy, the over-utilization of nursing staff had the greatest impact on direct nursing care. As a result, CEOs who over-utilized nursing staff to cope with the tight nursing labour market, reported experiencing adverse effects on the direct nursing care services of their facility/agency.

SNMs reported using research evidence for decision making regarding staffing allocation, nurse patient ratios, organization of nurses work, staffing mix, and restructuring. However, the research on these strategies for managing nursing resources was limited and most often focussed on the hospital sector with limited research being completed on long-term and community health sectors (Step 5 – SNM). Cost restraints and the desire to improve quality of care are the most prominent influences in the decision making process of CEOs (Step 5 – CEO), whereas quality of care followed by cost restraints were the most prominent decision making influences for SNMs. These differences in prioritized influences on decision-making process for health care executives could result in conflicts about the decisions to be made about nursing management and resources within health care settings across Canada.

Management decision priorities impacted the use of technology by nurses. There was reportedly more use of technology by LPNs and RNs when organizations identified improvement of quality of care as a priority in management decisions. However, when organizations set cost restraints as a priority, there was less use of technology by LPNs and RNs in the organization (Step 13). Organizations with a Chief Nursing Officer (CNO) who had control over the nursing budget benefited the most from nurses'

access to technology and training; whereas organizations in which the CNO had no control of budget benefited the least from technology.

In Step 5, SNMs suggested that care delivery models remain eclectic and have questionable utility for practice. Nursing care delivery models that utilize total patient care reportedly do not contribute to the quality of care or facilitate individual approaches to the coordination of care and other models of care delivery. Primary care models, on the other hand, were seen to promote fewer negative outcomes such as falls, medication errors and total medical incidents. Only the findings pertaining to falls in the long-term care sector failed to support this relationship. In general, primary care models that promote better continuity of care led to fewer errors.

3.5. Workplace environment

Assessment of nurses' workplace environments from the perspective of the individual nurse included qualitative responses from nurse union activists (Step 5 – Union), which in turn were consistent with findings from the nurse occupational group survey (Step 6). Some key findings relating to nurses' working conditions are highlighted.

3.5.1. Safety

In Step 5 (Union), nurses voiced concerns about a perceived lack of safety in the work environment: equipment was not always in working order; community nurses were in potentially dangerous situations at times; and, potential violence was experienced in the workplace. Although the majority of CEOs interviewed (71%) reported that they had operational patient safety programs, 63% stated that they had concerns regarding patient safety as related to nurse staffing. In Step 6, nurses reported that they were less likely to experience violence in the workplace when: they had more human resources to support patient care; they were working in health care organizations with more effective leadership; they were working less overtime; and, they were experiencing fewer shift changes. Demands in the workplace affected both the physical and the mental health of nurses, with variations in both physical and mental health noted by region and across the three occupational groups.

3.5.2. Technological changes

Step 13 used a component of the nursing occupational groups survey (Step 6) to assess staff nurses' perspectives on the use of technology in the workplace. Regardless of the type of technologies, older nurses used technologies less often and reported being less confident in using them than younger nurses. However, older nurses did not resist the use of technology, and age did not affect how nurses perceived the efficiency of information or diagnostic/therapeutic technologies. When compared to nurses in non-direct care and nurses with higher perceptions of empowerment, nurses in direct care and nurses less empowered at work used more diagnostic and therapeutic devices but less communication tools and information systems. Bedside nurses were also less confident in using communication tools and information systems and were less likely to rate them as efficient even after controlling for the level of use of these technologies. However, nurses' perceptions of the efficiency of diagnostic and therapeutic devices did not vary with whether or not they were in bedside nursing or what their level of work empowerment was.

After controlling for dimension of practice and work empowerment, degree-prepared nurses still accessed different types of technologies more than nurses with diplomas/certificates. Confidence levels, ratings of efficiency and adequacy of training, however, were not associated with educational level. The lack of gender differences in the confidence levels and perceptions of the efficiencies suggested that women were not averse to working with sophisticated equipment after factors regarding their level of use and the training were controlled.

3.6. Staffing and skill mix

According to the individual nurse perspective, continued utilization of unregulated caregivers raises concern about the overall competency of the care team. Registered nurses are worried about the extent of clinical preparation and competency of newly graduated nurses from colleges and universities, particularly when they go directly into critical care or community care without first gaining direct patient care experience. Furthermore, when mentoring is inadequate or unavailable, as is often the case, patient care may be threatened (Step 5 – Union). These findings were confirmed in Step 6 where nurse to patient ratios where so low that nurses often worked overtime to meet patients' needs. Compounding these factors are increases in patient acuity (Step 9, Step 5 – Union) and patient care workloads reported to exceed the capacity of nurses to provide the required levels of care (Step 6). Recent initiatives from the LPN, RN, and RPN national associations are underway to develop an evaluation framework that will assess staff mix ratios and be used as a decision-making tool for health care stakeholders. Further research is needed to develop similar tools to assist with decision-making.

3.6.1. Nursing Work Index (NWI)

According to Step 6 NWI findings, RPNs had the highest average summative sub-scale scores on measures of control (17.93), nurse physician relations (8.89) and resource adequacy (9.84), and the lowest on leadership (28.45). RNs recorded the highest average summative sub-scale score of all nursing groups, in terms of perceived autonomy (15.85) and leadership (29.2). LPNs, however, recorded the lowest average score on all summative sub-scales except for leadership. RN scores on autonomy, control over practice and RN/MD relationships were similar to those of Ontario RNs in the 1998 Canadian study (Laschinger, Shamian & Thomson, 2001) and somewhat higher than nurses in non-magnet hospitals in Aiken & Patrician's (2000) study. RPN scores were closer to those of nurse practitioners in Almost & Laschinger's (2002) study in Ontario acute care and primary care settings.

Consistent with the quantitative measure of necessary conditions for work for the best workplace were the qualitative responses from the focus group sessions (Step 5 – Union). Individual nurses identified inadequacies in terms of resources (e.g., equipment, supplies) and workplace support from nursing managers who are reported to be ineffective leaders, not respectful of the nurses, unsupportive, and have little nursing experience with poor understanding of the daily challenges encountered by nurses. In addition, there were comments about poor working relationships among nurse groups, particularly between RNs and LPNs.

3.6.2. Workload and the Conditions of Work Effectiveness Questionnaire (CWEQ)

SNMs acknowledged that, while staffing and workload are problematic in all health care sectors, certain areas appear to be more affected. Findings from the Step 5 SNM report suggest that the lowest nurse to patient ratios (i.e., fewer nurses per patient) were in the long-term care sector. In this sector, LPN, RN, and RPN caseloads are so large that they can only direct care and delegate functions of care to be completed by aides and other multi-skilled workers.

- Relationships between CQEW and NWI sub-scales from the nursing occupational groups survey were examined (Step 6). Nurses who worked in hospital and in direct patient care settings scored low on the NWI and CWEQ sub-scales, and were less satisfied with their current working environments than those who worked in the non-hospital sector in non-direct patient care settings. Other findings included the following:
- Empowerment was most strongly related to the autonomy, control over practice environment, and leadership NWI sub-scales.
- Empowerment was moderately related to the resources and nurse-physician relationships; overall empowerment was strongly related to job satisfaction, as were the autonomy, control over practice, leadership and resources NWI sub-scales.
- RPNs had the highest average summative sub-scale scores on measures of control, nurse physician relations, and resource adequacy, and the lowest on leadership.
- RNs recorded the highest average summative sub-scale score of all nursing groups, in terms of perceived autonomy and leadership.
- LPNs recorded the lowest average score on all summative sub-scales except for leadership.

Associations exist between empowerment and job satisfaction and greater nurse-physician relationships. A good/excellent rating of nursing care was associated with the age of nurses in that more experienced nurses tended to have more clinical experience and were less likely to rate the quality of nursing care delivered on the unit as good or excellent.

3.7. Deployment and utilization of nurses

Resource deployment and utilization reflects the amount and nature of the resources deployed to provide health services to the population at large. Utilization reflects the nature and type of resources used by the population to meet health needs. The efficiency and effectiveness of service delivery depends to a great extent on the effective deployment and use of personnel (Ozcan, Taranto & Hornby, 1995). The World Health Organization (2000) notes that provision of health care involves putting together a considerable number of resource inputs to deliver an extraordinary array of service outputs. Decisions concerning the deployment and use of personnel across all sectors of the system influence access to services and utilization by the population and outcomes (O'Brien-Pallas, 2002).

3.8. Work preferences or choices by nurses

Some of the results from the nursing occupational groups survey (Step 6) that relate to work preferences or choices by nurses include the following:

- RPNs were more likely to be employed full-time while LPNs had the highest number of worked casual hours of the three occupational groups studied.
- The top five reasons for not working full-time included personal choice, full-time positions not available, full-time positions too demanding, family reasons, and lack of flexible work hours (Step 5 – Union).
- RNs reported more often than the other two groups that family responsibilities and full-time positions were overwhelming.
- The reasons cited by LPNs for not working full-time are consistent with the findings of the nurse focus groups and SNM surveys in other sector study reports. The primary reason is the lack of full-time jobs.
- Less experienced nurses (those under 25) are less satisfied with their jobs than more experienced nurses; this dissatisfaction is even greater for less experienced males and those nurses who have "high levels" of education.
- Chaotic work environments existed in all three occupational groups in all sectors with changes being experienced in their worked hours, in the area of nursing where they worked, and either increased or decreased hours.
- A large number of respondents had taken temporary leaves of absence.
- Nurses employed in part-time and casual positions were also more likely to plan to leave their current position than nurses employed full-time. However, plans to leave their positions are most common among casual employed nurses in direct nursing care.
- Nurses who worked in health care organizations with strong leadership were less likely to leave.

3.9. Deployment

Findings from Step 5 (SNM) provide some insight into the nature of nurse deployment. There is a trend toward fewer budgeted positions for LPNs, particularly in the community sector. The actual utilization of LPNs across all sectors indicates that the majority are hired into casual and part-time positions except for positions within the long-term care sector. Of further interest is that these causal positions, often being of a short-term nature, suggest LPNs may be under-utilized in all sectors. In addition, nearly all CEOs interviewed (95%) reported using multi-skilled workers and paying these workers from their organization's nursing budget (Step 5 – CEO).

Fewer budgeted positions were available for RPNs except in long-term care and Regional Health Authorities with hospitals (Step 5 – SNM). None of the community health care agencies surveyed employed RPNs. The low utilization of RPNs may reflect the fact that RPNs are primarily in the Western region of Canada. Overall, there was high use of casual and part-time positions across all sectors for all three occupational groups in all regions of the country. In addition, there appears to be very little change in employment conditions when we examine new hires by occupational category by sector.

In terms of nurse deployment from the perspective of the individual nurse (Step 5 – Union), RNs voiced concern that newly graduated nurses go directly into critical care or community care without first gaining experience. Furthermore, when mentoring is inadequate, as is often the case, patient care is threatened.

Another deployment issue voiced by nurses participating in the union focus groups (Step 5) is that hospital nurses are often "floated" to different units where they are unfamiliar with the environment and unsure of their expectations.

3.10. Career choices

Career choices of nurses have to do with why nursing was initially chosen as a profession, but also relate to subsequent career decisions following first workplace experiences as practicing nurses. With regard to choosing nursing as a career, the nursing occupational groups survey (Step 6) highlights that, consistent with the predominance of related research, altruism and caring were the most important reasons for becoming a nurse across cohort and occupational groups.

At the same time, economic factors such as salary and job security were also rated as being important, perhaps a factor of uncertain times and realities of families, society, and health care environments. While work expectations varied according to the findings, organizational factors were often more important to nurses than benefits factors, such as salary and paid vacation.

It is important to note that, if recommending nursing as a career to others is an indicator of job satisfaction and "happiness", then over half of nurses were not pleased with their choice of nursing as a profession. Step 6 examined nurses' perceptions regarding reasons for leaving the nursing profession. While the major reason offered by respondents across occupational groups and the country for considering leaving nursing was, not surprisingly, retirement, a large number of respondents indicated that they were working outside of nursing because work was not available or accessible. Higher numbers intending to leave (nursing) were evident in nurses working casual and may be reflective of their frustration with this type of employment status. This was particularly striking in the LPN occupational group. A number of RNs identified the lure of full-time employment (full-time not available in their jurisdiction), better pay, and benefits as strong factors in their choices to leave. More experienced nurses and nurses with dependent children under the age of age 16 were less likely to leave their current position than less experienced nurses and nurses without dependent children. Additionally, the longer nurses were in their current job, the less likely they were to consider leaving their current position. While factors of dependent children,

education, length of time in the current position, mental health, leadership, and Worker's Compensation claims were all significant in predicting nurses leaving their current position, they were found not significant in the model for planning to leave nursing in the next year.

3.11. Outcomes

Several outcomes were examined through data collected in Steps 6, 9 and 13. The results of these analyses are presented below and provide direction for future action to be taken.

3.11.1. Patient

The term "patient health outcomes" refers to the health status of the population. Outcomes assessment has two broad objectives: to establish effectiveness of care and to assess quality of care. These outcomes are classified into those that focus on individual health and those that focus on the health of populations or communities. Similar to the US Public Health Services (Aday, Begley, Lairson & Slater, 1998) and Roos, Fransoo, Bogdanovic, Carriere, Frohlich, Friesen, Patton & Wall (1999), we have developed many indicators of health status from both primary and secondary sources, including population health surveys, vital statistics mortality data, cancer registry data, hospital discharge diagnoses, and the diagnoses appearing on physicians' claims for visits. Examples of these indicators are: premature mortality rate (PMR – i.e., death before age 75); socio-economic status (e.g., education, unemployment rates, percentage of single mothers, housing costs); life expectancy; standardized mortality rates; mortality from cancer, injury, and chronic diseases; disease incidence; medical conditions associated with poor functional status and poor perceived health status; low birth weight; prenatal care outcomes; and, poverty. These indicators capture various dimensions of community health, ranging from mortality/morbidity due to cancer, injuries, and chronic diseases, to disability among youths, to medical conditions associated with functional limitations and restricted-activity days among the elderly. Even though databases show great promise and it is imperative that they be used to inform health-related decisions and policy, it must be recognized that the relationship between health and health care is not a straightforward one (O'Brien-Pallas, 2002).

In general, this study found that the overall health of the population, when examined by age and gender, had improved over the last five years relative to decreased mortality and morbidity and self-rated health status.

3.11.2. Nursing Outcomes

Provider outcomes include the health status of providers, sick time, job satisfaction, and levels of burnout and other affective responses to work and the work environment. At the micro level, several studies have indicated that the work environment and job characteristics influence provider health (Irvine & Evans, 1995; O'Brien-Pallas, Baumann & Villeneuve, 1994; O'Brien-Pallas, Thomson, McGillis Hall, Pink, Kerr, Wang, Li & Meyer, 2003) and the quality of care provided to patients. Research across occupations suggests that long periods of job strain affect personal relationships and result in increased sick time, conflict, job dissatisfaction, turnover, and inefficiency. Job strain exacerbates medical problems and increases the risk of musculoskeletal injury and accidents, burnout, illness, substance abuse, and

smoking (Baumann, O'Brien-Pallas, Armstrong-Stassen, Blythe, Bourbonnais, Cameron, Irvine Doran, Kerr, McGillis Hall, Vezina, Butt & Ryan, 2001; O'Brien-Pallas, 2002).

3.12. Professional practice work environment

Leadership was measured using the Revised Nursing Work Index. Nurses working in community settings rated leadership higher than those nurses working in hospitals. Nurses working in direct patient care reported lower levels of leadership in the workplace than nurses working in non-direct patient care.

Nurses who worked overtime, both voluntary and involuntary, were more likely to perceive the leadership in the workplace as weaker than nurses who did not work extended hours. Nurses were more likely to perceive leadership as weaker when they anticipated job elimination or position changes due to restructuring. Also, the longer nurses stayed in their current position, the less likely they perceived the leadership at the workplace as strong. Nurses with better mental health perceived leadership as stronger; however, there was no significant difference in how different nursing occupational groups rated the leadership present in their work environment.

3.12.1. Resources

Resources were also constructed based on the Revised Nursing Work Index. Data revealed that nurses in the North region perceived the most resources available in their current job, followed by nurses in the West, the Atlantic region, and Ontario. Nurses in Quebec reported the least resources. RPNs rated the availability of resources in their workplace highest whereas LPNs had the least number of resources available to them. Nurses working in the long-term care sector reported fewer resources than nurses in any other sector whereas there was no difference among nurses in the hospital, community health services, and "other" sectors. Also, nurses who worked overtime, both voluntary and involuntary, perceived that fewer resources were available to them than nurses who did not work overtime.

Furthermore, the stronger the leadership present at the workplace, the more resources nurses perceived available to them. Nurses who worked in direct patient care, who were degree-prepared, and who worked in a stable environment reported more resources than nurses who worked in non-direct care, who were diploma/certificate-prepared, and who anticipated instabilities in their job. In addition, the longer nurses stayed in their current position, the fewer resources they perceived were available.

3.12.2. Total empowerment

Nurses in Quebec reported that their position was least empowering as compared to nurses in any other provinces (Step 6). Nurses in the Atlantic region ranked second lowest while nurses in the North and in Ontario showed little variation from nurses in the West. RPNs recorded the highest empowerment in their current job while LPNs reported the least. These findings are consistent with other empowerment studies for RNs and LPNs (Beaulieu, Shamian, Donner & Pringle, 1997).

Nurses in long-term care reported that they were least empowered while there was no difference in the level of empowerment between nurses in community health services and hospital sectors.

Full-time nurses had the highest level of empowerment around the work they do, followed by part-time nurses and casual nurses. Nurses felt they were less empowered when they worked in direct care, when they anticipated instabilities in their job, when their supervisor was a nurse, or when they were diploma/certificates-prepared. Stronger leadership at the workplace and greater availability of resources were also found to enhance nurses' ratings of empowerment.

3.12.3. Nurse-physician relationship

The most effective nurse-physician working relationships were reported in the North region, whereas the least effective were reported in Ontario. Nurses in Quebec and the East had little difference in these working relationships from nurses in the West. RNs had the best relationship with physicians whereas there was no difference between RPNs and LPNs. Nurses in the community health services sector reported having the least effective working relationships with physicians compared to nurses in the other health care sectors. There was no significant difference between nurses working in the long-term care and hospital sectors.

It is noteworthy that the relationship between nurses and physicians varied by gender, but this was dependent on where nurses worked. For nurses in non-direct care, female nurses had a less effective relationship with physicians than male nurses. In direct care, however, there were no gender differences. Conversely, female nurses working in direct care had a more effective relationship with physicians than female nurses working in non-direct care. Among male nurses, nurse-physician relationship did not vary with where they worked.

More effective nurse-physician working relationships were observed when nurses stayed in their current position longer, had more autonomy, had more resources, perceived higher leadership, or were more empowered. The link between empowerment and greater nurse-physician relationships is consistent with three studies reported by Laschinger, Almost & Tuer-Hodes (2003). Furthermore, nurses who were more mentally healthy also reported better working relationships with physicians.

3.12.4. Satisfaction with the current position

Female nurses and foreign-born nurses were less satisfied with their current nursing position than male nurses and nurses who were born in Canada. RNs and RPNs were more likely to be dissatisfied with their job than LPNs.

Nurses who expected job instability and had experienced violence at work were also more likely to be dissatisfied with their current position. Nurses who were able to take coffee/meal breaks were also more satisfied with their current job. Furthermore, provisions of educational opportunities by employers were more likely to lead to nurses' work satisfaction. The more autonomy, work empowerment and resources nurses had and the stronger the leadership present at work, the more likely nurses were to be satisfied with their current position.

Employment status also had an impact on nurses' work satisfaction but the effect varied depending on whether nurses worked in direct or non-direct care. For nurses in direct care, there were no differences in work satisfaction between nurses employed full- and part-time and casual. However, for nurses in non-direct care, those working in casual positions were less satisfied than nurses employed full- or part-time. Among nurses working as casuals, nurses working in direct care were more satisfied than those in non-direct care. Among those working in regular positions, there was no difference in job satisfaction between full- and part-time nurses in direct care or non-direct care.

3.13. Health and safety

3.13.1. Absence from work

Absence from work was measured by absence due to short-term illness for five or more days in the past year, which could include both sickness and non-sickness reasons. To understand nurse absence due to non-sickness reasons, the models controlled for physical health, mental health and Workers Compensation claims. After controlling for factors due to sickness, findings showed that older nurses were less likely to be absent from work than younger nurses. Nurses who were divorced, widowed or separated were more likely to be absent from work than nurses who were married. There was no difference between single and married nurses.

Nurses in part-time and casual positions were also less likely to be absent from work than nurses employed full-time even after controlling for the total number of hours these nurses had actually worked. Nurses who preferred to increase to full-time status were less likely to be absent from work than nurses who preferred no change in their employment status. There was no observed difference between nurses who preferred to reduce to part-time or casual employment status and nurses who preferred no status change. Nurses who worked unpaid or paid overtime were more likely to be absent from work than those who did not work overtime. In a separate model that examined involuntary pay, similar results were found; in that model, nurses who worked involuntary or voluntary overtime were more likely to be absent from work than those who did not work overtime.

Absence from work was also more likely for nurses who experienced violence at work and nurses who had frequent shift changes. Both LPNs and RPNs were more likely to take short absences from work than RNs.

3.14. Physical and mental health

Logistic regression was used to examine the relationships between nurse physical/mental health and predictors such as age, nursing occupational groups, region, job instability, etc.

Not surprisingly, healthy lifestyle improved both the physical and mental health of nurses. Furthermore, older nurses were less physically healthy than less experienced nurses, but they were more mentally healthy than younger nurses. Nurses with higher education had better physical health, but education had no effect on nurses' mental health. The findings showed degree-prepared nurses were

more likely to be in good physical health than nurses with diplomas/certificates. In addition, nurses who entered into nursing for altruist reasons also had better mental health.

Work environments affected nurses' physical and mental health. Nurses were less likely to be physically or mentally healthy when they worked involuntary overtime or preferred to reduce their work hours (from full-time to part-time or casual). Nurses were also less likely to be in good physical and mental health when there was violence at the workplace. Nurses who worked in direct patient care or those who anticipated job instability were less likely to be physically healthy than those in non-direct patient care or in stable working environments. Dimension of practice and anticipation of job instability, however, had no effect on nurses' mental health. In contrast, frequent shift change, while not affecting nurses' physical health, affected their mental health. Nurses who changed work shifts more than twice within two weeks were less mentally healthy than those who changed only once or did not change at all. But nurses who were able to take coffee/meal breaks had better mental health.

Compared to Western nurses, Quebec nurses were physically healthier and Atlantic nurses were physically unhealthier. Northern and Atlantic nurses were more likely to be mentally healthy than nurses in the West. Ontario nurses were not any different from Western nurses in both physical and mental health. After controlling for the effects of other factors, nursing occupational group differences were still identified in the data. LPNs and RNs were less physically healthy than RPNs. As to mental health, LPNs and RPNs were more likely to be mentally healthy than RNs.

3.14.1. Worker's Compensation claims

Many work environment attributes affected the likelihood of nurses reporting a Worker's Compensation injury or making a Worker's Compensation claim. Nurses working paid overtime were more likely to report a Worker's Compensation injury than nurses who did not work overtime, whereas there was no difference between nurses who worked unpaid overtime and who had no overtime hours. Furthermore, the stronger the leadership present in the organization, the less likely that nurses were making Worker's Compensation claims. Conversely, nurses were more likely to report a Worker's Compensation injury when they worked in an unstable work environment or when they had to delay tasks due to time constraints. The data also showed that nurses in the hospital sector were more likely to make a Worker's Compensation claim than nurses in long-term care, whereas community nurses were no different from hospital nurses in making the claims.

In addition, mentally healthy nurses were more likely to make a Worker's Compensation claim. Nurses who entered the profession mainly for financial reasons were also more likely to file a Worker's Compensation claim. But nurses with dependents under the age of five were less likely to make a claim. After controlling for the effects of others, there were no regional or nursing occupational group differences in the environment safety in terms of Worker's Compensation claims.

3.14.2. Violence

Violence was defined as whether nurses had experienced any one of the following incidents in the last 10 shifts/periods they worked: physical assault; verbal aggression; threat of assault; or, emotional abuse. The data revealed that nurses who were physically or mentally healthy were less likely to experience violence at work. Other than physical and mental health, all other significant factors were related to the work environments in which nurses worked.

Violence was more likely to be experienced by nurses in the long-term care sector and less likely by nurses in the community health services as compared to nurses in hospitals. Violence was also more likely to be experienced by nurses in direct nursing care than nurses in non-direct nursing care. Moreover, nurses with more human resources to support nursing or patient care were less likely to experience violence than nurses with fewer human resources. Nurses working in a workplace with stronger leadership also had a lower chance of experiencing violence than nurses working in organizations with weaker leadership. Nurses working in an over-utilized capacity, such as over 40 hours of work per week, involuntary overtime or voluntary overtime, and frequent shift change, were also more likely to report incidences of violence. As to the nursing occupational group differences, after controlling for the effect of the variables mentioned above, RPNs were still more likely to experience violence than RNs and LPNs, whereas there was no difference between RNs and LPNs in their report of violence at work.

3.14.3. System

System outcomes include the costs associated with resources dedicated to health services. These include hospitalization and re-admission rates, home visits, expenditures on the various health sectors, the number of people treated in each health sector, the neediness of the population being treated, case intensity, cost efficiency, discharge efficiency, proportion of acute versus non-acute care, outpatient/inpatient surgery rates, and occupancy rates and retention of nursing personnel. Based on a pilot study in five countries including Canada, the costs of turnover of one nurse is $24,000 US. Improving working conditions may reduce the amount of turnover in the health care system and actually keep nurses from leaving the profession. Outcomes such as quality of care, interventions completed or delayed, absence from work also influence the health system outcomes (O'Brien-Pallas, 2002).

3.15. Plan to leave nursing within the next year (2003-04)

This model examines the likelihood of nurses planning to leave nursing within the next year among nurses under 55 years of age so as to factor out retirement reasons. Many of the factors found significant in the model for leaving their current position were also found significant in the model for leaving nursing. Younger nurses were more likely to consider leaving nursing than older nurses and nurses employed in part-time and casual positions were more likely to plan to leave nursing than nurses employed full-time. Nurses who wished to decrease their work hours were more likely to consider leaving nursing than those who wished to stay in their current employment status. Nurses who wished to increase their work hours were less likely to consider leaving nursing. Nurses were also less likely to leave nursing if they were more satisfied with their current position and expected no job instability.

Nurses engaged in a healthier lifestyle were more likely to consider leaving nursing. But nurses entering into nursing for altruistic reasons were less likely to leave nursing.

Nurses in the North, Ontario and Quebec were more likely to consider leaving nursing than nurses in the Western region whereas there was no difference between Atlantic and Western nurses. There is no nursing occupational group difference in the likelihood of leaving nursing after controlling for the effect of employment status and the attributes of the work environments where nurses worked. Dependent children, education, length in the current position, mental health, leadership, and Worker's Compensation claims, which were significant factors in predicting whether nurses would leave their current position, were not found to be significant in the model for intent to leave nursing and thus were excluded from the final model presented.

When controlling for regional variation, it was discovered that the retention of RNs and RPNs within their current organization more than five years was significantly positively associated with both the presence of preceptor programs as well as a high degree of continuing education supports (Step 5 – SNM).

3.16. Plan to leave current position within the next year (2003-04)

This model examined the likelihood of nurses planning to leave their current position within the next year among nurses less than 55 years of age in order to factor out retirement reasons (Step 6). Findings revealed that older nurses and nurses with dependent children under the age of 16 were less likely to leave their current position than younger nurses and nurses without dependent children. Additionally, the longer nurses were in their current job, the less likely they were to consider leaving their current position. Conversely, new nurses (defined as registration with a provincial licensing body within the last three years), nurses who were degree-prepared, and nurses expecting job instability in the foreseeable future were more likely to consider leaving their current position. Moreover, nurses who reported having a Worker's Compensation injury in the past year (2002-03) were also more likely to consider leaving their current position than nurses without Worker's Compensation injury claims over this same time period.

Nurses employed in casual positions were more likely to plan to leave their current position than nurses employed full- and part-time, but only among those in direct nursing care. In non-direct nursing care, employment status did not affect the likelihood of nurses' intent to leave. Nurses who preferred to decrease their work hours (from full-time status to part-time/casual employment) were more likely to consider leaving their position than those who preferred to stay in their current employment status. Nurses who preferred to increase their work hours (from casual/part-time to full-time) were no different from those who preferred their hours to remain the same in their intent to leave their current position.

The findings also revealed that the stronger the leadership in the organization, the less likely nurses were to plan to leave their current position. Nurses were also less likely to leave if they were more mentally healthy and more satisfied with their current position.

Compared with nurses in the West region, nurses in the North region were more likely to consider leaving their current position while nurses in the Atlantic region were less likely to do so. There are no

nursing occupational group differences in the likelihood of leaving their current position after controlling for the effect of employment status and the attributes of the work environments where nurses worked.

3.17. Quality of nursing care

In this study, good/excellent ratings of nursing care were associated with the age of nurses. Older nurses, usually with more clinical experience in nursing care, were less likely to rate quality of nursing care as good or excellent. This is, in part, consistent with the findings by O'Brien-Pallas, Alksnis, Wang, Birch, Tomblin Murphy, Roy & Sajan (2003) in a study of nurse staffing and performance within hospital cardiac and cardiovascular units. They found nurses who rated themselves as expert clinicians were less likely to rate the quality of nursing care as good or excellent. In this study, good/excellent rating of nursing care was also associated with more resources and higher level of work empowerment of nurses, and with fewer interventions not completed and delayed. O'Brien-Pallas, et al. (2003), on the contrary, concluded good/excellent ratings of nursing care were associated with more effective nurse-physician relationships and less frequent change of shifts. This study also found RPNs had lower ratings of quality of nursing care than LPNs whereas there were no differences between RNs and LPNs.

3.18. Quality of patient care

In this study, improved quality of patient care was found to be associated with region and sector. Northern and Quebec nurses were most likely to rate the quality of patient care as improved. The quality of patient care was least likely to be rated as improved by hospital nurses. Once controlling for the work environment attributes in which different nursing occupational groups worked, nursing groups did not differ in their ratings of quality of patient care.

Findings in this study also showed improved quality of patient care was associated with nursing work attributes such as more resources, more effective nurse-physician relationships, higher levels of work empowerment, stronger leadership present at work, and fewer intervention delays in the delivery of patient care. O'Brien-Pallas, et al. (2003) also found the likelihood of improved nurse ratings of patient care increased when nurse autonomy was higher and when fewer interventions were delayed. But this study did not find the association between improved quality of patient care and degree-prepared nurses as shown in previous research that focused on acute care in cardiac and cardiovascular units. Similarly, Laschinger, Shamian & Thomson (2001) found that higher levels of autonomy, control and collaboration resulted in higher perceptions of patient care quality indirectly through trust in management.

3.18.1. Interventions not completed

This study showed interventions were more likely not completed for nurses in long-term care but less likely for community care nurses as compared to hospital nurses. Interventions not done were also associated with nurses who had fewer resources, less work empowerment, and nurses who worked over ward/unit census. Good mental health of nurses, however, reduced the likelihood of interventions not being done. These findings relating the nurse characteristics or system behaviours were not consistent with the findings in the study by O'Brien-Pallas, et al. (2003), in which younger nurses, experience of

violence, nurses with more clinical expertise, and lower level of autonomy were associated with interventions not completed.

3.18.2. Interventions delayed

Interventions were more likely to be delayed among Western nurses than nurses in any other regions, among LPNs rather than RNs and RPNs, and among nurses in the long-term care sector. As expected, intervention delay was associated with younger nurses and new nurses, because they were not as experienced as older nurses. Interventions delayed were also associated with nurses with fewer resources available, with frequent change of shifts, and working over ward/unit census. Nurses less satisfied with their work also tended to delay interventions. Nurses whose supervisor was a nurse increased the likelihood of intervention delayed. In contrast, O'Brien-Pallas, et al. (2003) found system behaviours such as job uncertainty and violence were related to intervention delayed.

The incongruence between findings in this study and findings by O'Brien-Pallas, et al. (2003) regarding interventions not done or delayed can be attributed to several factors. First, this study is based on national sample across all sectors whereas O'Brien-Pallas, et al. (2003) focused on nurses in hospital cardiac and cardiovascular units. Second, this study was only able to collect cross-sectional data related to nurse characteristics and some system behaviours such as job uncertainty, overtime, etc. O'Brien-Pallas, et al. (2003), on the other hand, collected data at both the patient and unit levels. Thus in the previous study, patients' medical complexity, diagnostic, environmental complexity factors such as re-sequence of activities in response to demands from patients, and the less prevalence of degree-prepared nurses on the unit level were all related to interventions not done or delayed, the effect of which could not be tested in this study.

3.18.3. Medical incidents

In examining medical incidents, Rogers et al. (2004) found the likelihood of a hospital nurse making a mistake, such as a medication error, was three times higher once a shift stretched past 12.5 hours. The risks of making an error were significantly increased when work shifts were longer than 12 hours, when nurses worked overtime, or when they worked more than 40 hours per week. This study also found that the workplace had a higher number of medical incidents when nurses worked overtime, regardless of whether it was voluntary or involuntary. In addition, this study found that interventions not done or delayed could also result in medical incidents such as falls, medication errors, etc. Furthermore, medical incidents were higher in the long-term care sector than in the hospital sector. But stronger leadership at the workplace reduced the number of medical incidents reported in the units.

3.18.4. Technology

In terms of technological applications and patient care (Step 13), nurses rated good quality of nursing care when they perceived information technologies were efficient. Nurses were more likely to rate improved quality of patient care when they used communication and information technologies more often. The more high technologies were used, the more likely routine tasks such as mobilization/turns,

responding to patient needs and establishing therapeutic relationships were not done or delayed, suggesting that operating sophisticated machines is competing with, or replacing, the traditional bedside nursing techniques in the delivery of care due to time constraints.

4. Conclusion

This report was the final synthesis of Phase I, *Building the Future: An integrated strategy for nursing human resources in Canada*. The overall goal of this project was to create informed, long-term strategies toward adequate supply of skilled and knowledgeable nurses to meet the evolving health care needs of all Canadians. *Building the Future* provides the first comprehensive report on the state of nursing human resources in Canada to date. Research about the nursing labour market in Canada was conducted in stages and, as work was completed, reports were released in order to share interim findings and recommendations with the nursing sector and broader stakeholder group. This final report outlined the findings of all the research at the conclusion of this phase.

This Research Synthesis report was organized in three main sections: introduction, summary of the methods, and findings. The key constructs of the Health Human Resources Planning (HHRP) Conceptual Framework developed by O'Brien-Pallas, Tomblin Murphy, Birch & Baumann (2001) formed the basis of the organization and presentation of the findings. These conceptual elements are as follows: health needs of the population; production of nurses; supply of nurses and career patterns; management of nurses; workplace environment; utilization of nurses; and, outcomes for patients, nurses and the system. The data collection methods included: literature reviews, focus groups, interviews, surveys, and analyses of secondary data sources.

Several conclusions can be drawn that emphasize the key findings to be brought to the attention of policy-makers. In terms of the literature review, there are barriers to efficient and reliable access to labour market information. Findings from Step 3 reinforce that sources of routine data such as population health needs, workload, productivity, and staffing mix are poorly developed in most provinces and territories, and certainly cannot be compiled for national studies. Decreases in enrolments in Canadian nursing schools is expected in the coming years due to financial constraints, inabilities to hire sufficient faculty with desired credentials and insufficient resources for current capacities. Schools of nursing report an ability and willingness to increase their enrolments if additional resources, to support capacity building, are made available to them. However, simulation models revealed that increases the number of nursing educational training seats is not enough to curb the current and anticipated nursing labour market supply demands and as a result focused efforts need to be placed on the development of effective retention strategies for nurses currently in the workforce.

The findings highlighted several factors that are incentives for a nursing as a career choice and these could be applied to student recruitment strategies. Key findings relating to nurse mobility indicate that nurses relocate to other jurisdictions because of availability of full-time employment opportunities; greater income and benefits; expectation of better working conditions; and, chances for personal/professional growth. Unfortunately, these desirable conditions are contrary to the practices reported by nursing managers in their efforts to cope with the tight labour market as nursing staff are over-utilized, working excessive overtime and lacking in human resources effective leadership in the workplace. Consequently, many nurses report that they may leave nursing in the next year, which will only exacerbate the already problematic state of nursing human resources. Furthermore, decision-making processes of health care executives are being largely being affected by the nursing shortages resulting in the implementation of

activities that have adverse effects on the health care organizations they manage. These decisions directly impact the worklife of nurses across sectors as well as provinces and territories.

To prevent the further erosion of gains made in supply strategies key HHRP realities must be acknowledged through evidenced-based research. Phase I of the *Building the Future: An integrated strategy for nursing human resources in Canada* project provides evidence from which comprehensive strategies have been suggested through each report. The results of the comprehensive research work completed and the recommendations proposed in Phase I will be discussed with health care stakeholder groups including provincial/territorial and federal governments in Phase II of the project. The overall goal of this dialogue is to not only share the findings and recommendations with stakeholder groups but also, encourage the development of strategies and action plans within the federal/province/territories' health human resource planning framework by all stakeholders.

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APPENDIX C: List of Acronyms

CEO	Chief Executive Officer
CHS	Community Health Service Sector
CIHI	Canadian Institute for Health Information
CNA	Canadian Nurses Association
CNO	Chief Nursing Officer
CWEQ	Conditions of Work Effectiveness Questionnaire
HRSDC	Human Resources and Skills Development Canada
LPN	Licensed Practical Nurse
LPNDB	Licensed Practical Nurses Database
LTC	Long-term Care Sector
NSSC	Nursing Sector Study Corporation
NWI	Nursing Work Index
RN	Registered Nurse
RNDB	Registered Nurses Database
RPN	Registered Psychiatric Nurse
RPNDB	Registered Psychiatric Nurses Database
SNM	Senior Nurse Manager

APPENDIX D: Glossary of Key Terms

Note: This glossary is meant to indicate only how the following terms are used in this report. It is not meant to provide comprehensive definitions.

Aboriginal/Native. Used synonymously in this document, and all include Métis.

Enrolment. The total number of students who are counted as taking the program after a "count day" in the university or college. A count day occurs after the date on which students who have been admitted may withdraw without penalty; these withdrawn students are then not counted as enrolled in the program.

Jurisdiction. In Canada, a province or territory. Internationally, a foreign country.

Licensed Practical Nurse (LPN). LPNs are regulated health care professionals who work in partnership with other members of the health care team to provide nursing services to individuals, families, and groups of all ages. LPNs combine nursing knowledge, skill, and judgement when treating health conditions, promoting health, preventing illness, and assisting clients to achieve an optimal state of health. They assess, plan, implement, and evaluate care for clients throughout the lifecycle as disease progresses, and through palliative stages.

Migrate. To move from one place (country, town, college, and/or house) to another (Canadian Oxford English Dictionary, 2001, p. 917).

Mobility/migration. Movement of people from one place to another.

Nurse. For the purposes of the report, a nurse is a graduate of an accredited nursing program who has passed the requisite licensing examinations and is registered with an appropriate regulatory body.

Nursing Education Program. Refers to the curriculum and to the entity in which students are enrolled. A school of nursing may have one or several programs in which students are enrolled on a full- or part-time basis. School of nursing refers to the entity that administers the LPN, RN, or RPN nursing education program and employs the staff. In Quebec, LPN education is provided through Centres de Formation Professionelle administered by boards of education. For the purposes of this report, these Centres are equivalent to schools.

Professions. Refers to the three regulated nursing occupational groups (RNs, LPNs, RPNs).

Registered Nurse (RN). Through their legislated scope, RNs are authorized to practice autonomously regardless of the complexity of the client's/clients' condition(s) or the predictability of the outcomes of care. RNs are diversified health care workers, able to provide care to individuals, families, groups, continuum of health promotion, disease prevention, treatment, support and rehabilitation and palliative care.

Registered Psychiatric Nurse (RPN). RPNs participate as members of interdisciplinary health care teams in providing holistic care to client groups in the context of mental and developmental health services. Psychiatric nursing promotes the restoration of client health and wellness through health promotion initiatives that are evidence- based. RPNs practice at all levels of prevention, including primary, secondary, and tertiary health care services across the life span.

Sector. Hospitals, nursing homes, public health, home care, etc.

APPENDIX E: List of Technical Reports

Step 1	Review of Concurrent Research on Nursing Labour Market Topics
Step 3	Simulation Analysis Report
Step 5a	Survey of Employers: Health Care Organizations' Chief Executive Officers
Step 5b	Nurse Union Activists Report of Focus Groups
Step 5c	Survey of Employers: Health Care Organizations' Senior Nurse Managers
Steps 6 & 10	Canadian Survey of Nurses from Three Occupational Groups
Step 7	Nursing as a Career Choice: A Student Perspective on Why Students Choose Nursing
Step 8	Nursing Education in Canada: Historical Review and Current Capacity
Step 9	Nurse Human Resource Requirements in Canada: Implications of Changes in Service Delivery
Step 11	The International Nursing Labour Market
Step 12	Mobility of Nurses in Canada
Step 13	Technological Change
Step 14	Immigration and Emigration Trends: A Canadian Perspective
Step 15	Understanding the Human Capital Equation: Incentives and Disincentives Associated with a Career in Nursing