

**HEALTH CANADA
HEALTH POLICY BRANCH**



**LITERATURE REVIEW AND
ENVIRONMENTAL SCAN OF PREFERRED
PRACTICES FOR DEPLOYMENT OF HEALTH
HUMAN RESOURCES AND DECISION
SUPPORT TOOLS
FINAL REPORT**

**Submitted By: North South Group Inc.
Contract Reference: H 654130-15
Final Report**

June 28, 2004

The opinions expressed in this publication are those of the authors/ researchers and do not necessarily reflect the official views of Health Canada.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
1.0 INTRODUCTION	4
1.1 Project Background	4
1.2 Project Scope	5
1.3 Acknowledgements	6
2.0 LITERATURE REVIEW	7
2.1 Approach and Methodology	7
2.2 Findings	13
2.2.1 Canadian HHR Deployment Practices	13
2.2.2 International HHR Deployment Practices	32
2.2.3 Decision Support Tools	42
2.3 Synthesis and Inventory	47
2.3.1 HHR Deployment Practices	47
2.3.2 Decision Support Tools	54
3.0 ENVIRONMENTAL SCAN	56
3.1 Approach and Methodology	56
3.2 Findings	58
3.2.1 Canadian HHR Deployment Practices	58
3.2.2 International HHR Deployment Practices	72
3.2.3 Decision Support Tools	77
3.3 Synthesis and Inventory of Preferred Deployment Practices and Decision Support Tools	79
4.0 CONCLUSIONS, CRITICAL SUCCESS FACTORS AND RECOMMENDATIONS	101
4.1 Conclusions	101
4.2 Critical Success Factors	102
4.2.1 Preferred Practices for Deployment	102
4.2.2 Decision Support Tools	103
4.3 Recommendations	103
5.0 BIBLIOGRAPHY	106
APPENDIX A	124
APPENDIX B	127
APPENDIX C	131

EXECUTIVE SUMMARY

Current and impending shortages and imbalances in the supply of health care providers have been well documented both within Canada and internationally. As health care delivery in Canada has undergone changes in structure and organization, many jurisdictions have reassessed their methods of deployment of health human resources (HHR) with a view to exploring different and innovative means of responding to these shortages and imbalances in number and mix of health care providers, in geographic maldistribution, and to developing new organizational models of delivery.

The 2003 First Ministers' Accord on Health Care Renewal called for the Ministers of Health to develop "collaborative strategies to be undertaken to strengthen the evidence base for national planning, promote inter-disciplinary provider education, improve recruitment and retention, and ensure the supply of needed health providers." As a result, the Government of Canada has committed \$20 million annually to support national HHR planning and coordination, as well as to promote research and evaluation activities.

To support the strengthening of effective HHR deployment, Health Canada's Health Human Resource Strategies Division contracted with North South Group Inc. to undertake a Literature Review and Environmental Scan related to Preferred Deployment Practices and Decision Support Tools for Deployment of Health Human Resources.

The objective of the project was to assist Health Canada in achieving the broader goals of:

- Sharing information on preferred practices related to HHR deployment, and encouraging the uptake of those practices, which might be appropriate in each particular context; and
- Identifying decision support tools that could contribute positively to deployment initiatives through the optimal utilization of available health care providers.

The project scope specifically included a literature review of Canadian and selected international published and grey literature, as well as an environmental scan conducted through the use of focused interviews with key informants.

The literature review was framed and defined by specifications relating to geographic location, type of health care services delivered, delivery setting and HHR occupational group, to identify and assess preferred practices of deployment. The focus of the review of decision support tools was based on specific types of health care providers and delivery settings. The scope included all 14 Canadian jurisdictions and five international jurisdictions (United States, United Kingdom, France, Australia, and New Zealand). What emerged from the review was not only a confirmation of a broad consensus on a number of underlying trends, but also a paucity of decision support tools, which are used to support deployment decisions. The bulk of the literature reviewed focussed on the role of physicians and nurses, with other health care providers receiving secondary consideration. Key

strategies that emerged from the study and are detailed in this report, included the redefinition of the roles of health professionals; the optimization of working towards full scope of practice, and the promotion of interdisciplinary collaboration. General HHR deployment trends from the Canadian and international literature included: use of multidisciplinary teams to delivery primary health care (PHC) services; substitution strategies; external HHR recruitment; expanded scope of practice for selected health care providers; shared care services; and telehealth and telemedicine applications. The literature review did not identify many decision support tools, and most of those identified were theoretical models.

The findings of the environmental scan were consistent with those of the literature review in the identification of several dominant trends in the deployment of HHR, which constitute changes to traditional models of practice. Key deployment strategies included substitution; expanded scope of practice; and team delivery models. Other major trends that emerged from the environmental scan included: use of health professionals to their full scope of practice; greater use of nurse practitioners to deliver PHC services; use of nurses with expanded scope of practice; use of telehealth and telemedicine to increase access to health services, particularly in remote or isolated communities; use of paraprofessional health workers; increased use of “assistants”; and other initiatives. Educational programs designed to support collaborative approaches and enhanced scope of practice for health care providers have been put into place. There are also efforts to undertake recruitment, training and practicums on location in remote and rural communities to encourage and increase the supply of health care providers to these underserved regions.

The report provides a detailed description of these deployment trends, organized around targeted providers and health care settings, and details practices in Canadian federal, provincial, and territorial jurisdictions, as well as innovative experiences on the international scene.

The report concludes with an analysis of principal findings, an examination of critical success factors and recommendations, which include the need to “reconceptualize” models of health care delivery, including the deployment of HHR, in light of changes to the organization of health care. A new workforce policy framework that effectively promotes innovative and responsive deployment practices with new role definitions is called for. A shift from planning for the “supply of health professionals” to “planning for health services” with health care delivery provided by the optimal mix of providers is considered important. The study concluded that, for the most part, decision support tools were not utilized to inform major deployment policy decision-making, and that these should be based on clear evidence-based research.

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Current and impending shortages and imbalances in the supply of health care providers have been well documented and are of great concern both within Canada and internationally. Over the past decade health care delivery in Canada has experienced substantial change in organization and configuration. Jurisdictions have had to closely examine their methods of deploying HHR and to explore different and innovative ways to address shortages and imbalances in geographic distribution and in the mix of health care providers, and to respond to new organizational models of delivery.

The 2003 First Ministers' Accord on Health Care Renewal called for the Ministers of Health to develop "collaborative strategies to be undertaken to strengthen the evidence base for national planning, promote inter-disciplinary provider education, improve recruitment and retention, and ensure the supply of needed health providers." As a result, the Government of Canada has committed \$20 million annually to support national HHR planning and coordination, as well as research and evaluation activities.

Deployment initiatives directed towards finding ways to alleviate geographic distribution, as well as imbalances in the mix of providers, and enabling health care providers to work to their full scope of practice, have been identified as key initiatives. The development and utilization of deployment strategies is considered critical in addressing shortages in specific occupational and speciality groups. Strategies to address imbalances in the supply of health care workers in rural, remote, isolated, inner city and First Nations and Inuit communities, and in specific services, such as PHC, Aboriginal health, home care and in a variety of practice settings (hospitals, long-term care facilities, community settings, and public health agencies) are equally important in responding to inequities and access problems.

Effective planning and management of HHR is essential for health systems to function optimally. This entails the optimal match between the epidemiological needs of the population and a well-trained, competent and motivated cohort of health care professionals, which includes the appropriate number and geographic distribution, as well as rationalization of type and level of service. In fact, few countries have achieved this optimal supply, number and distribution, responsive to population needs and which provide balanced and equitable access to health care services. In most OECD countries, health care systems are highly labour intensive, with salaries and benefits representing close to 75 percent of total health expenditures. These health care costs are strongly linked to the manner in which human resources are organized and deployed. In community-based health services, which rely less on technological infrastructure, human resources account for an even higher proportion of total health care costs.

Accordingly, the importance of strategic management of human resources in health sector reform must be underlined, and the methods used to manage HHR play a critical role in determining whether the objectives of the health care system will be achieved or hindered.

1.2 PROJECT SCOPE

To support the strengthening of effective HHR deployment, Health Canada's Health Human Resource Strategies Division contracted with North South Group Inc. to undertake a literature review and environmental scan related to preferred deployment practices and decision support tools for deployment of HHR.

The objective of the project was to assist Health Canada in achieving the broader goals of:

- Sharing information on preferred practices related to HHR deployment, and encouraging the uptake of those practices, which might be appropriate in each particular context; and
- Identifying decision support tools that could contribute positively to deployment initiatives through the optimal utilization of available health care providers.

The project scope specifically included a literature review of Canadian and selected international published and grey literature, as well as an environmental scan conducted through the use of focussed interviews with key informants.

For the purpose of this project, Health Canada provided the following definitions:

Deployment

- optimal use of available health human resources and technological resources to alleviate geographical imbalances and imbalances in the mix of providers;
- creative and innovative initiatives to maximize health care providers' scope of practice;
- use of the optimal mix of different health care providers to meet local needs, sustain the health care system, and achieve the best overall outcome;
- use of existing resources by either changing their physical location or the use of technological resources/telecommunication or other techniques to provide health services in underserved areas.

“Deployment does not include the use of financial incentives or other incentives to recruit health care providers.”

Decision Support Tools

- workload measurement tools or other tools that contribute positively to deployment initiatives through the optimal utilization of available health human resources;
- tools that objectively determine the total amount of care hours (which include direct and

indirect services) required for clients and the number and type of health care providers to provide these services;

- tools that are used or have the potential to assist employing authorities in determining how best to use available health human resources.

Preferred Practice

- the most frequent initiative or action taken by employing authorities to resolve a deployment issue.

Employing Authorities

- all those involved in the hiring of health care professionals, such as government and health care administrators.

1.3 ACKNOWLEDGEMENTS

The Project Team would like to extend its appreciation to Ms. Suzanne Larente and Mr. David Moore for their guidance of this study, as well as for the valuable contacts and resources they were able to provide to the team.

The Project Team would also like to take this opportunity to thank all respondents who participated in this survey for their valuable time in the midst of very busy and demanding professional responsibilities and for the wealth of information provided. The team assumes responsibility for any errors or misinterpretations of the information provided during the telephone interviews, as project deadlines did not allow the time for respondents to verify the interview summaries.

2.0 LITERATURE REVIEW

2.1 APPROACH AND METHODOLOGY

The literature review requirements involved a review of HHR-preferred deployment practices and decision support tools that are used or have the potential to assist employing authorities in determining how best to use available HHR in Canada.

The literature review focus was framed and defined by specifications relating to geographic location, type of health care service delivered, delivery setting and HHR occupational group to identify and assess preferred practices of deployment. The focus of the review of decision support tools was based on specific types of health care providers and delivery settings. The scope included all 14 Canadian jurisdictions and five other jurisdictions (United States, United Kingdom, France, Australia, and New Zealand), as well as selected international organizations, for review of preferred practices for deployment. The review reach included bibliographical and data-based searches of national and international published literature, as well as a manual search and review of “grey literature.” In order to cast as wide a net as possible in examining the literature, a liberal approach was adopted in the selection of both published literature (citations and abstracts) and of the grey literature (primarily Web-based search) documentation for this review. This approach resulted in the review of approximately three times the number of documents required by the assignment.

The review of the “grey literature” and documents from other sources (e.g. professional associations, government departments, health care organizations, international organizations) was hampered by the fact that the primary search drive, the CABOT Database (Canadian Association for Health Services and Policy Research) was undergoing a major systems update and was not scheduled to be operational until the end of April. When, by mid-May, the database was still not operational, the project team decided to undertake a manual search for “grey literature” and other reports which fit the identified criteria. The departments of health Web sites for the 14 Canadian jurisdictions and five targeted countries (United States, United Kingdom, France, Australia, and New Zealand) were extensively searched for relevant publications, reports or announcements, as well as Web sites for federal agencies, professional organizations (federal, provincial, and international), and research institutions.

The following table (Table 1) provides further detail on the focus, scope, and reach of the literature review.

Table 1 Literature Review Methodology

	PREFERRED PRACTICES FOR DEPLOYMENT	DECISION SUPPORT TOOLS
<i>FOCUS</i>	<p><u>Geographic:</u> rural; remote; isolated; inner-city; First Nations and Inuit communities (on and off reserve)</p> <p><u>Type of health care:</u> Primary Health Care; Aboriginal health; home care; mental health</p> <p><u>Delivery Setting:</u> Hospitals; Long-Term Care facilities; community settings; Public Health Agencies</p> <p><u>Health Human Resource Occupational Group:</u> nurses (including registered nurses, licensed practical nurses, and registered psychiatric nurses); family physicians; pharmacists; medical diagnostic technologists (including medical laboratory technologists and medical radiation technologists); rehabilitation workers (including physiotherapists, occupational therapists); and support workers (including personal attendants, homemakers).</p>	<p><u>Type of health care:</u> Primary Health Care; Public Health; Community Health</p> <p><u>Health Human Resource Occupation Group:</u> nurses (including registered nurses, licensed practical nurses, and registered psychiatric nurses); family physicians; pharmacists; medical diagnostic technologists (including medical laboratory technologists and medical radiation technologists); rehabilitation workers (including physiotherapists, occupational therapists); and support workers (including personal attendants, homemakers).</p>
<i>SCOPE</i>	<p><u>Canada:</u> 14 jurisdictions in Canada (all provinces, territories, as well as the federal government)</p> <p><u>International:</u> Australia, New Zealand, UK, US, France, WHO and other international organizations</p>	<p><u>Canada:</u> 14 jurisdictions (all provinces and territories, as well as the federal government)</p>
<i>REVIEW REACH</i>	Published and grey literature (national and international) related to health human resource deployment	Published and grey literature (Canadian) related to use of decision support tools

Published Literature/Database Search Strategy

Major groups or "components" of terms were identified based on terminology expressed in the Request for Proposals (RFP). Both Medical Subject Headings (MeSH) (terms used by the Medline database to categorize the subject matter of citations) as well as keywords (terms appearing in an article's title, medical subject headings or abstract) were identified for each component. All searches were limited to articles between 1994 and 2004 on the Medline database.

Canadian English-language articles were identified by the following search combinations:

- Citations containing at least one term from each of the following components: Canada, Health Human Resources, and Innovation (605 citations found).
- Citations containing at least one term from each of the following components: Canada, Health Human Resources, and Decision Support Tools (89 citations found).
- Citations containing at least one term from each of the following components: Canada, Health Human Resources, and Underserved Areas (207 citations found).
- Citations containing at least one term from each of the following components: Canada, Health Human Resources, and Practice Settings (521 citations found).

Given the large number of citations that were generated when the search parameters were broadened to include international English-language articles, these searches were run using an option on the Medline database, which limits the search to articles that summarize the literature (review articles) in the following search combinations:

- Review articles containing at least one term from each of the following components: International, Health Human Resources, and Innovation (565 citations found).
- Review articles containing at least one term from each of the following components: International, Health Human Resources, and Decision Support Tools (34 articles found).
- Review articles containing at least one term from each of the following components: International, Health Human Resources, and Underserved Areas (100 articles found).
- Review articles containing at least one term from each of the following components: International, Health Human Resources, and Practice Settings (496 articles found).

French-language articles were also singled out by combining the Canada component with the MeSH term "French" for the following searches:

- Citations containing at least one term from each of the following components: Canada (with the addition of "French"), Health Human Resources, and Innovation (82 citations found).
- Citations containing at least one term from each of the following components: Canada (with the addition of "French"), Health Human Resources, and Decision Support Tools (4 citations found).
- Citations containing at least one term from each of the following components: Canada

(with the addition of "French"), Health Human Resources, and Underserved Areas (12 citations found).

- Citations containing at least one term from each of the following components: Canada (with the addition of "French"), Health Human Resources, and Practice Settings (145 articles found).

The following table (Table 2) identifies the Medical Subject Headings and Keywords used.

Table 2 Medical Subject Headings and Keywords

Component	MeSH terms	Keywords
Health Human Resources	Health manpower Delivery of health care, integrated Nursing staff Medical staff Health personnel Professional practice Personnel management	Health human resources Health care provider Health care professional Human resources
	Nurses Nurse Practitioners Physicians, Family Pharmacists Laboratory personnel Mental health services Physical Therapy (Specialty) Occupational Therapy Nurses Aides Homemaker services Home care services Primary Health Care Family practice Community health centres Community health services Patient care team	Registered nurse Nurse practitioner Licensed practical nurse Registered psychiatric nurse Medical diagnostic technologist Medical laboratory technologist Medical radiation technologist Mental health worker Mental health provider Rehabilitation worker Physiotherapist Occupational therapist Support worker Personal attendant Homemaker

Component	MeSH terms	Keywords
Innovation	Health care reform Organizational innovation Continuity of patient care Comprehensive health care Models, organizational Pilot projects	Mix of providers Scope of practice Preferred practices Initiative Optimization Innovation
Decision Support Tools	Workload Task Performance and analysis	Workload measurement Decision support tools Care hours
Underserved Areas	Rural health services Telemedicine Medically underserved area Indians, North American Inuits	Inner-city Underserved Underserved First Nations Inuit Aboriginal
Canada	Canada British Columbia Alberta Saskatchewan Manitoba Ontario Quebec Prince Edward Island Nova Scotia New Brunswick Newfoundland and Labrador Northwest Territories Yukon Territory Nunavut	Canadian
International	United States Great Britain England Wales Scotland Northern Ireland Australia New Zealand France World Health Organization	United Kingdom

Component	MeSH terms	Keywords
Practice Settings	Hospitals Long-term care Home nursing Home care services Community health nursing Skilled nursing facilities Community health services Community health nursing Public Health	

Selection and Review of Citations and Abstracts

Upon initial review of the citations and abstracts, the Project Team was concerned that the search did not identify a body of published literature directly related to the review terms of “preferred practices of deployment” and/or “decision support tools” to support deployment. Each citation and abstract was accordingly reviewed by three researchers so as to achieve consensus on relevant sources and those selected had a minimum of two rankings for inclusion.

Table 3 Published Literature/Selection of Citations Reviewed

Search	Number of Citations and Abstracts Reviewed	Number of Documents Selected and Reviewed
HHR Deployment Canada	1,226	48
HHR Deployment International	1,161	22
Decision Support Tools Canada and International	123	4
TOTAL	2,510	74
<p>Note: For the categories listed above, the number of citations reviewed represents unique citations. However, in a few cases, the same citation was identified in more than one database search.</p>		

Grey Literature /Manual Search Strategy

The manual search for grey literature was extended to publications, policy documents, research papers, articles, announcements and other documentation, which have been posted on Web sites. The department of health Web sites for each jurisdiction were identified as the basis from which the search was conducted. The publications/reports sections of Web sites were searched for possible titles that included the terms or keywords as identified in Table 2. All relevant links from these Web sites to other departments, agencies and associations were also followed and similarly searched for relevant reports as well as potential contacts for the environmental scan telephone survey. The documents were scanned by the primary researcher for relevance and, if the document included an abstract or executive summary, this was printed for review by a second member of the research team before being downloaded and printed for a more in-depth reading, and subsequently summarized for this literature review report. Approximately 95 primary Web sites were visited, with over 1,700 titles reviewed for relevance and a minimum of 80 reports read and summarized for potential inclusion in this report.

Table 4 Grey Literature/Selection of Documents Reviewed

Search	Number
Primary Web Sites Visited	95
Titles Reviewed	1,700
Documents Reviewed	80

2.2 FINDINGS

2.2.1 Canadian HHR Deployment Practices

2.2.1.1 General Trends

The review of Canadian literature sources had as its objective the identification of trends and examples of emerging or innovative deployment models or practices in HHR, as well as decision support tools related to deployment strategies. What emerged from the review was not only a confirmation of a broad consensus on a number of underlying trends, but also a paucity of decision support tools, which are used to support deployment decisions.

A primary objective of this study was to identify preferred practices of deployment and to specifically look at examples, models or pilot studies of initiatives in Canada and internationally that could be practically replicated in other jurisdictions. The preponderance of the published literature focussed on documenting and analysing issues relating to physician recruitment, with

the greatest attention paid to financial incentives and payment mechanisms. While this topic is outside the specific scope of this review, it points to a significant finding - that much of the deployment strategies to date have focussed on funding mechanisms, alternative remuneration systems, and other incentives to promote physician relocation in underserved areas. In addition, a large part of the published literature centres on the role, education, and optimization of the nursing profession to support increased access to health care services. Furthermore, review of the grey literature emphasized these trends and provided some applicable information and examples of models and deployment trends, which are occurring within Canada and internationally.

The articles reviewed expressed generally recognized concerns about the supply of HHR in Canada, although there were a variety of perspectives regarding the magnitude of this concern. There were varying points of view expressed regarding the distribution of physicians and other providers, mix and levels of services, the extent to which shortages are occurring and projections of future supply of HHR. These discussions bearing generally on the supply and demand of health care professionals in various geographical locations and settings examined factors such as demographics, the proportion of general/family practitioners to specialists, and trends on ageing, retirement patterns and lifestyle expectations. It was generally accepted that the development and promotion of PHC within Canada was a policy priority. Regarding the utilization of HHR, this priority highlighted three aspects: strengthening the delivery of PHC; ensuring the future supply of HHR; and best utilizing existing human resources within the health care system. The key strategies identified towards accomplishing these HHR objectives involved redefining the roles of health professionals, optimizing efforts towards full scope of practice, and promoting interdisciplinary collaboration.

Within the literature there was some attention paid to the need and prospects for expanding the utilization of existing HHR, largely deemed possible by promoting interdisciplinary team approaches and fostering innovative collaboration practices among health professionals. Barriers to the integration and optimal contribution of health professionals within PHC teams were also discussed and analysed. Examples include the lack of availability of nurse practitioners, unclear role definitions and expectations, medical legal concerns, licensing and regulatory issues, and the lack of education and training to enhance roles and opportunities for substitution by the members of health care teams.

Traditional models of health care delivery have been under pressure during the past decade, as a result of reform measures, regionalization, constraints of financial resources, changes in the organization of health care delivery and shortages and imbalances of human resources. These pressures have resulted in the search for cost-effective innovative models, which provide high-quality services, while optimizing access and service delivery. A study conducted on behalf of the *Task Force Two: A Human Resource Strategy for Physicians in Canada* (Task Force Two, 2003) developed an inventory and synthesis of new and emerging models for health care delivery.

Several models identified in this inventory have been useful for this study with respect to utilization of HHR, as well as relating to innovative utilization of technology. Many of the models

involved new funding formulas and remuneration schemes (such as capitation, salary incentives), and, as such, fell outside of the scope of the study, but merit mentioning. Alternative funding arrangements are frequently utilized to address physician shortages in rural, remote and underserved areas, such as the Ontario Northern Group Funding Plan or the Saskatchewan Coordinated Northern Medical Services Program. Alternative payment systems are also being experimented within the delivery of PHC, such as use of salary schemes for physicians, and utilization of nurse practitioners paid by salary. Block funding approaches have been used to contract with physicians as in the Strengthening Primary Care project in Nova Scotia Communities initiative. Capitation funding has been utilized as well, as in the Ontario Family Care Health Networks, which is part of that province's PHC reform initiative.

Examples of innovation in PHC delivery described in the Task Force Two inventory primarily involved the use of multidisciplinary, community-based primary health care centres, ranging from the *CLSCs* (local community service centres), which have been operating in Quebec for almost a decade, to models implemented more recently in Western Canada. Multidisciplinary teams are composed of a range of health care professionals, including family doctors, nurse practitioners, social workers, rehabilitation specialists and other health professionals.

Observable trends in the Task Force Two inventory document the increased use of nurse practitioners and "expanded role nurses" in the delivery of primary care. The scope of practice of nurse practitioners (NPs) has been expanding across the country, and current tasks being performed by these health providers in Canada may include diagnosis, prescribing, treatment, patient counselling, ordering of laboratory testing, and other advanced nursing tasks, which vary among jurisdictions. The expansion of nurses' scope of practice was also noted in hospital-based services, including emergency services and an expanded role during surgery.

Models were identified demonstrating the trend towards greater use of hospitalists (GPs, FPs working in hospitals) to help alleviate congestion and overflow in hospitals. The Dartmouth General Hospital in Nova Scotia is currently utilizing hospitalists in the emergency department, as is the Calgary Regional Health Authority (Task Force Two, 2003).

Several provincial departments of health have received funding from Health Canada's Health Transition Fund to establish primary care projects. These projects share common characteristics, such as the utilization of multidisciplinary teams to deliver PHC; group medical practice; enhanced access to services (often 24/7); access to comprehensive services, including health promotion, illness prevention, treatment, follow-up; innovative physician funding schemes based on populations served, rather than fee-for-service; and the use of nurses as a key component of the team, playing an expanded role. Examples of such a model are the eight Primary Care Demonstration Projects in various British Columbia communities. A blended funding formula is used for physician payment (fee-for-service and population-based, adjusted for age and sex). Preliminary findings of an evaluation have been positive for both health care providers and patients (Micco, 2001).

Home care has also seen an increase in greater deployment of home care nurses, such as the CareLinks Program in the Simon Fraser Health Region of B.C., where home care nurses facilitate and manage the transfer from hospital care to home care. Quick response projects also include home care nurses who work in emergency departments and re-direct patients to their homes, with enhanced home care services. Other models of home care include chemotherapy, palliative care, cardiac home monitoring, and geriatric care, delivered in the home by nurses (Task Force Two, 2003).

The following sections highlight grouping of deployment trends found in the Canadian literature review.

2.2.1.2 Expanded Scope of Practice and Training/Education

Training and education issues were prioritized and underlined as essential to fostering role enhancement in expanded scope of practice strategies. This discussion focussed on the importance of promoting understanding among health professions, ensuring training and competencies development, and clarifying potential roles, requirements, and scope of practice as a means to identify opportunities for expanded collaboration. Health care team members need to understand their own roles as well as those of others, to examine overlap between them, and determine boundaries that must be maintained in order to redesign team function for maximum contribution by all members. The literature highlighted the current lack of clarity in this regard, largely because of the discipline-specific approaches taken in conventional education and the discipline-centric viewpoints that result (Minore and Boone, 2002). The literature suggests that the lack of understanding of scope of practice boundaries and parameters among many of the health professions is a key factor in health professionals not working to the full scope of their training capacity. For example, narrow understanding by physicians of the role and scope of capabilities of NPs tends to lead to their underutilization. One pilot study of two rural Ontario primary care practices participating in an outreach intervention to improve structured collaboration practice between NPs and family practitioners (FPs) was conducted to determine what PHC services are provided to patients by NPs and FPs working in the same rural practice setting. The study concluded that the NPs were underutilized with regards to curative and rehabilitative care and little evidence of shared care was found. The research study concluded that this may be explained by concerns over medical legal issues related to shared responsibility, lack of education in working in interdisciplinary teams, and the lack of FPs' familiarity of the scope of NP practice (Way, Jones, Baskerville and Busing, 2001).

The Task Force Two model inventory (Task Force Two, 2003) identified a number of special population initiatives in which family physicians are specifically trained for rural practice (Prince George, B.C., in consultation with the B.C. Ministry of Health and the Faculty of Medicine at UBC).

The retention and recruitment plan for the Northwest Territories' allied health care professionals, nurses and social workers prepared in 2002 by the Department of Health and Social Services

focussed on current and planned initiatives to retain the services of health providers (physicians are addressed separately) in the North. Initiatives relating to innovative deployment approaches principally involved training programs. A nurse mentorship Program that began in 1997 supported 62 mentorships in 2002. Three of the seven health authorities in the N.W.T. have hosted mentorships. The nurse educator/mentor focusses on mentorships and practicums and also coordinates and delivers in-service courses for front-line nurses. A nurse/educator float position has been developed to provide training in communities where there is no permanent mentor.

2.2.1.3 Rural Communities

Below are several examples of initiatives to increase HHR capacity in rural areas by providing training and education within rural and remote communities.

The Northern Family Education Program (Nor Fam), a seven-month rural practice rotation for family medicine developed in Newfoundland and Labrador cited that in 1997, 90 percent of the graduates opted for rural practice (Gray, 1997). Group general practitioner practices were cited, such as the Marathon Family Practice, which receives global funding from the Ontario Ministry of Health and Long-Term Care and which has been successful in providing stability to a Northern Ontario rural community (O'Reilly, 1998).

The Ontario Ministry of Health and Long-Term Care (Business Plan 2002-2003) established a new Northern Medical School in 2002, which is intended to encourage students and physicians to set up practices in northern rural communities so as to improve access to health services in underserviced areas and to recruit physicians from these areas.

The Dalhousie Outpost Nursing Program was designed to provide PHC in northern Canadian Aboriginal communities, where there is a shortage of physicians. It was designed specifically for registered nurses and intended to prepare them for positions in northern communities and to work in partnership with Aboriginal groups towards their vision of self-determination, equity and healing. An evaluation of the Program conducted in 1993 found that nurses working in Aboriginal communities were effective in providing PHC services. One theme expressed by the communities was the need for Aboriginal nurses to deliver services to Aboriginal communities (Martin-Misener and Black, 1998).

Nunavut Arctic College in Iqaluit and Dalhousie University developed, in partnership, the Arctic Nursing Program to provide education for the unique skills required for delivering health care in Nunavut. Nunavut Arctic College also offers a "Health Career Access Program" designed to provide Inuit students with opportunities to prepare for study in health-related fields.

The Northern Outreach Program (NOP) is a coordinated endeavour of Lakehead University (School of Nursing), Laurentian University (Centre for Research in Human Development), and the University of Western Ontario (Health Sciences Faculties and Libraries) working with district health councils, universities/colleges, health providers, administrators and government

representatives, which has helped to develop programs that enhance nursing, nutrition and rehabilitation service delivery. Since its inception in 1981, NOP has become involved in the Kenora-Rainy River, Thunder Bay, Algoma, Manitoulin-Sudbury, Cochrane, Muskoka-Parry Sound and Temiskaming-Nipissing Districts in Northern Ontario. A 1994 article describes consultation services and mentorship programs offered to physiotherapists and occupational therapists that can assist those working in remote and rural areas in clinical and professional issues. Other Program components noted were the use of regional support networks for new therapists and teleconferencing to help reduce distance and fiscal barriers to professional development (Sumison and Beggs, 1994).

2.2.1.4 Primary Health Care HHR Deployment Initiatives

The recent emphasis on PHC has brought about fundamental changes in the deployment of HHR and has introduced the concept of the interdisciplinary team and collaborative practice models. Below are some examples of initiatives promoted by the PHC approach.

Primary Care and Family Medicine in Canada: A Prescription for Renewal (2002), a paper authored by the College of Family Physicians of Canada advocated for the establishment of Family Practice Networks (FPNs) in which family doctors and other health care professionals work together as an integrated team. The author envisions the team to be comprised of family physicians, nurse practitioners, nurses, midwives and other professionals.

The B.C. Health Services (2004), in its document *Making Progress: Primary Health Care Renewal in British Columbia* states that the formation of 30 new PHC sites financed under a blended funding model and bringing together nurses and other health professionals in clinical teams is being contemplated. B.C.'s Primary Health Care Transition Fund framework recognizes that a one-size-fits-all model does not suit all situations. A range of initiatives, including PHC organizations and networks, community health centres, shared care, nurse managed care and chronic disease management, are also being considered.

The *2002 Strategic Health Plan for Newfoundland and Labrador* outlines a new model for PHC which includes two components: the use of a primary health care team, which is described as an interdisciplinary team approach comprised of general practitioners, family physicians, nurses, nurse practitioners, paramedics, physiotherapists, occupational therapists, social workers and others; and the inclusion of PHC networks, which is described as a wider network of other health professionals, such as speech and language therapists, community pharmacists, dieticians, dentists psychologists and others. In addition, implementation of a physicians' network was discussed in which physicians have a defined relationship with the regional health board regarding formal agreements for service (Department of Health and Community Services (Newfoundland, 2002).

A primary care demonstration project in the Elnora area (David Thompson Health Region) of Alberta (1998-2000) funded through the Health Canada Health Transition Fund was developed to increase access to primary care services and emergency services in remote rural communities. A primary multidisciplinary care team, comprised of a nurse practitioner, the Community Health Centre staff, a local pharmacist, two physicians from a neighbouring community, public health nurses, home support aides, a continuing care counsellor, an occupational therapist, a physiotherapist and a lab technician, was established. The central member of the team was the nurse practitioner, who provided ambulatory care (including diagnosis, entry level treatment of common and chronic illness, referrals and follow-up). Evaluation results showed that the nurse practitioner referred 55 percent of patients to another health professional. Patient satisfaction with access to emergency services, (identified earlier as a major concern of patients) indicated that 70 percent of patients were satisfied or very satisfied with emergency response. This increased from a 53 percent satisfaction rate in 1999. Ninety-nine percent of patients were satisfied or very satisfied with the quality of services provided by the nurse practitioner. In general, this project was deemed to be successful. Long-term sustainability was not addressed by the evaluation (Simpson & Littlejohns, 1999).

2.2.1.5 Rural and Remote Settings HHR Deployment Initiatives

Within the overall topic of availability of services, one issue of concern, which received appreciable attention, was the geographical imbalance in HHR and deficiencies in rural and remote settings. Discussion on the barriers and obstacles to practise in these settings cited studies that indicated that physicians who are trained (clinical rotations) in rural settings or are from rural areas are more likely to continue to practise in rural communities. There are numerous examples of programs offering such training in rural family medicine, which describe the benefits of cooperation between government, university and rural communities to achieve these objectives. The literature also explored trends in the use of international medical graduates in underserved areas both in the U.S. and Canada.

A number of articles addressed the shortage of various health professionals in these underserved areas. Most frequently attention was focussed on the recruitment and retention of nursing capability with calls for actions, policy and strategy development. But here again there were no specific examples found on specific effective deployment strategies.

A noteworthy project related to the deployment of nurses is the Comox Valley Nursing Centre (CVNC). This project was initiated in 1994 as a two-year demonstration project funded by the British Columbia Ministry of Health to demonstrate nursing practice in a PHC context. It was implemented as a nurse-managed centre providing clients direct access to registered nurses offering holistic, client-centred health services. Nurses provided PHC through assessment, education, health skills, health care intervention, referral and follow-up, in partnership with individuals, groups and the community. The mission statement of the CVNC was based on providing a full-range of nursing services to the people of Comox Valley by enabling nurses to work to the full scope of their

knowledge and skills, incorporating the principles of PHC, provide direct access to nursing services and consult with the community to determine its needs (Clarke and Mass, 1998). The CVNC now functions under the auspices of the Vancouver Hospital Authority and offers services, including health assessment, counselling, health information, a lending library, support groups and information about, or referrals to, community resources.

To improve access to health care in remote communities of New Brunswick, the Collaborative Nurse/Physician Care Model for Remote Areas was established in the Grand Manan and Black Harbour region of New Brunswick. A small community health clinic on Grand Manan Island is operated by an advance practice nurse who has received additional training beyond the standard scope of nursing practice and reports to the local physician. The model, developed by the Atlantic Health Sciences Corporation, allows the nurse to conduct patient assessment in the emergency clinic, and either treat patients or refer them to the physician, or to other health care providers, such as the dietician, physiotherapist, etc. Case management is a collaborative process between the nurse and the physician. Telehealth is used to access specialists outside the community. The nurse and physician are both salaried employees of the Atlantic Health Sciences Corporation. A process evaluation was conducted which concluded that the collaborative model is most successful when physicians are paid on a salaried, rather than a fee-for-service basis. Other evaluation findings have shown good clinical outcomes, and appropriate transfer of patients from Grand Manan Island. Patients expressed satisfaction with the care obtained in their communities. It was further noted that the sustainability of this type of model is dependent on the availability of appropriate clinical backup and telehealth linkages (Task Force Two, 2003).

The Faro/Mayo project in the Yukon was developed to address access to services in remote, rural communities. This model was established to stabilize health care services in light of difficulties in recruiting and retaining physician services, and relies on nurse practitioners to provide primary services to targeted communities (including diagnosis, treatment and prescribing). The nurses were to focus on chronic and longer-term health conditions, with the physician intervening in acute/emergency situations. This model has been operative for approximately 10 years. Physicians are hired by the Ministry of Health and are on contracts, while the nurses (on salary) report through the Community Nursing Department of the Ministry. While a formal evaluation has not been conducted, the Ministry reports that this model has improved the availability of health services in Faro and Mayo. Anecdotal evidence reports patient satisfaction with this system. However, it emphasized the importance of education and training for health professionals to prepare them for the rural/remote environment (Task Force Two, 2003).

In Canada's Aboriginal communities in Northern Ontario there are 28 Cree and Ojibway communities with few roads and a total population of 16,231. Most of these communities have a nursing station staffed by two or three nurses working with physicians who are on a "fly-in" rotation basis. In the smaller communities, the nursing stations are managed by a Community Health Representative (CHR) who is usually guided by the nurse at the nearby larger community. A working paper produced for the Centre for Rural and Northern Health Research stated that CHRs can provide complete primary care to 85 percent of patients. The authors conclude that combining clinicians' knowledge, skills and judgement with paraprofessionals' cultural and community

awareness is the preferred and, likely, only workable means of delivering essential health services to Canada's northern Aboriginal people. The system is funded by FNIHB (Minore and Boone, 2002).

The Rural Primary Health Care Project in Alberta provided for a mobile team of health professionals to four rural communities, Cremona, Youngstown, Cessford, and Hussar. The objective of this project was to improve access to health services in underserved rural communities. The project was administered by Health Region #5 and received funding from Health Canada's Health Transition Fund. The multidisciplinary team included physicians, speech language pathologists, respiratory therapists, mental health therapists, laboratory technicians, nurses, community development specialists and clinical assistants. There were also private pharmacists involved. Additional programs included breast health clinics, nutrition, and diabetes programs. An evaluation was conducted and included both process and outcomes indicators, and showed a very high level of satisfaction with the services on the part of the communities and patients. The project was not, however, implemented on an ongoing basis (Frere, 2000).

The College of Family Physicians of Canada's *Canadian Family Physician* published a study addressing ways to keep family physicians in rural practice (Burke et al, 2003). This was conducted through surveying physicians to identify strategies to achieve better physician recruitment and retention in rural areas. Possible solutions identified included increased and better access to medical education and rural practice solutions. Findings indicated the following practices could increase retention: reducing on-call services; deploying provincial locum programs for rural areas; revising the emergency room coverage funding system; implementing specialist referral networks, increasing the use of telephone/fax and Internet access; and implementing other funding-related measures.

A Review and Synthesis of Strategies and Policy Recommendations on the Rural Health Workforce prepared for the Centre for Rural and Northern Health Research identified the following strategies proposed for retaining physicians (Pong et al, 2003) in the North: provision of community clinic facilities for group practices, specialist back-up, locum relief, flexibility for locum contracts, and greater use of telemedicine. The authors conclude that emphasizing recruitment of medical students from rural areas and providing training opportunities in these locations will increase the likelihood of students choosing to practise in rural communities.

2.2.1.6 Nursing Practice Deployment/Expanded Scope of Practice

The shortage of family physicians, and other physicians, the need to provide health care services in remote or isolated communities, the increasing emphasis on PHC, as well as the growing realization that nurses can be deployed to provide a broad range of services, have led to an increasing utilization of nurses in various practice settings. Examples of such deployment practices are highlighted below.

The Health Care Corporation of St. John's, Newfoundland and Labrador, implemented a Cardiac Care Nurse Practitioner Model. The objective of this project was to support care to cardiac patients,

in collaboration with cardiac surgeons and other members of the health care team. The use of cardiac nurse practitioners was viewed as a means of reducing waiting time for surgery. Specially trained cardiac care nurse practitioners assist in patient assessment, pre-op and post-op care, and have prescribing authority within certain approved clinical protocols. Some nurse practitioners also act as first assistants in cardiac surgery. This model has not been formally evaluated; however, anecdotal evidence would conclude that the assistance of NPs, doing pre-op and post-op care, have enabled surgeons to process more cases, with consistent (if not better) outcomes achieved per case. Further anecdotal evidence would suggest the achievement of greater efficiencies such as more procedures completed, more efficient discharge, and improved clinical outcomes. This model has been supported by legislative changes in Newfoundland and Labrador, and changes to the training Program for nurses (Master's of Nursing Degree). It is anticipated that this model is sustainable in areas of physician/specialist shortage (Task Force Two, 2003).

A Clinical Nurse Specialist/Nurse Practitioner Model was developed in 2001 by the Hamilton Health Sciences Corporation in Ontario to provide greater access to health services to patients requiring rehabilitation services in the hospital setting. Two clinical nurse specialist positions were funded through the hospital global budget to provide care to patients with brain injuries, neurological disorders or cancer, under specific treatment protocols. These nurse specialists are considered "physician extenders" and provide complex rehabilitation services. While there has not been a formal evaluation of this model, anecdotal evidence would suggest satisfaction with the outcomes obtained to date; the physicians, health care teams, and nurses seem very satisfied with this approach, as are patients. It is reported, however, that patients' families would prefer discussing patient's cases with physicians, rather than with nurses. From an administrative viewpoint, however, this model appears to be successful. The scope of nursing, expanded within this model, allows for the demand on physicians' time to be reduced (Task Force Two, 2003).

The use of a clinical nurse associate was adopted by the Atlantic Health Sciences Corporation in Saint John, New Brunswick, in the late 1990s, to address service gaps in cardiac care units and in orthopaedic care units, and to ensure that patient care was provided on an ongoing basis in these units. These units are not academic teaching units, and, therefore, did not have residents on staff to assist in the provision of care. The objective of this model was to provide care equivalent to that provided by interns and junior resident physicians, and thus improve quality of care for patients. The clinical nurse associates report to the Director of Surgery Administration, and their duties include management of daily care patients (assessment, monitoring, coordination of care, liaison with specialists). Funding is provided through the hospital-operating budget. This model has been very well received, and is being applied to other units. It is considered to have increased efficiency and productivity. Monitoring studies have shown a higher quality of patient care and improved outcomes, satisfaction among care providers and patients. No formal evaluation has been conducted (Task Force Two, 2003).

A clinical nurse specialist model has been used by the Hamilton Health Sciences Corporation in Ontario to provide clinical care in the Neonatal Intensive Care Unit of the McMaster Children's Hospital. This advanced practice nursing position was created due to a gap resulting from resident

physician shortages (the total number of residency positions had been reduced by the Ontario Government) and lack of neonatal paediatricians and neonatologists. McMaster University is considered a leader in the training of nurse practitioners and was selected as a site for this project. The Canadian Paediatric Society supported this project. Clinical nurse specialists/neonatal practitioners are Master's-prepared clinical nurse specialists, with additional training in neonatal care so as to accept delegated medical acts. They are hospital employees on salary and perform the functions normally undertaken by physicians. In 1993 an alternate funding agreement was put into place through the Alternate Payment Branch of the Ontario Ministry of Health and Long-Term Care to supplement the funding provided through the hospital. An evaluation of the model has been conducted, which examined costs only, and concluded that there was very little difference in cost between the use of a resident or a clinical nurse specialist/nurse practitioner. Comparative competency testing also demonstrated very little difference between residents and clinical nurse specialists/nurse practitioners on all assessed outcomes. A clinical outcomes study, which assessed performances by residents and clinical nurse specialists/nurse practitioners, found that the two teams were comparable in quality of care and clinical outcomes obtained (morbidity, mortality, parent satisfaction, long-term outcomes, patient care costs). The quality of care was comparable in all instances, except in the case of jaundice and clinical documentation, which favoured clinical nurse specialists/nurse practitioners. Indicators for success of this model included the quality of the training Program, job satisfaction and the possibility of career advancement and recognition provided. The authors felt this model has potential for long-term sustainability (and has been established in Hamilton, Ontario) in circumstances where there are physician shortages (Mitchell-DiCenso et al, 1996; Paes, et al, 1989; Pinelli, & Baes, 1995).

The Labrador Health Corporation, which serves a large remote area, operates 2 hospitals and 10 community clinics staffed by regional nurses. The regional nurses have an expanded scope of practice, such as prescribing and dispensing medications under specific conditions. This practice has been authorized under provincial pharmacy legislation in isolated communities where there is no access to a pharmacy. In 2002, a nurse practitioner was added to one of the communities with authority to prescribe medication and function under a further advanced scope of practice. This model was seen to have been successful in reducing the physicians' workload and freeing their time to administer more acute medical services. It would also appear that utilization of the emergency department has been reduced (Task Force Two, 2003).

In 1998, the *Expanded Nursing Services for Patients Act* amended the *Regulated Health Professions Act and Nursing Act* to provide nurse practitioners in Ontario with an expanded scope of practice, authorizing them to diagnose, order specific diagnostic tests (ultrasound or x-rays), non-acute case electrocardiograms and specified laboratory tests, and prescribe and administer specific drugs. Since 1998, 402 NP positions have been established and funded by the Ministry of Health and Long-Term Care of Ontario to function in Community Health Centres, the Underserved Area Program, long-term care facilities, Aboriginal Health Access Centres, Primary Care Networks and Public Health Units. At that time, the Ministry planned to fund an additional 348 positions over a three-year period and committed to funding \$1.7 million annually for nurse practitioner education. In the 2002/2003 Ontario Ministry of Health and Long-Term Care Business Plan, \$10 million in

funding was allocated to increase the use of nurse practitioners working in conjunction with family physicians in the delivery of primary health care by creating an additional 106 nurse practitioners positions for long-term care facilities, underserved areas, family health networks and Aboriginal health centres. Most of these positions have been filled (Ontario MOHLTC, 2002).

A study was conducted to examine the barriers to practise, as well as to encourage the further integration of nurse practitioners in Ontario's health care system. The study identified two types of practice model relationships involving nurse practitioners: the collaborative and the consultative NP/MD relationship. Indicators used in the study to assess nurse practitioners' roles included the following: practice setting; external influences impacting the extent to which nurse practitioners are able to provide patient care within the scope of practice; decision-making; workplace satisfaction; collaboration; and team dynamics. The study determined that the key facilitators to integration of primary care nurse practitioners into the Ontario health care system included the introduction of policies that legitimize nurse practitioners, greater patient awareness of their role, and greater understanding of their role by other health professionals. Also identified were a supportive view of collaborative practice by physicians, provision of resources to sites that want to employ a nurse practitioner and policy changes to provide reimbursement to nurse practitioners and to the physicians who work in collaborative practice with them (Ontario Ministry of Health, 2003; Hanrahan *et al.*, 2001 and Birenbaum, 1994).

The Queen Elizabeth II Health Sciences Centre in Halifax, Nova Scotia, has introduced various models to increase the scope of practice for nurses. In the early 1980s, a cardiovascular associate position was created for nurses with additional training, followed by the introduction of the expanded role nurse, which was applied to over 20 specialty areas. The expanded role nurse position requires a Master's Degree in Nursing. In January 2002, the province of Nova Scotia introduced legislation to create the nurse practitioner position for both primary care and speciality areas. There is a pathway for expanded role nurses to retrain as nurse practitioners through a competency process. The nurse practitioner's designation requires two steps: the first being educational qualifications and credentialing from a designated educational Program, and the second being the approval of a "Collaborative Practice Agreement" from the Diagnostic and Therapeutics Committee of the Nursing College. The Diagnostic and Therapeutics Committee includes representatives from the College of Nursing, the College of Physicians and Surgeons and the College of Pharmacy. The Nova Scotia Department of Health funds the cost of the PHC nurse practitioner in collaborative practice with physicians (under alternative funding arrangements). Specialized nurse practitioners in hospitals are funded from hospital-operating budgets. The nurse practitioner model in Nova Scotia has not yet been evaluated, but it is expected that this model will be efficient in coordinating and integrating patient care, providing for enhanced access, and enabling greater continuity of care for patients (Task Force Two, 2003).

In the province of Saskatchewan, the College of Physicians and Surgeons of Saskatchewan and the Registered Nurses Association of Saskatchewan introduced a collaborative practice model, which was established in over 20 communities as of 1997. Within this model, advanced practice clinical nurses or nurse practitioners provide medical services previously rendered by physicians, and act

as part of a multidisciplinary team, including pharmacists, social workers, case managers, public health nurses, nutritionists, and community therapists providing a holistic range of health services. The nurses have advanced education and experience and work according to enhanced protocols, including diagnosing, treating common patient problems, minor illnesses and chronic conditions, ordering tests, prescribing medications and initiating treatment independently of physicians. The Saskatchewan Registered Nurses Association was developing, as of 2002, by-laws to regulate advanced nursing practice, which was anticipated to be supported by legislation. Physicians within these projects are compensated through alternative funding arrangements. An evaluation was planned to be conducted, but an interim report presented in March 2002 (completed after three years of project activity) emphasized that patients were very satisfied with the services provided and that communities had accepted the idea of a primary care nurse (Hudson Bay Primary Health Service, 2002; Saskatchewan Health, Primary Health Services Branch, 2002).

2.2.1.7 Mental Health Services HHR Deployment Initiatives

The Task Force II inventory of service delivery models (Task Force Two, 2003) indicated that there has been a noticeable trend in the utilization of general practitioners being deployed to deliver mental health services, under a "shared-care" model, in which primary physicians have been trained to better provide early intervention, access to mental health services, facilitate continuity of care between primary and mental health professionals, and generally increase family physicians' knowledge of mental health issues.

The Calgary Regional Health Authority and the Alberta Mental Health Board implemented a shared mental health care project intended to provide support to family physicians in delivering mental health services to their patients within their general practice. This project was developed to address problems with patient access to mental health services, long wait times and often inappropriate mental health services in the Calgary Health Region. The project enhanced outreach diagnosis and treatment and improved access for mental health consumers. This initiative was funded by Health Canada's Health Transition Fund as part of the Alberta Primary Health Care Project and was carried out from 1998 to 2000. It involved a shared-care model and included the participation of 24 family physicians, 3 psychiatrists, 4 mental health clinicians (1 psychologist, 3 nurses) and involved 463 patients with 947 consultations over a 14-month period. Training was provided to the participating family physicians. The project was evaluated and results demonstrated that family physicians (92 percent of participants) were satisfied with the results obtained. They indicated that they felt they were able to be more effective in managing mental health problems, and 59 percent stated that they had referred less as a result of their training. Patient satisfaction was also high. Emergency department utilization was shown to be reduced by 31 percent for project patients. This model was recommended for further application and expansion, and a permanent funding mechanism was seen to be important for sustainability (McElheran, 2000).

In Quebec, an estimated shortage of 200 FTE psychiatrists has resulted in the province's health minister announcing a hiring freeze of graduating psychiatrists at university hospitals in Montréal, Québec City, and Sherbrooke, thus mandating psychiatry residents to work in underserved remote

regions (March 2004). This shortage is also resulting in the reorganization of mental health care among professionals, the utilization of specialized nurses and general practitioners delivering front-line primary mental health services, thus freeing up psychiatrists for acute cases (Fidelman, 2004).

A research study conducted to examine the effectiveness of community-based mental health treatment, which emphasizes home care as compared with hospital-based psychiatric care, was cited in the document *Building a Stronger Foundation: A Framework for Planning and Evaluating Community-based Health Services in Canada* published by Health Canada (Church *et al*, 1995). The research study involved a home care patient group, which was treated by a multidisciplinary team consisting of a psychiatric social worker, a psychiatric nurse, and a half-time psychiatrist. The results showed in-hospital stay for hospital care patients to be longer at 41.7 days compared to 14.5 days for home care patients, with little difference in amount of ambulatory care required.

2.2.1.8 Applications of Telemedicine/Telehealth

Telemedicine/telehealth was also presented as another means of extending the availability of HHR, particularly in addressing geographic barriers. The literature examines various ways in which telemedicine offers potential for optimizing available financial and health human resources, improving accessibility of quality health services, and enabling the deployment of HHR, especially in rural and remote areas. At the same time, concerns were expressed that with the development of telemedicine there are system-wide issues that require coordinated approaches, such as human resource training, licensure, professional liability and quality control. Front-end implementation costs were identified as a barrier to a more widespread deployment of telemedicine systems.

In general, telehealth has become an important resource for health professionals in remote regions. It is estimated that there are approximately 200 telehealth projects and networks currently operating in Canada. There are about 300 Canadian telehealth companies. Organizations currently utilizing telehealth initiatives include the following: 272 rural and remote communities, 20 First Nations and Inuit communities; 98 professional associations; health care institutions, research organizations and universities; 19 government departments (*National Information-Sharing and Feedback Session on First Nations and Inuit Telehealth*).

The Task Force II service delivery model inventory (Task Force Two, 2003) identified telemedicine initiatives to serve remote areas of Newfoundland and Labrador, and the Magdalen Islands, as well as the use of distance education for upgrading skills of rural health providers. A telepsychiatry project has been instituted in Alberta. Sick Children's Hospital in Toronto operates a telehome care Program, and Manitoba Telehealth Network operates services in 21 sites in small rural communities throughout the province.

A project was implemented in remote regions of Quebec (*Telemedicine for Remote Regions of Quebec, Centre hospitalier universitaire du Québec, Magdalen Islands, Quebec*) intended to integrate telemedicine technology into the broader health care system and to make it a sustainable model. The project initially was designed to administer a telehealth network, which would link the

Magdalen Island Hospital to regional centres in Eastern Quebec. Physicians in the local hospital were linked to a referral network of approximately 100 specialists in 30 specialty areas, who periodically travelled to the Magdalen Islands to provide consultation. Two telehealth categories were established: teleconsultation (diagnosis, interpretation of films/images; peer consultation; monitoring and follow-up of patients) and teletraining (distance health learning, continuing medical education, including access to research databases). The following 14 specialty areas were involved: orthopaedics, radiology, speech therapy, dermatology; ENT, OB/GYN, traumatology, rehabilitation, genetics, endocrinology, neurology, psychogeriatrics, plastic surgery, and vascular surgery. An evaluation was conducted, which determined that the project been successful in meeting the intended expectations established. Access to health services was shown to have improved and service delivery was more timely and patient satisfaction was generally good. This model was shown to require strong organizational management and leadership, and the integration of telehealth into the operations of both the local hospital and the consulting institutions was seen to be essential (Cloutier, 2000).

Newfoundland and Labrador established the Telecentres for Education and Community Health Project (initiative of Memorial University Faculty of Medicine, Newfoundland and Labrador Department of Health and Community Services) to support the Primary Healthcare Enhancement Project in designated pilot communities. This project, financed by Health Canada's Health Transition Fund (1999-2000), and built upon the Newfoundland and Labrador Remote Community Services Telecentre, was used to provide telemedicine in the province. Its primary focus was on the delivery of a teleconsultation model for PHC services in rural and remote communities. It involved the Department of Health and Community Services and the Regional Health Boards (for targeted communities). The evaluation showed positive results, very high patient satisfaction, and a strong interest in using this technology. The model was shown to have excellent potential to improve access to services in remote communities (Sheppard and Goobie, 2000).

Ontario has established the Telehealth Ontario Program, a toll-free health advisory service, with access to registered nurses for advice, information and referrals, 24/7 in both English and French, and translation services for 110 languages. This Program was activated in 2001, and since February 2001 has responded to more than one million calls (MOHLTC, 2002).

The Tele-Homecare Multi-Centre Model was developed and implemented in the Hospital for Sick Children (Toronto), Health Care Corporation of St. John's (Newfoundland and Labrador), and the Alberta Children's Hospital. This paediatric tele-homecare project entails in-home service for children with intermediate intensity care and regular monitoring. The Program objectives were to extend paediatric services outside of the hospital to a home care setting and to improve and enhance the intensity of care for patients within their home. The model included integration of hospital services (tertiary care) with community care (home care and family support services), and provided 24-hour monitoring of home care patients via videoconferencing technology and monitoring of vital signs. Funding for this project was provided by the Health Infrastructure Support Program, and Health Canada's Health Transition Fund. The model is being evaluated through a randomized controlled trial and preliminary findings pointed to increased efficiencies and cost-benefit as a result

of reduced hospital stays, emergency visits and re-admission. Continuity of care would also appear to be enhanced, as would integration of health and social services care (Young *et al.*, 2000).

Telehealth has proven to have much potential to improve access to health care by First Nations and Inuit populations, as over one third of these communities (252) are located more than 90 kilometres from physicians (*National Information-Sharing and Feedback Session on the Potential Future of Telehealth in First Nations and Inuit Communities*, Final Report, October 5-6, 2003). Telehealth can improve access to services, to consultation and to information for First Nations and Inuit communities and to their primary caregivers. It can provide support to health care providers and communities and facilitate linkages. Telehealth may also contribute to more effective administration and management of health programs and resources, such as electronic health records, discharge planning, process evaluation, infrastructure and infostructure management. Telehealth may be used for medical consultations (most specialties); health education (educational materials and medical journals, seminars, conferences, courses and training); home care (including nursing, physiotherapy, occupational therapy, home maker services and meals programs); call centres (1-800 number to call for advice and information); health information networks (such as the First Nations and Inuit Health Information System); and for administration.

There are currently approximately 20 telehealth projects in First Nations and Inuit communities, including projects in diabetic retinopathy, telepsychiatry telecentres for education and community health, research projects, and many others. These projects utilize the following applications: tele-ultrasound, tele-emergency, teleradiology, tele-education, tele-rehabilitation, tele-home-monitoring, telecardiology, teledermatology, tele-ENT, tele-ophthalmology, tele-nephrology, telepsychiatry, and others.

The National First Nations Telehealth Research Project was initiated in September 1998 and was established in five isolated communities. An evaluation was undertaken in 2001, and presented its findings and critical factors for the success of telehealth. These included the following: identify clear expectations; clarify infrastructure requirements; determine deliverables and costs; establish strong project management expertise; provide training in equipment usage; initiate a testing and demonstration period; involve local health providers; use a telehealth coordinator; develop the human infrastructure to support telehealth; establish telehealth reimbursement policies, clinical guidelines and protocols, as well as cross-border licensing; and utilize user-friendly technology.

As of 2003, Alberta's telehealth network includes over 200 telehealth sites across the province. It is linked with Health Link Alberta, a 24-hour province-wide telephone advice and information service. Local Primary Care Initiatives (LPCI) are a formal arrangement between a group of physicians and their regional health authority committed to providing a required list of primary care services to a defined population of patients in a region. Up to 12 LPCIs are expected to be in operation in 2005.

The Provincial Mental Health Advisory Board in the Alberta Hospital, Ponoka Site, has established a telepsychiatry service to allow for increased access to psychiatric consultations from small rural

Alberta communities. Following a pilot project in 1996, the telepsychiatry service was expanded to additional communities. The project is funded by the Provincial Mental Health Advisory Board and the Regional Health Authority. Referrals are required from GPs and consultations are arranged by a telepsychiatry coordinator who also serves as a facilitator and contact person. Consultations are carried out via videoconferencing. Evaluation results were positive, both from physicians' and patients' perspectives (94 percent of patients were very satisfied with the results). Consulting psychiatrists believed that the service reduced hospitalization in some patients and also allowed for earlier intervention in others. The costs of the telepsychiatry project were the same as those for travelling psychiatrists. It was shown to be more expensive at lower volumes of patients and less expensive at higher volumes (Doze, Simpson, Hailey and Jacobs, 1999).

2.2.1.9 Other HHR Deployment Models and Initiatives

The study noted previously, conducted on behalf of the *Task Force Two: A Human Resource Strategy for Physicians in Canada* (Task Force Two, 2003), consists of an inventory and synthesis of new and emerging models for health care delivery, and provides numerous examples of HHR deployment practices occurring in Canada. The following is a snapshot of various applicable models that have been identified from the Task Force II database. The models are identified by their study database locator number.

In Halifax, a shared-care model for persons with mental health disorders was implemented, which promoted an integrated and holistic approach to physical and mental health problems. Three family physicians and a part-time psychiatrist and mental health workers form the treatment team (H0062).

Sponsored by the Calgary Urban Project Society, the services of nurse practitioners were integrated with an inner city drop-in centre providing services through a multidisciplinary team of physicians, nurses, dentists, chiropractors and orthotics. The nurse practitioner's role enhances the primary health care team's ability to provide a coordinated approach to service delivery (H0057).

The Eskasoni Primary Care Project in Cape Breton, Nova Scotia, established a health care centre and integrated numerous primary health care programs delivered by a multidisciplinary team comprised of a physician, primary care nurse, nutrition educator, pharmacist, community health nurse, and a diabetic education worker (H0055).

The Manitoba Telehealth Network maintains 21 telehealth sites with 30 staff members operated by the Winnipeg Health Sciences Centre (H0050).

The Registered Nurse First Assistants Program (RNFA) in Hamilton, Ontario, at the Health Sciences Hospital employs RNFAs for advance practice in surgery assistance, including responsibility for continuity of care, pre-op, intra-op and post-op up to six weeks (H0045).

The Aboriginal Health and Wellness Centre in Winnipeg serves First Nations, Inuit and non-status Indians with 38 staff (including two full-time physicians, three RNs, one LPN, one advanced

practice nurse, elders and traditional healers). The services cover six programs based on philosophy of the medicine wheel matrix encompassing physical, intellectual, emotional and spiritual need and are used as an alternative to the traditional medical disease model (H0039).

The Telehealth and Educational Technology Resource Agency of St. John's, Newfoundland and Labrador, utilizes telehealth applications to provide health care and clinical diagnosis to patients in over 200 urban, remote and isolated areas of the province and to facilitate educational opportunities for providers (H0037).

The Hamilton-Wentworth Health Service Organization Mental Health Program supports 87 family physicians in 36 practices, serving a population of 170,000 patients. On-site mental health services are provided by a mental health counsellor and a visiting psychiatrist. Mental health counsellors can be registered nurses, psychologists, social workers or community workers. Evaluation findings reported a high level of satisfaction on the part of the physicians involved (H0032).

The "hospitalist" model of the Atlantic Health Sciences Corporation of Saint John, New Brunswick, consists of five teams of internal medical specialists and physicians who work two weeks on a 10-week rotation in mornings only, along with a senior nurse who facilitates care and decision making, planning and monitoring, and discharge and follow-up. Two nursing units in the hospital are designated as "hospitalist" units and criteria for admittance to these units is based on patients who do not have dedicated family physician services (H0031).

The hospitalist model for in-patient care involves the use of designated family physicians/internists as a replacement for patients' primary care in-hospital and is established at Peter Lougheed Hospital in Calgary, Womens' College Hospital in Toronto, Hamilton Health Services Corporation, and William Osler Healthcare Centre in Brampton, Ontario (H0030).

Six primary care collectives are organized in Edmonton with each group comprising a family physician, a community pharmacist, and a home-care manager. This collaborative patient-centre practice is focussed on medication management (H0024).

In Fredericton, New Brunswick, a free-standing dialysis clinic operates with a nurse manager and seven nurses with four support staff and is connected to Saint John through telehealth videoconferencing (H0022).

Campbellford Memorial Hospital, a primary care rural hospital in Southern Ontario, maintains a family physician who, with the collaboration and supervision of a psychiatrist in a nearby city, spends seven hours per week in the hospital's mental health clinic (H0016).

The Strengthening Primary Care in Nova Scotia Communities Project operates at four sites (Caledonia, Pictou West, Springhill, Halifax). On-site teams are assembled with three elements, nurse practitioner in collaboration with a family physician, alternative payment plan for

participating primary care physician and the use of a computerized information system converting patient charts from paper to electronic records (H0010).

Calgary Health Region has implemented a nurse practitioner model in acute care centres. This model involves the expanded use of certified nurse practitioners in several areas of acute care hospitals: neonatal intensive care unit, neurology unit, cardiac surgery unit, specialized gerontology and stroke Program (H007).

The following are other examples of noteworthy models and deployment initiatives.

Rural - Outreach Rehabilitation Programs operate in several Canadian provinces. These services included teams of health care workers (including physiotherapists, occupational therapists, speech therapists, nurses, orthotics therapists, social workers and psychologists) based in urban health care institutions who travel to rural communities to provide service. (Sullivan et al., 1993).

Inner City - The Klinik Community Health Care Centre in Winnipeg was founded over 30 years ago and provides a multidisciplinary approach to a high-risk clientele, which includes transients, homeless people, drug users, and others. Adolescents are also a targeted population group. The clinic's holistic approach includes health counselling and social services. Team members are trained in HIV, hepatitis, STD care and management. The multidisciplinary team includes physicians, nurse practitioners, advanced practice nurses, social workers, and other support services. There are also special linkages that have been developed with community support services and networks. The primary caregivers are the nurse practitioners, with physicians acting as a resource. Sustainability is an issue because of the funding system utilized in this model (some physicians are on salary; others are on a fee-for-service system, but are not compensated for administrative work). This model has not been evaluated (H0133).

Pharmacists - Pharmacists are considered to be an underutilized health system resource who can make a significant contribution in the field of health education, health promotion and disease prevention. The University of Alberta's Division of Cardiology undertook a study of a cardiovascular risk intervention initiative utilizing community pharmacists to provide health care prevention services to increase detection of dyslipidemia and use of cholesterol-reducing drugs for high-risk patients. The study was brought to an early conclusion as the intervention group was showing strong evidence of benefit compared with the usual care group. Eighty-four percent of participants were very satisfied with pharmacist care. Training of pharmacists is required for this model to be effective and is currently available through a Web-based training Program. An economic impact study determined the intervention to be cost-effective with an approximate \$7 dollar per patient cost for four months (Simpson, Johnson and Tsuyiki, 2001 and Tsuyiki, Teo, Simpson, Ackman, Biggs and Cave, 2002).

Clinical Assistants - To address the problem of limited physicians in Manitoba, regulations were approved to allow the College of Physicians and Surgeons of Manitoba to establish a health care professional position called the "Clinical Assistant." This position was established to respond to

the shortage of physicians in hospitals and in rural and remote areas of the province. Clinical assistants may include individuals trained in a certified U.S. Physician Assistant Program, physician assistants trained by, and having served in, the Canadian Forces Health Services, graduates of foreign medical schools, level III emergency medical technicians, or licensed members of a Manitoba health regulatory body, such as nurses, physiotherapists, dentists, etc. The assessment process for entry into the Clinician's Assessment and Professional Enhancement (CAPE) Program is administered by the Faculty of Medicine of the University of Manitoba. At the end of the first year of the Program, there is another set of assessment tests to measure competency, based on the specific requirements of the positions. Clinical assistants work with a supervising physician and perform the same tasks as physicians within their specified areas of competency (with the exception of prescribing narcotics). Clinical assistants are on salary through the regional health authority operating budgets. There has been no evaluation of this model, but physicians seem pleased with this system. It is hoped that the Program will be used to provide clinical services in rural, remote and northern areas of the province. This will require clinical assistants to be licensed and certified so as to be able to operate independently from a supervising physician (Task Force Two, 2003).

In the Newfoundland and Labrador Department of Health and Community Services (2002) Business Plan, reference is made to an evolving role for paramedics with advanced training and skills, which may have the potential to reduce workloads in emergency departments, increase their capacity of assistance in out-of-hospital care, reduce need for nursing staff on routine ambulance trips and become involved in accident prevention education in schools and with the elderly.

2.2.2 International HHR Deployment Practices

2.2.2.1 General Trends

The review of international literature regarding preferred deployment practices showed a growing emphasis on PHC and a shift away from specialist providers to primary care providers. Within the policy contexts of the countries examined, reviewers considered cost containment, access to health services and provision of quality of care to citizens. The past 10 years has seen much experimentation and exploration of innovative approaches, particularly in terms of substitution of less specialized and 'costly' professionals for more specialized health care providers, an emphasis on the concept of team delivery and an expansion of scopes of practice. Legal and regulatory changes have, to some degree, reflected and supported this trend, but are considered to be lagging behind changes in practice.

A significant proportion of the literature focusses on the enhanced role of the nurse practitioner in the PHC setting, and the emergence of the roles of the advanced practice nurse and physician assistants. There is growing emphasis on the concept of the PHC team for the provision of health services, the importance of workforce planning and the need for national HHR strategies.

In 1997, a World Health Organization (WHO) analysis of European health care reform strategies (*European Health Care Reform Analysis of Current Strategies*) documented changes in health policy and practice during the previous two decades. An ageing population, increased incidence and prevalence of chronic disease, availability of new technologies, and rising public expectations placed growing pressure on health care systems throughout Europe. These factors make health reform imperative. Challenges have included the incapacity of policy makers to shift resources from curative to preventive measures, and from secondary and tertiary to primary care. The analysis also identified a lack of intersectoral collaboration among health, housing, agriculture, nutrition, education and training sectors to realize improved health outcomes. It further identified a lack of continuity in many countries and regions between the hospital and PHC sectors, as well as between health and social services. Four priorities of major reform strategies have emerged in Europe including the changing role of the state and the market in health care; decentralization to lower levels; empowerment of patients; and the evolving role of public health. The WHO study documents how the past two decades have seen increased attention being paid to the organization of services and service providers, which has seen emphasis placed on managerial efficiency and health outcomes. Efforts have also focussed on quality of care programs, and where possible, substituting more appropriate for less appropriate forms of care. These measures have included a greater emphasis on health care substitution as a major deployment strategy. Substitution in this context was defined as the process of regrouping resources across and within care settings to exploit the best and least costly solutions in the face of ever-changing needs and demands. It involves the reorganization of health sector staff, skills, equipment, information and facilities to achieve better clinical, financial and patient-related outcomes. Primary health care, with its emphasis on teamwork, has promoted a substantial degree of substitution (WHO, 1997).

Health sector reforms in the United Kingdom under the National Health Service Program during the 80s and 90s focussed primarily on structural change, cost containment, and the introduction of market mechanisms and consumer choice. Since the introduction of the NHS reforms in 1991, the emphasis has been on decentralization of managerial responsibility - the establishment of autonomous hospitals and primary care units (NHS "trusts") and the creation of "internal markets" namely the purchaser/provider splits. The NHS reforms were based on principles of the New Public Management, and, as such, involved the importation of many private sector business practices, including the management of HHR. It is argued by one specialist, James Buchan, that the reforms towards decentralization, devolution and greater competition did not include a blueprint for the management of HHR. The approach to HHR focussed on cost-reduction and on keeping costs low so as to remain competitive. This involved finding the most cost-effective staffing levels and mix, and different mix of occupational groups. In addition a new worker, the "health care assistant" (HCA) was introduced to be a generic or multi-skilled support worker (this has also been done in the United States). The author points out that there has been very little in terms of evaluation studies to examine the cost-effectiveness of skill mix experiments (this is attributed to the "erosion" of data availability resulting from decentralization). Cost-effective deployment of staff and skill substitution was the most prevalent means of saving costs, usually by substituting less "costly"

professionals for the more "expensive" ones. Patient-centred care is the "re-engineering" system designed to provide care by multidisciplinary teams, which is reputed to provide for significant savings in labour and administrative costs resulting from changes in skill mix, staffing levels and work practices. Buchan maintains that many of these new practices have not been implemented from a firm evidence base, and have not benefited from evaluation studies, which document the effects of changes in patterns of deployment and skill mix (Buchan, 2000).

The United Kingdom Department of Health publication, *Delivering the HR in the NHS Plan, 2004* details the development of new roles and models, and new ways of working across the NHS, which includes increasing diversity and flexibility of HHR, moving away from "professional demarcations" to team working, driven primarily by patient needs. One particular development is the emergence of "practitioners with a special interest (PSI)" such as doctors, nurses and other health care professionals working in PHC who develop skills in procedures and treatments, which have traditionally only been offered in hospital settings. This reflects a tendency for PSI professionals to develop skills so as to extend beyond their traditional areas of practice (UKDOH, 2004).

A recent World Bank study (Giles and Dubois, 2003) on critical components of human resources for health policies emphasizes the strategic importance of effective HHR planning and management, and puts forward a series of recommendations, which included the following:

- improved planning to avoid overstaffing;
- better distribution of personnel by categories (such as increasing the proportion of assistants and technicians in order to improve the productivity of specialized staff in performing tasks requiring higher skills);
- recognition of new categories of personnel, such as the clinical nurse, or recognition of existing providers, such as midwives, traditional healers, etc.; and
- modification of working conditions to allow for greater staff mobility, greater flexibility in deployment, or rationalization of methods of remuneration to align these with performance expectations.

The authors also argue that changes in the organization and delivery of health services must also have a fundamental effect on the deployment and management of HHR. The traditional focus on specialization of services must yield to new models, which emphasize integration and teamwork. Traditional planning has led to ineffective results, as demonstrated by mismatch of numbers, qualitative disparity, unequal distribution and a lack of coherence between HHR practices and the overriding concerns of health policy.

The International Nursing Labour Market Study (Nursing Sector Study, 2004) funded by the Government of Canada documents the nursing shortage internationally and describes how various jurisdictions have addressed this problem. Measures have included internal recruitment, increasing the number of student positions, scholarships and loans, external recruitment (international recruitment), and retention measures, including better deployment of the nursing workforce.

Recommendations include international collaboration to address shortages, including the development of international and national statistical databases to collect data on the nursing labour force, which would assist individual nations in developing health care policy. This report refers to various strategies employed by countries to increase their nursing supply pool, such as France's providing government-sponsored refresher programs and employment assistance. This has resulted in the increase of student nursing positions, with 45,000 new positions created. Likewise, new educational programs and continuing education have been established and clinical placement assistance for graduates is provided. The United Kingdom has undertaken a vigorous international recruitment process, with the current ratio of national to foreign nurses being 1:3 (compared with 1:10 in the 90s). This international recruitment effort is a major strategy to increase the nursing pool in the United Kingdom to a target of 20,000 additional nurses by 2004.

An international review of health workforce planning and finding a sustainable balance was conducted for Health Canada, Health Human Resource Strategies Division (Mable & Marriott, 2002). This study examined trends in issues in HHR planning in Canada and internationally, and points out how despite increasing reference to and use of team approaches in HHR planning and deployment, most countries continue to use traditional profession-specific approaches and models. A focus on physician workforce planning continues to dominate these models. An examination of international trends reveals that Germany, the Netherlands and Australia still focus on physician workforce planning, while New Zealand, the United States and the United Kingdom have begun to look at the total workforce and integrated workforce planning. Australia is said to be the exception, which has adopted "multi-modality" workforce planning methodologies and processes. Australia established the Australian Workforce Advisory Committee in 1995, which reports to the Australian Health Ministers' Advisory Council. There has been an increased tendency to initiate changes in organizational structures and the policy to allow for multidisciplinary teams of health care providers. New Zealand established the Health Workforce Advisory Committee in 2000 to coordinate workforce planning. The United Kingdom is moving to integrated planning for the entire HHR workforce, which underlines its commitment to multidisciplinary team deployment. The United Kingdom is focussing on information to support local, regional and national level workforce planning initiatives. Canada has made a commitment to enhanced workforce planning, through its F/P/T Ministers of Health (1998) and the First Ministers' 2000 Action Plan for Health System Renewal, undertaking to collaborate on priorities of HHR planning and deployment. In the U.S., the Federal Bureau of Health Professions has established guidelines for state governments to put into place central workforce advisory boards.

2.2.2.2 Nursing Practice Deployment/Expanded Scope of Practice

A WHO analysis of European health care reform strategies (*European Health Care Reform Analysis of Current Strategies*, 1997) reports the emphasis that countries in Europe have placed on increasing the role of nursing in PHC delivery. This shift is being accompanied in many countries by changes to the nursing education curriculum. Reference is made to changes in the nursing profession in the United Kingdom, particularly the emergence of the roles of the practice nurse and the nurse practitioner. Practice nurses are employed by general practitioners as members of the PHC team

to provide nursing care in the general practitioner's clinic. The nurse practitioner may work in a hospital, in the community, be employed by a general practitioner or by a health authority, and generally has the authority to make decisions about patient care, diagnosing medical conditions and treating and referring patients. Several studies are cited measuring the outcomes of such nursing interventions (United Kingdom and Northern Europe), showing nursing to offer comparable services and be more cost-effective than general practitioner care (WHO, 1997).

In 2001, the Canadian Nurses Association produced a fact sheet, which summarizes common themes in the roles of nurse practitioners around the world. Nurse practitioners generally have the authority to prescribe medication to treat, refer clients to other professionals and admit patients to hospitals. They function as the recognized point of contact for clients, case management (own caseloads), diagnostic care and provide treatment, preventive and palliative care. It is estimated that in the United States, the number of nurse practitioners will increase from 65,000 in 2001 to 100,000 by 2005. As of 2001, in Australia, legislation was being updated to recognize nurse practitioners' scope of practice. In the United Kingdom, most papers acknowledge that nurse practitioners will be an important resource in primary care. In New Zealand, legislation has been designed to protect the nurse practitioner and includes guiding principles for scope of practice. The nurse practitioners' role in New Zealand provides for innovative ways of reaching communities and meeting health needs across all sectors, and complementing existing services. In general, there is a growing realization around the world that the nurse practitioners' role has the potential to contribute significantly to resolving some of the current health care delivery problems.

An Australian study provides another model for restructuring professional roles around expanded nursing responsibilities and thereby enhancing HHR deployment. Limited access to health services for remote and rural Australian communities is created by significant barriers such as long distances to services, lack of transportation and inadequate availability of health services personnel. Access to family practitioners is very limited in rural Australia. Two types of nurses primarily work in rural areas in Australia: rural nurses and remote area nurses. Both have relatively autonomous practices that are primarily based on the needs of the particular community. Lauder, Sharkey and Reel (2003) comment that rural and remote nursing roles are akin to the advanced nurse practitioner role and require skills beyond that acquired in basic nursing education. To address these circumstances, they recommend restructuring of the role of nurses practising in rural and remote areas. In order to accomplish this goal, a national education plan with clearly defined minimum educational and performance standards and arrangements for shared learning between nurses and general practitioners is recommended. This model would place the family nurse practitioner (FNP), as well as the general practitioner, as the first point of contact within rural communities and the family health nurse (FHN) as the main provider of care for rural communities.

The potential role of FHNs goes beyond traditional medical services. It has been shown that the health of socially excluded and remote populations, such as indigenous Australians, is not improving relative to other Australian populations. It is suggested that the FHN could play a prominent role in meeting this challenge in these remote communities by co-ordinating health care, social care, housing, community development and education for vulnerable families. The FHN

concept is a WHO (Europe) strategy developed with the goal to improve access to community-based interventions. It is gaining momentum within the European community as a core structure for nursing practice. The FNP role is envisioned as expert clinicians demonstrating leadership as consultants, educators, administrators and researchers who would assess and manage both medical and nursing problems. Their practice emphasizes health promotion and maintenance and disease prevention, and diagnosing and managing acute and chronic disease.

In the United Kingdom, some National Health Services (NHS) initiatives utilize nurses as the core of the PHC team, either as the first point of contact for primary health services, or with general practitioners providing support to the nurses. The NHS views primary care as the bedrock of the health care system and nurses are the first points of entry in many United Kingdom clinics. There are approximately 40 walk-in clinics in England in which nurses lead the provision of primary care services (Lauder *et al*, 2003).

Another study in the United Kingdom reported that dating back to the early 1990s there has been an increase in the activities carried out by practice nurses, who are taking on roles and tasks beyond those traditionally assumed by primary and community care nursing. The research findings indicate that there has been an increase in the workload of the general practitioner and the practice nurse since the institution of the NHS general practitioner contract. The authors suggest that 39 percent of general practitioner consultations have an element that can be delegated to practical nurses, with 17 percent having the potential for complete delegation. They cite studies involving nurses managing after-hours appointments and home visits that have demonstrated substantial reductions in the general practitioner's workload to approximately 50 percent of the activity previously accounted for by these patients (Richards, Carley, Jenkins-Clarke, 2000).

Another United Kingdom analysis addressed the impact of shifting professional scopes of practice to promote professional substitution strategies. It describes the National Health Service Plan (2000), which outlines the government's strategy to reform NHS services. The strategy includes plans to increase the number of nurses employed by NHS by augmenting the number and location of retraining programs, which should encourage nurses who had left the workforce to acquire the necessary training to return to practice. More consultant and midwife posts are also being introduced. The article also describes discussion by educators and policy makers on ways and methods of introducing interprofessional education (Masterson, 2002).

Restructuring the deployment of registered nurses (RNs) in hospital settings has also been occurring over the past 20 years in the United States. An article exploring this topic describes a number of factors driving the deployment of RNs in institutional settings. Early efforts in the mid-1980s focussed on using RN time more effectively. Many hospitals implemented nurse extenders and other types of non-clinical support and assistance roles to undertake administrative and clerical tasks. Cost reduction was not the primary goal. Rather, the objective was to implement budget-neutral changes to optimize the time spent by RNs in providing patient care and thus improve quality of care. Related restructuring efforts to improve patient care occurred in the 1980s and 1990s with the typical intent to provide 80 to 90 percent of services required by patients at

bedside. In the 1990s, however, hospital restructuring plans tended towards cost-saving strategies where RNs were being replaced with lower cost licensed practical/vocational nurses and unlicensed assistance personnel. This pattern of HHR substitution was met by widespread RN dissatisfaction and retention difficulties. Although theoretically an enhancement to team-nursing models, it reduced RN time dedicated to patient care and increased RN focus on planning and administrative activities (Norrish and Rundall, 2001).

In the mid-1990s the United States Veterans Health Administration (VHA) undertook a major reorganization initiative (*Prescription for Change*) of its delivery of PHC services to the veteran population. The intent was to implement changes that would improve performance outcomes such as actual costs, improved access to primary health care, decreased waiting times, greater client satisfaction and improved patient functional status. The VHA vision was to develop an integrated health care delivery system based on ambulatory and primary care services that extend into the community. A key component in the change strategy were plans to improve patient access to primary care health services through expanding the role of nurse practitioners and physician assistants. The deployment of advanced practice nurses (includes clinical nurse specialists and nurse practitioners) in the VHA system has been in practice for more than 20 years. The Advance Practice Nursing Advisory Council of the VHA formed a Best Practice Model Task Force to identify patient delivery models that maximize the deployment and contribution that can be made by advanced nursing practices.

The VHA system established the Patient-Centred Care Delivery Models Task Force, which examined 40 patient care models that were evolving in the United States, including the VHA and private sector health care system. An evaluative framework was utilized to assess organizational development toward patient-centred service orientations. The findings revealed the integral role of advanced nursing practice in the delivery of quality patient care and a positive correlation to improvements in health system efficiency, cost savings, co-ordination of services and patient satisfaction (Lynn, Achtmeyer, Chavez, Zicafoose and Therien, 1999).

Studies have shown that when interdisciplinary and expanded scopes of practice are thoroughly and effectively implemented, outcomes remain at satisfactory or even improved levels (cited in Hopkins, Solomon and Abelson, 1996). For instance, examples are cited that clinical results obtained for primary care provided by nurse practitioners and family physicians were identical. Similar results were obtained in a rheumatoid arthritic outpatient clinic (consultant rheumatologist and nurse practitioner), with patients of the nurse practitioner having greater improvements in measures of pain, better knowledge of their disease and higher overall satisfaction with care. Screening for sigmoidoscopy by nurses, and cardiac surgeons, assistants (a non-medically qualified assistant) also showed very positive results. Although not all studies demonstrated cost savings, in no cases were there appreciable differences in quality of care or health outcomes (Hopkins *et al*, 1996).

Lauder *et al.* (2003) reported that randomized control trials in the United States and United Kingdom have demonstrated that, in general, nurse practitioners have similar patient outcomes to

general practitioners accompanied by higher rates of patient satisfaction. The article cites that in the United States, nurse-led mobile health clinics for rural populations have been shown to increase the provision of preventive interventions and result in the decreased use of emergency facilities.

The evolving role of the nursing disciplines is but one example of the shifting boundaries between health professionals. Literature from the United Kingdom points to an emerging focus on delegation from one health profession to another and also delegation within professions. These changes are accompanied by concerns about the adequacy of professional education and consistency in professional governance as the distinctions between health professions are becoming progressively more blurred. A United Kingdom article documents and discusses issues pertaining to these boundaries. The author proposes that the focus of attention needs to be on patient outcomes, rather than on professional issues regarding who is delivering the service. It noted that control of health roles by professionals was being eroded for several reasons: increased knowledge and independence of users of health care, which enables them to make more informed choices; and increased technical specialization of tasks, which has, in turn, increased the number of health specialists. The article argued that it is important to distinguish complementarity from substitution, the former pointing to ways in which roles can be mutually enhancing, the latter at replacement options. In both cases, training and education are needed to identify and develop working relationships between professional groups and to adjust to the new demands for expanded scope of practice (Materson, 2002).

The American Nurses Association produced a fact sheet on advanced practice nursing in 1995 (AMA, 1995). Although dated, it provides a good overview of nursing classification in the United States. The advanced practice nurse (APN) is an umbrella term given to a registered nurse (RN) who has met advanced educational and clinical practice requirements beyond the two to four years of basic nursing education required of all RNs. As of 1995, there were four principal types of APNs:

- Nurse Practitioners (NPs)
NPs work in clinics, nursing homes, hospitals or their own offices and conduct physical exams, medical histories, diagnose and treat common acute minor illnesses, order and interpret lab tests and X-rays, and counsel and educate clients. Forty-eight states allow medication prescribing.
- Certified Nurse Midwives (CNMs)
CNMs provide well-woman gynecological and low-risk obstetrical care. CNMs have prescriptive authority in 33 states.
- Clinical Nurse Specialists (CNSs)
CNSs work in hospitals, clinics, nursing homes, offices and other community-based settings. CNSs provide primary care and psychotherapy.
- Certified Registered Nurse Anaesthetists (CRNAs)
CRNAs administer more than 65 percent of all anesthetics and are the sole providers of anesthetics in 85 percent of rural hospitals.

2.2.2.3 Pharmacist Human Resource Deployment

The international literature identified another topic of relevance in the consideration of deployment options, such as the emerging role of pharmacists, particularly in the United Kingdom and the United States. The literature examined the growing use of pharmacists for health promotion and health education activities in the United Kingdom and their evolving role as primary care pharmacists within a PHC team. This has resulted in more responsibility for dispensing being left to pharmacy assistants. This trend is supported by research in the United Kingdom, showing that pharmacists can be involved in effective health promotion campaigns, health screening and smoking cessation services.

Training is now available for pharmacists in areas of nutrition, smoking cessation and asthma, as well as in the provision of social and psychological advice to patients. A number of health authorities in the United Kingdom have provided training to pharmacists, and 75 health authorities have set up community health promotion activities, which underscore the role of pharmacists as part of the health promotion team. There is strong support for pharmacists receiving funding for these activities. Northwest Anglia Health Authority has set up an accreditation scheme, whereby pharmacists must complete workshops on health promotion, dental health, coronary heart disease and work with general practitioners. The Greater Glasgow Health Board runs health promotion events, dental health and mental health activities utilizing pharmacists. Several regional health authorities remunerate pharmacists for health promotion and counselling services. As part of their 2000 National Service (NHS) contract, United Kingdom pharmacists were allowed to prescribe for minor ailments. This trend is also taking place in Sweden and other European countries, although there are few published studies to document this (Anderson, 2000).

The United States has also seen an increased scope of practice for pharmacists. With the transition to the PharmD. Degree and automated drug-dispensing systems, the pharmacists' scope of practice is expanding. By 1999, 24 states allowed some type of collaborative practice agreement in which physicians delegate some patient management responsibilities to pharmacists (ranging from refill approvals to modification and initiation of patient medication regimens). Pharmacists are evolving from "prescription providers to pharmaceutical care providers" ("patient-centred, outcomes-oriented pharmacy practice"). Pharmaceutical care entails a new scope of practice and is designed to promote health; prevent disease; assess, monitor, initiate and modify medication use; assess therapeutic needs; prevent adverse reactions; and manage chronic disease. Pharmacist-prescribing privileges are under discussion, as well as a greater role in disease management, immunization, collaborative drug therapy, lab testing and analysis, and patient education. At the time of this article (2000), 30 states allowed pharmacists to administer immunization, which has increased access through extended business hours and convenient locations. Pharmacists have been trained and focus on at-risk groups. As of 2000, over 30 states considered bills to grant prescribing independent practice rights to non-physicians (Ann Intern Med, 2000).

2.2.2.4 Mental Health Services Human Resource Deployment

An article examining the utilization of non-specialty providers in the provision of mental health care services in the United States noted that rural areas generally tend to have fewer specialized services, fewer providers, higher levels of poverty, and transportation problems, which impact upon access, quality and cost of mental health services. The U.S. Government classified one fourth of the population to be living in rural areas. There is, however, a great diversity in types of rural communities with the literature not reflecting this diversity. There are significant differences in utilization experienced by rural areas that are within commuting distance from urban areas and for those which are far removed from urban communities. It is, however, established that rural communities have unique needs, which are affected by socio-cultural aspects, and by the availability of health care professionals. Several studies have shown that many rural areas lack inpatient mental health services. There is a lack of human resource information on rural areas, and sparse data describing the training, supply and deployment of specialty mental health professionals. It is, however, well-documented that there are widespread regional disparities in the distribution of psychiatrists, psychologists, social workers and psychiatric nurses, and there is general recognition of a shortage of mental health professionals in rural areas and in public mental health. The article refers to studies that document innovative treatment programs used by several rural mental health centres, using different staffing levels, mixes of disciplines, and types of activities. Team approaches include using nurses to deliver mental health services, and incorporating informal care providers, such as rural personal care homes, or care provided through voluntary organizations, such as religious groups. There are also increased efforts to involve consumers in the provision of services to other consumers, promoting self-help and mutual help. There are also instances of telephone help provided by psychiatrists (Merwin, Goldsmith and Manderscheid, 1995).

In the U.S., a study of 12 community support programs for mental health care services in small towns and rural areas of Wisconsin showed much diversity in the use of paraprofessional caregivers (Hollingsworth *et al*, 1993), with models ranging from care provided by an all-paraprofessional team to those having no paraprofessional (paraprofessionals being defined as support workers, such as case aides and psychiatric attendants).

2.2.2.5 Applications of Telemedicine/Telehealth

Telemedicine is another area where international sources report innovation in the deployment of HHR. A telemedicine literature review conducted in 2001 examined data from the United States, Canada, Europe and the United Kingdom (Roine *et al* 2001). It notes that there is a shortage of assessment studies examining technical, clinical, economic, ethical, legal and organizational issues associated with telemedicine. There are few economic analyses and only limited cost analysis studies (wherein benefits are estimated as savings, e.g. cost of travel). These studies demonstrated much variation in costs examined, so comparison of cost estimates is not always feasible. The conclusion of the literature review was that there was little data on the effectiveness or cost-effectiveness of telemedicine. Very few studies offered controlled comparisons of telemedicine applications with conventional means of service delivery. Limited research shows that the most convincing published evidence regarding the effectiveness of telemedicine deals with teleradiology,

teleneurosurgery (transmission of CT images before patient transfer), telepsychiatry, and transition of echocardiographic images. Although the term "cost-effective" was frequently used in the studies examined, the effectiveness and costs were assumed to be established for telemedicine in the absence of quantitative analysis. The literature did not address the impact on HHR deployment.

An article from the United States examined the use of telemedicine in a managed-care environment with limited access to paid visits. It stated that eliminating hands-on visits and home health nurses' travel time reduce expenses. Increasing health care providers' ability to contact more patients per day increases efficiency and access in remote areas. In view of current practices to contain health care cost, including early discharge, the closing of home care agencies and overall fewer home health care resources, telemedicine technology is presented as a means to close the gap between demand and availability. Nursing assessments via telemedicine have demonstrated increased effectiveness and efficient nurse-patient interactions, a reduction in unnecessary emergency department visits, unscheduled physician office visits, and a decrease in repeat hospitalization. Telemedicine has been documented to show successful treatment of patients in PAC, public health, home health, mental health, obstetrics, paediatrics, dermatology, surgery, radiology, pathology, ICU, and emergency contexts. Among the barriers experienced in the United States are initial high start-up costs to establish the network, and reimbursement by Medicare and Medicaid, although residents of communities designated as "counties of health professional shortage areas" have been reimbursed for telehealth services since 1999. The combined use of telemedicine and the deployment of nurse practitioners has helped many rural areas experiencing physician shortages (Jenkins and White, 2001).

In South Australia, the use of telemedicine in psychiatry has been implemented quite extensively. By 1997, most of the 60-80 videoconferencing health sites nationwide had been developed for two primary services, psychiatric and renal dialysis (Yellowless and Kennedy, 1997).

Overall, the international literature offers more substantial attention to deployment strategies and examples that are relevant to the study objective than was found in Canadian sources.

2.2.3 Decision Support Tools

The Project Team was asked to examine the existence and utilization of decision support tools, which are used or have the potential to assist employing authorities in determining how best to use available HHR in Canada. For the purposes of this report, decision support tools were defined by Health Canada as "workload measurement tools or other tools that contribute positively to deployment initiatives through the optimal utilization of available health human resources. Workload measurement tool is defined as the objective determination of the total amount of care hours, which includes direct and indirect services, required for clients and the number and type of health care providers required to provide these services." The literature review looked at decision support tools and identified a limited number of concrete tools with the desired criteria. Few articles referred to decision support tools. The following summarizes these limited results. Many of the decision support tools reviewed were theoretical models with sparse reference accorded to the effectiveness of these tools.

2.2.3.1 International Trends

The World Health Organization (WHO, 2001)) has developed the *Human Resources for Health: A Toolkit for Planning, Training and Management*. This kit is a broad and comprehensive set of systems and instruments to be used for the effective planning and deployment of HHR. Sections of the toolkit deal with the following: Tools for Workforce Deployment; Planning the Workforce; Nursing Personnel; Performance Indicators; Workforce Policy; Legislation and Regulation; Workload Indicators of Staffing Needs; Functional Job Analysis; Improving Workers' Skills; Health Workforce Data; Determining Skill Mix; Workforce Planning Workbook; and Simulation Models for Workforce Planning.

The WHO Workload Indicators of Staffing System (WISM) is designed to be a comprehensive decision support tool, which is offered as a response to inadequate systems of HHR planning used in most developed countries. Traditional HHR systems rely on population ratios (numbers of MDs or nurses per 1000 population), bed ratios, facilities staffing ratios, etc., which do not effectively take into account wide local variations, regional needs, different levels and patterns of morbidity/mortality in different areas, and access issues. The traditional planning systems also do not take into consideration specialty breakdowns and levels of services required. Service norms based on population ratios, bed ratios and standard staffing levels, are usually averages and may result in understaffing/overstaffing situations. This situation is said to undermine the very objectives of HHR deployment and staffing strategies. Health system managers are struggling to match increasing demand for health services with decreasing human resource supply (in some areas), provide for maximum amount of coverage of all areas (including remote/distant areas that involve higher cost per unit of service), while providing for effectiveness and efficiency of operations (controlling numbers and mix of levels of services).

The WISM system is designed to provide optimal:

- allocation and deployment of current staff geographically according to volumes and types of services and different categories of health professionals;
- allocation and deployment of current staff functionally according to volumes and types of services and the different categories of health professionals; and
- staffing patterns and levels (categories and numbers) in individual health facilities according to its local conditions (morbidity/access/attitudes) and not based on national averages.

The WISM method is based on work actually undertaken by health professionals as collected by individual health facilities' workload patterns (including inpatient, outpatient, OR volumes, deliveries, clinics, etc.). These workload activities represent average time required to perform a specific activity; alternatively, standards of performance can also be set (number of patients seen, number of laboratory tests performed, etc.). This activity information can then be translated into annual workloads, which can assist in the calculation of staffing requirements, as compared with current staffing levels, so as to identify shortages or surpluses. To be successful, WISM depends on available and accurate actual staffing figures (WHO , 2001).

In a study commissioned by WHO on determining required skill mix (Buchan, 2001), the author argues that management of staff mix and skill mix has been driven by a new emphasis on cost containment and quality improvement objectives. He points to a number of reasons that compel health managers to review skill mix:

- organizational response to skills shortages;
- management of unit labour costs, so as to reduce costs per unit of output and improve productivity;
- implementation of quality improvements resulting in a reduction in unit costs;
- organizational response to technological innovation;
- organizational response to changes in professional regulation and legislation; and
- assistance in the development of care standards or skills/competency-based professional training.

Several major methods for determining mix were identified; these include quantitative and qualitative approaches (within occupational groups or across different professional groups, e.g. doctors and nurses). Major approaches to determining skill mix include the following: task analysis; activity analysis; daily diary/self-recording; case mix/patient dependency; zero-based re-profiling; professional judgement; job analysis interviews; and group discussion/brainstorming. The strengths and weaknesses of each method are discussed and analysed. The author then proposes his criteria for an "ideal" analysis of skill mix. These include the following:

- relevant contextual information;
- detailed staffing profile (including numbers, grades, qualifications);
- available workload data;
- quality assurance/outcomes measures that are valid and reliable;
- comprehensive costing data; and
- robust, reliable and replicable methodology.

Another WHO study, *Monitoring and Evaluation of Human Resources for Health: an International Perspective* (Diallo, Zurn, Gupta and Dal Poz, 2003) also emphasizes the fact there is little consistency internationally as to how HHR strategies are monitored and evaluated and that international assessments of non-financial resources are much less widespread than comparisons of financial expenditures. The authors present a model for an integrated evidence-based approach to HHR planning to support decision-making, drawing from a large number of primary and secondary data sources to develop indicators.

In the United States, Norrish and Rundall (2001) state that the development of workload decision support tools to aid in nurse staffing deployment resulted in the development of patient classification systems (PCSs). PCSs were designed to present consistent administrative guidelines for allocation of staffing based on patient acuity. Most PCSs are derived from measured nursing care requirements for individual patients to determine their "acuity." These individual patient requirements are generalized to create medical patient classifications. Individual patients are assigned an appropriate classification based on their medical profile and current patient volumes

are summed to estimate total patient care hours for a unit, which then determines staffing requirements. Staffing projections are based on predetermined standards for each type of patient or patient care task. These standards are usually based on empirically derived work samples or based on standards embedded in patient classifications. Although PCSs can expedite staffing assessments, it is important to adjust them if hospital HHR restructuring alters the skill mix of patient care staff from the workload measurement system's initial design profile. This article concludes that there are three major limitations to the methodology of PCSs utilized in workload system support tools used to calculate the appropriate level of deployment of nursing staff. First, the incorporated time standards are based on average time and do not reflect individual characteristics of the patient or caregiver. Second, staffing levels are derived by summing individual patient care requirements based on an average time standard (mean time) and do not account for unique variances. Third, the patient care time does not take into consideration the population dynamics of a unique group of patients in a unit, including such factors as the volume of patients, admissions, discharges and complexity of discharge planning (Norrish and Rundall, 2001).

Although PCSs show promise as workload decision support tools, they have only been developed for use in a narrow context. As HHR deployment evolves to greater interdisciplinary and flexible team models, decision support tools must consider adapting accordingly. These tools must be capable of modelling these alternative health provider models and adjusting to workplace variation.

A U.S. article notes that managed care systems such as Kaiser Permanente specify staffing models, which define the balance and number of physicians, physician assistants, nurse practitioners, and nurses for clinical services and are based on the population served. Concerns have been expressed about this approach given that clinical protocols and professional standards may be developed by managers, not clinicians. Critics suggest that this approach may be unduly influenced by the company's cost considerations, which can override concern for patient care. Specific details on the Kaiser Permanente workload measurement system were not provided (Schneller and Ott, 1996).

The Australian Medical Workforce and Health Workforce Advisory Committees (Health Workforce Intelligence, 2004) describe in an article on health workforce planning that they regard a focussed organizational structure to oversee planning, stakeholder participation, clear principles and transparent methodologies for predicting workforce supply, and access to reliable and accurate data as critical to planning. They identify the following tasks and processes required in the planning process: descriptions of the unique services provided to the community, current level of supply and characteristics, recruitment processes and level of exit of human resources. Evaluation of the adequacy of current workforce, geographic distribution, extent of other service providers (potential substitution) and the extent of service provision in line with goals is required to make predictions regarding workforce requirements for stated future period, and workforce supply using scenarios and potential for changes in practice.

2.2.3.2 Canadian Trends

Driven by the need to increase efficiency into its financial management system, Alberta Health Services implemented an Emergency Services Workload Measurement System (ESWMS). The emergency services workload measurement system, which was developed, assesses caseload and workload in hospital emergency departments. It is designed so that hospitals can be reimbursed for emergency services on a workload basis, which takes into account numbers and types of patients treated. This system evolved from the nursing measurement system developed by Health Canada, which measured approximately 70 discrete nursing activities. The ESWMS measures over 1,000 International Classification of Disease Case Mix (ICD-0-CM) diagnoses, and also measures supportive activities of nursing and non-nursing personnel who support the management and operations. In its first year of data collection, April 1992 to March 1993, 1.5 million emergency visits were listed by 118 hospitals. An audit was conducted after the first six months of operations to assess the accuracy of the data collected, which was reported to be 92 percent accurate. The data collected provided interesting information on service patterns in emergency departments. However, as of 1995, the system had not led to revised funding of hospital emergency services; however, this model was utilized to develop an integrated ambulatory care funding model (Eliasoph, & Ashdow, 1995).

The Canadian Medical Association, the Society of Rural Physicians of Canada, the Canadian Pharmacists Association, and the Canadian Nurses Association formed a partnership to address recruitment and retention issues in HHR planning and developed a multi-stakeholder planning tool. The final report was submitted to Health Canada, entitled *The Development of a Multi-stakeholder Framework/Index of Rurality* (2003). The authors conclude that the poor health status of rural and remote populations has been shown to be inferior to their urban counterparts, and face additional access challenges. These issues are further exacerbated by difficulties dealing with recruitment and retention. There has been some effort to move beyond the financial incentives approaches and address some professional/personal/lifestyle issues associated with rural/remote practice. Most of the Canadian approaches to address these issues have been regional and profession-specific (dealing primarily with physicians). They believe this project represents a first Canadian attempt to address the problems of rurality from a multi-stakeholder perspective and is intended for use by government planners and community planning boards. The Framework/Index of Rurality is a decision support tool, which underlines the multidimensional factors of rural practice and attempts to introduce more comprehensiveness and depth into planning of HHR in the rural context.

A 1995 survey of senior occupational therapy managers in accredited Canadian facilities found that most were using a time recording system that employed a workload measurement decision-making tool. Participating managers expressed relatively low levels of satisfaction since the system was unable to provide costing data. The majority of respondents indicated interest in costing OT services with reference to the appropriate diagnostic grouping system and establishing standard protocols per diagnosis, standard times per procedure per institution, and standard times per procedure for the profession. Costing systems have been developed primarily around patient classifications (medical classification systems) using relatively homogeneous groupings. Case Mix Groups (CMGs) utilize the most responsible diagnosis (the diagnosis that is responsible for the

greatest portion of the patient's length of stay). At the time of this survey, very little had been done regarding the development of appropriate workload measurement systems for the allied health professional groups. The findings indicated support for developing expanded workload measurement systems that predict workload prospectively and assist in case costing and Program management (Cockerill, 1995).

The literature examined contained very little information on decision support tools to support telemedicine. Three or four studies of the transmission of diagnostic images indicated that TelMed was more costly than the cheapest alternative. Several studies demonstrated a measure of the workload that has to be exceeded in order to achieve cost savings by using teleradiology (break-even analysis) and a telepsychiatry study also shows a need for a clear number needed to efficiently utilize the TelMed option (Roine *et al*, 2001). These workload measurement systems clearly represent an attempt to better analyse and understand the use of telemedicine technology, and although they are not specific to deployment strategies, they do contain the potential for this application.

Diagnostic Related Grouping (DRG) and Case Mix Systems, although not specifically workload measurement tools, have evolved to provide more precise accounting of costs centred around patient care and to project HHR and operational costs. However, these methods have not really been designed or used to manage “deployment” issues on a broader systems level.

Several literature references examined management information systems as management support tools, and in this sense, these systems may have some relevance to the parameters of this study. Management information systems, while not technically utilized to provide deployment information, may be considered useful in providing managers with requisite data on actual HHR utilization and trends.

2.3 SYNTHESIS AND INVENTORY

2.3.1 HHR Deployment Practices

The literature review identified the emergence of several dominant trends in the deployment of HHR, which are reflected in patterns of practice. While this review cannot be considered a scientific study in providing findings that are representative or that can be generalized, these findings may, nonetheless, point to several important trends, which have emerged from the published and grey literature surveyed. They may also have the potential of offering new models of practice for consideration by policy makers and health care managers.

The main emphasis in the information reviewed was found to be on the role of physicians and nurses, with other health care providers receiving secondary consideration. The bulk of the literature on deployment examines physician shortages, with analyses of methods for physician recruitment and retention. Measures to address these problems deal primarily with financial incentives, loan repayment schemes, education grants, as well as alternative payment mechanisms.

As will be discussed below, ongoing reform and changes in health care delivery will require different approaches to HHR planning and deployment, which take into account new collaborative and interdisciplinary practice models.

Some of the general trends may be summarized as follows:

- Emergence of the PHC model and delivery system, with emphasis on multidisciplinary team approaches and collaborative practice models of care;
- Optimization of nursing practice to facilitate increased access to health services;
- Emphasis on enabling health care providers to work to their full scope of practice, and required regulatory/legislative adjustments to support these initiatives;
- HHR substitution tendencies (the substitution of less specialized, "less costly" health professionals for more highly specialized personnel);
- Development of training and education initiatives to enable HHR substitution, collaborative practices, and expanded scope of practice. Examples may include:
 - Special training for providers to work in remote or rural communities;
 - Nurse mentorship programs for nurses to work in the North and in remote communities;
 - Training programs offered in the rural and Northern communities, as well as programs targeted to recruit and deploy First Nations and Inuit health professionals; and
- Application of technological systems to deliver health care and to provide education, training and professional development to health care providers in remote or isolated communities (telehealth/telemedicine).

The following table presents an inventory of preferred deployment practices identified through the literature review in a schematic and summarized form.

Table 5 Inventory of Preferred HHR Deployment Strategies

Preferred HHR Deployment Strategy	Commentary
<p>Use of Multidisciplinary Teams to Delivery PHC Services</p>	<p>This tendency is prevalent across the country and in the international jurisdictions examined. Many of the initiatives in Canada were supported by the Health Transition Fund, and recent years have witnessed a proliferation of community health centres, primary health care centres, CLSCs (Quebec), Family Practice Networks (Ontario), community clinics and the like. The composition of the health team providing primary services varies considerably, and may include various configurations of the following health care professionals: general practitioners/family physicians, nurses (RNs) nurse practitioners, public health nurses, community health nurses, social workers, support workers, rehabilitation specialists, chiropractics, nutritionists, diabetic educators, orthotics, and others. In many models, nurses are the main health coordinator, with the physician offering consultative advice and support (see next section).</p> <p>Decentralization of services has also witnessed the physical location of services directly in the area of need. Specialized or high-risk population groups are served by PHC teams located directly in the area, such as Inner City Community Centres, which provide health care services and counselling to groups at risk of HIV, AIDS, Hepatitis or STDs and include collaborative teams consisting of different combinations of physicians, nurse practitioners, advance practice nurses, social workers and counsellors.</p>
<p>Nurse Substitution Strategies</p>	<p>The use of nurse practitioners (NPs) has been increasing, both in Canada and internationally, to address physician shortages, according to the literature reviewed (and supported by key respondents' observations). There are still many issues to be addressed with respect to the deployment of NPs, namely legal and regulatory, disciplines boundaries, education and training, nature of the relationship with MDs. NPs can be both community- or hospital-based, where in some institutions they function in emergency, surgery, cardiac care, neonatal and several other clinical departments. The portfolio of skills and competencies utilized by NPs varies very much according to practice setting jurisdiction, degree of remoteness or isolation, and arrangements with physicians. Among the competencies identified are patient assessment, diagnosis, treatment, patient education and counselling, ordering laboratory testing, referral and follow-up. Many PHC centres are nurse-managed, with the physicians playing a consultative or advisory role. Among the appellations of NPs are the following in institutional settings: Clinical Nurse Specialist/Nurse Practitioner, Cardiac Care NP, Nurse Practitioner/First Assistant (cardiac surgery) Clinical Nurse Associate (providing care equivalent to junior resident physicians), "Physician Extenders", Clinical Nurse Specialist, Neonatal Practitioner, and in community settings: Nurse Practitioner, regional nurse, Family Nurse Practitioner.</p>

Preferred HHR Deployment Strategy	Commentary
External HHR Recruitment	<p>External recruitment of physicians and nurses is being used in several international jurisdictions (most notably the United Kingdom) to address HHR shortages. This deployment strategy, however, has the effect of negatively affecting the HHR supply of other jurisdictions, most notably those of developing countries.</p>
<p>Expanded Scope of Practice</p> <p>Nurses</p> <p>Pharmacists</p> <p>Paramedics</p>	<p>Many models describe the emergence of the role of the nurse with enhanced skills or competencies. This model has been deployed in a variety of settings: the community, the hospital and the home. The educational and training requirements for these new roles vary from jurisdiction to jurisdiction, depending largely on factors ranging from the legal and regulatory to professional relationships among the providers involved. Some advance practice nurses have Master's Degree preparation, but other models do not require such formal training. Advance practice nurses work in emergency departments, in chemotherapy units, in palliative care, cardiac care and geriatric wards, among others. Appellations utilized for this model include: Advance Practice Nurse, Advance Practice Clinical Nurse, RN First Assistants (advance practice in surgery assistance), Practice Nurse (United Kingdom), Rural Nurse (Australia), Remote Area Nurse (Australia), Family Health Nurse (rural), Nurse Extenders (U.S.), Certified Nurse Midwife (U.S.), Clinical Nurse Specialists (U.S.), and Certified Nurse Anesthetist (U.S.).</p> <p>The role of pharmacists in the health care system has been evolving from a model of dispensing of pharmaceuticals to health care provider. In many PHC models, pharmacists are now part of multidisciplinary teams, providing the following range of services: community health education, chronic disease management, health education, health promotion, patient medication management, including prescribing and monitoring of medication. This expanded scope of practice has involved additional education and training, in most cases, and in the U.S., the newly designated DPharm has seen the delegation of some medical responsibilities. Pharmacy assistants or pharmacy technicians have assumed more of the routine tasks historically performed by pharmacists, including dispensing and pharmaceutical records.</p> <p>Based on the approach of health care delivered by "people who are there", the role of paramedics has also seen some expansion (as in the case of Newfoundland and Labrador). Some paramedics have been receiving special training and skills to work in emergency departments, have reduced the need for nursing loads in ambulances, and provide accident prevention education in schools and in communities.</p>

Preferred HHR Deployment Strategy	Commentary
<p data-bbox="337 310 500 342">Hospitalists</p> <p data-bbox="228 533 508 606">Clinical Assistants/ Physician Assistants</p>	<p data-bbox="548 310 1390 464">Hospitalists are GPs working in hospitals, often in multidisciplinary teams (with internal medicine specialists, advance practice nurses, dieticians, etc.) who provide care to patients who don't have GPs. As such, they provide family medicine care to a large number of patients who may not have access to a family doctor.</p> <p data-bbox="548 533 1390 686">Clinical Assistants provide support to physicians in providing clinical care. Individuals may have trained in the U.S. Certified Physician Assistant Program, in the Canadian Forces Health Services, may be Foreign Medical Graduates, be level III Emergency Medical technicians, or be licensed advanced practice nurses, physiotherapists, dentists (licensed in Manitoba).</p>
<p data-bbox="248 747 508 821">Practitioner with a Special Interest</p>	<p data-bbox="548 747 1380 867">The emergence of the "Practitioner with a Special Interest" has also been noted. These can be physicians, nurses or other health care providers working in the PHC setting, who develop skills in procedures and treatments usually offered only in hospital settings.</p>
<p data-bbox="326 898 508 972">Other Health Professionals</p>	<p data-bbox="548 898 1360 989">Other categories of health providers have emerged as a result of shortages of physicians and nurses, but also due to the need to provide more culturally appropriate care. These include the following:</p> <p data-bbox="548 1020 935 1052"><i>Community Health Representatives</i></p> <p data-bbox="548 1052 1390 1142">These paraprofessionals are used to operate nursing stations in rural and remote areas and are frequently guided by nurses located within the nearest larger communities.</p> <p data-bbox="548 1173 841 1205"><i>Elders/Traditional Healers</i></p> <p data-bbox="548 1236 1385 1419">Traditionally used to provide health services and counselling in First Nations and Inuit communities, native health organizations have been arguing for the integration of these important members of communities into mainstream health practice and the health care system. Some health centres and health care institutions now employ elders and traditional healers as part of the complement of health services offered to First Nations and Inuit patients.</p>

Preferred HHR Deployment Strategy	Commentary
<p data-bbox="215 310 407 380">Technological Applications</p> <p data-bbox="321 422 508 491">Telehealth/ Telemedicine</p> <p data-bbox="321 793 508 827">Mobile Team</p> <p data-bbox="272 982 508 1016">"Fly-in" services</p>	<p data-bbox="545 401 1390 737">Not surprisingly, technological applications have been utilized to address shortages and to extend service to areas experiencing problems with access to health services and are now widely used in Canada and internationally. In particular, telehealth and telemedicine have enabled the provision of services to remote and isolated areas, most notably First Nations and Inuit communities. Telehealth programs can be managed by a variety of health care provider, from physicians, to nurses to "telehealth coordinators." Telehealth is being used for diagnosis, treatment, counselling, training, professional development, continuing education, advisory services, professional linkages, and quality control, among others. Applications extend to an entire range of medical areas, from PHC to telepsychiatry, and telehome care.</p> <p data-bbox="545 779 1390 957">Another mechanism to provide services to rural and isolated areas has been the Mobile Unit, which has been used in rural Northern Alberta. The mobile units have employed a wide variety of providers, including laboratory technicians, pharmacists, physiotherapists, occupational therapists, speech pathologists, social workers, and many others. Many utilize connectivity hookups or linkages to central sites.</p> <p data-bbox="545 989 1349 1083">"Fly-in" services of physicians and dentists have been used for some time to service northern and remote communities, with nurses operating nursing stations.</p>
<p data-bbox="215 1150 415 1255">Mental Health Shared Care Services</p>	<p data-bbox="545 1150 1390 1455">The field of mental health has also witnessed innovative deployment practices, as a result of the shortages of psychiatrists, and in particular, shortages in rural and isolated areas. A "shared-care" approach has been utilized, whereby primary physicians or nurses undertake specialized training to provide mental health services to patients in this type of community, having access to specialist consultations provided by a psychiatrist. Various team configurations have emerged, with family physicians, nurses, mental health clinicians (psychologists or nurses), mental health workers, being used to provide front-line care. In many instances, specialized nurses are used to provide the core support.</p> <p data-bbox="545 1493 1390 1549">Mental health home care has also been identified by this study, administered by a multidisciplinary team, involving any of the above-referenced providers.</p> <p data-bbox="545 1587 1373 1675">The use of paraprofessional caregivers in primary mental health services is another deployment practice, particularly in rural areas of the U.S.; these may be support workers, case aides or psychiatric attendants.</p>

Preferred HHR Deployment Strategy	Commentary
<p>Educational/ Training Approaches to HHR Recruitment and Deployment</p> <p style="text-align: center;">Educational/ Training Assistance</p> <p style="text-align: center;">Rural/Northern Training</p>	<p>Many jurisdictions are using the incentives of educational support and grants to assist with key HHR shortages. While the examination of financial incentives does not form part of this study, indirect support of educational activity is certainly one means of increasing supply and deployment activity. In this category one can refer to government-funded refresher or continuing education programs to increase the supply pool (France), clinical placement assistance programs and other subsidized training programs.</p> <p>An approach that received positive reviews in the literature was the practice of training physicians in rural locations, which was shown to have positive outcomes on recruitment and retention. Use of rural practice clinical rotations was found to have positive correlation with a physician establishing a rural practice, as was the strategy of recruiting physicians from rural areas.</p> <p>In this category, one must cite the establishment of northern health education institutions, such as the Northern Medical School in Northern Ontario, which targets the recruitment of students from Northern communities for training and practice in these communities, as well as the Arctic College, Iqaluit/Dalhousie University Arctic Nursing Program, with a special "Health Career Access" Program for Inuit students. (see also Lakehead University's Northern Outreach Program, Laurentian University, and University of Western Ontario Programs, inter alia).</p>

2.3.2 Decision Support Tools

The literature review did not identify a large number of decision support tools, which have been used to support HHR deployment practices. The following Table represents a synthesis of the decision support tools findings in the published and grey literature review.

Table 6 Inventory of Decision Support Tools

Jurisdiction/ Organization	Commentary
World Health Organization	<p>WHO Health Human Resources for Health: A Toolkit for Planning, Training and Management This toolkit comprises a comprehensive set of systems and instruments to be used for HHR planning and deployment. Limited information was available on its use and effectiveness.</p> <p>WHO Workload Indicators of Staffing Systems A comprehensive decision support tool to address HHR planning, and to provide optimal allocation and deployment of professional staff geographically and according to volumes of services and different categories of health professionals.</p>
United States	<p>Patient Classification System (PCS) U.S. - provides administrative guidelines for allocation of staffing based on patient acuity. Primarily derived from measured nursing care requirement of individual patients to determine their acuity, which are then generalized.</p> <p>Kaiser Permanente workload measurement system and staffing models - U.S.- limited information available. Defines the balance and number of physicians, physician assistants, nurse practitioners and nurses for the delivery of clinical services; the models are based on populations served.</p>
Australia	<p>Australian Medical Workforce and Health Workforce System for Workforce Planning. Tasks and processes are broken down, services described and quantified, level of supply determined.</p>

Jurisdiction/ Organization	Commentary
Canada	<p>Government of Alberta, Emergency Workload Measurement System Assesses caseload and workload in hospital emergency departments. This system has been designed to assist hospitals in the reimbursement of emergency services on a workload basis, taking into account volume and type of treatment provided. This system evolved from a nursing measurement system developed by Health Canada.</p> <p>Multi-Stakeholder Framework/Index of Rurality Developed by the Canadian Medical Association, the Society of Rural Physicians of Canada, the Canadian Pharmacists Association, and the Canadian Nurses Association to address HHR recruitment and retention issues. This instrument is intended for use by policy planners and managers to provide more depth to HHR planning in rural environments.</p>
Other	<p>Occupational Therapy Workload Measurement System Enables workload measurement and costing of services provided by occupational therapists, with reference to diagnostic groupings. Standard protocols per diagnosis and times per procedure are established.</p> <p>Diagnostic-Related Groupings Patient classification systems that relate demographic, diagnostic, and therapeutic characteristics of patients to length of inpatient stay and amount of resources consumed.</p> <p>Case Mix Groups A type of decision support tool that is a diagnosis-specific description of a health Program's workload. Case mix describes length of stay, intensity, cost and scope of the services provided by an institution.</p>

3.0 ENVIRONMENTAL SCAN

The findings of the environmental scan are largely consistent with those of the literature review in the identification of several dominant trends in the deployment of HHR, which constitute changes to traditional patterns and models of practice. Once again, while this review and scan cannot be considered a scientific study by providing findings that are representative and that can be generalized, the findings may, nonetheless, point to several important new trends, which have emerged from the published and grey literature surveyed, and from the information provided by selected key respondents who were contacted for the purposes of this study.

3.1 APPROACH AND METHODOLOGY

The framework and design for the environmental scan was driven by the requirements of the Request for Proposals, supplemented by discussions with the Health Canada Client Authority, and informed by the findings of the literature review (see Section 2.0). The literature review identified practices, models and other deployment options currently in use in other jurisdictions. Most Canadian provinces and regional health authorities are testing innovative HHR deployment strategies in efforts to respond to imbalances in the provision of health care providers. Likewise, international jurisdictions such as the United Kingdom, France, the United States, Australia, and New Zealand are facing similar issues and challenges and have responded with innovative approaches.

Using scan techniques of Internet searches and Web site visits, references and sources identified in the literature review process, contacts recommended by Health Canada, as well as contacts from other professional assignments, the research team proceeded to develop a master list of key informants (see Appendix A).

The approach consisted of the following steps. A project team member contacted the key respondent to identify the study and request a telephone interview. Regarding the provincial/territorial departments/ministries of health, an initial call was made to the Deputy Ministers' office, to the Directors of Health Human Resources, or to the Policy and Planning Divisions, to request the name and contact information of the person(s) responsible for, or knowledgeable about, HHR planning and deployment in the jurisdiction. Based on the information received, an e-mail was sent to the individual(s) designated, which included the following:

- An introductory letter from North South Group Inc., identifying the project and its objectives;
- The name, e-mail address and telephone number of the Health Canada official responsible for the study (Ms. Suzanne Larente);
- The interview guide.

These documents are attached as Appendix B to this report.

The introductory e-mail requested a 20-minute telephone interview to probe and discuss HHR deployment practices and decision support tools in the jurisdiction or organization/association in question. A telephone call followed within a few days, and an interview was scheduled. In some cases, respondents requested that they complete the questions rather than be formally interviewed. In these cases, the completed guide was treated as an interview. Once the interviews were obtained, the respondents contacted were very helpful and generous with their time. Many referred the team to other contacts, forwarded additional resources, or identified Web sites that were of interest. These resources were reviewed and treated as part of this environmental scan.

The project team undertook over 70 interviews/documentation reviews. The information collected from these sources was analysed and transcribed onto one- to two-page summaries (Appendix C). These findings are presented in the following sections in narrative form (3.2) as an inventory of preferred practices of deployment and decision support tools (3.3).

The respondents were assured confidentiality regarding the information provided, particularly concerning their assessment/evaluation of certain deployment practices and strategies. They were informed that their names and contact information would be provided to Health Canada, but that their comments would not be associated with their identities. However, the name of the organization surveyed would be listed in the report (Appendix A). All respondents agreed with this protocol.

3.2 FINDINGS

To a large degree, the findings of the environmental scan (consisting of both telephone interviews and documentation review of materials either identified by respondents or found on respondents' Web sites) reflected and reiterated the findings of the literature review.

There was a commonality of HHR issues, namely personnel shortages in key health human resource supply experienced by all jurisdictions surveyed and, the use of substitution, expanded scope of practice, and team delivery models as deployment strategies.

Other major deployment strategies utilized by the jurisdictions and organizations surveyed are summarized below and are detailed in the ensuing narrative report.

- Use of health care professionals to their full scope of practice;
- Greater use of nurse practitioners to deliver PHC services;
- Use of nurses with expanded scope of practice;
- Use of telehealth/telemedicine technology to increase access, particularly in remote and isolated communities;
- Increased use of paraprofessional health workers, such as peer support workers, community health workers and care coordinators;
- Increased use of "assistants" to provide services;
- Educational programs to enhance collaborative approaches and enhanced scope of practice for health care providers;
- Recruitment, training and practicums offered on location in remote/rural communities to encourage and increase the supply of health care providers in these regions; and
- Creation of policy and planning working groups to develop strategies to address HHR shortages and target special at-risk populations.

The following section documents the findings of the environmental scan through the telephone interviews and the review of associated documentation. The findings are organized by jurisdiction and organizations surveyed, as well as by key health issues, as identified in the Project RFP.

3.2.1 Canadian HHR Deployment Practices

3.2.1.1 Federal Government Programs

Veterans Affairs Canada (VAC)

VAC is currently conducting a study to clearly identify the health and social needs of rural seniors and will design special programs to address these needs.

In terms of mental health services, VAC cooperates with the Department of National Defence (DND) and the Canadian Forces (CF) at the five Operational Trauma Stress and Support Centres

to develop peer support training for the **Peer Support Coordinators** (employees of DND having experienced Operation Trauma and Stress Injuries). These trained peer support workers will be deployed to offer **mental health counselling services under the direction of clinical psychologists**.

A Tool Kit is being developed through a joint initiative of WHO and VAC to address "Mental Disorders in Primary Care" and will **provide civilian primary care physicians with skills to understand and treat military trauma**. VAC works with St. Anne's Veterans Hospital to provide networks for support of clients experiencing post-traumatic stress disorders and other operational stress injuries through **telehealth programs**. These programs offer counselling and follow-up services, as well as **training and education for local service providers of mental health services**. **Telemental health services** are also offered through Memorial University's Faculty of Medicine and the Telehealth Educational Technology Resource Agency (TETRA) to VAC clients in **remote and rural areas**.

Health Canada

First Nations and Inuit Health Branch (FNIHB)

The federal government is responsible for health services delivery to Aboriginal populations on reserve. The **community health nurses practising in First Nations and Inuit communities have expanded scopes of practice**, which include competencies for emergency labour and delivery, and emergency trauma care. These competencies are beyond the traditional nurse practitioner scope of practice in most provincial and territorial jurisdictions. These nurses with **expanded scopes of practice also operate X-Ray equipment**, which can be found in most nursing stations. There are also **First Nations employees in many of these nursing stations who have received training in operating X-Ray equipment**. Nurses are also trained to draw blood and use a microscope for simple slides, and thus **perform basic laboratory work**, such as examining pap smears or white blood cell counts. Nurses also dispense drugs according to clinical guidelines and a pharmaceutical compendium. There are three categories of drugs stored in nursing stations:

- 1) drugs that nurses may prescribe and dispense without the authorization of a doctor;
- 2) drugs for which nurses must consult a physician; and
- 3) drugs that may only be dispensed by physicians visiting the community.

FNIHB has experienced challenges in the recruitment and retention of nurses in remote and isolated communities overseen by this Program. To support nursing practices in communities served by FNIHB, a community health nurse competency Program has been developed to identify required skills and to provide training and skills upgrading for nurses in advance practice specific to the needs of their assignments. The shortage of nurse practitioners to fill the FNIHB positions is an important issue, as is the consistency in the education, licensing and recognition of NPs across the country.

Shortages have also been experienced in the Office of Community Medicine, which deploys specialists in community medicine within the FNIHB regions. Community medicine specialists are responsible for public health, including responsibility for communicable disease control and health surveillance. It was reported that most provinces and territories are also experiencing shortages in Public Health Officers, and are hiring individuals who do not have the required training or experience (e.g. family physicians). While this is a deployment strategy to address shortages, this strategy is not considered to be best practice in light of the special requirements for these positions. **The Office of Community Medicine has recruited physicians with more limited preparation and provides training on the job to assist them in upgrading and developing their skills. International recruitment of public health specialists** has also been undertaken (Australia, South Africa) in an effort to fill these positions.

Efforts are being made **to recruit First Nations and Inuit students into medical schools**, generally, and **public health programs**, specifically, in order to increase recruitment and retention in First Nations and Inuit communities.

FNIHB has another category of health professional, which falls outside the purview of this study, but should nonetheless be mentioned in light of its innovative nature. The Primary Health Care and Public Health Directorate of FNIHB operates a Dental Therapy Program, which deploys **dental therapists** to First Nations and Inuit communities across the country. Dental therapists provide primary dental care to First Nations and Inuit populations, with a particular emphasis on paediatric dentistry. Dental therapists provide dental preventive and restorative dental services to populations, which do not have access to dental services. Operating since 1972, the FNIHB Dental Therapy Program has been reviewed and found to be a cost-efficient mode of delivery of dental services. Studies have shown that dental therapists working in communities are able to provide cost-effective services and positive clinical outcomes. There are, however, some challenges regarding dental therapy, as the educational Program has not been able to receive accreditation, and dental therapists are not recognized nor licensed in most Canadian provinces, as a result of opposition from dental associations.

Health Canada has supported **telehealth projects** across the country, primarily through the former CHIP Program (Canada Health Information Partnership), which provided over \$80 million in funding to 29 projects over the 2001-2003 period. The bulk of CHIP funding, co-shared with the provinces on a 50-50 basis, went to telehealth projects. **These telehealth projects had as their objective maximizing limited health human resources, such as radiologists, psychiatrists and emergency room physicians in remote and rural areas. Examples include telehome care provided to inner city populations by nurses (CLSC du futur in Quebec); telepsychiatry services** provided across Ontario (enabling psychiatrists to provide more services, although time spent with each patient was less than through traditional practice, which is delivered through a team approach using nurses and social workers); the Manitoba and British Columbia Telehealth projects, which supported the transition from acute to community-based home care; **teleradiology** projects, the Eastern Ontario Connect Care (which connected 19 hospitals to rural communities); and many others.

Telehealth has also been used for **continuing professional education**, and has been demonstrated to be critical as a recruitment and retention tool for physicians and nurses in remote communities. In particular, for radiologists, telehealth has been found to reduce health care providers' isolation and has been shown to improve professional satisfaction. **Team telehealth** has increased patient-specific partnerships, such as paediatricians/oncologists, paediatrician/cardiologists, to provide focussed and coordinated care.

In terms of allied health care professionals, **radiology technicians**, in particular have strongly benefitted from telehealth and have utilized this technology; studies have found that telehealth has provided them with the possibility of working autonomously from radiologists, whereby they are able to beam their images to larger hospitals for interpretation. Radiology technicians are able to do mammograms and fetal imaging through telehealth technology.

While all CHIP projects have been evaluated, there have been few cost studies prior to introducing telehealth decision support tools. Studies cited by respondents have shown that to be successful, telehealth projects need a physician, an administrator and a technology champion to successfully provide telehealth applications. According to respondents consulted, telehealth can provide for a better use of HHR; affect recruitment and retention; reduce isolation; provide access to professional education; and foster team approaches. It can also reduce travel costs associated with professionals traveling to remote communities.

Federal Health Care Partnership Secretariat

The environmental scan has highlighted the increased use of national coordinating bodies and agencies to address HHR planning and deployment issues. This trend was also observed among the international jurisdictions surveyed. In Canada, the federal Health Care Partnership Secretariat (HCPS) is an organization among others that is mandated with the coordination of health issues. The HCPS brings together federal government departments, which have a health care mandate (Solicitor General, RCMP, VAC, DND, CIC, Health Canada, and central agencies, such as PCO, TBS and Public Works. CIDA is an observer). The Secretariat is housed in VAC, but located in Ottawa. The mandate of the HCPS is to exchange information and to seek coordinated approaches to health issues, such as equity and access, standards, efficiencies, among others. Telehealth has recently been examined, and HHR planning and deployment strategies will be discussed in the near future.

3.2.1.2 Provincial Departments of Health

Most departments of health have introduced PHC models of care under Primary Care Renewal projects, which utilize **multidisciplinary teams, including family physicians and nurse practitioners and a variety of other health care professionals working in a collaborative model of care at the community level**. These clinics may be located in rural, remote or isolated communities, as well as in inner city settings. The focus of the PHC centres is based on holistic approaches, which include health promotion, disease prevention, health education and

community capacity development. Several provinces, such as Manitoba, have reconfigured the scopes of practice for health professionals in PHC centres, such as nurse practitioners, respiratory therapists, and paramedics to enable them to provide a broader range of health care services.

There is, in general, a more pronounced tendency to use nurses and nurse practitioners to their maximum scope of practice so as to address both shortage and access problems. Likewise, there is a trend by long-term care facilities to utilize LPNs and personal care attendants to their full scopes of practice in view of nursing shortages.

To increase service to remote or isolated communities, some provinces, such as Newfoundland and Labrador, are working to **identify community members with any form of health care training (such as LPNs or paramedics), strengthen their skills, and enable them to work to their full scope of training with support mechanisms in place.**

Financial incentives were identified as the principal means of attracting physicians to rural areas, such as Nova Scotia's Debt Assistance Plans, as well as alternative payment arrangements. Service agreements for health professions students, such as physicians, nurses, pharmacists, (education paid for in exchange for service in a determined location) are used by several jurisdictions (Quebec, Manitoba, Alberta) to provide health care to underserved areas.

Most provinces and territories are utilizing **telehealth** initiatives to access remote or isolated communities. Nova Scotia's Telehealth Network is supported by an Alternative Funding Program to reimburse physicians for clinical practice in telehealth/telemedicine applications. There has been an expanded use of **mobile health care delivery**, as well as telephone health advice support, such as Alberta's Health Link Service.

To address nursing shortages, several provincial governments have provided increased funding support to educational and health care institutions for the recruitment, retention and education of nurses.

To promote collaborative practices among PHC providers, some health programs (medical, nursing, social work, and pharmacy), such as the one offered at Memorial University in Newfoundland and Labrador, offer **joint courses on the scope of practice of each profession and strategies for collaborative practices to maximize each group's skills within a team approach.**

Nunavut's Arctic College Nursing Program (initiated in 1999) has specifically targeted the recruitment of nurses from the North to increase the supply of nurses in that region. **Offering health professions training programs in the North** has been shown to increase recruitment of Aboriginal health care providers according to some respondents.

In addition, many provinces, such as Alberta, offer **Aboriginal Health Career Bursary Programs** to increase the recruitment of Aboriginal health professions students (offered to Indian, Inuit, Métis and non-status Aboriginal students).

Health Care Providers

The following findings are grouped by health professional category and by health issue identified in the RFP of this study.

Nurses

There has been an increased emphasis on team delivery of PHC services, which has emphasized the use of nurses and nurse practitioners as key components of the multidisciplinary team. In New Brunswick, for example, the "**Nursing Run Clinics**", are PHC clinics operated by NPs with no physicians on site. These clinics are also used for clinical rotations for nursing students. Ontario operates the **Congestive Heart Failure Care Clinics**, where nurses manage care, with no physicians on site.

There is now a growing interest in deploying **clinical nurse specialists** (who are also nurse practitioners) to provide nursing support in hospital settings, including ICUs, and to conduct advanced therapeutics and pre-op assessments. Also working in multidisciplinary teams, nurse practitioners make patient rounds with physicians, but approach rounds from a different perspective, and examine the systems surrounding the patients, as well as the patients themselves.

Home Care Clinics in B.C. offer services delivered by nurses and other health professionals, such as dietitians and physiotherapists, whereby patients come to the clinic for various services, such as "leg ulcer" treatment, dressing changes, IV antibiotics, nutrition counselling, diabetes counselling, and other types of care. These clinics have been found to be more cost- and time-efficient modes of delivery of home care, also providing clients with social support and a social outing opportunity.

Manitoba has introduced a special Nursing Recruitment and Retention Program (also in New Brunswick) to encourage nurses who have left the field to return to practice under a **subsidized refresher course in exchange for relocation to the province and/or a service commitment** (see also, for example, British Columbia, United Kingdom, France). Other provinces have graduate support programs for new nurses, including mentoring, preceptorships, transition facilitation, and provision of full-time work opportunities for new graduates. In B.C., for example, measures were adopted **to hire nurses to work as supernumeraries after their second year**, to address the concern that new graduates were not practice-ready. An evaluation found that a higher percentage of these nurses stayed in their positions as a result of this practice. **Legislation has also been developed to allow student nurses to work in hospital settings as "nurses"** in response to workforce shortages (B.C.). **Transition funding** has also been made available to health employers to assist nurses on Workers' Compensation Programs or Long-Term Disability to use their experience more productively.

The Northwest Territories offers an **Advanced Nurse Mentorship Program** to assist in filling vacancies in northern and remote areas. Manitoba has an on-line Master's Degree nurse practitioner Program, which allows nursing students in remote and isolated communities to acquire advanced training, provided there is another NP or physician in the community who can act as preceptor.

It was reported that the competencies of LPNs are not fully utilized in practice as a result of legislative barriers in some provinces. There is thus a "disconnect" between the training received by LPNs and actual clinical practice, as well as professional resistance to their expanded scope of practice. However, some changes are occurring as a result of shortages in most HHR professional groups. More clarification of scope of practice is needed, as well as more collaboration among health professional groups.

Work is under way towards an **expanded scope of practice for LPNs**. In P.E.I., a project funded by the Labour Market Development Agreement of HRSDC has brought together the P.E.I. LPN Registration Board, the LPN Association and the Department of Health, to identify entry level competencies for LPNs, as competencies are not clearly identified in any document at the present. This competency identification process includes a Web tool for self-assessment. It is expected that second and third phases of this study will be carried out to identify overlaps between LPN and RN competencies, and then to further identify educational needs to address LPN gaps. It is further expected that this study will contribute to an expanded scope of practice for LPNs.

There are also plans to introduce Prior Learning Assessment tools to evaluate the knowledge and skills of LPNs wishing to continue into a Bachelor of Nursing Program. There are several skills upgrading support programs to encourage LPNs to upgrade their skills. Several hospitals are financing these initiatives, as are FNIHB of Health Canada and some First Nations communities.

It is believed that Health Disciplines Acts would be useful in addressing turf problems, clarifying scopes of practice, and ultimately, in providing improved nursing care to patients.

Pharmacists

The past few years have witnessed an evolution in the scope of practice of pharmacists in Canada. **Pharmacy technicians** have been assuming some of the more "routine" tasks historically performed by pharmacists, such as counting pills, computer entry and labelling, with the pharmacists' role expanding to include more patient-oriented care and more of a PHC provider role. This role has been hampered by the shortage of pharmacists in Canada. The trend to expanded scope of practice for pharmacists has been more pronounced in the hospital setting than in community pharmacies, with hospital-overseeing boards approving these new enhanced practices. Pharmacy technicians, however, have no legal standing. In an effort to provide for a provincial regulatory function, the Government of Ontario has put into place a Pharmacy Technician Certification Program (under the auspices of the Ontario College of Pharmacists).

Several interesting pilot projects have been implemented across the country. For example, in Alberta and British Columbia, specially trained pharmacists have **managed medication dosages of anticoagulant drugs**. Evaluations have shown the effectiveness and efficiency of this practice, with the care provided by pharmacists being at least comparable to care provided by family doctors in this respect. This project, which was initiated in a hospital setting, has now expanded into communities. Another Alberta study utilized pharmacists to **screen and manage patients on cholesterol medication**; evaluation results showed very positive outcomes in terms of patient health management.

Pharmacists performed a **triage role** in a Windsor, Ontario, study, where they assessed patients purchasing Zantac and other acid-reducers. Half of the patients assessed by pharmacists presented "alarm symptoms" and were referred to physicians for further investigation.

Pharmacists have also been trained as **health educators** in several studies. In an asthma study, patients were recruited, received preventive education and instruction. As a result of the pharmacists' interventions, there were fewer emergency visits, less use of broncho-dilators, and reduced morbidity and mortality.

In general, pharmacists are seen to be **enhancing the role of family physicians in PHC**, and could do more, allowing family physicians to focus on more complex and acute cases. There has been no payment method established to remunerate pharmacists for this expanded role. However, shortages of pharmacists have had a restraining role in expanding their scope of practice. The regulatory system to support these expanded practices has been slow and reactive. It is believed that new expanded role tasks being performed by pharmacists could be challenged by medical associations.

Pharmacists have also expanded their scope of practice into home care (at no charge to patients, and for which they are not remunerated). In a recent survey of pharmacists, 20 percent of respondents had made home visits to patients (usually seniors), and had performed tasks, such as taking over new prescriptions and explaining usage; completing medication reviews for patients; examining storage of medications; and assessing medication interactions.

A current study in Ontario (University of Ottawa and McMaster University) **integrates pharmacists into the family practice group setting as part of the PHC team**.

Pharmacists have also worked in providing **telehealth support to First Nations and Inuit communities**, providing support primarily to nurses and community health workers on reserve.

There have been some interesting developments in Quebec, which are different from the other provinces in terms of "cognitive services" delivered by pharmacists. **Pharmacists in Quebec can prescribe emergency contraception** ("morning after pill") without a physician's authorization (see *L'Ordre des pharmaciens du Québec* (College of Quebec Pharmacists) Web site www.opq.ca).

3.2.1.3 Health Care Settings

Home Care/Long-Term Care

In the province of Nova Scotia, the Home Care Program requires the staff designation of **continuing care assistant (CCA)**, which will be compulsory in the fall of 2004 to assist personal care workers or home care workers to upgrade their skills through a combination of Prior Learning Assessment and Continuing Education. The Nova Scotia Department of Education supports training institutions to deliver this designation.

Remote/Isolated Communities

A pilot project in Cape Breton, Nova Scotia, is utilizing the **care coordinator** to provide communication links with First Nations communities. This position has been deemed successful and will be offered to other First Nations communities.

Many First Nations and Inuit communities are filling the need for full-time health care providers with **shorter term placements or sharing the services of health care providers among adjacent communities.**

Continued efforts to **recruit and train students from rural and remote areas** ("recruiting home-grown talent") are ongoing in the hope that these recruits will return to provide service in this type of setting. There are also efforts to **place students in rural and remote settings as part of their clinical training.**

In B.C., an **Interprofessional Rural Placement Program** (operated by UBC) funds teams (students of medicine, physiotherapy and nursing) to work together in remote communities during the summer for clinical placement in the hope of attracting these students to work in remote or isolated settings after graduation.

Several provinces have **loan repayment programs** to attract health care professionals to remote/rural/isolated areas experiencing shortages of health care professionals. There are also **special incentives for nurses working in Aboriginal communities and in inner cities**, including professional development courses and incentives to retain them in these difficult-to-fill positions.

It is believed by several respondents that the most successful solution for the recruitment and retention of HHR for the Government of N.W.T. is to **foster local "home-grown" providers.** According to the respondents contacted, the success rate with retention of local nurses is very high, and thus most programs are aimed at supporting the local population to develop their skills and receive training to serve within their communities. There are financial and non-financial incentive programs, such as mentorship programs, job guarantee programs, supernumerary programs, and others.

Manitoba has experienced success with its Program for increased Aboriginal recruitment of health care providers, undertaken in partnership with First Nations associations throughout the province.

The use of **mobile teams** for HHR deployment is prevalent in many remote areas, such as Manitoba's Visiting Doctor Program, Mobile Breast Clinics, Mobile Dialysis Clinics, Mobile Mental Health Crises Teams, and other similar initiatives.

Inner Cities

There are more “**street nurses**” being hired by municipalities in an effort to reach at-risk populations and to provide services on location. For example, Manitoba's Mobile Needle Exchange Program includes a street nurse for primary care and health education to high-risks groups. The “street nurses” of Vancouver are another example of nurse practitioners who distribute clean needles and condoms, conduct birth control counselling and hand out booklets. Patient counselling is an important part of their role on the street.

Mental Health

Psychiatrists in Canada are in very short supply, as are nurses working in the mental health arena. Respondents also report shortages of other health professionals working in mental health services, such as social workers, support workers, occupational therapists, and others. Stakeholders have been calling for a broader HHR strategy to address mental health care needs in Canada.

Nurse practitioners have been utilized to provide primary mental care in communities experiencing a shortage of psychiatrists. There have some interesting initiatives, such as the local branch of the Canadian Mental Health Association in Windsor, Ontario, hiring **a nurse practitioner as part of a multidisciplinary team** (also including a part-time psychiatrist and a GP) for a pilot project funded by the Ontario Ministry of Health and Long-Term Care to provide expanded care, which includes prescribing, monitoring and adjusting medication for mental health patients. This model of using an NP to screen and treat patients prior to referring to a physician has been found to be very effective as it allows physicians to focus on more acute cases.

There are examples of community organizations, such as clubhouses, which provide mental health services to chronic patients by using **occupational therapists, social workers, and mental health support workers**.

British Columbia has been training **mental health workers** through its community college system so as to address the gaps in mental health care services. As a result of the gap in service providers, social workers are increasingly assessing and diagnosing in some jurisdictions, but it is felt that they do not have the required training. Accordingly, a new law (Reserved Action

Model) will be enacted in B.C. to ensure that only doctors, nurses, NPs (and other identified health professions) can diagnose.

NPs have also been found to be very effective in **providing primary mental health services in First Nations communities and in remote and rural communities** that are experiencing shortages of psychiatrists or physicians.

The Nova Scotia Shared Care initiative involves provision of mental health services through an interdisciplinary team, including family physicians and mental health clinicians working in a collaborative practice. **Nurse practitioners also provide mental health services in the public school system** in an effort to be closer to at-risk youth.

Health Care Institutions

The Canadian Health Association supports health care professionals working to their full scope of practice, however, it recognizes that there are many barriers to this practice, including union contracts. It is believed that the best strategy to address innovative deployment of HHR is to **utilize evidence-based research** (primarily Canadian) to provide the evidence and to document the benefits of innovative deployment strategies. Entry-to-practice credentials must also be reassessed in light of decisions that need to be made on cost-effectiveness and patient-centred care. Rising credential requirements have driven up costs of HHR in Canada. Collaborative practice of health professionals has been a recent trend, but it is not appropriate to all types of care.

There is increasing use of **clinical nurse specialists** assigned to specialty areas, and **nurse practitioners being utilized in acute care, neonatal care, ICUs**, and other hospital departments. In New Brunswick, under the Primary Care Collaborative Practice Project, the role of the RN in emergency is being expanded to work to full scope of practice and manage patients from admissions to discharge, with the patient not requiring to see a physician.

There is a study under way in B.C. examining the **use of LPNs in operating rooms** functioning in an enhanced capacity to address the shortage of OR nurses.

It is reported that **unregulated workers have been used in home care and long-term care settings** as a cost-savings measure, and that this practice must be carefully monitored in light of lack of training and patient safety issues.

Funding cuts have also led to an increasing **use of family members to provide care for patients**. According to some respondents, this type of deployment practice poses risks and must be carefully examined.

It is suggested that there needs to be **stronger support on the part of government-funding agencies to train laboratory technicians, radiology technicians, rehabilitation professionals,**

and other allied health professionals to ensure that the supply meets rising demand for services. It was expressed that HHR shortages must be addressed jointly by government and health care institutions.

It is reported that the **use of First Nations and Inuit translators** in many hospitals to assist in care coordination, as well as in discharge planning and management, has been increasing.

Telehealth/Telemedicine

Telehealth and telemedicine programs have enabled greater access to medical and health services for populations living in remote and isolated communities. Some examples of innovative deployment are discussed below.

The Telehealth Education Technology Resource Agency (TETRA) Program is a non-governmental agency based in Newfoundland and Labrador, which provides health and education services to a variety of users. TETRA collaborates with health and education boards across the province by providing assistance in implementing technology solutions and in dispensing telehealth services (audio and video links) to underserved areas. It is multifunctional in providing health and education services to a variety of users. There are many layers of services, from specialty consultations, to interprovincial connectivity, to education and training. It works with small communities, including Aboriginal communities in remote and isolated sites, in setting up telehealth sites.

Examples of TETRA projects include **advanced practice nurses providing primary care services in many remote coastal Labrador communities.**

Newfoundland and Labrador physicians are not reimbursed for telehealth services. Accordingly, the Program relies on salaried physicians to deliver services (e.g. oncologists, radiologists, psychiatrists) and nurses (**advanced practice and nurse practitioners**). Other medical specialists volunteer their time and provide consultations. Remunerative schemes have not kept pace with the technology being used.

Other allied health professionals are involved in telehealth projects, such as physiotherapists and speech pathologists.

Several evaluations have been conducted, and most projects are evaluated. However, there has not been any comprehensive evaluation examining outcomes or cost-benefit. Lessons learned from evaluations conducted include the importance for skills development, training, the right equipment, and the human resources to support the health staff in working with telehealth technology.

The North Network is a telemedicine Program, which has been providing patient consultations and continuing professional education to northern and rural communities

in Ontario since 1998. Initially funded through an infrastructure development grant of \$8.5 million from CHIP, it is now funded through the Ministry of Health and Long-Term Care and provides services to over 800 patients ar month, in 70 specialty areas, working with approximately 100 member organizations in 150 sites. Its principal partner is Keewaytinook Okimakanak Telehealth.

The North Network has increased access to health care services to populations in remote and isolated communities, through two-way television, electronic medical devices and other technologies. Services are provided by physicians, nurses and allied health professionals and are coordinated through the Sunnybrook and Women's College Hospital in Toronto. There are **case conferences for mental health care workers, diabetes education, an emergency telestroke Program, nurse practitioner support in remote and rural communities, and telementoring**, among other services. The North Network has achieved in **linking 14 hospitals and 2 First Nations communities to provide a teleradiology service in northwestern Ontario**.

Allied health professionals, such as speech therapists, occupational therapists, physiotherapists, psychologists, nutritionists, diabetes educators are also involved in the delivery of patient care through multidisciplinary teams working in telehealth applications.

Reported barriers to telehealth programs include physician remuneration issues; credentialing of physicians to provide telehealth services; interprovincial licensure; and MIS and patient charting systems.

The N.W.T. uses telehealth programs to improve access to remote areas, such as **the 24/7 health advice telecare programs**, in addition to many telehealth programs to link communities to health professionals. **Lay dispensers or community health representatives** act as liaison between patients and doctors.

Rural Health Issues

Thirty-one point six percent of Canadians live in rural communities of up to 10,000 people. Only 4 percent of specialists live in rural communities, and although there are more general surgeons in rural areas than other specialists, very few live in communities of less than 10,000 people. A 1992 survey of Ontario hospitals with less than 100 acute care beds showed that 30 percent experienced shortages of general surgeons and 61 percent expected shortages within five years. To increase access to health care services to rural and isolated populations, the Society of Rural Physicians of Canada has recommended **providing training for rural family doctors in anaesthesia and in surgery**, including caesarean sections to meet the needs of rural communities. It further recommends that national standards be established, including national accreditation and verification of qualifications. Training should also be provided through continuing medical education (see, for example, The Society of Rural Physicians of Canada, *Primary Care Renewal Policy*).

There have been other calls for the need to develop the "generalist" GP-surgeon (see, for example, *Towards Integrated Medical Resource Policies for Canada*, by Maurice Barer and Greg Stoddart (1991)). There is very little information on patient outcomes regarding GP surgery in Canada. One study in B.C. examined appendectomy outcomes over a five-year period and found complication rates to be comparable between GP-surgeons and Board Certified general surgeons (ibid).

The Canadian Medical Association (CMA) has undertaken a study, *Framework of Rurality*, in collaboration with the nursing profession and pharmacists, to address rural health care delivery issues. The CMA also manages a bursary Program for First Nations and Inuit students to encourage them to serve in remote communities.

Occupational Therapy

As most occupational therapists (OTs) work in urban centres and in institutional settings, there is an access problem in rural areas. **More OTs are now being included in pilot projects in primary health care.** Funding is a problem, as OT services are covered in hospitals under the *Canada Health Act*, but outside of institutional settings, there is a wide range of provincial variation in reimbursement schemes. Many OTs work outside of the public system and are funded primarily by Workers' Compensation, insurance schemes or the school systems.

Physiotherapy

Physiotherapists have been included in recent PHC models as part of interdisciplinary teams, working in **extended scope of practice in health promotion and disease prevention**, as well as in the more conventional roles.

It has been found that when physiotherapy students **have pregraduation exposure through clinical placements in northern and rural settings**, they are more likely to accept a remote/rural placement. The University of Saskatchewan has an **Interprofessional Graduate Practicum** where teams of health care providers undertake a work study clinical/practicum in Africa. The approach **integrates community development and PHC**. This Program has been reported to have provided beneficial experience for physiotherapists working in **inner city, remote or rural placements in Canada, where poverty in the community is a factor**. Saskatchewan has student placements in conjunction with Tribal Health Councils. Saskatchewan also employs physiotherapists in **telehealth applications to rural communities**.

Physiotherapy support workers have been deployed more extensively in recent times, receiving on-the-job training to support the work of physiotherapists, although these are unofficial, non-accredited positions. There are no set standards, but there are efforts to standardize and formalize this profession, with a view to increased placement in rural settings. The problem of supervision by a physiotherapist is an issue, as are matters of legislation and regulation.

3.2.2 International HHR Deployment Practices

3.2.2.1 United States

The federal department of Health and Human Resources is mandated with national initiatives, while the state governments administer health programs. As such, state programs need to be examined for innovative deployment strategies, but the timelines of this study did not allow for a closer examination of state activities.

In light of recognition of shortages of key health personnel, there are efforts **to promote coordinated planning at the national level, through agencies such as the National Center for Health Workforce Analysis.** There are, in addition, **special programs to address HHR shortage areas, through the designation of health professional shortage areas (HPSAs), which are the target of special activities and funding.**

Main activities to address shortages **are financial incentive programs**, such as the **Loan Repayment Strategy**, wherein PHC providers are offered loan repayment schemes to serve in underserved (HPSA) areas. This Program has a very high success rate and applies to paediatricians, internists, family doctors, obstetricians, nurse practitioners, midwives, clinical nurse specialists, dentists and mental health counsellors.

There are also programs to address nursing shortages to assist with recruitment and retention problems, including **funding for training programs to educational institutions to enable “training up nursing career ladders”; internship and residency programs; mentorships; innovative opportunity funding; as well as nursing education loan repayment programs.**

There is **great variety in terms of scope of practice for nurse practitioners from state to state**, with some states and particularly rural areas, allowing nurses to practise to their full scope of practice.

Another successful measure for increasing physician recruitment to rural areas is through the use of **clinical rotation placements of medical students to underserved areas.**

Indian reserves, as HPSAs, are specially targeted, and are staffed through the U.S. Public Health Service, a Program under the U.S. Surgeon General's Office. There have also been efforts to attract more Aboriginal and minority population students into the HHR professions.

There is widespread use of **telehealth technology** throughout the U.S.

Pharmacists

There is a shortage of licensed pharmacists in the U.S. and, as a result, there have been

considerable increases in the volume and range of services provided by current pharmacists, with **expanded roles and responsibilities in both the retail and the institutional settings.**

As stated by the American College of Clinical Pharmacy (U.S. Bureau of Health Professions, 2000), "Pharmacy will, within the next decade, transform itself from a primarily product-centered profession to a patient-care oriented profession." Pharmacists now provide a much broader range of services, including: **counselling patients on proper use of medication; drug monitoring and disease management for defined conditions; participating on multidisciplinary clinical care teams; consulting on drug utilization programs; providing drug information; patient education; formulary management; public health initiatives, such as smoking cessation, diabetes education, immunization, etc.** They are also contributing to initiatives to reduce medication error, which in the U.S. has reached alarming proportions. Overall cost of drug-related morbidity and mortality is estimated to be in the range of \$77-136 billion a year.

The education and scope of practice of pharmacists is undergoing changes in the U.S., with the introduction of the Pharm.D., a Program that has lengthened the educational Program and increased the required practice experience. **Pharmacy technicians are now assuming many of the tasks traditionally undertaken by pharmacists.**

Pharmacists are frequently providing disease management programs for patients with chronic conditions, such as diabetes, asthma, high cholesterol, high-blood pressure, and anticoagulant therapy. With physician collaboration, pharmacists may assess patients, order drug therapy-related laboratory tests, administer drugs, and monitor and adjust medication.

A key issue is recognition of "cognitive health care services", which is billable to third-party insurers. Many states have expanded pharmacy practice acts to cover new functions. Evaluations have shown improved patient management in certain cases, and decreased treatment costs (Ashville, North Carolina project).

3.2.2.2 United Kingdom

The United Kingdom is also witnessing expanded scope of practice and innovative deployment for many health care professionals, as a result of shortages of key health care providers.

More than 25,500 **district nurses and health visitors** have been trained to prescribe from a formulary, and another 2,000 nurses are qualified to prescribe from the Nurse Prescribers' Extended Formulary. More than 1,400 of these nurses and **100 pharmacists are trained as supplementary prescribers.** A Department of Health study reports that extended nurse prescribing is improving patient services.

The professional bodies for **physiotherapists, podiatrists and radiographers, have been developing a training Program for supplementary prescribing for these groups,** and there

is discussion about **dieticians, occupational therapists, speech and language therapists, and prosthetists and orthotists** being added to the list of professionals authorized to prescribe medications.

Regarding **laboratory and radiation technologists**, there are financial incentive programs and loan repayment schemes so as to increase the supply of practising technologists. An **Improving Working Lives Initiatives** has been established to improve recruitment and retention rates, where, through flexible working schedules, professional development, flexible retirement schemes, and other measures, the quality of professional activity can be improved for these categories of health professionals.

To address shortages in allied health professionals, such as physiotherapists, occupational therapists, speech language therapists, and others, there have been **efforts to recruit from the local populations and to employ their services as assistants**, with opportunities for more formal training provided. There have also been promotional programs in the school system to encourage students to consider careers in the health professions. There also efforts to promote more **ethnic diversity in the workforce** through broader recruitment strategies. **International recruitment** efforts are under way to increase the numbers of professionals in shortage areas.

"Return-to-Work" programs have been found to be the quickest and most effective way of increasing the workforce - 20,000 health care providers were brought back into the workforce within a four-year period. Surveys were conducted to determine reasons for individuals leaving the workforce and many of the critical issues, dealing primarily with worklife, were addressed in innovative ways. Also, changing workforce programs focussing on **breaking down traditional professional barriers**, have been introduced with the objective of allowing each professional group to work to full scope of practice. The remuneration system has also undergone changes to better reflect the skills utilized.

The role of the **"assistant"** has been evolving in all health professions - **physician assistant, midwifery assistant, radiography assistant**, and others. New roles have also emerged, such as **"Evercare"** nurses (nurses trained to educate patients with chronic care needs to better attend to their own needs), **"Home Help"** (support workers to assist recent hospital discharges); **nurse prescribers, pharmacist prescribers**.

In **home care**, there has been a tendency to use **smaller teams of multi-skilled generalists**, such as physiotherapists also doing nutrition counselling, etc.

3.2.2.3 Australia

An area of particular emphasis in HHR deployment in Australia to reach remote and isolated communities is the **recruitment and training of Aboriginal health workers to deliver health services to their communities**. Community control and delivery of health services, in a

culturally appropriate manner, are foundation principles of the Australian health care system. Likewise, **traditional healing practices are also included in the provision of primary care.**

Aboriginal and Torres Strait Islanders are seriously disadvantaged by poor living conditions, limited service access and shortages of health care providers. Their health status is poor compared with mainstream Australians, with increased child mortality rates, and poor morbidity and mortality rates (life expectancy for Aboriginals is 16-18 years less than for non-Aboriginal Australians).

The roles of medical, nursing and allied health professionals are also being expanded to serve remote and rural areas. Most health-related training programs involve a clinical placement in rural communities to promote rural practice. There are also **scholarship programs** that can be worked off by serving in rural communities. James Cook University in northern Australia has a mission to attract students from rural areas and specifically train them to serve in these communities. Results have been positive to date.

Regarding nurses, two sets of competency standards are being developed for the **advanced nurse** and for the **remote area nurse**. (There are no "nurse practitioners" in Australia at the present time, although there is a move to introduce them).

Physicians working in remote areas are usually generalists who have had specialized training in rural medicine and, ideally, have received training in Aboriginal health issues.

Another deployment initiative is the development of the occupation of "**Aboriginal and Torres Strait Islander Health Worker.**" Competencies have been developed for this designation of health worker, including clinical care (first aid, screening), health care to children, nutritional care, counselling, emergencies, research on communities. The indigenous health worker is the first point of contact. If referral is needed, the remote area nurse provides a more specialized assessment, with the physician being the third tier of contact. This model uses each level to the full scope of practice and leaves physicians with the more complex acute cases. There are training programs for the indigenous health worker to develop and broaden skills, which include service management, data collection and research.

Aboriginal community-controlled health services (ACCHS) are primary health care services developed by local Aboriginal communities to deliver "holistic and culturally appropriate care to people within their communities." Over the past 30 years, more than 120 ACCHSs have been established across Australia to provide primary health care services to the Aboriginal population, **particularly in areas where Aboriginals could not access mainstream health care services, or where these mainstream services were not felt to be culturally appropriate.** The ACCHSs are initiated and governed by local Aboriginal communities and provide health services to a significant proportion of the Aboriginal population. **In employing and training health workers, the ACCHS sector is the largest employer of Aboriginal peoples in Australia.**

Primary health care services provided to Aboriginal communities vary from region to region, ranging from a single nurse or physician, to **multidisciplinary teams, including dentists, psychologists, on-site pharmacies, and prenatal care services**. Under the national Medicare Program, services are provided at no cost to the user. The majority of Australia's Aboriginal population uses the ACCHSs.

To improve access to **rural health care services**, the Australian Faculty of Rural Medicine in the Royal Australian College of General Practitioners has developed a specialized training Program for rural GPs, with advanced skills in anaesthesia, obstetrics and surgery.

The North West Allied Health Services Team uses **teams of health workers to travel together to reach rural and isolated communities**. This approach has increased patient satisfaction and increased retention levels of health providers and improved continuity of service to communities.

3.2.2.4 New Zealand

Deployment of health care providers is managed by 21 district health boards in New Zealand. Existing delivery models are currently primarily physician-driven, but there is **growing emphasis on multidisciplinary teams**. There are only nine nurse practitioners in the entire country, but **midwives work collaboratively with physicians**. An "umbrella" health act has been passed by the New Zealand Government to **expand scope of practice for RNs, and there are changes under way to provide NPs with prescribing rights**. A new category of nurse, "**enrolled nurses**" has been moving up into the RN scope of practice. Enrolled nurses are trained to practise in one scope of practice area, with clients with predictable health outcomes in situations that do not call for complex nursing judgement. Their training does not have a broad general base, which significantly restricts the number of acute settings in which they are competent to practise (Hughes, 2003).

The Maori Provider Development Scheme has been developed by the New Zealand Government to **support the provision of health care services by Aboriginal providers**. This Program provides funding to health programs targeted at increasing the enrolment of Aboriginal students.

New graduate programs have been established to **train nurses to work in the mental health care field**.

3.2.2.5 France

France is experiencing difficulties with shortages of physicians and nurses. In particular, there are problems in the Paris region because of the high cost of living. Furthermore, it is reported that the quotas for medical education programs are too low to recruit the required number of physicians.

France is **actively recruiting nurses internationally** (notably in Spain and Poland); nurses are provided with language training. There have been 800 nursing recruits since 2002 as a result of these efforts.

3.2.2.6 World Health Organization (WHO)

WHO has undertaken studies on **"transfers of tasks" from one level of health care provider to another and has reported on extended scopes of practice for nurses internationally**. The most notable examples are to be found in the United Kingdom and in the United States, although Canada is also said to be a leader in this area.

3.2.3 Decision Support Tools

The following is a summary of decision support tools identified by respondents approached by this survey.

CIHI has developed **MIS guidelines for collecting workload data, both financial and statistical**. There are over 20 workload measurement systems (WMS), including those for nurses, occupational therapists, respiratory technologists, physiotherapists, and diagnostic imaging technologists, which are methodologically different and specific to the requirements of each professional group. Three different approaches have been incorporated. These include calculations based on average time (used in clinical laboratory work, diagnostic imaging, and pharmacy); standard time; and actual time. The MIS systems are designed for use by departmental managers and provincial administrators to assist them in determining budgets, resource allocation, staffing and skill mix requirements, productivity assessments, and determination of FTE requirements. Information is collected by the provincial departments of health and forwarded to CIHI to calculate aggregate data bases. Provinces are at different stages of WMS implementation and utilization to inform decision-making.

Instrument Development: Index of Interdisciplinary Collaboration, Bronstein, Laura R. (2002). This model is currently used in P.E.I. Newfoundland and Labrador is considering utilizing it to encourage collaborative practice. The family health approach is founded on principles of collaborative practice, and this model is considered useful in identifying the current extent of collaborative practice and strengthening collaboration on the primary care team.

Likewise, ***Implementation Strategies: "Collaboration in Primary Care - Family Doctors and Nurse Practitioners Delivering Shared Care"*** produced by the Ontario College of Family Physicians, May 2000, together with the Registered Nurses Association of Ontario is a **collaborative model of practice**. The process involves the identification of the roles and functions of the collaborative partners and a review of the services to be provided by the team. This model is a type of decision support tool which considers the patient population to be served, the nature and type of services to be rendered, the practice setting, and the skills and preferences of the partners. The design of the optimal collaborative practice through this process is thought to optimize the skills and competencies of the health care providers and to tailor design the practice to the specific needs of the care receivers.

Innovative Scheduling Practices: A Resource Guide (Provincial Working Group, Health Employers Association of British Columbia and British Columbia Nurses' Union, October 2003.) Funded by the Ministry of Health Planning Nursing Directorate, the objective of this system is to **support nurse recruitment and retention and increase job satisfaction** - all key contributors to a healthy, sustainable nursing workforce. The need for innovative scheduling has been shown to be of importance in recent years, as a result of nursing human resource shortages, an ageing workforce, and worklife issues. This Resource Guide is designed to **assist managers, staff nurses and union representatives to explore and implement innovative scheduling**. Flexible and innovative scheduling can also assist nurse managers staff shifts, which have been difficult to fill. A series of themes and recommendations were developed to provide options for managers overseeing nursing scheduling. These are incorporated in Phase I of the project. Phase 2 is currently focussed on the identification, implementation and evaluation of innovative pilot scheduling projects.

Clinical Resource for Introducing New LPN Competencies/Functions Asking Key Questions to Support Quality Care (PEI Ministry of Health, 2003).

The Resource comprises a framework for assisting employers and managers to make decisions about adding competencies or functions to the LPN role in health care settings. This tool can **assist managers in the clinical aspects of making decisions about maximizing scope of practice for LPNs**. The following areas form part of the review for decision making: context of practice; clients' needs; legislation; practice environment; and professional competency.

In Nova Scotia, a decision support tool is being piloted in several nursing homes, utilizing **Minimum Data Set 2.0** (MDS) system to identify care needs and track changes in care over time. It is expected that this tool will enable better resource allocation by Program over time.

Also in Nova Scotia, a **Resident Assessment Instrument (RAI) 2.0** is used in nursing homes to assess and design a care plan for patients. The RAI 2.0 is being used in 9 nursing homes across the province, but is being recommended for all 74 nursing homes. This system was developed in the U.S. over 15 years ago and is also used elsewhere. The RAI 2.0 is not a workload measurement system, but rather a multidimensional functional assessment for use by clinicians. **The Resource Utilization Grouping System (RUGS)** was developed for use with RAI 2.0 to determine at which of the 44 care levels a client is placed. It is used in the U.S. to determine the case mix of a nursing home and the level of funding to be received. The **RAI HC** is a similar tool used for home care assessment in Nova Scotia.

The Canadian Nursing Association conducted a project based on the Canadian Nursing Advisory Committee (CNAC) recommendation to **study nursing workload measurement tools**. Funding was provided by Health Canada and consisted of 11 parts. Findings for the first part of the study indicated that 50 percent of employers are not using decision support tools, and of those who are, serious concerns with reliability and validity were expressed. There were examples of tools being utilized in a study on staff mix decision tools.

3.3 SYNTHESIS AND INVENTORY OF PREFERRED DEPLOYMENT PRACTICES AND DECISION SUPPORT TOOLS

The 56 key informants who responded to the questions regarding preferred deployment practices and decision support tools contributed important information that corroborated and substantiated the findings of the literature review. The inventory is listed sequentially as follows:

- federal government with 7 responses;
- provinces and territories with 20 responses;
- associations and institutions with 15 responses; and
- international government departments and institutions with 15 responses.

The range and mix of key informants provided a broad response to the questions concerning the study topics. Observations and comments received highlighted the benefits of innovative deployment practices in the delivery of PHC and medical treatment.

The following table lists the respondents, the related HHR deployment practice(s) and/or decision support tools and a brief description of the activities.

Table 7

Inventory of Preferred Deployment Practices and Decision Support Tools

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
FEDERAL		
1. Veterans Affairs Canada (VAC)	Peer support coordinators - Specially trained PHC physicians for post-traumatic stress disorders - Telehealth	Trained DND employees to provide mental health consulting services Training of PHC physicians in mental health services Counselling and follow-up services, training and education for mental health service providers in remote/rural areas
2. Health Canada - First Nations and Inuit Health Branch (FNIHB)	Dental therapists	The national dental therapy program is designed to respond to the needs of First Nations and Inuit populations living in remote areas and the North. Dental therapists are trained at the National Dental Therapy School in Prince Albert, Saskatchewan, and recognized as health professionals by that province. They are employed by First Nations reserves and Health Canada.
3. Health Canada - First Nations and Inuit Health Branch - Office of Nursing Services	Expanded scope of practice nurses serving in the North - reading X-rays - drawing blood samples - performing basic laboratory work - dispensing pharmaceuticals	FNIHB deploys nurses with expanded scope of practice in the North in areas of physician shortages. Examples of expanded tasks include reading simple X-rays, drawing blood, using a microscope for simple slides, and dispensing drugs according to a pharmaceutical compendium.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
4. Health Canada - First Nations and Inuit Health Branch - Office of Nursing Services	Community health nurses with expanded scope of practice - emergency labour - emergency trauma care	Over 250 positions in First Nations and Inuit communities are held by community health nurses having an expanded scope of practice with competencies for emergency labour and delivery and emergency trauma care.
5. Health Canada - First Nations and Inuit Health Branch - Community Medicine	Physicians with additional training to act as Public Health Officers in the North	This group is responsible for Public Health Officer positions within Health Canada regions, mostly in the North. Innovative deployment strategies include using doctors with limited preparation in public health and providing specialized training to upgrade their skills.
6. Health Canada - Health and Information Highway Division	Telehealth services in rural and remote areas - home care - telepsychiatry - teleradiology - emergency services - inner-city telehome care - continuing professional education - team telehealth	Telehealth development to make the best use of limited HHR, such as radiologists, psychiatrists and emergency room physicians in remote and rural areas. Examples include home care in inner cities, telepsychiatry through a team approach, transition from acute to community home care, teleradiology and many others. Telehealth can provide better use of HHR, improve recruitment and retention, enhance access to continuing education and foster team approaches.
7. Federal Health Care Partnership Secretariat	Coordinates information exchange among federal government departments on health issues	The Secretariat is an organization that exchanges information on health care among several federal departments with a health care mandate.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
PROVINCES AND TERRITORIES		
8. Newfoundland and Labrador Department of Health and Community Services - Office of Primary Care	Regional nurses - nurse practitioners supported by telemedicine - team approach in service delivery at PHC Centres - telehealth - LPNs and PCAs working to full scope of practice - paramedics or LPNs used to full scope of practice in remote and isolated areas	Primary health care in rural settings is delivered by enhanced RNs, functionally a Nurse Practitioner supported by Telemedicine. Seven pilot sites of PHC Centres are employing a comprehensive approach that includes a network of direct and allied providers, including enhanced scope of practice RNs providing services in remote/rural/isolated areas.
9. Nova Scotia Department of Health -Continuing Care	Continuing Care Assistants in Home Care Program Model of Nursing Home assessment of patient's care needs (minimum data set 2.0 system) Resident assessment instrument Resource utilization grouping system	Home Care Program is planning staff designation as CCA, (continuing care assistant), and is assisting in training with long-term care facilities, etc. Decision support tools are being piloted in nursing homes to identify care needs in patients and track changes to assist in allocating resources.
10. Nova Scotia Department of Health - Physician Services	Financial incentives for general practice physicians in rural areas and inner-city clinics Primary care delivery models (GPs and NPs) Impact Analysis Model for physician resource planning	Recruitment coordination matching community needs with service providers. GP contracts in rural areas and for an inner-city clinic. Use an Impact Analysis Model for physician resource planning and team PHC delivery.
11. Nova Scotia Department of Health - Nursing Services	Nurse practitioners Telehealth programs Changing status of casual and part-time to full-time permanent positions EMTs deployed in remote and rural settings	Co-op program for third-year baccalaureate nursing students. Telehealth programs for clinical support to patients, physician and nursing continuing education. Major focus on enhancing status of casual and part-time positions to full-time permanent.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
12. Nova Scotia Department of Health - Primary Care	Pairing of physicians and nurse practitioners Youth Health Centres established Rural Health Network Shared Care for Mental Health Services Family Help telephone line	Nurse practitioners and physicians working in pairs. Youth Health Centres being established. Rural Health Network operating with off-site FPs.
13. Nova Scotia Department of Health - Information Management	Clinical IT applications in primary care system	Nova Scotia maintains a telehealth network that includes Pictorial Archiving Communications System, a digital image transmission system that supports physicians in rural settings with diagnosis by specialists in real time. Clinical IT applications form part of the primary care system.
14. Nova Scotia Department of Health	Resident Assessment Instrument 2.0 used in - nursing homes - home care - resource utilization grouping system	Resident Assessment Instrument is a patient-focussed decision support tool used in nursing homes. It is a multidimensional assessment form used in designing care plans recommended for all 74 nursing homes in Nova Scotia. A similar tool is used for home care assessment and used province-wide in Nova Scotia.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
<p>15. Prince Edward Island Department of Health and Social Services</p>	<p>Nurse practitioners with allied health professionals and a GP Primary care through community clinics development LPN training for dispensing medication Decision support tools: - HHR supply and demand database - Assessment tool to establish entry-level qualifications for LPNs</p>	<p>Currently, P.E.I. has no classification for nurse practitioners. A demonstration project is being carried out at the O’Leary Community Clinic with two nurse practitioners along with other allied health professionals and a GP. P.E.I. Health is developing an assessment tool to establish entry-level qualifications for LPNs. LPNs are now receiving clinical training in order to dispense medication. P.E.I. now has a much greater number for salaried physicians. Pharmacists employed in public institutions are being paid salary adjustments to compete with the private sector. Primary care redesign is under way with the establishment of community clinics where GPs, rehabs, nurses and social workers all work together in the clinic. P.E.I. Health maintains databases for HHR supply and demand to anticipate needs in the public sector health system.</p>

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
16. Quebec Ministry of Health and Social Services	Nurse practitioners in Northern Quebec Education subsidies Integrated HHR planning in each RHA Scope of practice of pharmacists is expanding - hospital pharmacists manage drug therapy - perform delegated medical practices - monitor chronic high cholesterol, hypertension, diabetes and anticoagulants - prescribe emergency contraception	Use of nurse practitioners in Northern Quebec is prevalent. Bursaries are provided to nursing candidates, 75 seats in 2004 and shortage of nurses is acute, particularly in Montréal. New programs are being established to integrate the university nursing programs with CEGEPs (community colleges). Home care is being integrated with the RHAs. Working groups are set up under each RHA to address HHR issues. Pharmacists' scope of practice is rapidly expanding.
17. Manitoba Rural and Northern Health	Return-to-service agreements Rural placements of medical students Rural recruitment Entrance incentives for rural students	The office was established to resolve physician and nurse practitioner shortages in rural and northern areas of the province. The office works closely with the RHAs and the Faculty of Medicine. Early exposure of medical students to rural environment is provided.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
<p>18. Human Resource Council of Manitoba RHAs</p>	<p>Broadening scope of practice for</p> <ul style="list-style-type: none"> - nurse practitioners - respiratory therapists - paramedicals <p>Primary care access centres with partnerships of</p> <ul style="list-style-type: none"> - physicians - nurses - psychologists - nutritionists <p>Training programs for Aboriginal students</p> <p>Reduction of “baccalaureate requirements” for nurses in LTC facilities</p>	<p>Integration of home care with the RHAs has contributed to major improvements in service delivery. Manitoba has backed off imposing baccalaureate requirements for nurses. Reconfiguration of scope of practice for nurse practitioners, respiratory therapists and paramedicals. Primary care access centres have opened with multiple partnerships of physicians, nurses, psychologists, nutritionists, etc.</p>
<p>19. Ministry of Health of Alberta</p>	<p>Numerous telehealth sites</p> <p>Northern Alberta Development Council Bursaries for Northern Service (Physicians, Nurses, Pharmacists, etc.)</p> <p>Financial support for Aboriginals pursuing health careers and targeted seats in HHR education</p> <p>PHC team deployment (GPs and NPs)</p> <p>Health Links Program</p> <p>LCPI partnerships of physicians and allied health care workers</p> <p>RHA working groups for HHR</p> <p>Planning the Resource</p> <ul style="list-style-type: none"> - framework to assist employers about adding competencies to the LPN role in health care settings, including context of practice, clients’ needs, legislation, practice environment and professional competency. 	<p>The Northern Alberta Development Council Bursary Program provides financial support to Aboriginals for careers in health care. Alberta has 236 telehealth sites servicing the province. Alberta has a program called Local Primary Care Initiative providing \$50 a patient annually. The LPCI forms partnerships of community physicians and allied health care workers to deliver wellness, acute care, post-operative follow-up and chronic disease management. Working groups have been established in each RHA to deal with HHR issues.</p> <p>The Clinical Resource for Introducing New LPN Competencies to assist managers in the clinical aspects of decision making about maximizing the scope of practice for LPNs.</p>

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
20. British Columbia Ministry of Health Services - Nursing Directorate	Mentorship, preceptorship programs Interprofessional Rural Placement Program - rotations in rural/remote community clinics Decision Support Tool: Guide for long-term care facilities to assist in HHR Nurse practitioners Team PHC (including inner-city deployment) Mental health workers Resident care and home support workers Loan Forgiveness Program for rural placements Student nursing as supernumeraries Return to Nursing Funds	UBC sponsors an Interprofessional Rural Placement Program that funds teams to work in clinics in remote communities thereby encouraging students to consider rural/remote placement upon graduation. Teams are made up of one medical student, physiotherapy student, and a nursing student. A program employs funding mentorship/preceptor activity for new graduates to serve in Aboriginal communities. A formal guide is used by long-term care facilities to decide if an LPN is required for a position versus an RN. In primary health care, three demo clinics have been established that each include a physician, nurse practitioner, pharmacist and physiotherapist.
21. Kivalliq Region of Nunavut	Community Therapy Assistant Integrated HHR planning Arctic College Nursing Program	Introduction of Community Therapy Assistant in Rankin Inlet who functions as a “cultural broker” to assist professional PTs, OTs and SLPs with language and follow-up.
22. Health and Social Services of the Government of Nunavut	HHR retention steering committee to develop strategies	A retention steering committee has been established to target areas of concern in the delivery of health services in the Far North.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
23. Northwest Territories Health and Social Services - Human Resources Planning	Telecare and telehealth programs Advanced Nurse Mentorship Program Integrated Service Model Team approach to community health care Local recruitment	The N.W.T. has many vacancies amongst health providers and uses many financial incentives to recruit locals. 24/7 Telecare and Telehealth programs are employed in the N.W.T. The development of an Integrated Service Model provides for a team approach to community health care. An Advanced Nurse Mentorship Program is in place.
ASSOCIATIONS AND INSTITUTIONS		
24. Canadian Medical Association	Examination of scopes of practice and agreements with national associations - multidisciplinary teams Ontario GPs under alternate funding plan for primary care Development of new delivery models Framework of Rurality Bursary program for First Nations and Inuit	The CMA has negotiated agreements with the national associations of nurses and pharmacists covering scopes of practice. The acceptance of scopes of practice has promoted the use of multidisciplinary teams in the delivery of health care. More than 2,000 GPs in Ontario have signed up for alternative funding programs in primary care.
25. Society of Rural Physicians of Canada	Examination of scopes of practice issues - primary health care in a team setting - retraining of family physicians in general surgery - retraining of family physicians in anesthesia Telehealth	The goal is to provide teams of providers (GPs, nurses and nurse practitioners, and others) who perform to their full scope of practice.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
26. Ontario College of Family Physicians	<p>Shared Care Model</p> <ul style="list-style-type: none"> - identification of roles and functions of collaborative partners in delivery of shared care - patient population - nature and type of services - practice setting - partners' skills 	<p>The Ontario College of Family Physicians and the Registered Nurses Association of Ontario developed a collaborative model of delivering shared care. The process is thought to optimize the skills and competencies of the health care providers and to tailor the practice to the needs of the patients.</p>
27. Canadian Nurses Association - HHR consultant	<p>Nurses and nurse practitioners</p> <ul style="list-style-type: none"> - provider teams in Community Health Care Centres - nurses operate congestive heart failure clinic - manage home care clinics - clinical nurse specialist assigned to acute care units and neonatal units - advanced training for nurses - student nurses working as “nurses” - LPN upgrading programs - Transition facilitator - recruiting home-grown talent - Inner-city “street” nurses - expanded use of RNs in emergency rooms <p>Decision Support Tools</p> <ul style="list-style-type: none"> - workload measurement systems - staff mix decision tools 	<p>Nurses and nurse practitioners are being incorporated into the development of provider teams in Community Health Care Centres or Clinics (New Brunswick example of primary care clinics run exclusively by nurse practitioners). In Ontario, nurses run the Congestive Heart Failure Care Clinic. In British Columbia and the United Kingdom, nurses, operating in teams, manage Home Care Clinics. Nurses are becoming more involved in case management and coordinating care. The CHSRF has sponsored a program in which a “Transition Facilitator” is hired to provide ongoing clinical support to nursing graduates for the first 15 months of their careers. Short-term (6 months) placements and sharing of health care providers between adjacent First Nations communities is being pursued. Street nurses are being hired by some major cities. In some hospitals, the charge nurse is being replaced by nursing staff liaising directly with the physician and working to their full scope of practice. Clinical nurse specialists are assigned to acute care neonatal and ICUs.</p>

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
28. Canadian Pharmacists Association	<p>Expanded scope of practice for pharmacists</p> <p>Pharmacy technicians</p> <ul style="list-style-type: none"> - more extensive use <p>Inclusion of pharmacists in PHC teams</p> <p>Primary health care provider</p> <ul style="list-style-type: none"> - managing medication - triage and assessing patients for Zantac - medication reviews - telepharmacy - health education - home care - home visits <p>Telehealth support to First Nations and Inuit communities</p>	<p>The role of pharmacists is expanding in scope. Pharmacy technicians are being used more extensively in Canada for mundane tasks in the delivery of medications.</p> <p>Pharmacists are expanding their role to include more in terms of the PHC provider role. In Alberta and B.C., pharmacists can manage dosages of anticoagulant medication. In Windsor, Ontario, pharmacists performed triage by assessing patients and purchasing Zantac and other acid-reducers. Pharmacists have expanded their scope of practice to home care, including medication reviews of patients, etc.</p> <p>Telepharmacy is used for prescription refills and supports First Nations communities in providing medication.</p>
29. Canadian Physiotherapy Association	<p>Physios working in PHC teams</p> <p>Rural placement</p> <ul style="list-style-type: none"> - placement during training - training and supervision <p>Role of physiotherapy support workers and increasing scope</p> <ul style="list-style-type: none"> - physiotherapist aides and assistants - telehealth 	<p>Rural placement during training is important to recruitment for rural settings. In Saskatchewan, rural service is accompanied by a telehealth service. Opportunity for increased placements in rural settings of physio support workers. Training and supervision are issues.</p> <p>Support workers in physiotherapy have received on-the-job training, but are not regulated or well-defined.</p>

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
30. Canadian Mental Health Association	Use of NPs, GPs and psychiatrists and mental health nurses - partnering in multidisciplinary teams, nurses in expanded roles: prescribing, monitoring and making medication adjustments - nurse practitioners provide primary mental health services to First Nations and Inuit communities	There is a supply of psychiatrists and mental health care nurses in Canada. In Windsor, Ontario, a nurse practitioner works as a partner in a multidisciplinary team prescribing, monitoring and making medication adjustments. Continuum of care breaks down between hospital and community.
31. Nurse Practitioners Association of Manitoba	Health Links Program - telephone health provider service - mobile health services, including needle exchange, dialysis and breast clinics - mobile mental health crisis team Midwifery program Telemedicine Distance education First Nations translators	Manitoba has a Health Links Program accepting telephone calls for patient's health service and advice. An on-call mobile mental health crisis team is available. Midwifery is available for care in the home or at a women's health clinic and in hospitals.
32. Canadian Healthcare Association	Work to full scope of practice for health care providers Review entry-to-practice credentials Exercise caution with unregulated workers, family members providing care Increased educational support for laboratory workers, radiology technicians, etc.	Major issue is upward creep of "credentialism." Barriers to expanded scope of practice also an issue. Education and training must be addressed to fill future needs.

RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION
33. Canadian Health Services Research Foundation	Special training for health care professionals working in the North Nursing deployment - knowledge of unique requirements of Northern practice Use of local paraprofessionals	Regarding First Nations, the ideal is to recruit and retain staff knowledgeable about the unique requirements of Northern practice and health issues. Examples of nursing deployment in the South Fraser Health Region of British Columbia include utilizing nurses to provide more community-based care and providing alternate-level care by nurses within the acute care system.
34. Canadian Institute for Health Information (CIHI)	Examination of jurisdictional issues - nurse practitioners' scope of practice	Information on HHR deployment not specifically collected by CIHI. CIHI is aware of jurisdictional issues surrounding nurse practitioners' scope of practice.
35. Canadian Institute for Health Information - MIS Guidelines	MIS Guidelines Workload measurement systems - standards for workload data measurements	The MIS Guidelines are a set of standards for collecting workload data, with 20 workload measurement systems for nursing, occupational therapy, respiratory technology, physiotherapy, diagnostic imaging, etc. The objective of MIS is to assist in determining budgets, resource allocation, staff and skill mixes, productivity assessment and FTE estimates.

<p>36. Canadian Association of Occupational Therapists</p>	<p>Primary health care clinics with occupational therapists Appropriate use of support personnel, including</p> <ul style="list-style-type: none"> - rehabilitation or therapy assistants - OT aides - occupational therapy assistants - OT technicians - care aides - case management assistant - other allied health assistants 	<p>OTs should be included in PHC clinics. The Association supports the inclusion of support personnel in the delivery of OT services. Collaborative HHR studies are fundamental to the development of new models of service delivery.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>
<p>37. Canadian Association of Advanced Practice Nurses</p>	<p>Nurse practitioners</p> <ul style="list-style-type: none"> - primary health care - acute care settings <p>Clinical Nurse Specialists</p> <ul style="list-style-type: none"> - ICUs - advanced therapeutics - pre-op assessments <p>First Nations and Inuit communities Rural/remote communities Emergency departments</p>	<p>Advanced practice nurses - nurse practitioners (NPs), conduct activities in two main areas of nursing: primary health care and acute care with highly specialized patient populations. The following are three examples of NPs' work: participating in multidisciplinary teams by making patient rounds with physicians; working in public health delivering antibiotics and becoming involved with infectious disease education; and working as "street" nurses in inner cities.</p>

<p>38. Health Employers Association of British Columbia</p>	<p>Resource Guide - explore and implement innovative scheduling - identify and implement innovative pilot scheduling projects</p>	<p>With the cooperation of the British Columbia Nurses Union, the objective of the Guide is to support nurse recruitment and retention and increase job satisfaction. The Guide is designed to assist managers, staff nurses and union representatives to explore and implement innovative work scheduling.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>

<p>39. Dalhousie University Faculty of Health Professions</p>	<p>Nurse practitioners - deployment on First Nations reserves Youth Centres - counselling Multidisciplinary teams - New Brunswick Extra-Mural Hospital Program - pharmacists working in communities prescribing antibiotics, providing health education and monitoring medications</p>	<p>Nurse practitioners are deployed in Eskasoni, Whycogomah and Mill Brook, three First Nations reserves in Nova Scotia. Innovative practices included the establishment of Youth Centres in Truro, Amherst and Pictou with senior community nurses providing pap-smears, birth control and morning-after pills. Non-cash incentives are important motivators in the deployment of health care personnel, such as time-off work arrangements, limited overtime and quality time at work. In PHC, the best initiatives are GPs working in multidisciplinary teams. New Brunswick's Extra-Mural Hospital Program was cited as an example for home care deployment.</p>
<p>40. Prince Edward Island LPN Registration Board</p>	<p>Broadening the LPNs' scope of practice - learning assessment tool for LPN evaluation Index of interdisciplinary collaboration - model used in strengthening collaboration in a primary care team</p>	<p>A study is currently under way to identify overlaps between LPN scope of practice and that of RNs. It is expected the study will broaden the LPN scope of practice. A prior learning assessment tool will evaluate LPNs wishing to continue their careers as RNs. A model used as an index of interdisciplinary collaboration is used in P.E.I. and considered useful in identifying the current extent of collaborative practice in primary care.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>

41. NORTH Network	<p>Telemedicine program to rural/remote Northern communities</p> <ul style="list-style-type: none"> - team delivery using physicians, nurses and allied health professions (OTs, PTs, nutritionists, diabetes educators) - telestroke application - emergency medicine - radiology - mental health - diabetes education 	<p>This is a telemedicine program providing services to over 800 patients a month in over 150 sites. The program improved access to physicians and allied health care professionals. Improvements in quality of care were noted in the evaluations, including the “tele-stroke” project, NORTH Network’s first emergency application. NORTH Network brought 14 hospitals and two First Nations communities together and developed a tele-radiology network for Northwestern Ontario.</p>
42. Telehealth Education Technology Resource Agency (TETRA) Program, St. John’s, NL	<p>Telehealth/telemedicine, including allied health professionals</p> <ul style="list-style-type: none"> - advanced practice nurses in coastal Labrador communities 	<p>TETRA provides assistance in implementing technology and telehealth services with audio and video links. The service is used by advanced practice nurses providing primary care services in remote coastal Labrador communities.</p>
INTERNATIONAL		
43. World Health Organization	<p>Scope of practice expansion for nurses and paramedical technicians</p>	<p>The discussion focussed on expansion of scope of practice, particularly at the nursing levels and the use of paramedical technicians.</p>
44. Ministry of Health, France	<p>Working Groups in various health workforce sectors to address HHR shortages Return-to-work incentives for nurses International recruitment</p>	<p>France is actively recruiting nurses in Spain and Poland. The ministry has created working groups for the various health workforce sectors to monitor and oversee HHR strategies.</p>
RESPONDENT	STRATEGY/PRACTICE	DESCRIPTION

<p>45. U.S. Department of Health and Human Services</p>	<p>Loan repayment strategies HPSA incentives Incentives for nursing training up career ladders Mentorship programs Nurses with expanded scope of practice Telehealth/telemedicine Area Health Education Center Program - clinical rotations of medical students</p>	<p>The Loan Repayment Strategy serves to address shortages of providers in underserved areas. The program offers loans to health students who are willing to serve in underserved areas for three years or more. The Area Health Education Center Program involves linking academic institutions through clinical rotations of medical students.</p>
<p>46. U.S. Department of Health and Human Services</p>	<p>Pharmacists are now providing disease management - patients with diabetes, asthma, high cholesterol, high-blood pressure, and anticoagulant therapy - with physician collaboration, assess patients, order drug therapy-related lab tests, administer drugs and monitor and adjust medication</p>	<p>Major shortages of licensed pharmacists in the U.S., which is the third largest health professional group. Pharmacy will, within the next decade, transform itself from a primarily product-centred profession to a patient-care oriented profession. Education and scope of practice is evolving and technicians are now assuming tasks traditionally undertaken by pharmacists.</p>
<p>47. U.S. National Institute of Health - Indian Health Services</p>	<p>Designation of Indian Reserves as HPSAs (staffing by U.S. Public Health Service) Incentives and support for training of Aboriginal health professionals Educational incentives Local recruitment of Aboriginal students</p>	<p>The National Institute of General Medicine (NIGMS) and the Indian Health Service (HIS) jointly established a new program designed to promote, develop and support centres to link the Native American community with research organizations. The program is designed to provide American Indian researchers with a sense of ownership for their research on issues that affect them.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>

<p>48. United Kingdom Department of Health - Scientists</p>	<p>Laboratory and radiation technologists - workplace schemes</p>	<p>The division is responsible for lab and radiation technologists. Various schemes are provided to the specified health personnel, including flex-time, flexible retirement and personal development.</p>
<p>49. United Kingdom Department of Health - Allied Health Professionals</p>	<p>Allied health providers - multi-skilling for therapists in home care Local recruitment to service rural areas Diversity recruitment Team Delivery Multi-skilled generalists Incentive programs for laboratory and radiation technologists Worklife improvement programs</p>	<p>Programs for physiotherapists, occupational therapists, etc. involving recruitment challenges in specific regions look to local populations and employ candidates as assistants by way of offering opportunities for more training. In home care, it is anticipated that the therapists' role will be expanded to include multi-skilling and avoid troops of health service personnel coming into the homes.</p>
<p>50. National Health Service - United Kingdom</p>	<p>Local hiring of HHR Return-to-work programs Changing workforce program Incentives for renewed deployment - growing role of assistants (physician assistants, midwifery assistants, radiography assistants, etc.) New positions: evercare nurses, home help, nurse prescribers, pharmacist prescribers</p>	<p>Deployment activities include extensive return-to-work incentives and changing workforce programs (which encourage work to full scope of practice without perceived encroachment across professional lines). Noted growing role of assistants in all the health professions.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>

<p>51. United Kingdom Department of Health - National Recruitment and Retention Project</p>	<p>Career Pathways and Skills Escalating Program - on-the-job training Changing Workforce program - use of support workers in health care</p>	<p>A new initiative, Career Pathways and Skills Escalating Programs, recruits from the local community and offers pre-employment programs followed by on-the-job training for support workers. Another program, Changing Workforce Program, initiates the use of support workers in physio and occupational therapy, assistant nurses and assistant midwives allowing professionals to undertake more clinical work.</p>
<p>52. United Kingdom Department of Health</p>	<p>Nurse prescribers Nurses now have been trained to prescribe from a formulary - more than 2,000 nurses are qualified to prescribe from an extended formulary Pharmacists trained as supplementary prescribers</p>	<p>More than 25,500 nurses can prescribe from a formulary and professional bodies representing allied health professionals are being added to the list of authorized prescribers.</p>
<p>53. Ministry of Health of New Zealand - Health Workforce Advisory Committee</p>	<p>Health delivery teams, including - specialists - GPs - midwives Workplace training of mental health workers Enrolled nurses (new category) Increased scope of practice for RNs</p>	<p>Health care in New Zealand is delivered by 21 District Health Boards (DHBs) They are developing health delivery teams of specialists, GPs and midwives. Special funding available for health programs delivered to the Maori population. One third of New Zealand's physicians are immigrants.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>

<p>54. Australia - Queensland Rural Medical Support Agency</p>	<p>Team delivery, including GPs and pharmacists Medication management plans for patients Data Research and Evaluation system for: - monitoring -workforce distribution -HHR planning</p>	<p>Data Research and Evaluation Information System provides training to LPNs to dispense medication and follow up, delineate workforce distribution and enhance proactive HHR planning. GPs and local pharmacists collaborate on a medication management plan for patients.</p>
<p>55. James Cook University - Rural Health and Workforce Research Unit Australia</p>	<p>Medical School in remote rural area Clinical training in rural settings working in teams - indigenous health worker - nurse in remote practice, isolated practice nurse - physician with specialized training skills in anesthesia, obstetrics and surgery Multidisciplinary teams</p>	<p>Undergraduate health professions programs at all universities in Australia have compulsory clinical training in rural settings to promote rural placement. Three-tiered approach used in rural health service: Indigenous health worker is first point of contact who after initial assessment moves patient to the remote area nurse who then may move patient to a physician. Each level functions to a full scope of practice. Team approaches are also employed where three health providers travel together. Rural GPs are eligible for specialized training in anesthesia, obstetrics and surgery.</p>
<p>RESPONDENT</p>	<p>STRATEGY/PRACTICE</p>	<p>DESCRIPTION</p>

<p>56. National Health and Medical Research Council of Australia - Training and Employment Strategy for Aboriginals Torres Strait Islander Health Workers</p>	<p>Recruitment of Aboriginal health community workers</p> <ul style="list-style-type: none"> - nurses with advanced nurse competencies to serve remote/rural areas - nurses with remote area competencies - physicians with specialized training in rural medicine - Aboriginal and Torres Strait Islander Health Workers 	<p>The Aboriginal community-controlled health services (ACCHS) are primary health care services developed by local Aboriginal communities to deliver holistic and culturally appropriate care. Services range from single nurse or physician to multidisciplinary teams. The majority of Australia's Aboriginal population uses the ACCHS.</p>
<p>57. World Bank Institute</p>	<p>Rotational locums</p> <ul style="list-style-type: none"> - physicians and nurses deployed for vaccination programs <p>Rural areas served by village healers</p>	<p>Most successful deployment practices observed by the Bank consist of short-term rotational locums of physicians and nurses for vaccination programs. Rural areas of Third World countries tend to be primarily served by traditional village healers.</p>

4.0 CONCLUSIONS, CRITICAL SUCCESS FACTORS AND RECOMMENDATIONS

4.1 CONCLUSIONS

As the literature review and the environmental scan have brought to light, recent changes in the organization of health care prompted by the emphasis on PHC and community-based models require a "reconceptualization" of models of health care delivery, including the deployment of HHR. A new workforce policy framework, which effectively promotes innovative and responsive deployment practices, and provides for clear role redefinitions and use of new types of providers in community-based care, is seen to be essential. The management of the potential for conflict arising from expanded scope of practice and substitutions must also be effectively addressed. This new framework must integrate conceptual issues, which include the continuum of care, continuity of care, as well as the effective deployment of the full complement of HHR.

Skills substitution and expanded scope of practice for existing health care providers have been shown to be a major deployment strategy to deal with workforce imbalances, including shortages and maldistribution. The use of substitute professionals may reduce demand on more "costly" and specialized health care professionals. Likewise, the application of technological deployment methods has increased access to health care services in many remote and isolated communities. As many studies have pointed out, and as underlined by respondents in this study, the reconfiguration of the health care landscape, brought about by several decades of health reform, necessitates moving HHR planning and management from a profession-specific approach, to one that is more closely linked to population health planning and is needs-driven. This would entail moving from planning for the supply of health professionals to planning for health services, with delivery provided by the optimal mix of providers and in various setting configurations.

This study has highlighted an increase in the use of the multidisciplinary and the interdisciplinary team to deliver PHC services in community-based care, with various personnel configurations being utilized, ranging from various formulas employing family doctors, nurse practitioners, licensed practical nurses, pharmacists, nutritionists, and many others. Studies on the effectiveness of HHR skill substitution and expanded scope of practice have shown the sustainability of this model in terms of cost-effectiveness, positive health outcomes, and reduced burden on institutional services. Canada has been said to lag behind other countries in HHR innovative deployment of skill substitution, with nurse practitioners' roles not widely accepted in the health care mainstream, and midwives still not recognized in many provinces. A Health Canada (1996) study, *Health Human Resources in Community-Based Health Care: A Review of the Literature*, reports that "reverse substitution" in effect is practised in Canada, whereby highly trained and qualified personnel take over functions, which have been performed by lower-level personnel. Examples of this include the demise of the dental therapy Program for children in Saskatchewan, the displacement of licensed practical nurses by RNs in many hospitals, and the management of uncomplicated pregnancies by OB/GYNs (a practice formerly

performed by family doctors). This trend should be carefully assessed by policy makers in light of practices that have been successfully applied in other jurisdictions.

As a result of recent policy shifts to population-based health planning, the emphasis on P HC, changes in the organization and delivery of health services, and the focus on patient-centred outcomes, it will be important for policy makers to approach HHR planning and deployment from this perspective. It is suggested that this new approach must relate HHR planning to overall health objectives and be outcomes driven; it must be comprehensive in including all health professions; and it must be pan-Canadian in scope, and adopt a longer-term viewpoint.

4.2 CRITICAL SUCCESS FACTORS

4.2.1 Preferred Practices for Deployment

As this study has demonstrated, innovative deployment strategies have been introduced in response to situations of HHR shortages and problems of access to care. Most deployment practices identified have involved creative approaches to providing health care through a variety of methods, which primarily include substitutions of professionals; utilization of health care professionals to their full scope of practice; expansion of traditional scopes of practice; use of advanced technologies, such as telehealth and telemedicine applications; utilization of paraprofessionals; introduction of new categories of workers, and increased mobility of health professionals.

Critical success factors, which have been noted by the study team in its analysis of the more successful HHR deployment practices examined as part of this study, can be summarized as follows:

Successful HHR deployment practices are based on clearly established population and health needs-based approaches, which are articulated in health policies and strategies (rather than being ad hoc practices);

Successful HHR deployment practices are clearly defined, with coherent scopes of practice, and must be clearly articulated to both the health profession deployed and to other associated professional groups working with this profession;

Successful HHR deployment practices are based on clearly defined standards of practice, which must be enforced by the provincial executive authority and supported by the required legislative and regulatory framework;

Successful HHR deployment practices are generally accompanied by the required education and training to support the new skills and capacities needed to provided the health services;

Successful HHR deployment practices are founded on evidence-based best practices, which have been demonstrated through evaluation studies;

Criteria for successful HHR deployment practices must include patient outcomes, patient satisfaction, quality of services, efficiency, effectiveness and value for money.

Information and findings on successful deployment practices should be exchanged and discussed between health authorities and health managers.

4.2.2 Decision Support Tools

The project team was unable to identify many decision support tools as part of the literature review and environmental scan. The lack of applicable findings in this area points to major gaps in the widespread use and/or literature available on the use of decision support tools in deploying HHR. In general, and surprisingly, there appears to be little use of decision support tools to introduce new HHR deployment practices, both in Canada and internationally among the countries surveyed.

Most decision support tools encountered are theoretical models, some were management information systems, and others were workload measurement instruments, whose validity and reliability were questioned, and which are not generally used to support management decisions made at a macro level about HHR deployment.

The study brought to light scant evaluation information to support managerial decisions about HHR resource allocations, and very little costing information or cost-benefit analysis available beyond the staffing unit level.

Many HHR deployment practices appear to be introduced with little prior study or analysis of costs (including opportunity costs), but, understandably, they are introduced to respond to policy imperatives, namely access, equitability, etc., required by the provisions of the *Canada Health Act*. More study and analysis in this area would appear to be warranted, in particular to gain better information on which practices work, which are less successful, and what measures can be adopted to improve HHR deployment practices.

4.3 RECOMMENDATIONS

Evolving models of health care delivery require new HHR planning approaches and deployment strategies, which take into account:

- the emerging importance of PHC models of delivery;
- an outcome orientation and a population needs-based approach;
- an integrated workforce HHR planning approach;
- the promotion of interdisciplinary team models and collaborative practices;
- enhanced responsiveness and flexibility in addressing worklife issues;

- optimization of HHR skills substitution, expansion of scopes of practice and increased recognition of other non-traditional care providers (e.g. midwives, traditional healers);
- flexibility and responsiveness in HHR funding mechanisms; and
- technologies that enable improved access to health care and optimal deployment of HHR.

As such, it is recommended that:

1. Education and training for health professions should reflect and promote these new models and deployment strategies to ensure that graduates possess all of the required skills and professional competencies;
2. Service delivery models be developed that optimize and maximize skill substitution and expanded scopes of practice of health professions. This should include clear definitions of these scopes of practice; communication of these scopes of practice to associated health team members and other key stakeholders; and the establishment of coherent boundaries for professional practice;
3. Legal and regulatory frameworks be put in place to support new policy directions to encourage full and expanded scope of practice for health professionals;
4. HHR licensing and regulatory requirements in federal, provincial, and territorial jurisdictions be reviewed and coordinated to provide for consistency in standards and allow for the portability of health professions within Canada;
5. The use of technologies that enhance deployment of HHR and improve access to health services continue to be explored;
6. The recognition of non-traditional health care and new categories of health care providers be examined;
7. Policy makers promote greater diversity of HHR and target the recruitment of more minority groups, including First Nations, Inuit and Métis health professionals into the workforce;
8. Recruitment efforts and training opportunities, including the use of clinical rotations be undertaken in underserved areas so as to attract health care providers to practise in these regions;
9. Government-funded educational and training positions reflect and support HHR requirements as defined by these new workforce policy directions;
10. National approaches to coordination of HHR planning and deployment issues, in view of the difficulty of applying regional or local solutions to HHR challenges;

11. Greater international collaboration for HHR planning, including the development of international labour market data bases;
12. Care be exercised regarding international recruitment, as this practice creates imbalances in other geographic areas and places developing countries, many of which are experiencing acute HHR shortages and are not able to compete with more affluent economies, at a serious disadvantage in providing health care services to their populations.
13. Innovative deployment practices are supported by clear evidence-based research;
14. More evaluation studies of innovative deployment practice be undertaken to analyse their clinical and financial implications, and as a basis upon which to expand or replicate these practices.

5.0 BIBLIOGRAPHY

- Adams, John. 1998. Medical resources and manpower. *Canadian Journal of Rural Medicine*, 3(2): 101-107
- Adams, O. (1994). Reprofitting human resources: transferring care from hospital to community. *Leadership in Health Services*, 3: 13-17.
- Advisory Committee Health Delivery and Human Resources. 2003. *A Report on The Nursing Strategy for Canada*. Health Canada
- Alberta Telehealth Network. 2003. *Alberta: Moving Primary Health Care Forward*
- American College of Physicians-American Society of Internal Medicine. 2002. Pharmacist scope of practice-position paper. *Annals of Internal Medicine*, 136(1): 79-85
- American Nurses Association-Nursing Facts. 1995. Advance Practice Nursing: A New Age in Health Care. Retrieved May 20th, 2004 from <http://nursingworld.org/readroom/fsadvprc.htm>
- Anderson, C. (2000). Health promotion in community pharmacy: the UK situation. *Patient Education & Counseling*, 39: 285-291
- Atkinson, A., and Hull, S. 2001. *Health Human Resources Supply and Demand Analysis*. Prince Edward Island Advisory Committee on Health Human Resources
- Australian Medical Workforce Advisory Committee and Australian Health Workforce Advisory Committee. April 2004. *Health Workforce Intelligence*, 4(3)
- Australian Medical Workforce Advisory Committee and Australian Health Workforce Advisory Committee. November 2003. *Health Workforce Intelligence*, 3(10):1-4
- Backman, A. 2000. Job satisfaction, retention, recruitment and skill mix for a sustainable health care system. Health WORCS. Saskatchewan. Retrieved from: www.health.gov.sk.ca/mc_dp_worcs
- Baer, Leonard D., T.C. Ricketts, T.R.Konrad and S.S. Mick. 1998. *Do international medical graduates reduce rural physician shortages?* *Medical Care* 36 (11): 1534-1544
- Barer, M. and Stoddart, G. 1999. *Improving access to needed medical services in rural and remote Canadian communities: recruitment and retention revisited*. Discussion paper prepared for Federal/Provincial/Territorial Advisory Committee on Health Human Resources
- Barer, Morris L., L. Wood, D.G. Schneider. 1999. *Toward improved access to medical services for relatively underserved populations: Canadian approaches, foreign lessons*. Centre for Health Services and Policy Research. UBC

Bauman, A., Blythe, J., Kolotylo, C. and Underwood, J. 2004. Building the future: an integrated strategy for nursing human resources in Canada. The International Nursing Labour Market. The Nursing Sector Study Corporation, Canada

Baumgart, A. J. (1997). Hospital reform and nursing labor market trends in Canada. *Medical Care*, 35, OS124-OS131

BC Health Care. 2002. Rural Programs 02-04: *A guide for rural physician programs in British Columbia*. British Columbia Medical Association

BC Health Services. 2004. *Making Progress: primary health care renewal in British Columbia; putting patient's first*

Berman, S., and Shah P. 2003. *Report on Expanding Areas of Employment Within Health Care for Health Support Staff*. Human Resources Development of Canada (HRDC) and Hospital Employee's Union (HEU)

Betkus, M.H. and MacLeod, M. 2004. *Retaining public health nurses in rural British Columbia, the influence of job and community satisfaction*. *Canadian Journal of Public Health*, 95(1)

Birenbaum, R. 1994. Nurse Practitioners and Physicians. Competition or Collaboration? *Canadian Medical Association Journal*

Bleich, M. R., Hewlett, P. O., Santos, S. R., Rice, R. B., Cox, K. S., & Richmeier, S. (2003). Analysis of the nursing workforce crisis: a call to action. *AJN, American Journal of Nursing*, 103: 66-74

Blomqvist, A. 2001. International health system comparisons: lessons for Canada. Study completed for the Kirby Study Committee

Boone, M., Minore, B., Katt, M., & Kinch, P. 1997. Strength through sharing: interdisciplinary teamwork in providing health and social services to northern native communities. *Canadian Journal of Community Mental Health*, 16: 15-28

Borkenhagen, R. H. 1996. Walk-in clinics and time management. Fresh insights as family practices adapt. *Canadian Family Physician*, 48: 437-439

British Columbia's Primary Health Care. 2004. *Making Progress: Primary Health Care Renewal in British Columbia*

Broadcast Resource Guide. *Cross-Cultural Communication in Health Care: Building Organizational Capacity*. Retrieved June 2, 2004 from <http://www.hrsa.gov/financemc/broadcast/resource-guide.htm>

Buchan, J. 2000. Health Sector reform and Human Resources: Lessons from the United Kingdom. *Health Policy and Planning*; 15(3): 319-325

"Buchan, J. 2001. *Determining Skill Mix: An International Review*. Retrieved from http://hrhtoolkit.forumone.com/mstr_skill_mix/index.html

Bureau of Health Professions National Center for Health Workforce Information and Analysis. HRSA State Health Workforce Data Resource Guide. U.S. Department of Health and Human Services

Canadian Alliance of Community Health Centre Associations. 2002. What is a Community Health Centre?

Canadian Alliance of Physiotherapy Regulators and the Canadian Physiotherapy Association. 2002. Physiotherapy Health Human Resources. Background Paper. Submitted to Health Canada Health Human Resource Strategies Division. Retrieved from www.physiotherapy.ca

Canadian Association of Occupational Therapists. 2004. CAOT Position Statements (2003) Retrieved June 8, 2004, from www.caot.ca/default.asp?ChangeID

Canadian Association for Health Services and Policy Research. Retrieved April 14, 2004, from <http://www/cahspr.ca/>

Canadian Healthcare Association-Health Care Publications Catalogue-Books about human resources from CHA Press. Retrieved April 14, 2004, from <http://www.cha.ca/publishing/human.htm>

Canadian Institute for Health Information. 2001. Future development of information to support the management of nursing resources: recommendations

Canadian Institute for Health Information-Health Human Resources. Retrieved April 15, 2004, from http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=hhrdata_e

Canadian Institute for Health Information-Health Services. Retrieved from April 15, 2004, http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=services_e

Canadian Institute for Health Information-Publications. Retrieved April 15, 2004, from http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=pub_e

Canadian Institute for Health Information-Workforce Trends of LPNs. Retrieved April 19, 2004, from http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_16oct2003_e

Canadian Institute from Health Information; Health Human Resources Databases. Retrieved April 15, 2004, from http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=hhrdata_e

Canadian Labour and Business Centre. 2003 *Physician Workforce in Canada: Literature Review and Gap Analysis*. Final Report. Prepared for Task Force Two: A Physician Human Resource Strategy for Canada

Canadian Mental Health Association. Info Centre. Retrieved from http://www.cmha.ca/english/info_centre/index.html

Canadian Nurses Association Fact Sheet. 2001. Role of Nurse Practitioners Around the World
Canadian Pharmacists Association. Retrieved from http://www.pharmacists.ca/content/about_cpha/who_we_are/board_of_directors/board_member_s.cfm

Capital Health, Government of Alberta. 2004. Innovative clinics improve access to specialists. News release January 21, 2004. Retrieved May 10, 2004, from www.gov.ab.ca/acm/200401/15771.html

Centre for Health Services and Policy Research. 1992. *A human resources decision support model: nurse deployment patterns in one Canadian system*. Health Human Resources Unit Research Reports HHRU 92:4R

Chalmers, K. I., Bramadat, I. J., & Andrusyszyn, M. A. 1998. *The changing environment of community health practice and education: perceptions of staff nurses, administrators, and educators*. *Journal of Nursing Education*, 37: 109-117

Chaytors, R. G. & Spooner, G. R. 1998. *Training for rural family medicine: a cooperative venture of government, university, and community in Alberta*. *Academic Medicine*, 73: 739-742

Church, J., Saunders, Wanke, M. and Pong, R. 1995. *Component 2: Organizational Models in Community-Based Health Care: A Review of the Literature*. Health Care Network. Retrieved April 20, 2004, from <http://www.hc-sc.gc.ca/hppb/healthcare/pubs/foundation/component2.htm>

CIET Canada in Collaboration with Health Canada and the University of Ottawa. 1999. Local Evidence-based Planning in Atlantic Canada: Panel Discussions from a Colloquium

CIHI directions ICIS. July/August 2001. CIHI reports moderate rise in registered nurses workforce, fewer RNs working on casual basis, more working full-time

Clarke, H. F. & Mass, H. 1998. Comox Valley Nursing Centre: from collaboration to empowerment. *Public Health Nursing*, 15: 216-224

Clinical Services Steering Committee. 2001. Making Better Health Care Decisions for Nova Scotia

Cloutier, A. 2000. La télémédecine au service des régions: Un projet de démonstration aux Iles-de-la-Madeleine. Health Transition Fund Report

Cockerill, R., Scott, E. and Wright, M. 1994. Responding to workload measurement needs. *Canadian Journal of Occupational Therapy*, 61(4): 219-221

Cockerill, R., Scott, E. and Wright, M. 1995. Interest among occupational therapy managers in measuring workload for case costing. *American Journal of Occupational Therapy*

Cohen, J. A., Palumbo, M. V., & Rambur, B. 2003. Combating the nursing shortage. Vermont's call to action. *Nursing Leadership Forum*, 8: 3-12

Curtin Indigenous Research Centre, Centre for Educational Research and Evaluation Consortium and Jojara & Associates. A National Review of Aboriginal and Torres Strait Islander Health Worker Training. Office for Aboriginal and Torres Strait Islander Health. Australia. Retrieved from <http://www.health.gov.au/oatsih/pubs/pdf/healthworker.pdf>

D. Parker-Taillon and Associates. 2003. Background Paper on Occupational Therapy Human Resource Data: Sources, Utilization, and Interpretative Capacity. Prepared for the Canadian Association of Occupational Therapists

Dalhousie University-School of Nursing-BScN (Arctic Nursing). Retrieved April 14, 2004, from http://is.dal.ca/~son/nursing_495.html

Decter, M. B. 1997. Canadian hospitals in transformation. *Medical Care*, 35, OS70-OS75

Denis, Hean-Louis, M. Beaulieu, Y. Hebert, A. Langley, D. Lozeau, R. Pineault, L. Trottier. 2001. Canadian Health Services Research Foundation

Department of Health (UK). Emergency care project team. Retrieved May 21, 2004, from <http://www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/EmergencyCareArticle>

Department of Health (UK). January 2004. Local Pharmaceutical Services (LPS) Guidance Notes. Third Wave (2004) Applications

Department of Health, (UK). 2004. Delivering the HR in NHS Plan 2004. Capacity and Corporate Communications. Retrieved from <http://www.dh.gov.uk>

Department of Health, (UK). 2004. Pharmacy in the Future-Implementing the NHS Plan. Sept. 2000. Retrieved from www.dh.gov.uk/policyandguidance/medicinespharmacyandindustry/localpharmaceuticalservices

Department of Health. Delivering HR with attitude; Leading people; leading progress. Retrieved May 18, 2004, from <http://www.dh.gov.uk>

Department of Health and Community Services. 2002. *Partnering for Health: A Strategic Health Plan for Newfoundland and Labrador*

Diallo, K., Zurn, P., Gupta, N., Dal Poz, M. 2003. *Monitoring and Evaluation of Human Resources for Health: An International Perspective*. Human Resources for Health. Retrieved from <http://www.human-resources-health.com/articles/browse.asp>

Docteur, E and Oxley, H, 2003. Health Care Systems: Lessons from the Reform Experience. OECD Health Working Papers (9)

Doze, S., Simpson, J., Hailey, D. and Jacobs, P. 1999. Evaluation of a Telepsychiatry Pilot Project. *Journal of Telemedicine and Telecare*

Dreyer, N. C., Dreyer, K. A., Shaw, D. K., & Wittman, P. P. 2001. Efficacy of telemedicine in occupational therapy: a pilot study. *Journal of Allied Health*, 30: 39-42

Dussault, G. and Dubois, C.A. 2003. *Human Resources for Health Policies: A Critical Component in Health Policies*. Human Resources for Health <http://www.human-resources-health.com/articles/browse.asp>

Dussault, G., and Rigoli, F. 2003. *The Interface between Health Sector Reform and Human Resources in Health*. Human Resources for Health. Retrieved from <http://www.human-resources-health.com/articles/browse.asp>

Easterbrook, M., Godwin, M., Wilson, R., Hodgetts, G., Brown, G., Pong, R. et al. 1999. Rural background and clinical rural rotations during medical training: effect on practice location. *CMAJ Canadian Medical Association Journal*, 160: 1159-1163

Egger, E., Lipson, D. and Adams, O. 2000. *Achieving the right Balance: The role of policy-making processes in managing human resources for health problems*. World Health Organization

Eliasoph, H., & Ashdown, C. 1995. Development, Testing and Implementation of an Emergency Services Methodology in Alberta. Health Care Management Forum

Evidence and Information for Policy Department of Health Service Provision World Health Organization. 2002. Imbalances in the health workforce. Report of a technical consultation. Ottawa, Canada

Farrell, S. P. & McKinnon, C. R. 2003. Technology and rural mental health. *Archives of Psychiatric Nursing*, 17: 20-26

Fidelman, C. May 1, 2004. Psychiatry network 'in crisis'; Quebec short 200 Practitioners; no relief in sight for overloaded doctors; too few students coming from med school. Montreal Gazette.

First Nations and Inuit Health Branch. 2000. National Information Sharing and Feedback Session on the Potential Future of Telehealth in First Nations and Inuit Communities Final Report. Assembly of First Nations Inuit Tapirisat of Canada and Health Canada

- Forest, Pierre-Gerlier. 1997. Les régimes d'équité dans le système de santé du Québec. *Canadian Public Policy - Analyse de Politiques*, 23(1):55-68.
- Frere, D. 2000. The Little Project that could: The Story of Primary Health Care Project. Health Transition Fund Report-Alberta Health and Wellness
- Friedland, J., Polatajko, H., & Gage, M. 2001. Expanding the boundaries of occupational therapy practice through student fieldwork experiences: description of a provincially funded community development project. *Canadian Journal of Occupational Therapy - Revue canadienne d'ergothérapie*, 68: 301-309
- Gillett, J., Hutchison, B., & Birch, S. 2001. Capitation and primary care in Canada: financial incentives and the evolution of health service organizations. *International Journal of Health Services*, 31: 583-603
- Gore, Brian. May 1, 2004. The family doctor crunch. *Montreal Gazette*.
- Government of Alberta and Capital Health. 2004. News Release: Innovative clinics improve access to specialists. Retrieved April 12, 2004, from <http://www.gov.ab.ca/can/200401/15771.html>
- Government of Alberta. Health Summit '99 Delegate Recommendations. Health and Wellness. Retrieved from http://www.health.gov.ab.ca/resources/publications/summit99_q2.html
- Gray, S. 1997. Labrador program prepares MDs for northern, remote practice. *CMAJ Canadian Medical Association Journal*, 157: 1429-1430
- Greene, J. March 12, 2001. Growing ranks: Benefits of collaboration with Nurse Practitioners. *Amednews.com The Newspaper For America's Physicians*. Retrieved May 5, 2004, from <http://www.ama-assn.org/amednews/2001/03/12/prsa0312.htm>
- Greenlaw, B. 2003. Licensed Practical Nurses: Current Utilization. Hospital Employees' Union. Burnaby, B.C.
- Hannah, K. J. 1995. Transforming information: data management support of health care reorganization. *Journal of the American Medical Informatics Association*, 2: 147-155
- Harrison, S. & Choudhry, N. 1996. General practice fundholding in the UK National Health Service: evidence to date. *Journal of Public Health Policy*, 17: 331-346
- Health Canada. 1996. Health Human Resources In Community-Based Health Care: A Review of the Literature

Health Canada. 2001. An Environmental Scan of the Human Resources Issues Affecting Medical Laboratory Technologists and Medical Radiation Technologists 2001. Retrieved May 14, 2004, from http://www.hc-sc.gc.ca/hppb/healthcare/pubs/environment_scan/index.html

Health Canada. 2003. Health Policy Research Bulletin- Closing the Gaps in Aboriginal Health. Retrieved April 12th, 2004 from <http://www.hc-sc.gc.ca/iacb-dgiac/arad-draa/english/rmdd/bulletin/aboriginal.html>

Health Canada. Alberta First Nations Telehealth Program: program overview. Retrieved from http://www.hc-sc.gc.ca/fnihb-dgspni/fnihb/phcph/telhealth/alberta_telehealth.html

Health Canada. Advisory Committee Health Delivery and Human Resources 2003. A report on the nursing strategy for Canada

Health Canada-Health Care Network-Health Human Resources. Retrieved May 19, 2004, from http://www.hc-sc.gc.ca/hppb/healthcare/health_resources.htm

Health Canada-Health Care Network-Steady State-Finding a Sustainable Balance Point. Retrieved May 19, 2004, from http://www.hc-sc.gc.ca/hppb/healthcare/pubs/steady_state/index.html

Health Canada-Health Promotion and Programs Branch. 1996. Health Human Resources in Community-based Health Care: A Review of the Literature

Health Care Human Resource Sector Council. 2003. A Study of Health Human Resources in Nova Scotia. Human Resources Development Canada. Retrieved from <http://www.gov.ns.ca/health/reports>

Health Innovation Awards. 2004. Retrieved from <http://www.healthinnovationawards.co.nz/about.html>

Health Workforce Advisory Committee. 2003. The New Zealand Health Workforce Future Directions-Recommendations to the Minister of Health. <http://www.hwac.govt.nz>

Health Workforce. Retrieved May 28, 2004, from <http://www.health.gov.au/workforce/index.htm>

Health Workforce-Workforce Advice to Medical Practitioners-Policy guidelines for determining a district of workforce shortage. Retrieved May 28, 2004, from <http://www.health.gov.au/workforce/workforce/policy.htm>

Heitlinger, A. 2003. The paradoxical impact of health care restructuring in Canada on nursing as a profession. *International Journal of Health Services*, 33: 37-54

Henderson, B. M. & MacLeod, M. L. 2004. Retaining public health nurses in rural British Columbia: the influence of job and community satisfaction. *Canadian Journal of Public Health*,

Revue canadienne de santé publique. 95: 54-58.

Henderson, R. W. 1997. Staffing rural hospitals. Strategies for survival. *Canadian Family Physician*, 42, 1057-1059

Hopkins, A., Solomon, J., & Abelson, J. 1996. Shifting boundaries in professional care. *Journal of the Royal Society of Medicine*, 89: 364-371

Houston, A.M. and Clifton, J. 2001. Corporate working in health visiting: a concept analysis. (UK) *Journal of Advanced Nursing*, 34(3): 356-366

HRSA Bureau of Health Professions. 1999. *The Pharmacists Workforce: A Study of the Supply and Demand for Pharmacists*. Retrieved from <http://bhpr.gov/healthworkforce/reports/pharmacists.htm>

Hughes, Frances. 2003. Nursing Sector Updates. Ministry of Health, New Zealand. Retrieved July 22, 2004, from <http://www.hog.govt.nz>

Human Resources and Training. Retrieved May 5, 2004, from <http://www.dh.gov.uk/PolicyAndGuidance/HumanResourcesAndTraining/fs/en>

Human Resources For Health . Retrieved April 12, 2004, from <http://www.human-resources-health.com/>

Human Resources for Health. Retrieved May 18th, 2004 from <http://www.human-resources-health.com/articles/browse.asp>

Hutten-Czapski, P., Konkin, J., and Larsen-Soles, T. 2003. Primary Care Renewal Policy. Society of Rural Physicians of Canada

InterRAI, 2004. Case-Mix Funding. Retrieved from www.interrai.org/applications/casemixfunding.php. June 18, 2004

Jenkins, R. L. & White, P. 2001. Telehealth advancing nursing practice. *Nursing Outlook*, 49: 100-105

Kazanjian, A., Pulcins, I.R., Kerluke, K. 1992. A human resource decision support model: nurse deployment patterns in one Canadian System. *Hospital & Health Services Administration*, 37(3): 303-319

Kazanjian, A., Rahim-Jamal, S., Macdonald, A., Wood, L. and Cole, C. 2000. Nursing Workforce Study Volume IV, Nursing Workforce Deployment: A survey of Employers. Health Human Resources Unit Centre for Health Services and Policy Research, UBC

Keely, J. L. & American College of Physicians-American Society of Internal Medicine. 2002

Pharmacist scope of practice. *Annals of Internal Medicine*, 136: 79-85

Kolehmainen-Aitken, Riitta-Liisa. 2004. Decentralizations impact on the Health Workforce: Perspectives of Managers, Workers and National Leaders. Human Resources for Health. Retrieved from <http://www.human-resources-health.com/articles/browse.asp>

Lauder, W., Sharkey, S., & Reel, S. 2003. *The development of family health nurses and family nurse practitioners in remote and rural Australia*. *Australian Family Physician*, 32: 750-752

Leatt, P., Pink, G. H., & Naylor, C. D. 1996. Integrated delivery systems: has their time come in Canada? *CMAJ Canadian Medical Association Journal*, 154: 803-809

Leonard, L. G. 1998. Primary Health Care and partnerships: collaboration of a community agency, health department, and university nursing program. *Journal of Nursing Education*, 37: 144-148

Local Pharmaceutical Services (LPS). 2004. Guidance Notes. Department of Health. United Kingdom. Retrieved from <http://www.dh.gov.uk/PolicyAndGuidance/MedicinesPharmacyAndIndustry/LocalPharmaceuticalServices>

Lynn, M. M., Achtmeyer, C., Chavez, C., Zicafoose, B., & Therien, J. 1999. The evolving role of advanced practice nursing within the new Veteran's Health Administration. *Health Care Management Review*, 24: 80-93

Mable, Ann L., & Marriott, J. 2002. Finding a Sustainable Balance Point: International Review of Health Workforce Planning. Health Canada, Health Human Resource Strategies Division

Martin, P. April 26, 2004. Medicare made easy. *The Globe and Mail*

Martinez, J., Collini, L. and Martineau, T. 1999. A Review of Human Resources: Issues in the Health Sector-Briefing Paper. DFID-Health Systems Resource Centre
<http://www.healthsystems.org/cf/search/index.cfm>

Martin-Misener, R. & Black, J. 1998. Using the evaluation of the Dalhousie Outpost Nursing Program for responsive social action. *International Journal of Circumpolar Health*, 57 (1): 96-99

Mass, Heather. Making best use of every healthcare provider's knowledge and skill.

Masterson, A. 2002. Cross-boundary working: a macro-political analysis of the impact on professional roles. *Journal of Clinical Nursing*, 11: 331-339

McElheran, W. 2000. Alberta Primary Health Care Project: Shared mental Health Care in Primary Care Practice. Health Transition Fund Report

Merwin, E. I., Goldsmith, H. F., & Manderscheid, R. W. 1995. Human resource issues in rural mental health services. *Community Mental Health Journal*, 31: 525-537

Micco, A. 2001. Primary Care Demonstration Project: Final Report. Health Transition Fund Report-Ministry of Health B.C.

Millar, John. 2001. Physician supply in Canada: How much is enough? *Hospital Quarterly*. Summer: 44-47

Millsteed, J. 2000. Issues affecting Australia's rural occupational therapy workforce. *Australian Journal of Rural Health*, 8: 73-76.

Ministry of Health Services of BC. 2004. Health professions council shared scope of practice model working paper. Ministry of Health Services: Government of British Columbia. Retrieved April 22, 2004, from <http://www.healthservices.gov.bc.ca/leg/hpc/review/shascope.html>

Ministry of Health, Ontario. 2004. Supporting Interdisciplinary Practice: The Family Physician Nurse Practitioner Educational and Mentoring Program

Minore, B. & Boone, M. 2002. Realizing potential: improving interdisciplinary professional/paraprofessional health care teams in Canada's northern Aboriginal communities through education. *Journal of Interprofessional Care*, 16: 139-147

Minore, B. & Boone, M. 2002. Working Paper W01-10. Realizing Potential: An Argument for Improving Interdisciplinary Professional/Paraprofessional Health Care in Canada's Northern Aboriginal Communities. Centre for Rural and Northern Health Research, Laurentian University and Lakehead University

MOH: Nurse Practitioners in New Zealand. Retrieved May 26, 2004, from <http://www.moh.govt.nz/moh.nsf>

National Association of Pharmacy Regulatory Authorities-Pharmacy Licensing Authorities' Links. Retrieved May 5, 2004, from <http://www.napra.ca/docs/0/745.asp>

National Health and Medical Research Council. 1997. A National Training and Employment Strategy. Aboriginal and Torres Strait Islander Health Workers and professionals working in Aboriginal and Torres Strait Islander Health, Australia. Retrieved from <http://www.health.gov.au/nhmrc/publication/wfhome.htm>

National Health Service (UK) Modernisation Agency. 2003. New ways of working. Retrieved June 15, 2004, from www.modern.nhs.uk/scripts/default.asp?site_id=47

New Zealand Ministry of Health. 2004. New Zealand Health Innovation Reward Profiles of Finalists 2004. Retrieved from <http://www.healthinnovationawards.co.nz/about.html>

News Round-Up 2004. Retrieved May 21, 2004, from http://www.nurse-prescriber.co.uk/news/news_roundup.htm

Nicki Sims-Jones. 2003. The Eskasoni primary care project. (Pg.14-17) in Health Policy Research Bulletin - Closing the Gaps in Aboriginal Health. Minister of Public Works and Government Services Canada

Norrish, B. and Rundall, T. 2001. Hospital restructuring and the work of registered nurses. *The Millbank Quarterly*, 79(1): 55-79

North Network, 2004. Summary Document sent by Dr. Ed Brown June 2004. Retrieved from www.northnetwork.com.

Northwest Territories Health and Social Services. 2002. Retention and Recruitment Plan for The Northwest Territories' Allied Health Care Professionals, Nurses and Social Workers

Northwest Territories Medical Association and Northwest Territories Registered Nurses Association. 2000. The provision of health care in the Northwest Territories (NWT): a joint statement on health care reform in the NWT, September 1998. *Canadian Journal of Rural Medicine* 5(1): 12-21

Nova Scotia Department of Health. 2001. Business Plan 2001-2002

Nova Scotia Department of Health. 2001. Strengthening Primary Care in Nova Scotia Communities. Progress Report

Nurse Prescriber. Retrieved May 21, 2004, from <http://www.nurse-prescriber.co.uk>

O'Brien-Pallas, L. 2002. Where to go from here? *Canadian Journal of Nursing Research*, 33: 3-14

O'Brien-Pallas, L., Irvine, D., Peereboom, E. and Murray, M. 1997. Measuring nursing workload: understanding the variability. *Nursing Economics*, 15(4): 171-182

Office for Aboriginal and Torres Strait Islander Health. Workforce, Information and Policy Branch. Retrieved May 28, 2004, from <http://www.health.gov.au/oatsih/contact/div/wip.htm>

Ontario Ministry of Health and Long-Term Care. 2002. Business Plan 2002-2003. Retrieved http://www.health.gov.on.ca/english/public/pub/ministry_bplans/bplan02/bplan02.html

Ontario Ministry of Health. 2003. Report on the Integration of Primary health Care Nurse Practitioners into the Province of Ontario, Ministry of Health and Long Term Care. http://www.health.gov.on.ca/english/public/pub/ministry_reports/nurseprac03/nurseprac03_mn.html

Ontario Ministry of Health. 2004. Supporting Interdisciplinary Practice: The Family Physician Nurse Practitioner Educational and Mentoring Program

Or, Zeynep. 2002. Labour Market and Policy-Occasional Papers No. 5. Improving the Performance of Health Care Systems: From Measures to Action. A review of experience in four OECD Countries. Organization for Economic Co-operation and Development

O'Reilly, M. 1998. A Marathon session: a town's MDs develop a philosophy to call their own. *CMAJ Canadian Medical Association Journal*, 158: 1516-1517

Perry, S., Report from the Albert Heritage Foundation for Medical Research: Evaluation of a Telepsychiatry Pilot Project. *International Journal of Technology Assessment in Health Care*

Pflaum, M., Wall, C., Slayter, B., Boutchard, C., Jolly, R. and Harris, K. August 2001. Occasional Papers: New Series No. 12. The Australian Medical Workforce, Department of Health and Aged Care

Pitblado, J. Roger and Pong, R. W. 1999. *Geographic distribution of physicians in Canada* Prepared for Health Canada

Pong, R. and Pitblado, J.R. 2002 Beyond counting heads: some methodological issues in measuring geographic distribution of physicians. *Canadian Journal of Rural Medicine*, 7(1): 12-20

Pong, R., and Russell, N. 2003. A Review and Synthesis of Strategies and Policy Recommendations on the Rural Health Workforce. Centre for Rural and Northern Health Research; Laurentian University

Pong, R., Saunders, M.B., Church, J., Wanke, M. and Cappon, P. 1995. Component 1: Health Human Resources in Community-Based Health Care: A Review of the Literature. Health Care Network. Retrieved April 12, 2004, from <http://www.hc-sc.gc.ca/hppb/healthcare/pubs/foundation/component1.htm>

Pong, R.W., Saunders, D., Church, J., Wanke, M., and Cappon, P. 1995. Component 1: Health Human Resources in Community-Based Health Care: A Review of the Literature. Health Canada - Health Care Network. Retrieved April 12, 2004, from <http://www.hc-sc.gc.ca/hppb/healthcare/pubs/foundation/component1.htm>

Pong, R. and Russell, N.. 2003. A Review and Synthesis of Strategies and Policy Recommendations on the Rural Health Workforce. Centre for Rural and Northern Health Research, Laurentian University

Prince Edward Island Advisory Committee on Health Human Resources. 2001. Health Human Resources Supply and Demand Analysis

Prince Edward Island Health and Social Services System. 2001. Strategic plan for the Prince Edward Island Health and Social Services System 2001-2005

Provincial Scheduling Working Group, Health Employers Association of British Columbia and British Nurses' Union. 2003. Innovative Scheduling Practices: A Resource Guide. Ministry of Health Planning Nursing Directorate

Queensland Rural Medical Support Agency. 2004. Retrieved June 9, 2004, from <http://www.qrmsa.com.au/main.asp?NodeID=2700>

Richards, A., Carley, J. Jenkins-Clarke, S. and Richards, D.A. 2000. Skill mix between nurses and doctors working in primary care-delegation or allocation: a review of the literature. *International Journal of Nursing Studies*, 37: 185-197

Rogers, Judy. 2003. Sustainability and collaboration in maternity care in Canada: dreams and obstacles. *Canadian Journal of Rural Medicine* 8(3): 193-198

Roine, R., Ohinmaa, A., & Hailey, D. 2001. Assessing telemedicine: a systematic review of the literature. *CMAJ Canadian Medical Association Journal*, 165: 765-771

Romanow, Roy J. 2002. Building on values. The future of health care in Canada. Commission on the future of health care in Canada

Rourke, J., Incitti, F., Rourke, L. and Kennard, M. 2003. *Keeping Family Physicians in Rural Practice: Solutions favoured by Rural Physicians and Family Medicine*. Retrieved May 25, 2004, from <http://www.cfp.ca/cfp/2003/Sep/vol49-sep-research-3.asp>

Rourke, Leslie L., J. Rourke, J. Belle Brown. 2002 Women family physicians and rural medicine. Can the grass be greener in the country? *Canadian Family Physician* 48: 441-445

Rural and Remote Health Innovations Initiative. 2003. The Development of a Multistakeholder Framework/Index of Rurality. Society of Rural Physicians of Canada, Canadian Medical Association, Canadian Pharmacists Association, and Canadian Nurses Association

Rushforth, H. and Gласper, E.A. 1999. Implications of nursing role expansion for professional practice. (UK) *Specialists Nursing*

Satellite Broadcast-Resource Guide. Cross-Cultural Communication in Health Care: Building Organizational Capacity. Broadcast Guide. Retrieved June 6th, 2004 from <http://www.hrsa.gov/financemc/broadcast/resource-guide.htm>

Schneller, E. S. & Ott, J. B. 1996. Contemporary models of change in the health professions. *Hospital & Health Services Administration*, 41: 121-136

Shediach-Rizkallah, M. C. & Bone, L. R. 1998. Planning for the sustainability of community-based health programs: conceptual frameworks and future directions for research, practice and policy. *Health Education Research*, 13: 87-108

Sheppard, K. and Goobie, S. 2000. Telecentres for Education and Community Health. Health Transition Fund Report

Silcock, J., Raynor, D. K., & Petty, D. 2004. The organisation and development of primary care pharmacy in the United Kingdom. *Health Policy*, 67: 207-214

Simpson, L. & Littlejohns, L.B. 1999. Primary Health Care Project for Elnora Area. Health Transition Fund Report

Simpson, S.H., Johnson, J.A. & Tsuyuki, R. 2001. Economic Impact of Community Pharmacist Intervention in Cholesterol Risk Management: An Evaluation of the Study of Cardiovascular Risk Intervention by Pharmacists

Singh, G., O'Donoghue, J., & Soon, C. K. 2002. Telemedicine: issues and implications. *Technology & Health Care*, 10: 1-10

Society of Rural Physicians of Canada, College of Family Physicians of Canada and Canadian Anesthesiologists Society. 2001. Position paper on training for family practitioners in anesthesia. Retrieved June 11, 2004, from <http://www.srpc.ca/librarydocs/anesthesiatraining.html>

Society of Rural Physicians of Canada. 2002. Report on Feedback to the 2001 International Environmental Scan. Health Human Resources Planning

Society of Rural Physicians of Canada. 2004. Summary of: Western Australian Rural Program. Retrieved from <http://www.srpc.ca/librarydocs/review.html#wacrrm>

Society of Rural Physicians of Canada; Canadian Medical Association, February 2003. The Development of a Multistakeholder; Rural and Remote health Innovations Initiative http://www.can-nurses.ca/_frames/welcome/frameindex.html

Society of Rural Physicians of Canada-Library Shelves. Retrieved June 10, 2004, from <http://www.srpc.ca/shelf.html>

Sumsion, T. H. & Beggs, C. E. 1994. Distance consultation: concepts, components, and collaboration. *Journal of Allied Health*, 23: 341-348

Task Force Two, A Physician Human Resource Strategy for Canada. January 2003. Physician Workforce in Canada: Literature Review and Gap Analysis Final Report. Canadian Labour and Business Centre

Task Force Two. 2003. A Physician Human Resource Strategy for Canada. Assessing New Models for the Delivery of Medical Services: Inventory and Synthesis. Holander Analytical Services Ltd.

The Canadian Medical Forum Task Force on Physician Supply, 2003. A Physician Human Resource Strategy for Canada, Assessing New Models for the Delivery of Medical Services, Inventory and Synthesis

The College of Family Physicians of Canada. 2000. Primary Care and Family Medicine in Canada: A Prescription for Renewal

The Romanow Reforms: *CMAJ Canadian Medical Association Journal*, 168: 821

The Scottish Office. Towards a New Way of Working - The Plan for Managing People in the NHS in Scotland. 1997. Retrieved April 22, 2004, from <http://www.scotland.gov.uk/library/documents3/tnww-00.htm>

The Scottish Office. Towards a New Way of Working - The Plan for Managing People in the NHS in Scotland. 1997. Retrieved April 22, 2004, from <http://www.scotland.gov.uk/library/documents3/tnww-00.htm>

The World Bank Group. 2001. Health Systems Development. http://www1.worldbank.org/hnp/hsd/humanresources_topics.asp

The World Bank Group-Health Systems Development-Human Resources. Retrieved April 12, 2004, from http://www1.worldbank.org/hnp/hsd/humanresources_library.asp

The World Bank Group-Health Systems Development-Human Resources-Key Readings. Retrieved April 12, 2004, from http://www1.worldbank.org/hnp/hsd/humanresources_readings.asp

Thomas, M. 1998. Delivery of physiotherapy services to some First Nations communities in Manitoba. *International Journal of Circumpolar Health*, 57 (1): 697-701

Toung, N., Barden, W., & Dick, P., 2000. Tele-Homecare: Multi-centre Canadian Modeling Component. Health Transition Fund Report

Traynor, Kate. 2004. Pharmacists outside U.S. inch toward independent prescribing. *American Journal of Health System Pharmacy*, 61:1429

Tsuyiki, R.T., Johnson, J.A., Teo, K.K., Simpson, S.H., Ackman, M.L., Biggs, R.S., Cave, A., et al. 2002. A randomized trial of the effect of Community Pharmacist Intervention on cholesterol Risk Management

Tyrrell, Lorne and D. Dauphinee on behalf of the Canadian Medical Forum Task Force. 1999. Task force on physician supply in Canada

Urness, D. A., 1999. Evaluation of a Canadian Telepsychiatry Service

Vaillancourt, Régis. 2004. Patient safety and legislative change. *Canadian Journal of Hospital Pharmacy*, 57(3):200

Wanke, M., Saunders, L., Pong, R., and Church, W. 1995. Building a Stronger Foundation: A Framework for Planning and Evaluating Community-Based Health Services in Canada. Health Canada - Health Care Network. Retrieved April 20, 2004, from <http://www.hc-sc.gc.ca/hppb/healthcare/pubs/foundation/framework.htm>

Wanke, M., Saunders, L., Pong, R., Church, W., and Cappon, P. 1995. Companion Document: A Summary Report of Site Visits to Selected Community-Based Health Organizations in Canada. Health Canada - Health Care Network. Retrieved April 20, 2004, from <http://www.hc-sc.gc.ca/hppb/healthcare/pubs/foundation/companion.htm>

Way, D., Jones, L., and Busing, N. 2000. Implementation Strategies: "Collaboration in Primary Care - Family Doctors & Nurse Practitioners Delivering Shared Care". Ontario College of Family Physicians

Way, D., Jones, L., Baskerville, B., & Busing, N. 2001. Primary health care services provided by nurse practitioners and family physicians in shared practice. *CMAJ Canadian Medical Association Journal*, 165: 1210-1214

Western Australia Center for Remote and Rural Medicine. 1997. Western Australia Rural Program

Williams, A. M. 1996. The development of Ontario's Home Care Program: a critical geographical analysis. *Social Science & Medicine*, 42: 937-948

Willison, D.J. and Muzzin, L.J. 1995. Workload , data gathering, and quality of community pharmacists advice. *Medical Care*, 33(1): 29-40

Winnipeg Integrated Services Initiative (WISI). 2003. A Conceptual Framework: Manitoba Family Services and Housing. Winnipeg Regional Health Authority, Manitoba Health

Working Group of the Society of Rural Physicians of Canada and the College of Family Physicians of Canada. 1999. Position paper on training for family physicians in general surgery. Retrieved June 11, 2004, from <http://www.srpc.ca/librarydocs/surgerytraining.html>

World Health Organization. 1997. European health care reform. Analysis of current strategies. WHO Regional Publications, European Series. 72: 1-308

World Health Organization. 2000. Global Advisory Group on nursing and midwifery. Report of the 6th Meeting. Geneva. November 2000

World Health Organization. 2001. Human Resource for Health: A toolkit for planning, training and management. Department of Health Service Provision. Retrieved May 18, 2004, from:

http://www.hrhtoolkit.forumone.com/mstr_tool/tools-01.html

World Health Organization. 2002. Technical consultation on imbalances in the health workforce. WHO/EIP/OSD/02.3

World Health Organization. 2002. Strategic Directions for strengthening nursing and midwifery services

Yellowlees, P. M. & Kennedy, C. 1997. Telemedicine; here to stay. *Medical Journal of Australia*, 166: 262-265

APPENDIX A

Master List of Departments/Organizations/Agencies/Associations Contacted

Organization	Web site
Provincial/Territorial Depts of Health	
British Columbia	www.healthservices.gov.bc.ca
Alberta	www.health.gov.ab.ca
Saskatchewan	www.health.gov.sk.ca
Manitoba	www.gov.mb.ca
Ontario	www.health.gov.on.ca
Quebec	www.cessss.gov.qc.ca
New Brunswick	www.gnb.ca
Nova Scotia	www.gov.ns.ca/health
Prince Edward Island	www.gov.pe.ca/hss
Newfoundland and Labrador	www.gov.nf.ca/health
Yukon	www.hlth.gov.yk.ca
Northwest Territories	www.hlthss.gov.nt.ca
Nunavut	www.gov.nu.ca/Nunavut/English/phone/hss.shtml
Federal Departments/Agencies	
Federal Health Care Partnership Secretariat	www.vac-acc.gc.ca
Health Canada Health and Information Highway	www.hc-sc.gc.ca/ohih-bsi
Health Canada First Nations and Inuit Health Branch	www.hc-sc.gc.ca/fnihb
Veterans Affairs Canada	www.vac-acc.gc.ca
CIHI	www.cihi.ca
Associations	
Canadian Nurses Association	www.cna-nurses.ca
Nurse Practitioners Association of Canada	www.nursepractitioner.ca
Canadian Association of Advanced Practice Nurses	www.caapn.com

Organization	Web site
Canadian Association of Occupational Therapists	www.caot.ca
Canadian Pharmacists Association	www.pharmacists.ca
Physiotherapy Foundation of Canada	www.physiotherapyfoundation.ca
Canadian Physiotherapy Association	www.physiotherapy.ca
Canadian Medical Association	www.cma.ca
Society of Rural Physicians of Canada	www.srpc.ca
Canadian Mental Health Association	www.cmha.ca
Health Employers Association of British Columbia	www.heabc.bc.ca
Dalhousie University Faculty of Medicine	www.medicine.dal.ca
Canadian Health Services Research Foundation	www.chsrf.ca
Canadian Healthcare Association	www.cha.ca
International	
World Health Organization	www.who.org
World Bank Institute	www.worldbank.org
United Kingdom National Health Service	www.dh.gov.uk
New Zealand Ministry of Health	www.moh.govt.nz
Australia National Health and Medical Research	www.health.gov.au
Australia Queensland Rural Medical Support Agency	www.qrmsa.com.au
Australia James Cook University	www.mcrrh.jcu.edu.au
U.S. Department of Health and Human Services	www.us.dhhs.gov
Ministry of Health of France	www.gouv.sante.fr

APPENDIX B

Introductory Letter and Interview Guide

Letter to Potential Respondents

Dear XXXXX:

As you are well aware, health human resource planning and management is a key component of any health care system. The Canadian 2003 Federal Budget committed \$90 million, over five years, to strengthen health human resource planning and coordination. This budgetary commitment has enabled Health Canada, in collaboration with provincial and territorial governments, and key health sector stakeholders, to support the First Ministers' Accord on Health Care Renewal and to develop a health human resource strategy.

To address deployment and health human resource shortages, Health Canada's Health Human Resource Strategies Division has contracted North South Group, Inc. to undertake a study on Health Human Resources Deployment Preferred Practices and Decision Support Tools for Deployment. The study will produce a report for Health Canada which will provide information and analysis of innovative deployment practices both in Canada and internationally, as well as decision support tools being used to support these deployment initiatives.

We are contacting you as part of this study to obtain information on any innovative deployment practices being used in your jurisdiction. Specifically, we are looking for concrete examples of experimental deployment practices which have been utilized, and which could stimulate interest or be beneficial for improving access to health care services in other jurisdictions. If there are any decision support tools which have informed these innovative practices, these would also be of interest. Examples of decision support tools might include workload measurement systems which would be used to forecast needs and plan deployment of health professionals. We are including a list of the health professions which are included in the parameters of this study; please note that while family doctors are included in this study, medical specialists are not.

We would be very appreciative if you could take part in a short telephone interview. A member of the Project Team (Roz Ernst or Camille Gallant) will be telephoning you shortly to schedule this interview at a time convenient for you. To assist you in preparing for this interview, we have attached a list of the research questions that we will be asking you about. If you have any questions about this interview or the study, I would invite you to call me at any time. I may be reached at (902) 423-2328. The official at Health Canada responsible for this study is Ms. Suzanne Larente, who may also be reached at Suzanne_larente@hc-sc.gc.ca, or at (613) 952-6425.

If you are able to recommend any reports or documentation produced by your Department, which would assist us in the conduct of this study, we would be most grateful.

In closing, we thank you very kindly for your kind consideration of this request for an interview. Your participation will help to make this a successful study for Health Canada.

Best regards

Martine Durier-Copp, Ph.D.
Project Director
North South Group, Inc.
(902) 423 2328 (telephone); (902) 429 6537 (facsimile)

**Definition of “deployment” and “decision support tools”
and
List of Health Professions Covered**

Deployment is defined as "optimal use of available health human resources and technological resources to alleviate geographical imbalances in mix of providers." It includes creative and innovative initiatives to maximize health care providers' scope of practice and use the optimal mix of different health care providers to meet local needs, sustain the health care system, and achieve the best outcomes for patients. Ideally, these deployment initiatives are based on population health needs and health care providers' workload. For the purpose of this project, deployment means using existing resources by either changing their physical location or using technological resources/telecommunication or other techniques to provide health care services in underserved areas. Deployment does not include the use of financial incentives or other incentives to recruit health care providers.

Decision Support Tools include workload measurement tools or other tools that contribute positively to deployment initiatives through the optimal utilization of available health human resources. Workload measurement tool is defined as "the objective determination of the total amount of care hours, which includes the direct and indirect services required for clients and the number and type of health care providers required to provide these services." Decision Support Tools are used or have the potential to assist employing authorities in determining how best to use available health human resources.

Health Professions: nurses (including registered nurses, nurse practitioners, licensed practical nurses, and registered psychiatric nurses); family physicians; pharmacists; medical diagnostic technologists (including medical laboratory technologists and medical radiation technologists); rehabilitation workers (including physiotherapists, occupational therapists); and support workers (including personal attendants, homemakers).

Interview Guide

Are you aware of any innovative practices for the deployment of Health Human Resources in your jurisdiction?

What have been the strategies to address scarce Health Human Resources with respect to:

- Rural, remote or isolated communities?
- Inner-city areas?
- First Nations and Inuit Communities?

Has your Department utilized any innovative deployment practices in the delivery of:

- Primary Health Care?
- Aboriginal Health programs?
- Home Care?
- Mental Health Services?

Has your Department introduced any innovative practices for deployment of Health Human Resources in the following settings:

- Hospitals?
- Long-Term Care Facilities?
- Communities?
- Public Health Agencies?

Are you familiar with any innovative deployment strategies or practices being used with reference to the following groups of health professionals:

- Nurses (registered nurses, nurse practitioners; licensed practical nurses, registered psychiatric nurses)
- Family physicians
- Pharmacists
- Medical Diagnostic Technologists (medical laboratory technologists, medical radiation technologists)
- Rehabilitation workers (physiotherapists, occupational therapists)
- Support workers (personal attendants, homemakers)?

Has your Department used Decision Support Tools to inform and support any innovative practices with respect to the deployment of Health Human Resources?

Are there any other general comments you would like to make with respect to the deployment of Health Human Resources, which you feel would be helpful to this study?

APPENDIX C

Interview and Associated Documentation Summaries

Veterans Affairs Canada (VAC)

Rural/remote health

The department is conducting a study to determine the health and social needs of rural seniors, and programs will be developed to address these needs.

Mental Health Services

VAC is working with DND and the CF at the five Operational Trauma Stress and Support Centres. Peer support training has been developed for peer support coordinators (employees of DND who have experienced operational trauma and stress injuries). These employees will work under the direction of a clinical psychologist.

A joint initiative with WHO to expand the WHO Program, "Mental Disorders in Primary Care" will include a VAC-sponsored section pertaining to trauma. This "toolkit" is being delivered to civilian primary care physicians to help them understand and treat military trauma.

Telehealth

VAC is offering the Networks for Excellence with Ste. Anne's Veterans Hospital for VAC clients to provide follow-up services, educational opportunities for local service providers and psychological services for clients suffering from post-traumatic stress disorder and other operational stress injuries.

VAC also works with Memorial University's School of Medicine to offer telemental health services to VAC clients in rural and remote areas, linking clients with their mental health service provider via existing telehealth structures (this Program is a component of the TETRA Telehealth Educational Technology Resource Agency).

**Health Canada
First Nations and Inuit Health Branch**

The FNIHB Dental/Oral Health Strategy Program was developed in 1972 to respond to the lack of dental services provided to First Nations and Inuit populations living in remote areas. The Program is unique in Canada and involved the creation of the National School of Dental Therapy, which trained dental therapists to provide primary dental care to First Nations and Inuit people. The concept was developed to provide dental preventive care and restorative dental services to a population that did not have easy access to dental services.

The National School of Dental Therapy (NSDT) was established in 1972 in Fort Smith, N.W.T., and was funded by FNIHB (originally Medical Services Branch) of Health Canada. The school is now located in Prince Albert, Saskatchewan, and has a contractual agreement (approximately \$9 million for the 2000-2005 contract period) with Health Canada to train dental therapists.

A number of reports and economic studies have documented the cost-effectiveness of the dental therapy Program. The evidence demonstrates that dental therapists working at the community level are able to provide cost-effective services and positive clinical outcomes for their patients.

Dental therapists have not as yet achieved full recognition as health professionals, and are only recognized in Saskatchewan, which operates a provincial children's dental therapy Program. Dental therapists work primarily on reserve, as employees of Health Canada or of transferred First Nations communities. Dental therapists may work in private practice only in the province of Saskatchewan.

Efforts are under way to obtain accreditation of the NSDT Program, but there has been resistance by the dental associations.

**Health Canada
First Nations and Inuit Health Branch
Office of Nursing Services**

Health Canada has been providing nursing services to Northern Canada for over 50 years, and has been **deploying nurses with expanded scope of practice in areas where there are physician shortages**. These nurses have been used in "expanded" roles (i.e. beyond the provincially licensed scope of practice of nurses).

In the 1980s there were special programs to train nurses for northern service, namely the Dalhousie Outpost Nursing Program, which was a very small, select, and specialized Program. This Program funded by Health Canada, was expensive to run and trained a small number of nurses (including practicums in the North, such as Baffin Island and Sioux Lookout). The Program ended in 1997 when funding from Health Canada was terminated. McMaster University also initiated its own nursing Program, which was an 11-week intensive curriculum. This Program has now been discontinued.

Eventually the Territories, under transferred governance, began providing their own programs under their jurisdiction. Likewise, British Columbia, Saskatchewan, Ontario, and Manitoba also established their own expanded practice nursing programs, usually 16-week intensive curricula, with intensive preparation in health assessment, prescribing drugs, diagnosing, laboratory testing, emergency obstetrics, and trauma. Many graduates of these programs have applied to work for FNIHB, and are submitted to competencies testing prior to being deployed in the North.

As of the mid-1990s, many provinces also recognized and licensed the use of Nurse Practitioners (NPs). Accordingly, several Canadian universities offer this Program. NPs operate in several provinces, including Alberta, Nova Scotia, New Brunswick, and Newfoundland and Labrador. FNIHB has hired NPs although their skills in trauma and emergency OB/GYN need to be strengthened. FNIHB does not refer to its nurses as NPs, but rather as **Nurses with Expanded Scope of Practice**.

Other examples of innovative deployment by these nurses include the **operation of X-Rays**. Most nursing stations have X-Ray equipment, and most nurses can read a simple X-Ray. For more complex situations, nurses may have telephone contact with physicians in tertiary care institutions. There are also First Nations employees in the nursing stations who have had simple X-Ray training.

Nurses can also draw blood and use a microscope for simple slides, and thus perform basic laboratory work, such as examining pap smears or white blood cell count. **Nurses are also trained to dispense drugs, and perform according to clinical guidelines and a pharmaceutical compendium**. There are three categories of drugs which may be dispensed: 1) drugs that nurses may prescribe and dispense without the authorization of an MD; 2) drugs for which nurses must consult an MD; and 3) drugs located in the nursing station that can only be dispensed by a physician visiting the community.

Health Canada
First Nations and Inuit Health Branch (FNIHB)
Office of Nursing Services

The situation with nursing staffing in First Nations and Inuit (FN&I) communities was reviewed, including the role of nurses in remote, isolated and distant communities overseen by FNIHB. Many nurses are reticent to relocate to distant communities; distance, location, isolation are problems, as are communications and connectivity to the mainstream health care system. There is a high turnover of nurses in these positions.

To support nursing practice in these communities, FNIHB has developed a competency Program, identifying the competencies required of nurses practising in FN&I communities (there is a competency assessment process, including a self-assessment). Based on the results of this assessment, learning plans are developed, which may include educational preparation for the advanced practice role, and the scope of practice may be limited to reflect the competencies a nurse holds. The positions are identified as Community Health Nurse positions, and the incumbent may come from a variety of backgrounds, including RNs, BNs or NPs. Of approximately 250 positions in FN&I communities, approximately 50 percent of nurses have advanced preparation.

The federal government is responsible for health services delivery on reserve to Aboriginal populations. The Community Health Nurses practising in FN&I communities have an expanded scope of practice, which includes competencies for emergency labour and delivery and emergency trauma care. These competencies are in addition to the scope of practice for NPs in provincial jurisdictions.

The question of consistency in education, licensing and recognition of NPs across the country is an issue, as is the insufficient supply to meet these needs.

The **expanded scope of practice of a Community Health Nurse** is a good example of innovative health human resource deployment in remote or isolated communities even though it has been in use for several decades by FNIHB (formerly Medical Services Branch, of Health Canada) in areas where there are shortages of physicians.

**Health Canada
First Nations and Inuit Health Branch
Community Medicine**

The Office of Community Medicine, which deploys specialists in community medicine within the Health Canada regions, has been experiencing **shortages** in the 19 positions across the country. Currently, half of the positions are vacant. Community medicine specialists are generally responsible for leading the **public health** response in the regions, including responsibility for communicable disease control and health surveillance. There has also been a problem with retention of specialists in these positions (departures resulting from non-competitive salaries, in some cases, and "bureaucratic" environment in others).

It was stated that most **provinces are also experiencing shortages in Public Health Officers positions**, and are resorting to hiring individuals who do not have the required training or experience (e.g. family doctors). There needs to be a concerted effort nationally to address this shortage, including **the attracting of First Nations and Inuit students into medical schools, generally, and into public health programs, specifically**. Deans of medical schools across the country have targeted Aboriginal enrolment as a key strategy.

The innovative deployment strategies employed by the Office of Community Medicine have **included using MDs with more limited preparation, and providing training or "fostering" on-the-job to assist them in upgrading and developing their skills**. (A Master's of Public Health degree is considered the minimum requirement for this position). It has also undertaken international recruitment (South Africa, Australia) in an attempt to fill these positions. There has also been some attempt to attract residents in medical programs and to offer them interesting opportunities.

Health Canada

Health and Information Highway Division

The former CHIP project provided over \$80 million in funding to 29 projects across the country in a two-year period (2001-2003). Most of these projects are now complete, although some are still ongoing, with provinces having now assumed the funding for these initiatives. Evaluations have been undertaken and databases created (shared with Industry Canada CANARIE project).

The bulk of the CHIP funding (co-shared with provinces 50:50) went to a **telehealth project**, with approximately one third supporting electronic health records projects. Project ranged in size from \$500,000 to \$12 million. The objectives of the telehealth projects were to make best use of limited HHR, such as radiologists, psychiatrists and emergency room physicians in remote and rural areas.

Examples include home care provided to inner city populations by nursing staff (CLSC du futur in Quebec); telepsychiatry services provided across Ontario (psychiatrists were able to provide services to many more patients, although time spent with each patient was less than through traditional practice, and was delivered through a team approach, using nurses and social workers); the Manitoba and B.C. Telehealth projects (which supported the transition from acute to community-based home care); teleradiology projects, the Eastern Ontario Connect Care (which includes 19 hospitals); and many others).

Telehealth is very important for continuing professional education, and has been demonstrated to be critical as a recruitment and retention tool for physicians and nurses in remote communities. In particular, for radiologists, telehealth reduced their isolation and has been shown to improve professional satisfaction. Telehealth has increased patient-specific partnerships, such as paediatricians/oncologists, paediatrician/cardiologists, to provide focussed and coordinated care.

In terms of allied health care professionals, **radiology technicians**, in particular, have strongly benefitted from telehealth and have utilized this technology. It has provided them with the possibility to work autonomously from radiologists and to beam their images to larger hospitals for interpretation. Radiology technicians are able to do mammograms and fetal imaging.

In terms of decision support tools, decisions come from above; there is very little in terms of cost-studies before telehealth is introduced. Some studies have shown that to be successful, telehealth projects need a physician, an administrator and a technology champion to provide the telehealth applications. Telehealth can provide for a better use of HHR; affect recruitment and retention; reduce isolation; provide access to professional education; and foster team approaches. It is "saving us money" in terms of salaries and fee-for-service, and also travel costs associated with professionals travelling to remote communities (and in some cases, being able to buy their own planes and have these subsidized by public funds).

Federal Health Care Partnership Secretariat (HCPS)

The HCPS (name recently changed from the Health Care Coordination Initiative) has been in existence since 1994 and brings together several federal government departments, which have a health care mandate:

Solicitor General
RCMP
Veterans Affairs Canada
Department of National Defence
Citizenship and Immigration Canada
Health Canada

Three central agencies also sit on the committee: PCO, TBS and Public Works (CIDA is an observer). Other departments are being considered for inclusion (Transport Canada and DFAIT).

The Secretariat is housed in VAC, but is located in Ottawa. The mandate of the HCPS is to exchange information and to look for ways to work together on health solutions, such as equity and access, standards, greater efficiencies in the delivery of services, and others. For example, the Secretariat has examined telehealth, as used by FNIHB and VAC. The HCPS is only just beginning to look at HHR planning and deployment strategies, and will be moving in that direction in the months ahead. It sees a strong need for federal departments to exchange information and share ideas.

The Secretariat has offered its venue as a way of sharing any ideas or to test deployment approaches, upon the completion of this study.

Newfoundland and Labrador Department of Health and Community Services Office of Primary Health Care

Regional Nurses - Regional Nurse is not an educational category, but is more of a job description. Regional Nurses are used in rural/remote/isolated areas where there are no doctors present, but are linked to a doctor by telephone, videoconference, etc. The position is best described as enhanced RNs working to their full scope of practice - functionally an NP, but without the prescribing capability. They tend to be individuals from the area with a commitment to stay in the area and are devoted to the community. They would be supported in education/training upgrading whenever feasible.

Nurse Practitioners (NPs) - Deployment of NPs tends to be to communities that cannot find a doctor. However, if a doctor becomes available for that community, the NP is then without a position. There needs to be a better description of a niche for NPs within the rural community setting. NPs should be part of a broader team approach.

Licensed Practical Nurses (LPNs) and Personal Care Attendants (PCAs) - Long-term care facilities are using LPNs and PCAs more and more to their full scope of practice. LPNs are doing medication. There are fewer RNs, but they are also being used to their full scope of practice.

Telehealth - Telehealth is used mostly for videoconferencing, but is also used for tele-oncology (partnered with Atlantic Provinces) in Labrador and in Primary Health care Centres. The possibility of using Clinidata Corporation in Moncton, New Brunswick, has been investigated, but it requires paying equivalent FTEs, which would mean reducing the roster of physician(s) actually practising in Newfoundland and Labrador.

FN & I - There is difficulty with funding as it comes from a variety of sources (provincial, FNIHB etc.). It is reported that the number of FTEs from all sources is higher per capita than in an urban setting.

Primary Health Care Centres - There are seven pilot sites (six rural and one urban). Their approach is thought to be very comprehensive, whereby the roles of all professions are enhanced. Each site may have several subsets with a team of direct providers and a network of other providers (can be from the private sector, e.g. pharmacists, physiotherapists, speech pathologists) floating to each of the subsets. The focus is on prevention/promotion and capacity building within the community.

Rural/Isolated - The move is towards identifying community members with any form of health care training - be that **LPNs or paramedics**- and using them to their full scope of practice and providing opportunities for them to enhance their skills. They are much like the FN & I Community Health Worker.

Centre for Collaborative Education, Memorial University - Four health care professions (medical, nursing, social work and pharmacy) have courses together whereby they are educated on the scope of practice of each profession and how to work/collaborate together to maximize each groups' skills within a team approach. With this type of education/information, graduates are better prepared to work as a team across professions.

Nova Scotia Department of Health Continuing Care

The Home Care Program requires a designation for staff - **Continuing Care Assistant (CCA)** - which will be compulsory as of November 2004. Staff (Personal Care Workers or Home Care Workers) are being assisted in upgrading/attaining this designation through a combination of Prior Learning Assessment (PLA) and Continuing Education. The Department of Health supports training suppliers (e.g. long-term care facilities, Nova Scotia Community College). The CCA training in rural communities is supported through private colleges and nursing homes in the area.

First Nations communities - there is a pilot project in Cape Breton in which a care co-ordinator provides a communication link to ensure care flow to the community. This designation will likely be requested by other First Nations communities as it has been successful.

A decision support tool, which is being piloted in several nursing homes, uses a **Minimum Data Set 2.0 (MDS)** system to better identify care needs and track changes in care over time to better allocate resources.

Nova Scotia Department of Health Physician Services

Questionnaire responses focussed on financial incentives, such as a Debt Assistance Plan; contracts for GPs in rural settings and in clinics (one inner-city clinic); and alternative payment arrangements.

There are primary care renewal models with GPs and NPs working together in primary care clinics.

The Department of Health uses an Impact Analysis Model for physician resource planning.

Nova Scotia Department of Health Nursing Services

Deployment initiatives are considered a challenge within a unionized environment, which might not support/implement innovative ideas.

Some examples are:

Co-op Program for 3rd year B.Sc. Nursing Students with placements across the province. Students work and receive pay for 10 weeks during the summer. These students tend to return to the co-op location to look for work after graduation.

Telehealth which connects expertise by providing clinical support for patient care, as well as continuing education to physicians and nurses over a wide range of topics in a broad geographical area.

Hospitals and long-term care facilities have focussed on changing casual and part-time positions into full-time/permanent positions. At the same time, the collective bargaining process has included job-sharing, permanent resource nurse and week-end nurse categories (i.e. improving worklife) provisions.

Nova Scotia Department of Health Primary Health Care

Nurse Practitioners - under the Strengthening Primary Care Initiative, each pilot site must include an NP and a GP pair. The original pilot sites (4) have now been extended to 12 communities.

Rural

Of the four pilot sites for the Strengthening Primary Care Initiative, three are in rural settings.

Examples were cited of NPs and EMTs working in rural/remote settings (islands), connected by telephone to a family doctor.

Rural Health Network Project - This involves three NPs and three GPs working as teams.

Decision Support Tool

Indirectly, the evaluation of the Strengthening Primary Care Initiative will look at the workload effects of NP and GP pairs.

Nova Scotia Department of Health Information Management

Telehealth

The **Nova Scotia Telehealth Network** is limited by resources. The Alternate Funding Proposal will guarantee salary and teaching/research funds.

Pictorial Archiving Communications System is a digital image transmission system, which supports specialists/ physicians working in rural locations (in real time).

Family Help - This project is in the research stage, but will provide telephone contact for families and GPs.

Mental Health

Shared Care - This Program started in the Capital District, but has expanded to other areas of the province. It involves an interdisciplinary team of family physician and a mental health clinician.

Nova Scotia Department of Health

Decision Support Tool

Reference was made to a Minimum Data Set System in the questionnaire. This system is formally called **Resident Assessment Instrument 2.0 (RAI 2.0)**. This is an assessment instrument or tool used in nursing homes. It is a multidimensional functional assessment form that the clinician would use when designing a care plan. It is being used in 9 nursing homes in the province, but has been recommended for all 74 of these facilities. Note: it was developed in the U.S. about 15 years ago and is being used internationally. Nova Scotia implemented its use about three years ago. It is not a workload measurement tool as it will not tell you how many RN or LPN hours you need for an individual's care.

However, the **Resource Utilization Grouping System (RUGS)** was developed for use with RAI 2.0 in which a client is placed into one of 44 care levels. It is used in the U.S. to determine the case mix of a nursing home and thereby the level of funding it should receive.

The RIA HC is a similar tool, but it was created for home care assessment. It is used province-wide in Nova Scotia (www.interrai.org).

Prince Edward Island Department of Health and Social Services

Currently, P.E.I. has no classification for nurse practitioners. A demonstration project is being carried out at the O’Leary Community Clinic with two nurse practitioners along with other allied health professionals and a GP.

P.E.I. Health is developing an assessment tool to establish entry-level qualifications for LPNs. LPNs are now receiving clinical training in order to dispense medication.

P.E.I. now has a much greater number of salaried physicians compared to previous years.

Pharmacists’ salaries in institutions receive additional salary adjustments in order to compete with the private sector.

Primary care redesign is under way with the establishment of **community clinics** where GPs, rehabilitation workers, nurses, and social workers all work together in the clinic.

P.E.I. Health maintains databases for HHR supply and demand in order to anticipate needs in the health care system.

Ministère de la santé et des services sociaux du Québec (Quebec Department of Health and Social Services)

Dossiers d'analyse du personnel

The use of **nurse practitioners** in northern Quebec is widespread. The Department is in discussions with the Association of Nurse Practitioners to **expand the scope of practice**.

Subsidies are provided to nursing candidates amounting to \$30,000 over two years. The shortage of nurses is acute and programs are being developed to increase enrolment in nursing schools. CEGEPs (community colleges) provide a three-year nursing program. Universities provide baccalaureate training. New programs are being established to integrate university training with that of the community colleges. Curriculums have been standardized between these two types of institutions.

Inner cities in Montréal are particularly hard hit with the nursing shortage.

The use of **family physicians at CLSCs (local community service centres)**, and their mode of compensation is considered an innovative deployment of HHR in Quebec.

Home care is being integrated with the regional health boards and the system is being reorganized around these boards. Each region is submitting proposals for home care reform and renewal, including integration with regional health boards for mental health services. All services will be established under the management of the regional health boards and include hospitals, long-term care facilities, community care personnel, and public health agencies.

Working Groups have been established in each region to address shortages in the various HHR sectors. The results of the Working Group sessions are expected to assist in the alleviation of the shortages in terms of policy and action plans.

Annual reports and working documents are regularly prepared to model and predict movements in HHR at every level (entrance and departures).

Office of Rural and Northern Health Manitoba

The Office was established in 2002 to resolve the physician shortages in rural Manitoba, but has broadened to include other stakeholders (communities) and other health professions.

There are the usual financial incentives, which are necessary to even begin to compete in the recruitment game. The Regional Health Authorities have standardized a Return-to-Service Agreement (whereby a Regional Health Authority would pay x dollars for education in return for x number of years service) so that the Health Authorities are not competing among themselves.

Education - There is an emphasis on providing good information to students early in their undergraduate years (or even high school) regarding health care professions in rural settings as a career choice from the onset. The types of initiatives include the following:

- Formalized process whereby the Office works with the Faculty of Medicine to get information to the students (job fair/trade show type of venue). This is not aimed at recruitment for the upcoming graduating class, but rather looks at graduates four and five years down the road. This venue also looks to offer summer opportunities and clerkships to give students exposure to make informed decisions. Note: in the order of 60 percent of rural physicians are from South Africa or the Middle East with retention being poor. This is an attempt to move out of this cycle by **recruiting Manitoba-trained rural students/physicians**.
- Provide opportunities for **rural exposure** early. It has become mandatory as part of the core curriculum to include one-week rural placement in Year 1. There are efforts to develop a Year 2 experience as well. As part of this program, the Office offers training to rural doctors to receive these students and provide them with the tools/teaching skills. This is a train-the-trainer program.
- The Office also sponsors career fairs in high schools. Again, it has been found that **students who originate from a rural setting** are more likely to go back.

It was noted that the **entrance requirements for rural students** should be viewed differently and/or financial support offered. An example was given that students do not often get accepted the first year they apply to medical school. In this situation, local/urban students can live at home for another year and take a few courses to strengthen their application, which is considerably cheaper than for rural students in the same position.

HR Council of RHAs for Manitoba

Manitoba has **reconfigured the scope of practice for nurse practitioners, respiratory therapists and paramedicals and opened access centres operating as primary care health centres with multiple partnerships consisting of physicians, nurses, psychologists, nutritionists, etc.**

The development of the Office of Rural and Northern Health involves **advanced practice nurses.**

Six RHAs have very robust HHR initiatives: training programs for candidates from the Aboriginal community have been successful. Twenty percent of new hires are Aboriginals, which has been accomplished through continuing partnerships with Aboriginal associations.

The integration of the home care program with the RHAs has contributed to a major improvement in the delivery of services, which are now all under one roof. The RHAs control all the activity from tertiary care to home care and community services.

Mental health services are part of community health, with region-wide programs. There is some difficulty in the recruitment of psychologists outside Winnipeg.

Strategies have been put in place to train more diploma nurses (technical colleges) and Manitoba Health has “backed off” baccalaureate requirements for nurses, particularly in long-term care facilities.

Department of Health and Wellness of Alberta

Programs for Aboriginal People:

Aboriginals receive financial support from the Aboriginal Health Careers Bursary Program. They also benefit from various educational programs of the Northern Alberta Development Council (NADC), primarily Bursary Programs for medical students and pharmacy students; the Northern Links Program that promotes the importance of education for northern Alberta students; and the Northern Student Supplement.

1. Aboriginal Health Careers Bursary Program - awards annual bursaries to encourage Aboriginal Albertans to pursue adult and post-secondary education in health-related fields. Students must be enrolled or planning to enroll in a health-related field at the post-secondary level. The Program has awarded 344 bursaries worth a total of \$1.4 million since its inception in 1996.
2. NADC Bursary for Medical Students - provides financial support for medical students who commit to live and work in northern Alberta upon completion of their residency. Every recipient must sign a return service contract and commit to live and work anywhere in northern Alberta for a period of time commensurate with the number of times (years) the student received the bursary.
3. NADC Bursary for Pharmacy Students - Upon completion of studies, students receiving this bursary must live in northern Alberta and work for their sponsor for a period of time commensurate with the amount of their bursary.
4. NADC: Northern LINKS Program - funds projects that encourage northern Alberta students to complete high school and to make a successful transition to post-secondary training. Eligible projects include campus tours, career fairs, orientation sessions and mentorship programs. Targeted groups are students in Grades 9 to 12, and first-year post-secondary students from the NADC geographical area.
5. NADC: Northern Student Supplement - first- or second-year students from northern Alberta with high financial need may be eligible for the bursary, which reduces their student loan.

University of Alberta has five targeted undergraduate medical seats for Aboriginal students; and nine targeted nurses seats for Aboriginal students.

Primary Health Care

1. In central Alberta, a **team of family physicians and a nurse practitioner** work with other professionals. Health First Strathcona gives county residents access to after-hours non-emergency primary care services, and it co-ordinates access to specialists and Capital region hospitals.
2. **Health link** service provides front-line health care advice and triage to everyone with a telephone. This service already has slowed the growth of wait times in emergency rooms.

3. **Telehealth** system has grown to 236 sites around the province, including 25 that handle tele-radiology. Now, telehealth is providing more clinical services, from telemental health, to cardiac monitoring, to supporting parents providing at-home care for children discharged from the Alberta Children's Hospital.
4. **Alberta Health Primary Care Model** - an agreement model of primary care that starts in the community and builds on shared leadership. Local physicians and their region design a Local Primary Care Initiative (LPCI) to deliver a set of services to a defined population, including 24-hour access to care. The LPCI partners outline their proposal in a formal Letter of Intent that goes to a trilateral management committee for review. The business plan clarifies how the LPCI will work with other health disciplines to deliver wellness, acute care, post-operative follow-up, and chronic disease management. It will detail how the LPCI will link to specialist services and hospital care, for more appropriate wait lists and better patient outcomes. On approval of the business plan, the trilateral management committee will authorize additional primary care funding of up to \$50 a patient per year. This money goes not to the doctors or the region, but to pay for the services of allied health professionals and other supports essential to that particular delivery model.

Alberta recognizes that, if we are going to ask professionals to work differently, we need a compensation structure that supports those delivery options. The Primary Care Initiative has its own funding, separate from physician compensation. The Alberta Government has allocated \$100 million over three years, and it is this budget that provides the primary care funding of up to \$50 a patient per year for each LPCI. The per-patient amount depends on if the patients are formally or informally enrolled. Albertans resist and resent limits on choice; even if formally enrolled, patients have no constraints on where they seek care. However, the expectation is that better care and outcomes through the LPCI will lead to patient loyalty and continuity.

Nursing Directorate

B.C. Ministry of Health Services

In 2001, B.C. allocated \$59 million for funding initiatives for recruitment, retention and education programs (mentors, preceptors). Twenty-nine million dollars was for new seats (students) in nursing and the balance for programs.

Mentorships/Preceptorships - This program provided funding for mentoring/preceptoring new graduates for three-month periods in Aboriginal communities (also mentorship programs for nurses wanting to move into a new area (e.g. critical care)). It has been found that if students/new graduates have a good experience in a rural setting they are more likely to return to this type of setting. An active support system during this period is key.

Examples identified include the following:

Rural/Remote/Aboriginal

Interprofessional Rural Placement Program (out of UBC) - Program that funds teams to go to remote communities for the summer to work in clinics with the desired outcome of enticing these students to consider rural/remote placement upon graduation. The team consists of one medical student, one physiotherapy student and one nursing student.

Loan Forgiveness - The government will pay up to 30 percent a year of a student loan if the student stays and works in a rural setting.

Funding for nurses working with Aboriginals (communities and inner city) for **professional development courses**. This is an incentive to keep nurses in these hard-to-fill spots.

Education/Retraining

Undergraduate Nurse Program at the University of Victoria. - Nurses are hired and paid to work as supernumeraries after their second year. This policy is being tried because there was the complaint that new graduates were not practice-ready and by giving them this extra time on site they were in a better position for jobs after graduation and not as overwhelmed by the workplace. A higher percentage of these nurses stayed in their jobs/workplaces.

Return to Nursing Fund (similar to United Kingdom) - Funding is provided to non-practising RNs, RPNs and LPNs and under-employed internationally educated nurses who require refreshers, qualifying, or English-language courses to be eligible for practising membership.

Return to Work - Transition funding to health employers to assist nurses on Workers' Compensation or Long-term Disability to use their expertise and knowledge to return to a practice setting.

Pharmacology Education for LPNs - Funding for LPNs who need pharmacology upgrading to full scope of practice.

Project to address Canadian Nursing Advisory Committee Recommendations

Innovative scheduling and flexible work environments

This project focusses on clarifying **scopes of practice** and assisting employers and nurses regarding roles/scope. It also emphasizes **collaboration** between nursing groups. All health authorities have projects to upgrade and increase the scope of practice of LPNs with the use of facilitators to help RNs understand and accept LPNs' roles. It was found that having an effective unit manager is key. Staff turnover has decreased and there is better recruitment success where there is a unit manager. Thus, leadership program/curriculum development for front-line nurses - **strengthening nursing leadership** - is part of this initiative.

There is an ongoing problem with the thought that LPNs were taking jobs from RNs in long-term care facilities. A **guide** (decision support tool) to be used by employers has been developed to decide if an LPN is what is needed for a position or another health professional (this guide, while still in draft format, is being used by other professionals).

Special Projects

Nurse Practitioner implementation project - B.C. passed an Act in 2004 and is developing regulations. Target is for 30 new seats (students) this year in PHC, geriatrics and mental health.

PHC - three demo clinics in Vancouver (**inner city**) and one on the Island (Ladysmith). Each clinic has a doctor, an NP, a community pharmacist, and a physiotherapist. Note: doctor is paid through an AFP, not a fee-for-service.

Pharmacology

Pharmacists will not be prescribing in B.C. in the immediate future (except for morning after pill). Pharmacists are being used in PHC demo clinics.

Mental Health

There are a large number of vacancies, which are hard to fill. At the regional level, Vancouver Island has implemented a six-month **Mental Health Worker** program at the local community college to try and fill some of these gaps.

Because there are not enough doctors and nurses working in mental health, the gap is tending to be filled with social workers who are assessing and diagnosing, but they do not have the required training. Coming within the year B.C. is going to legislate (**Reserved Action Model**) such that

only doctors, nurses, NPs (total 13 professions) can diagnose, but not social workers.

Note: mental health issues for youth under 19 years of age is under the jurisdiction of the Ministry of Children and Families.

Home Care

Resident Care and Home Support Worker seats (students) have been cut and the number of these 'professionals' graduating is decreasing as the work in these settings is becoming more demanding. These workers are being replaced by LPNs.

Operating room nurses are in demand. There is a study under way on the feasibility of using LPNs in the OR.

Kivalliq Region of Nunavut

There are two **physiotherapists** based in Rankin Inlet who provide services to the surrounding six communities on an itinerant basis, flying to each community on a regular basis (every four to six 6 weeks).

The most recent innovation in the Nunavut Region is the introduction of **Community Therapy Assistant**. The training program will be 10 months in length and the curriculum for this program is currently under development. The training will be provided centrally in Rankin Inlet, supported by practical work in the participants' home communities. The workers will be community members fluent in Inuktitut, who will be trained to act as support workers to PTs, OTs, SLPs and the itinerant audiologists. They will function as interpreters, advocates for individual clients and essentially "cultural brokers" for the professional staff. They will also have the responsibility of following up on client's individual therapy programs, as well as the maintenance of hearing aids in the communities. They will not be empowered to assess individuals or progress individual programs. They are not meant to replace professional services, but to augment existing services.

The medical library at the University of Manitoba offers full Web-based support services to the staff based in the Kivalliq Region. Where the Internet is not available, the services may be accessed by telephone or by facsimile.

Professional support to the therapists is provided by the School of Medical Rehabilitation at the University of Manitoba.

Telehealth initiatives in the way of professional support (consultation with colleagues on difficult cases) and clinical services (e.g., seating issues, and orthotics).

All clinical services are available on a walk-in-basis, hence, they often represent first contact with the health care system.

Therapists are very much involved in prevention and health promotion activities. In-services to nurses and physicians at health centres and group homes occur regularly, as well as client education sessions within the community, such as elders centres. Examples include Back Care classes, Lifts and Transfers in-services, or Management of COPD elders' classes.

The Northern Program is a component of the JA Hildes Northern Medical Unit of the University of Manitoba, specializing in Aboriginal health. The unit has contracts with the Department of Health and Social Services of Nunavut, as well as the First Nations and Inuit Branch of Health Canada to provide medical services in the fly-in communities in the northern First Nations communities of Manitoba. Medical services include general practice and specialty services, as well as rehabilitation services in the Kivalliq Region and some specialty nursing services.

The program being described is community-based and partners with community services as appropriate, including home care. Home care referrals are accessed directly and therapy services are offered in the home, where this is most appropriate.

Occupational Therapy services addressing mental health issues are being explored further with the Department of Health and Social Services.

Adult and paediatrics group homes operating in the region receive regular therapy services.

Therapy services coordinate with public health in Rankin Inlet to complete preschool screening, which is performed annually. The professional teams up with public health, each completing the appropriate sections of the screening tool. Through this screening, appropriate paediatric referrals to therapy services are being facilitated.

Registered nurses are the primary "gatekeepers" of the health care system in the Kivalliq region. Physicians are consulted on patient care, and referred to, when appropriate.

Family physicians are based in Rankin Inlet and provide community visits to the other communities in the region based on the needs of the community. The nurses in the outlying communities consult with the family physicians in Rankin Inlet between their community visits by telephone, facsimile, e-mail, and telehealth.

The Community Needs Assessment was performed in 1999 to determine the needs for therapy services in the region. As a result, the program being described was initiated.

The development of the Community Therapy Assistant is a result of a report entitled, *A Feasibility Study on Rehabilitation Assistants and Hearing/Speech Workers for the Kivalliq region of Nunavut*. The report looked at the need for therapy services support workers and developed the framework to develop work in progress.

**Human Resource Department
Health and Social Services (HSS)
Government of Nunavut**

Nunavut has established a **Retention Steering Committee** that has multidisciplinary membership. The HSS is currently reviewing the territorial health care system and targeting areas of concern where immediate changes are needed. The development of a five-year strategy is planned to better anticipate health care changes and predict the best way to provide improved care for Nunavummiut closer to home.

Strategies include the following:

1. reviewing the complement of health care providers and the care that they are able to provide with the limitations of being in remote and isolated communities;
2. reviewing the staff mix, increasing the number of physicians to 24.5 across the territory;
3. repatriating Nunavummiut who are living outside the territory due to the inability of Nunavut to provide these patients with proper care;
4. developing a nursing program at Arctic College that began in 1999 (the first two nurses graduated in the spring of 2004);
5. promoting health care professions in the school system through career fairs, job shadowing, and school visits.

Northwest Territories Health and Social Services Human Resource Planning and Development

Note: small population (40,000), isolation, small communities, almost all First Nations.

Overall, the solution that has been most successful in retaining health care professionals in the North is to foster “**local/home grown providers.**” Retention of local nurses is high - of a graduating class of 20, only 3 left the region. Thus, most programs work towards supporting the local population to gain the skills and training necessary to serve their communities. Programs in place include the following:

- **Telecare N.W.T.** - residents can call 24/7 for advice; the Program is operated out of Ontario, but is designed for the N.W.T.
- **Telehealth** - working towards getting all health centres on-line and set up to use this system. A means by where the **Lay Dispenser or Community Health Representative** can liaise between the patient and the doctor.
- **"Do I Need to See the Nurse/Doctor?"** - the goal is to distribute a copy of this book to every household.
- **Integrated Service Model** - a team approach to providing community health care is being developed.
- **Retention and Recruitment Plan** - it has been found that the best way to ensure professionals stay and work in the North is to recruit home-grown talent. Numerous programs to encourage entry into the health professions, including support (financial and mentorship) for local students and programs whereby nursing students are guaranteed a job (e.g. where there is full staffing at hospitals, new graduates are hired as **supernumeraries** and kept in this position (with pay and all benefits) until a position opens up).
- **Advanced Nurse Mentorship Program** - Note: while staffing in hospitals is not a problem, there continues to be vacancies in health care centres because these positions require an advanced degree which most of the local graduates do not have. The Community Health Nurse Development Program is an incentive for new graduates to upgrade. After working for at least one year, the mentorship Program provides them with equivalent qualifications. The policy is to not close down any health centres, but this often means the services of nursing agencies have to be used (at great expense) to fill positions on a short-term basis until a longer term solution can be found.
- **Pharmacists** - shortages result in having to contract out because they are unable to fill these positions.

Canadian Medical Association (CMA)

Manitoba's system of bonuses to physicians for long-term service constituted one of the better retention tools in the country.

The CMA sponsored a study covering "research and advocacy for rural health" that provided a FRAMEWORK OF RURALITY. The study involved collaboration with nurses and pharmacists.

The CMA also has agreements with the national associations of nurses and pharmacists covering scopes of practice. The acceptance of scopes of practice has promoted the use of multidisciplinary teams in the delivery of health care.

The CMA is also engaged in sectoral studies. A new study has produced an inventory of new delivery models – see: www.physicianhr.ca.

The CMA also manages a bursary program for First Nations and Inuit.

The CMA presented a paper to the Kirby Commission on mental health.

More than 2,000 GPs in Ontario have signed up for the alternative funding program being offered in primary health care by the province.

The CMA operates a state-of-the-art computerized projection model for all specialties: "Physician Resource Evaluation Template." The model predicts HHR numbers across Canada taking into account all the variables, such as medical school outputs, attrition and IMGs.

Society of Rural Physicians of Canada (SRPC)

The SRPC is a voluntary organization of health providers interested in rural health (doctors and nurses). It started as a group that felt the federal/provincial governments were not doing enough to support rural doctors. It is there to support physicians and communities, but has become an organization that deals with health care policy and educational issues around rural health. The organization has seen an increase in numbers as it provides professional development through education/maintaining skills, communication with colleagues and sharing information.

Physicians work together in a different way in rural settings than in an urban setting. The concept of PHC has, for the most part, always been alive and well in rural communities and is a very effective means of health care delivery. It just was never funded as such - it developed in isolation without government funding. Primary health care is delivered in rural settings using **a mix of health care providers maximizing their individual scopes of practice.**

If a rural/isolated community has a hospital equipped with an OR and doctors with the skill set to do basic surgery or stabilize a patient before evacuation to a larger centre, there is not only better health outcomes, but better retention of the workforce than communities with hospitals/staff that do not have this capability. If the doctors are not as limited in what they can do in a given situation, they are more satisfied with their work and more likely to stay. The critical size seems to be four doctors for an effective rural hospital setting. If there are less than four doctors, **nurse practitioners** are needed. Ideally, **the goal for rural/isolated communities is to overstaff by one** for both doctors and nurses. The extra should be viewed as a flex person and would cover for emergency, sick time, etc. Without this extra position, the situation tends towards paying up to 2.5 FTEs in overtime, so it is still very financially viable to overstaff.

Incentives - neither carrot (money) nor stick (pay back of student loans/support) work to attract and retain rural physicians. What works is attaining the **right mix of health care providers** such that each provider can maximize their potential and are supported in what they do by their colleagues - a **mix of complementary skill sets** that form a supportive group or team with complementary skill sets - i.e. the Primary Health Care Model.

Telehealth - there are limitations to the use of telehealth in rural communities due to lack of equipment and highspeed lines, etc. It is, however, excellent for educational purposes and for videoconferences and meetings so that personnel are not taken out of the community for long periods. It also works well in psychiatry. In B.C., rural hospitals are currently linked in real time to the Vancouver General Hospital for trauma management but, without the tools and skill set, there is sometimes little that can be done.

First Nations and Inuit communities use **Community Health Workers** with visiting clinics and a link to a physician/primary health care group, and then to a rural hospital, as needed.

**Canadian Nurses Association
HHR Consultant**

Numerous programs and studies in place in the country were cited, which address nursing human resource planning and incentives.

Primary Health Care/Clinics

There is increasing implementation of the primary health care model with the development of teams of health care providers working together. **Nurses and Nurse Practitioners** are being incorporated either in Community Health Care Centres or Clinics.

Examples:

In N.B., "**Nurse-Run Clinics**" have been opened in which primary care services are offered by Nurse Practitioners with no doctor on site. These clinics are also being used for clinical settings or rotations for nursing students. The professors work in the clinic and supervise the students. There is also a "**Primary Care Collaborative Practice Project**" in N.B.

In Ontario, there are examples of nurse-run clinics, e.g. **Congestive Heart Failure Care Clinics**. Again, these are settings where there are no doctors on site.

Home Care

In B.C. (and in the United Kingdom) there are **Home Care Clinics**. The example given was a wound care clinic ('leg ulcer clinic') run by nurses with dietitians, physiotherapists and other health professionals available on site as needed. The 'patient' comes to the clinic for things like dressing changes, IV antibiotics, nutrition counselling, etc., as well as participating in social support group(s). Coming to the clinic also serves as an opportunity for the patient to get out of the house. This is considered a much more efficient use of health professionals than travelling from home to home delivering often the same message. This model is also used in the treatment of diabetes by providing nutrition counselling, teaching blood sugar testing, etc.

Nurses are losing jobs and being replaced by LPNs and the nurse is becoming more involved in case management and overseeing and coordinating the care.

Programs dealing with student nurses, returning nurses and advanced training were also identified. In B.C. (and one of the Eastern provinces) student nurses are hired for summer jobs working independently and unsupervised depending on their level of education. **Legislation was developed to allow student nurses to work in the hospital setting as a 'nurse.'**

Manitoba Nursing Recruitment and Retention Program (also in N.B.) is a large campaign to encourage nurses who have left the profession to return to practice. The Program will pay for the refresher course if the participant is willing to relocate to the province for a period of time.

In Eastern Canada there is a program whereby newly graduating nurses are hired full-time for one

year to give them the time and experience to integrate their skills and be in a better position to apply for full-time work. Historically, new nurses in Canada were only getting part-time positions and, therefore, leaving the country in increasing numbers.

There is a promotion to encourage LPNs to become RNs. Hospitals are paying the cost for **LPNs to upgrade**. First Nations communities and/or FNIHB are also paying for, or otherwise giving incentives, for LPNs to upgrade.

In Manitoba, the CHSRF (Canadian Health Services Research Foundation) has sponsored a Program with the Winnipeg Regional Health Authority and the College of Registered Nurses of Manitoba) in which a **Transition Facilitator** is hired. This is an RN hired to provide ongoing clinical support to nursing graduates in the workplace for the first 15 months that they work.

Strategies regarding geographic setting:

For rural, remote, isolated, First Nations or Inuit communities, there is a realization that rather than continuing to look for the ideal full-time health care provider, they are filling the need with shorter term (six-month) placements and/or sharing of services of health care providers between adjacent communities.

There are continued efforts to recruit and train students from a rural/remote area ("**recruiting home-grown talent**") in the hope that they are more likely to return to that type of setting. Thus, there is more emphasis on placing students in these settings as part of their training.

Inner cities - more and more "**street nurses**" are being hired by cities.

Schools that are underserved by a public health nurse are now hiring nurses through private practice to be the 'school nurse' (in Toronto).

An increase in **personalized recruitment strategies** (finding a job for the husband, finding schools, homes, etc. for the nurse first). Rural communities do not rely as much on job postings and Web sites for finding their health care providers, but rather on word of mouth and then offer personalized packages to potential candidates.

Strategies in various health care settings:

Hospitals

There is a shift in trying to get the mix of full-time to part-time nurses up to 70 percent. The current national average is 53 percent. The University Health Network has achieved this 70 percent goal.

In hospitals there is a shift to allowing nurses to work to their full scope of practice. Rather than having a charge nurse who reports to the doctor, they are removing the charge nurse and each nurse liaises with the doctor or other health professional for their respective patients and oversees all of

their care. Nurses are working more and more to their full scope of practice. There is more job satisfaction and better user of each individual's skills and potential.

There are more and more clinical nurse specialists assigned to specialty areas and nurse practitioners being introduced to Acute Care, Neonatal, ICUs.

In N.B., one recommendation of the Primary Care Collaborative Practice Project was to standardize the **role of the RN in Emergency** and to expand responsibilities to work to full scope of practice, which could be from entrance to discharge. The patient may not necessarily have to see a doctor. Another recommendation was the introduction of Nurse Practitioners to the hospital setting (it was suggested that employers should stop restricting what nurses can do and have been trained to do).

Long-term Care Facilities

There was a trend towards hiring LPNs for these facilities, but with the increasing concerns over patient care, Ontario is putting more money to hiring back **RNs, as well as NPs** for these facilities.

Decision Support Tools

The CNA recently completed a HC-funded project based on the Canadian Nursing Advisory Committee (CNAC) recommendation to study Nursing Workload Measurement Tools. There were 11 parts to this study. One part found that 50 percent of employers are not using workload measurement tools and of those that are, they found serious issues with reliability and validity (nurses are just ticking something to get the form finished and off their list). In another study on Staff Mix Decision Tools, there are examples of tools being used (such as a staff mix decision tool framework for RNs, LPNs and Psychiatric Nurses).

Canadian Pharmacists Association

The evolution of the scope of practice of pharmacists in Canada was described. Generally, pharmacy technicians are being used more extensively for "mundane tasks", such as counting pills, undertaking computer entry and labelling. This trend is more pronounced in the hospital setting, as it is easier to implement policies and procedures in hospitals than in community pharmacies. In hospitals, these practices are approved within the departments of pharmacy, and approved by hospital-overseeing boards. It is more difficult to delegate tasks within community pharmacies, as there is a variety of provincial regulatory bodies to deal with. Currently, the pharmacy technician has no legal standing in the country. Ontario is further ahead of the other provinces in having put into place a Pharmacy Technician Certification Program (under the auspices of the Ontario College of Pharmacists).

The role of pharmacists is also expanding to include **more patient-oriented care and more in terms of a PHC provider role**. This is becoming a trend across the country. The more widespread use of this expanded role has been hampered, however, by the shortage of pharmacists in Canada.

There have been many interesting pilot projects. For example, in Alberta and B.C., pharmacists have been trained to manage dosages for anticoagulant medication. Evaluations have been conducted and have shown the effectiveness and efficiency of this practice, with the care provided by pharmacists being at least comparable to care provided by family doctors in this respect. This project started out in a hospital setting, and has now expanded into communities.

Another Alberta study utilized pharmacists to **screen and manage patients on cholesterol medication**; evaluation results showed very positive outcomes in terms of patient health management.

Pharmacists performed a **triage role** in a Windsor, Ontario, study, where they assessed patients purchasing Zantac and other acid-reducers. Half of the patients assessed presented "alarm symptoms" and were referred to physicians for further investigation. Pharmacists have also played a role **as health educators** in several studies. In particular, pharmacists were trained as health educators in an asthma study, wherein patients were recruited, received education and instruction on prevention. As a result of the pharmacists' interventions, there were fewer trips to emergency departments, less use of broncho-dilators, and reduced morbidity and mortality.

In general, pharmacists are seen to be **enhancing the role of family physicians in PHC**, and could do more, allowing family doctors to focus on more complex and acute cases. There has been no payment method established to pay pharmacists for this expanded role. Pharmacists were paid while part of the studies and projects referred to above, but not beyond that. However, shortages of pharmacists have had a restraining role in expanding their scope of practice. The regulatory system has been slow and reactive. New tasks being performed by pharmacists could be challenged by medical associations, and there have been "some discussions" with the political arms of the medical profession, which have been very reluctant to give up "political turf."

Pharmacists have also expanded their scope of practice into home care (at no charge to patients, and for which they are not paid). In a recent survey, 20 percent of respondents had made home visits to patients (usually seniors), and had performed tasks, such as taking over new prescriptions and explaining usage; completing medication reviews of patients; examining storage of medication; assessing medication interactions (on average seniors were found to be on more than 10 prescriptions a year).

A current study in Ontario (University of Ottawa and McMaster University) integrates pharmacists into the family practice group setting (Impact Study).

Technology has also been used, telepharmacy is used for prescription refills on the Internet. Also, pharmacists have provided telehealth support to First Nations and Inuit communities, dealing primarily with nurses and community health workers on reserve.

Canadian Physiotherapy Association (CPA)

Education/exposure - When students have pre-graduation exposure (i.e. clinical placement) in a northern/rural setting, they are much more likely to seek and accept a rural/remote placement. In Saskatchewan, (U of S) there is an Interprofessional (Health) Undergraduate Practicum Program in Africa, which integrates community development and primary health care. It has been found that this experience is valued in the inner city/rural/remote placement in Canada where poverty in the community is often a factor. In Saskatchewan, there is student placement in conjunction with Tribal Health Councils. (Note: it was mentioned that it seems as if anything innovative comes out of Saskatchewan). Employers (private and public) report that if they take on a student for a clinical placement, they are much more likely to be able to recruit that student upon graduation.

Rural - See rural placement during training (above). In Saskatchewan, physiotherapists in rural settings work in conjunction with telehealth. Some physiotherapists prefer the rural setting as they have exposure to the full spectrum and have more opportunity to work to full scope of practice, which they find rewarding. In urban centres, the individual or centre tends to become more specialized in one area or another.

Primary Health Care - In Saskatchewan, community clinics tend to include physiotherapists who work in health promotion and disease prevention, as well as the more conventional role (again, opportunity to work to full scope of practice). Several provinces/universities are looking at interprofessional health education programs whereby the various health professional groups have classes together to become familiar with their respective scopes of practice and to develop the team approach as seen in PHC settings/centres.

Physiotherapy Support Workers - These tended to be on-the-job training, unofficial positions. There are now one- and two-year college-trained support workers. As yet, there are no set standards and the Program(s) are not accredited, but a competency profile has been developed to look into 'formalizing' the profession. This professional group is seeing increased placement in rural settings, and once the training becomes standardized, further increases are anticipated. A basic problem lies in the fact that a physiotherapist would have to have direct responsibility, which is difficult without direct supervision. The profession has to look at the supervision/regulation issue and have legislation in place. Support workers tend not to be used in home care settings due to the same issue of direct supervision.

Canadian Mental Health Association (CMHA)

The CMHA does not espouse the medical model of care to its membership. The organization fully supports the need for, and appropriateness of, medical intervention; however, it does not consider medical intervention to be the only intervention. The medical model is not the only model as this view affects its perspective on HHR planning and deployment.

Psychiatrists in Canada are "in incredibly short supply", and likewise, there are not enough nurses who can work in mental health services. It is also difficult to attract other health professionals - such as social workers, support workers, occupational therapists - to work in the mental health field. Nurse practitioners can do much of what physicians can do in PHC.

When hospital bed closures take place, psychiatric beds are often the first to be closed. Recent trends have seen mental health patients be deinstitutionalized, without the required community support to assume their care and well-being. More supportive housing is needed to support community living.

From a HHR viewpoint, "we don't have the capacity in Canada to address the needs of people requiring mental health services." It is a challenge and problem area. A broader strategy is needed, and it is imperative for groups to work together to find solutions. It is important to remember that mental health patients also have PHC needs, which are not being addressed. The CMHA has, however, developed interesting initiatives to respond to shortages. For example, the local branch of the CMHA in Windsor, Ontario, hired a nurse practitioner as part of a multidisciplinary team (also including a part-time psychiatrist and a GP) on a pilot project funded by the Ontario Ministry of Health and Long-Term Care to provide expanded care, which includes prescribing, monitoring and adjusting medication. This model of using an NP to screen patients requiring referral to a physician should be more widely adopted.

Many CMHAs have clubhouses, which provide services to chronic patients using occupational therapists, social workers, and mental health support workers.

Psychiatric nurses provide a very important service in the hospital setting, and are more prevalent in Western Canada. However, the continuum of care breaks down between the hospital and community.

NPs are also used to provide primary mental health services in First Nations communities and in remote and rural communities and are found to be very effective.

Nurse Practitioner Association of Manitoba and Canadian Association of Advanced Practice Nurses

In Manitoba, there are very few positions and those nurses with the education and the training cannot get a job.

Programs in place in Manitoba include the following:

- Visiting Doctor Program - in-house visits
- Health Links - a call-in health service whereby a protocol is used to assist with, and advise regarding the next step (e.g. go to emergency or not)
- Mobile Needle Exchange Program (with a street nurse for primary care, health promotion, etc.)
- Mobile Breast Clinic
- Mobile Dialysis Clinic
- Mobile Mental Health Crisis Team (on-call team that will go out with police or ambulance, when required)
- TeleMed
- Find a Doctor phone line
- Midwifery prenatal care for teens
- PACT - Program to develop a care plan to try and keep mental health patients out of hospitals and in the community

Education

There are distance education programs to train people within their communities in health services. The Nurse Practitioner program is an on-line Master's program that can be taken as long as there is another NP or physician in the community willing to act as preceptor.

First Nations

Translators are available at most hospitals. They are used not only for in-hospital communication, but also for discharge planning and coordination.

Most hospitals require all non-Aboriginal staff to have taken cultural sensitivity courses.

Nurse Practitioners

As yet, there are no NPs working in emergency, but this is coming.

Most NPs work in critical care in publicly funded community clinics or for doctors in private practice in smaller communities. Legislation is not in place to use NPs to their full scope of practice (prescribing, ordering diagnostics, performing invasive procedures) so many private practices see it as a waste of time and inefficient because the client often still needs to be seen by the doctor for prescriptions.

Canadian Healthcare Association (CHA)

It was strongly recommended that we survey institutions and regional health authorities to get a better picture of what types of innovative experiences are taking place. The National office of CHA does not track innovative projects.

CHA puts forward some policy principles to guide it and its membership, which can be summarized as follows: 1) taking a systems approach; 2) meeting and better serving the health care needs of Canadians; 3) cost-efficiency (how to work in the most cost-efficient way, including deployment strategies).

It is important for all health care professionals and providers to work to their full scope of practice. However, this is not always the case, and often institutions pay for a higher level of service, which is not warranted in all cases. Barriers to professionals working to their maximum scope of practice include union contracts, which prevent these practices from happening. This underlines the importance and the need to use evidence-based approaches. Canadian-based research is needed to document and provide evidence that innovative practices are reliable and effective.

"Entry-to-Practice Credentials" also need to be examined. More professions are requiring Master's-prepared professionals, which will create problems. Who will pay for Master's-prepared providers? Is their deployment cost-efficient? Will these professionals be allowed to use all of their skills? There is certainly a creep upward of "credentialism" and of entry-to-practice credentialism. This has an impact upon scarce HHR and costs to the system.

Collaborative practice is good for certain types of care, such as management of chronic diseases, mental health services, PHC, cardiac care, but it might not always be the preferred approach for all situations. It is not a universal model.

An important issue is the use of unregulated workers, particularly in home care and LTC settings, adopted as cost-saving measures. These measures can backfire, and can create problems. Many of these types of workers do not have the required training, which can affect patient safety issues. It is not cost-efficient to use people who do not have the appropriate training.

Another concern is the use of family members to provide care. Again, many of these individuals do not have the required training, which can affect patient safety issues.

There are issues of turf protection, yet there is "in theory" commitment to expanded scope of practice for some professions. In practice however, barriers are put into place. Members of CHA are worried about "how to pay the bills", yet they may not compromise on safety issues.

Laboratory technicians are important to the health care system. There is much discussion about doctors and nurses, but without the supporting professionals, such as laboratory and radiology technicians and rehabilitation professionals, the health system would come to a standstill. There needs to be better recognition of government's role in the education and training of these professionals and the education system must provide enough funds and seats to train essential workers. These issues must be addressed by the health care and the education sectors.

Canadian Health Services Research Foundation (CHSRF)

The management of oncology patients shows that good continuity of care is achievable for clients who live in northern First Nations communities, although there are serious disruptions in areas like mental health. Continuity depends on having adequate, appropriate and well-prepared staff at the local level and effective communication between primary and tertiary care centres.

The ideal is to **recruit and retain staff who are knowledgeable about the unique requirements of highly independent northern practice**. Even those hired to provide short-term coverage must use holistic approaches to care.

The interdisciplinary team of care providers is small. Achieving continuity depends upon **local paraprofessionals** being accepted, recognized and supported by the professionals, both inside and outside the community.

The First Nations and Inuit Health Branch (Ontario Region), working in collaboration with local health authorities, must find ways to provide stable funding for health promotion, early screening and detection efforts in oncology, diabetes and mental health. A national mental health strategy for Aboriginal peoples should be developed to shift from the current emphasis on crisis intervention to providing a full continuum of mental health care.

Access to client information is hindered by time, distance and providers' lack of knowledge about the work environment in other care settings. At the local level, client charts need to be organized so information is easy to find and understand. Further, the importance of timely and complete client information needs to be reinforced for all those who deal with northern First Nations communities.

In the former South Fraser Health Region of British Columbia (now a part of the larger Fraser Health Authority), the number of alternate-level care patients is increasing. Care for these patients - who occupy acute care beds while waiting for a transfer to a chronic unit, home for the aged, nursing home, rehabilitation facility, other continuing care institution, or homecare program - is viewed as low-status by registered nurses, unchallenging, and not what they were trained or hired to provide (Kuhn 1990). Caring for these patients may, therefore, negatively affect nurses' morale and sense of control. It may also lead to more injuries, as alternate-level patients frequently need to be lifted and transferred. To deal with the increasing alternate-level patient population, the South Fraser Health Region developed a dual strategy of building more community beds and, as an interim solution, improving alternate-level care within the acute care system.

Canadian Institute for Health Information (CIHI)

Information and data on deployment of HHR is not specifically collected. There is an awareness of jurisdictional issues regarding nurse practitioners involving scope of practice. There is also an awareness of work done by the University of Toronto's nursing resource unit regarding work measurement tools.

MIS guidelines have been developed by CIHI and include standards for collecting workload data, both financial and statistical. There are over 20 Workload Measurement Systems (WMS), including those for nursing, occupational therapy, respiratory technology, physiotherapy, diagnostic imaging, etc., which are all different methodologically. There are three different approaches, including those based on average time calculations (used in clinical laboratories, diagnostic imaging, pharmacy); standard time; and actual time.

MIS users include managers of departments and provincial and territorial health managers. The objective of MIS is to assist in determining budgets, resource allocation, and staff and skill mixes; assessing productivity; and estimating FTE requirements.

These MIS standards are purchased by health care institutions from CIHI and may provide this information to provincial and territorial departments of health. The provinces and territories decide on the information to be reported to CIHI, which compiles the aggregate databases.

In terms of the WMS, the provinces and territories are at different stages of implementation. In addition, implementation of the WMS is one thing, using the data to inform decisions is another.

Canadian Association of Occupational Therapists (CAOT)

As an organization, CAOT is not involved in deployment issues of human resource management. There is a need for baseline data. CAOT has completed one study (funded through HRSDC) to look at human resource data for the profession and a second study on human resource planning, but is waiting for funding for a third study, which will address strategies whereby CIHI will be the keeper and manager of the data.

Occupational therapists (OTs) tend to work in urban centres and in hospital settings, but it is known that there is an access problem in rural settings. CAOT recommends that A National Home Care Program should include OTs as an essential and core component.

There tends to be no free-standing occupation therapy clinics, but OTs are beginning to be included in pilot projects in PHC clinics.

Funding is an issue. OT services are covered in hospitals under the *Canada Health Act*, but outside the hospital setting funding varies by jurisdiction. Many OTs work outside the publicly funded health care system either through Workers' Compensation, auto insurance, and the school system.

There is a real need to examine the population health needs first in order to assess the need and placement of OT services, along with addressing the funding issue.

Canadian Association of Advanced Practice Nurses

In Ontario, nurse practitioners work in two main areas of practice: primary health care and acute care, with highly specialized patient populations.

There is now growing interest in deploying clinical nurse specialists (who are also nurse practitioners) for nursing support in ICUs conducting advanced therapeutics and pre-op assessments.

In London, Ontario, nurse practitioners are involved in collaborative practice arrangements. In multidisciplinary teams, nurse practitioners make patient rounds with physicians, but approach rounds from a different perspective and examine the systems surrounding the patients, as well as the patients themselves.

Nurse practitioners in Hamilton, Ontario, deal with public health and conduct surveys of population health, deliver antibiotics and participate in treatment of infectious diseases. In a number of rural/isolated nursing stations, some nurse practitioners are employed as community health nurses. Clinical nurse specialists work with Health Canada in the Inuit communities of the North.

Another example of nurse practitioners' practice consists of the "street" nurses of Vancouver who distribute clean needles and condoms; conduct birth control counselling; and distribute booklets. Patient counselling is an important part of their role on the streets.

In primary health care, emergency departments are utilizing nurse practitioners in acute care settings.

Dalhousie University Faculty of Health Professions

This faculty undertakes health workforce research projects on behalf of the Maritime Council of Education.

The deployment of **nurse practitioners** in the Atlantic Canada First Nations communities of Eskasoni, Whycogomah, and Millbrook was cited as a creative deployment strategy.

The establishment of the Youth Health Centres in Truro, Amherst and Pictou were innovative deployment examples with **senior community nurses** intervening with programs for pap-smears, birth control and morning-after pills.

In Nova Scotia, nurse practitioners, along with GPs, consult regularly with mental health services and conduct sessions in schools.

Strategies should include **enhancing the quality of work environments and participating more in decision-making** at the local level. The use of **non-cash incentives** is very important, such as time off work, limited overtime, and quality time at work.

It is important to enhance access for First Nations candidates in health education programs in order to promote their participation in opportunities to return to their communities. There is a lack of incentives for this type of initiative, which requires an increase in First Nations mentors.

The best initiatives are **GPs working in multidisciplinary teams**. It has been shown that health outcomes are improved.

There are dramatic shortages in pharmacists. **Pharmacists could work directly in communities in prescribing antibiotics, working with the elderly on education for medication, and lowering intensity of drug use.**

LPN Registration Board P.E.I.

P.E.I. is a small province, and change is not easily accepted. It lags behind the rest of Canada in terms of the actual scope of practice for LPNs.

A new Program for LPNs was developed in 1996, but the competencies developed in this curriculum are not utilized in actual practice. For example, LPNs are trained in the administration of medication, but in clinical practice they are not allowed to do so as a result of legislative barriers, such as the *Community Care and Nursing Homes Act*, which prohibits all but RNs from administering medication. There is thus a "disconnect" between what LPNs are trained to do, and what they are actually allowed to do in practice. There is also some professional resistance to an expanded scope of practice for LPNs, but things are changing in light of shortages of personnel and all groups being under stress to provide services.

Work is under way towards an expanded scope of practice for LPNs. A Project funded by the Labour Market Development Agreement of HRSDC has brought together the P.E.I. LPN Registration Board, the LPN Association, and the Department of Health to identify entry-level competencies for LPNs, as competencies are not clearly identified in any document at the moment. This competency identification includes a Web tool for self-assessment. A final report was due in August 2004. It is expected that second and third phases of this study will be carried out to identify overlaps between LPN and RN competencies, and then to further identify educational needs to address LPN gaps. It is anticipated that this study will contribute to an expanded scope of practice for LPNs.

There are also plans to introduce prior learning assessment tools to evaluate the knowledge and skills of LPNs wishing to continue into a Bachelor of Nursing Program.

The change in title from "Nursing Assistant" to "LPN" in 2002 through legislative change greatly enhanced the morale and professional recognition of LPNs, although there are still morale problems as a result of LPNs not being allowed to work to their full scope of practice.

LPNs working in the private sector are ahead of their counterparts in the public sector, where they are able to work to their full scope of practice in private community care facilities (in some community care facilities, there are no RNs, only LPNs).

A Health Disciplines Act would be useful in addressing "turf" problems in delivering nursing care to patients.

North Network

The North Network is a telemedicine Program that has been providing patient consultations and continuing professional education to northern and rural communities in Ontario since 1998. It is funded through the Ontario Ministry of Health and Long-Term Care, after an initial infrastructure development grant from CHIPP (Health Canada Health Information Highway) of \$8.5 million. The North Network provides services to over 800 patients a month in 70 specialty areas and works with approximately 100 member organizations at 150 sites. Its principal partner is Keewaytinook Okimakanak Telehealth.

The North Network has increased access to health care services to populations in remote and isolated communities, through two-way television, electronic medical devices and other technologies. Services are provided by physicians, nurses, and allied health professionals, which are coordinated through the Sunnybrook and Women's College Hospital in Toronto. There are case conferences for mental health care workers, diabetes education, and emergency telestroke Program, nurse practitioner support in remote and rural communities, and telementoring. North Network has achieved a linking of 14 hospitals and 2 First Nations communities to provide a tele-radiology service in northwestern Ontario.

Allied health professionals, such as speech therapists, OTs, PTs, psychologists, nutritionists, diabetes educators are also involved in patient care, and take part in assessments, patient education and management. Many of the activities are carried out through multidisciplinary teams at both the urban academic centre and at the rural location, and review, for example, patients' treatment plans before they are sent home to their communities.

Barriers to this telehealth Program include physician remuneration issues; credentialing of physicians to provide telehealth services; interprovincial licensure; and MIS and patient-charting systems.

North Network has begun collaboration with other CHIPP-funded initiatives in Ontario, the Eastern Ontario Telehealth Network and the Southwestern Ontario Telehealth Network to launch a single portal - Telemedicine Networks in Ontario.

An external evaluation was carried out at the conclusion of the CHIPP Program funding. Current base funding is provided by Ontario's Ministry of Health and Long-Term Care, which provides for some stability and sustainability.

TETRA Program - Newfoundland and Labrador

The Telehealth Education Technology Resource Agency is a non-governmental agency, which provides services in health and education to a variety of users. While housed at Memorial University of Newfoundland (close to medical and nursing schools), it is not funded by the University nor the Newfoundland and Labrador Government. The budget is \$2 million (most of it telecommunications costs) and there are 16 FTEs. Users pay for the Program, e.g. health boards, third-party payers (insurance companies), professional associations, and some private sector organizations.

TETRA does not employ staff directly, but collaborates with health and education boards across the province, providing assistance in implementing technology and providing telehealth services (audio and video links). It is multifunctional in providing health and educational services to a variety of users. There are many layers of services, from specialty consultations, to interprovincial connectivity, to education and training. It works with small communities, including Aboriginal communities in remote and isolated sites, in setting up telehealth sites.

Project funds initially set up 70 sites (funded by the European Space Agency, Canadian Space Agency, Health Transition Fund), although some form of telehealth has been in operation since the seventies.

Examples are advanced practice nurses providing primary care services in many remote coastal Labrador communities.

Newfoundland and Labrador physicians are not reimbursed for telehealth services. Accordingly, the Program relies on salaried physicians to deliver services (e.g. oncologists, radiologists, psychiatrists) and on nurses (advanced practice and nurse practitioners). Other specialists volunteer their time and consultations. This is an important issue for the future of telehealth in Newfoundland and Labrador.

Other allied health professionals are involved, such as physiotherapists and speech pathologists.

Thirty percent of TETRA activities are health-related.

Several evaluations have been conducted with most projects being evaluated. However, there has not been any comprehensive evaluation. Lessons learned include the importance for skills development, training, the right equipment, and the human resources to support the health staff.

Scope of practice and licensing issues are important and must keep up with the technology. Likewise, the importance of compensating physicians for telehealth is key for the sustainability of telehealth.

World Health Organization (WHO)

WHO reports on experiences in Africa regarding the transfer of tasks from one level of health care provider to the next level. The report includes discussion **on employing nurses to prescribe and conduct minor surgeries and on using medical technicians**. In Brazil, transfers of tasks have occurred from physicians to **paramedicals**. Models for expanded scope of practice for nurses have been developed mostly in Canada, the United States, and the United Kingdom.

Health researchers working in Second- and Third-World countries are hesitant to describe deployment initiatives in health care since Canada is considered much more advanced in this field.

Ministry of Health, France

Difficulties exist in France in recruiting specialists and nurses. In particular, the Paris region has problems with job retention because of the high cost of living. Quotas for medical education programs are too low. A recruiting team has been established in both Spain and Poland to recruit nurses and has experienced some measure of success. The nurses are given language training and hired. There have been 800 nursing recruits since 2002. Spain has a surplus of nurses because they train more than they need and have no entrance quotas.

The Ministry of Health has created working groups (*observatoires*) for workforce sectors. Unions and associations in France are powerful and protective. The Ministry uses models in each work sector to predict the demand for, and the supply of, health care workers.

**Bureau of Health Professions
U.S. Department of Health and Human Services (HHS)**

The HHS is mandated with federal programs, but the state governments administer health at the state level. There is a diversity of programs and activities, which were recommended be examined. There are initiatives between the federal government and the state governments to address nationwide shortages of HHR, such as the National Center for Health Workforce Analysis.

The U.S. is experiencing a shortage of key HHR professionals, and there are many programs to address these shortages. Areas experiencing shortages of health care providers are called health professional shortage areas (HPSAs), and are assigned a score from 0 to 25, with 25 being the most severely underserved area.

One of the most successful practices to address shortages has been the Loan Repayment Strategy, where future primary health care providers (see below) are offered loan repayment schemes to serve in underserved areas for up to three years. This Program has a high success rate with 55 percent of loan repayees staying in the HPSA communities for up to an additional 15 years beyond the loan repayment time allotment. This has been successful in providing access to populations in several underserved areas, and in providing continuity of care. There is also a scholarship Program, but it is not as successful as the loan Program (default rates are 80 percent for the scholarship Program, and 20 percent for the loan Program).

Primary care providers who are targeted by this Program include paediatricians, internists, family doctors, obstetricians, nurse practitioners, midwives, clinical nurse specialists, dentists, and mental health counsellors.

Regarding the nursing shortage, there are three new programs being implemented to assist with recruitment and retention problems:

Funds are being provided to training institutions to increase the education and retention of nurses, e.g. training nurses aides to become nurses and to train upwards on the nursing career ladders.

Internship and Residency Program - is a mentorship program that links nursing students with new graduates and provides better exposure to worklife issues and clinical practice.

Enhancing Patient Care Program - provides clinics and hospitals with funds to enable nurses to come together as groups to discuss recruitment and retention problems, identify barriers, and find solutions and measures to address these problems.

There is also a Nursing Education Loan Repayment Program to assist with placement of nurses in shortage areas.

There is great variety in terms of scope of practice of nurses across the country with some states enabling NPs to practise to their full scope of practice (more prevalent in rural areas), and other states having more barriers and limitations of nursing practice. Massachusetts is an example of a progressive state in the use of NPs.

There is difficulty in attracting MDs to work in primary care, and to address this issue, the HHS sponsors a PHC week, with teleconferences and other promotional activities being held in medical schools.

There is widespread use of telehealth technology throughout the country.

Another Program is the Area Health Education Center (AHEC), which involves clinical sites linking up with academic institutions through clinical rotation placements of medical students, interns and residents in underserviced areas to provide them with more community exposure.

Aboriginal Health

Indian reserves are considered underserviced areas, and are managed as HPSA programs by the Indian Health Services Unit within the HHS. The U.S. Public Health Service also staffs positions on these reserves (USPHS is a Program under the U.S. Surgeon General's Office). There has been an initiative to attract more Aboriginal and minority populations into the HHR professions.

U.S. National Institutes of Health (NIH), Indian Health Services (IHS)

General Description

The National Institute of General Medical Sciences (NIGMS) and the Indian Health Service (IHS) jointly established a new program designed to promote, develop and support centres to link the Native American Community with research organizations. The Program created, **Native American Research Centers for Health** (NARCH was established in September 2000 and focusses on health conditions and research germane to American Indians).

NARCH forms a strategic partnership with NIGMS and the IHS to serve the health care needs of American Indians and the Alaska Native communities. Most innovatively, NARCH includes American Indians as research partners, as opposed to research subjects. The Program is designed to provide American Indian researchers with a sense of ownership for their research on issues that affect them.

NARCH is also mandated with developing a cadre of American Indian biomedical and behavioural scientists and health professionals who can successfully compete for NIH grants. Another goal is to increase the capacity of research organizations and Indian organizations to work in partnership on research proposals and projects.

The program provides funds to support faculty-initiated scientific research projects, including pilot research projects, and also supports projects to increase the research skills of Native American science students.

The IHS has primary responsibility for health care to Native Americans; this initiative developed between the IHS and NIGMS following a conference on training needs sponsored by the two organizations. It is a relatively new partnership (three years) designed to increase capacity ("who is in the driver's seat"). It evolved from a roundtable discussion attended by NIH and the IHS, as well as a select group of participants, including physicians, research institutions, health boards, and Indian researchers. Discussion focussed on how to develop capacity primarily, and not on how to treat or approach specific diseases. This group laid out the foundation for NARCH, and issued its objectives, guiding principles, as well as cautionary notes.

Mandate

The IHS and NIH developed a responsive Program. Congress provided the IHS with its mandate and allowed it to issue grants, using NIH funds. Tribes are the grantees and select projects of interest and importance to them. These grants also contribute to the development of infrastructure and capacity (good examples include: White Mountain Apache Tribe of Arizona is in a partnership with John Hopkins University's MPA Program; Portland Area Indian Health Board is supporting post-doctoral research by granting funds to meritorious students).

The current commitment (2000-2005) is for US\$20 million, which covers the first five years of NARCH's operations. In principle, Congress is committed to another five years, from 2005-2010.

It receives close to US\$5 million a year. The federal grant is supplemented by some private contributions, for example, cancer institutions. There are currently about 10 NARCH projects, which are multi-year (approximate duration of four years).

NARCH is an interesting and innovative Program, which has strong potential for developing the capacity of Aboriginal health research efforts. It also promotes strong links and partnerships among research institutions and Aboriginal tribes and health councils, working together to address health issues of specific concern to Indian populations. Several of the research projects are dedicated to reducing disparities between Native American populations and the mainstream; increasing the number of Native researchers; and studying risk factors affecting Native populations.

United Kingdom National Health Service

The National Health Service identified its goal in terms of the number of additions to all positions needed for each health profession and then set about filling these positions through the following four initiatives:

- hiring new staff either locally or internationally;
- developing initiatives to reduce the numbers leaving the workforce;
- instituting return-to-work programs; and
- changing workforce programs.

The return-to-work Program was found to be the quickest and most effective means of increasing the workforce. Twenty thousand workers were brought back into the workforce in three to four years. Surveys were done to find out why individuals had left the workforce and the issues identified were addressed. It was noted that the rate of pay was about sixth down the list of reasons individuals had left the workforce. More importantly were issues around lifestyle, which were similar to issues identified and being addressed by the second initiative (“keep what you have”).

Changing workforce programs is centred around more staff working differently; breaking down traditional barriers allowing each professional group to work to its full scope of practice; and changing the pay system to better reflect the skills delivered.

The role of the assistant is growing in all professions - physician assistants, midwifery assistant, radiography assistant, etc.

Some ‘new’ roles identified include the following:

- Evercare - nurses that are educated to train patients with chronic health needs to attend to more of their own care;
- Home Help - support workers to assist people who have just come out of a hospital;
- Nurse Prescriber; and
- Pharmacist Prescriber.

National Recruitment and Retention Project (NRRP)

Scientists

This office is responsible for 'scientists' including laboratory and radiation technologists.

Many of the programs are incentive-based, from direct financial incentives to payback schemes. It has been found, however, that recruitment and retention rates are improved more through programs that look at improving worklife. There is a Program in place called **Improving Working Lives Initiatives (IWLI)**, which addresses issues such as:

- flexible working schedules (part-time/flex time, etc.);
- personal development (courses, e-learning, integrated career pathway); and
- flexible retirement (an option to work last years either part-time or with reduced management responsibilities, but retain pension according to previous, higher paid years of service).

Allied Health Professions

This office is responsible for allied health care workers, which includes physiotherapists, occupational therapists, speech language therapists, etc.

In areas that are difficult to recruit, there is a tendency to look at the local population, which is not transient and employ their services as assistants and offer opportunity for more formal training.

There are programs in schools - at a very early age - to encourage considering the health professions as a career and begin course selection towards this end. There is a need for programs to enhance and widen the field to include a broader socio-economic and ethnic base to these professions. HHR usually tends to be middle class white females. In order to better serve the population, there are efforts to change this stereotype.

The Unit is working towards developing the PHC TEAM by better defining their roles.

Home care clients with ongoing chronic conditions often do not want troops of professionals coming through their homes. Consistency in their caregiver with a small team, or a more multi-skilled generalist, is preferred. To this end, the role of any one therapist may be expanded to include aspects of what would otherwise be thought of as a separate profession (e.g. having a physiotherapist provide nutritional counselling).

One needs to temper the needs of the service with the needs of the individual worker. In hard-to-fill positions where burnout is high, there must be robust support and supervision/management and a plan whereby professionals are given opportunities for respite work and know the game plan and where it is leading them in their careers.

Allied Workers

This office is responsible for allied workers in the NHS (kitchen staff, cleaners, etc.) including **nurses aides**, however, many of the programs discussed are also being implemented for nurses, technicians, etc.

The key is the training and use of support workers. Career Pathways and Skills Escalating Programs are effective in keeping workers within the system. It has been found that financial incentives alone do not work to attract and retain workers. Offering more flexible hours, assistance with travel and daycare are incentives that are more attractive than monetary

incentives. In other words, reduce the stress of working. The NHS cannot compete with the private sector for many of these professions/positions financially, but they can offer pensions and on-the-job training and upgrading. The **National Vocational Qualifications** is a system whereby, for example, nurses aides would be hired and offered the training to move up through the various levels of training to the point where they could be seconded for a year on pay to become a registered nurse.

The National Recruitment and Retention Program works with local job centres (employment offices) that pay benefits to the unemployed to get this group (the undereducated; those with language (ESL) issues; and those with physical and mental health problems) into the health care workforce. The Program 'recruits' within the local community (job fairs) by offering pre-employment programs followed by on-the-job training. This long-term strategy hopes to establish a renewed workforce that will follow in subsequent generations. The goal is to establish a diverse (ethnic) workforce that reflects the demographics of the population it serves.

Many of those that this Program serves or targets have had mental health/stress-related issues. It is often found that this group are 'good' workers within mental health institutions as they can relate to the patients.

Changing Workforce Program

This Program looks at structures and roles of professions with an eye to changing and developing new roles (for example, the use of support workers in the physiotherapy and occupational therapy professions; and the use of assistant nurses and assistant midwives and other professions to release the nurse, etc. to undertake more clinical work).

Nurse Prescribers

More than 25,500 district nurses and health visitors have been trained to prescribe from a formulary, and another 2,000 nurses are qualified to prescribe from the Nurse Prescribers Extended Formulary. More than 1,400 of these nurses and **100 pharmacists are trained as supplementary prescribers** (www.nurse-prescriber.co.uk/news/news_roundup.htm).

A Department of Health study states that extended nurse prescribing is improving patient care. The professional bodies for **physiotherapists, podiatrists, and radiographers have been developing a training Program for supplementary prescribing for these groups**, and there is discussion about **dieticians, occupational therapists, speech and language therapists, prosthetists, and orthotists** being added to the list of professionals authorized to prescribe medication.

**Health Workforce Advisory Committee
Ministry of Health (MOH), New Zealand**

Deployment of the health workforce is not centrally driven. Health care is delivered by 21 District Health Boards (DHBs) in New Zealand, which work with education providers in setting up health delivery teams of specialists, GPs, and midwives. There are only 9 nurse practitioners (NPs) in the country, but it is anticipated that their number will increase in the near future.

An “umbrella” act has been passed by the New Zealand Government to increase scope of practice for RNs. New Zealand is in transition in allocating prescribing rights to NPs.

The Maori Provider Development Scheme is part of the government’s commitment to support the delivery of effective health services. The fund is managed by the MOH and the respective DHBs, and provides funding directly to health programs aimed at the Aboriginal population.

Existing structures are GP-driven and MOH is looking to developing multidisciplinary teams.

Mental health support workers are trained separately to level 4 (vs. RNs at level 6 which is baccalaureate level) and most training is workplace driven. There has been more involvement since the devolution of patients from institutions.

New Zealand is now analysing workforce research so as to provide for better support care of the elderly by training support workers. The issue of regulated versus unregulated workers is also being examined with a view to ensuring that high standards of care are maintained. Workers in the field of elder care are considered to be poorly paid.

New graduate programs have been established for training nurses in the mental health field. A new category of nurses – “enrolled nurses” - are moving up into the RNs’ scope of practice. There is a strong tradition of midwifery in New Zealand.

Queensland Rural Medical Support Agency (QRMSA) www.qrmsa.com.au

The mission of the QRMSA is the enhancement of functional relationships between general practices and other primary health care providers and communities; and the implementation of sustainable solutions embracing cultural diversity and innovation in workforce development and support.

There are recruitment and retention programs including the following:

- Medical education and training (workshops, clinical attachments to hospitals, support to attend functions)
- Data Research and Evaluation - information system to allow for effective monitoring of workforce distribution and proactive planning
- Locum program
- GP recruitment
- Family support
- Quality Use of Medicine - pharmacists providing services to rural doctors (practice visits, teleconference, information sessions)

Use of Pharmacists for Rural Practice Setting

Home Medicine Review is a consumer-focussed collaborative service involving the GP and the local community pharmacist to optimize medicine use and prevent medication-related problems through a team approach. The consumer is referred to the pharmacist. The pharmacist interviews consumers to gather information about their medication. The information is assessed and written up and discussed with the GP. After discussion with the pharmacist, the GP and the consumer agree on a medication management plan. The patient is central to the development of this plan.

Australia
James Cook University (JCU)
Rural Health and Workforce Research Unit

All universities, undergraduate health care programs have compulsory (legislated) training/clinical in rural settings at various stages of their training for doctors, nurses and pharmacy students in an effort to increase rural placement. There are numerous scholarships that can be worked off by doing time in rural settings, but these scholarships can also be bought out.

Until recently, all medical schools were in the south and in urban settings. The JCU now has a medical school (in year five with first cohorts about to graduate) and its mission is to attract students from rural areas and train them with the skills and confidence to work in a rural setting. These graduates are trained to be empathetic and knowledgeable to the population group that they will be serving. Over 80 percent of the intake are rural students (have lowered the entrance standards, but still take in the best of the best of rural students). The nursing program, however, has been under way for 15 years and rural retention is good. The pharmacy program has been under way for six years, occupational therapy for five and physiotherapy is coming on board.

Nurse Practitioners - Australia does not have NPs (the medical lobby is still strong enough to keep them out) but there is a move to bring them on board.

Nurses in Remote Practice or Isolated Practice Nurse - Legislation prevents anyone but a doctor to have primary responsibility for a patient, but this group is often the only one in the community with health care training.

Doctors - An average placement of physicians in a rural setting is two to three years. New 'rural students' express a desire to practise in rural settings, but are not necessarily interested in returning to these rural communities.

Locums - It is necessary to have a good locum program. Rural doctors are assured of 10 weeks vacation. It is thought necessary for them to have time out of the community to recharge. The locum doctors must have worked as a rural GP for 5 years first. Good locums are needed to replace the rural doctors when they are on leave.

The best model of Rural Health Service is the Indigenous Health Worker (IHW). A three-tiered approach is used:

- The IHWs are the first point of contact. They take the patient's history and may be able to deal with the situation at that point. If not, the patient is moved into tier two.
- The nurse (a remote area nurse) assesses the patient.
- The last point of contact is the doctor.

This model uses each level to the full scope of practice and eliminates doctors performing services that could be done by others more cost effectively, e.g. blood pressure measurement.

The IHW is committed to the community and serves functions other than strict health services (cultural sensitivity, translation, etc.) Besides ongoing education and training for IHWs, they have also developed training modules to broaden their skills in service management, data collection and research.

North West Allied Health Services - The team approach is used. Rather than having doctors circulating through rural/isolated communities alone, this program uses a team approach whereby a team of health care workers (three) travels together. Where before service was patchy and there was high turnover and little continuity in the service to the community, this approach has increased patient satisfaction and increased the retention of the health care worker. There is interprofessional support and the health care worker feels less isolated.

It has finally been recognized that the old model of taking the urban model and reducing by proportion does not work in a rural setting. New models need to be sought and communities need to be more actively involved in determining the services that they need.

Australia

A National Training and Employment Strategy for Aboriginal and Torres Strait Islander

Health Workers and Professionals Working in Aboriginal and Torres Strait Islander Health, National Health and Medical Research Council, 1997

[\(www.health.gov.au/nhmrc/publication/\)](http://www.health.gov.au/nhmrc/publication/)

An area of particular emphasis in HHR deployment in Australia to reach remote and isolated communities is the recruitment and training of Aboriginal health workers to deliver health services to their communities. Community control and delivery of health services in a culturally appropriate manner are foundation principles. Likewise, traditional healing practices are also included in the provision of primary care.

Aboriginal and Torres Strait Islanders are seriously disadvantaged by poor living conditions, limited service access and shortages of health care providers. Their health status is poor compared with mainstream Australians, with reduced child mortality rates, and poor morbidity and mortality rates (life expectancy for Aboriginals is 16-18 years less than for non-Aboriginal Australians).

The roles of medical, nursing and allied health professionals are also being expanded to serve remote and rural areas. Regarding nurses, two sets of competency standards are being developed: competency standards for the advanced nurse and for the remote area nurse. Physicians working in remote areas are usually generalists who have had specialized training in rural medicine and, ideally, Aboriginal health.

Another deployment initiative is the development of the occupation of "Aboriginal and Torres Strait Islander Health Worker." Competencies have been developed for this designation of health worker, including clinical care (first aid, screening), paediatric care, nutritional care, counselling, emergencies, research on communities.

The National Aboriginal Community Controlled Organisation (NACCHO) is the "national peak" Aboriginal health body, which has a membership of 127 Aboriginal community-controlled health services (ACCHS) in Australia, in both urban and rural and remote locations. The ACCHS is primary health care services developed by local Aboriginal communities to deliver "holistic and culturally appropriate care to people within their communities. Over the past 30 years, more than 120 ACCHSs have been established across Australia to provide PHC services to the Aboriginal population, particularly in areas where Aboriginals could not access mainstream health care services, or where these mainstream services were not felt to be culturally appropriate. The AACHSs are initiated and governed by local Aboriginal communities and provide health services to a significant proportion of the Aboriginal population. In employing and training health workers, the ACCHS sector is the largest employer of Aboriginal peoples in Australia.

The AACHS evolved as a community-driven initiative, leading to community-owned health services, publicly-funded, and operating as autonomous grassroots organizations providing comprehensive primary health care services to their communities. These services vary from region to region, ranging from a single nurse or physician, to multidisciplinary teams, including dentists, psychologists, on-site pharmacies, and prenatal care services. Under the national Medicare program, services are provided at no cost to the user. The majority of Australia's Aboriginal population uses the AACHSs.

World Bank Institute

Providers in Third-World countries, such as India and in Africa will not live in rural areas and WHO objectives for PHC are ignored. Other than the “saints” in the business, usually unskilled traditional healers are providing most of the primary care in rural areas in the Third World.

The best performers in terms of PHC are the engineers who clean up the sewage and provide clean water to the villages.

Examples of innovative deployment practices would be the short-term rotational locums of physicians and the conduct of vaccination programs.

Additional Document Summaries Reviewed as part of the Environmental Scan

Society of Rural Physicians of Canada

Rural primary care, on a per capita basis, is said to be one of the most efficient health care systems in Canada, with many rural physicians providing obstetrical services and in-patient care. Rural physicians, it is stated, have higher workloads and longer hours; provide a wide range of services in a variety of settings; and refer and admit less than their urban counterparts.

Working documents of this association (*Primary Care Renewal Policy*, www.srpc.ca/shelf.html) refer to the new/old practice of providing training for family doctors in anesthesia and in surgery, including caesarean sections - practices which historically were provided by rural family doctors!

Position Paper on Training for Family Practitioners in Anesthesia, March 29, 2001. This paper recommends that University Departments of Family Medicine provide training positions in family practice anesthesiology to support the needs of rural communities. It is further argued that national standards be established, including national accreditation and verification of qualifications. Training should also be provided through continuing medical education.

Position Paper on Training for Family Physicians in General Surgery, January 5, 1999

According to this document, 31.6 percent of Canadians live in rural communities of up to 10,000 people. Only 4 percent of specialists live in rural communities, and although there are more general surgeons in rural areas than other specialists, only very few live in communities of less than 10,000 people. A 1992 survey of Ontario hospitals with less than 100 acute care beds showed that 30 percent experienced shortages of general surgeons and 61 percent expected shortages within five years. General surgeons in rural communities require communities sufficiently large (estimated between 15-25,000) to sustain a full-time practice. Full-time surgeons require ORs, nursing and support staff. It is argued that the GP surgeon, combining family practice with limited surgery, can fill the needs of rural communities.

The majority of GP surgeons received their training abroad (notably South Africa and the United Kingdom). For very complicated reasons, rural Canada has decreased access to the skills of foreign-trained physicians. Consequently, as the present population of rural physicians with surgical skills ages and leaves practice, their communities face a crisis in how to replace them (ibid.).

Towards Integrated Medical Resource Policies for Canada, by Maurice Barer and Greg Stoddart (1991) has argued the need for the development of the "generalist" GP-surgeon.

The Australian Faculty of Rural Medicine in the Royal Australian College of General Practitioners has developed a specialized training program for rural GPs, with advanced skills in anesthesia, obstetrics and surgery.

South African medical schools provide GPs with advanced surgical skills. The United Kingdom provides diplomas in general surgery, obstetrics and anesthesia.

There is very little information on patient outcomes regarding GP surgery in Canada. One study in B.C. examined appendectomy outcomes over a five-year period and found complication rates to be comparable between GP surgeons and board-certified general surgeons (ibid).

Instrument Development: Index of Interdisciplinary Collaboration, Bronstein, Laura R. (2002), *Social Work Research*, 26 (2) 113-123)

This model is currently used in P.E.I., and Newfoundland and Labrador is considering utilizing it to encourage collaborative practice. The family health approach is founded on principles of collaborative practice, and this model is considered useful in identifying the current extent of collaborative practice and in strengthening the primary care team.

Likewise, ***Implementation Strategies: "Collaboration in Primary Care - Family Doctors and Nurse Practitioners Delivering Shared Care"*** produced by the Ontario College of Family Physicians, May 2000, together with the Registered Nurses Association of Ontario, is a collaborative model of practice. The process involved the identification of the roles and functions of the collaborative partners and a review of the services to be provided by the team. This model is a type of decision support tool, which considers the patient population to be served, the nature and type of services to be rendered, the practice setting, and the skills and preferences of the partners. The design of the optimal collaborative practice through this process is thought to optimize the skills and competencies of the health care providers and to tailor design the practice to the needs of the care receivers.

Occupational Therapists (retrieved from www.caot.ca)

The CAOT "position statement" supports the inclusion of support personnel in the delivery of OT services where their contribution will enhance their effectiveness. OT support personnel include rehabilitation or therapy assistants, OT aides, occupational therapy assistants (OTAs), OT technicians, care aides, case management assistants, educational assistants, vocational assistants, health care assistants, health care workers, nurses aides, nursing assistants, orderlies and many others, such as teacher assistants, vocational therapists and workshop technicians - with varying degrees for formal training from one to two years college training

to exclusively on- the-job training.

Noted that studies on OT and support personnel human resources are needed to shape future OT services in Canada. Collaborative human resources studies with members, stakeholders, funders, decision makers and health policy planners are fundamental to the development of new models of service delivery that utilize OT and support personnel appropriately.

CAOT-"position statement" on Primary Health Care (2000) & Home Care (2000)- OT has a critical role in primary health care and views home care as an essential and critical part of the continuum of health services for Canadians.

Background Paper on Occupational Therapy Human Resource Data: Sources, utilization and Interpretative Capacity Prepared by D. Parker-Taillon and Associate. Canadian Association of Occupational Therapists 2003

There are widespread shortages of OTs across Canada. The practice pattern has shifted in the past decade with the majority of OTs now working in community, school, work- or home-based practice, and not in hospitals or long-term care facilities. An inventory and literature review of OT human resource data and gap analysis is needed. It is essential that effective HHR planning in OT be undertaken within an integrated/interdisciplinary framework.

Physiotherapy Health Human Resources Background Paper. Canadian Alliance of Physiotherapy Regulators and the Canadian Physiotherapy Association 2002 (retrieved from www.physiotherapy.ca)

It recommends that a national physiotherapy human resource planning initiative be undertaken to ensure an adequate supply of physiotherapists, including a supply and demand analysis, a national physiotherapy database, a labour market analysis and an analysis of the impact of the current health care system changes and technological advances on the role of physiotherapists. This database will provide a framework for physiotherapy human resource planning, integrated with human resource planning of other health care providers, to provide physiotherapy resources that would meet the health needs of Canadians.

The role of physiotherapy support workers has been documented for the first time in ***Competency Profile: Essential Competencies of Physiotherapist Support Workers in Canada*** 2002 Available on order from www.physiotherapy.ca

It is noted in *Physiotherapy Health Human Resources Background Paper (2002)* that this group is not well-defined and the labour force survey is not accurate. Physiotherapist assistants are graduates of a program, but are not registered. Therefore, the number working and the workforce mix is difficult to assess. Physiotherapist aides are workers that have received on-the-job training and are not well-defined. These workers are part of the

physiotherapy workforce and have an impact on physiotherapy service delivery.

Strengthening Primary Care in Nova Scotia Communities Nova Scotia Department of Health 2001

This booklet describes Nova Scotia's progress towards adopting a primary care system of delivery of health services. Four pilot projects or demonstration sites/clinics were established in which a nurse practitioner was hired to practise collaboratively with one or more family physicians and other members of an interdisciplinary primary care team. The *Nova Scotia Pharmacy Act* and Regulations were amended to allow pharmacists to fill prescriptions written by an NP.

L'ordre des pharmaciens du Québec (The Quebec College of Pharmacists) (www.opq.ca)

The scope of practice for **pharmacists** is rapidly expanding and is different across Canada. Pharmacy technicians are assuming more of the roles traditionally played by pharmacists. There are different pieces of legislation allowing pharmacists to prescribe (e.g. "morning after pill" can be dispensed by the pharmacist without a physician's authorization in Quebec). There are two principal settings for pharmacists: community and hospital. Hospital pharmacists can manage drug therapy (not initiate, but alter dosage); and perform delegated medical practices, including monitor chronic conditions, such as high cholesterol, hypertension, diabetes, anticoagulants. Pharmacists in the hospital setting have a more advanced scope of practice. Their scope of practice is usually covered by hospital by-laws. In the hospital setting, pharmacists usually have access to patients' records (unlike in the community setting). Quebec has some very interesting initiatives and is ahead of the other provinces in terms of cognitive services, e.g. pharmacists can prescribe emergency contraception.

The Pharmacist Workforce, A Study of the Supply and Demand for Pharmacists, Health Resources and Services Administration, Bureau of Health Professions, December 2000
United States Department of Health and Human Services

There is a shortage of licensed pharmacists in the U.S. (a rapid increase in demand, with constrained ability to increase the supply). Pharmacists are the third largest health professional group in the U.S. As a result, there has been "unprecedented increases in the volume and range of activities demanded of today's pharmacists" resulting in expanded roles and responsibilities in both the retail and the institutional setting. "Pharmacy will, within the next decade, transform itself from a primarily product-centered profession to a patient-care oriented profession (American College of Clinical Pharmacy)." Pharmacists now provide a much broader range of services: counselling patients on proper use of medication; drug monitoring and disease management for defined conditions; participating on multidisciplinary clinical care teams; consulting on drug utilization programs; providing drug information and patient education; overseeing formulary management; and undertaking public health initiatives, such as smoking cessation, diabetes education, immunization. They are also contributing to initiatives to reduce medication error, which in the U.S. has reached alarming proportions. Overall cost of drug-related morbidity and mortality is estimated to be in the range of US\$77-136 billion a year. The education and scope of practice of pharmacists is evolving (PharmD), a program which has lengthened the educational program and increased the required practice experience. Technicians are now assuming many of the tasks traditionally undertaken by pharmacists.

Pharmacists are now providing disease management programs for patients with chronic conditions, such as diabetes, asthma, high cholesterol, high-blood pressure, and anticoagulant therapy. With physician collaboration, pharmacists may assess patients, order drug therapy-related laboratory tests, administer drugs, and monitor and adjust medication.

A key issue is having this type of service recognized as a "cognitive health care service" which is billable to third party insurers. Many states have expanded pharmacy practice acts to cover new acts.

Evaluations have shown improved patient management in certain cases, and decreased treatment costs (e.g. Ashville, North Carolina project).

Decision Support Tools

Innovative Scheduling Practices: A Resource Guide, Provincial Working Group, Health Employers Association of British Columbia and British Columbia Nurses' Union, October 2003

Funded by the Ministry of Health Planning Nursing Directorate, the objective of this system is to support nurse recruitment and retention and increase job satisfaction - all key contributors to a healthy, sustainable nursing workforce. The need for innovative scheduling has been shown to be of importance in recent years, as a result of nursing human resource shortages, an aging workforce, and worklife issues.

This Resource Guide is designed to assist managers, staff nurses and union representatives to explore and implement innovative scheduling. It was developed in two phases, involving background work (literature review, industry review, development of framework, focus groups, themes and recommendations) and implementation strategies, including structured evaluation.

Flexible and innovative scheduling can also assist nurse managers staff shifts that have been difficult to fill.

A series of themes and recommendations were developed to provide options for managers overseeing nursing scheduling. These are incorporated in Phase I of the project. Phase 2 is currently focussed on the identification, implementation, and evaluation of innovative pilot scheduling projects.

Clinical Resource for Introducing New LPN Competencies/Functions
Asking Key Questions to Support Quality Care August-November 2003, LPN Competency Guidelines Advisory Committee, Ministry of Health Planning

This resource comprises a framework for assisting employers and managers to make decisions about adding competencies or functions to the LPN role in health care settings.

This tool can assist managers in the clinical aspects of making decisions about maximizing scope of practice for LPNs. Areas that form part of the review for decision making include context of practice; clients' needs; legislation; practice environment; and professional competency.