

Supply and Demand of Health Workers in an Economic Downturn

Appendix 3: References Reviewed With abstracts where available

Raisa Deber, PhD
Professor, Department of Health Policy, Management and Evaluation
Faculty of Medicine, University of Toronto
Director, CIHR Team in Community Care and Health Human Resources
E-mail: raisa.deber@utoronto.ca

Andrea Baumann, PhD
Associate Vice-President, Global Health,
Faculty of Health Sciences
Scientific Director, McMaster Site,
Nursing Health Services Research Unit
Email: Baumana@mcmaster.ca

Brenda Gamble, PhD
Assistant Professor, Faculty of Health Sciences,
University of Ontario Institute of Technology
Email: Brenda.Gamble@uoit.ca

Audrey Laporte, PhD
Associate Professor of Health Economics
University of Toronto
Department of Health Policy, Management and Evaluation
155 College Street, Suite 425
Toronto, Ontario
M5T3M6

Prepared for the International Medical Workforce Collaboration 2010
May 2-5, New York City, USA

Appendix 3: References Reviewed

Academy Health. (2004). *Glossary of terms commonly used in health care*. Academy Health, Advancing Research, Policy and Practice, 2004 Edition. Downloaded from <http://www.academyhealth.org/publications/glossary.htm>.

This glossary is intended to be used primarily as a reference guide for health care policymakers. It is periodically updated and edited to reflect the changing lexicon of health care terms and concepts. Major sources of original definitions include the publications, articles, and web sites listed in Appendix B, as well as personal communication with experts in health care policy and service delivery. The glossary is divided into three sections: (a) health care delivery and financing terms; (b) epidemiological and statistical terms; and (c) accounting and economic terms. It also includes an appendix that lists commonly used acronyms.

Advisory Committee on Health Delivery and Human Resources. (2007). *A framework for collaborative pan-Canadian health human resources planning*. Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources, March. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/2007-frame-cadre/index-eng.php>.

Canadians want timely access to high quality, effective, patient-centered, safe health services. To meet public expectations, jurisdictions across Canada must plan and manage their health delivery system, including planning for the health human resources (HHR) required to provide care within their system. As part of the '10-year Plan to Strengthen Health Care', signed by First Ministers in September 2004, provinces and territories agreed to complete health human resource action plans by December 31, 2005. HHR planning does not occur in isolation, but within the context of the broader health care delivery system. Each province and territory in Canada designs its health care delivery system based on: population health needs, reliable evidence about the services that are effective in improving the health of individuals and the population, and available resources. In addition, health care delivery design is shaped by intergovernmental agreements, such as First Ministers commitments to improve patient safety, reduce wait times for medically necessary procedures, provide home care programs, and increase disease prevention initiatives. Health system design also occurs within the prevailing social, cultural, economic and political environments, which can create both opportunities and constraints. Governments, in their role as policy makers and funders, work with partners and stakeholders - including educators, public and private sector employers, providers, Aboriginal organizations, professional associations, patients, and the public - to determine the delivery models (e.g., primary health care, acute care facilities) to deliver effective accessible services needed by their populations. Different levels of need require different levels of service, and the types and levels of service determine the requirement for health human resources.

Advisory Committee on Health Delivery and Human Resources. (2009). *How many are enough? Redefining self-sufficiency for the health workforce: A discussion paper*. Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources, July. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/2009-self-sufficiency-autosuffisance/index-eng.php>.

Faced with a global shortage of skilled health providers, countries are struggling - and often competing - to develop and maintain a stable, adequate health workforce. Developed countries like Canada are under pressure to become more self-sufficient in health human resources. In the Framework for Collaborative Pan-Canadian Health Human Resources Planning developed by the Advisory Committee on Health Delivery and Human Resources (ACHDHR), federal/provincial/territorial governments identified greater

Appendix 3: References Reviewed

self-sufficiency as one of the principles of effective health human resource planning. Traditionally, self-sufficiency has been defined almost exclusively in terms of numbers: that is, the capacity to produce or recruit enough new health care providers each year to compensate for attrition (i.e., retirements, turnover, out migration) in each profession occupational group, and keep pace with population growth. 'How many are enough?' explores the pressures in the current system that affect self-sufficiency, including the mobility of the workforce, advances in research, new technologies, changes in health care delivery, workforce demographics, and the impact of policy decisions and efforts to manage the health care system. It also describes a range of strategies - in addition to producing more health care providers - that jurisdictions across Canada are using to achieve greater self-sufficiency, including: managing demand, developing and implementing new service delivery models and new roles, providing more flexible education programs, redesigning work, and improving workplaces.

Alameddine, M., Baumann, A., Laporte, A., O'Brien-Pallas, L., Levinton, C., Onate, K., & Deber, R. (2009). Career trajectories of nurses leaving the hospital sector in Ontario, Canada (1993-2004). *Journal of Advanced Nursing*, 65(5):1044–1053.

Aim: This paper is a report of an analysis of the career trajectories of nurses 1 year after leaving hospitals. **Background:** Although hospitals are traditionally the largest employers of nurses, technological advances and budgetary constraints have resulted in many countries in relative shrinkage of the hospital sector and a shift of care (and jobs) into home/community settings. It has been often assumed that nurses displaced from hospitals will move to work in the other workplaces, especially the community sector. **Method:** Employment patterns were tracked by examining a longitudinal database of all 201,463 nurses registered with the College of Nurses Ontario (Canada) between 1993 and 2004. Focusing on the employment categories Active (Working in nursing), Eligible-Seeking nursing employment or Dropout from the nursing labour market, year-to-year transition matrixes were generated by sector and sub-sector of employment, nurse type, age group and work status. **Findings:** For every nurse practising nursing in any non-hospital job or in the community a year after leaving hospitals, an average of 1.3 and four nurses, respectively, dropped out of Ontario's labour market. The proportion of nurses leaving hospitals transitioning to the Dropout category ranged from 63.3% (1994-95) to 38.6% (2001-02). The proportion dropping out of Ontario's market was higher for Registered Practical Nurses (compared to Registered Nurses), increased with age and decreased with degree of casualization in nurses' jobs. **Conclusion:** Downsizing hospitals without attention to the potentially negative impact on the nursing workforce can lead to retention difficulties and adversely affects the overall supply of nurses.

Alameddine, M., Laporte, A., Baumann, A., O'Brien-Pallas, L., & Deber, R. (2005). "Stickiness" and "inflow" as proxy measures of the relative attractiveness of various sub-sectors of nursing employment. *Social Science and Medicine*, 63(9):2310–2319.

Workplaces vary in their ability to recruit and retain workers. We introduce two new concepts which can be used as proxy measures of the relative attractiveness of a particular setting, where setting can be defined narrowly (e.g., a particular organization) or broadly (e.g., a sub-sector). 'Stickiness' is defined as the transition probability that an employee stays in a given setting; 'inflow' as the proportion of new employees. Using a longitudinal dataset of all nurses registered with the College of Nurses of Ontario, Canada 1993-2003, employment site was used to define consistent sectors and sub-sectors. Each nurse was assigned to one sector/sub-sector per year. Stickiness and inflow values were calculated for each sub-

Appendix 3: References Reviewed

sector, and the trends across time were analyzed. Results show that despite shrinkage in the hospital sub-sectors, hospitals remained highly sticky. The expanding sub-sectors, in general, appear relatively unattractive to nurses; they couple medium/low stickiness with high inflow. Considerable variability across sub-sectors was evident. Stickiness and inflow were found to be useful as proxy measures of the relative attractiveness of the various sub-sectors of nursing employment over time. The concepts may be used for other workforces for which linked longitudinal data are available.

Alameddine, M., Laporte, A., Croxford, R., Deber, R., O'Brien-Pallas, L., Baumann, A., Mildon, B., Wang, S., & Milburn, B. (2006). Where are nurses working? Employment patterns by sub-sector in Ontario, Canada. *Healthcare Policy*, 1(3):65–86.

Objective: As care shifts to home and community, have nursing jobs followed? We examined changes in the absolute and relative size of the nursing workforce by sector/sub-sectors in Ontario, Canada. Methods: All nurses registered with the Ontario College of Nurses over the 11 years from 1993 to 2003 were categorized as Active, Eligible or Not Eligible. Active nurses were then categorized by sector (Hospital, Community, Other) and sub-sector. The analysis was repeated by age group and for registered nurses and registered practical nurses. Results: The decline in Active and Eligible nurses was particularly pronounced for younger workers. Both the absolute number and proportion of nurses working in the hospital sub-sector has dropped. In the community sector, growth was evident in the use of nurses as case managers (in the CCAC sub-sector), community agencies and community mental health (representing a shift from hospital-based workers). However, the steady growth in the number and proportion of nurses working in home care agencies was reversed in 1999, with this sub-sector shedding 19% of its nurses by 2003. Conclusion: Despite considerable rhetoric to the contrary, nurses still tend to work within institutions (hospitals and long-term-care facilities). However, compared to their numbers in 1993, there were fewer nurses providing direct patient care in Ontario in both the hospital and community sectors, and a higher proportion of older nurses.

Allin, S., & Hurley, J. (2008). *Inequity in publicly funded physician care: What is the role of private prescription drug insurance?* CHEPA, Paper 08-02, Hamilton, ON: McMaster, University. Downloaded from <http://www.chepa.org/LinkClick.aspx?link=pdf/CHEPA+WP+08-02.pdf&tabid=130&mid=450>.

This study examines the impact that private financing of prescription drugs in Canada has on equity in the utilization of publicly financed physician services. The complementary nature of prescription drugs and physician service use alongside the reliance on private finance for drugs may induce an income gradient in the use of physicians. We use established econometric methods based on concentration curves to measure equity in physician utilization and its contributors in the province of Ontario. We find that individuals with prescription drug insurance make more physician visits than do those without insurance, and the effect on utilization is stronger for the likelihood of a visit than the conditional number of visits, and for individuals with no chronic conditions than those with at least one condition. Results of the equity analyses reveal the most important contributors to the pro-rich inequity in physician utilization are income and private insurance, while public insurance, which covers older people and those on social assistance, has a pro-poor effect. These findings highlight that inequity in access to and use of publicly funded services may arise from the interaction with privately financed health services that are complements to the use of public services.

Appendix 3: References Reviewed

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36(1):1–10.

The Behavioral Model of Health Services Use was initially developed over 25 years ago. In the interim it has been subject to considerable application, reprobation, and alteration. I review its development and assess its continued relevance.

Andrews, D. (2007). *Assessing alternative financing methods for the Canadian health care system in view of population aging*. Social and Economic Dimensions of an Aging Population (SEDAP). Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs07.htm#abs205>.

Armstrong, H., Clement, W., Lin, Z., & Prus, S. (2006). *Contrasting inequalities: Comparing correlates of health in Canada and the United States*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 167, December. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs06.htm#abs167>.

Comparative health studies consistently find that Canadians on average are healthier than Americans. Comparing health status within and between Canada and the United States provides key insights into the distribution of inequalities in these two countries. Canada's universal health care insurance system contrasts with the mixed system of the United States: universal care for seniors, private health care insurance for many, and no or intermittent coverage for others. These countries are also notably different in the extent of income and racial/ethnic inequalities. It is within this context that this study compares the relative strength of the relationships between social, economic, and demographic factors (sex, age, marital status, income, education, country of birth, and race/ethnicity) and health status in Canada and the United States. Evidence drawn from the 2002-2003 Joint Canada/United States Survey of Health reveals that the correlations between these factors, above all country of birth and race/ethnicity, and health are relatively stronger in the United States, reflecting differences in health care access and racial/ethnic-based inequalities between the countries. The study findings are suggestive of the effects of universal access to health care and more equitable distribution of other social resources in protecting the health of the general population.

Barer, M. L., & Stoddart, G. L. (1991). *Toward integrated medical resource policies for Canada: Background document*. Report prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health, June. Downloaded from <http://www.chspr.ubc.ca/node/522>.

Physician resource policy in Canada is plagued by historical and political inertia, professional and geographic territoriality, incomplete and inconsistent information, frustration, and a great deal of nervous apprehension. It is also a field of remarkable complexity, encompassing issues of equity, distribution, supply, incomes, regulation, immigration, education and research, to name a few of the prominent ones. It would be pretentious of us to suggest that, in the short space of ten months, we developed a complete understanding of every nuance of every issue, and became sufficiently well informed and insightful that we can now do what others before us have avoided, or failed to do: provide a blueprint for a national physician resource policy that will 'work'. So we will not, because we did not. What struck us during the life of this project was not just the complexity of each issue area taken separately, but the fact that so many issues were so very interdependent. It is this 'inter-complexity--the fact that, to have any chance of meeting their objectives, initiatives in one area must be accompanied by concurrent policies in another --

Appendix 3: References Reviewed

and the diversity of regional and provincial problems, which present the greatest challenges to a 'national approach' to policy co-ordination in this critically important area of health policy. It also points to the need to think of physician resource policy in a dynamic health and social policy context. We need to be able to do much better in monitoring and evaluating the effects of what we do on people's health and well-being, and then in adjusting or fine-tuning policies as may seem appropriate. Perhaps most importantly, we need to get over our collective Canadian-style fear of changing directions even when such re-direction is clearly called for. We must realize collectively that letting policy develop by default, disinterest, or insufficient will, is itself a policy strategy, but one that can only be expected to bring about satisfactory results by those who believe in winning lotteries.

Barer, M., L, Evans, R. G., McGrail, K. M., Green, B., Hertzman, C., & Sheps, S. B. (2004). Beneath the calm surface: The changing face of physician-service use in British Columbia, 1985/86 versus 1996-97. *Canadian Medical Association Journal*, 170(5):803–807.

Background: Although expenditures on health care are continually increasing and often said to be unsustainable, few studies have examined these trends at the level of services delivered to individual patients. We analyzed trends in the various components that contributed to changes in overall expenditures for physician services in British Columbia from 1985/86 to 1996/97. Methods: We obtained data on all fee-for-service payments to physicians in each study year using the British Columbia Linked Health Data set and analyzed these at the level of individual patients. We disaggregated overall billing levels by year into the following components: number of physicians seen by each patient, number of visits per physician, number of services rendered on each visit and average price of those services. We removed the effect of inflation on fees by adjusting to those in 1988. We used direct age-standardization to isolate and measure the effect of demographic changes. We used the Consumer Price Index to determine the effects of inflation. Results: Total payments to fee-for-service physicians in British Columbia rose 86.3% over the study period. The increase was entirely accounted for by the combined effects of population growth (28.9%), aging (2.1%) and general inflation (41.4%). Service use per capita rose 10.5%; this increase was offset by a decline of 9.4% in inflation-adjusted fees. The average cost of age-adjusted per-capita services rendered by general or family practitioners (GP/FPs) increased very little (3.3%) over the 11-year period, compared with a nearly one-third (31.8%) increase for medical specialists. Although there was a dramatic increase in the number of GP/FPs seen on average by each patient (32.9%), this increase was offset by the combination of decreases in the number of visits per physician (-14.9%), the number of services provided per visit (-8.0%) and the 'real cost' of each service provided (-3.5%). Visits to medical specialists increased by about 20% over the study period in all age groups. However, for each person 65 years of age or over receiving any services, the average fee-adjusted expenditures increased 24.8%, almost 4 times the rate of increase for people younger than 65. The use of surgical services grew 26.5% for seniors while declining -2.0% for people under age 65. Interpretation. These findings suggest a form of 'homeostasis' in aggregate-level service use and cost. The supposed inflationary effects of population aging and increasing 'abuse of the system' by patients were not found.

Barnett, R., & Shustack, A. (1994). Cost containment: The Americas. Canada. *New Horizons*, 2(3):332–335.

Resources allocated for health care in Canada are about to be decreased. In recent years, the Canadian healthcare system has been consuming a progressively greater share of the country's gross domestic

Appendix 3: References Reviewed

product. Due to recession, less revenue is available for health care. The need to contain and limit national healthcare spending has begun to affect resource allocation in Canadian ICUs. Increasing efficiency and reducing inappropriate use may not be enough to contain costs. More difficult decisions need to be made.

Basu, K., & Gupta, A. (2007). *Nursing shortages: Where and why*. Health policy research bulletin, issue 13, published in February 2007 by Health Canada. Downloaded from <http://www.hc-sc.gc.ca/sr-sr/pubs/hpr-rpms/bull/2007-nurses-infirmieres/7-eng.php>.

Canada's current nursing shortage is expected to increase significantly in the next 15 years. This article explores both demand- and supply-side factors, and highlights the impact of demographic pressures and nurses' working conditions. As well, it applies newly developed models to predict nursing specialties where shortages will be the greatest.

Baumann, A., & Blythe, J. (2003). Nursing human resources: Human cost versus human capital in the restructured health care system. *Health Perspectives*, 3(1):27–34.

Nursing human resources are limited; thus, effective deployment of personnel is essential to optimize staff capacity. The nursing profession competes for staff in environments where human capital is at a premium. To maximize recruitment and retention, it is imperative that nurse's work preferences are taken into account. This paper reviews historical trends in full-time and part-time work in the general workforce and among nurses in particular. Further, it describes changes in hospital staffing strategies and discusses the literature on nurses' preferences for full-time, part-time and casual work status. The findings from a study of nurses in three teaching hospitals in Ontario are described, including hospital staffing practices and nurse's preferences for specific work statuses. The strategies adopted by nurses who were unable to find work that matched their preferences are also examined. The paper concludes by considering the implications of the findings for policymakers.

Baumann, A., & Blythe, J. (2003). Restructuring, reconsidering, reconstructing: Implications for health human resources. *International Journal of Public Administration*, 26(14):1561–1579.

In the 1990s, many health care organizations adopted restructuring strategies that were inappropriate to an industry in which the effective use of worker's knowledge, skills and social relations was essential to productivity. Workforce cuts and the withdrawal of workplace supports without sufficient consideration of human consequences led to a demoralized and short-staffed workforce rather than cost containment. This paper uses two neo-capitalist perspectives to illustrate the impact of restructuring initiatives on nursing, the most numerous health care profession. It describes how reconsideration of strategies adopted during restructuring has led to a search for new approaches to institutional change that make optimum use of human and social capital.

Baumann, A., & Blythe, J. (2009). *Integrating internationally educated health care professionals into the Ontario workforce*. Ontario Hospital Association, Nursing Health Services Research Unit, McMaster University, Hamilton, ON, report no. 20, November 19. Downloaded from <http://www.hrhresourcecenter.org/node/2932>.

A shortage of health care professionals is forecast for Ontario. An aging workforce and insufficient recruitment and production in the past decades mean that the province must make full use of all health human resources. The purpose of this report is to provide background information to support the

Appendix 3: References Reviewed

development of guidelines for the integration of internationally educated health professionals (IEHPs) into the workplace. Challenges and barriers to hiring IEHPs and mechanisms for addressing them are outlined. The report also focuses on the extent to which the recruitment and retention of IEHPs is a priority. It identifies professions that are encouraging the recruitment of IEHPs and the strategies and resources required to reduce barriers and improve IEHP recruitment and retention. Multiple methods were used to gather information on IEHP integration into the Ontario health care system, including a review of published literature, an investigation of relevant web sites and interviews with various stakeholders. Individuals from government, education and health care organizations were interviewed. The community sector, acute care hospitals and rural, urban and mid-sized communities were represented.

Baumann, A., Giovannetti, P., O'Brien-Pallas, L., Mallette, C., Deber, R., Blythe, J., Hibberd, J., & DiCenso, A. (2001). Healthcare restructuring: The impact of job change. *Canadian Journal of Nursing Leadership*, 14(1):14–20.

Restructuring, particularly redeployment and job change, had a dramatic impact on the working conditions and practices of nursing personnel. This study was conducted to determine whether nurses (RNs and RPNs) who experienced job change perceived their work-lives differently than those who did not undergo job change and, whether nurses who experienced different types of job change (new role, new unit, or new hospital) varied in their perceptions. A questionnaire exploring themes relevant to redeployment was administered to all nurses (N = 3,408) in two large teaching hospitals that had undergone restructuring. The response rate was 50.7% (n = 1,728). Of the responses, 1,662 were used in the analysis. T-tests and ANOVAs were used to compare groups of nurses. Nurses who changed their jobs perceived their commitment to the organization, their work environment and quality of care differently than those who did not change jobs. Nurses with different types of job change differed in their organizational commitment, perceptions of work-related injuries, attitudes towards job change, need for orientation and new knowledge, and feelings about the health care team. Results will assist managers to address the specific needs of nurses with different experiences of job change in the restructured workplace.

Baumann, A., O'Brien-Pallas, L., Armstrong-Stassen, M., Blythe, J., Bourbonnais, R., Cameron, S., Doran, D. I., Kerr, M., McGillis-Hall, L., Vezina, M., Butt, M., & Ryan, L. (2001). *Commitment and care: The benefits of a healthy workplace for nurses, their patients and the system*. CHSRF Policy Synthesis. Downloaded from <http://www.chsrf.ca/docs/finrpts/pscomcaree.pdf>.

The Canadian healthcare system is facing a nursing shortage that threatens patient care. Many nurses, physically and mentally exhausted, quit; employers can't fill those vacancies, while paradoxically other nurses can't find secure jobs with hours that suit them. Meanwhile, nursing schools can't keep up with the demand for new recruits. While caring for the sick and dying has always been demanding, many of the problems facing nurses today seem to arise from work environments that have grown increasingly difficult through the cutbacks and upheavals of the 1990s. This paper was commissioned to answer two questions: What is the impact of the working environment on the health of the nursing workforce (and hence, potentially, on patient outcomes)? What effective solutions could be implemented to improve the quality of the nursing work environment (and hence, potentially, patient outcomes)?

Baumann, A. O., Blythe, J. M., & Underwood, J. M. (2006). Surge capacity and casualization: Human resource issues in the post-SARS health system. *Canadian Journal of Public Health*, 97(3):230–232.

Appendix 3: References Reviewed

In Ontario, the unpredictable funding climate of the 1990s led health care organizations to look for ways to reduce costs. Adopting a just-in-time staffing policy, they employed fewer full-time workers, scheduled part-time workers to work regular shifts, took on more casual staff, and became increasingly reliant on agency nurses and overtime to cover shifts. These policies resulted in higher costs and reduced surge capacity, and placed the health of nurses and patients in jeopardy. Fewer staff meant more overtime. Stress-related absenteeism increased. Some nurses reacted to casualization by working for multiple employers. During the SARS (severe acute respiratory syndrome) epidemic in Toronto, nursing resources were stretched to their limits. An exploratory investigation, based on relevant literature and interviews with 13 nurse administrators who held key positions during the epidemic, confirmed the lack of spare capacity in the health care system and indicated that community and long-term care sectors had less capacity than acute care. Low surge capacity in these sectors increased the vulnerability of the entire health care system. Capacity issues should be addressed as part of a larger human resources initiative to create a more flexible workforce. Since SARS, a number of government and organizational initiatives have been developed to increase nursing capacity.

Baumgart, A. J. (1997). Hospital reform and nursing labor market trends in Canada. *Medical Care*, 35(10):OS124–OS131.

Objectives: Trends in the Canadian registered nurse (RN) workforce during the past 3 decades are examined, and the implications of current hospital sector retrenchment for RN employment are considered. Methods: A descriptive review using relevant literature and existing databases on the nurse workforce is presented. Results: From the 1960s through the 1980s, the Canadian RN workforce grew exponentially, fueled by expansions in the health-care delivery system under Medicare, rising inpatient acuity and skill-intensive patient care, enhanced access to nursing education, and increases in the numbers of women entering the workforce. Acute care hospitals have and continue to be the predominant employer of RNs. However, the 1990s have witnessed considerable hospital retrenchment, and with that retrenchment the growth of the hospital RN workforce has slowed dramatically. Conclusions: The ultimate outcomes of hospital retrenchment for the RN workforce remain unclear. Some speculate that the quality of care and working conditions will deteriorate in hospitals, as hospital administrators replace RN staff with lesser trained personnel to reduce costs. Others see change in the hospital sector as an opportunity for RNs to expand their scope of practice and responsibility in outpatient settings. The need for national and international research on the outcomes of hospital restructuring on patient care and the work of RNs is critical to sound policy making.

Beach, C. M., Chaykowski, R. P., Shortt, S., St-Hilaire, F., & Sweetman, A. (2007). Introduction. In C. Beach, R. Chaykowski, S. Shortt, F. St-Hilaire, & A. Sweetman (Eds.), *Health services restructuring in Canada* 1st ed. Kingston, Ontario: McGill-Queen's University Press. pp. 1–7.

The papers in this volume and the issues they examine are set against an important health policy backdrop. There were substantial public funding cuts to the health-care system in the mid-1990s, and also substantial reinvestments more recently. Currently, not only are tens of billions of dollars spent each year on providing health-care services for Canadians, but the rate of spending growth for the last decade has been, and looks like it will continue to be, well above inflation even after adjusting for population growth. Government spending on health care is an increasing, and historically unprecedented, proportion of total program spending and there are concerns about it crowding out other government services. Yet the health-

Appendix 3: References Reviewed

care system is under sustained pressure and there are continuing demands to improve the availability of services including rhetorically and medically important wait times. Moreover, baby boomers are just starting to turn 60 and an increasing demand for health care by an aging population will put increasing stress on some components of the current system. Rapid advances in new medical technologies and pharmaceuticals come at an increasing cost. The health-care system is trying to catch up with new information technologies. And the effective delivery of health care is under major re-examination in terms of incentives and responsiveness to local needs, regional access over large geographical areas, and funding and payment arrangements.

Béland, F. (2007). Arithmetic failure and the myth of the unsustainability of universal health insurance. *Canadian Medical Association Journal*, 177(1):54–56.

Since its inception, the sustainability of Canada's universal health insurance (Medicare) has been a concern. A search for "sustainability" and "unsustainability" on the CMAJ Web site yielded some 40 editorials, papers, letters, synopses, and reviews. Arguments for or against sustainability are usually supported by health care data of a variety of types, such as costs, percentage of gross domestic product (GDP) and proportions of provincial government spending. For example, McKinnon has argued for the unsustainability of Medicare using the ratio of health care spending to government income. Her argument can be summarized in 3 points: government health care expenditure is an increasing proportion of total government program spending; it is increasing faster than government income; and when projected as percentage of income over the next 20 years, the trend appears to be unsustainable. More-or-less the same criteria are used in the Menard report on the sustainability of government spending in Quebec on health and social care. This report laid the foundation for part of the recent white paper on the Chaoulli Supreme Court judgment by Quebec's Ministère de la Santé et des Services sociaux. I shall examine McKinnon's 3 points in terms of data from Quebec.

Berk, M. L., & Monheit, A. C. (2001). The concentration of health care expenditures, revisited. *Health Affairs*, 20(2):9–18.

In two previous publications, we described the distribution of health care expenditures among the civilian, noninstitutionalized U.S. population, specifically in terms of the share of aggregate expenditures accounted for by the top spenders in the distribution. Our focus revealed considerably skewed distribution, with a relatively small proportion of the population accounting for a large share of expenditures. In this paper we update our previous tabulations (last computed using data more than a decade old) with new data from the 1996 Medical Expenditure Panel Survey (MEPS). Our findings show that the skewed concentration of health care expenditures has remained very stable; 5 percent of the population accounts for the majority of health expenditures.

Birch, S., O'Brien-Pallas, L., Alksnis, C., Tomblin Murphy, G., & Thomson, D. (2003). Beyond demographic change in human resources planning: An extended framework and application to nursing. *Journal of Health Services Research and Policy*, 8(4):225–229.

Objectives: To introduce health care production functions into human resources planning and to apply the approach to analysing the need for registered nurses in Ontario during a period of major reduction in inpatient capacity. Methods: Measurement of changes in services delivered by acute care hospitals in Ontario between 1994/95 and 1998/99, and comparison with changes in the mix of human resources, non-

Appendix 3: References Reviewed

human resources and patient needs. Results: Inpatient episodes per nurse fell by almost 2%. At the same time the number of beds was cut by over 20%. As a result, the number of patients per bed increased by 12%. Allowing for severity, there was a 20% reduction in beds per episode and a 3.7% reduction in nurses per episode. Conclusions: The demands on nurses in acute care hospitals have increased as an increasing number of severity-adjusted episodes are served using fewer beds by a reduced number of nurses. Human resources planning traditionally only considers the effects of demographic change on the need for and supply of health care. Failure to recognize the variable and endogenous nature of other health care inputs leads to false impressions about the adequacy of existing supplies of human resources. Consideration of human resources in the context of the production function for health services provides a meaningful way of improving the effectiveness and efficiency of human resources planning.

Birch, S., Kephart, G., Tomblin Murphy, G., O'Brien-Pallas, L., Alder, R., & MacKenzie, A. (2007). Human resources planning and the production of health: A needs-based analytical framework. *Canadian Public Policy*, 33(Supplement):S1–S16.

Traditional approaches to health human resources planning emphasize the effects of demographic change on the needs for health human resources. Planning requirements are largely based on the size and demographic mix of the population applied to simple population-provider or population-utilization ratios. We develop an extended analytical framework based on the production of health-care services and the multiple determinants of health human resource requirements. The requirements for human resources are shown to depend on four separate elements: demography, epidemiology, standards of care, and provider productivity. The application of the framework is illustrated using hypothetical scenarios for the population of the combined provinces of Atlantic Canada.

Birch, S., Kephart, G., Tomblin Murphy, G., O'Brien-Pallas, L., Alder, R., & MacKenzie, A. (2009). Human resources planning and the production of health: Development of an extended analytical framework for needs-based health human resources planning. *Journal of Public Health Management and Practice*, 15(6):s56–s61.

Health human resources planning is generally based on estimating the effects of demographic change on the supply of and requirements for healthcare services. In this article, we develop and apply an extended analytical framework that incorporates explicitly population health needs, levels of service to respond to health needs, and provider productivity as additional variables in determining the future requirements for the levels and mix of healthcare providers. Because the model derives requirements for providers directly from the requirements for services, it can be applied to a wide range of different provider types and practice structures including the public health workforce. By identifying the separate determinants of provider requirements, the analytical framework avoids the illusions of necessity that have generated continuous increases in provider requirements. Moreover, the framework enables policy makers to evaluate the basis of, and justification for, increases in the numbers of provider and increases in education and training programs as a method of increasing supply. A broad range of policy instruments is identified for responding to gaps between estimated future requirements for care and the estimated future capacity of the healthcare workforce.

Birch, S., Lavis, J., Markham, B., Woodward, C. A., & O'Brien-Pallas, L. L. (1994). *Nursing requirements for Ontario over the next twenty years: Development and application of estimation methods*. Centre for

Appendix 3: References Reviewed

Health Economics and Policy Analysis Working Paper Series 94-13, Hamilton: McMaster University, June. Downloaded from <http://ideas.repec.org/p/hpa/wpaper/199413.html>.

In this study we develop, appraise and compare alternative approaches to addressing the problem of determining the quantity and mix of nursing resources required for the health-care system in Ontario in the future. We argue that there is no 'right' number of nurses per se. On the contrary, the appropriate number of nurses is conditional upon society's decisions about the right amount of health-care services to produce - decisions which are essentially political. A critical appraisal of the literature notes that existing research on nursing human resource planning has generally overlooked the political context of the issues. Most studies focus attention exclusively on issues of the future supply of nurses and nursing hours. Some studies relate estimates of future supplies to assessments of the future need for nurses. However in these studies assessments of need have been based on adjusting or projecting current levels of provision in accordance with expected demographic changes in the populations being served (the utilization-based approach), or quantifying the resource requirements to meet the estimated burden of illness in the population (the needs-based approach). In some instances authors recognize that planning for future resources is largely determined by what governments decide to allocate to these resources. But this is usually dealt with in the studies by costing the utilization or needs-based requirements and noting that these requirements are likely to be in excess of even the most optimistic estimates of what governments might allocate to nursing resources (i.e., effective demand). In developing the alternative approaches for thinking about the future requirements for nurses a distinction is made between the conceptual basis of the model (i.e., the nature of the question being addressed) and the methodological approach used to apply the model (i.e., the nature of the data requirements). The utilization-based approach is essentially concerned with calculating the numbers of nurses required to serve the estimated future population in the same ways that the current population is served. The needs-based approach bases calculations of requirements on meeting the service needs of the estimated future population in cost-effective ways. The effective-demand-based approach calculates the number of nurses required by the health-care system within the context of current and future resource constraints. Although each approach requires different types of data, these requirements can be addressed by using existing values of the respective variables (i.e., projections), estimating future values of those variables based on exogenous changes (i.e., forecasts) or estimating future values of the variables based on exogenous and endogenous changes (i.e., plans). The applications of the alternative approaches are limited by the availability of appropriate data. However illustrative calculations are performed for the utilization and effective-demand based approaches and the sensitivity of the estimates to different assumptions is illustrated. In the case of the needs-based approach, the absence of any appropriate data prevented the illustration of the approach. In other studies, the absence of such information has led to other types of data, in particular data on nurse vacancies, being used as an indicator of unmet need. Although corresponding data for Ontario are presented here, these are not used to calculate future requirements because the determinants of these vacancy data have little, if anything, to do with needs. In summary, the resources required for an ongoing exercise in nurse human resources planning, in terms of the research skills and analytical techniques, already exist. But major issues remain about the willingness and/or ability of those agencies involved directly with issues of nurse human resources to invest in both the collection and management of appropriate data and the further development of analytical techniques.

Birch, S., Thomson, D., Li, X., & Wu, C. (2004). *Building the future: An integrated strategy for nursing*

Appendix 3: References Reviewed

human resources in Canada: Nurse human resource requirements in Canada: Implications of changes in service delivery. Canadian Nurses Association, The Nursing Sector Study Corporation, Ottawa, ON, December. Downloaded from <http://www.cna-aiic.ca/CNA/documents/pdf/publications/nursehumanresourcerequirementse.pdf>.

Human resource planning (HRP) is a complex process of attempting to match the supply of human resources with the requirements for those resources. In the health care sector in Canada, the focus of HRP policy to date has been on the impact of demographic change on requirements for individual health care professions, i.e., the effect of an aging population on the requirements for particular health care providers and the effect of an aging workforce on total service provision by the particular provider groups. The analyses of these factors have tended to focus on estimating shortfalls or surpluses in provider groups and discussing the implications for proposed changes in the size of education programmes.

Bloor, K., & Maynard, A. (2003). *Planning human resources in health care: Towards an economic approach. An international comparative review.* Ottawa, ON: Canadian Health Services Research Foundation, March. Downloaded from <http://www.hrhresourcecenter.org/node/274>.

The planning of supply of and demand for human resources in healthcare is a neglected topic characterised by significant methodological weaknesses which have been discussed for decades but not resolved. Workforce planning policies, where they exist, tend to assume that existing healthcare delivery systems are efficient, and the forecasts made are rarely costed systematically. In most healthcare systems, workforce planning is driven by healthcare expenditure, with resources dictating volume of provision. Typical workforce planning systems ignore variations in practice and the possibility of changing productivity, skill mix and substitution. Healthcare policy makers increasingly recognise the need for more integrated planning of human resources in healthcare, in particular making the management of human resources responsive to system needs and design, instead of vice versa. To inform the design and implementation of improved workforce planning systems, a review of healthcare systems and interaction between systems of service delivery and approaches to planning human resources was done in five countries: Australia, France, Germany, Sweden and the United Kingdom. These represent different welfare state regimes, and a range of health systems dominated by national taxation (UK, Australia), local taxation (Sweden) and social insurance (France, Germany). These countries have some parallels to the Canadian health system, including the funding base (most have a mix of public and private finance and provision) and payment structures (Australian doctors and some aspects of other medical provision are funded fee-for-service, like in Canada).

Bourgeault, I. L. (2007). *Relatively inaccessible abundance: Reflections on U.S. health care.* Social and Economic Dimensions of an Aging Population. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs07.htm#abs178>.

Outsiders' views of American health care - and Canadian views in particular - contains this paradox: ready access to excellent high tech services for those who can pay but unfortunately too expensive for many Americans; in essence, inaccessible abundance. In this paper, I embellish upon this paradox with an initial examination of the rather complicated organization of American health care as viewed by an outside observer. I then highlight the key benefits and drawbacks seen of U.S. health care, grounded in empirical data, and how despite its drawbacks it is being spread to other countries. I conclude with a discussion of the values inherent in the provision of health care - that is, whether it should be viewed as a commodity or

Appendix 3: References Reviewed

as a right of the citizens of a nation.

Bourgeault, I. L. (2007). *Who minds the gate?* Social and Economic Dimensions of an Aging Population (SEDAP) Research paper no. 205, June. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs07.htm#abs205>.

The gate-keeping role of primary care has been the most fiercely defended of the health care jurisdictions, but more recently it has become a less attractive form of medical practice. This has created an open market for the expansion of a variety of substitute providers? In this paper, I present comparative documentary and interview data from Canada and the U.S. on the changes and composition of the primary health care division of labour. What is revealed from this analysis is that: 1) there is a greater reliance on substitute health labour in the U.S. as evidenced by the greater number of and different kinds of primary care providers; 2) there is also a greater propensity in the U.S. towards specialization even of substitute providers; and 3) in both countries, substitute providers resist that label focusing instead on their own model of practice or niche within the primary care division of labour.

Bourgeault, I. L., Sainsaulieu, I., Khokher, P., & Hirschhorn, K. (2007). *Professional work in health care organizations: The structural influences of patients in French, Canadian and American hospitals*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 204, June. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs07.htm#abs178>.

Although there are several studies of the impact of employment of health professionals in large bureaucratic organizations, there has been significantly less research focused on the structural influence of patients on this relationship. In this paper we present comparative qualitative data gathered on the work experiences of health care professionals in Canadian, U.S. and French hospitals. We elaborate specifically on a typology of structural influence of clients on health care professionals work in hospitals in terms of open and closed units.

Brown, M. G. (1993). Rationing health care in Canada. *Annals of Health Law*, 2:101–120.

This article examines how access to health care is managed in Canada's publicly financed healthcare system. It describes the evolution of the new public sector management strategies designed to preserve Canada's "free" universal, and comprehensive healthcare programs during difficult economic times. The central theme is that dispassionate micro-rationing decisions throughout the healthcare system indirectly influence Mirco-rationing decisions at the clinical level, which in extreme cases involve highly emotive and value-laden choices about which patients shall, or shall not, receive vital healthcare services.

Brownell, M. D., Roos, N. P., & Burchill, C. A. (1999). *Monitoring the Winnipeg hospital system: 1990/91 through 1996/97*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, March. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/bedcloz3.pdf.

As part of the downsizing of the acute hospital sector, major bed closures began in the Winnipeg hospitals in 1992/93. By the end of fiscal 1996/97 731 acute beds (or 24%) had been closed in Winnipeg hospitals. When Manitoba Health began downsizing the hospital sector, the MCHPE agreed to monitor the effects of the bed closures. This is the third in a series of reports that monitors the impact of hospital bed closures in Winnipeg. This report examines data up to the end of fiscal 1996/97. Where available, we have added results using 1997/98 data. In each of the reports the key questions addressed are: have the bed closures

Appendix 3: References Reviewed

adversely affected 1) Manitobans' access to care? 2) the quality of care delivered? or 3) the health of the population?

Broyles, R. W., Manga, P., Binder, D. A., Angus, D. E., & Charette, A. (1983). The use of physician services under a national health insurance scheme: An examination of the Canada Health Survey. *Medical Care*, 21(11):1037–1054.

In this paper the individual is employed as the unit of analysis to examine the extent to which the use of physician care by beneficiaries insured under the Canadian Medicare program is determined by medical needs and sociodemographic characteristics as opposed to economic considerations. The data were derived from the Canada Health Survey, which is a stratified, multistaged sample of the entire population. The results of the discriminant and weighted multiple regression analysis indicate that the use or nonuse of service and the volume of physician care consumed is determined by medical needs and sociodemographic characteristics rather than by economic status. Accordingly, the findings of this study are consistent with the contention that the Medicare program has resulted in an equitable distribution of physician service.

Buchan, J., & Dal Poz, M. R. (2002). Skill mix in the health care workforce: Reviewing the evidence. *Bulletin of the World Health Organization*, 80(7):575–580.

This paper discusses the reasons for skill mix among health workers being important for health systems. It examines the evidence base (identifying its limitations), summarizes the main findings from a literature review, and highlights the evidence on skill mix that is available to inform health system managers, health professionals, health policy-makers and other stakeholders. Many published studies are merely descriptive accounts or have methodological weaknesses. With few exceptions, the published analytical studies were undertaken in the USA, and the findings may not be relevant to other health systems. The results from even the most rigorous of studies cannot necessarily be applied to a different setting. This reflects the basis on which skill mix should be examined, identifying the care needs of a specific patient population and using these to determine the required skills of staff. It is therefore not possible to prescribe in detail a "universal" ideal mix of health personnel. With these limitations in mind, the paper examines two main areas in which investigating current evidence can make a significant contribution to a better understanding of skill mix. For the mix of nursing staff, the evidence suggests that increased use of less qualified staff will not be effective in all situations, although in some cases increased use of care assistants has led to greater organizational effectiveness. Evidence on the doctor-nurse overlap indicates that there is unrealized scope in many systems for extending the use of nursing staff. The effectiveness of different skill mixes across other groups of health workers and professions, and the associated issue of developing new roles remain relatively unexplored.

Buchan, J., Hancock, C., & Rafferty, A. M. (1997). Health sector reform and trends in the United Kingdom hospital workforce. *Medical Care*, 35(10):S143–S150.

Objective: The authors examine changing trends in the profile and patterns of employment of the workforce in hospitals in the National Health Service (NHS) in the United Kingdom. The effect of the implementation of the NHS reforms is considered, with particular reference to the changing composition of the nursing workforce. The authors note that there are problems with establishing trend data because of altered information requirements as a result of the NHS reforms. Method: Analysis and review of data

Appendix 3: References Reviewed

from secondary sources and research publications. Results: Although hospital activity rates have grown, patient length of hospital stays decreased, and patient activity levels increased, there has not been a linked growth in the size of the nursing workforce. The main changes in the profile of the nursing workforce highlighted are a marked reduction in the numbers of nursing students and alterations in the skill mix between first- and second-level qualified nurses. The authors also note a large increase in the number of managerial and administrative staff employed and growth in medical staff numbers. Changes in working patterns and increases in contracting for support services and in the use of temporary staff also are discussed. Conclusions: There have been pronounced changes in the profile of the hospital workforce but little evaluation of the impact of these changes on outcomes of care.

Buerhaus, P. (1994). Capitalizing on the recession's effect on hospital RN shortages. *Hospital and Health Services Administration*, 39(1):47–62.

The recent economic recession and slow-paced recovery have contributed to dampening out the shortage of hospital-employed registered nurses (RNs), a shortage that has persisted since the mid-1980s. While national unemployment rates remain relatively high and continue to exert economic pressure on RNs to maintain high levels of employment activity, hospital and nurse executives now have an opportunity to make strategic investments in the organizational infrastructure supporting nursing because once the economy rebounds, RN shortages could easily resurface.

Buske, L. (2009). *Estimating future supply based on maximum work hours scenarios*. Canadian Collaborative Centre for Physician Resources, working paper, May.

In the United States, about 5 years ago, the Accreditation Council for Graduate Medical Education made changes to its resident training system which included reducing duty hours of residents to 80 hours per week averaged over 4 weeks and shifts were limited to 30 hours with a minimum 10-hour rest period between them. Europe has a much longer history in this area with a Working Time Directive that dates back to 1993. It limited working time for all employees but excluded physicians in training. By 2004 junior doctors and those in training were limited to 58 hours per week. By August 2009 this will be reduced to 48 hours with a minimum of 11 hours rest in any 24 hour period. Eugene Leduc notes that the Canadian Medical Protective Association does not produce clinical guidelines or standards with respect to physicians in training and in practice but points out that for other occupations such as truck drivers and airline pilots, regulations are in place that limit the hours they can work in a given period. For instance the Canadian Aviation Regulations limit flying time for pilots to 40 hours in any 7 consecutive days. Canada does not have formal legislation or accreditation standards with respect to resident work hours but instead are established through collective agreements between the provincial resident associations and the academic health organizations.

Buske, L., & Newton, S. (1997). An overview of Canadian physician work force databases. *Clinical Performance and Quality Health Care*, 5(2):56–60.

Physician-resource planning activities have increased dramatically in Canada since the release of the Barer-Stoddart report, 'Toward Integrated Medical Resource Policies for Canada' in 1991. One of the key concepts of the Barer-Stoddart report is the "medical career life cycle," beginning with entry to medical school and ending with exit from practice. To apply this concept in a planning context, it is essential to have a current information base that will contain data on numbers of physicians, where they are, what

Appendix 3: References Reviewed

they do, and how active they are. In addition, a longitudinal capability is important for understanding issues such as retention and attrition. The objective of this article is to review and assess recent initiatives in the establishment of physician-resource databases in Canada by medical associations, governments, licensing bodies, certifying colleges, and other groups with a respect to comprehensiveness and comparability of key data elements and their ability to address key policy questions in physician-resource planning and to identify opportunities for collaboration and links.

Buske, L., & St-Pierre, I. (2010). *Physician and nursing workloads: Relationship to health and well-being*. Canadian Collaborative Centre for Physician Resources, March.

Workload has been identified as an important factor related to the recruitment and retention of health care professionals; it also appears related to health and well-being. This bulletin explores these relationships and suggests that strategies to address workload issues among both nurses and physicians should be further explored to optimize health as well as the length of time spent in their respective professions.

Calgary Regional Health Authority. (1999). *Health services utilization results from the National Population Health Survey*. Calgary Regional Health Authority, Health Services Delivery Highlights, volume 4, spring, Calgary, AB. Downloaded from <http://www.calgaryhealthregion.ca/qshi/hsau/PopulationHealth/Highlights/4/natls4.pdf>.

The purpose of this article is to present some of the health services utilization results from the recently released 1996/97 National Population Health Survey which was conducted across Canada. The National Health survey was a computer assisted telephone survey with 3,694 randomly selected residents from the Calgary Region. Alberta Health arranged for a larger sample to be surveyed to allow further analyses in Alberta. The response rate in Alberta was 82%. Data involving children less than 12 years were provided by parents or guardians.

Canadian Association of Schools of Nursing, & Canadian Nurses Association. (2008). *Nursing education in Canada statistics 2006-2007*. Ottawa, ON, June. Downloaded from <http://www.casn.ca/en/Reports113/items/2.html>.

The Canadian Nurses Association (CNA), in collaboration with the Canadian Association of Schools of Nursing (CASN), is pleased to present Nursing Education in Canada Statistics, 2006-2007. Since 1963, CNA has been collecting student and faculty data from Canadian schools offering education programs that entitle successful graduates to apply for initial licensure/registration as a registered nurse (RN) and graduate programs for RNs. CNA and CASN have collaborated to collect data from CASN member schools since 1985. This publication includes quantitative data from the annual survey and then builds on the data, in combination with other information, to provide analysis of key findings and observations. In 2007, CNA and CASN agreed to collect faculty data every second survey. The survey of 2006-2007 did not include questions regarding faculty, and thus the faculty data presented here are unchanged from 2005-2006. Faculty data will be collected once again in the 2007-2008 survey, and the results will be published in Nursing Education in Canada Statistics, 2007-2008 in the spring of 2009.

Canadian Health Services Research Foundation. (2010). *Myth: Most physicians prefer fee-for-service payment*. CHSRF, Ottawa, ON, Mythbusters, January. Downloaded from <http://www.chsrf.ca/mythbusters/html/myth33e.php>.

Appendix 3: References Reviewed

Since the introduction of Medicare in 1966, physicians in Canada have operated as independent, self-employed entrepreneurs, billing their provincial ministries of health and other payers for each insured service they provide. This payment method - commonly called fee-for-service - reimburses doctors for each of their clinical activities, based on a set of billing codes established by the payer. Fee-for-service is believed to be the payment model most trusted by physicians, possibly because it reflects their desire for professional autonomy. However, some doctors may also prefer this form of payment because it enables them to use fee-for-service billing to generate more revenue. This tactic arguably drives the 'one problem per visit' policies adopted by a number of family doctors.

Canadian Institute for Health Information. (2000). *Canadian Institute for Health Information (CIHI) reports continued drop in registered nurses per capita and aging workforce*. Report, Ottawa, ON: CIHI, July. Downloaded from <http://www.cihi.ca/medrls/19july2000.htm>.

Canadian Institute for Health Information. (2001). *Future development of information to support the management of nursing resources: Recommendations*. Ottawa, ON. Downloaded from <http://www.cihi.ca/cihiweb/disPage.jsp?cwpage=GR149E>.

The purpose of this report is to recommend priorities for guiding the future development of information that is relevant to the management of nursing resources. The focus is to provide a practical reference guide for CIHI and other organizations that have a role in developing and maintaining information relating to nursing.

Canadian Institute For Health Information. (2001). *The practicing physician community in Canada 1989/90 to 1998/99. Workforce and workload as gleaned through billing profiles for physician services*. Ottawa, ON. Downloaded from <http://www.cihi.ca/cihiweb/googleSearch.jsp?langCODE=ENG&q=the+practicing+physician+community+in+canada+1989%2F90+to+1998%2F99%2C+workforce+and+workload+as+gleaned+through+billing+profiles+for+physician+services>.

This report 'The Practicing Physician Community in Canada: Workforce and Workload as gleaned through Billing Profiles for Physician Services', focuses on physicians who practice clinical medicine and bill fee for service (FFS). It does not provide a head count of physicians, regardless of their activities, who are licensed in Canada. It should, therefore, be relevant to the current dialogue addressing adequacy of physician availability for clinical service needs, timely access to required services, waiting periods, etc. The issue in the current physician workforce debate should be around the effective supply of physicians for clinical needs, not on a hypothetical available supply since many physicians have responsibilities outside of clinical care areas in administration, teaching, research and in other business ventures. There are many factors that influence physician workload, workflow and output, such as gender, age, specialty, size of community, place of graduation, clinical demands, number of physicians, as well as personal considerations. It is important to understand how the sum of these factors yields an effective physician workforce. There are several methods that attempt to arrive at a measure of effective physician workforce. A calculated fulltime equivalent (FTE) count, physicians who bill above a certain threshold or with reasonable frequency are examples that allow an estimate of effective supply. What is clear is that at any one time there may be up to 15 to 20% of FFS physicians who are 'inactive' from provision of clinical services, either temporarily or permanently even though they do maintain FFS activities at other times.

Appendix 3: References Reviewed

Unless this knowledge is factored into any discussion that predicts the number of future physicians that Canada needs, trains, recruits, etc., the projections may remain off target.

Canadian Institute for Health Information. (2004). *Health personnel provincial profiles*. Ottawa, ON: Canadian Institute for Health Information. Downloaded from <http://secure.cihi.ca/cihiweb/products/HCPChartbook05e.pdf>.

This document is produced annually presenting health personnel data grouped by province rather than by person type in order to facilitate provincial and national comparative analysis of the Health Personnel Database (HPDB) data.

Canadian Institute for Health Information. (2004). *Health personnel in Canada, 1988 to 1997*. Ottawa, ON: CIHI, June. Downloaded from <http://secure.cihi.ca/cihiweb/products/HealthPersonnelTrend1995-2004e.pdf>.

Health Personnel in Canada, 1988 to 1997 is a reference document produced by the Canadian Institute for Health Information (CIHI) to assist health services planning and research. By providing time-specific personnel information for a number of health occupations, this publication may be used by governments, academics, professional health organizations, and researchers to better understand Canadian health system employment trends.

Canadian Institute for Health Information. (2005). *Guidance document for the development of data sets to support health human resources management in Canada*. Ottawa, ON, February. Downloaded from <http://www.cihi.ca/cihiweb/dispPage.jsp?cwpage=downloadforme&cwsku=HHRGD05PDF&cwctt=2&cwform=null>.

This guidance document outlines the results of a consultation process designed to identify and validate HHR priority information needs and related indicators and to identify data elements that should be collected in a standardized fashion across Canada. The identification of data elements was needed to support the compilation of national measures and indicators associated with the supply, distribution, practice/employment characteristics, education/training and migration patterns of health personnel in Canada.

Canadian Institute for Health Information. (2006). *Enhancing the primary health care data collection infrastructure in Canada: Report 2*. Pan-Canadian Primary Health Care Indicator Development Project. Downloaded from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cwpage=GR1489E>.

Primary health care (PHC) has been called the foundation of Canada's health care system and is the most common type of health care that Canadians experience. An estimated \$5 billion annually is spent just on family physician/general practitioner (FP/GP) fee-for-service related services in Canada.

Federal/provincial/territorial governments have agreed that PHC is a priority, however, at the present time there is relatively little comparative information available about how the PHC system is evolving. We also know little about the way services are delivered and the results of these services. These information gaps may affect our collective ability to measure, manage and improve primary health care in Canada.

Canadian Institute for Health Information. (2006). *Health personnel in Canada-An overview*. Canadian Information Centre for International Credentials, Ottawa, ON. Downloaded from

Appendix 3: References Reviewed

<http://www.cicic.ca/factsheets/factsheet2en.stm#2>.

In general, a regulated health occupation is one that is controlled by provincial/territorial or federal legislation and governed by a professional organization or regulatory authority. Provincial/territorial or federal legislation empowers a specific organization (such as the College of Physicians and Surgeons of British Columbia) with the authority to set entry requirements and standards of practice; to assess applicants' qualifications and credentials; to certify, register or license qualified applicants; and to discipline licensees.³ From the perspective of collecting data on health personnel, regulated health occupations present an opportunity for more complete data because employment in a particular health occupation is often conditional on registration or licensure with a specific primary data collector. Of the regulated health care provider groups, there is more information available on physicians and the regulated nursing professions than on any other health provider group in Canada.

Canadian Institute for Health Information. (2007). *Distribution and internal migration of Canada's licensed practical nurse workforce*. Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/products/2007LPNENweb.pdf>.

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. While this workforce is relatively large in Canada, it is not evenly distributed geographically in relation to the distribution of the general population. This distribution of health care providers is constantly being modified by internal migration—the movement of health care workers within provinces or territories or from one province or territory to another. Very few studies have been undertaken on the geographical distribution and mobility of most health care providers in Canada. This stems primarily from the fact that there are limited sources of data upon which to base such analysis. However, the Canadian Census of Population, in spite of its limitations, can provide some of this information. The present publication is based primarily on the census and begins an exploration of the geographical distribution and internal migration patterns of more than 20 groups of health care providers in Canada. For each profession in the study, either a report or a series of graphs and tables (available from the website of the Canadian Institute for Health Information at www.cihi.ca) has been prepared. For each health care occupation, the reports provide: 1) Preliminary empirical analysis of the numbers of people in the occupation and selected demographic characteristics; 2) An examination of provincial/territorial and subprovincial geographical distribution; 3) Initial analyses of internal (interprovincial and intraprovincial) mobility patterns; and 4) For each of the descriptive categories listed above, temporal comparisons using data from 1991, 1996 and 2001.

Canadian Institute for Health Information. (2007). *Distribution and internal migration of Canada's occupational therapist workforce*. Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/products/2007OccupationalTherapistsENweb.pdf>.

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. While this workforce is relatively large in Canada, it is not evenly distributed geographically in relation to the distribution of the general population. This distribution of health care providers is constantly being modified by internal migration—the movement of health care workers within provinces or territories or from one province or territory to another. Very few studies have been undertaken on the geographical distribution and mobility of most health care providers in Canada. This stems primarily from the fact that there are limited sources of data upon which to base such analysis. However, the Canadian Census of

Appendix 3: References Reviewed

Population, in spite of its limitations, can provide some of this information. The present publication is based primarily on the census and begins an exploration of the geographical distribution and internal migration patterns of more than 20 groups of health care providers in Canada. For each profession in the study, either a report or a series of graphs and tables (available from the website of the Canadian Institute for Health Information, www.cihi.ca) have been prepared. For each health care occupation, the reports provide: 1) Preliminary empirical analysis of the numbers of people in the occupation and selected demographic characteristics; 2) An examination of provincial/territorial and subprovincial geographical distribution; 3) Initial analyses of internal (interprovincial and intraprovincial) mobility patterns; and 4) For each of the descriptive categories listed above, temporal comparisons using data from 1991, 1996 and 2001.

Canadian Institute for Health Information. (2007). *Distribution and internal migration of Canada's pharmacist workforce*. Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/products/2007PharmacistsENweb.pdf>.

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. While this workforce is relatively large in Canada, it is not evenly distributed geographically in relation to the distribution of the general population. This distribution of health care providers is constantly being modified by internal migration-the movement of health care workers within provinces or territories or from one province or territory to another. Very few studies have been undertaken on the geographical distribution and mobility of most health care providers in Canada. This stems primarily from the fact that there are limited sources of data upon which to base such analysis. However, the Canadian Census of Population, in spite of its limitations, can provide some of this information. The present publication is based primarily on the census and begins an exploration of the geographical distribution and internal migration patterns of more than 20 groups of health care providers in Canada. For each profession in the study, either a report or a series of graphs and tables-available from the Canadian Institute for Health Information (CIHI) website (at www.cihi.ca)-have been prepared. For each health care occupation, the reports provide: 1) Preliminary empirical analysis of the numbers of people in the occupation and selected demographic characteristics; 2) An examination of provincial, territorial and subprovincial geographical, distribution; 3) Initial analyses of internal (interprovincial and intraprovincial) mobility patterns; and 4) For each of the descriptive categories listed above, temporal comparisons using data from 1991, 1996 and 2001.

Canadian Institute for Health Information. (2007). *Distribution and internal migration of Canada's physiotherapist workforce*. Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/products/2007PhysiotherapistsENweb.pdf>.

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. While this workforce is relatively large in Canada, it is not evenly distributed geographically in relation to the distribution of the general population. This distribution of health care providers is constantly being modified by internal migration-the movement of health care workers within provinces or territories or from one province or territory to another. Very few studies have been undertaken on the geographical distribution and mobility of most health care providers in Canada. This stems primarily from the fact that there are limited sources of data upon which to base such analysis. However, the Canadian Census of Population, in spite of its limitations, can provide some of this information. The present publication is

Appendix 3: References Reviewed

based primarily on the census and begins an exploration of the geographical distribution and internal migration patterns of more than 20 groups of health care providers in Canada. For each profession in the study, either a report or a series of graphs and tables-available from the Canadian Institute for Health Information (CIHI) website (at www.cihi.ca) have been prepared. For each health care occupation, the reports provide: 1) Preliminary empirical analysis of the numbers of people in the occupation and selected demographic characteristics; 2) An examination of provincial, territorial and subprovincial geographical, distribution; 3) Initial analyses of internal (interprovincial and intraprovincial) mobility patterns; and 4) For each of the descriptive categories listed above, temporal comparisons using data from 1991, 1996 and 2001.

Canadian Institute for Health Information. (2007). *Distribution and internal migration of Canada's registered nurse workforce*. Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/products/2007RNENweb.pdf>.

Canadian Institute for Health Information. (2007). *Distribution and internal migration of Canada's physician workforce*. Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/products/2007physENweb.pdf>.

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. While this workforce is relatively large in Canada, it is not evenly distributed geographically in relation to the distribution of the general population. This distribution of health care providers is constantly being modified by internal migration-the movement of health care workers within provinces or territories or from one province or territory to another. Very few studies have been undertaken on the geographical distribution and mobility of most health care providers in Canada. This stems primarily from the fact that there are limited sources of data upon which to base such analysis. However, the Canadian Census of Population, in spite of its limitations, can provide some of this information. The present publication is based primarily on the census and begins an exploration of the geographical distribution and internal migration patterns of more than 20 groups of health care providers in Canada. For each profession in the study, either a report or a series of graphs and tables-available from the Canadian Institute for Health Information (CIHI) website (at www.cihi.ca)-have been prepared. For each health care occupation, the reports provide: 1) Preliminary empirical analysis of the numbers of people in the occupation and selected demographic characteristics; 2) An examination of provincial, territorial and subprovincial geographical, distribution; 3) Initial analyses of internal (interprovincial and intraprovincial) mobility patterns; and 4) For each of the descriptive categories listed above, temporal comparisons using data from 1991, 1996 and 2001.

Canadian Institute for Health Information. (2007). *Highlights from the regulated nursing workforce in Canada, 2006*. Health Human Resources Database, Regulated Nursing Workforce, Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cwpage=PG970E&cwtopic=970&cwrel=AR1173E>.

The Health Human Resources team of the Canadian Institute for Health Information (CIHI) is pleased to present Highlights from the Regulated Nursing Workforce in Canada, 2006. This document is a companion to the Workforce Trends of Regulated Nurses in Canada series of publications. The WorkforceTrends series organizes and presents data by nursing profession, with separate publications for

Appendix 3: References Reviewed

each of the licensed practical nurse (LPN), registered nurse (RN) and registered psychiatric nurse (RPN) workforces. This publication, in contrast, organizes and presents data by province or territory. CIHI developed this format to better meet the needs of stakeholders who prefer to see information from all the nursing professions in a single jurisdiction. For each province and territory, therefore, CIHI highlights current trends in the nursing workforces and provides separate LPN, RN and RPN profiles. This document centralizes some of the summary information that is also reported in each Workforce Trends publication and also presents a partial look at the Health Human Resource workforce of Canada's provincial and territorial health regions.

Canadian Institute for Health Information. (2007). *Canada's health care providers*. Ottawa, ON.

Downloaded from

<http://www.cihi.ca/cihiweb/dispPage.jsp?cwpage=downloadforme&cwsku=CHCP2007PDF&cwctt=1&cwdfm=N>.

This report is a compendium of information on education and training, workplace environment, distribution and migration, and updated data and information on supply-side trends for health professions, where available. There is also current information on the development, implementation and evaluation of health human resources (HHR) policies, planning and the management strategies. This report will help support the current HHR environment, answering to the complexity of HHR in Canada.

Canadian Institute for Health Information. (2007). *Supply, distribution and migration of Canadian physicians, 2006*. Health Human Resources Database, Ottawa, ON. Downloaded from

<http://secure.cihi.ca/cihiweb/dispPage.jsp?cwpage=downloadforme&cwsku=SMDB2005PDF&cwctt=1&cwdfm=N>.

The Supply, Distribution and Migration of Canadian Physicians, 2006 report is produced by Health Human Resources at CIHI to support health human resource planning and research efforts. This report provides demographic and descriptive statistics for physicians in 2006, including international entries and exits, as well as migration within Canada.

Canadian Institute for Health Information. (2008). *Regulated nurses: Trends, 2003 to 2007*. November.

Downloaded from

<http://secure.cihi.ca/cihiweb/dispPage.jsp?cwpage=PG1710E&cwtopic=1710&cwrel=AR2529E>.

Regulated Nurses: Trends, 2003 to 2007 draws on data from the Canadian Institute for Health Information's regulated Nursing Database, which covers the three regulated nursing professions in Canada: registered nurses (RNs), licensed practical nurses (LPNs) and registered psychiatric nurses (RPNs). This report presents five-year workforce trends across Canada, across regulated nursing professions and across a variety of demographic, education, mobility and employment characteristics, in order to inform health human resource planning in Canada.

Canadian Institute for Health Information. (2008). *The Health Personnel Database Technical report*.

Ottawa, ON. Downloaded from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cwpage=hhrdatapersonnele>.

Canada's Health Care Providers, 1997 to 2006, A Reference Guide is a report that aligns with the previous Health Personnel Trends in Canada 1995-2004 annual report and the Health Personnel Trends series. The reference guide provides aggregate, supply-based trend information by province and territory and by year,

Appendix 3: References Reviewed

expanding on the information available from previous Health Personnel Database (HPDB) reports. The report is the only one in Canada of its kind. The consolidated format ensures the ease of use of the aggregate data and is suitable for baseline information and analysis on a specific health occupation. The user-friendly and defined format presents aggregated data on graduate counts, regulatory environments, supply and demographic trends for 24 distinct health professions. The reference guide should be used together with the HPDB Technical Report to ensure appropriate use and understanding of the data and information presented.

Canadian Institute for Health Information. (2009). *National health expenditure trends, 1975-2009*. Ottawa, ON: National Health Expenditure Database. Downloaded from <http://www.cihi.ca/cihiweb/disPage.jsp?cwpage=PG2490E&cwtopic=2490&cwrel=AR31E>.

This publication includes updated expenditure data by source of funds (sector) and use of funds (category) at the provincial/territorial level and for Canada. It also contains an overview with discussion on the trends of health care spending in Canada. International comparisons such as health spending to GDP ratio are included as well as a comprehensive set of data tables and methodological notes.

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, Ottawa, ON: Government of Canada, January. Downloaded from <http://www.physicianhr.ca/reports/default-e.php>.

Physician resource planning in Canada has undergone a remarkable swing from what was perceived as an oversupply of physicians a decade ago to the commonly held view that we are facing a shortage which will only get worse over time. Many key groups have realized the value of addressing the issue of physician resource planning in a co-ordinated and planned fashion. Given the importance Canadians attach to quality of life and their high expectations regarding the health care system, addressing structural changes and skills shortages is crucial to improving Canadians access to quality care. In view of mounting concerns about the physician workforce, Task Force Two was given the mandate to focus on developing a human resource strategy for physicians in Canada. The present document reports on one component of this mandate, a literature and gap analysis. The principal objective of this exercise was to identify, analyze and critically assess the available current and relevant information from 1990 to the present on the physician workforce, with a view to identifying gaps in the literature on the physician resource challenges relevant to the occupation. The project involved a variety of research and analysis tasks. First a review of the literature, secondary data, information sources and initiatives was conducted. In total, 196 monographs, studies, reports and other documents were analyzed, commented upon and integrated into an electronic database. Second, 31 interviews were carried out with key informants. Based on this accumulated knowledge and information, a gap analysis was conducted, based on gaps identified in the literature and by key informants, and on the research team's analysis of those areas necessitating further data gathering, research and investigation.

Canadian Nurses Association. (2001). *Optimizing the health of the health system*. Brief to the Commission on the Future of Health Care in Canada, October. Downloaded from <http://www.cna-aic.ca/cna/search/default.aspx?cx=017995081769602664776%3A%07p1eqo4vc&cof=FORID%3A11&ie=UTF-8&q=optimizing+the+health+of+the+health+system#1055>.

Appendix 3: References Reviewed

The Canadian Nurses Association is pleased to respond to the invitation of the Commission on the Future of Health Care in Canada to submit a brief on behalf of the registered nurses of Canada. We first offer a synopsis, from the perspective of nursing, of Canada's current health system. The brief then presents the CNA's recommended approaches to the four themes proposed by the Commission: Canadian values, sustainability, managing change and cooperative mechanisms. The concluding section regroups the recommendations made throughout the document.

Canadian Nurses Association. (2002). *Planning for the future: Nursing human resource projections*. Ottawa, ON: CNA, June. Downloaded from <http://cna-aicc.ca/>.

There are many approaches to determining future supply, including supply forecasting, utilization or demand forecasting, needs-based forecasting, etc. This report, using a cohort analysis modelled on demographic data, tracks and projects the supply of registered nurses (RNs) in Canada for the years 2011 and 2016. The supply of RNs is estimated using standard methods of estimating current stock, entry, exit, etc. Demand estimates are determined on the basis of current consumption of hospital services, assuming that even if services shift to another sector, the age cohort specific need for services will not change over time. The overall goal of this exercise is to project the approximate number of RNs required to meet the future health care needs of Canadians.

Canadian Nurses Association. (2005). *National planning for human resources in the health sector*. Position Statement, November. Downloaded from <http://www.cna-nurses.ca/CNA/documents/pdf/publications/PS81NationalPlanninge.pdf>.

CNA believes that successful human resources planning in the Canadian health sector requires a collective and integrated effort among governments - federal, provincial and territorial as well as municipal - and health professionals. For the association, effective planning must include all components of the health system, from public health through prevention, diagnosis and treatment to palliation. Moreover, CNA believes the many policy levers - education; employment, labour and industry; immigration; social, economic and fiscal - that affect the career lifecycle need to be coordinated. CNA recommends the implementation of a common framework for human resources planning in the health sector. Fundamental to the framework, the association believes that governments and health professionals must acknowledge three concepts: that health services must be focused on and engage individual patients/clients; that health system issues transcend the mandates and responsibilities of any one organization, whether governmental or professional; and that retention strategies are needed to support career choices in the health sciences.

Canadian Nurses Association. (2005). *Regulation and integration of international nurse applicants into the Canadian health system*. Position Statement, March. Downloaded from <http://www.cna-nurses.ca/CNA/nursing/hhr/forecasting/defaulte.aspx>.

The Canadian Nurses Association (CNA) believes in the following principles with respect to the regulation and integration of international nurse applicants into the Canadian health system. CNA recognizes that the responsibility to uphold these principles lies with multiple parties and that an evaluative framework is necessary to ensure that the principles are being adhered to: 1) focus 2) consistency 3) fairness and access 4) competencies and credentials 5) disclosure.

Canadian Nurses Association. (2006). *The national student and faculty survey of Canadian schools of*

Appendix 3: References Reviewed

nursing 2004-2005: Survey methodology. May 2.

Registered nurses (RNs) are the backbone of the health care system. Ensuring an adequate supply of RNs is of critical importance to the system's smooth functioning. The annual output of new nurse supply from nursing education programs (programs entitling successful graduates to apply for RN licensure) is the principal source of new additions to the Canadian RN workforce.

Canadian Nurses Association. (2007). *Post-secondary student applications: How to support effective links between education system and workforce needs?* HHRP Issues - A Series of Policy Options, Policy Brief #1, June. Downloaded from <http://www.cna-aicc.ca/CNA/documents/pdf/publications/HHRPolicyBrief12007e.pdf>.

More than one million students enrolled in post-secondary education in Canada in 2004. Many others applied and were put on wait lists. And yet, not all seats in educational institutions are filled, as no mechanism exists to identify duplicate applications or to match applicants with unfilled seats. A pan-Canadian clearinghouse for applications for post-secondary education could serve to better manage Canada's educational capacity. As a policy tool, a clearinghouse can provide early warnings of workforce shortages, signal opportunities to redirect students to enrollment openings, and support evaluation of educational investments, and policy.

Canadian Nurses Association. (2007). *Meeting future health-care needs through innovations to nursing education*. HHRP Issues - A Series of Policy Options, Policy Brief #2, November. Downloaded from <http://www.cna-aicc.ca/CNA/resources/bytype/reports/defaulte.aspx?y=2007>.

To be internationally competitive and productive, Canada needs to be a successful innovator. Cultivating a culture of lifelong learning supported by a high-quality education system and world-class research is the foundation for innovation. Changes in technology and consumer expectations and the need to increase productivity and manage workforce shortages will drive changes to future health-care delivery. A 10-year forecast of the Canadian labour market suggests that employment growth in the health sector will be strong. It also predicts shortages in some occupations. The forecast notes that graduates of Canada's education system will be the primary source of new labour for all sectors of the economy. Innovative approaches to education can increase the throughput and yield of the educational system. Innovation must be promoted as a policy tool that improves the quality of education, meets labour needs better and addresses new demands and challenges.

Canadian Nurses Association. (2007). *Meeting the health system's labour challenges through innovative workforce redesign*. HHRP Issues - A Series of Policy Options, Policy Brief #3, November. Downloaded from <http://www.cna-aicc.ca/CNA/resources/bytype/reports/defaulte.aspx?y=2007>.

According to a recent report from the Conference Board of Canada, Canada is a poor innovator compared with 16 other OECD countries - and innovation is a critical element of competitiveness and productivity. At the same time, Statistics Canada warns that the country's workforce may shrink because there are not enough young people to replace retiring baby boomers. A workforce with increasing numbers of people nearing retirement age will slow Canada's economy unless we can boost productivity. Given the pressure to be internationally competitive, combined with the constraints of a declining supply of human capital, Canadians need to seek out innovative ideas. We need to identify new approaches that optimize the knowledge and skills of a shrinking workforce as well as explore strategies for improving productivity in

Appendix 3: References Reviewed

all sectors of the economy.

Canadian Nurses Association. (2008). *The long-term care environment: Improving outcomes through staffing decisions*. HHRP Issues - A Series of Policy Options, Policy Brief #4, January. Downloaded from <http://www.cna-aiic.ca/CNA/resources/bytype/reports/defaulte.aspx?y=2008>.

Indicators of poor quality of care, rising compensation claims and violent deaths among residents of long-term care facilities have prompted organizations such as WorkSafeBC and the Office of the Chief Coroner for Ontario to investigate and make recommendations about long-term care. A framework for evaluating staff mix in these institutions offers a policy tool for assessing staffing decisions against patient and provider outcomes and allocating resources more effectively.

Canadian Nurses Association. (2009). *Sustaining the workforce by embracing diversity*. HHRP Issues - A Series of Policy Options, Policy Brief #5, January. Downloaded from <http://www.cna-aiic.ca/CNA/resources/bytype/reports/defaulte.aspx?y=2009>.

According to a 2002 study by the Canadian Nurses Association, Canada will experience a shortage of 113,000 registered nurses by 2016 if past workforce utilization patterns continue. Physicians and other health-care professionals are also experiencing critical workforce shortages. At the same time, Canada's population continues to grow, largely owing to an increase in immigration. Canada receives 200,000 new immigrants each year from all over the world. Our visible minority population is growing at a faster rate than the general population, and it is estimated that by 2017, 20 per cent of Canadians (up from 16.2 per cent in 2006) will be a member of a visible minority. For the health workforce to be effective, sustainable and self-sufficient, it must reflect the diversity of Canadians. Embracing diversity can be described as accepting and respecting individual differences in ethnicity, race, culture, language, religion, gender, generation, sexual preference, occupation, physical ability and socio-economic status. Innovative strategies are needed to transform the health workforce into a workforce of inclusiveness.

Canadian Nurses Association. (2009). *Enhancing workforce productivity and increasing capacity in the health system through information and communications technology*. HHRP Issues - A Series of Policy Options, Policy Brief #6, February. Downloaded from <http://www.cna-aiic.ca/CNA/resources/bytype/reports/defaulte.aspx?y=2009>.

In 2006, the World Health Organization estimated a worldwide shortage of almost 4.3 million doctors, nurses and other healthcare workers. Factors such as an aging population and the growing incidence of chronic diseases will continue to challenge the capacity of the health system in Canada and other countries across the globe in the coming years. Implementing effective strategies for retaining the existing workforce and recruiting new health-care professionals will not be enough to address workforce shortages: innovative approaches are also needed to enhance the productivity of the health workforce. New strategies using information and communications technology (ICT) can revolutionize Canada's health system. By adding efficiencies and reducing errors, the use of ICT will improve quality, productivity and financial performance. ICT must be implemented in the health system to increase the productivity of the health workforce and its capacity to provide quality care.

Canadian Nurses Association. (2009). *Tested solutions for eliminating Canada's registered nurse shortage*. July. Downloaded from <http://www.cna-nurses.ca/CNA/issues/hhr/defaulte.aspx>.

Appendix 3: References Reviewed

A stable and sufficient supply of health professionals continues to be one of Canada's greatest health-care challenges. The human resources shortages we are facing have produced: 1) long and frustrating wait times in our clinics and hospitals; adverse events for patients; and untenable work situations for registered nurses and other health-care workers. The Canadian Nurses Association is at the forefront of tackling this relentless issue and has been a leader in developing research, policies and plans that address Canada's RN shortage. Our latest report, *Tested Solutions for Eliminating Canada's Registered Nurse Shortage*, provides new projections for how the shortage will grow by almost five times over 15 years.

Canadian Nurses Association, & Canadian Federation of Nurses Unions. (2004). *Country report for the International Council of Nurses workforce forum*. Wellington, New Zealand, September 20-22.

Downloaded from <http://cna-aiic.ca/CNA/documents/pdf/publications/canadareport2004e.pdf>.

Canada is a country of more than 31.7 million people. Its land mass totals almost 10 million km² and is divided into 10 provinces and 3 territories. The responsibility for health policy is shared among national and provincial/territorial governments. However, the responsibility for workplace and labour issues falls to provincial and territorial governments. Canadian demographics for 2003 show 31.9 per cent of the population is under 25 years, 38.1 per cent is between 25 and 50 years, and 30 per cent is 50 years or older. Life expectancy is approximately 81 years for women and 76 years for men. In 2001, average earnings for full-year, full-time Canadian workers was \$35,258 Cdn for women and \$49,250 Cdn for men. The national unemployment rate as of April 2004 was 7.3 per cent. The major Canadian employers in 2003 are the manufacturing industry, the retail trade industries, health and social service industries and other service industries. Nurses, like other health professionals, are employed by the government, hospitals, nursing homes, privately owned organizations or as independent contractors. Provincial legislation defines scope of practice for all health professions. Licensure, credentials and standards of performance are established and monitored by national or provincial professional regulatory bodies. The regulatory bodies are publicly accountable for the appropriateness of these standards and for ensuring that those individuals awarded a licence to practise have the necessary skills, abilities and competencies to meet the standards.

Canadian Nurses Association, & Canadian Medical Association. (2005). *Toward a Pan-Canadian planning framework for health human resources: A green paper*. Ottawa, ON, June. Downloaded from <http://cna-aiic.ca/CNA/documents/pdf/publications/CMACNAGreenPapere.pdf>.

While the Canadian Constitution assigns the responsibility for the delivery of health care to the provinces/territories, since its introduction in the 1960s, Medicare has sought to provide universal access to Canadians to hospital and medical services on uniform terms and conditions as set out in the Canada Health Act. Notwithstanding recent concerns about timely access and the limited breadth of Medicare, this is an example of a pan-Canadian approach that continues to be highly valued by Canadians. In contrast, planning for the workforce that delivers health services has been left to individual provinces and territories. Planning efforts to date have been characterized by two key trends. 1) the focus has tended to be exclusively on supply-side planning which views health professionals as costs to the economy 2) planning approaches have treated health professional groups in isolation of each other. The overall policy that has resulted from this approach has been one of 'beggar thy neighbour' between provinces and territories with continued reliance on internationally educated health professionals to meet any shortfall. As we move into an era with growing global shortages of physicians, nurses and other health

Appendix 3: References Reviewed

professionals, this approach will not be sustainable. The seriousness of Canada's health workforce situation is highlighted by a comparison to other countries. In 2002 Canada ranked 24th among the 30 member countries of the Organization for Economic Cooperation and Development (OECD) in the number of practising physicians per 1,000 population at 2.1 - almost one-third below the average of 2.9. In the case of nursing, a 2004 OECD study reported that Canada had the highest relative nursing shortage of the 6 countries examined at 6.9% of the present workforce.

Carriere, K. C., Roos, L. L., & Dover, D. C. (2000). Across time and space: Variations in hospital use during Canadian health reform. *Health Services Research*, 35(2):467-487.

Objectives: To investigate change in hospital utilization in a population and to discuss analytical strategies using large administrative databases, focusing on variations in rates of different types of hospital utilization by income quintile neighborhoods. Data Sources: Hospital discharge abstracts from Manitoba Health, used to study the changes in utilization rates over eight fiscal years (1989-1996). Study Design: We test the hypotheses that health reform has changed utilization rates, that utilization rates differ significantly across income quintiles (defined by the relative affluence of neighborhood of residence), and that these variations have been maintained over time. Our approach uses generalized estimating equations to produce robust and consistent results for studying rates of recurrent and nonrecurrent events longitudinally. Data Extraction Methods: Rates of individuals hospitalized, hospital discharges, days of hospitalization, and hospitalization for different types of medical conditions and surgical procedures are generated for the period April 1, 1989 through March 31, 1997 for residents of Winnipeg, Manitoba. Data are grouped according to the individual's age, gender, and neighborhood of residence on April 1 of each of the eight fiscal years for the rate calculations. Neighborhood of residence and the 1991 Canadian Census public use database are used to assign individuals to income quintiles. Principal Findings: The substitution of outpatient surgery for in-hospital surgery accounted for much of the change in hospital utilization over the 1989-1996 period. Health care reform did not have a significant effect on the utilization gradient already observed across socioeconomic groups. Health reform markedly accelerated declines in in-hospital utilization. Conclusions: Grouping the data with key characteristics intact facilitates the statistical analysis of utilization measures previously difficult to study. Such analyses of variations across time and space based on parametric models allows adjustment for continuous covariates and is more efficient than the traditional nonparametric approach using standardized rates.

Chan, B. (1996). *Supply of physicians' services in Ontario*. Atlas Reports: Users of health services. Toronto: Institute for Clinical Evaluative Sciences (ICES). Downloaded from <http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=67>.

Key messages: a) The supply of active physicians increased steadily from 1991/92 to 1997/98 concurrent with the population rate growth. b) The geographic maldistribution of doctors in Ontario has increased. Doctors continue to practise in urban centres, while underserved areas continue to lose doctors. c) The comprehensiveness of primary care services has declined. Fewer general practitioners and family physicians are working in hospitals, nursing homes and obstetrics, opting instead to work more exclusively in their offices. d) Women physicians have made a significant entry into many fields of medicine, but have low participation in some specialty areas. This may represent either lifestyle choices or continued barriers.

Appendix 3: References Reviewed

Chan, B. (1999). Supply of physicians' services in Ontario. *Hospital Quarterly*, 3(2):17.

A critical component to providing Ontarians with access to a comprehensive range of essential medical services is ensuring an adequate supply of physicians. This research atlas addresses the issue of physician supply and distribution within the province. Key findings indicate that although the supply of active physicians rose steadily from 1991/92 to 1997/98, geographic maldistribution of doctors also increased. More doctors are practicing in urban centres while underserved areas continue to lose physicians. The report also found that comprehensiveness of services declined as more general practitioners and family physicians shift their focus away from hospitals, nursing homes, and obstetrics, in favour of office practice.

Chan, B. T. B. (2002). The declining comprehensiveness of primary care. *Canadian Medical Association Journal*, 166(4):429–434.

Background: Recent studies suggest that comprehensiveness of primary care has declined steadily over the past decade. This study tracks the participation rates of general practitioners and family physicians in 6 non-office settings across Ontario and examines among which types of physicians this decline in comprehensiveness has occurred. Methods: Billing (claims) records were used to determine the proportions of fee-for-service general practitioners and family physicians who provided emergency, inpatient, nursing home, house call, anesthesia or obstetrical services from 1989/90 to 1999/2000. 'Office-only' physicians were those who worked in none of these nonoffice settings. The relation of various physician characteristics to comprehensiveness of care was tested with multivariate analysis for 1999/2000. Results: The proportion of 'office-only' general practitioners and family physicians rose from 14% in 1989/90 to 24% in 1999/2000 ($p < 0.001$). Significant increases in this proportion were noted among general practitioners and family physicians of all ages, both sexes and all practice locations. In 1999/2000, recent graduates (who had completed medical school within the past 7 years) had higher participation rates for emergency medicine (40% v. 5% for physicians aged 65 years and older); female physicians had higher participation rates for obstetrics (16% v. 11% for males); and older physicians had higher participation rates for nursing home visits and house calls (20% and 57% respectively v. 11% and 37% for recent graduates). However, 'office-only' physicians were more likely to be female (odds ratio [OR] 2.65, 95% confidence interval [CI] 2.37-2.96), recent graduates (OR 1.35, 95% CI 1.15-1.60), aged 65 years and older (OR 1.45, 95% CI 1.20-1.75) or practising in a city with a medical school (OR 2.30, 95% CI 2.06-2.56) and were less likely to be rural physicians (OR 0.31, 95% CI 0.24-0.41) or certified in family medicine (OR 0.58, 95% CI 0.52-0.66). Interpretation: There has been a decline in the provision of comprehensive care by general practitioners and family physicians in Ontario. The decline is evident across all age groups and for both male and female physicians. It is also evident in rural areas and in cities with and without medical schools.

Chan, B. T. B. (2002). *From perceived surplus to perceived shortage: What happened to Canada's physician workforce in the 1990s?* Ottawa, ON: Canadian Institute for Health Information, June.

Downloaded from

<http://secure.cihi.ca/cihiweb/dispPage.jsp?cwpage=downloadforme&cwsku=CANPHYWORKFORCEPDF&cwctt=ctt=1&cwdfom=N>.

Since the late 1990s, physician groups have been claiming that there is a shortage of physicians in Canada. Increasingly, this is becoming the consensus view and policy-makers and governments have recently

Appendix 3: References Reviewed

taken measures to increase the supply of doctors. Medical school enrolments are rising and more international medical graduates are being allowed into the system. Yet, in the early 1990s, the consensus was that Canada had a physician surplus and policies were aimed at controlling physician supply growth. How did common perception change so radically in such a short period of time? This report dissects the various trends affecting the physician workforce in the 1990s, in order to shed light on this question. First, it examines the overall balance between supply and demand for physician services, taking into account aging and growth of the patient population and the fact that the physician workforce now comprises more females who work fewer hours. Second, it analyzes the different ways in which physicians enter and leave active practice and how these movements changed over time. Third, it engages the reader in a discussion of what policies were implemented during this time period and how they may have accounted for the observed trends. Lastly, it offers a variety of possible explanations as to 'why it feels like there is a physician shortage', given the findings in this study.

Chen, J., & Hou, F. (2002). Unmet needs for health care. *Health Reports (Statistics Canada)*, 13(2):23–34. Objectives: This analysis examines the prevalence of self-reported unmet needs for health care and the extent to which they were attributable to perceived problems with service availability or accessibility or acceptability. Data source: Most data are from the 1998/99 cross-sectional household component of Statistics Canada's National Population Health Survey; 1994/95 and 1996/97 cross-sectional data are used to present trends from 1994/95 to 1998/99. The primary analysis is based on 14,143 respondents aged 18 or older. Analytical techniques: Multivariate logistic regression was used to estimate the association of risk factors with the three types of unmet health care need. Main results: In 1998/99, about 7% of Canadian adults, an estimated 1.5 million, reported having had unmet health care needs in the previous year. Around half of these episodes were attributable to acceptability problems such as being too busy. In 39% of cases, service availability problems, such as long waiting times, were mentioned. Just under 13% of episodes were related to accessibility problems (cost or transportation). Unmet needs attributable to service availability problems were not significantly associated with socio-economic status. By contrast, unmet needs due to accessibility problems were inversely associated with household income.

Cloutier-Fisher, D., Penning, M. J., Zheng, C., & Druyts, E.-B. F. (2006). The devil is in the details: Trends in avoidable hospitalization rates by geography in British Columbia 1990-2000. *BMC Health Services Research*, 6(104):1–12.

Background: Researchers and policy makers have focussed on the development of indicators to help monitor the success of regionalization, primary care reform and other health sector restructuring initiatives. Certain indicators are useful in examining issues of equity in service provision, especially among older populations, regardless of where they live. AHRs are used as an indicator of primary care system efficiency and thus reveal information about access to general practitioners. The purpose of this paper is to examine trends in avoidable hospitalization rates (AHRs) during a period of time characterized by several waves of health sector restructuring and regionalization in British Columbia. AHRs are examined in relation to non-avoidable and total hospitalization rates as well as by urban and rural geography across the province. Methods: Analyses draw on linked administrative health data from the province of British Columbia for 1990 through 2000 for the population aged 50 and over. Joinpoint regression analyses and t-tests are used to detect and describe trends in the data. Results: Generally speaking, non-avoidable hospitalizations constitute the vast majority of hospitalizations in a given year

Appendix 3: References Reviewed

(i.e. around 95%) with AHRs constituting the remaining 5% of hospitalizations. Comparing rural areas and urban areas reveals that standardized rates of avoidable, non-avoidable and total hospitalizations are consistently higher in rural areas. Jointpoint regression results show significantly decreasing trends overall; lines are parallel in the case of avoidable hospitalizations, and lines are diverging for non-avoidable and total hospitalizations, with the gap between rural and urban areas being wider at the end of the time interval than at the beginning. Conclusion: These data suggest that access to effective primary care in rural communities remains problematic in BC given that rural areas did not make any gains in AHRs relative to urban areas under recent health sector restructuring initiatives. It remains important to continue to monitor the discrepancy between them as a reflection of inequity in service provision. In addition, it is important to consider alternative explanations for the observed trends paying particular attention to the needs of rural and urban populations and the factors influencing local service provision.

Conde, H., & McDonald, J. T. (2007). *The health services use among older Canadians in rural and urban areas*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 178, February. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs07.htm#abs178>.

Even though universal health care is one of the fundamental pillars of Canadian society, the rising cost of all services has resulted in the relocation and redistribution of funding and services between rural and urban areas. While most econometric analyses of health service use in Canada include broad controls by province and rural/urban status, there has been relatively little econometric work that has focused specifically on geographical variation in health service use. Using the 2002-03 wave of the Canadian Community Health Survey, we examine the determinants of a range of health services use by older Canadians across different types of urban and rural areas of residence. The regression analysis suggests two general conclusions: 1) other things equal, health service use is lower among older residents of rural areas in terms of visits to a GP, to a specialist and to a dentist compared to residents of urban core CMA/CAs, but there are no significant differences in hospital nights; and 2) these results are surprisingly robust across a range of specifications that control variously for demographic characteristics, socio-economic status, private health insurance, and physical health. However, the magnitude of the estimated differences is quantitatively not very large. In addition, the self-reported incidence of unmet healthcare needs overall shows no systematic variation across rural and urban areas.

Conrad, D. A., & Perry, L. (2009). Quality-based financial incentives in health care: Can we improve quality by paying for it? *Annual Review of Public Health*, 30:357–371.

This article asks whether financial incentives can improve the quality of health care. A conceptual framework drawn from microeconomics, agency theory, behavioral economics, and cognitive psychology motivates a set of propositions about incentive effects on clinical quality. These propositions are evaluated through a synthesis of extant peer-reviewed empirical evidence. Comprehensive financial incentives-balancing rewards and penalties; blending structure, process, and outcome measures; emphasizing continuous, absolute performance standards; tailoring the size of incremental rewards to increasing marginal costs of quality improvement; and assuring certainty, frequency, and sustainability of incentive payoffs-offer the prospect of significantly enhancing quality beyond the modest impacts of prevailing pay-for-performance (P4P) programs. Such organizational innovations as the primary care medical home and accountable health care organizations are expected to catalyze more powerful quality incentive models: risk- and quality-adjusted capitation, episode of care payments, and enhanced fee-for-

Appendix 3: References Reviewed

service payments for quality dimensions (e.g., prevention) most amenable to piece-rate delivery.

Cooper, R. A. (2004). Weighing the evidence for expanding physician supply. *Annals of Internal Medicine*, 141(9):705–714.

For 2 decades, health planners have forecasted impending physician surpluses, and policy decisions related to medical schools and residency programs have been based on such expectations. However, these much-heralded surpluses never materialized, and a growing body of data and opinion now point in the other direction. The question at the forefront is whether the United States is instead headed for a physician shortage. What is the evidence? This paper reviews the trends that link economic growth to health care spending and to the demand for physicians. It assesses the current environment by examining trends in the characteristics of clinical practice, signals from the medical market, and recent experiences of physician shortages in other English-speaking countries; it also discusses why past forecasting approaches may have failed. Taken together, this body of information indicates that physician shortages are emerging and that they will probably worsen over the next 2 decades. By 2020 or 2025, the deficit could be as great as 200,000 physicians--20% of the needed workforce. If remedies are to be found, the nature of the problem must be appreciated, and a consensus to solve it must be reached.

Cooper, R. A., Getzen, T. E., & Laud, P. (2003). Economic expansion is a major determinant of physician supply and utilization. *Health Services Research*, 38(2):675–696.

Objective: To assess the relationship between levels of economic development and the supply and utilization of physicians. Data Sources: Data were obtained from the American Medical Association, American Osteopathic Association, Organization for Economic Cooperation and Development (OECD), Bureau of Health Professions, Bureau of Labor Statistics, Bureau of Economic Analysis, Census Bureau, Health Care Financing Administration, and historical sources. Study Design: Economic development, expressed as real per capita gross domestic product (GDP) or personal income, was correlated with per capita health care labor and physician supply within countries and states over periods of time spanning 25-70 years and across countries, states, and metropolitan statistical areas (MSAs) at multiple points in time over periods of up to 30 years. Longitudinal data were analyzed in four complementary ways: (1) simple univariate regressions; (2) regressions in which temporal trends were partialled out; (3) time series comparing percentage differences across segments of time; and (4) a bivariate Granger causality test. Cross-sectional data were assessed at multiple time points by means of univariate regression analyses. Principal Findings: Under each analytic scenario, physician supply correlated with differences in GDP or personal income. Longitudinal correlations were associated with temporal lags of approximately 5 years for health employment and 10 years for changes in physician supply. The magnitude of changes in per capita physician supply in the United States was equivalent to differences of approximately 0.75 percent for each 1.0 percent difference in GDP. The greatest effects of economic expansion were on the medical specialties, whereas the surgical and hospital-based specialties were affected to a lesser degree, and levels of economic expansion had little influence on family/general practice. Conclusions: Economic expansion has a strong, lagged relationship with changes in physician supply. This suggests that economic projections could serve as a gauge for projecting the future utilization of physician services.

Cooper, R. A., Getzen, T. E., McKee, H. J., & Laud, P. (2002). Economic and demographic trends signal an impending physician shortage. *Health Affairs*, 21(1):140–154.

Appendix 3: References Reviewed

It is widely believed that the United States is producing too many physicians. We have approached this issue by developing a new model for workforce planning based on assessments of the macro-trends that underlie the supply and use of physician services. These trends include economic expansion, population growth, physicians' work effort, and the provision of services by nonphysician clinicians. Contrary to earlier predictions, this model projects that the United States soon will have a shortage of physicians and that if the pace of medical education remains unchanged, the shortage will become more severe. A dialogue focused on that eventuality is imperative.

Crossley, T. F., Hurley, J., & Jeon, S.-H. (2006). *Physician labour supply in Canada: A cohort analysis*. CHEPA Working Paper Series, Working Paper 06-04, Hamilton, ON: McMaster University Centre for Health Economics and Policy Analysis. Downloaded from http://www.chepa.org/portals/0/pdf/CHEPA_WP_06-04.pdf.

This paper employs a cohort analysis to examine the relative importance of different factors in explaining changes in the number of hours spent in direct patient care by Canadian general/family practitioners (GPs) over the period 1982-2003. Cohorts are defined by year of graduation from medical school. The results for male GPs indicate that there is little age effect on hours of direct patient care, especially among physicians aged 35-55, there is no strong cohort effect on hours of direct patient care, but there is a secular decline in hours of direct patient care over the period. The results for female GPs indicate that female physicians on average work fewer hours than male physicians, there is a clear age effect on hours of direct patient care, there is no strong cohort effect, and there has been little secular change in average hours of direct patient care. The changing behaviour of male GPs accounted for a greater proportion of the overall decline in hours of direct patient care from the 1980s through the mid-1990s than did the growing proportion of female GPs in the physician stock.

Curtis, L. J., & MacMinn, W. J. (2007). *Health-care utilization in Canada: 25 years of evidence*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 190, May. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs07.htm#abs178>.

An abundance of literature links socio-economic status to health and health care in Canada and other countries. Recent anecdotal evidence indicates that Canadians believe their access to health care is diminishing over time. This study provides a brief description of utilization patterns in health-care services provided under public health insurance (physicians, specialists and hospitals) in Canada between 1978 and 2003. The relationships between socio-economic status (SES) and utilization, controlling for demographic characteristics are examined to investigate whether changes in the equity of utilization have occurred over time. Results indicate that SES inequities in utilization are apparent in publicly insured services, appearing to be more relevant in initial contact with the system rather than in the number of visits. Specialist's services are particularly problematic and becoming more so over time.

D'Arcy, C., & Siddique, C. M. (1985). Unemployment and health: An analysis of 'Canada Health Survey' data. *International Journal of Health Services*, 15(4):609-635.

This paper provides a cross-sectional analysis of the physical and emotional well-being of employed and unemployed workers. The data used consists of a sub-sample (N = 14,313) drawn from the Canada Health Survey's national probability sample (N = 31,688). The analysis indicates substantial health differences between employed and unemployed individuals. The unemployed showed significantly higher levels of

Appendix 3: References Reviewed

distress, greater short-term and long-term disability, reported a large number of health problems, had been patients more often, and used proportionately more health services. Consistent with these measures, derived from self-reported data, physician-diagnosed measures also indicate a greater vulnerability of unemployed individuals to serious physical ailments such as heart trouble, pain in heart and chest, high blood pressure, spells of faint-dizziness, bone-joint problems and hypertension. While these health differences between the employed and unemployed persisted across socio-economic and demographic conditions, further analysis indicated strong interaction effects of SES and demographic variables on the association of employment status with physical and emotional health. Females and older unemployed individuals reported more health problems and physician visits whereas the younger unemployed (under 40) reported more psychological distress. The blue-collar unemployed were found to be considerably more vulnerable to physical illness whereas the unemployed with professional background reported more psychological distress. The low-income unemployed who were also the principal family earners, were the most psychologically distressed. A regional look at the data showed that the low-income unemployed suffered the most in terms of depressed mood in each region of the country. It is apparent that unemployment and its health impact reflect the wider class-based inequalities of advanced industrial societies. The need for social policies that effectively reduce unemployment and the detrimental impact of unemployment is clear.

Deber, R. (2000). Getting what we pay for: Myths and realities about financing Canada's health care system. *Health Law in Canada*, 21(2):9–56.

Canadian Medicare is, once again, under attack. Despite being wildly popular among Canadians, and internationally admired, our system of universal insurance for medically necessary hospital and physician services is being dismissed by critics as old-fashioned, unsustainable, economically unfeasible, and otherwise out of step with our new global times. The newspapers are full of announcements of privatization of hospital care in Alberta, accusations that 'we already have two tier medicine' and might as well finish the job, and seemingly erudite pronouncements that we must choose between maintaining equity and economic good sense. Too often, however, these criticisms result from some fundamental confusions about both concepts and evidence. In consequence, they often misinterpret the actual problems with Medicare. Just as physicians cannot treat without an accurate diagnosis, healing Medicare requires that we be clear in defining our terms.

Deber, R. (2003). Health care reform: Lessons from Canada. *American Journal of Public Health*, 93(1):20–24.

Although Canadian health care seems to be perennially in crisis, access, quality, and satisfaction in Canada are relatively high, and spending is relatively well controlled. The Canadian model is built on a recognition of the limits of markets in distributing medically necessary care. Current issues in financing and delivering health care in Canada deserve attention. Key dilemmas include intergovernmental disputes between the federal and provincial levels of government and determining how to organize care, what to pay for (comprehensiveness), and what incentive structures to put in place for payment. Lessons for the United States include the importance of universal coverage, the advantages of a single payer, and the fact that systems can be organized on a subnational basis.

Appendix 3: References Reviewed

Deber, R. (2008). Access without appropriateness: Chicken Little in charge? *Healthcare Policy*, 4(1):12–18.

Health policy makers in Canada have swung between the twin poles of ensuring access and controlling costs. Recently, access has dominated. Reconciling these opposing ideals, rather than alternating between them, requires adding the concept of appropriateness, and recognizing that rapid access to unneeded care may do more harm than good. Several examples are given of resources wasted (and side effects endured) through inappropriate use, and a few modest suggestions for improvement are made.

Deber, R., Forget, E., & Roos, L. (2004). Medical savings accounts in a universal system: Wishful thinking meets evidence. *Health Policy*, 70(1):49–66.

Medical savings accounts (MSAs) and similar approaches based on flowing reimbursements through individuals/consumers rather than providers are unsuited for systems with universal coverage. Data from Manitoba, Canada reveal that, because expenditures for physician and hospital services are highly skewed in all age groups, MSAs would substantially increase both public expenditures and out-of-pocket costs for the most ill. The empirical distribution of health expenditures limits the potential impact of many current 'demand-based' approaches to cost control. Because most of the population is relatively healthy and uses few hospital and physician services, inducing the general population to spend less will not yield substantial savings.

Deber, R., & Lam, K. C. K. (2009). *Handling the high spenders: Implications of the distribution of health expenditures for financing health care*. Presented at 2009 Annual Meeting & Exhibition, American Political Science Association, Toronto, ON, September 3-6. Downloaded from <http://papers.ssrn.com/sol3/papers.cfm?abstractid=1450788>.

Health financing policy involves determining how to distribute the costs of illness. Several paradigms contend. As Stone noted, one is the struggle between two visions of distributive justice - the solidarity principle which seeks to distribute these costs on the basis of ability to pay, vs. views based on actuarial fairness which seek to distribute these costs on the basis of the likelihood of incurring them. A related debate is whether health is a consumer good or a merit good, linked to questions about what should happen to those unable to pay for care. In the US, dialogue has tended to emphasize consumer sovereignty and suggest the risk of moral hazard should insurance coverage be too generous. In Canada, dialogue has stressed health care as a mutual responsibility, tempered by ongoing fears that overly generous coverage threatens the sustainability of the system. Our analysis of data related to the distribution of health expenditures, however, suggests that moral hazard is vastly overrated as a policy dilemma. We have analyzed expenditures on physician, hospital and pharmaceutical care for the entire population of Manitoba, Canada for the years 1997-2006. Our analysis notes that this spending is highly skewed, and that this skewing holds for all age-sex categories, as well as for major disease categories. Most people are healthy, and use few services. A focus on choice and actuarial fairness thus acts to increase total costs while decreasing coverage and patient outcomes for those with health problems. Internationally, the position of the US as an outlier - spending far more than do other developed countries to achieve less coverage - can in part be attributed to its continued reliance on an underlying model which ignores the distribution of health expenditures and foregoes many opportunities for cost containment associated with single payers.

Appendix 3: References Reviewed

Deber, R. B., Lam, K. C. K., Roos, N., Walld, R., Comm, B., Finlayson, G. S., & Roos, L. L. (2008). Canadian healthcare: Need and utilization in an almost-universal system. *Harvard Health Policy Review*, 9(1):78–87.

All healthcare systems have strengths and weaknesses. They seek multiple goals - ensuring that everyone has access to high quality healthcare whenever they need (or want?) it, in a timely manner, at the lowest possible cost, regardless of where they live or how much money they make. To the extent that these goals are not fully compatible, trade-offs are inevitable. Health policy in most countries is accordingly reactive, as policy makers respond to one set of perceived problems, and in so doing create new ones. As the late political scientist, Aaron Wildavsky, noted, many policy arenas - including healthcare - exemplify problems that cannot be solved. He suggested that the mark of success for such arenas is 'to contrast the problems we have now with those we had before' and see which we prefer.

Decter, M. B. (1997). Hospital restructuring in North America and Europe: Patient outcomes and workforce implications. *Medical Care*, 35(10 (sup)):S70–S75.

Objectives: This article reviews health system reform in Canada and discusses how hospitals are restructuring staffing patterns and redesigning work in response to increasing budgetary constraints. **Methods:** Two models for work redesign at the patient unit level are contrasted, one employing a mix of registered nurses and registered practical nurses and one using registered nurses and assistive personnel. **Principles and rationale for work redesign** are discussed. **Results:** Both models for patient care redesign reduce registered nurse positions and both appear to yield some cost savings. These models for patient care redesign are controversial among providers, and there is no consensus as to which model is preferable. No research has been undertaken to determine whether staffing changes and work redesign result in adverse patient outcomes. **Conclusions:** Regionalization of hospitals is reducing inpatient capacity in Canada, although the pace of regionalization varies in the different provinces. Hospital reengineering is designed to reduce expenditures by reducing the cost of staffing. Research is needed to evaluate the results of reengineering on patient outcomes and their relationship to registered nurse staff reductions.

Denton, F. T., Feaver, C. H., & Spencer, B. G. (2008). *An application of price and quantity indexes in the analysis of changes in expenditures on physician services*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 228. Downloaded from <http://ideas.repec.org/p/mcm/sedapp/228.html>.

Price and quantity indexes are applied in the analysis of expenditure on physician services in the province of Ontario, Canada, using newly available data files for 1992 and 2004. Price indexes for such services are found to have increased less rapidly than indexes of general inflation and quantity indexes are found to account for the largest share of physician expenditure increases. The quantity indexes imply substantial gains in services per capita, especially for older adults. They imply also an increase in labour productivity for physicians that is somewhat greater than the corresponding increase for the economy at large.

Denton, F. T., Gafni, A., & Spencer, B. G. (2001). Exploring the effects of population change on the costs of physician services. *Journal of Health Economics*, 21(5):781–803.

The effects of population aging on future health care costs are an important public policy concern in many countries. We focus in this paper on physician services and investigate how changes in the size and age

Appendix 3: References Reviewed

distribution of a population can affect the aggregate and per capita costs of such services. The principal data set (unpublished, for Ontario) provides information about payments to physicians, by age and sex of patients. Using it, we derive age/cost profiles for 19 categories of physicians. Adopting an index-theoretic framework, we then use the profiles to analyse the "pure" effects of population change (historical and projected) on physician costs, and to decompose the effects into population growth effects and population aging effects. We present calculations for Ontario, for the population of 15 industrialized countries, and for four theoretical populations.

Denton, F. T., Gafni, A., & Spencer, B. G. (2005). *Users and suppliers of physician services: A tale of two populations*. SEDAP research paper no. 136. Downloaded from <http://ideas.repec.org/p/mcm/sedapp/136.html>.

Physician shortages and their implications for required increases in the physician population are matters of considerable interest in many health care systems, in light especially of the widespread phenomenon of population ageing. To determine the extent to which shortages exist one needs to study the population of users of physician services as well as that of the physicians themselves. In this paper we study both, using the province of Ontario, Canada, as an example. The user population is projected and the implications for requirements calculated, conditional on given utilization rates. On the supplier side, the age and other characteristics of the (active) physician population are examined and patterns of withdrawal investigated. The necessary future growth of supply is calculated, assuming alternative levels of present shortages. The effects of population change on requirements are found to be smaller in the future than in the decade 1981- 1991, in the aggregate, not far from the effects in 1991-2001, but highly variable among different categories of physicians.

Denton, F. T., & Spencer, B. G. (2009). *Population aging, older workers, and Canada's labour force*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 256, September. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs09.htm#abs255>.

The Expert Panel on Older Workers made recommendations designed to increase the labour force participation of older workers. We explore the implications that higher rates of older-worker participation would have for the overall size and age composition of the labour force, for the productive capacity of the economy, and for the incomes of Canadians. Our purpose is to assess the potential impact that increased participation of older workers might have in offsetting any anticipated adverse effects of population aging on standards of living.

Denton, F. T., & Spencer, B. G. (2009). *Chronic health conditions: Changing prevalence in an aging population and some implications for the delivery of health care services*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 259, October. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs09.htm#abs259>.

Since the prevalence of many chronic health conditions increases with age we might anticipate that as the population ages the proportion with one or more such conditions would rise, as would the cost of treatment. We ask three questions: How much would the overall prevalence of chronic conditions increase in a quarter century if age-specific rates of prevalence did not change? How much would the requirements for health care resources increase in those circumstances? How much difference would it make to those requirements if people had fewer chronic conditions? We conclude that the overall

Appendix 3: References Reviewed

prevalence rates for almost all conditions associated mostly with old age would rise by more than 25 percent and that health care requirements would grow more rapidly than the population - more than twice as rapidly in the case of hospital stays - if the rates for each age group remained constant. We conclude also that even modest reductions in the average number of conditions at each age could result in substantial savings.

Denton, M., Zeytinoglu, U., Davies, S., & Hunter, D. (2005). *Where have all the home care workers gone?* Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 128, September. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs05.htm#abs128>.

Because of the on-going need to co-ordinate care and ensure its continuity, issues of retention and recruitment are of major concern to home care agencies. The purpose of this study was to examine the factors affecting turnover decisions among visiting home care workers. In 1996, 620 visiting nurses and personal support workers from three non-profit agencies in a mid-sized Ontario city participated in a survey on their work and health. By the fall of 2001, 320 of these respondents had left the agencies. Analysis of the turnover data showed a temporal association between the implementation of managed competition and turnover. We mailed a self-completion questionnaire asking about their reasons for leaving the agency and about their subsequent work experience. One hundred and sixty nine (53%) responded to this survey. Respondents indicated dissatisfaction with the implementation of managed competition, with pay, hours of work, lack of organizational support and work load as well as health reasons, including work-related stress, as reasons for leaving. Less than one-third remained employed in the home care field, one-third worked in other health care workplaces and one-third were no longer working in health care. Their responses to our 1996 survey were used to predict turnover. Results show that nurses were more likely to leave if they had unpredictable hours of work, if they worked shifts or weekends and had higher levels of education. They were more likely to stay with the agency if they reported working with difficult clients, had predictable hours, good benefits, had children under 12 years of age in the home, and were younger. Personal support workers were more likely to leave if they reported higher symptoms of stress, and had difficult clients. They were more likely to stay if they worked weekends and perceived their benefits to be good.

Docteur, E., & Oxley, H. (2003). *Health-care systems: Lessons from the reform experience*. OECD Health Working Papers, No. 9, OECD Publishing. Downloaded from <http://www.oecd.org/LongAbstract/0,2546,en26493458721547787119684111,00.html>.

Economics Department Working Papers 374. This study reviews health-system reforms in OECD countries over the past several decades and their impact on the following policy goals: ensuring access to services; improving the quality of care and its outcomes; allocating an "appropriate" level of resources to health care (macroeconomic efficiency); and ensuring microeconomic efficiency in service provision. While nearly all OECD countries have achieved universal insurance coverage, initiatives to address persistent disparities in access are now being undertaken in a number of countries. In light of new evidence of serious problems with health-care quality, many countries have recently introduced reforms, but it is too soon to generalise as to the relative effects of alternative approaches. Instruments aimed at cost control have succeeded in slowing the growth of (particularly public) health-care spending over the 1980s and 1990s but health-care spending continues to rise as a share of GDP in most countries. A few countries have been concerned that spending restrictions have gone too far and hurt health-system performance.

Appendix 3: References Reviewed

There is some evidence that supply of health services has become more efficient, particularly in the hospital sector, but scope for further gains exists. Measures such as better payment methods have improved the microeconomic incentives facing providers. However, introducing improved incentives through a more competitive environment among providers and insurers has proved difficult.

Donaldson, C., Gerard, K., Jan, S., Mitton, C., & Wiseman, V. (2005). *Economics of health care financing: The visible hand*. 2nd ed. Basingstoke: Palgrave/Macmillan.

The financing arrangements of many health care systems world wide are under reform, or at least their reform is anticipated. The key to judging such reforms is whether they make things better or worse for the population at large. Our overall, if rather depressing, conclusion must be that much more evidence is required on the effects of different ways of financing health care. So far, however, it is clear that "solutions" based on simple (even simplistic) neoclassical models which assume the existence of well-informed consumers uninfluenced by providers are very naive. Neither charges nor competitive reforms go well with health care. Where competition involves public bodies acting on behalf of consumers, the situation may be improved: but this type of competition remains unevaluated. The key to health care market lies on the supply side, and financing reforms should be concentrated there. Such future reforms, however, can be properly informed only by adequate evaluation, which in turn depends primarily on the future development of outcome measures, measures of access and incentive structures.

Dubois, C.-A., McKee, M., & Nolte, E. (Eds.). (2006). *Human resources for health in Europe*. 1st ed. New York: Open University Press.

Health service human resources are key determinants of health service performance. The human resource is the largest and most expensive input into health care, yet it can be the most challenging to develop. This book examines some of the major challenges facing health care professions in Europe and the potential responses to these challenges. The book analyses how the current regulatory processes and practices related to key aspects of the management of the health professions may facilitate or inhibit the development of effective responses to challenges facing health care systems in Europe. The authors document how health care systems in Europe are confronting existing challenges in relation to the health workforce and identify the strategies that are likely to be most effective in optimizing the management of health professionals in the future. *Human Resources for Health in Europe* is key reading for health policy makers and postgraduates taking courses in health services management, health policy and health economics. It is also of interest to human resource professionals.

Duckett, S. J. (2006). Next steps in health workforce reform. *The Australian Economic Review*, 39(3):318–322.

The recent Productivity Commission report on the Australian health workforce (2005) arises from increasing disquiet in health policy circles with the current policy settings for the health workforce, disquiet which comes from concerns about dynamic and technical inefficiency within the health workforce market. The dynamic inefficiency stems from the view that contemporary role assignment in the health workforce is based on early to mid twentieth century compromises and a subsequent slow evolution of health sector roles, and that the resulting division of labour is no longer appropriate in the face of the different needs that are likely to dominate twenty-first century health care. Health care needs have changed dramatically over the last 50 years, in part driven by an epidemiological transition, where

Appendix 3: References Reviewed

the dominant needs of the population are shifting from acute, often infectious or trauma-related episodic needs to chronic or acute-on-chronic needs. This epidemiological transition requires an organisational transition: rather than working in an environment of a single health problem with a single leader addressing the patient's problem, health professionals interact with patients presenting with multiple problems needing care from staff with diverse skills and with leadership being shared around the team at different points of the treatment, rehabilitation and care pathway.

Dumont, J.-C., Zurn, P., Church, J., & Le Thi, C. (2008). *International mobility of health professionals and health workforce management in Canada: Myths and realities*. World Health Organization, OECD Health Working Paper no. 40. Downloaded from <http://www.oecd.org/dataoecd/7/59/41590427.pdf>.

This report examines the role played by immigrant health workers in the Canadian health workforce but also the interactions between migration policies and education and health workforce management policies. Migrant health worker makes a significant contribution to the Canadian health workforce. Around 2005-06, more than 22% of the doctors were foreign-trained and 37% were foreign-born. The corresponding figures for nurses are close to 7.7% and 20%, respectively. Foreign-trained doctors play an important role in rural areas as they contribute to filling the gaps. In most rural areas, on average, 30% of the physicians were foreign-trained in 2004. Over past decades the evolution of the health workforce in Canada has been characterised notably by a sharp decline in the density of nurses and a stable density of doctors, which is in contrast with the trends observed in other OECD countries. This evolution is largely the result of measures were adopted at the end of the 1980s and early 1990s in order to address a perceived health workforce surplus. During that time, substantial public spending cuts in the health sector, anticipated cuts in medical and nursing school enrolments, and large layoffs of nurses also took place. In addition more restrictive immigration policies were adopted for doctors and nurses between 1986 and 2002 and more stringent registration procedures were introduced for foreign-trained health professionals.

Dussault, G., Fournier, M.-A., Zanchetta, M. S., K rouac, S., Denis, J.-L., Bojanowski, L., Carpentier, M., & Grossman, M. (2001). *The nursing labor market in Canada: Review of the literature*. Report presented to the Invitational Roundtable of Stakeholders in Nursing, Paper R01-03, Montr al, QC: Universit  de Montr al, GRIS, Janvier. Downloaded from <http://www.gris.umontreal.ca/rapportpdf/R01-03.pdf>.

Mandate and objectives: This project consisted in the production of a review of the literature published after 1985 on the nursing labor market in Canada. The topics to be covered included the dynamics of the market, the factors influencing supply and demand, the impact of current health care system changes. This review is expected to identify knowledge gaps and major issues that need to be further investigated, in order to perform a valid and complete analysis of nursing labour in the health care system. Methodology: In this literature search, the nursing workforce was defined as including registered nurses (RNs), licensed practical nurses (LPNs), and registered psychiatric nurses (RPNs). Two types of literature were covered: the published scientific and professional literature and the unpublished literature produced by professional associations and governments, such as briefs, reports, and studies. Bibliographical databases such as MEDLINE, CINAHL, Current Contents, as well as ERIC were exploited, and to track the non-published literature, the collaboration of the stakeholders involved in the project was sought (and obtained).

Dussault, G., & Franceschini, M. C. (2006). Not enough there, too many here: Understanding geographical imbalances in the distribution of the health workforce. *Human Resources for Health*, 4(12):1–16.

Appendix 3: References Reviewed

Access to good-quality health services is crucial for the improvement of many health outcomes, such as those targeted by the Millennium Development Goals (MDGs) adopted by the international community in 2000. The health-related MDGs cannot be achieved if vulnerable populations do not have access to skilled personnel and to other necessary inputs. This paper focuses on the geographical dimension of access and on one of its critical determinants: the availability of qualified personnel. The objective of this paper is to offer a better understanding of the determinants of geographical imbalances in the distribution of health personnel, and to identify and assess the strategies developed to correct them. It reviews the recent literature on determinants, barriers and the effects of strategies that attempted to correct geographical imbalances, with a focus on empirical studies from developing and developed countries. An analysis of determinants of success and failures of strategies implemented, and a summary of lessons learnt, is included.

Dussault, G., & Rigoli, F. (2003). *The interface between sector reform and human resources in health*. Health, Nutrition and Population (HNP) Discussion Paper. Downloaded from <http://www.ncbi.nlm.nih.gov/pubmed/14613523>.

The relationship between health sector reform and the human resources issues raised in that process has been highlighted in several studies. These studies have focused on how the new processes have modified the ways in which health workers interact with their workplace, but few of them have paid enough attention to the ways in which the workers have influenced the reforms. The impact of health sector reform has modified critical aspects of the health workforce, including labor conditions, degree of decentralization of management, required skills and the entire system of wages and incentives. Human resources in health, crucial as they are in implementing changes in the delivery system, have had their voice heard in many subtle and open ways - reacting to transformations, supporting, blocking and distorting the proposed ways of action. This work intends to review the evidence on how the individual or collective actions of human resources are shaping the reforms, by spotlighting the reform process, the workforce reactions and the factors determining successful human resources participation. It attempts to provide a more powerful way of predicting the effects and interactions in which different "technical designs" operate when they interact with the human resources they affect. The article describes the dialectic nature of the relationship between the objectives and strategies of the reforms and the objectives and strategies of those who must implement them.

El-Jardali, F., & Fooks, C. (2005). *An environmental scan of current views on health human resources in Canada: Identified problems, proposed solutions and gap analysis*. Health Council of Canada. Prepared for the National Health Human Resources Summit, June 23, 2005. Downloaded from healthcouncilcanada.ca/docs/summit05/EnviroScanENG.pdf.

The Health Council of Canada strongly believes that the health care renewal goals established by the First Ministers cannot be achieved without a collaborative and coordinated approach to resolving the complex issues of health human resources. Effective management of health human resources requires a committed and sustained effort. Leaders responsible for educating, training, employing, regulating, and funding the health care workforce must work together, along with researchers and experts in the field of health human resources. In June 2004, the Health Council hosted a Health Human Resources Summit to initiate dialogue and examine solutions and success stories. In preparation for the summit, we conducted an environmental scan of current views on health human resource issues in Canada. This paper presents the

Appendix 3: References Reviewed

findings of this environmental scan.

Evans, R. G. (1996). Going for gold: The redistributive agenda behind market-based health care reform. *Journal of Health Politics, Policy and Law*, 22(2):427–765.

Political conflict over the respective roles of the state and the market in health care has a long history.

Current interest in market approaches represents the resurgence of ideas and arguments that have been promoted with varying intensity throughout this century. (In practice, advocates have never wanted a truly competitive market, but rather one managed by and for particular private interests). Yet international experience over the last forty years has demonstrated that greater reliance on the market is associated with inferior system performance--inequity, inefficiency, high cost, and public dissatisfaction. The United States is the leading example. So why is this issue back again? Because market mechanisms yield distributional advantages for particular influential groups. (1) A more costly health care system yields higher prices and incomes for suppliers--physicians, drug companies, and private insurers. (2) Private payment distributes overall system costs according to use (or expected use) of services, costing wealthier and healthier people less than finance from (income-related) taxation. (3) Wealthy and unhealthy people can purchase (real or perceived) better access or quality for themselves, without having to support a similar standard for others. Thus there is, and always has been, a natural alliance of economic interest between service providers and upper-income citizens to support shifting health financing from public to private sources. Analytic arguments for the potential superiority of hypothetical competitive markets are simply one of the rhetorical forms through which this permanent conflict of economic interest is expressed in political debate.

Evans, R. G. (1984). *Strained mercy: The economics of Canadian health care*. . Toronto, ON: Butterworths & Co.

This book is the result of a series of painful compromises among several different books with different purposes - such as providing a comprehensive survey of health economics, impressing one's professional colleagues, serving as a text for courses in health economics, and demonstrating the application of economics to health care services in a way that would be most interesting and useful to the people actually on the line in organizing, delivering, and funding health care -- in Canada or elsewhere. This book tries to do a bit of each. But it is primarily intended for two specific audiences which are only partially overlapping. In the first place, it is a text for courses in health economics, as part of university programs in health planning and administration, economics, or public administration. The formal economic analysis which is explicit in the text presupposes that the reader has as background a one-term course in micro-economic theory, and remembers and understands it. The concept of optimal resource allocation, and the strengths and weaknesses of price and market systems, supply and demand, in that process, as well as the basic theory of the firm, would normally be covered at that level. There is, however, a much larger group of health professionals -- administrators, clinical practitioners, planners, "bureaucrats" of various sorts -- with a considerable interest in and knowledge about health care organization and delivery, "at the coalface," as the British say. Their work inevitably has an economic dimension, whether explicit or implicit. But their acquaintance with formal economic analysis may be variable, remote, or unsatisfactory, and they may find abstract graphic or algebraic demonstrations unhelpful at best. Accordingly, I have tried to make the presentation self-contained in two respects. First, the economic concepts and tools of analysis which do emerge explicitly are defined and explained at each

Appendix 3: References Reviewed

point, so that previous economic background is not essential. Secondly, the formal parts are in chunks which are not critical to the flow of the text. The reader who is prepared to take the demonstrations on faith can skip over them without loss of continuity.

Evans, R. G. (2004). Financing health care: Options, consequences, and objectives for financing health care in Canada. In G. P. Marchildon, T. McIntosh, & P.-G. Forest (Eds.), *The fiscal sustainability of health care in Canada: Romanow papers, Volume 1*. Toronto: University of Toronto Press. pp. 139–196.

All modern health care systems are predominantly financed from public revenues, supplemented by private sources. Most draw on general taxation; a few have public social insurance systems. Private financing is primarily through direct user payments; some countries also have private insurance systems for the better-off. The public share ranges from 60% to over 90%, most countries fall between 75% and 85%. Canada reports a 72.6% public share (2001); the public tax expenditure subsidies to private insurance bring the true figure to about 75%. Although the public share in Canada is relatively low, the public-private debate has largely focused on raising the private share. This paper accordingly describes several proposed mechanisms for such a shift, and assesses both the revenue potential of private finance and its impact on the distribution of health-care costs and access to care. It does not deal with potential increases in the public share, e.g. a national tax-financed Pharmacare program, though its conclusions have obvious implications for such proposals. The choice of financing mechanisms is only half the public-private debate; the other half concerns the ownership, motivations and funding of provider organizations. An accounting framework, derived from the National Income Accounts, illustrates the distinction between funding choices - which organizations shall be entitled to provide and be paid for which services? - and choices of financing mix - how shall the revenues be raised, from whom, and by what organizations? In principle, these choices are independent; in practice, public-private choices in the organization of care delivery do influence the financing mix.

Evans, R. G., Barer, M. L., & Hertzman, C. (1991). The 20-Year experiment: Accounting for, explaining, and evaluating health care cost containment in Canada and the United States. *Annual Review of Public Health*, 12:481–518.

Since the late 1960s, concerns over the escalating costs of health care have been expressed with increasing vigor on both sides of the Canada-United States border. This is in sharp contrast with the previous 20 years, during which the principal policy concern was to "meet needs" by finding ways to expand the flow of resources into healthcare. In retrospect, the turning point in Canada was marked by the 1970 publication 'Task Force Reports on the Costs of Health Care'. The 1970 Annual Report of the Economic Council of Canada also expressed concern about the cost trends of the 1960s. 'Cost Containment' became part of the American health agenda, at least rhetorically, at about the same time. As we attempt to assess the effects of efforts at containment, it is important to remember that before about 1970 no one was really trying. It is only since that time that policies can be said to have 'succeeded' or 'failed'.

Evans, R. G., & McGrail, K. M. (2008). Richard III, Barer-Stoddart and the daughter of time. *Healthcare Policy*, 3(3):1–11.

"Truth is the daughter of Time," said mystery writer Josephine Tey. This point, illustrated in her rehabilitation of the "villainous" King Richard III, is equally apt for a reconsideration of the 1991 Barer-Stoddart report on medical personnel. Canadian physicians have reviled these authors for "creating" a

Appendix 3: References Reviewed

physician shortage by encouraging provincial cuts to medical school enrolment. Yet, data pre- and post-1991 are quite clear: their report did not and could not have had this effect. The physician-to-population ratio has been stable since 1989. Average physician hours of work have fallen, but per capita expenditures on physicians' services (inflation-adjusted) are rising rapidly. A flood of physicians from the major expansion of enrolments now in place threatens serious fiscal trouble over the next two decades, and is likely to pre-empt any significant system reform.

Evans, R. G., Schneider, D., & Barer, M. (2010). *Health human resources productivity: What it is, how it's measured, why (how you measure) it matters, and who's thinking about it*. Prepared for the Canadian Health Services Research Foundation and the Michael Smith Foundation for Health Research, Ottawa, ON. Downloaded from <http://www.chsrf.ca/fundingopportunities/commissionedresearch/projects/pdf/HHRPe.pdf>.

The healthcare sector makes up roughly one-tenth of the economic activity of modern economies, and labour inputs make up a large share of its costs, relative to other industries. As a result, the measurement, tracking and improvement of labour productivity in this industry, referred to here as health human resources productivity (HHRP), should be of significant policy concern. In principle, HHRP should be defined in terms of the relationship between health outcomes achieved (health status protection or improvement for individuals or populations) and health human resource inputs (time, effort, skills and knowledge) required. However, the vast majority of HHRP literature defines HHRP as the ratio of procedural and service outputs over inputs measured in terms of numbers of personnel, or time.

Eyles, J., Birch, S., Chambers, S., Hurley, J., & Hutchison, B. (1991). A needs-based methodology for allocating health care resources in Ontario, Canada: Development and an application. *Social Science and Medicine*, 33(4):489–500.

In an attempt to limit its health care expenditures, Ontario is, as one option, exploring the possibilities of a capitated system for service delivery payments as opposed to the present mixture of global budgets and fee-for-service. After reviewing the literatures on capitation (primarily American) and on resource allocation (primarily British), the paper sets out to establish a capitation rate, based on 'need' and not prior use, for a range of health services in the northern Ontarian community of Fort Frances-Rainy River. The difficulties and limitations of the needs-based approach are explored. The results reported show the setting of the local population characteristics against provincial average health care utilization data to generate expected use rates, which are then adjusted for need and other factors, particularly relative costs and sparsity. Finally these adjusted rates are applied to current provincial expenditures to derive a target share. This target is then expressed in relation to the planning population to derive the capitation rate.

Feil, E. C., Welch, H. G., & Fisher, E. S. (1993). Why estimates of physician supply and requirements disagree. *Journal of the American Medical Association*, 269(20):2659–2663.

Objective: To review the major forecasts of physician supply and physician requirements. Data Sources: English-language medical literature on physician manpower published between 1980 and 1990, identified from journal articles selected through searches of the MEDLINE and Health Planning and Administration databases using the search formulations physician supply, health manpower--physicians, and physician manpower. Study Selection: Sources were selected if they were repeatedly cited and provided quantitative projections. Data Extraction: Each study was reviewed for its quantitative projections and to identify its

Appendix 3: References Reviewed

methodological assumptions. Data Synthesis: All forecasts point to a steadily increasing physician supply and, with one exception, suggest that supply will exceed requirements in the year 2000. The estimates of physician supply across studies varied primarily because of differing assumptions about entrance rates into the profession and the size and clinical work load of specific categories of physicians: researchers, teachers, administrators, residents, and women. The estimates of physician requirements were more volatile because of differences in the basic approach and assumptions about future growth and market structure. Conclusions: Even though the measurement of entrance and exit rates from the profession is a generally accepted approach to forecasting supply, apparently minor disagreements on assumptions create large discrepancies between forecasts over time. There is no accepted approach to forecasting physician requirements.

Figueras, J., McKee, M., Lessof, S., Duran, A., & Menabde, N. (2008). *Health systems, health and wealth: Assessing the case for investing in health systems*. WHO & The European Observatory on Health systems and Policies; European Ministerial Conference on Health Systems, Tallinn, Estonia, 25-27 June, 2008. Downloaded from <http://www.euro.who.int/document/hsm/3hsc08eBD3.pdf>.

Health policy-makers have been under enormous pressure in recent years over concerns about financial sustainability and cost-containment. The resources available to any society are finite, but emerging evidence is recasting health systems not as a drain on those resources but as an opportunity to invest in the health of the population and in economic growth. Health systems, health and wealth are inextricably linked in a set of mutually reinforcing and dynamic relationships. This new paradigm offers an opportunity for a fundamental reassessment of the role of health systems in society. It poses three key questions. 1) How can we improve health, wealth and societal well-being by investing in health systems? 2) How can we ensure that health systems are sustained in the future? 3) How can we monitor, manage and improve performance so that health systems are as effective and efficient as possible? This background document to the WHO Ministerial Conference on Health Systems (Tallinn, Estonia, 25-27 June 2008) explores this evidence. It makes the case for appropriate investment in health systems because they can improve health and impact positively on economies and because they reflect core values that underpin European societies.

Finkelstein, M. M. (2001). Do factors other than need determine utilization of physicians' services in Ontario? *Canadian Medical Association Journal*, 165(5):565–570.

Background: Universal health care systems seek to ensure access to care on the basis of need, rather than income, but there are concerns about preferential access to cardiovascular and specialist care for high income patients. In this study, I used population-based, individual-level health, income and utilization data to determine whether there is evidence for differential access to physician care in relation to household income. Methods: I studied data for 2170 Ontario respondents to the 1995 National Population Health Survey (aged 40 to 79 years) who had approved linkage of their survey responses to the administrative databases of the Ontario Health Insurance Plan and for whom income data were available. I used linear and generalized linear regression to model the mean per capita expenditures on physician care and the probability of referral to a specialist in relation to income and self-reported health status. Results: Residents of higher income households incurred lower per capita expenditures for physicians' services than those in lower income households; for example, the mean per capita expenditure in the upper middle income group was \$220 less (95% confidence interval -\$87 to -\$334) than the mean per

Appendix 3: References Reviewed

capita expenditure in the lowest income group. Expenditures were significantly related to self-reported health status; for example, the mean per capita expenditure among those reporting fair health status was \$590 higher (95% confidence interval \$465 to \$737) than among those reporting excellent health. After adjustment for health status, there was no association between income and the expenditures on all physician services, out-of-hospital services or specialist care. Interpretation: Utilization of physicians' services in Ontario is based on need, rather than income.

Fooks, C., Duvalko, K., Baranek, P., Lamothe, L., & Rondeau, K. (2002). *Health human resource planning in Canada: Physician and nursing work force issues*. Commission on Future of Health Care in Canada, October 2002. Downloaded from <http://www.cprn.com/theme.cfm?theme=39&l=en>.

Daily stories in the media state that Canada does not have enough doctors and nurses and we need more immediately. Those currently working in the health care system are over-worked, burned out and are leaving. We need to fix this by increasing the numbers of personnel working in the system. These are statements made frequently over the last few years backed up by factfinding reports, surveys, stories of small towns without a family physician and hospitals unable to fill nursing positions. The solution offered by stakeholders is to increase supply now. Sounds simple. It isn't. What it is, however, is a popular media topic, the subject of continual claims and counter-claims, and a source of endless frustration for patients, health professionals, health care institutions and governments.

Forget, E. L., Deber, R., & Roos, L. L. (2002). Medical savings accounts: Will they reduce costs? *Canadian Medical Association Journal*, 167(2):143–147.

Background: Medical Savings Accounts are an attempt to reduce health care costs by transferring responsibility for expenditures to patients, while providing them with state-supported base amounts to cover some of the costs. We wondered whether such a system would actually be effective, given the fact that medical care expenditures (and illness) are unequally distributed across the population. Methods: We used the Manitoba Population Health Research Data Repository to assess costs incurred by individual residents of Manitoba for all physician visits and admissions to hospital between 1997 and 1999, and we calculated an average expenditure per person per year over the 3 years. Results: During fiscal years 1997-1999, physician and hospital costs that could be attributed to individual Manitoba residents averaged \$730 each year. Most users accounted for very little expenditure. About 40% of the entire population of Manitoba used less than \$100 each, and 80% used less than \$600. The highest-using 1% of the Manitoba population accounted for 26% of all spending on hospital and physician care, whereas the lowest-using 50% accounted for 4%. When examined by age category, the results were similar. Even in the highest age category, most of the population falls into the low-usage category. If the entitlement under a Medical Savings Account scheme was set at the current average cost of \$730 per year, then total spending by government on health care for this healthy group would increase (by \$505 million) rather than decrease. If the "catastrophic threshold," above which the insurer would pay costs, was set at \$1000 per year, then the sickest 20% of Manitoba residents would become personally responsible for just over \$60 million of current health care costs. The net result is a 54% increase in spending on hospital and physician costs that can be allocated to individuals. Interpretation: Medical Savings Accounts will not save money but will instead, under most formulations, lead to an increase in spending on the healthiest members of the population.

Fransoo, R., Martens, P., Burland, E., Prior, H., & Burchill, C. (2009). *Manitoba RHA indicators atlas*

Appendix 3: References Reviewed

2009. Manitoba Centre for Health Policy, Dept. of Community Health Sciences, Faculty of Medicine, U of Manitoba, September. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/reference/RHAAtlasReport.pdf>.

The results in this report show that there continues to be a strong connection between socioeconomic status and health status. Residents of lower income areas have higher mortality rates and higher prevalence of physical and mental illness. However, they also receive more health care services, especially hospital care. In urban areas (Winnipeg and Brandon), residents of lower income areas also receive more physician visits, however in both urban and rural areas, they had slightly lower rates of consultations (mostly to specialists), and lower continuity of care. Many surgical and diagnostic procedures (cardiac care, cataract surgery) were performed at higher rates among residents of lower income areas, except Magnetic Resonance Imaging scans, which showed the opposite trend. Hip and Knee replacement rates were similar across income groups. Home care service rates were higher among residents of lower income areas within Winnipeg and Brandon, whereas in rural areas rates were equal across income groups. Immunization rates for influenza and pneumonia were not related to income, but mammography and Pap testing rates were lower among women from lower income areas. Prescription drug use rates were similar across income groups, though residents of lower income areas received a higher number of different drugs - possibly related to their higher disease prevalence. Quality of care indicators showed no consistent relationship with area-level income.

Frohlich, N., & Carriere, K. C. (1997). *Issues in developing indicators for needs-based funding*. Manitoba Centre for Health Policy Evaluation, University of Manitoba, Winnipeg, June. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

It is widely accepted across Canada that funding for health care should be provided on the basis of need. However, identifying exactly how to measure need is a difficult problem. This report examines one possible way of measuring need in a service area when detailed data is available on utilization patterns in that area. The methodology provides an idealized starting point for needs-based planning in such areas. The model presented here was first developed to look at requirements for physician services in Manitoba. This paper elaborates that methodology to make it more accessible to those interested in the policy question of needs-based funding.

Frohlich, N., Fransoo, R., & Roos, N. (2001). *Indicators of health status and health service use for the Winnipeg Regional Health Authority*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, Winnipeg, March. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

This report provides information on the health status and health service use of the population of the Winnipeg Health Region as baseline information for the recently formed Winnipeg Regional Health Authority (WRHA). Administratively, the Winnipeg Region is divided into 12 Community Areas (CA) and further into 25 Neighbourhood Clusters (NC). Our analyses match these definitions to ensure consistency. It is hoped that the data will prove useful in the management of existing and proposed services, and provide a benchmark against which the effects of future changes can be compared. Most analyses for this report were based on information from fiscal year 1998/99. However, for some analyses, three-year (1996/97 - 1998/99) and five-year periods (1994/95 - 1998/99) were also used. These multi-year values provide more reliable estimates and allow for the examination of trends in the data. The report

Appendix 3: References Reviewed

addresses the distribution of services across the various areas of the city with emphasis on the extent to which service use in the areas corresponds to the health status of the populations in the areas. Finding a measure of health status that is independent of health care service use is a difficult problem that has bedeviled many health policy analysts. It is generally acknowledged that no perfect measure exists. Nevertheless, one measure has come to be recognized as an acceptable approximation.

Frohlich, N., Katz, A., De Coster, C., Dik, N., Soodeen, R.-A., Watson, D., & Bogdanovic, B. (2006). *Profiling primary care physician practice in Manitoba*. Manitoba Centre for Health Policy, Department of Community Health Sciences Faculty of Medicine, University of Manitoba, Winnipeg, August. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

The Primary Health Care system (PHC) is the foundation of Canada's health care system. For most people, it is their first point of contact with the health care system, usually through a physician. In Manitoba, the government has published a policy framework that defines its vision, mission, principles and goals for PHC. Manitoba Health's strategy acknowledges that to support service delivery "a provincial population health information and monitoring system that collects, analyzes and distributes accurate and timely information is required." This study helps to address this need. This study deals with a central component of the PHC system: primary care as delivered by a physician. The Manitoba Centre for Health Policy (MCHP) undertook this project as part of its contract with Manitoba Health. The purposes of the study were to (a) develop indicators of primary care delivery, (b) describe current patterns of primary care physician services delivery, and (c) offer insights regarding variability in the scope, breadth, and continuity of services delivered by primary care physicians.

Frohlich, N., Markestejn, T., Roos, N. P., Carriere, K. C., Black, C. D., DeCoster, C., Burchill, C. A., & MacWilliam, L. (1995). Stability and trends over 3 years of data. *Medical Care*, 33(12 (sup)):DS100–108.

Because the health status of a population does not usually respond immediately to interventions, whether social or medical, the ability to analyze change over time is important. Therefore, patterns of change and stability in health status and health care use of Manitoba residents during a 3-year period from 1990 to 1992 were analyzed using the Population-based Health Information System. This article presents summary findings and discusses methodological and policy issues arising from the analyses. A small but significant decrease in premature mortality (the primary health status indicator) was observed in most regions of the province, but two remote, northern regions, those whose residents scored at high socioeconomic risk, remained distinguished for their poor health status. These "poor health" regions also had the highest contact rates with primary caregivers, raising questions about the role of the health care system in improving the health of the population. A persistent increase in surgery was observed in several regions, led by increases in outpatient surgery over and above increases in the elderly population and beyond substitution for inpatient procedures. This trend (not obvious before these analyses) is important as hospitals move to expand their outpatient facilities in response to restraints on inpatient care.

Frohlich, N., Markestejn, T., Roose, N., Carriere, K. C., Black, C., DeCoster, C., Burchill, C. A., & MacWilliam, L. (1994). *A report on the health status, socio-economic risk and health care use of the Manitoba population 1992-93 and overview of the 1990-91 to 1992-93 findings*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, Winnipeg. Downloaded from <http://mchp->

Appendix 3: References Reviewed

appserv.cpe.umanitoba.ca/deliverablesList.html.

POPULIS is a population-based information system developed by MCHP. It provides data on current health and illness profiles, including socio-economic risk factors and patterns of health care use across Manitoba.

Garber, A. M., & Sox, H. C. (2004). The U.S. physician workforce: Serious questions raised, answers needed. *Annals of Internal Medicine*, 141(9):732–734.

We all have a stake in the size of the physician workforce. With too few physicians, access to care will be compromised; with too many, there will be strong pressures to overconsume health services. Increasing the production of U.S.-trained physicians by expanding physical resources of medical schools and creating new residency and fellowship positions will be costly and will have delayed, long-lasting effects on the supply of physicians' services. According to those who believe that physicians increase the demand for their own services, every additional physician would generate added health care costs for the length of a career, which now averages about 30 years. These increased expenditures would dwarf the short-term costs of expanding our capacity to train physicians.

Goddard, M., Gravelle, H., Hole, A., & Marini, G. (2010). Where did all the GPs go? Increasing supply and geographical equity in England and Scotland. *Journal of Health Services Research and Policy*, 15(1):28–35.

Objectives: To examine the effect on geographical equity of increases in the total supply of general practitioners (GPs) and the ending of entry restrictions in 2002 and to explore the factors associated with the distribution of GPs across England. Methods: Calculation of Gini coefficients to measure geographical equity in GPs per 100,000 population in England and Scotland. Multiple regression of GPs per capita and change in GPs per capita on demographics, morbidity, deprivation and measures of amenity in English Primary Care Trusts (PCTs). Results: Equity in England rose between 1974 and 1994 but then decreased, and in 2006 it was below the 1974 level. After 2002, England had a greater percentage increase in GP supply than Scotland and a smaller increase in inequity. The level of GP per capita supply in 2006 was positively correlated with morbidity and PCT amenity, and negatively correlated with unemployment and poor air quality. The increase in per capita supply between 2002 and 2006 was not significantly associated with morbidity, deprivation or amenities. Conclusions: Reducing geographical inequity in the provision of GPs requires targeted area level policies.

Goel, V., Williams, J., Anderson, G., Blackstein-Hirsch, P., Fooks, C., & Naylor, D. (1996). An overview of trends in the use of acute care hospitals, physician and diagnostic services, and prescription drugs. In V. Goel, J. I. Williams, G. M. Anderson, P. Blackstien-Hirsch, C. Fooks, & C. D. Naylor (Eds.), *Patterns of health care in Ontario* 2nd ed. Toronto, Ontario: Institute for Clinical Evaluative Services (ICES). pp. 27–42.

The Ontario Ministry of Health (MOH) provides funding for a range of health care services. In 1984/85, the total MOH budget was \$8.4 billion; it had more than doubled to \$17.7 billion by 1994/95. The increase was marked by rapid growth in the seven-year period between 1984/85 and 1991/92, when MOH expenditures increased at an average rate of 11% per year. Expenditures levelled off in the three-year period from 1991/92 through 1994/95, increasing by a total of less than 2%.

Appendix 3: References Reviewed

Goel, V., Williams, J., Anderson, G., Blackstien-Hirsch, P., Fooks, C., & Naylor, D. (1996). Trends in physician fee-for-service billing patterns. In V. Goel, J. I. Williams, G. M. Anderson, P. Blackstien-Hirsch, C. Fooks, & C. D. Naylor (Eds.), *Patterns of health care in Ontario* 2nd ed. Toronto, Ontario: Institute for Clinical Evaluative Sciences (ICES). pp. 247–264.

This chapter examines expenditures on physician services in terms of the characteristics of the physicians providing the services. An analysis from this perspective provides insight into trends in physician supply and changes in billing patterns for different groups of physicians. This information plays an important role in better understanding what has happened to Ontario Health Insurance Plan (OHIP) expenditures over the last few years and in ensuring the effectiveness of future reimbursement policies.

Goel, V., Williams, J., Anderson, G., Blackstien-Hirsch, P., Fooks, C., & Naylor, D. (1996). The use of acute care hospitals, physician and diagnostic services, and prescription drugs in Ontario's health planning regions. In V. Goel, J. I. Williams, G. M. Anderson, P. Blackstien-Hirsch, C. Fooks, & C. D. Naylor (Eds.), *Patterns of health care in Ontario* 2nd ed. Toronto, Ontario: Institute for Clinical Evaluative Sciences (ICES). pp. 43–50.

The Ontario Ministry of Health (MOH) funds health care services for approximately 11 million people. Ontario covers a vast geographic area; most residents live in urban areas, but many, particularly those in the North, live in isolated rural areas. Providing equal access to health care services for this large and diverse population is a challenge.

Goel, V., Williams, J., Anderson, G., Blackstien-Hirsch, P., Fooks, C., & Naylor, D. (1996). Conclusions and reflections. In V. Goel, J. I. Williams, G. M. Anderson, P. Blackstien-Hirsch, C. Fooks, & C. D. Naylor (Eds.), *Patterns of health care in Ontario* 2nd ed. Toronto, Ontario: Institute for Clinical Evaluative Sciences (ICES). pp. 329–338.

In the conclusion of the first edition of the ICES Practice Atlas, we noted that Ontario's health care system was in the throes of an affordability crisis, compounded by an ongoing lack of the information tools necessary for health systems restructuring. Two years later, public spending on health care in Ontario has been held steady at around \$17.5 billion dollars. An end to 25 years of steady growth in public expenditures on health care in readily understandable, given the enormous debt burden and continued operating deficit of the provincial government. Nonetheless, with a growing and aging population, and with the pressures of new medical technologies, a freeze is equivalent to a funding reduction in real terms.

Goel, V., Williams, J. I., Anderson, G. M., Blackstien-Hirsch, P., Fooks, C., & Naylor, C. D. (1996). *Patterns of health care in Ontario: The ICES practice atlas*. Canadian Medical Association, Institute of Clinical Evaluative Sciences, Ottawa, ON. Downloaded from <http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=67&morgid=0&gsecid=0&itemid=1411&type=atlas>.

In the mid-1990s, Ontario's health care system continued to undergo profound change with demands to restructure while maintaining or improving health outcomes. Funding constraints, combined with changing demographics, emerging technologies and prescription drugs resulted in reduced real dollars for health care. As in the 1994 edition, this research atlas analyzes data about status, expenditure, and delivery of health care in Ontario. In addition to updating information in the last edition, this report covers additional topics such as physician billing patterns and impact of length of stay on hospital readmissions.

Appendix 3: References Reviewed

As well, information is provided on utilization and expenditure trends in mental health and pediatric services.

Goodman, D. C., & Grumbach, K. (2008). Does having more physicians lead to better health system performance? *Journal of the American Medical Association*, 299(3):335–337.

The U.S. health system faces ongoing challenges in addressing its shortcomings in access and quality. Against a foreground of uneven and fragmented care lies a bleak background of unrelentingly accelerating costs. Although the problems of quality and costs are long-standing, several organizations have recently asserted that there is a new impending health care 'tragedy': the physician workforce shortage. In contrast to the extensively documented problems of quality and affordability, the inference of a physician shortage rests on a less robust set of analyses. Assertions of a physician shortage warrant a critical examination because more physicians will compete for new resources against already well-documented health system needs.

Grignon, M., Paris, V., & Polton, D. (2002). *Influence of physician payment methods on the efficiency of the health care system*. Discussion Paper, Romanow Commission, CREDES, Paris, France. Downloaded from dsp-psd.pwgsc.gc.ca/Collection/CP32-79-35-2002E.pdf.

The study concerns the impact of physician payment methods on the costs of medical care. There are three main methods of remunerating health care professionals: fee-for-service, capitation and salary. In theory, fee-for-service can lead the professional to generate an excessive volume of care, while lump-sum methods can jeopardize quality and equality of access. The magnitude of these respective risks basically depends on the nature and extent of the physician's discretionary power over the patient. If the physician simply influences demand, risks are limited through the control exercised by the patient; if the physician induces demand, the risks are greater. There is no satisfactory empirical test of the nature of the physician's discretionary power. However, the majority of experimental studies comparing volume and quality of care according to payment method come to the conclusion that fee-for-service has a significant impact on the volume of service generated by primary care physicians (general practitioners and pediatricians). Conversely, capitation increases referrals and prescriptions, which can impose costs on other health care expenditure budgets. Finally, natural experiments in Norway show that the method of remuneration has less impact than the health characteristics of the patient.

Gupta, N., Diallo, K., Zurn, P., & Dal Poz, M. R. (2003). Assessing human resources for health: what can be learned from labour force surveys? *Human Resources for Health*, 1(5):1–16.

Background: Human resources are an essential element of a health system's inputs, and yet there is a huge disparity among countries in how human resource policies and strategies are developed and implemented. The analysis of the impacts of services on population health and well-being attracts more interest than analysis of the situation of the workforce in this area. This article presents an international comparison of the health workforce in terms of skill mix, sociodemographics and other labour force characteristics, in order to establish an evidence base for monitoring and evaluation of human resources for health. Methods: Profiles of the health workforce are drawn for 18 countries with developed market and transitional economies, using data from labour force and income surveys compiled by the Luxembourg Income Study between 1989 and 1997. Further descriptive analyses of the health workforce are conducted for selected countries for which more detailed occupational information was available. Results:

Appendix 3: References Reviewed

Considerable cross-national variations were observed in terms of the share of the health workforce in the total labour market, with little discernible pattern by geographical region or type of economy. Increases in the share were found among most countries for which time-trend data were available. Large gender imbalances were often seen in terms of occupational distribution and earnings. In some cases, health professionals, especially physicians, were overrepresented among the foreign-born compared to the total labour force. Conclusions: While differences across countries in the profile of the health workforce can be linked to the history and role of the health sector, at the same time some common patterns emerge, notably a growing trend of health occupations in the labour market. The evidence also suggests that gender inequity in the workforce remains an important shortcoming of many health systems. Certain unexpected patterns of occupational distribution and educational attainment were found that may be attributable to differences in health care delivery and education systems; however, definitional inconsistencies in the classification of health occupations across surveys were also apparent.

Hanvelt, R. A., Reid, R. J., Schneider, D. G., Pagliccia, N., McGrail, K. M., Barer, M. L., & Evans, R. G. (2000). *The effects of rationed access days (RAD) on physician MSP fee-for-service payments in B.C.* UBC, Health Human Resources Unit Research Reports, March. Downloaded from <http://www.chspr.ubc.ca/node/305>.

This study estimates the effect of the British Columbia Medical Association's (BCMA) Rationed Access Day (RADs) policy on the British Columbia Medical Services Plan (MSP) fee-for-service (FFS) expenditures during the fiscal year 1998/99. We examine the changes in individual physicians & billing practices and develop an estimate of the difference between the actual MSP expenditures during the 1998/99 fiscal year and what would have been expended had the RAD policy not been implemented (i.e. the counterfactual).

Hayes, L., McGrath, J.-L., & O'Brien-Pallas, L. (2004). *Building the future: An integrated strategy for nursing human resources in Canada: The nursing union activist focus group report*. Canadian Nurses Association, Ottawa, ON, The Nursing Sector Study Corporation, October. Downloaded from <http://www.cna-aiic.ca/CNA/documents/pdf/publications/NurseUnionactivistsReporte.pdf>.

This report marks the culmination of the Nursing Sector Study. The five year study consisted of two phases, and examined the nursing workforce for all three regulated nursing professions in Canada. Phase I, which concluded in December 2004, examined the state of nursing human resources in Canada. The objective of Phase II was to develop a pan-Canadian nursing human resource (HR) strategy in consultation with government and non-government stakeholders that built on the findings and recommendations presented at the completion of Phase I.

Health Canada. (2004). *Health human resources: Balancing supply and demand*. Health Policy Research Bulletin, Issue 8, Ottawa, ON, May. Downloaded from <http://www.hc-sc.gc.ca/sr-sr/pubs/hpr-rpms/bull/2004-8-hhr-rhs/indexe.html>.

Health care delivery is highly labour intensive. As a result, an effective and sustainable health care system depends on having the right number and mix of health care workers. Increasingly, reports of current and impending work force shortages are becoming the subject of public concern and debate. This issue of the Health Policy Research Bulletin identifies the key policy levers that are available to address the imbalances in health human resources (HHR) in Canada and explores the type of evidence that is shaping

Appendix 3: References Reviewed

the current planning and policy development process. In particular, this issue focuses on: 1) paid health care providers and the complexity of the health care work force, 2) how pressures on both HHR supply and demand contribute to work force imbalances and create HHR 'shortages', 3) the challenges in assessing HHR shortages and emerging evidence about where these shortages are, 4) the influence of demographic trends such as population growth and aging on escalating HHR requirements 'down the road', 5) how improving working conditions can help ease current imbalances and attract new recruits, 6) the need to situate HHR issues within the global context and how integrating foreign-trained health care providers helps address short-term HHR imbalances. A clear message emerges from these articles: averting future HHR shortages requires a committed and sustained effort now, with researchers and forecasters working closely with planners and policy makers to develop sound, evidence-based decisions.

Health Canada. (2005). *Pan-Canadian health human resource strategy: 2004-2005 annual report*. Ottawa, ON: Health Canada Pub. No. 8002. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/altformats/hpb-dgps/pdf/hhr/2005-05-panreport-eng.pdf>.

The 2005/2006 Annual Report describes the key initiatives of the Pan-Canadian Health Human Resource Strategy and outlines the important progress that was made during the 2005/2006 fiscal year.

Health Canada. (2006). *Health human resource connection*. Health Human Resource Strategies Division of the Health Care Policy Directorate of Health Canada, issue #1, August. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/hhr-rhs-conn/2006-hhr-rhs-conn-eng.php>.

In response to the 2003 Accord on Health Care Renewal, the federal government established the Pan-Canadian Health Human Resource Strategy (the Strategy) to address pan-Canadian and jurisdictional health human resource needs. The Accord noted that appropriate planning and management of health human resources is key to ensuring that Canadians have access to the health providers they need. As a result of the initial Accord, three key initiatives have been implemented under the Pan-Canadian Health Human Resource Strategy: Pan-Canadian Health Human Resource (HHR) Planning, Interprofessional Education for Collaborative Patient-Centred Practice, and Recruitment and Retention. First Nations and Inuit Health Branch (FNIHB) leads the First Nations and Inuit component of the HHR Strategy. In September 2004, the First Ministers reaffirmed the 2003 Accord and agreed to: "continue and accelerate their work on health human resources action plans and initiatives to ensure adequate supply and appropriate mix of health care professionals". In September 2005, the federal government announced a \$100 M 5-year initiative on Aboriginal HHR. Also, in the budget of 2005, the federal government announced an investment of \$75 million over five years for the Internationally Educated Health Professionals Initiative to support programs that will expand the assessment and integration of these professionals into the Canadian workforce.

Health Canada. (2007). *Pan-Canadian health human resource strategy: Ongoing projects in 2006/07*. pub. # 3468. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/2007-ongoing-encours/index-eng.php>.

This report details all projects funded in 2005/06 that are still ongoing in the 2006/07 fiscal year, as well as project amendments that were made during the 2006/07 fiscal year, under the Pan-Canadian Health Human Resource Strategy and Internationally Educated Health Professionals Initiative.

Health Human Resources Unit. (2000). *Rollcall 99: A status report of health personnel in the province of*

Appendix 3: References Reviewed

British Columbia. Vancouver, BC: Centre for Health Services and Policy Research, August. Downloaded from <http://www.chspr.ubc.ca/node/298>.

The ROLLCALL series, documents the number and location of selected health profession groups in British Columbia. The series has two components - ROLLCALL and ROLLCALL UPDATE - which are produced in alternate years. The main purpose of ROLLCALL is to enumerate and describe each of the health human resources groups in British Columbia for which reliable data are available. There may be small or large health personnel groups for which we were unable to secure data because a formal licensing body or professional association with a broad membership base does not exist or, more generally, because an accurate source of required information is not available. ROLLCALL 99 provides a snapshot picture of the distribution of health human resources in British Columbia as compared to 1997. The publication of ROLLCALL 99 marks the 25th anniversary of the ROLLCALL reports as the first ROLLCALL report published was ROLLCALL 74 in November 1974.

Hurley, J., & Grignon, M. (2006). Income and equity of access to physician services. *Canadian Medical Association Journal*, 174(2):187–188.

Van Doorslaer and colleagues have produced a timely piece for Canadian health policy discussions regarding income, access to care and the role of private insurance. They examined equity in physician utilization in 21 member countries of the Organization for Economic Cooperation and Development (OECD), using data from nationally representative surveys conducted in 2000 or later. The analysis provides both good news and bad news for Canada. First the good news. Absolute rates of physician visits in Canada, as measured by either the likelihood of any visit or the annual number of visits, are well within OECD norms. This conclusion would be reinforced if the observed rates were age-adjusted, since a number of European countries with high visit rates have greater proportions of elderly people in their populations than does Canada.

Hurley, J., Lomas, J., & Goldsmith, L. J. (1997). Physician responses to global physician expenditure budgets in Canada: A common property perspective. *The Milbank Quarterly*, 75(3):343–364.

Global expenditure budgets in the fee-for-service physician sector create management problems for both funders and physicians. Global expenditure cap policies must be designed, and appropriate institutional structures created, to mitigate perverse utilization incentives, manage collective utilization, and diffuse the internal professional and the funder-profession tensions created by a capped budget. Two Canadian provinces that adopted different approaches to the design of their physician expenditure cap policies experienced different outcomes in utilization growth. The outcomes, however, are the opposite to what one would predict based on an analysis of the incentive structures embodied in the two provinces' policies. An analytic framework developed for the study of common-property resources is applied to the differing physician responses to global budgets across the two provinces. The insights offered by this framework can guide policy design for global physician budgets, and they indicate the critical importance of physician acceptance of such a policy.

Hutchison, B. (2007). Disparities in healthcare access and use: Yackety-yack, yackety-yack. *Healthcare Policy*, 3(2):10–18.

Despite change, uncertainty and disarray in Canada's healthcare system(s), some observations about Canadian medicare still seem beyond challenge: access to healthcare based solely on need is the core

Appendix 3: References Reviewed

value that gave rise to and sustains medicare; the advent, through medicare, of universal, publicly funded physician and hospital services substantially reduced disparities in access to, and outcomes of, healthcare based on socio-economic status. Despite those gains, disparities remain - factors other than need continue to influence access to and use of services. The last point deserves elaboration. A growing body of research evidence indicates that use of hospital services in Canada is generally consistent with relative need across income groups. Some studies show greater use of hospital services by those with lower income after controlling for healthcare need - perhaps calling into question the adequacy of existing measures of need. On the other hand, studies of specialist services have demonstrated a direct relationship between use and income, education or both - wealthier and better-educated Canadians use more specialist services independent of need.

Hutchison, B., Birch, S., Hurley, J., Lomas, J., & Stratford-Devai, F. (1996). Do physician-payment mechanisms affect hospital utilization? A study of health service organizations in Ontario. *Canadian Medical Association Journal*, 154(5):653–661.

Objectives: To determine whether payment of primary care physicians based on capitation, with an additional incentive payment for low hospital-utilization rates, resulted in lower hospital-utilization rates among patients of these physicians than among patients of physicians still paid on a fee-for-service basis. Design: Retrospective cohort study. Setting: Capitation-based and fee-for-service primary care practices in Ontario. Subjects: Thirty-nine physicians whose method of payment was converted from fee-for-service to capitation during the period from June 1985 to January 1989 and 7 physicians who remained in fee-for-service practice, two of whom were matched with one physician in capitation-based practice on the basis of practice location, type of practice (academic v. community), hours of practice (part-time v. full-time), years since graduation, physician group size, practice size (number of patients), type of group (primary care v. multispecialty), sex, certification in family medicine, country of graduation (Canada v. other) and age. One physician in capitation-based practice was matched with only one physician in fee-for-service practice. Outcome Measures: Annual hospital-utilization rates (hospital separations or hospital days per 1000 patients in each practice) for the physicians paid on a capitation basis 3 years before, 1 year before and 3 years after they converted from fee-for-service payment and at corresponding periods for the matched physicians still paid on a fee-for-service basis. Results: The mean annual rate of hospital days used, adjusted for the age and sex of patients as well as for their social-program-recipient status, fell from 1085 per 1000 patients (3 years before the conversion date) to 1030 (1 year before conversion) and to 954 (3 years after conversion) in capitation-based practices. For the matched physicians in fee-for-service practice, the rates during the corresponding periods were 1085, 1035 and 956 hospital days per 1000 patients. The pattern was similar for rates of hospital separations, adjusted for patient's age, sex and social-program-recipient status. There were no statistically significant differences between the rates of hospital utilization among patients of physicians in capitation-based practices and the rates among those of physicians in fee-for-service practices during each of the three periods, nor were there significant differences in the changes in rates. Conclusion: Capitation payment, with an additional incentive payment to encourage low hospital-utilization rates, did not reduce hospital use. Factors other than the method of physician payment appear to be responsible for the variations in hospital utilization among practices.

Hutchison, B., Torrance-Rynard, V., Hurley, J., Birch, S., Eyles, J. D., & Walter, S. D. (2003). *Equity in health care funding: Comparison of expenditures in Ontario to allocations based on population need*.

Appendix 3: References Reviewed

Hamilton: McMaster Centre for Health Economics and Policy Analysis Working Paper 03-03.

Downloaded from <http://ideas.repec.org/p/hpa/wpaper/200303.html>.

Background: The geographic distribution of health care funding in Canada has traditionally been based on past allocations and the distribution of health care facilities and providers. Whether this approach has succeeded in distributing resources among populations in keeping with relative health care needs is unknown. **Methods:** Using data on self-assessed health status and utilization of health care services from the Ontario Health Survey, data on health care expenditures from the Ontario Ministry of Health and Long-Term Care, and population data from Statistics Canada, we compared actual health care expenditures for geographically-defined populations in Ontario to allocations based on relative population need as represented by age, sex and self-assessed health status. Comparisons were made at the regional (Health Region), district (District Health Council) and local (Public Health Unit) levels. **Results:** Expenditures and needs-based allocations were significantly different for 4 of 7 regions, 9 of 15 districts and 23 of 42 local areas. At the regional level, needs-based allocations ranged from 8.9% higher to 6.4% lower than actual expenditures. For districts, needs-based allocations ranged from 12.9% higher to 9.8% lower than expenditures. At the local level, needs-based allocations ranged from 23.8% higher to 18.8% lower than expenditures. Intraclass correlation coefficients measuring agreement between needs-based per capita expenditures and actual per capita expenditures were 0.86, 0.74 and 0.58 for regions, districts and local areas respectively. **Interpretation:** Although, on average, the differences between needs-based allocations and actual health care expenditures were not large, the discrepancies were substantial for many geographic areas. The adoption in Ontario of funding methods based on relative population needs would improve equity in the allocation of health care resources to populations and result in a considerable redistribution of resources.

Iglehart, J. K. (2009). How many physicians are enough? *Health Affairs*, 28(4):1221–1222.

Like the health economics professor that he is, Richard Scheffler takes readers of his most recent book into a virtual classroom, offers up an analysis of how many doctors are enough, and spices the mix with the opinions of respected peers. But, ultimately, he provides no definitive opinion on the question that begs for an answer: how many physicians would be an adequate number to care for a more demanding baby-boom generation, to cope with an explosion of chronic illness, and to prepare for a population that is growing at the rate of about twenty-five million people every decade? Although Scheffler offers different takes on the contentious issues surrounding physician supply, he is reluctant to offer a definitive view on the appropriate number. As he notes, previous analyses have declared with confidence that the United States faces a surplus (or a shortage) of physicians given societal trends at the time. Most (if not all) of the predictions have been proved wrong, and accurately forecasting the right number remains one of the many challenges facing our troubled health care system. Vast differences of opinion continue to provide grist for the continuing debate. Scheffler does state a preference to err on the side of too many rather than too few doctors and to modestly increase the number of primary care physicians. But in his final chapter he says, "Forecasting efforts in the past have missed the mark and even led to strategies that caused problems over the long term. Therefore, as a health economist, my inclination is to summarize the input on all sides and leave it at that" (p. 191). (Of the twenty-seven health policy experts he interviewed, most who addressed the question of whether more doctors should be trained opposed an increase in physician supply or offered cautionary comments.)

Appendix 3: References Reviewed

Jaakkimainen, L., Schultz, S., Klein-Geltink, J., Kopp, D., & Kopp, A. (2006). *Ambulatory physician care for adults in Ontario*. ICES Institute for Clinical Evaluative Sciences, Toronto, ON, November.

Downloaded from

<http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=67&morgid=0&gsecid=0&itemid=3655&type=atlas>.

Primary medical care is the first point of contact with the health care system and is the place where the coordination of care across different health care sectors and providers occurs. Most primary care is provided in the community; generally by physicians in an office setting. Information is lacking on who currently sees office-based physicians, what types of physicians are seen and how often people see these physicians. More descriptive information is needed in order to anticipate potential shifts in the need for care.

Jaakkimainen, L., Upshur, R. E. G., Schultz, S. E., & Maaten, S. (2006). *Primary care in Ontario: ICES atlas*. Institute for Clinical Evaluative Sciences, Toronto, ON, June. Downloaded from

<http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=67>.

This report provides the most comprehensive picture, to date, on the state of primary care health services in Ontario between 1992/93 and 2002/03, prior to the introduction of new primary care reform initiatives in Ontario. Chapters 1-5 present current trends in primary care for women during pregnancy, labour and childbirth; care of children; care provided to adults; and patterns in preventive health care. Chapters 6-10 describe how primary care services were provided to patients with congestive heart failure; cancer; respiratory diseases; mental health problems; and disadvantaged populations (for 2000/01). Chapters 11 and 12 examine the supply of physicians providing primary care, their practice locations, workloads, services provided, and patient characteristics, as well as the factors which influence preventive, chronic and acute disease management in primary care.

Johansen, H., Nair, C., & Bond, J. (1994). Who goes to the hospital? An investigation of high users of hospital days. *Health Reports (Statistics Canada)*, 6(2):253–277.

Hospital morbidity data are useful for administrative purposes, but because Canadian data are based on the number of hospital visits for a given diagnosis rather than the number of patients with the diagnosis, they have historically been ineffective in determining how many people have been hospitalized with a given condition. Now, by linking computerized patient data, the records of the same patient can be combined. Linked records can be used to estimate disease prevalence, examine health care utilization, and evaluate the effectiveness of medical treatments, procedures and programs. Hospital morbidity records for the fiscal year 1989/90 were linked by person to study hospital utilization in New Brunswick and Saskatchewan. Approximately 11% and 12% of their populations, respectively, were admitted to hospital in the study period. The percentage of the population that was hospitalized increased with age from 50 onwards. About one in four hospital patients were admitted to hospital more than once in 1989/90, and approximately 4% were admitted four or more times. Cancer diagnoses were associated with the highest hospital re-admission rates. About half of hospitalized patients spent five days or less in hospital over the period studied. At the other extreme, 10% of patients, referred to as 'high users', accounted for about half of the hospital days—but only 1% of the population in these two provinces. Typically, high users are patients with chronic conditions or illnesses severely affecting cognitive or physical abilities. This profile of high users suggests that high medical costs are due not so much to intensive care of terminally ill

Appendix 3: References Reviewed

patients, but to ordinary medical and palliative care of chronically and seriously ill patients. Restructuring health care data so that all of the records for one patient could be linked would help identify problem areas in the health care system and help evaluate new ways of delivering health care.

Jost, T. S. (2007). *Health care at risk: A critique of the consumer-driven movement*. . Durham, NC: Duke University Press.

America's health care system is in trouble. The problems that it faces are described in detail in chapter 1, but that it is in serious difficulty is disputed by almost no one. There is little agreement, however, as to what to do about it. Half a century of debate about how to expand access to health care, control its cost, and improve its quality has brought about some major advances - access to health care for the elderly, disabled, and many poor children, for example - but has failed to yield anything approximating a comprehensive solution. Managed care, our latest health care policy nostrum, seemed to hold down cost escalation through the mid-1990s, but as we reach the end of the first decade of the twenty-first century, health care costs continue to grow while the number of uninsured is expanding, and we seem to be progressing only slowly in narrowing significant deficits in health care quality.

Kabene, S. M., Orchard, C., Howard, J. M., Soriano, M. A., & Leduc, R. (2006). The importance of human resources management in health care: A global context. *Human Resources for Health*, 4(20):1-17.

Background: This paper addresses the health care system from a global perspective and the importance of human resources management (HRM) in improving overall patient health outcomes and delivery of health care services. Methods: We explored the published literature and collected data through secondary sources. Results: Various key success factors emerge that clearly affect health care practices and human resources management. This paper will reveal how human resources management is essential to any health care system and how it can improve health care models. Challenges in the health care systems in Canada, the United States of America and various developing countries are examined, with suggestions for ways to overcome these problems through the proper implementation of human resources management practices. Comparing and contrasting selected countries allowed a deeper understanding of the practical and crucial role of human resources management in health care. Conclusion: Proper management of human resources is critical in providing a high quality of health care. A refocus on human resources management in health care and more research are needed to develop new policies. Effective human resources management strategies are greatly needed to achieve better outcomes from and access to health care around the world.

Katz, A., Bogdanovic, B., Ekuma, O., Soodeen, R.-A., Chateau, D., & Burnett, C. (2009). *Physician resource projection models*. Manitoba Centre for Health Policy, University of Manitoba, February. Downloaded from www.cahspr.ca/Portals/0/documents/Katz1.pdf.

There is considerable interest in health human resource planning at the local, provincial, national and international levels. This is based to a large extent on the widespread perception that there are shortages of physicians, nurses and other health care professionals that may result in negative impacts on the health of the population. In response to the shortage of physicians in Manitoba, the number of training positions for medical students at the University of Manitoba has increased from 85 positions to 110 positions within a five year period. After completion of the four year medical program, students require further residency training before entering practice. This report provides information to help medical education

Appendix 3: References Reviewed

planners decide how to distribute the available residency positions among the various specialties. The projections for the growth of service requirements in the specialties can be used to actively manage the training of different specialists and family physicians who will provide medical services to the population of Manitoba. The projections for service requirements are based on the historical trends in service provision over the past 23 years and the future population projections developed by Statistics Canada with the Manitoba Bureau of Statistics. There is no claim that any of the projected service levels represent the 'correct' number of services needed. In fact, there is evidence to suggest that historically there has been a continual shortage of services in many areas of medical practice and that modeling our projections on this state of shortage will perpetuate the physician shortage. The purpose of this study, however, is to use the evidence available to project service requirements based on the projected population changes, not to speculate on an optimal service provision level.

Kazanjian, A. (2000). *Changes in the nursing workforce and policy implications*. Nursing Workforce Study, Volume V: Health Human Resources Unit, Centre for Health Services and Policy Research, University of British Columbia, HHRU 00:7. Downloaded from <http://www.chspr.ubc.ca/node/299>. Several issues related to the nursing workforce require further analysis and monitoring especially given the recently expressed concern that the nursing workforce will be insufficient to meet the needs of the future health care delivery system. This study, commissioned by the Federal/Provincial/Territorial Advisory committee on HHRs, is designed to collect primary and secondary information that can be used to identify and analyse the policy implications of the current supply and deployment of nursing personnel, and that may help anticipate the effects of changes in the nursing workforce on the provision of health care services in the future. Voluminous data have been described in each of the preceding four volumes. This volume attempts to synthesize these findings and to delineate salient policy issues.

Kazanjian, A., Rahim-Jamal, S., Macdonald, A., Wood, L., & Cole, C. (2000). *Nursing workforce deployment: A survey of employers*. Nursing Workforce Study, Volume 1V: Health Human Resources Unit, Centre for Health Services and Policy Research, University of British Columbia, HHRU 00:6. Downloaded from <http://www.chspr.ubc.ca/node/300>.

This part of the Nursing Workforce Study examines employer practices and policies for nursing workforce deployment in each province/territory. Primary data regarding deployment was collected using a survey questionnaire pertaining to all three regulated nursing groups: Licensed Practical Nurses (LPNs), also known as Registered Nurse Assistants (RNAs), Registered Psychiatric Nurses (RPNs), and Registered Nurses (RNs). Information on other professionals and unregulated patient care providers, e.g. Aides was also included in the questionnaire. The questionnaire was designed to capture the following information as per the request by the ACHHR Working Group: Hiring practices (amount of experience required, deployment, credentials, etc.); Kinds of services provided and the skills perceived to be needed to provide those services; Numbers and mix of nursing personnel used to provide services; Use of unregulated health care workers in relation to nursing services provision; Anticipated changes in deployment practices related to changes in the organization of the health care delivery system The survey was sent to a representative sample of employers in each province/territory which comprised Tertiary/Teaching Hospitals, Regional Community Hospitals, Community Hospitals, Rehabilitation/Convalescent Centres, Extended Care/Long Term Care/Nursing Homes, Mental Health Facilities/Agencies, Community Health Agencies/Health Centres/Public Health Units, Home Care and Nursing Stations. Regional Health

Appendix 3: References Reviewed

Boards/Authorities were surveyed regarding their delivery of public health and mental health services.

Kazanjian, A., Rahim-Jamal, S., Wood, L., & MacDonald, A. (2000). *Demographic context and health system structure for nursing services in Canada*. Nursing Workforce Study, Volume 1: Health Human Resources Unit, Centre for Health Services and Policy Research, University of British Columbia, HHRU 00:3. Downloaded from <http://www.chspr.ubc.ca/node/303>.

Several issues related to the nursing workforce require analysis and monitoring, especially given the recently expressed concern that the nursing workforce will be insufficient to meet the needs of the future health care delivery system. Our five part project, Nursing Workforce Study, has been designed to collect primary and secondary data that can be used to identify and analyze the policy implications of the current supply and deployment of nursing personnel and that may help to anticipate the effects of changes in the nursing workforce on the provision of health care services in the future. As the demand for health services increases, the demand for health human resources may also increase in order to provide increased service. The common rhetoric is that as the demographics of the Canadian population change, so will the demand for and utilization of health services and thus health human resources. However, this is not entirely correct. As Barer et al. discussed and illustrated in 1994, "the quantitative impact of population aging only accounts for a small fraction of the increases in per capita use rates," and that in fact, the increase in per capita use rates in the elderly population has been "driven by changes in patterns of health care practice, not in the numbers and ages of elderly people in the population." Thus, population demographics alone will not have a major impact on the demand for health services and hence for health human resources.

Kazanjian, A., Reid, R. J., Pagliccia, N., Aplan, L., & Wood, L. (2000). *Issues in physician resources planning in B.C.: Key determinants of supply and distribution, 1991-96*. Post-Graduate Medical Education Advisory Committee, Health Human Resources Unit, Centre for Health Services and Policy Research, UBC, June. Downloaded from <http://www.chspr.ubc.ca/node/304>.

At the request of the Post Graduate Medical Education (PGME) Advisory Committee of British Columbia, this project was undertaken to describe the supply and distribution of physicians in British Columbia, including that of general practitioners/family physicians and specialists certified by the Royal College of Physicians and Surgeons of Canada (RCPSC). To meet this objective, the study had four specific aims: (1) to describe the supply and distribution of physicians in B.C. in 1991/92 and 1996/97 by region, sex, age, specialty and place of medical education; (2) to examine differences in the 'scope of practice' among B.C. physicians in relation to their specialty, geographic location, demographics, practice intensity, and place of medical education; (3) to examine the stability of the physician workforce in B.C. between 1991/92 and 1996/97 by sociodemographics, specialty and place of medical education; and (4) to examine how physicians' intensity of practice relates to the professional life cycle. The study did not examine issues relating to the appropriateness of the physician supply in relation to population health needs or demand for care. The following outlines the study's methodology and major findings.

Kazanjian, A., Wood, L., Yip, H., Rahim-Jamal, S., & Macdonald, A. (2000). *The supply of nursing personnel in Canada*. Nursing Workforce Study, Volume II: Health Human Resources Unit, Centre for Health Services and Policy Research, University of British Columbia, HHRU 00:4. Downloaded from <http://www.chspr.ubc.ca/node/302>.

This part of the Nursing Workforce Study analysis examines data on the supply of nursing personnel in the

Appendix 3: References Reviewed

provinces and territories to provide basic information about employment status, deployment (place of employment, area of responsibility, type of position, hours worked), age, and type and place of education/training. All three nursing groups have been included: Registered Nurses (RNs), Registered Psychiatric Nurses (RPNs), and Licensed Practical Nurses (LPNs) (also known as Registered Nurse Assistants (RNAs) and Registered Practical Nurses (RPNs)). The analysis is based on data collected by the respective regulatory bodies in their registration and renewal processes; all the provinces and territories have had regulatory bodies for RNs (since 1994, when the Yukon Territory established their organisation), while all ten provinces regulate LPNs; only the four western provinces regulate RPNs.

Kazanjian, A., Brothers, K., & Wong, G. (1986). Modeling the supply of nurse labor: Life-cycle activity patterns of registered nurses in one Canadian delivery system. *Medical Care*, 24(12):1067–1083. Using 1980 membership data made available by the provincial nurses' association, a simple, age-specific projection model was developed that comprised two submodels: a Markovian one to monitor yearly movements from one membership state to another and a linear submodel for the infusion of new members. The model assumes that the likelihood of moving to any membership state depends only on the nurse's current age and membership state. A comparison of actual/projected data for 1981–1984 indicates a fairly high level of accuracy, despite the oscillatory pattern of the nurse labor market in the Province of British Columbia since 1982. The details of the projections of labor force over time show a particular age cohort's characteristic behavior and delineate the effect of childbearing and aging on the supply of nurses. As well as projecting future manpower, the age-specific transition matrices were used to estimate the professional life expectancy of registered nurses. This information includes the average number of continuous years of practice for each age, as well as the average total number of years of practice until being deleted from the system at the age of 75. The forecasting capability developed from this work attempts to address two questions central to manpower planning: how many nurses will there be in the province in the next 5 years? and what is the time-frame involved in nurses' life-cycle activity patterns?

Kazanjian, A., Hebert, M., Wood, L., & Rahim-Jamal, S. (1999). *Regional health human resources planning & management: policies, issues and information requirements (executive summary)*. Centre for Health Services and Policy Research (CHSPR), Vancouver, BC, January. Downloaded from <http://www.chspr.ubc.ca/node/360>.

The purpose of health human resources management and planning activities is to identify and achieve the optimal number, mix and distribution of personnel, at a cost society is able to afford. It is not simply establishing the required number of physicians, nurses, pharmacists, or technologists, etc.; it is establishing the numbers in each of these and other groups, given the most cost-effective and appropriate mix of required personnel and their equitable geographic distribution based on varying service needs. Therefore, the determination of the depth and breadth of information required to facilitate such health human resources management and planning activities is complex. Consequently, the information requirements associated with health human resources planning have been erroneously identified with the planning itself, in the form of simple counting of supply, or, at best, the estimation of workforce requirements based on some arbitrary population:personnel ratio. A needs-based approach to health human resources planning draws on techniques that assess the prevalence of diseases and the burden of illness in a target population. Health deficits can be translated into health care services or task requirements. Alternative mixes of inputs (human and non-human) can be identified, based on evidence

Appendix 3: References Reviewed

of effectiveness and the social context, to meet these task requirements. A comparison of human resources requirements against currently available skills would determine net requirements. Different planning activities can be considered when an imbalance is indicated. From a regional planning perspective, a needs-based approach may be more practical and appropriate than the methods used historically in provincial planning. Using this approach, local and regional needs assessment activities can provide the appropriate input data for health human resources planning.

Kazanjian, A., MacDonald, A., Wood, L., & Cole, C. (2000). *An inventory of nursing program enrolments and graduates in Canada by Province/Territory, 1998*. Nursing Workforce Study, v. III, Health Human Resources Unit, Centre for Health Services and Policy Research, UBC, April. Downloaded from <http://www.chspr.ubc.ca/node/301>.

The purpose of this project is to describe the production of nursing personnel in Canada. Our definition of 'nursing personnel' includes three groups of regulated professionals; Registered Nurses (RNs), Registered Psychiatric Nurses (RPNs), and Licensed Practical Nurses or Registered Nursing Assistants (LPNs) in this report). RPNs are not regulated east of Manitoba. The term 'nurses' will be used throughout this report to refer to all three groups of licensed personnel; when a specific group is under discussion, the appropriate abbreviation will be used. While in the past nurses were educated in hospitals or hospital-based programs, today there are no hospital programs remaining in Canada. Nurses are now trained largely in the post-secondary sector, predominantly at community colleges, and increasingly at or in collaboration with universities or university colleges (defined as community colleges with degree-granting privileges).

Kazanjian, A., Rahim-Jamal, S., & MacDonald, A. (2001). *Literature review of HHR policy/planning models: Summary of population-based models*. Prepared for the Planning Methodologies Working Group, Health Human Resources Advisory Committee, BC Ministry of Health Planning. Centre for Health Services and Policy Research, Health Human Resources Unit Research Reports, University of British Columbia, August 2001. Downloaded from <http://www.chspr.ubc.ca/node/244>.

Summary: The purpose of the study was to determine if international medical graduates (IMGs) are likely to practice in rural, underserved areas. The study illustrates the need to examine both local & State conditions, prior to the introduction of policies that seek to change the supply of IMGs in rural or other under-served areas. Results: IMGs constitute a greater % of the US primary care physician workforce in rural, under-served areas than in other rural areas. There is substantial interstate variation in the extent to which IMGs practice in rural, under-served areas. Mississippi, N. Carolina & Montana have much higher % of IMGs in rural, under-served areas than in other rural areas. Methodology: Calculated the percentage of primary care IMGs in the US primary care physician workforce in rural areas. The data were stratified by Health Professional Shortage Area (HPSA) designation as a measurement of underservice, resulting in separate IMG percentages for rural, whole county HPSAs, partial county HPSAs, and non-HPSAs. The data sources were: the 1996 American Medical Association Physician Masterfile, and the US Bureau of Health Professions 1997 Area Resource File. Analysis: Could possibly be done in BC, data are available on physicians and IMGs, but BC does not currently have a measure such as HPSAs for under-served areas. No cost was given, no modeling was done, only a measure of the current distribution of IMGs was calculated, giving a baseline for planning. Key Features: Not a forecasting model - illustrates importance of policies & planning at State level, and the need for greater

Appendix 3: References Reviewed

collaboration & coordination between Federal, State & local policies.

Kazanjian, A., Rahim-Jamal, S., MacDonald, A., & Chen, A. (2001). *The rehabilitation workforce study: Supply side analysis*. Health Human Resources Unit, Centre for Health Services and Policy Research, University of British Columbia, HHRU 01:8, December. Downloaded from <http://www.chspr.ubc.ca/node/241>.

This study examines the supply of physical therapists (PTs) and occupational therapists (OTs) in British Columbia over the last ten years, and is part of a larger research project examining the current and future supply of, and demand for, rehabilitation personnel in BC. Supply data were obtained from the regulatory bodies for PTs for 1991, 1995, 1997 and 2000, and from the professional association for OTs for 1991, 1995, 1997 and 1999. The data elements collected and examined for both groups include demographic items, membership in the organization, employment characteristics, and education.

Kennedy, J., & Morgan, S. (2006). Health care access in three nations: Canada, insured America, and uninsured America. *International Journal of Health Services*, 36(4):697–717.

This analysis provides new statistics for one of the oldest and fiercest debates in American health policy: whose residents have better access to health care, the United States' or Canada's? Data from the 2002-2003 Joint Canada U.S. Survey of Health show that, despite major differences in their health systems, most Canadians and Americans get the care they need. However, one group of Americans is much more likely to report serious access barriers—the uninsured. About one-third of currently or recently uninsured Americans, aged 18 to 64, said they could not get needed health care (over three times the rate of insured Americans or Canadians). Compared with Canadians and insured Americans, the uninsured are less likely to use hospital or physician services, and those who do are less satisfied with the care they receive. They are also less likely to purchase prescribed medications, due to cost. From a consumer perspective, the most salient feature of the Canadian system is its universality. In contrast, insured Americans under age 65 are at risk of losing their insurance and facing substantial access barriers.

Kephart, G., Maaten, S., O'Brien-Pallas, L., Tomblin Murphy, G., & Milburn, B. (2004). *Building the Future: An integrated strategy for nursing human resources in Canada: Simulation analysis report*. Canadian Nursing Association, Ottawa, ON, The Nursing Sector Study Corporation, September. Downloaded from <http://www.cna-aiic.ca/CNA/documents/pdf/publications/simulaitonanalysisreporre.pdf>.

The supply of nurses in Canada, as well as in other countries, has been characterized by cyclical patterns of shortage and surplus. In the early 1990s, most provinces and territories were experiencing an oversupply of nurses. A decade later, Canada is facing a growing nursing shortage that has become a primary concern for governments, educational institutions, and other health care planners. This report is intended to complement the Canadian Nursing Labour Market Synthesis and is part of the overall research for Building the Future. The focus in this report is on the supply of nurses. This report focuses on an empirical analysis and simulation of demographic scenarios affecting the future supply of nurses in the three regulated nursing professions: registered nurses, licensed/registered practical nurses, and registered psychiatric nurses.

Kirch, D. C., & Vernon, D. J. (2008). Confronting the complexity of the physician workforce equation. *Journal of the American Medical Association*, 299(22):2680–2682.

Appendix 3: References Reviewed

The United States is a nation in which 47 million citizens have no health insurance, more than 16% of the country's gross domestic product is spent on rapidly increasing health costs, and stark disparities exist in health care access, exemplified by 20% of the population currently residing in federally designated health professional shortage areas. These formidable challenges have led to renewed interest in reforming the health care system while engendering intense debate among policy makers and politicians. One area of increasing focus has been the current and future size of the US physician workforce. If the health care system's purpose is to provide quality care and appropriate access to care, a critical factor is to have an adequate supply of well-educated providers. Although physicians are not the only professionals providing health services, they are a key component of the overall health care workforce. Therefore, determining the number of physicians necessary to meet current and future US needs has become a critical question. The debate regarding this question, however, is at risk of becoming overly simplistic and polarized.

Klassen, A. F., Lee, S. K., Barer, M., & Raina, P. (2005). Linking survey data with administrative health information: Characteristics associated with consent from a neonatal intensive care unit follow-up study. *Canadian Journal of Public Health*, 96(2):151–154.

Background: Health services and population health research often depends on the ready availability of administrative health data. However, the linkage of survey-based data to administrative data for health research purposes has raised concerns about privacy. Our aim was to compare consent rates to data linkage in two samples of caregivers and describe characteristics associated with consenters. Methods: Subjects included caregivers of children admitted at birth to neonatal intensive care units (NICU) in British Columbia and caregivers of a sample of healthy children. Caregivers were asked to sign a consent form enabling researchers to link the survey information with theirs and their child's provincially collected health records. Bivariate analysis identified sample characteristics associated with consent. These were entered into logistic regression models. Results: The sample included 1,140 of 2,221 NICU children and 393 of 718 healthy children. The overall response rate was 55% and the response rate for located families was 67.1%. Consent to data linkage with the child data was given by 71.6% of respondents and with caregiver data by 67% of respondents. Families of healthy children were as likely to provide consent as families of NICU children. Higher rates of consent were associated with being a biological parent, not requiring survey reminders, involvement in a parent support group, not working full-time, having less healthy children, multiple births and higher income. Conclusion: The level of consent achieved suggests that when given a choice, most people are willing to permit researcher access to their personal health information for research purposes. There is scope for educating the public about the nature and importance of research that combines survey and administrative data to address important health questions.

Kliewer, E., & Kazanjian, A. (2000). *The health status and medical services utilization of recent immigrants to Manitoba and British Columbia: A pilot study*. Prepared for Citizenship and Immigration Canada, UBC Centre for Health Services and Policy Research, September. Downloaded from <http://www.chspr.ubc.ca/node/335>.

This pilot study had two aims: to assess the feasibility of linking Citizenship and Immigration Canada's (CIC) immigrant landing file to the provincial health records of Manitoba and British Columbia; and to provide a preliminary assessment of the medical screening process by describing the health status of recently arrived immigrants in Manitoba and British Columbia, and their medical services utilization.

Appendix 3: References Reviewed

Kozyrskyj, A., Lix, L., Dahl, M., & Soodeen, R.-A. (2005). *High-cost users of pharmaceuticals: Who are they?* Manitoba Centre for Health Policy, Department of Community Health Sciences Faculty of Medicine, University of Manitoba, March. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/high-cost.pdf.

We have known for a long time that health care resources and costs are concentrated on a relatively small proportion of the population. These high level consumers of health care have gained the negative reputation of being 'high users' and provide an obvious target for cost containment. With the rising costs of pharmaceuticals over the last two decades, this target group has increasingly become the high-cost users of pharmaceuticals. The research literature is quite clear on two aspects of high usage of health care. Many high users continue their usage patterns over time. High users are much more likely than other users to have chronic illnesses and often, multiple chronic conditions. Higher users of pharmaceuticals have additional characteristics: they are more likely to use multiple medications and to use newer, expensive drugs. The former, referred to as polypharmacy, predisposes them to adverse events such as hospitalization.

Landry, M. D., Ricketts, T. C., & Verrier, M. C. (2007). The precarious supply of physical therapists across Canada: Exploring national trends in health human resources (1991-2005). *Human Resources for Health*, 5(23):1-6.

Background: Health Human Resource (HHR) ratios are one measure of workforce supply, and are often expressed as a ratio in the number of health professionals to a sub-set of the population. In this study, we explore national trends in HHR among physical therapists (PTs) across Canada. Methods: National population data were combined with provincial databases of registered physical therapists in order to estimate the HHR ratio in 2005, and to establish trends between 1991 and 2005. Results: The national HHR ratio was 4.3 PTs per 10,000 population in 1991, which increased to 5.0 by 2000. In 2005, the HHR ratios varied widely across jurisdictions; however, we estimate that the national average dropped to 4.8 PTs per 10,000. Although the trend in HHR between 1991 and 2005 suggests positive growth of 11.6%, we have found negative growth of 4.0% in the latter 5-years of this study period. Conclusion: Demand for rehabilitation services is projected to escalate in the next decade. Identifying benchmarks or targets regarding the optimal number of PTs, along with other health professionals working within inter professional teams, is necessary to establish a stable supply of health providers to meet the emerging rehabilitation and mobility needs of an aging and increasingly complex Canadian population.

Landry, M. D., Tepper, J., & Verrier, M. C. (2009). Moving from 'muddling through' to careful planning: Physical therapy human resources in Canada. *Physiotherapy Canada*, 61(2):60-62.

Health human resources are consistently ranked as a priority in Canadian health policy and planning debates. Moreover, as Baumann et al. have recently noted, population health disparities have highlighted workforce issues across Canada's vast and diverse landscape. Demand for health services, which does not always equate to population 'need', tends to surpass the supply of financial and human resources in an environment of economic scarcity; therefore, ongoing challenges remain in providing a fully integrated health system that includes comprehensive rehabilitation and physical therapy services. As provinces and territories continue to reconfigure their health systems under the pretext of health reform, it is necessary to develop an enhanced understanding of future demand for health services in order to allocate current financial and human resources effectively across the care continuum.

Appendix 3: References Reviewed

- Lankshear, A. J., Sheldon, T. A., & Maynard, A. (2005). Nurse staffing and healthcare outcomes: A systematic review of the international research evidence. *Advances in Nursing Science*, 28(2):163–174.
- The relationship between quality of care and the cost of the nursing workforce is of concern to policymakers. This study assesses the evidence for a relationship between the nursing workforce and patient outcomes in the acute sector through a systematic review of international research produced since 1990 involving acute hospitals and adjusting for case mix. Twenty-two large studies of variable quality were included. They strongly suggest that higher nurse staffing and richer skill mix (especially of registered nurses) are associated with improved patient outcomes, although the effect size cannot be estimated reliably. The association appears to show diminishing marginal returns.
- Laporte, A., Nauenberg, E., & Shen, L. (2008). Aging, social capital, and health care utilization in Canada. *Health Economics, Policy and Law*, 3(part 4):393–411.
- This paper examines relationships between aging, social capital, and healthcare utilization. Cross-sectional data from the 2001 Canadian Community Health Survey and the Canadian Census are used to estimate a two-part model for both GP physicians (visits) and hospitalization (annual nights) focusing on the impact of community- (CSC) and individual-level social capital (ISC). Quantile regressions were also performed for GP visits. CSC is measured using the Petris Social Capital Index (PSCI) based on employment levels in religious and community-based organizations [NAICS 813XX] and ISC is based on self-reported connectedness to community. A higher CSC/lower ISC is associated with a lower propensity for GP visits/higher propensity for hospital utilization among seniors. The part-two (intensity model) results indicated that a one standard deviation increase (0.13%) in the PSCI index leads to an overall 5% decrease in GP visits and an annual offset in Canada of approximately \$225 M. The ISC impact was smaller; however, neither measure was significant in the hospital intensity models. ISC mainly impacted the lower quantiles in which there was a positive association with GP utilization, while the impact of CSC was strongest in the middle quantiles. Each form of social capital likely operates through a different mechanism: ISC perhaps serves an enabling role by improving access (e.g. transportation services), while CSC serves to obviate some physician visits that may involve counseling/caring services most important to seniors. Policy implications of these results are discussed herein.
- Laroche, M. (2000). Health status and health services utilization of Canada's immigrant and non-immigrant populations. *Canadian Public Policy*, 26(1):51–75.
- This paper compares the health status of immigrants and their utilization rates of health services to those of the Canadian-born population using data contained within two cycles (1985 and 1991) of the General Social Survey (GSS). Our main results show that neither the health status of immigrants nor their utilization rates of health services differ significantly from those of the Canadian-born population. When both data sets are pooled, the estimated results show that immigrants' health status and their use of health services have remained unchanged over time.
- Lavis, J. N., & Birch, S. (1997). The answer is..., now what was the question? Applying alternative approaches to estimating nurse requirements. *Canadian Journal of Nursing Leadership*, 10(1):24–44.

Appendix 3: References Reviewed

Levy, H., & Meltzer, D. (2008). The impact of health insurance on health. *Annual Review of Public Health*, 29:399–409.

How does health insurance affect health? After reviewing the evidence on this question, we reach three conclusions. First, many of the studies claiming to show a causal effect of health insurance on health do not do so convincingly because the observed correlation between insurance and good health may be driven by other, unobservable factors. Second, convincing evidence demonstrates that health insurance can improve health measures of some population subgroups, some of which, although not all, are the same subgroups that would be the likely targets of coverage expansion policies. Third, for policy purposes we need to know whether the results of these studies generalize. Solid answers to the multitude of important questions about how specific health insurance policy options may affect health seem likely to be forthcoming only with investment of substantial resources in social experiments.

Lin, E., & Goering, P. (2000). *Fee-for-service core mental health services: Changes in provider source and visit frequency*. Toronto, ON: Institute for Clinical Evaluative Sciences (ICES); Report 3, Atlas Reports, Uses of Health Services. Downloaded from <http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=67>.

Distribution of resources according to need is an important component in the delivery of mental health care services. The measure of visit frequency provides information on cost and a rough measure of resource use. This research atlas examines changes from 1992/93 to 1997/98 in provider source (physicians who provide mental health care) and the visit frequency of mental health care users. In the five-year period, usage patterns remained fairly constant, with 63% of mental health care users receiving care from a general practitioner or family physician, 22% seeing a psychiatrist and 12% seeing both. The most significant change is that services were delivered to a larger percentage of Ontario's population through providers seeing more patients rather than an increase in the relative number of providers.

Lin, E., & Goering, P. (2000). *Fiscal changes for core mental health services delivered by fee-for-services physicians*. Institute for Clinical Evaluative Sciences (ICES), Toronto, ON, April. Downloaded from <http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=31&morgid=0&gsecid=0&itemid=1294>.

Core mental health services include the assessment, diagnosis and treatment of emotional, mental or addiction problems, and are typically provided by a psychiatrist for persons with a psychiatric disorder, but may involve other health care professionals such as general practitioners/family physicians (GP/FP) for other types of conditions. This research atlas examined fiscal changes to fee-for-service mental health services between 1992/93 and 1997/98 and found that costs increased as more Ontarians sought mental health care, however, underserved groups in 1992/93 were still underserved five years later.

Lippincott Williams & Wilkins. (1997). Introduction: Hospital restructuring: Impact on the health-care workforce. *Medical Care*, 35(10):S123.

Hospitals are the most labor intensive settings for care in developed countries and thus account for a large share of all jobs in health care. In the United States, almost half of the entire health-care workforce is employed in hospitals, and in many communities hospitals are among the largest employers. Therefore any substantial change in hospital employment could have significant impact on local economies and for occupations employed in hospitals in large numbers. Hospitals remain the place of employment for the majority of nurses. In 1996, approximately 60% of employed nurses in the United States worked in hospitals.

Appendix 3: References Reviewed

Little, L. (2007). Nurse migration: A Canadian case study. *Health Services Research*, 42(3, Part II):1336–1353.

Objective: To synthesize information about nurse migration in and out of Canada and analyze its role as a policy lever to address the Canadian nursing shortage. Principal Findings: Canada is both a source and a destination country for international nurse migration with an estimated net loss of nurses. The United States is the major beneficiary of Canadian nurse emigration resulting from the reduction of full-time jobs for nurses in Canada due to health system reforms. Canada faces a significant projected shortage of nurses that is too large to be ameliorated by ethical international nurse recruitment and immigration.

Conclusions: The current and projected shortage of nurses in Canada is a product of health care cost containment policies that failed to take into account long-term consequences for nurse workforce adequacy. An aging nurse workforce, exacerbated by layoffs of younger nurses with less seniority, and increasing demand for nurses contribute to a projection of nurse shortage that is too great to be solved ethically through international nurse recruitment. National policies to increase domestic nurse production and retention are recommended in addition to international collaboration among developed countries to move toward greater national nurse workforce self sufficiency.

Mable, A. L., & Marriott, J. (2002). *Steady state: Finding a sustainable balance point*. International Review of Health Workforce Planning, Health Canada; Ottawa, ON. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/2002-steadystate-etastable/index-eng.php>.

Health workforce planning is the latest plank in health system reform being pursued by countries around the world. A main objective of health workforce planning is to have the right number and mix of health practitioners with appropriate skills in the right places at the right time, to provide quality services to those who need them. Historically, however, workforce planning has more often referred to less-than-perfect approaches to planning for physician 'manpower', based on maintaining existing physician-population ratios. Less focus was placed on planning for nurses and other health providers. In spite of recent health reform initiatives that emphasize 'team', the planning that has taken place has tended to continue a pattern of working 'in the silos' of profession-specific approaches. Less work has been done in the area of determining future requirements for physicians, nurses and other health providers overall. And as a result, past efforts have not proven to be as accurate, effective or as comprehensive as needed, or enough to inform decision makers and planners sufficiently to adjust to changing demographics and other patterns in both the population at large, as well as provider groups and changing models of health care delivery.

Mable, A. L., & Marriott, J. (2005). *Pan-Canadian health human resource strategy: 2004/2005 annual report*. Health Canada, Ottawa, ON. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/2005-ar-ra/index-eng.php>.

At the heart of any health care system are the people who deliver care - health human resources (HHR). The sustainability of Canada's HHR is an issue which has received significant attention in recent years. Canada's HHR are facing a constantly evolving health care landscape in which factors such as an aging population and workforce, new technologies, and health care reforms are all contributing to the need for change. Through recent health care accords, First Ministers have repeatedly stressed the need for appropriate planning and management of HHR in order to ensure that Canadians have access to the health care providers they need. In response, the 2003 Budget provided \$85M to address pan-Canadian HHR

Appendix 3: References Reviewed

needs. These funds have formed the basis for Health Canada's Pan-Canadian Health Human Resource Strategy (the Strategy), which was approved by the Treasury Board in 2004 with ongoing funding of \$20M annually.

Manga, P., Broyles, R. W., & Angus, D. E. (1987). The determinants of hospital utilization under a universal public insurance program in Canada. *Medical Care*, 25(7):658–670.

This study employs the individual as the unit of analysis to examine the relative importance of medical need, sociodemographic and economic factors in determining the use or non-use of hospital care and the volume of service consumed by those who experienced an episode of hospitalization during the study period. The data were derived from the Canada Health Survey which is a stratified, multistaged sample of the entire population. The results of the discriminant and weighted regression analyses indicate that the use or non-use of hospital care and the volume of service consumed are largely determined by medical need and not by income. The findings are supportive of the view that the national health insurance scheme in Canada has resulted in a more equitable distribution of hospital care.

Manga, P., & Campbell, T. (1994). *Health human resources substitution: A major area of reform towards a more cost-effective health care system*. Cost-effectiveness of the Canadian Health Care System: Queen's-University of Ottawa Economic Projects #94-01.

The health care sector is highly labour intensive, with about three-quarters of health care expenditures comprising wages, salaries, and fees. Therefore, the efficient use of health personnel is of vital importance in assuring that services are produced and delivered in a cost-effective manner. However, despite evidence of the potential to save costs, health human resources substitution as a strategy to improve efficiency has had limited use. In this paper, we highlight and discuss many fruitful areas of health human resources substitution, namely, nurse practitioners, dental hygienists, registered nurses and nursing assistants, midwives, pharmacist technicians, nurse anaesthetists, chiropractors, and intraprofessional substitution within medicine. We also examine primary care, an important area in which many of the cost-effective substitutions presented in the report can actually occur. Very importantly, we develop a section on obstacles to health human resources substitution, in an attempt to understand the reasons why many of the cost-effective substitutions have not been implemented. Finally, we offer some generally articulated recommendations for action on this reform strategy.

Manuel, D. G., Maaten, S., Thiruchelvam, D., Jaakkimainen, L., & Upshur, R. (2006). Primary care in the health care system. In L. Jaakkimainen, R. Upshur, J. Klein-Geltink, A. Leong, S. Maaten, S. Schultz, & L. Wang (Eds.), *Primary care in Ontario* 1st ed. : Institute for Clinical Evaluative Sciences (ICES).

This report provides the most comprehensive picture, to date, on the state of primary care health services in Ontario between 1992/93 and 2002/03, prior to the introduction of new primary care reform initiatives in Ontario. Chapters 1-5 present current trends in primary care for women during pregnancy, labour and childbirth; care of children; care provided to adults; and, patterns in preventive health care. Chapters 6-10 describe how primary care services were provided to patients with congestive heart failure; cancer; respiratory diseases; mental health problems; and disadvantaged populations (for 2000/01). Chapters 11 and 12 examine the supply of physicians providing primary care, their practice locations, workloads, services provided, and patient characteristics, as well as the factors which influence preventive, chronic and acute disease management in primary care.

Appendix 3: References Reviewed

Marsden, D., & Xu, S. Y. (2009). *Income-related inequity in Ontario GP utilization*. CIHR & Statistics Canada Research Data Centre at McMaster University, August. Downloaded from <http://socserv.mcmaster.ca/rdc/wpabs.htm>.

A guiding principle of Canada's public health care system is that of horizontal equity: those in equal need should receive equal care. Informed policy-making aimed at alleviating horizontal inequity requires an understanding of both the source and magnitude of any existing inequity. This paper investigates income-related horizontal inequity for family doctor and GP utilization among Ontario adults. Comparative studies have provided evidence of income-related inequity in health care utilization both in Canada and abroad. Typically, initial contact with a GP is found to be distributed pro-rich, while ongoing contact, conditional on at least one visit, is found to be proper. Due to data limitations, most of these studies use categorical income measures and as a result, previous findings may be biased. Given the importance of accurate and precise information for the delivery of effective and efficient policy, we apply existing methods to richer, recently available data from the Canadian Community Health Survey to obtain improved estimates of income-related inequity from 1996 to 2005.

Martens, P. J., Fransoo, R., Burland, E., Jebamani, L., Burchill, C., Black, C., Dik, N., MacWilliam, L., Derksen, S., Walld, R., Steinbach, C., Dahl, M., & Bogdanovic, B. (2003). *The Manitoba RHA indicators atlas: Population-based comparisons of health and health care use*. Manitoba Centre for Health Policy, University of Manitoba, June. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

Evidence-based decision-making requires provision of information to those who need to make those decisions. In planning for the needs of Manitoba's eleven non-Winnipeg Regional Health Authorities (RHAs), policy makers, decision-makers, and planners all require population-based health information. This helps create a picture of the health status, burden of illness, and the way in which people use health care services.

Maynard, A. (2006). Medical workforce planning: Some forecasting challenges. *The Australian Economic Review*, 39(3):323–329.

While medical workforce planning is essential, it is generally deeply flawed methodologically and often wrong in the conclusions it reaches. It is usually based on an unquestioning assumption that more health care inputs automatically result in more health and that the efficient and unique way to produce improved population health is through increased investments in the health care workforce. Such an approach should be dealt with sceptically in an industry in which patient outcomes are neither measured nor managed and where a significant proportion of health care in common use has no evidence base. Furthermore, workforce planning is traditionally confined to medical practitioners and dominated by members of this profession to the exclusion of the majority of health care workers in nursing and other professions allied to medicine. These outcomes are a product of the economic and political power of medical practitioners, which in the next decade are unlikely to survive.

McDonald, J. T., & Sherman, A. (2008). *Determinants of mamography usage across rural and urban regions of Canada*. Social and Economic Dimensions of an Aging Population (SEDAP), research paper no. 238, December. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs08.htm#abs238>.

Breast cancer is a leading source of mortality among Canadian women; however early detection via mammography considerably improves survival rates. Accordingly, national guidelines advocate biennial

Appendix 3: References Reviewed

screening for asymptomatic women aged 50 to 69 years. Unfortunately many women do not abide by such recommendations, and there is some evidence that compliance rates are lower in rural areas. This report explores the extent of regional variation within and between Canadian provinces using a new and more detailed set of rural indicators based on economic zones of influence. We find the incidence of ever having a mammogram and screening within the last two years are significantly lower for women most removed from large urban centers. This result is obtained after controlling for demographic and socio-economic characteristics, concentration of physicians and specialists in the local area and whether the woman has a regular family doctor. An important reason for the observed differences across rural and urban areas is found to be awareness of the need for regular screening. We also observe that differences in mammography usage between rural and urban areas vary significantly across Canadian provinces.

McGrail, K. (2007). Medicare financing and redistribution in British Columbia, 1992 and 2002. *Healthcare Policy*, 2(4):123–137.

Equity in healthcare in British Columbia is defined as the provision of services based on need rather than ability to pay and a separation of contributions to financing from the use of services. Physician and hospital services in Canada are financed mainly through general tax revenues, and there is a perception that this financing is progressive. This paper uses Gini coefficients, concentration indexes and Kakwani indexes of progressivity to assess the progressivity of Medicare financing in British Columbia in 1992 and 2002. It also measures the overall redistributive effect of Medicare services, considering both contributions to financing and use of hospital and physician services. The conclusion is that Medicare does redistribute across income groups, but this redistribution is the result solely of the positive correlation between health status and income; financing is nearly proportionate across income groups, but use is higher among lower-income groups. Informed public debate requires a better understanding of these concepts of equity.

McGrail, K., Green, B., Barer, M. L., Evans, R. G., Hertzman, C., & Normand, C. (2000). Age, costs of acute and long-term care and proximity to death: Evidence for 1987-88 and 1994-95 in British Columbia. *Age and Aging*, 29(3):249–253.

Background: The consequences of ageing populations for health care costs have become a concern for governments and health care funders in most countries. However, there is increasing evidence that costs are more closely related to proximity to death than to age. This means that projections using age-specific costs will exaggerate the impact of ageing. Previous studies of the relationship of age, proximity to death and costs have been restricted to acute medical care. Objective: To assess the effects of age and proximity to death on costs of both acute medical care and nursing and social care, and to assess if this relationship was stable in a time of rapid change in health care expenditure. Design and Methods: We compared all decedents in the chosen age categories for the years 1987-8 and 1994-95 with all survivors in the same age groups. We measured use of health and social care for each individual using the British Columbia linked data, and costs of care assessed by multiplying the number of services by the unit cost of each service. Setting: The Province of British Columbia. Subjects: All decedents in 1987-88 and 1994-95 in British Columbia in the chosen age groups, and all survivors in the same age groups. Results: Costs of acute care rise with age, but the proximity to death is a more important factor in determining costs. The additional costs of dying fall with age. In contrast, costs of nursing and social care rise with age, but additional costs for those who are dying increase with age. Similar patterns were found for the two

Appendix 3: References Reviewed

cohorts. Conclusion: Age is less important than proximity to death as a predictor of costs. However, the pattern of social and nursing care costs is different from that for acute medical care. In planning services it is important to take into account the relatively larger impact of ageing on social and nursing care than on acute care.

McGrail, K. M., Evans, R. G., Barer, M. L., Sheps, S. B., Hertzman, C., & Kazanijian, A. (2001). The quick and the dead: "Managing" inpatient care in British Columbia hospitals, 1969-1995/96. *Health Services Research*, 35(6):1319–1338.

Objective: To examine changes in hospital use in British Columbia during a decade of capacity reductions. Data Sources/Study Setting: The data used are all separation records for British Columbia hospitals for the years 1969, 1978, 1985/86, 1993/94, and 1995/96. Separation records include acute care, rehabilitation, extended care, and surgical day care hospital encounters in British Columbia that were concluded during the years of interest. Study Design: Analyses were based on per capita use of services for five-year age groups of the population to ages 90+; the emphasis was on looking at changes in the use of specific types of hospital services over the 26 years of study, with a particular focus on the most recent decade. Data Collection/Extraction Methods: Data were extracted from hospital separations files owned by the British Columbia Ministry of Health and housed at the Centre for Health Services and Policy Research. All separation records for the years of interest were included in the study. Principal Findings: Acute care use continued to fall over the last decade. The rate of decline increased during the last time period of study and affected seniors to the same degree as younger patients. At the same time, use of extended care decreased, compared to steady increases in earlier years. The result was that by 1995/96 nearly 40 percent of inpatient days were used by people who died in hospital, compared to 9 percent in 1969. These people, however, still represent a small proportion of separations. Conclusions: The "bed blocker" problem common to many hospital systems appears to have been largely alleviated in British Columbia over the decade 1985-95. The concurrent decrease in extended care use, however, makes it difficult to say where and how these people are now being cared for. Care for the dying has become a bigger issue for hospitals, but whether this is because of heroic interventions at the end of life is not clear. A "top-down," capacity-driven management approach to hospital use in British Columbia has produced effects that may seem familiar to those involved in more "bottom-up" managed care approaches in the United States.

McKee, M., Suhrcke, M., Nolte, E., Lessof, S., Figueras, J., Duran, A., & Menabde, N. (2009). Health systems, health, and wealth: A European perspective. *The Lancet*, 373(9660):349–351.

Countries from WHO's European region met in Tallinn, Estonia in June, 2008, to discuss a new way of thinking about health systems. For the past three decades, much of the debate on health care in Europe has been dominated by cost containment. Informed by detailed background analyses, a 2 year consultation process began by asking 'what is a health system actually for?' The answer depends on who is asking the question. For some, a health system is a means of redistributing society's resources - from healthy to sick and from rich to poor. For others, it is for commercial opportunity like any other service sector. However, there is widespread consensus around the goals set out in the 2000 World Health Report. These aims are improving health, ensuring responsiveness to legitimate expectations, and ensuring fairness of financing.

Menec, V., Black, C., Roos, N. P., Bogdanovic, B., & Reid, R. (2000). *Defining practice populations for*

Appendix 3: References Reviewed

primary care: Methods and issues. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, February. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>. Primary care has been described as the cornerstone of health care because it provides an entry point for individuals into the health care system. However, there is now increasing recognition in Canada that changes are called for in the funding of the primary care system which, for the most part, is based on a fee-for-service payment system. Proposals for primary care reform have therefore stressed the need for alternative funding and payment models (capitation and blended), as being critical to improving the system. A fee-for-service system is recognized as providing the wrong signals to physicians, given that more services provided translate into higher incomes. In contrast, capitation (population-based) funding is thought to place greater emphasis on patients and their needs and less on the services provided. Under a capitation system, practice revenue is determined by the capitation fee (the amount paid per patient) and the size of the practice population, regardless of the quantity of services provided. Capitation may be supplemented with fee-for-service or salary components in a blended funding system.

Menec, V. H., MacWilliam, L., Soodeen, R.-A., & Mitchell, L. (2002). *The health and health care use of Manitoba's seniors: Have they changed over time?* Manitoba Centre for Health Policy, University of Manitoba, September. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>. The Canadian population is aging; that is a fact. What impact the increase in the senior population will have on the health care system is subject to debate, however. One view is that the aging population will have a major negative effect on the health care system, with the increasing health expenditures being no longer sustainable given the current organization and funding of the health care system in Canada. A more optimistic alternative to this 'apocalyptic' scenario has also been proposed, however. This more moderate view takes several important factors into account. First, most seniors have few health problems and disabilities and continue to live independent and healthy lives into old age. Second, research indicates that the health of seniors is improving. Such improvements in health could offset (or at least reduce) the impact of the aging population. Third, increases in health care use may be driven not so much by an increasing number of seniors, but rather by a health care system which does much more to them now than was the case even a decade ago. Thus changes in the health care system have the potential to either magnify (if more and more is done to an increasing number of seniors) or reduce (if health care policy leads to a decrease in use) the impact of the aging population.

Michaud, P. C., Goldman, D., Lakdawalla, D., Zheng, Y., & Gailey, A. (2009). *Understanding the economic consequences of shifting trends in population health*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 225, September. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs09.htm#abs255>.

The public economic burden of shifting trends in population health remains uncertain. Sustained increases in obesity, diabetes, and other diseases could reduce life expectancy - with a concomitant decrease in the public-sector's annuity burden - but these savings may be offset by worsening functional status, which increases health care spending, reduces labor supply, and increases public assistance. Using a microsimulation approach, we quantify the competing public-finance consequences of shifting trends in population health for medical care costs, labor supply, earnings, wealth, tax revenues, and government expenditures (including Social Security and income assistance). Together, the reduction in smoking and the rise in obesity have increased net public-sector liabilities by \$430bn, or approximately 4% of the

Appendix 3: References Reviewed

current debt burden. Larger effects are observed for specific public programs: annual spending is 10% higher in the Medicaid program, and 7% higher for Medicare.

Muller-Mundt, G. (1997). Trends in hospital restructuring and impact on the workforce in Germany. *Medical Care*, 25(10):S132–S142.

Objectives: The author describes the impacts of hospital restructuring and reform legislation in Germany on the nursing workforce. Methods: A descriptive analysis using selected literature is presented. Results: Driven by the increased service needs of an aging population and the imperative to contain health-care costs, the hospital sector is shrinking while increasing its intensity of care delivery. Within this environment, the demand for patient-focused, high-quality nursing care is high, whereas the number of new graduates entering the nursing field is declining. Despite absolute increases in the number of nurses employed by the hospital sector, evidence suggests that hospitals are operating with a nursing workforce deficit. The recent reform law of 1992 mandates several changes with large implications for nursing. These include a linking of the hospital sector with outpatient care; a focus on rigorous, interdisciplinary quality assurance; and a revaluing of the adequacy of hospital nurse staffing. Conclusions: Hospitals will remain the major employers of nurses, with new outpatient sector opportunities. Adequate nurse staffing methodologies, sound personnel retention strategies, and reform of care delivery models are needed to assure high-quality nursing care in the hospital sector.

Mustard, C., & Derksen, S. (1998). *A needs-based funding methodology for regional health authorities: A proposed framework*. Working paper, Manitoba Centre for Health Policy, University of Manitoba, October. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/FundNeed.pdf.

There are precedents, both international and Canadian, for the initiative underway in Manitoba devolving the management and delivery of health care services to regional authorities. An important component of this devolved management initiative is the method by which resources are allocated to regional health authorities for the provision of health care to resident populations. At the request of Manitoba Health, the Manitoba Centre for Health Policy and Evaluation developed a framework for the funding of health care services for Regional Health Association populations, working in collaboration with members of the Methodology Advisory Committee.

Mustard, C., Derksen, S., Berthelot, J.-M., Wolfson, M., Roos, L. E. L., & Carriere, K. C. (1995). *Socioeconomic gradients in mortality and the use of health care services at different stages in the life course*. Statistics Canada/Manitoba Centre for Health Policy and Evaluation Linkage Project, September. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

This report presents results from the first of three research projects currently in progress which are based on the linkage of records for 48,000 Manitobans which describe health service utilization and socioeconomic status. The objective of this project was to analyze socioeconomic differences in mortality and the utilization of health care services at different stages in the life course. Subsequent reports will compare the explanatory power of individual and area-based measures of socioeconomic status in describing differences in health status and health services utilization and a description of differences in morbidity across occupational groups.

Mustard, C. A., & Frohlich, N. (1995). Socioeconomic status and the health of the population. *Medical*

Appendix 3: References Reviewed

Care, 33(12, sup.):DS43–54.

To examine the relationship of a population's socioeconomic characteristics to its health status and use of health care services, a composite socioeconomic risk index was developed for the Population Health Information System. From a set of 23 socioeconomic indicators derived from public use census data, a summary index was formed from six indicators to generate profiles for the eight health regions of the province. Regional scores were plotted against an index of health status measures and against measures of health care utilization. Strong regional variations were found in all of these measures, and the socioeconomic risk index explained 87% to 92% of the differences in health status and acute hospitalizations. Moreover, regions with the worst health status on our indicators were found to be among the highest consumers of health services. The socioeconomic risk index appears to be a powerful tool in clarifying which benefits in improved health status might accrue from changing the underlying inequities in amenable socioeconomic risk factors, rather than simply increasing services to regions of low health status.

Nabalamba, A., & Millar, W. J. (2007). Going to the doctor. *Health Reports (Statistics Canada)*, 18(1):23–35.

Objectives: This article, based on the Andersen model, describes patterns of consultation with general practitioners (GPs) and specialists among Canadians aged 18 or older. Associations with health status and other factors are examined. **Data Source:** Estimates are based on data from the 2005 Canadian Community Health Survey (CCHS), cycle 3.1. **Analytical Techniques:** Cross-tabulations were used to estimate the proportion of adult Canadians who had had a GP consultation, four or more GP consultations, or a specialist consultation in the previous year. Adjusted logistic regression models were used to examine factors associated with such consultations when the effects of health need were taken into account. **Main Results:** In 2005, 77% of Canadians aged 18 to 64 and 88% of seniors reported that they had consulted a GP in the previous year; 25% and 44%, respectively, had done so four or more times; and 27% and 34% had consulted a specialist. Individual health need, as measured by the presence of chronic conditions and self-reported general and mental health, was a strong determinant of service use. However, when need was taken into account, physician consultations were independently associated with age, sex, household income, race, language, urban/rural residence and having a regular family doctor. Seniors aged 75 or older and rural residents had low odds of specialist consultations, but high odds of four or more GP consultations. Visible minorities and Aboriginal people had lower odds of reporting specialist consultations than did Whites.

North South Group. (2004). *Literature review and environmental scan of preferred practices for deployment of health human resources and decision support tools: Final report*. Health Canada, Health Policy Branch, Ottawa, ON, June 28. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/2004-hhr-rhs-tools-outils/index-eng.php>.

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'

Appendix 3: References Reviewed

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.

O'Brien-Pallas, L., Baumann, A., Donner, G., Tomblin Murphy, G., Lochhass-Gerlach, J., & Luba, M. (2001). Forecasting models for human resources in health care. *Journal of Advanced Nursing*, 33(1):120–129.

This article is a review of the approaches published between 1996 and 1999 that have been used to forecast human resource requirements for nursing. Much of the work to date generally does not consider the complex factors that influence health human resources (HHR). They also do not consider the effect of HHR decisions on population health, provider outcomes such as stress, and the cost of a decision made. Supply and demand approaches have dominated. Forecasting is limited, too, by the availability of reliable and valid data bases for examining supply and use of nursing personnel across sectors. Three models - needs based, utilization based, and effective demand based - provide substantially different estimates of future HHR need. The methods of analysis employed for forecasting range from descriptive to predictive and are borrowed from demography, epidemiology, economics, and industrial engineering. Simulation models offer the most promise for the future. The forecasting methods described have demonstrated their accuracy and usefulness for specific situations, but none has proven accurate for long-term forecasting or for estimating needs for large geographical areas or populations.

Oelke, N. D., White, D., Besner, J., Doran, D., Hall, L. McG., & Giovannetti, P. (2008). Nursing workforce utilization: An examination of facilitators and barriers on scope of practice. *Nursing Leadership*, 21(1):58–71.

Several reports have highlighted the need to address underutilization of health human resources, but barriers to and facilitators of role optimization for nurses are poorly understood. The purpose in this study was to understand the perceptions of nurses - Licensed Practical Nurses (LPNs), Registered Nurses (RNs) and Registered Psychiatric Nurses (RPNs) - of the extent to which they can work to full scope of practice and identify barriers and facilitators in optimizing their roles. As part of a mixed-methods study, semi-structured interviews were conducted with 167 acute care nurses (RNs, LPNs, RPNs and nurse managers) in three western Canadian health regions. Approximately 48% of all nurses interviewed felt they were working to full scope, at least some of the time. Barriers to working to full scope included heavy workload, high patient acuity, lack of time, poor communication and ineffective teamwork. Identified facilitators were working as a team, management and leadership support and support for continuing education. Barriers need to be addressed in light of nursing shortages, as these are closely related to job satisfaction and directly affect the retention and recruitment of all groups of nurses. Policies and strategies based on these findings must be developed to ensure that nurses can work to their full scope of practice.

Payne, G., Laporte, A., Deber, R., & Coyte, P. C. (2007). Counting backward to health care's future: Using

Appendix 3: References Reviewed

time-to-death modeling to identify changes in end-of-life morbidity and the impact of aging on health care expenditures. *The Milbank Quarterly*, 85(2):213–257.

In most developed countries, as the largest population cohorts approach the age of sixty-five, the impact of population aging on health care expenditures has become a topic of growing interest. This article examines trends in elderly disability and end-of-life morbidity, estimations of the cost of dying, and models of expenditures as a function of both age and time-to-death and finds broad improvement in mortality and morbidity among the elderly in the developed world. Reduced mortality and low growth in the costs associated with dying could reduce forecasted expenditures, but high growth in expenditures for those not close to death and for nonhospital services could create new economic pressures on health care systems.

Peterson, J. Z. (2009). *Job stress, job satisfaction, and intention to leave among new nurses*. Unpublished Ph.D. Dissertation, University of Toronto, Graduate department of Nursing Science, Toronto, ON.

The difficulties new nurses experience when first entering acute care work environments have been recognized since Kramer's seminal work in the 1970s. Despite the implementation of interventions designed to help ease the transition, the literature continues to report that new graduates undergo stress when beginning their careers as nurses. The purpose of this study was to examine the effects of perceived demands, control, social support and self-efficacy on the job stress, job satisfaction and intention to leave of new nurses.

Pong, R. W. (2008). Strategies to overcome physician shortages in northern Ontario: A study of policy implementation over 35 years. *Human Resources for Health*, 6(24):1–9.

Background: Shortages and maldistribution of physicians in northern Ontario, Canada, have been a long-standing issue. This study seeks to document, in a chronological manner, the introduction of programmes intended to help solve the problem by the provincial government over a 35-year period and to examine several aspects of policy implementation, using these programmes as a case study. Methods: A programme analysis approach was adopted to examine each of a broad range of programmes to determine its year of introduction, strategic category, complexity, time frame, and expected outcome. A chronology of programme initiation was constructed, on the basis of which an analysis was done to examine changes in strategies used by the provincial government from 1969 to 2004. Results: Many programmes were introduced during the study period, which could be grouped into nine strategic categories. The range of policy instruments used became broader in later years. But conspicuous by their absence were programmes of a directive nature. Programmes introduced in more recent years tended to be more complex and were more likely to have a longer time perspective and pay more attention to physician retention. The study also discusses the choice of policy instruments and use of multiple strategies. Conclusion: The findings suggest that an examination of a policy is incomplete if implementation has not been taken into consideration. The study has revealed a process of trial-and-error experimentation and an accumulation of past experience. The study sheds light on the intricate relationships between policy, policy implementation and use of policy instruments and programmes.

Pong, R. W., Saunders, D., Church, J., Wanke, M., & Cappon, P. (1995). *Building a stronger foundation: A framework for planning and evaluating community-based health services in Canada*. Component 1: Health Human Resources in Community-Based Health Care: A review of the literature, Health Promotion

Appendix 3: References Reviewed

and Programs Branch, Health Canada, Ottawa, ON. Downloaded from <http://www.hc-sc.gc.ca/hcs-sss/pubs/hhrhs/1995-build-plan-commun/index-eng.php>.

Although Canada has a well developed health care system, it also has one of the highest rates of institutionalization in the world. But it has become evident that health care is more than institutional care. It encompasses a much wider range of services and activities, including self-care, disease prevention, health promotion, community support, ambulatory care, acute and specialized treatment, long-term care and rehabilitative services. In many western societies, including Canada, the determination to control health care costs, the need to be more accountable and the attempts to make services more accessible, along with the realization that medical care is just one of many factors that sustain population health, have coalesced to reshape the health care system in substantial ways. The closing and downsizing of some hospitals and psychiatric institutions, reform of the long-term care system and the emphasis on primary health care have meant a greater reliance on community-based health care. At the same time, technological advances, changes in practice organization and a better informed public have made it possible for many medical services traditionally provided in institutions to be delivered in community settings. While there is no universally accepted definition of community-based health care, most would agree that it means bringing health services as close as possible to where people live and work and providing health services outside hospitals and other institutions. It emphasizes consumer participation, holistic and team approaches, a more rational use of health resources, greater responsibility by individuals for their well-being and a prevention and health promotion orientation. Health care is a labour-intensive industry and personnel account for 70 percent or more of health care cost. Human resources play an even more prominent role in and account for an even greater share of the cost of community-based health care as it relies less on facilities and advanced technologies. In developing a framework for evaluation and policy decisions in relation to community-based health care, it is, therefore, imperative to pay special attention to health human resources issues.

Raphael, D., Macdonald, J., Colman, R., Labonte, R., Hayward, K., & Torgerson, R. (2005). Researching income and income distribution as determinants of health in Canada: Gaps between theoretical knowledge, research practice, and policy implementation. *Health Policy*, 72(2):217–232.

The research identified gaps in Canadian knowledge and research activity concerning the roles that income and its distribution play in Canadians' population health. 241 Canadian research studies on income and health were considered along eight taxonomies: conceptualization of income or its proxies; theoretical underpinnings; income distribution measures; health measures; who/what was studied, pathways mediating between income and health; complexity of these pathways; research design; and presence of policy implications. The study identified the following areas of weakness: (a) poor conceptualization of income and the means by which it influences health; (b) lack of longitudinal studies of the impact of income-related issues upon health across the life-span; (c) lack of linked data bases that allow complex analyses of how income and related issues contribute to health and well-being, and (d) little interdisciplinary work in identifying pathways mediating the income and health relationship. Advances in health policy to address the health effects of income and its distribution requires a research infrastructure that draws upon recent theoretical developments in the area and is able to access data sources to test these advanced conceptualizations.

Rechel, B., Dubois, C.-A., & McKee, M. (Eds.). (2006). *The health care workforce in Europe: Learning*

Appendix 3: References Reviewed

from experience. . Copenhagen, Denmark: World Health Organization on behalf of the European Observatory on Health Systems and Policies.

A trained and motivated workforce, with appropriate skills, a commitment to life-long learning and receiving adequate rewards is an essential pre-requisite for high-performing health systems. Yet, for many countries the challenge of getting this right too often proves elusive. How do you ensure the right skill-mix, so that the appropriate staff are in the right places to meet the needs of populations with changing health needs? How do you cope with unprecedented levels of international mobility of health professionals, when minor changes in working conditions in another country can make the difference between surplus and scarcity? How do you ensure that the rewards are commensurate with the contributions that staff are making, especially when there are many other employment opportunities open to them? There are no easy answers, but in this book we have brought together the experiences of a range of countries that are all struggling with these issues. We hope that they will provide lessons for others facing similar challenges.

Reid, R., Bogdanovic, B., Roos, N. P., Black, C., MacWilliam, L., & Menec, V. (2001). *Do some physician groups see sicker patients than others? Implications for primary care policy in Manitoba*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, July. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

Canadian policy makers are considering a variety of new policy initiatives directed at improving the effectiveness and efficiency of health care delivery, particularly in the ambulatory setting. These initiatives include monitoring the volume and types of care provided by physicians to their patients and shifting away from fee-for-service payment to methods which pay physicians according to the number of patients in their practice - a system of reimbursement based on full or partial capitation. A critical component of these and other initiatives is the generation of reliable information about how morbidity is distributed across practice populations. Without adequate attention to methods which make it possible to adjust for differential morbidity levels and hence different 'need' for services which potentially vary from practice to practice, these initiatives could discourage physicians from treating patients with serious health needs, and/or penalize the providers that care for them. The aims of this study are to see how feasible it is to measure the 'burden of morbidity' of physician practices using available administrative data, and to examine how levels of illness vary across practices in urban and rural Manitoba.

Reid, R. J., Evans, R. G., Barer, M. L., Sheps, S., Kerluke, K., McGrail, K., Hertzman, C., & Pagliccia, N. (2003). Conspicuous consumption: Characterizing high users of physician services in one Canadian province. *Journal of Health Services Research and Policy*, 8(4):215–224.

Objectives: To examine medical care use and costs, patterns of morbidity and co-morbidity, and other patient characteristics of high users of physician services in British Columbia. Methods: This population-based study uses physician claims, hospital discharge summaries and vital statistics data linked at the level of the individual to compare characteristics of high users, other users and non-users of physician services in the Province of British Columbia, Canada. The study included all enrolled adults in the universal health care plan during fiscal year 1996/97. High users were defined as the most costly 5% of users of fee-reimbursed services. Key variables included age, sex, an ecological socio-economic status indicator and a comprehensive set of morbidity indicators, derived from the diagnoses recorded on the utilization records. Results: The top 5% of users consumed a disproportionate 30% of spending on

Appendix 3: References Reviewed

physician services. High users were overwhelmingly characterized by a significant burden of morbidity. Over 80% had at least six different types of morbidity during the study year compared with fewer than 20% of other users. High users were also much more likely to have major diagnoses that were both acute and chronic in nature. Co-morbidity involving psychosocial and chronic medical conditions was also very common. Conclusions: High users of physician services are overwhelmingly characterized by multiple and complex health problems. Policy tools based on a philosophy of deterrence such as cost-sharing are unlikely to have much impact on their costs and will likely do considerable harm.

Rice, T. (1997). Can markets give us the health system we want? *Journal of Health Politics, Policy and Law*, 22(2):383–426.

The purpose of this article is to reconsider the foundations of health economics as applied to the study of competition. It shows that conclusions concerning the purported desirability of competitive markets are based on a number of assumptions--many of which have heretofore been ignored--that typically are not fulfilled in the health care area. Once this is recognized market mechanisms no longer necessarily provide the best way to improve social welfare. The article is divided into two parts: competition and demand. Each of these sections presents and then critiques key assumptions of the conventional economic model, and then provides a number of health applications. It concludes that by not considering the validity of these assumptions in health care applications, researchers and policy analysts will bind themselves to policy options that may not be most effective in improving social welfare.

Rice, T. (1998). *The Economics of Health Reconsidered*. 2nd ed. Chicago: Health Administration Press. Like its predecessor, this book challenges the field of health economics as it is taught and practiced. As controversial and thought provoking as the first edition, this new edition continues to question the prevailing belief that a competitive healthcare marketplace results in the best outcomes. This edition expands the debate to include new discussions of how the distribution of income affects health, and the application of defined contribution insurance products, Medicare premium support proposals, and medical savings accounts. A substantial new chapter provides a much-requested comparison between market and government involvement theories. The author includes information on the health systems of developed nations, and uses this data as evidence to support various conclusions about the role of the markets and the government in healthcare.

Roberfroid, D., Leonard, C., & Stordeur, S. (2009). Physician supply forecast: Better than peering in a crystal ball? *Human Resources for Health*, 7(10):1–13.

Background: Anticipating physician supply to tackle future health challenges is a crucial but complex task for policy planners. A number of forecasting tools are available, but the methods, advantages and shortcomings of such tools are not straightforward and not always well appraised. Therefore this paper had two objectives: to present a typology of existing forecasting approaches and to analyse the methodology-related issues. Methods: A literature review was carried out in electronic databases Medline-Ovid, Embase and ERIC. Concrete examples of planning experiences in various countries were analysed. Results: Four main forecasting approaches were identified. The supply projection approach defines the necessary inflow to maintain or to reach in the future an arbitrary predefined level of service offer. The demand-based approach estimates the quantity of health care services used by the population in the future to project physician requirements. The needs-based approach involves defining and predicting

Appendix 3: References Reviewed

health care deficits so that they can be addressed by an adequate workforce. Benchmarking health systems with similar populations and health profiles is the last approach. These different methods can be combined to perform a gap analysis. The methodological challenges of such projections are numerous: most often static models are used and their uncertainty is not assessed; valid and comprehensive data to feed into the models are often lacking; and a rapidly evolving environment affects the likelihood of projection scenarios. As a result, the internal and external validity of the projections included in our review appeared limited. Conclusion: There is no single accepted approach to forecasting physician requirements. The value of projections lies in their utility in identifying the current and emerging trends to which policy-makers need to respond. A genuine gap analysis, an effective monitoring of key parameters and comprehensive workforce planning are key elements to improving the usefulness of physician supply projections.

Roos, N., Burchill, C., & Carriere, K. (2003). Who are the high hospital users? A Canadian case study. *Journal of Health Services Research and Policy*, 8(1):5–10.

Objectives: Researchers have taken two different approaches to understanding high use of hospital services, one focusing on the large proportion of services used by a small minority and a second focusing on the poor health status and high hospital use of the poor. This work attempts to bridge these two widely researched approaches to understanding health care use. Methods: Administrative data from Winnipeg, Manitoba covering all hospitalizations in 1995 were combined with public use Census measures of socio-economic status (neighbourhood household income). High users were defined as the 1% of the population who spent the most days in hospital in 1995 (n = 6487 hospital users out of population of 648715 including non-users). Results: One per cent of the Winnipeg population consumed 69% of the hospital days in 1995. Thirty-one per cent of the highest users were among the 20% of residents of neighbourhoods with the lowest household incomes, and 10% of the highest users were among the 20% from neighbourhoods with the highest household incomes. However, on most other dimensions, including gender, age, average days in hospital, average admissions, percentage who died in hospital and diagnostic reasons for being hospitalized, the similarities between high users, regardless of their socio-economic group, were striking. Conclusions: The lower the socio-economic status, the more likely an individual is to make high demands on hospitals. However, patterns of use as well as the diseases and accidents that produce high use among residents of low income neighbourhoods are not much different from those that produce high use among residents of high income neighbourhoods.

Roos, N., Black, C., Wade, J., & Decker, K. (1996). How many general surgeons do you need in rural areas? Three approaches to physician resource planning in southern Manitoba. *Canadian Medical Association Journal*, 155(4):395–401.

Objective: To assess critically the results of using three different approaches to planning for the number of general surgeons in rural areas. Design: Estimates of the number of general surgeons needed using a ratio approach, and a population needs-based approach. Setting: Rural southern Manitoba. Outcome measure: Number of general surgeons needed. Results: The ratio approach supported the recruitment of 7.8 to 14.5 additional general surgeons to rural southern Manitoba. The repatriation approach suggested that the area might support five additional general surgeons, if residents could be persuaded to undergo their surgery closer to home. The population needs-based approach suggested that the health status of area residents was similar to that of residents of other areas of the province and that they had a higher rate of surgery

Appendix 3: References Reviewed

than residents of other areas; no additional surgeons were apparently needed. Conclusions: Each method has certain advantages, and none is necessarily useful in isolation. Hence, the most effective approach to planning for general surgeons is likely a combination of all three methods. Other factors that may be important include the type of payment structure and the need for professional groups to monitor variations in rates of surgery.

Roos, N. P. (2000). The disconnect between the data and the headlines. *Canadian Medical Association Journal*, 163(4):411–412.

One of the most interesting health policy questions of this decade is "Why is there such a disconnect between what we know from the headlines and what we know from the data?" In this issue Samuel Sheps and colleagues use data to describe the consequences of bed closures and hospital downsizing. British Columbia closed 30% of its acute care beds over the 5-year period 1991-1996. 'Doom and gloom' headlines in the Vancouver papers claimed that these cuts caused crises and disasters for British Columbians and their medical care system ("Expect more deaths as hospitals reorganized, nurses' union says"; " 'Prescription for disaster' union and hospital staff decry ministry's closure of Shaughnessy"; "It's tougher to get into hospital"). One would expect, however, that if more people had bad experiences after bed closures than before, these results should be showing up in the "data." If the nurses' union is right, we should find a higher death rate after bed closures, particularly among vulnerable groups such as elderly people. If indeed it is "tougher to get into hospital," we should find fewer people getting in. Is this what the data tell us? Sheps and colleagues have, in effect, added up all the anecdotes and all the bad and good experiences before and after bed closures, and what do they find?

Roos, N. P., Bradley, J. E., Fransoo, R., & Shanahan, M. (1998). How many physicians does Canada need to care for our aging population? *Canadian Medical Association Journal*, 158(10):1275–1284.

Background: There is concern that the aging of Canada's population will strain our health care system. The authors address this concern by examining changes in the physician supply between 1986 and 1994 and by assessing the availability of physicians in 1994 relative to population growth and aging, and relative to supply levels in the benchmark province of Alberta. Methods: Physician numbers were obtained from the Canadian Institute for Health Information. The amount of services provided by each specialty to each patient age group was analysed using Manitoba physician claims data. Population growth statistics were obtained from Statistics Canada. Age- and specialty-specific utilization data and age-specific population growth patterns were used to estimate the number and type of physicians that would have been required in each province to keep up with population growth between 1986 and 1994, in comparison with actual changes in the physician numbers. Physician supply in Alberta was used as a benchmark against which other provinces were measured. Results: Overall, Canada's physician supply between 1986 and 1994 kept pace with population growth and aging. Some specialties grew much faster than population changes warranted, whereas others grew more slowly. By province, the supply of general practitioners (GPs) grew much faster than the population served in New Brunswick (16.6%), Alberta (6.5%) and Quebec (5.3%); the GP supply lagged behind in Prince Edward Island (-5.4%). Specialist supply outpaced population growth substantially in Nova Scotia (10.4%), Newfoundland (8.5%), New Brunswick (7.3%) and Saskatchewan (6.8%); it lagged behind in British Columbia (-9.2%). Using Alberta as the benchmark resulted in a different assessment: Newfoundland (15.5%) and BC (11.7%) had large surpluses of GPs by 1994, whereas PEI (-21.1%), New Brunswick (-14.8%) and Manitoba (-11.1%) had substantial deficits;

Appendix 3: References Reviewed

Quebec (37.3%), Ontario (24.0%), Nova Scotia (11.6%), Manitoba (8.2%) and BC (7.6%) had large surpluses of specialists by 1994, whereas PEI (-28.6%), New Brunswick (-25.9%) and Newfoundland (-23.8%) had large deficits. Interpretation: The aging of Canada's population poses no threat of shortage to the Canadian physician supply in general, nor to most specialist groups. The marked deviations in provincial physician supply from that of the benchmark province challenge us to understand the costs and benefits of variations in physician resources across Canada and to achieve a more equitable needs-based availability of physicians within provinces and across the country.

Roos, N. P., Forget, E., Walld, R., & MacWilliam, L. (2004). Does universal comprehensive insurance encourage unnecessary use? Evidence from Manitoba says "no". *Canadian Medical Association Journal*, 170(2):209–214.

Background: Many argue that 'free' medical care leads to unnecessary use of health resources. Evidence suggests that user fees do discourage physician use, at least by those of low socioeconomic status. In this study, we compare health care utilization and health among socioeconomic groups to determine whether people of low socioeconomic status see physicians more than would be expected given their health status. Methods: We examined the use of health care services (physicians and hospitals) by residents of Winnipeg, Manitoba, in 1999. The cost of physician services was drawn directly from the claims filed, and the cost of hospital services was estimated using the Case Mix Group and Day Procedure Group methods linked to resource intensity weights and Manitoba hospital costs. We used neighbourhood indicators of socioeconomic status from the 1996 census and measured health status by examining rates of premature mortality, acute myocardial infarction, hip fracture (1995-1999) and diabetes (1999). Using these measures, we compared health status and health care use of residents living in areas with low average household incomes with those living in areas with high average household incomes. All rates were age- and sex-adjusted across the groups. Results: The province spent 44% more providing hospital and physician services to residents of Winnipeg neighbourhoods with the lowest household incomes (\$820/person annually v. \$596/person for residents of the neighbourhoods with highest household incomes). However, expenditures were strongly related to health status. The 70% of the population on which the province spends 10% of its health care dollars scored well on all health indicators, and the 10% of the population on which 74% of the dollars are spent scored poorly. In each expenditure group, those with lower socioeconomic status had poorer health. In the highest expenditure group, those with lowest socioeconomic status had 82% higher premature mortality rates (23.0 v. 12.6 per 100 000 population) and 53% higher hip fracture rates (5.5 v. 3.6 per 100 000 population) than those with the highest socioeconomic status. Despite their poorer health, in each expenditure group, residents of the neighbourhoods with the lowest household incomes incurred physician expenditures that were similar to those of residents of wealthier neighbourhoods. Interpretation: Most people use little health care; high-cost users are a small group of very sick people drawn from all neighbourhoods and all income groups. People living in areas with low average household incomes use fewer physician services than might be expected, despite their poor health status.

Roos, N. P., Fransoo, R., Bogdanovic, B., Friesen, D., Frohlich, N., Cerriere, K. C., Patton, D., & Wall, R. (1996). *Needs-based planning for Manitoba's generalist physicians*. Manitoba Centre for Health Policy Evaluation, University of Manitoba, June. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/SurDocs.pdf.

Appendix 3: References Reviewed

The past rate of growth in the supply of physicians has substantially exceeded the rate of growth in the population. Moreover, this growth in the number of physicians has largely taken place in urban areas and has not solved the problem of maldistribution. Several provinces have taken steps to limit the number of physicians and to cap physician expenditures. At the same time they have sought means of deciding how many physicians are needed and where they are needed. The June 1996 Conference of Deputy Ministers will again focus on managing physician supply. Their efforts are supported by the medical profession: the National Ad Hoc Working Group on Physician Resource Planning was formed by representatives of provincial/territorial medical associations and the Canadian Medical Association. In August 1995 the group issued a report which included a recommended set of planning tools. They recognized that while in the short run it might be necessary to continue to rely on physician to population ratios, it was desirable to move to a needs based planning approach. Needs-based planning for physician services involves taking account of the characteristics of the population in each area (e.g. age, gender, socio-economic status and health status), their physician contact rates, and the characteristics of local practising physicians (e.g. workload, closeness to retirement). This report describes a needs-based planning approach for Manitoba.

Roos, N. P., Fransoo, R., Bogdanovic, B., Friesen, D., & MacWilliam, L. (1997). *Issues in the management of specialist physician resources for Manitoba*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, June. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

This is the second of two reports on physician resource requirements for Manitoba. The first report, released in June 1996, focused on generalist physicians. This second report focuses on specialist physicians and surgeons. Major parts of the analyses for both reports were carried out in support of the Physician Resource Committee (PRC) which was established when the province and the Manitoba Medical Association signed a 5-year agreement to co-manage the insured medical services program. As with all MCHPW reports, responsibility for the conclusions drawn and recommendations made remain with MCHPE authors, not with Manitoba Health nor with the Committee which requested many of these analyses. Unless otherwise notes, all analyses are based on Manitoba data for fiscal year 1994/95. Whenever possible, procedure rates were directly standardized to account for differences in age and sex characteristics of regional populations.

Roos, N. P., Fransoo, R., Bogdanovic, B., Friesen, D., & MacWilliam, L. (1999). Issues in planning for specialist physicians. *Medical Care*, 37(6 (sup)):JS229–253.

Objectives: The Manitoba Centre for Health Policy and Evaluation worked in support of a provincial Physician Resource Committee to address questions pertinent to assessing Manitoba's supply of specialist physicians. Research Design: Because there was no direct method of determining whether the province's supply of specialists was adequate, three types of evidence were reviewed: the supply of specialists relative to recommended population/physician ratios; the supply of specialists relative to other Canadian provinces; and the level of care delivered by specialists in Manitoba relative to other provinces. Four additional questions were addressed: is a problem developing from the aging of Manitoba's specialist physicians? and will the supply of specialists be sufficient to keep up with the aging of the population? How well do specialists serve as a provincial resource? And how well do specialists serve high-need populations?

Appendix 3: References Reviewed

Roos, N. P., Gaumont, M., & Horne, J. M. (1976). The impact of the physician surplus on the distribution of physicians across Canada. *Canadian Public Policy*, 2(2):169–191.

The discussion of physician supply in Canada has now come full circle. In the 1960's and early 1970's, a Royal Commission and provincial and federal agencies were preoccupied with the great demand for manpower which the Medical Care Act of 1966 was expected to produce. Now Federal Health Minister Marc Lalonde worries about the 'rapidly increasing number of physicians.' Regulations of the Manpower and Immigration Act have been changed to selectively restrict physician immigration to Canada, and British Columbia has halted the interprovincial flow of foreign medical graduates to BC except to specially designated 'underdoctored areas'.

Roos, N. P., & Mustard, C. A. (1997). Variation in health and health care use by socioeconomic status in Winnipeg, Canada: The system works well? Yes and no. *The Milbank Quarterly*, 75(1):738–745.

Health varies with socioeconomic status; those with higher incomes or who are better educated can expect to have better health. The success of the Canadian universal health care system in delivering care according to need was assessed. Consistent gradients in all-cause and cause-specific mortality according to neighborhood income characteristics are evident among Winnipeg residents. Poorer, less healthy groups receive more acute hospital care and have more contacts with general practitioners. Surgical rates and contacts with specialist physicians however, show less variation by socioeconomic status. One reason may be that members of higher socioeconomic groups have the skills required to negotiate for surgery when they develop conditions, like joint pain, that are less critical. The move toward organized priority lists in Canada may remedy this situation. As access to health care is more equalized, improvement in the health of lower and middle socioeconomic groups will occur through changes in social policy like improvement of educational opportunities.

Roos, N. P., & Shapiro, E. (1995). Using the information system to assess change: The impact of downsizing the acute sector. *Medical Care*, 33(12 (sup)):DS109–126.

A population-based approach was used to monitor impact of hospital bed closures in Winnipeg, Manitoba. Four years of administrative data were analyzed. Access to hospital services was not adversely affected: The reduction in beds resulted in increases in outpatient surgery and earlier discharges. In addition, access favored the admission of persons with more health care needs. Quality of care, as measured by mortality within 3 months of admission, readmission rates within 30 days of discharge, and increased contact with physicians within 30 days of discharge, did not change. The health status of the Winnipeg population, measured by premature mortality, did not change. However, health status and hospital use was found to be strongly related to socioeconomic status. In light of this gradient, the authors conclude that well designed and evaluated experiments that focus on the determinants of health, rather than on providing more health care services, could help identify ways of reducing hospital use.

Roos, N. P., Shapiro, E., Bond, R., Black, C., Finlayson, G., Newburn-Cook, C., MacWilliam, L., Steinbach, C., Yogendran, M., & Walld, R. (2001). *Changes in health and health care use of Manitobans: 1985-1998*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, May. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

This project was designed to examine the health of the Manitoba population, the supply of health care resources, access to care and use of the system over the period 1985-present (which at the time we started

Appendix 3: References Reviewed

included data through March 1999). The purpose was to identify changes in the delivery of care, and the impact of the aging of the population, and in particular to assess how these changes have played out differently across the province. While the Manitoba Centre for Health Policy and Evaluation has examined short term trends in the health of the population and in the delivery of care in previous reports, we have never undertaken a review covering such an extensive period. This project brought together indicators as part of several previous and ongoing projects at MCHPE. The project was designed to answer the following questions: a) How has the health of the Manitoba population, and the health of residents of different areas of Manitoba, changed over time? - How has the delivery of health care changed as the Manitoba population has changed, most notably as the population has aged? b) How has the health care system performed over the period of health care reform, c) a period of hospital bed closures and of strident headlines expressing growing concerns about access to care and physicians' ability to cope with these changes? We focus on key indicators of the health of the population (premature mortality and life expectancy), and on key characteristics of each sector (hospital, physician, nursing homes, and pharmaceuticals). Changes in access, changes in rate of contact, changes in expenditure patterns (where data are available) and changes in supply (of beds, physicians) are tracked over this 14-year period.

Roos, N. P., Shapiro, E., & Tate, R. (1989). Does a small minority of elderly account for a majority of health care expenditures? A sixteen-year perspective. *The Milbank Quarterly*, 67(3-4):347–369. Canadian and American analysts commonly find that a small proportion of the elderly is responsible for a large share of health care expenditures. Data on a representative cohort in Manitoba indicate that the longer the time frame studied, the less health care usage concentrates in a single small group of elderly people. Over the sixteen-year period treated, the average older person's risks of using hospital and nursing home services is nevertheless notably higher than reported to date; yet, one-half of the elderly make relatively minimal demands on the health care system. The results reinforce calls for targeting the needs of intensive consumers of health care services and highlight the variability of cumulative usage patterns among older Manitobans.

Roos, N. P., Stranc, L., Peterson, S., Mitchell, L., Bogdanovic, B., & Shapiro, E. (2001). *A look at home care in Manitoba*. Winnipeg: Manitoba Centre for Health Policy and Evaluation, August. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/homecaresumm.pdf. Between 1990 and 1997, public expenditures across Canada on home care more than doubled. Manitoba was no exception to this trend: over this period the province experienced a 34% growth in the number of home care clients and a 119% increase (in constant dollars) in expenditures. Factors that may have contributed to this growth include a 24% decrease in hospital beds, a 7% reduction in the ratio of Personal Care Home (PCH) beds to the population aged 75 or more, a 13% decrease in the number of persons waiting for PCH placement, a 20% increase in the number of persons aged 75 or more (the predominant users of home and PCH care), and an increase in the longevity of elderly persons. Manitoba does not have a computerized data system for home care similar to the one that provides individual-based information on the use of hospitals, physicians or Personal Care Homes. Therefore, Manitoba Health asked the Manitoba Centre for Health Policy and Evaluation (MCHPE) to examine the utility of using the Manitoba Support Services Payroll (MSSP) data to assess trends in access to, and use of, home care across the province. This study, therefore, in addition to evaluating the strengths and weaknesses of the current

Appendix 3: References Reviewed

home care information system, used the available data to review the use of home care in 1998/99 and trends in its use from 1995/96 to 1998/99. This project was also undertaken as a first step towards adding home care information to the Manitoba Centre for Health Policy and Evaluation's Population Health Information System - POPULIS.

Ross, N. A., Wolfson, M. C., Berthelot, J., & Dunn, J. R. (2000). *Why is mortality higher in unequal societies: Interpreting income inequality and mortality in Canada and the United States*. British Columbia: Centre for Health Services & Policy Research, HPRU 2000:4D, March. Downloaded from <http://www.chspr.ubc.ca/node/320>.

There is a growing body of empirical evidence to suggest that the way a society distributes its wealth affects the health of its people - independent of how wealthy a society is in absolute terms. In this paper, we review the current thinking about how income dispersion and mortality might be related and suggest that income inequality has number of social correlates that allow for the existence of unhealthy (i.e. unsafe, conflictual, lacking social cohesion) smaller-scale environments in the home, at work and in local communities. Those on the bottom of the social hierarchy are affected disproportionately by their day-to-day interactions with unhealthy environments - made worse for psychosocial health when one is acutely aware that others manage to escape or avoid them altogether. We explore some of these ideas using comparative census and mortality data for the U.S. and Canada and Canadian survey data. Results show a strong association, independent of absolute income, between inequality and state/provincial mortality. The effect is most pronounced for younger age groups and for working-age populations but diminishes for the elderly. Within Canada, inequality is also associated with aggregate indicators of psychosocial health and social cohesion. A key methodological issue raised by the work is the appropriate level of geographical aggregation to use given that politics become more homogeneous at smaller scales.

Ryten, E. (1997). *A statistical picture of the past, present and future of registered nurses in Canada*. Ottawa: Canadian Nurses Association, September.

Since 1991, the withdrawal of public funding from the health care system has resulted in the disruption of long-term trends in nursing employment. Rates of growth in employment have declined and have been negative for the most recent years. Full-time employment has decreased more than the reduction in overall nursing employment, as full-time jobs have been converted to part-time and on-call positions. Part-time employment grew throughout the period of health care cutbacks. The hospital sector experienced the largest cutbacks in funding and facilities, and the employment of nurses in hospitals was disrupted to a greater extent than employment at other sites.

Sandier, S. (1989). Health services utilization and physician income trends: International comparison of health care financing and delivery: Data and perspectives. *Health Care Financing Review*, 10(sup.):33-49.

Statistics from several Organization for Economic Cooperation and Development countries on consumption and cost of health care services, physician workload, and physician earnings are presented. Data are analyzed according to type of physician payment used: fee for service, per case, capitation, or salary. Incentives theoretically embodied in each payment method are often offset by other factors--scale of charges, patient out-of-pocket payment, and patient access or physician activity restrictions. Moreover, the impact of payment method on use appears to be weaker than the impact of such factors as population

Appendix 3: References Reviewed

morbidity, national health insurance, professional ethics, and medical technology.

Sanmartin, C., Houle, C., Tremblay, S., & Berthelot, J.-M. (2002). Changes in unmet health care needs. *Health Reports (Statistics Canada)*, 13(3):15–21.

Objectives: This article examines recent trends in self-reported unmet health care needs among the household population aged 12 or older, and explores various explanations for the increase observed. **Data Sources:** The data are from the first half (September 2000 through February 2001) of data collection for cycle 1.1 of the Canadian Community Health Survey and from cross-sectional (1994/95 through 1998/99) household components of the National Population Health Survey. **Analytical Techniques:** Weighted frequencies and cross-tabulations were used to estimate the proportion of people aged 12 or older who reported that they did not receive health care when they thought they needed it. Estimates were also produced for the type of care sought, and specific reasons for unmet health care needs. **Main Results:** The percentage of people reporting unmet health care needs rose gradually between 1994/95 and 1998/99, then doubled (from 6% to over 12%) between 1998/99 and 2000/01. Long waiting time was the reason most frequently reported for unmet needs.

Schultz, S. E., Tepper, J., Guttman, A., & Jaakkimainen, L. (2006). Characteristics of primary care practice. In L. Jaakkimainen, R. E. G. Upshur, J. E. Klein-Geltink, A. Leong, S. Maaten, S. E. Schultz, & L. Wang (Eds.), *Primary care in Canada* 1st ed. Toronto, Ontario: Institute for Clinical Evaluative Sciences. pp. 175–206.

Previous studies have examined primary care in terms of the supply and utilization of general practitioners and family physicians (GP/FPs), physician turnover and training. To date, there have been few studies examining either the supply of specialists providing primary care, or the practice settings in which Ontario GP/FPs work.

Scott, A. (2006). The productivity of the health workforce. *The Australian Economic Review*, 39(3):312–317.

Policies that increase the health status of the population can have significant effects on wellbeing and economic growth. The new National Reform Agenda agreed by the Council of Australian Governments in early 2006 has recognised that health is a major factor influencing labour force participation, well-being and quality of life. This has led to a renewed focus on how best to improve the health of Australians, including examining the efficiency of the health care system. The labour-intensive nature of the health care system is one reason why, as part of the broader reform agenda, there is now a specific focus on health workforce reform. This has been informed by a report from the Productivity Commission, Australia's Health Workforce, which suggested a number of new policies aimed at increasing the productivity of the health workforce.

Seshamani, M., & Gray, A. (2004). Ageing and health-care expenditure: The red herring argument revisited. *Health Economics*, 13(4):303–314.

Zweifel and colleagues have previously proposed that proximity to death is a more important influence on health-care costs than age, suggesting that demographic change per se will not have a large impact on future aggregate health expenditure. However, issues of econometric methodology have led to challenges of the robustness of these findings. This paper revisits the analysis. Using a longitudinal hospital data set

Appendix 3: References Reviewed

from Oxfordshire, England, the two-step Heckman model from the Zweifel study is first replicated, to find that neither age nor proximity to death have a significant effect on hospital costs. Econometric problems with the model are demonstrated, and instead a two-part model shows both age and proximity to death to have significant effects on quarterly hospital costs. Cost predictions, calculated with bootstrapped 95% confidence intervals, further demonstrate that while age may significantly affect quarterly costs, these cost changes are small compared to the tripling of quarterly costs that occurs with approaching death in the last year of life. The analyses show the importance of model selection to properly assess the determinants of health-care expenditures.

Shamian, J., & Lightstone, E. Y. (1997). Hospital restructuring initiatives in Canada. *Medical Care*, 35(10 Supplement):562–569.

Objectives: Recent changes in the organization, staffing, and utilization of acute hospitals in Canada are reviewed with regard to the potential implications for quality of care, national nurse workforce requirements, and research. Methods: Available national and selected provincial data and trends in hospital utilization, capacity, and staffing are synthesized. Results: Health system reform in Canada has resulted in lower utilization of acute inpatient resources, excess hospital capacity, and increased budgetary constraints in the hospital sector. In response, there is widespread hospital restructuring, which includes modifications in nurse staffing ratios and skill mix. Little is known about the potential impact of these changes on patient outcomes. From a workforce perspective, changes in the hospital sector have reduced demand for registered nurses but nursing schools have not modified enrollments. As a result, new graduates are experiencing difficulty obtaining registered nurse positions. Conclusions: Research should be undertaken to evaluate the impact of changes in the organization and staffing of hospitals on patient outcomes, and on the future requirements for nurses.

Shanahan, M., & Gousseau, C. (1997). *Interprovincial comparisons of health care expenditures*. Manitoba Centre for Health Policy and Evaluation, University of Manitoba, June. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/HcExpend.pdf.

This project was undertaken as a result of a query by Manitoba Health as to how health expenditures in Manitoba compare to those of other provinces. The question also extended to include consideration of whether or not there are differences in provincial population characteristics that might be associated with any variations in provincial government expenditures on health care. The project attempted to answer those questions in a manner that would inform the health policy process, by comparing indicators of need for health care and expenditure across provincial populations. However, given the limited scope of this report, the study is of a descriptive nature and no attempt was made to evaluate the appropriateness of health expenditures, to determine whether greater or lesser expenditure is better, or to propose alternate distribution of health dollars.

Sharif, N. R., Dar, A. A., & Amaratunga, C. (2000). *Ethnicity, income, and access to health care in the Atlantic region: A synthesis of the literature*. Maritime Centre of Excellence for Women's Health, The Atlantic Regional Office of the Health Promotion and Programs branch. Downloaded from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1955372/>.

Canada is both a source and a destination country for international nurse migration with an estimated net loss of nurses. The United States is the major beneficiary of Canadian nurse emigration resulting from the

Appendix 3: References Reviewed

reduction of full-time jobs for nurses in Canada due to health system reforms. Canada faces a significant projected shortage of nurses that is too large to be ameliorated by ethical international nurse recruitment and immigration.

Shelly, P. (2003). *The impact of poverty on health: A scan of research literature*. Canadian Institute for Health Information, Ottawa, ON, June. Downloaded from <http://secure.cihi.ca/cihiweb/disPage.jsp?cwpage=GR323E>.

This paper assesses the current state of research knowledge on linkages between poverty and health as of February 2002. While it refers extensively to the existing research literature, its goal is not to provide an exhaustive survey, but rather to summarize, and to provide a starting point from which to learn and think about future directions.

Sheps, S. B., Reid, R. J., Barer, M. L., Krueger, H., McGrail, K. M., Green, B., Evans, R. G., & Hertzman, C. (2000). Hospital downsizing and trends in health care use among elderly people in British Columbia. *Canadian Medical Association Journal*, 163(4):397–401.

Background: There has been considerable downsizing of acute care services in British Columbia over the past 2 decades. In this population-based study we examined changes in the proportion of elderly people who used acute care, long-term care and home care services between 1986-1988 and 1993-1995 to explore whether the downsizing has influenced use. Changes in death rates were also examined. Methods: The British Columbia Linked Health Database was used to select all British Columbia residents aged 65 years, 75-76 years, 85-87 years or 90-93 years as of Jan. 1, 1986 (cohort 1), and Jan. 1, 1993 (cohort 2). Each person was assigned to 1 of 6 mutually exclusive categories of health care use reflecting different intensities of use (i.e., hospital, long-term or home care). The proportions of people within each category were compared between the 2 periods, as were the age-standardized death rates. Results: There were 79 175 people in cohort 1 and 92 320 in cohort 2. Overall, the relative proportion of people in each use category was similar between the 2 study periods. The most substantial changes were an increase of 2 percentage points in the proportion of people who received no facility or home care services and a decrease of 2 to 3 percentage points in the proportion who received some acute care but no facility-based continuing care. The age-adjusted all-cause death rates for the earlier and later cohorts were virtually identical (15.7% and 15.8% respectively), although the rate increased from 63.6% to 70.1% among those in the 'full-time facility with acute care' group. Interpretation: Overall changes in health care use were small, which suggests that the repercussions of the decline in acute care services for elderly people have been minimal. The higher age-adjusted death rates in the later cohort in fulltime care suggests that long-term stays are becoming reserved for a sicker group of elderly people than in the past.

Stabile, M. (2002). *Impacts of private insurance on utilization*. IRPP Conference "Toward a National Strategy on Drug Insurance", Toronto, ON, September 23. Downloaded from www.irpp.org/events/archive/sep02/stabile.pdf.

Canada's provincial health insurance programs each provide coverage for all medically necessary hospital and physician services. Each of the ten provinces administers its own public health care system (subject to federal regulations) and coverage is portable from province to province. However, despite universal public coverage, there is significant demand for supplementary health insurance in Canada. Such health insurance generally covers prescription drugs, semi-private or private hospital accommodation, dental

Appendix 3: References Reviewed

services, special nursing, ambulance services, and other services not fully covered under provincial plans. Since many visits to health practitioners involve prescription medication, overnight stays, or other equipment not covered by Medicare, it is often the case that individuals will incur some private expense when using health services. A large part of the cost outside the Canadian Medicare program comes in the form of prescription drugs used outside the hospital. Prescription drugs consumed by inpatients are covered under the public health insurance program in every province. In 2001 15.2 percent of health expenditures, or \$15.5 billion was spent on drugs (both prescription and non-prescription). The amount is second only to that spent on hospitals in that same year-greater than the amount spent on physicians.

Stewart, D. K., Finlayson, G., MacWilliam, L., & Roos, N. P. (2002). *Projecting hospital bed needs for 2020*. Manitoba Centre for Health Policy, University of Manitoba. Downloaded from <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

There is much concern about the impact an aging population will have on Canada's medical system. A recent C.D. Howe Institute report captured this concern with the title 'Will the Baby Boomers Bust the Health Budget.' At the federal level the Auditor General has raised the need for governments to plan for the needs of the changing population. One aspect of Manitoba's preparation to meet the health care needs of the changing population is the estimation of acute care bed day needs for in the future. This report attempts to project the number of acute care bed days that will be required in Manitoba by the year 2020. Projecting how many beds will be needed requires estimates of Manitoba's future demographic composition and hospital care needs of Manitobans. The demographic component comprises three parts: 1) What will Manitoba's population be in 2020? 2) Where in Manitoba will that population reside? 3) What will the age and sex composition of the population be? The Manitoba Bureau of Statistics (MBS) was contracted by Manitoba Health to develop population projections. The task of the Manitoba Centre for Health Policy (MCHP) was to assess how this population might use hospitals. There is no simple answer to this question. After considering the two components, our analysis suggests that there appears to be sufficient physical capacity in the existing system to handle the needs of 2020, provided the trend to outpatient surgery and shorter lengths of hospital stay continue. If these trends do not continue (and in recent years there has been some flattening of these trends), the acute hospital system would still have sufficient capacity, if efforts are made to ensure that those who occupy acute care beds actually need acute care beds. Previous studies have shown that substantial numbers of beds in Manitoba's acute hospitals are occupied by individuals who don't require this level of care, although most of them do require some alternative form of care.

Tataryn, D. J., Roos, N. P., & Black, C. D. (1995). Utilization of physician resources for ambulatory care. *Medical Care*, 33(12):DS84–DS99.

This article describes the utilization of ambulatory physician services by Manitoba residents during the fiscal year 1991/1992. Care was assigned to the patient's residence in one of eight administrative regions, whether the care was received in or out of the region of residence. Disparities in physician supply across regions did not correspond with differences in the use of services: the Winnipeg region had twice as many physicians per 1000 residents as the largely rural non-Winnipeg regions and was home to most specialists. With their rich supply of physicians, particularly specialists, Winnipeg residents had somewhat higher contact rates (16%), and the province spent 26% more per resident providing physician services, despite the fact that our indicators of health status and socioeconomic risk suggest no increased

Appendix 3: References Reviewed

need for physician services among Winnipeg residents. Despite the concentration of physicians in Winnipeg, there was remarkably good access to physicians across the province, with 78% or more of the residents in every region making at least one contact with a physician during the year. The differences in use between Winnipeg and non-Winnipeg residents were almost entirely accounted for by intensive users, (individuals making eight or more visits per year). Although residents 75 years of age and older (6% of the population) made twice as many visits per capita compared to younger adults, their actual demand on the system was small, accounting for just less than 10% of expenditures on physician services. Population-based health information provides important insight for needs-based planning of physician services.

Tepper, J., & Canadian Institute for Health Information. (2004). *The evolving role of Canada's Family Physicians: 1992 - 2001*. Canadian Institute for Health Information, Ottawa, ON. Downloaded from <http://www.cihi.ca/cihiweb/dispPage.jsp?cwpage=AR1171E&cwtopic=1171>.

This report looks at how family doctors' billing practices have changed over the 10-year period from 1992 to 2001. Changes in how family doctors provide a variety of health care services are examined, including office and hospital inpatient visits, mental health care and surgical and obstetrical care. The report also describes shifts in the family practice environment, such as medical training trends, regulatory and policy developments and societal changes. The report is authored by Dr. Joshua Tepper.

Tepper, J. D., Schultz, S. E., Rothwell, D. M., & Chan, B. T. B. (2006). *Physician services in rural and Northern Ontario*. ICES Investigative Report, Toronto, ON: Institute for Clinical Evaluative Sciences, January. Downloaded from <http://www.ices.on.ca/file/PhysicianServicesinRuralandNorthernOntario.pdf>. Ontario's extensive rural and northern regions face significant and unique challenges in the recruitment and retention of physicians. The goal of this report is to provide an understanding of these communities, and the general practitioners/family physicians and specialists who work there. The report explores the characteristics of the different rural and northern communities; government initiatives and policies to address rural and northern physician issues; location of training, demographic profile and overall numbers of these physicians in relation to the population they serve; and, frequency of physician turnover. The report also offers several new approaches to the study of Health Human Resources (HHR) and rural issues, which can help to guide HHR policy development and resource allocation.

To, T., Guttman, A., & Dick, P. (2001). *Inpatient and day surgery use by children in Ontario*. Toronto: Institute for Clinical Evaluative Sciences (ICES), Atlas Reports, Uses of Health Services Report 4. Downloaded from <http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=67>.

In recent years, there has been increased focus on providing care in the community. While this change is not limited to the pediatric population, there are some important considerations when analyzing trends in health care utilization among children. This research atlas highlights trends in inpatient health care service utilization from 1992 to 1998. The findings show no dramatic change in the types of childhood diseases requiring hospitalization, and an overall trend of fewer pediatric inpatient admissions, with no significant regional variation. Two exceptions were noted: infants with jaundice and dehydration, and teenagers with psychiatric disorders.

To, T., & Ungar, W. (2001). *Outpatient health services use by children in Ontario*. Institute for Clinical

Appendix 3: References Reviewed

Evaluative Sciences (ICES), Toronto, ON, February. Downloaded from <http://www.ices.on.ca/webpage.cfm?siteid=1&orgid=31&morgid=0&gsecid=0&itemid=1301>.

With increasing emphasis on cost containment and a focus on meeting the needs of an aging population, the health care system must ensure that services meet the needs of all segments of the population. This research atlas describes trends in health service use by children under 20 years of age. Despite an overall increase in the number of children in the province from 1991 to 1998, this report found that pediatric OHIP billing volumes declined in the same period by 10.6%. As well, the per capita expenditures dropped from \$241 to \$212, an 11.9% decrease, which accounted for a 5.7% reduction in expenditures since 1991. Close to 70% of the 1997/98 OHIP expenditures on children's outpatient services were for physicians consultations or visits, including office, emergency room and home visits.

Tomblin Murphy, G., Kephart, G., Lethbridge, L., O'Brien-Pallas, L., & Birch, S. (2009). Planning for what? Challenging the assumptions of health human resources planning. *Health Policy*, 92(2-3):225–233. Objectives: Health human resource planning has traditionally been based on simple models of demographic changes applied to observed levels of service utilization or provider supply. No consideration has been given to the implications of changing levels of need within populations over time. Recently, needs based resource planning models have been suggested that incorporate changes in needs for care explicitly as a determinant of health care needs. Methods: In this paper, population indicators of morbidity, mortality and self-assessed health are analyzed to determine if health care needs have changed across birth cohorts in Canada from 1994 to 2005 among older age groups. Multivariate regression analysis was used to estimate the age pattern of health by birth year with interaction terms included to examine whether the association of age with health was conditional on the birth year. Results: Results indicate that while the probability of mortality, mobility problems and pain rises with age, the rate of change is greater for those born earlier. The probability of self-assessed poor health increases with age but the rate of change with age is constant across birth years. Conclusions: Even in the short time period covered, our analysis shows that health care needs by age are changing over time in Canada.

Tomblin Murphy, G., O'Brien Pallas, L., Alksnis, C., Birch, S., Kephart, G., Pennock, M., Pringle, D., Rootman, I., & Wang, S. (2003). *Health human resources planning: An examination of relationships among nursing service utilization, an estimate of population health and overall health status outcomes in the province of Ontario*. Ottawa, ON: Canadian Health Services Research Foundation, November. Downloaded from <http://www.chsrf.ca/finalresearch/ogc/pdf/toblinfinal.pdf>.

The goal of this study was to develop and test a way to establish, monitor, and predict need for nursing services by using the health needs of the population. This study explored the relationship between the health needs of Ontarians, their use of community and hospital nursing services, and variations in outcomes. The findings suggest that decisions about the deployment of nursing resources are associated with differences in outcomes. Greater intensity of nursing resources is associated with shorter lengths of stay (other things being equal). There was no evidence that greater intensity of nursing resources resulted in poorer patient outcomes as measured by higher rates of readmission, lower levels of patient satisfaction, or lower levels of self reported health. This information is important to both healthcare managers and health human resource planners in considering the planning and use of health human resources. These findings emphasize that although nursing staff is often the easiest thing to cut back on during hard fiscal times, and not always the easiest thing to justify expanding when times get better,

Appendix 3: References Reviewed

increases and decreases in their caregiving has tangible effects for both patients and systems. Therefore, greater attention needs to be paid to the mix of inputs: there is no use having more beds, theatres, MRIs, or physicians if we do not have the appropriate number of nurses with which these can be combined to generate optimal service outputs and health outcomes.

Tomblin Murphy, G., & O'Brien-Pallas, L. (2004). *The Development of a National Minimum Data Set For Health Human Resources in Canada: Beginning the Dialogue*. Working Document, Canadian Institute For Health Information, Toronto, ON, August. Downloaded from

<http://secure.cihi.ca/cihiweb/en/downloads/NationalMinimumDataSetforHHR-BeginningtheDialogue.pdf>.

Health human resources (HHR) is recognized to be of fundamental importance in Canada. HHR management is an important and enduring issue for policy-makers, health care administrators, professional associations, unions and health services and policy researchers. In the past few years, understanding the human resources (the people) who work in the health system, and the care that they are involved in with Canadians, has become one of the top priorities at the national, provincial/territorial and sub-provincial/territorial levels. The provision of quality health care services is dependent on the availability of trained HHR. Currently, in Canada, there are over 800,000 individuals working in the health care sector. The health care system costs Canada \$121.4 billion dollars, or \$3,839 per person (2003 figures). By far the largest component of health care costs is labour, and while the specific statistics vary by jurisdiction and/or by year, HHR expenditures are never below 60 percent and may sometimes be as high as 80 percent of total operating costs. Many of the issues identified as fundamental to the successful evolution of the Canadian health care system (for example, dealing with waiting times for health services and improving patient safety) are complex and require, among other things, an adequate health personnel workforce.

van de Ven, W. P. M. M., Beck, K., Van de Voorde, C., Wasem, J., & Zmora, I. (2007). Risk adjustment and risk selection in Europe: 6 years later. *Health Policy*, 83(2-3):162–179.

In this paper we analyse the developments concerning risk adjustment and risk selection in Belgium, Germany, Israel, the Netherlands and Switzerland in the period 2000-2006. Since 2000 two major trends can be observed. On the one hand the risk adjustment systems have been improved, for example, by adding relevant health-based risk adjusters. On the other hand in all five countries there is evidence of increasing risk selection, which increasingly becomes a problem, in particular in Germany and Switzerland. Some potential explanations are given for these seemingly contradictory observations.

Verhulst, L., & Forrest, C. B. (2007). To count heads or to count services? Comparing population-to-physician methods with utilization-based methods for physician workforce planning: A case study in a remote rural administrative region of British Columbia. *Healthcare Policy*, 2(4):e178–e192.

Objectives: To demonstrate the feasibility of a population-based measure of physician services utilization by type of service as a tool for physician workforce planning. Setting: The Northern Health Region of British Columbia. Design: Retrospective descriptive statistics are compiled about the regional population's physician services utilization by the specialty of the service, irrespective of the specialty or location of the provider. These are compared to norms based on provincial average utilization, adjusted for age and sex, and norms based on population-to-physician ratio recommendations. Metrics: By specialty type of service: actual utilization; age-sex expected utilization; in-region, out-of-region and out-

Appendix 3: References Reviewed

of-province utilization; full-time equivalency (FTE) values of actual and expected utilization; and FTE requirement to meet a set of recommended population-to-physician targets. Specialty substitution by general practitioners (GPs) is also quantified. Results: The overall estimated deficit in physician numbers is similar between the two methods (51 versus 54), but the magnitude of surplus or deficit by specialty is greater with the population-to-physician method. Conclusion: The method targets an equitable distribution, rather than normative ideal physician supply. The magnitude of estimated surplus or deficit at the level of each specialty is greater with the population-to-physician ratio approach. The latter fails to consider interregional flow and specialty substitution. A population-based utilization approach is demonstrated to be a feasible, and in many ways superior, tool for physician resource planning.

Vujicic, M., & Evans, R. G. (2005). The impact of deficit reduction on the nursing labour market in Canada. *Applied Health Economics and Health Policy*, 4(2):99–110.

Introduction: Beginning in 1992, governments throughout Canada began reducing expenditures in an effort to eliminate fiscal deficits and reduce their alarmingly high debt burden. As part of this deficit-fighting era, governments reduced hospital expenditure levels quite dramatically. Some of the current problems in the Canadian healthcare system - the recent unrest in the nursing labour market in particular - are often attributed to this hospital downsizing era. Methods: This article examines trends in the labour market for registered nurses in Canada during the hospital downsizing period. Of particular interest is the effect of hospital spending reforms on nurse employment levels in hospitals and on the age structure of the nursing workforce. After identifying the trends, the main factors driving the trends are discussed. Results: Results indicate that a decrease in the demand for nursing labour resulted in large staff layoffs during the restructuring period, particularly among the youngest age groups. Discussion/Conclusion: The evidence does not support the claim that deteriorating wages and working conditions in hospitals led nurses to quit their jobs during the hospital downsizing period.

Ward, T. (2007). Opening remarks. In C. Beach, R. Chaykowski, S. Shortt, F. St-Hilaire, & A. Sweetman (Eds.), *Health services restructuring in Canada* 1st ed. Kingston, Ontario: McGill-Queen's University Press. pp. 211–212.

This section discusses issues in the delivery of health care, health human resources, and regionalization. I, like several of my colleagues, bring a somewhat different view to this discussion in that I escaped from the bedside through hospital administration and government bureaucracy. And my interest in this, quite frankly, is that I remain an absolutely passionate, vocal, and occasionally abrasive champion around the need to wrap our minds around health human resource issues in Canada.

Watson, D., Bogdanovic, B., Heppner, P., Katz, A., Reid, R., & Roos, N. (2003). *Supply, availability and use of family physicians in Winnipeg*. Manitoba Centre for Health Policy, University of Manitoba, May. Downloaded from mchp-appserv.cpe.umanitoba.ca/reference/famphys.pdf.

A large and growing number of people in Canada have expressed concern that access to family physicians in their communities is deteriorating and the medical profession shares this perspective. The College of Family Physicians of Canada recently reported that family physicians work 53 hours per week and many have expressed concern about a shortage of family and general practitioners (FPs). This view of physician supply is in sharp contrast to what people were saying one decade ago. Articles published in the *Winnipeg Free Press* in the early 1990s reflected concerns of an oversupply. Manitoba's Minister of Health, as

Appendix 3: References Reviewed

reported in the Winnipeg Free Press on July 31, 1992, when medical school enrolments were cut, indicated "There are twice as many physicians serving the same numbers of people in Manitoba today versus 20 years ago." Results of a survey conducted by Angus Reid for the Canadian Medical Association, as described in the Winnipeg Free Press on June 22, 1993, "Almost half of physicians in Canada said enrolment in medical schools should be cut." On that same day in 1993 the President of Canadian Medical Association, as reported in the Winnipeg Free Press, suggested "It will be possible to serve all areas with Canadian-trained physicians."

Watson, D. E., Katz, A., Reid, R. J., Bogdanovic, B., Roos, N., & Heppner, P. (2004). Family physician workloads and access to care in Winnipeg: 1991 to 2001. *Canadian Medical Association Journal*, 171(4):339–342.

Watson, D. E., Slade, S., Buske, L., & Tepper, J. (2006). Intergenerational differences in workloads among primary care physicians: A ten-year, population-based study. *Health Affairs*, 25(6):1620–1628.

Analyses of population-based services and surveys in Canada from the early 1990s and the early 2000s indicate that younger and middle-aged family physicians carried smaller workloads in 2003 than their same-age peers did ten years earlier and that older family physicians carried larger workloads in 2003 than their same-age peers did ten years earlier. Yet family physicians in all age groups worked similar numbers of hours in 2003. Intergenerational effects are similar for male and female physicians, although feminization of the workforce will affect supply, as a result of the falling service volumes delivered by women.

Wilson, D., Birch, S., Sheps, S., Hollis, V., & Truman, C. (2009). *A case study of high users of hospitals for evidence-based health policy and health services planning: A report for public dissemination and discussion purposes*. University of Alberta, Edmonton, Alberta, January 19.

Four data collection activities were undertaken to focus attention on high users of hospitals. Systematic Research Literature Review: High users were repeatedly identified as a very small proportion of patients who were responsible for a disproportionately large share (20-80%) of total utilization however measured. Many different types of patients were found to be high users, although mainly female and in poor health. Many factors contributing to high use were identified, with further study needed to identify and validate current Canadian factors. Two-hospital Acute Care Utilization Study: High users of hospital beds, ERs, outpatient clinics, and daysurgery units were most often younger persons with mental illnesses admitted 2 or more times in one year to hospital. One quarter of high users were older persons (age 65+) whose pattern of utilization was primarily through one long stay (30+ days). Depending on the area, 0.4% to 9.2% of admitted patients were responsible for 6.6% to 35% of utilization. Qualitative Study of High Users: Similar findings for why some people are high users of hospitals were identified across the two high user groups - readmitted younger patients suffering from mental illnesses and older long-stay (30+ days) patients. These findings could be grouped into three themes: (a) serious illnesses and high care needs, (b) hospitals are an accessible and often sole place to get needed care, and (c) hospital and post-hospital factors external to these people engender long hospital stays or hospital readmissions. Psychiatric Hospital Utilization Study: The majority of patients admitted to one 410-bed hospital were male and younger, with younger people more often high users both through long stays and more frequent readmissions to this hospital for acute psychiatric care. Stays were often long; 153.9 days on average, 52

Appendix 3: References Reviewed

day median, and 15 day mode. Patients were received by transfer from acute care hospitals (82.6%) and nursing homes (16.0%) across the province. Most discharges from this psychiatric hospital were to the patient's home (91.1%) or to nursing homes and other LTC facilities (6.9%) across the province.

Wilson, J. F. (2005). U.S. needs more physicians soon, but how many more is debatable. *Annals of Internal Medicine*, 143(6):469–472.

When Richard A. Cooper, MD, first starting investigating the question of how many physicians the United States needed in its work force, the common wisdom of the early 1990s held that the country was facing a major physician surplus. The surplus would push down physician salaries and leave some searching for employment. But as Cooper spent more time studying the numbers of graduates from U.S. medical schools and residents in training, he determined a completely different future: The United States instead faced a looming shortage that threatened to overtax and weaken the health care system by the early 21st century. Cooper first published his findings in a medical journal in 1994, and the controversy that he fueled continues to this day.

Zeytinoglu, I. U., Denton, M., Davies, S., Seaton, M. B., & Millen, J. (2008). *Visiting and office home care workers' occupational health: An analysis of workplace flexibility and worker insecurity measures associated with emotional and physical health*. Social and Economic Dimensions of an Aging Population (SEDAP) research paper no. 234, October. Downloaded from <http://socserv.mcmaster.ca/sedap/p/sedabs08.htm#abs234>.

The home health care sector in Canada experienced major restructuring in the mid-1990s creating a variety of flexibilities for organizations and insecurities for workers. This paper examines the emotional and physical health consequences of employer flexibilities and worker insecurities on home health care workers. For emotional health the focus is on stress and for physical health the focus is on self reported musculoskeletal disorders. Data come from our survey of home health care workers in a mid-sized city in Ontario, Canada. Data are analyzed separately for 990 visiting and 300 office workers. For visiting workers, results showed that none of the 'objective' flexibility/insecurity measures are associated with stress or musculoskeletal disorders controlling for other factors. However, 'subjective' flexibility/insecurity factors, i.e. feelings of job insecurity and labour market insecurity, are significantly and positively associated with stress. When stress is included in the analysis, for visiting workers stress mediates the effects of 'subjective' flexibility/insecurity with musculoskeletal disorders. For office workers, none of the objective flexibility/insecurity factors are associated with stress but subjective flexibility/insecurity factor of feelings of job insecurity is positively and significantly associated with stress. For office home care workers, work on call is negatively and significantly associated with musculoskeletal disorders. Feeling job insecurity is mediated through stress in affecting musculoskeletal disorders. Feeling labour market insecurity is significantly and positively associated with musculoskeletal disorders for office home care workers. Decision-makers in home care field are recommended to pay attention to insecurities felt by workers to reduce occupational health problems of stress and musculoskeletal disorders.