Commission on the Future of Health Care in Canada

Commission sur l'avenir des soins de santé au Canada

Appendix A
Literature Review

Health Human Resource Planning in Canada: Physician and Nursing Workforce Issues

Prepared for the Commission on the Future of Health Care in Canada

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METHODOLOGY

This literature review is organized into three sections: forecasting and data issues; education and training issues; and, professional practice and system issues. The literature on healthy work places is included in the professional practice and system section as the work place in health care is the location of professional practice. Within each section, physician and nursing issues have been separated where there is an independent literature on the topic.

The following steps were taken to search for relevant literature. First, a Pubmed search was undertaken using the following terms: entry to practice; forecasting; health human resources; licensing; magnet hospitals; manpower planning; nursing shortage; nursing supply; physician practice patterns; physician shortage; physician supply; physician resource planning; quality of worklife; recruitment in combination with "physician" and "nurse"; retention in combination with "physician" and "nurse."

Pubmed findings based on these search words were limited to English-language articles, and articles designated as dealing with "humans." As a priority, references from 1990 on were reviewed, although in the case of seemingly-sentinel articles that were published prior to 1990, the original reference was also reviewed. References from Canada were reviewed as a priority, however pertinent references from the United States and the United Kingdom were also considered. Articles from the rest of Europe, or from Australia/New Zealand were also considered (if published in English), but generally did not have the same level of relevance as US/UK studies. Articles from the rest of the world were not considered (e.g. Mexico, Eastern Europe, African countries) due to perceived differences in the issues currently affecting the health systems of those countries. Finally, if a particular reference seemed especially pertinent to the research question at hand, the Pubmed function, related articles, was used to review other references that were conceptually linked via Pubmed keywords.

As well, published reports and research papers from stakeholder organizations and governments were located through a web search and included in the review.

This is *not* a critical appraisal of the literature but rather a descriptive summary of findings. The specific references reviewed are listed in the bibliography in Appendix C.

FORECASTING AND DATA ISSUES

Ensuring the "right" number of health care providers with the right mix of skills, available to provide appropriate health services where and when they are needed, is a complex task and is influenced by many factors. Different authors have used slightly different names for various approaches to human resource modeling and forecasting. In general, four approaches have been used and they are described briefly below. They are supply forecasting, utilization or demand forecasting, needs-based planning, and benchmarking.

i) Supply forecasting

Supply forecasting models use current or historical levels of personnel numbers in a particular geographic area and project them forward. Based on this initial starting point, numbers of

additional personnel that will be needed in the future are generated, taking into account physician increases (i.e. numbers of new medical school graduates, numbers of new residents and numbers of International Medical Graduates entering the country), decreases (i.e. physician deaths, retirements and emigration), as well as projected growth in the population being served. Physician:population ratios are the planning tool. This is the simplest and most basic model of human resource forecasting and has been referred to as physician "projection," rather than actual planning (Lomas et al 1985).

Historically, this has been the most common approach in Canada because, according to Pong and Pitbaldo (2001) it is easy to understand, easy to construct and has minimal data requirements.

The Canadian Medical Forum report (1999) used supply-based forecasting when it concluded that the current physician supply would not keep pace with the country's need for physicians. The report indicated that there were 56,000 physicians licensed in Canada in 1998. Three and a half percent were expected to retire, die or emigrate each year leading to a replacement number of 1,960. Population growth for that same time period was expected to be between 300,000 to 350,000 per year, requiring 540-600 new physicians/year. To maintain a ratio of 1.8 to 1.9 physicians per 1000 population (a ratio recommended in Barer and Stoddart 1991), Canada needed a supply of 2,500 new physicians per year. The supply of new physicians based on medical school graduates, says the report, is less than 2,000 per year, and unless medical school enrolment and residency spots are increased, Canada will be facing imminent physician shortages. Similar methods and conclusions are reached in other reports (Buske 1998).

The usefulness of supply projections is limited because it begins with a pre-set physician:population ratio and assumes that this ratio must be replicated or built upon in the future to meet population health care needs. Supply forecasting sets aside the dynamics and external environments in which the forecasting takes place, therefore, it can never hope to project supply accurately. As Evans (1998) writes, "the key assumption, which is neither explicit nor justified, is that the "need" for physicians cannot be less than the current supply, *whatever that supply may be* (emphasis in original). Self-sufficiency requires that domestic production be sufficient to prevent any decline in the physician-to-population ratio, from whatever level it may have attained, however it got there and regardless of what else may be going on. No other basis is offered for judging adequacy of supply."

Most recently, this methodology was used in a position paper from the Ontario Medical Association on workforce policy and planning (2002) and in an analysis done for CIHI (Chan 2002b).

ii) Utilization or Demand Forecasting

A second, slightly-modified model of forecasting begins with the same steps and assumptions as simple supply forecasting, but strives to take patterns of service delivery and actual utilization of health services into account in the final analysis (Lomas et al 1985; Turner et al 1993a;1993b; Greenberg and Cultice 1997).

Lomas et al (1985) describe the following four basic steps in this model of physician forecasting:

Step 1: Estimate current physician supply based either on current numbers of physicians or on numbers of services delivered by physicians converted into full-time equivalents on the basis of productivity – hours worked per day, weeks worked per year and time taken per service.

Step 2: Estimate current requirements by adjusting this figure for any perceived gaps in current supply (based on pooled opinions of medical experts) or by using vacant advertised positions or other proxies for vacancies or unmet needs.

Step 3: Conversion of resulting required complement of physicians into a physician:population ratio.

Step 4: Conversion of projected ratio to future requirements by adding physicians due to attrition (death, retirement, emigration) and population growth and subtracting physicians due to immigration. The final number may also be affected by expert opinions about changing requirements based on changing age-sex mix of population (or changing age-sex mix of physician stock) and adjustments for changing technology or patterns of practice/service delivery.

Forecasting models based on demand or utilization improve on the planning capabilities of pure supply projections by taking into account some measure of actual service delivery capacity beyond the health counts. Denton et al (1994;1995) used this type of modelling to create their system for health area resource planning (SHARP) looking at medical school enrolments and nursing resource.

Certain supply and utilization/demand forecasting models have employed increasingly complex and more sophisticated measures of actual service delivery or utilization. Watanabe (1994) for example, has linked a variety of standardized databases to compare fee-for-service billing rates of physician specialties and sub-specialties in Canada with the number of full-time equivalents practicing in each specialty or sub-specialty to obtain a more accurate measure of physician workload. He concludes that increasing workloads are most marked in the surgical specialities while decreasing workloads are most marked in general practice. Watanabe concludes that estimates of workload, together with broader considerations of contemporary health reform efforts have to set the context for the interpretation and application of the results of any forecasting exercise for those forecasts to be valid. Chan (1999) also combined billing data, and numbers of registered personnel to examine the supply of physicians in Ontario. By calculating simple head counts, active physicians billing over $35,000 a year and full time equivalents (weighted by billing volume), he concluded that the Ontario pool of physicians was fairly stable over the time period but that geographic differences existed.

Other studies (Roos et al. 1996; 1997a;1997b; Persaud et al. 1999) build a case for using a variety of forecasting models under a variety of assumptions to come up with the best estimate of future resource needs.

In spite of the increased sophistication of supply and demand/utilization forecasting models, these models have met with increasing levels of criticism regarding their ability to capture the number of physicians needed to meet population health services needs (Millar 2001; Peters 1999; Stoddart and Barer 1999; Roos et al. 1999a;1999b; Roos et al.1998; Fried 1997; Friedenberg 1996; Turner et al. 1993a;1993b; Flux 1983; Gray 1980; Hayton 1979).

Research from the United States argues that utilization studies may be subject to the pitfalls of ecological fallacy; that is, just because an "appropriate" number of physicians are available in a particular area given the population size, and are providing an "appropriate" level of overall service, this does not mean that every patient in that geographic area is actually receiving the care they desire or need. For example, one study from the United States analyzed patient demand for ethnically similar physicians especially of African-American and Hispanic descent (Libby et al.1997). The researchers found that ethnic graduates of medical schools were under-represented when compared to the distribution of African-Americans and Hispanics in the general population and couldn't meet growing demand for care by ethnic doctors, in spite of a perceived oversupply of specialists in that area. Simple studies of physician:population ratios, even if taking general utilization measures into account, cannot capture this level of nuance in service delivery. In Canada, there is no evidence of research of this kind to date in spite of increasing pockets of ethnic concentration in particular Canadian cities.

Another US study analyzed numbers of rural residents travelling for specialist care to urban centres even when that specialist care was available locally in rural community hospitals (Borders and Rohrer, 2001). This is further indication that the availability of a physician does not always seem to be an adequate predictor of utilization.

Studies both from the United States and Canada (Politzer et al. 2001; Evans 1998; Friedenberg 1996; Politzer et al. 1996; Tarlov 1995; Lomas et al. 1985) have indicated that supply and demand forecasting are limited by numerous unknown factors, such as changes in the economy, changes in the financing and organization of health care (especially managed care in the United States), population growth and technological advances. Demand can also be affected by the level of services provided by residents (especially if moving away from tertiary hospitals and into community/ambulatory settings as has happened in the United States), and by non-physician care providers.

Turner et al's (1993a;1993b) critique of demand-based forecasting in part explains the cyclical nature of the surplus/shortage rhetoric. They write, "A demand-based approach… tends to perpetuate any inequities and utilization patterns that exist at the time the forecast is made, whether or not they are optimal. In addition, if we acknowledge that demands are determined by income levels and the perceived health of the economy, forecasts made in times of fiscal constraint may result in shortages in periods of recovery; forecasts made in times of affluence may result in surpluses should financial resources become scarce."

Some have argued that unmet demand can be met with or without increasing the supply of physicians. Increased prevention and health promotion measures can decrease demand overall, demand can be met by non-physician providers, demand can be met by more appropriate,

evidence-based provision of services. "Unmet need may not necessarily be detrimental if the need is for unnecessary services." (Turner et al. 1993a;1993b).

iii) Needs-based Planning

In an effort to address some of the limitations of previous forecasting models, more recent attempts at physician forecasting have turned to needs-based, rather then supply or demand-based forecasting. Needs-based models incorporate measures and estimates of health need in the population, by using disease prevalence or modeling physician requirements based on age, sex and health-related indicators of the population.

The report of the National Ad Hoc Working Group on Physician Resource Planning (1995) was one of the first Canadian initiatives to incorporate comprehensive needs-based resource planning as a model for physician forecasting. The Working Group reviewed existing physician resource management tools and compiled an inventory of current strategies. The recommendation of the group was to begin with standard physician:population ratios to continue planning initiatives in the short term. However, they recommended that these ratios be adjusted according to age/sex factors, measures of health services utilization, the number of physician full time equivalents and geographic considerations.

More importantly, the group emphasized a critical mass concept for physician planning referring to the minimum number of physicians required for a given geographic region to provide an acceptable level of access to services. The concept of critical mass takes into account on-call requirements, minimum volumes of work required to maintain clinical competencies, the level and type of back-up required and staffing differences that may results from geographic variations. Thus, in rural or remote settings, physician critical mass requirements may be larger to address retention needs that in urban settings. Alternatively, these considerations may lead to the decision not to provide specialised services in some regions.

Roos et al. (1997a; 1997b; 1999a; 1999b) from the Manitoba Centre for Health Policy have led Canadian efforts to develop and use needs-based models for forecasting the number and appropriate distribution of physicians – both generalists and specialists. Beginning with map-based analyses of physician supply and contacts across the province, they compared actual physician-contacts (based on billing data) with the health and socio-economic characteristics of local populations, which were used as proxy measures of need. They then compared the projected "need" from the characteristics of the population with what actually happened in terms of physician contacts. Their research found that, contrary to popular perceptions, Manitoba does *not* suffer from an increasing shortage of physicians. They point out that the concentration of generalist physicians in Winnipeg is actually "an expensive and unnecessary use of physician human resources." The Manitoba initiative is one of the chief improvements in terms of rationally addressing the human resource needs of a population, rather than merely adding on to existing resource levels based on a subjective and sometimes arbitrary identification of optimal physician:population ratios.

Similarly, in the United States, the Graduate Medical Education National Advisory Committee (GMENAC) and its descendants have built in an epidemiological assessment of disease patterns throughout the United States and the resultant disease incidence rates and health care needs of

the population. These projections are then incorporated into supply projections and into an analysis based on expert opinions through Delphi panel judgements about the level of physician resource required. The GMENAC model also specifically takes into account the potential for delegation of services to non-physicians.

All three approaches – supply, demand or needs-based forecasting - build upon each other and can be combined to generate a more global approach. O'Brien-Pallas and colleagues have proposed a framework for modeling human resource needs that combines service utilization and the distribution of health professionals, population characteristics related to predictors of health status and health risk, issues effecting health spending, and outcome data resulting from the use of different types of health personnel (O'Brien-Pallas et al 1998).

iv) Benchmarking

A related method of forecasting more fully developed in the United States than in Canada is that of benchmarking (Fried 1997; Sekscenski et al 1997; Goodman 1996). Benchmarking involves identifying areas that have a relatively low number of clinically active physicians without any apparent compromise of the health status of the population. These areas are deemed the starting point for the identification of optimal physician levels. Adjustments are then made for the age and sex characteristics across different population groups (e.g. counties, cities, states) and the low level of providers (based on the number of physicians per 100,000 population) is used as the current best estimate of a reasonable physician workforce to meet population health needs. Further adjustments can be made for key health and socio-economic indicators across populations to increase or decrease physician levels for different population groups. Although benchmarking principles have to start with the assumption that a particular geographic area is somehow the best predictor of necessary resource levels based on the quality of care and efficiency of meeting population health needs, it improves on previous forecasting models by purposefully disregarding assumptions of stability in the health care system. Previous supply and demand/utilization forecasting models assume that environmental factors used to assess current needs are relatively stable and can be used to forecast future human resource needs. Benchmarking does not do this. Geographic areas or health systems that are seen as representing "the future" of health care are deliberately selected as the benchmarks for future planning. Of course, disagreements arise around the choice of benchmark areas and the communities selected as indicators of optimal physician levels and distribution patterns.

Apart from the incorporation of benchmarking principles into the needs-based forecasting work of Roos et al. (1997a; 1997b; 1999a; 1999b) the Canadian literature does not yet indicate much interest in this model.

v) A Note on Nursing issues

For nursing, the issues of forecasting and measurement are even less clear than they are for physician resources as the number of positions is so tightly aligned with increases or decreases in health care budgets. Decreased budgets in the acute hospital sector means closed beds and staff layoffs.

A fundamental definitional question that is addressed in the nursing literature centers around what is a shortage and, by extension, how do we know when there is one?

There are two key efforts in the Canadian forecasting literature on nursing. A 1997 report by Ryten provided a statistical picture of the nursing workforce in Canada (Ryten 1997). Ryten calculated the future demand for nurses (a combination of supply of personnel and utilization of hospital services) and the future supply (a combination of education and training trends and demographics) and arrived at a projected shortage of between 59,000 and 113,000 by 2001 under three different planning scenarios.

Following on from this, the Federal/Provincial/Territorial Advisory Committee on Health Human Resources commissioned a comprehensive study to develop baseline data on the supply and education of registered nurses, registered psychiatric nurses and licensed practice nurses. The study provided a description of current nursing demographics, supply, educational programs and surveyed employers about their employment practices. It relied largely on looking at existing numbers of personnel and projecting forward (Kazanjian 2000a).

The definition of shortage needs to be carefully considered when responding to shortage alarms. Indicators of shortage can be objective such as vacancy rates or subjective such as administrators' perceptions of the staffing situation at their institution. Buchan and O'May (1998) identify five objective indicators: vacancy rates, turnover/wastage rates, agency/bank nurse employment, overtime/excess hours working, and nurse unemployment rates (See also Aiken et al.1994; Blegen1993; Fridkin et al.1997; Gray et al. 1988; Wilson and Stilwell1992; Yett 1970).

One way to assess the effectiveness of these different means of measuring shortages is to compare different measurements, in the hopes that they will lead to similar conclusions about the state of staffing. Grumbach and colleagues (2001) have compared several different methods of identifying shortages that use both objective and subjective measures. They found the strongest association was between self-reported shortages and nursing vacancy rates. The association between self-reported shortages and RNs per inpatient year, and between self-reported shortages and overall regional supply was weaker.

Part of the problem in identifying shortages relates to the lack of a common standard for defining adequate staffing levels. Some approaches use normative standards, but it is not known whether hospitals that do not meet these standards perceive a shortage. Another approach takes a broader view of the population as a whole. In this population-based method, inferences about shortage are made by measuring nurse supply relative to the overall population, rather than to the number of hospital beds or days.

Grumbach et al. (2001) propose a means of shortage identification that integrates objective and subjective measures. They suggest that hospitals will report shortages when they perceive recruitment and retention difficulties, as measured by vacancy and turnover rates. This understanding of shortage unites the potential utility of objective measures with the realization that such measures are still, at the end of the day, perceived subjectively. In the absence of meaningful standards for determining staffing difficulties, some such combination of objective and subjective measures seems inevitable.

vi) Key issues for Forecasting

The first key issue in considering forecasting methods is identifying the *overall policy goal* of health human resources planning. Without entirely understanding conceptually the purpose of the exercise, identifying the best methodologic approach becomes more difficult. A variety of purposes for forecasting have been proposed: to meet demand for immediate services; to provide a certain level of service that is somehow determined to be appropriate; to meet the needs of health service providers; or to improve the health of the population. Perhaps all are appropriate but without an explicit definition or statement of purpose by policy makers, forecasting efforts may remain somewhat unconnected to policy formulation.

Secondly, it is clear that models for forecasting health human resource levels have generally improved in their ability to consider environmental and need factors in projecting resource levels. Researchers have built upon previous efforts and are attempting to create more comprehensive and global approaches. There is clear recognition in the literature that a combination of factors and methods will yield the richest results. However, the linkage to policy options requires the ability to control distribution. In a country where human resource distribution is still largely market-based in spite of some efforts to plan centrally (see professional practice section below), the pathways to using the modeling data to plan resource allocation remain murky.

The third key issue is the difficulty in defining an appropriate geographic unit of analysis. Regardless of methodology, researchers are often left defining a community or region somewhat artificially to fit existing data. As Pong and Pitbaldo (2001;2002) have argued, there is not a single approach that will serve all planning purposes. However, more effort is required to continue conceptualizing and refining measurement tools.

EDUCATION AND TRAINING ISSUES

Among the policy levers determining the supply and, to a lesser extent, the distribution of health human resources are policies related to education and training. There are four areas addressed in the literature: the number and mix of post-graduate training positions; the costs related to education; the content of the educational curricula; and, the trend towards greater credentialling requirements.

i) Number and Mix of Training Positions

In Canada, the number of post-graduate training positions is controlled largely by provincial Ministries of Health together with provincial educational institutions. Since the elimination of a rotating internship program for medicine in the early 1990s, medical students must choose their training area early in their educational career. Two Canadian studies (Thurber and Busing1999; Woodward et al. 2001a) have linked a decrease in the supply of family physicians to the phasing out of rotating internships with no concurrent increase in family medicine residency positions.

Both the Canadian Medical Association (2000) and the Canadian Association of Interns and Residents (2002) have called for increased flexibility in terms of post-graduate medical training and re-entry positions. According to these organizations, current policies that require career choices early in the training phase of a physician's worklife run against provincial health human

resource planning needs. Once locked-in, it is very difficult and costly to shift into another content area. Individuals must go back and re-train and re-entry positions are few in number.

It is the faculties of medicine who determine the types of distinct residency programs available and there is a trend towards increasing sub-specialization. A complicated matching procedure occurs each year in which applicants' choices are matched against available positions. This has little to do with an assessment of actual population health needs and is related more to departmental budgets and faculty resources. As well, there is often an imbalance between available positions and wishes of trainees. Some examples of this can be seen in the first round matching in 2001: 296 people applied for 415 family medicine positions; 31 people applied for 61 rural family medicine spots; 36 people applied for 49 obstetrical/gynacologic spots; whereas, 35 people applied for 16 ophthalmology positions, 16 people applied for 10 plastic surgery positions, and 13 people applied for 5 dermatology positions (CIHI 2001). Family medicine is one of the lower paid groups within medicine whereas ophthalmology, plastic surgery and dermatology are more highly paid in Canada's fee-for-service remuneration system.

Barer and Stoddart (1991) identified four reasons for the "irrationality" of the residency student mix: conflict between service needs of teaching hospitals and the educational needs of residents; the needs of the post-graduate training system and a need for critical resident mass; clinicians' access to residents as a reason to engage in academic-related work; academic centres dominated by specialists who control the program and student mix.

ii) Cost of Education

A second factor related to the education and training of physicians that determines human resources outcomes is the rising cost of medical training. The Canadian Institute for Health Information (2001) estimates that the average annual medical school tuition in Canada has risen from an annual cost of just under $5000 in 1998/99 to just under $7,000 in 2001/2002. The University of Toronto is charging $14,700 for the 2001/02 academic year.

According to the Canadian Medical Association (CMA), high tuition fees for medical schools have a number of deleterious affects. First, they limit diversity in medical school applicants. However, a recent survey of Canadian medical students indicates that they are not currently that diverse and do not represent the Canadian population ethnically or economically (Dhalla et al, 2002). Thus, tuition levels may not affect current enrolment patterns but may be a barrier if schools wish to match their student population more closely to the makeup of the Canadian population.

Second, the CMA argues that higher tuition will affect the choice of medical specialty as students will pick the clinical areas demonstrated to have high income earning potential. This is somewhat borne out by the matching statistics cited in the previous section. Third, the CMA argues that higher tuition will affect the choice of practice location as students perceive urban, high-density population areas as providing a larger patient pool for billing purposes. It is too soon to tell whether these assertions will play out in practice as the increased tuition fees have only been approved in the last few years. However, a recent survey of medical school indicates that current students are concerned about increased debt load upon graduation and that they will

take this into consideration when thinking about practice location, practice style and speciality choices (Kwong et al., 2002).

iii) Content of the Curricula
To date in Canada, the majority of universities and colleges have kept health professional training and educational curricula profession-specific. A number of papers outline how this pattern does not reflect new models of service delivery nor does it encourage multi-disciplinary approaches to care provision. (Krakauer 2002; Alcock 2002). The greatest drawback seems to have been the unwillingness to address inter-professional cooperation and teamwork.

The lack of interdisciplinary education at the undergraduate and postgraduate level may undermine later attempts to work collaboratively in primary care (Cooper 1995; Pringle et al. 2000; Rabinowitz et al. 2001b). A demonstration project in the United States found that fundamental changes are needed to medical school curricula to reflect new models of service organization and delivery. The authors conclude that medical students and residents need to be trained to work in integrated teams, alongside other health care providers, and not as solo-practitioners (Rabinowitz et al. 2001b). In Ontario, experts have called for a uniform curriculum for physicians and nurses covering basic issues of anatomy, physiology and patient care (Alcock 2002; Shragg 2002). While appealing in theory, and presumably more cost-effective than independent programs, there is little evidence yet on whether inter-professional education makes a difference. A recent systematic review looked at the effects of inter-professional education on professional practice and patient outcomes but given the early state of the programs and the research associated with them, the research group was unable to draw any conclusions (Zwarenstein et al. 2001).

iv) Increased Credentialism
Increasingly, professions are requiring a university degree, rather than a community College diploma as a minimum requirement for entry to practice. All provincial nursing associations have accepted this as a requirement for nursing in Canada. Currently in Canada, Saskatchewan, New Brunswick, Nova Scotia, Newfoundland and Prince Edward Island have a degree option for nursing. Ontario will require a degree by 2005 and British Columbia, Manitoba, Alberta and Quebec still offer both options. This decision has far-reaching effects in terms of human resource planning. Research indicates that at the individual level, increased levels of education lead to increased expectations of career potential and workplace quality, as well as increased income expectations. When these workplace and income expectations cannot be met, the non-physician workforce has an increased likelihood of disenchantment in career choice and staff turnover increases (Baptiste 2002; Krakauer 2002).

At the system level, increased educational requirements add to the costs of training health professionals and the costs of meeting the income expectations of these highly-educated workers. At a time when provincial governments are looking for cost-efficiencies and cost-savings, increased credentialism is seen by some as adding to an already very complicated human resource problem (Ward 2002).

There is a growing body of literature focused on the skill mix of nurses and the impact it may have on patient care --- the argument being that an increased skill set through more training will positively affect patient outcomes. A recent study (Tourangeau 2002) found that a higher skill

mix in nursing care was linked to lower mortality rates in hospital. Another study found that hospital patients on wards with a higher proportion of registered nurses and licensed practical nurses had better outcomes when they left hospital. As well, those patient care areas had fewer medication errors and lower infection rates than areas using less skilled workers. However, differences in patient health status did not exist six weeks after discharge (McGillis Hall et al. 2001).

v) Key Issues for Education and Training

First, the process for identifying medical post-graduate training positions needs to be linked to population health data. The need for a broader perspective in the planning process and linkage to some of the modeling approaches being developed in the research literature has also been identified.

Second, the question of whether the elimination of the rotating internship and the early selection of residency programs meets with health human resource capacity issues has been identified as worthy of reconsideration.

Third, while there is little evidence yet, the steering affects of higher tuition costs has been asserted and needs to be monitored.

Fourth, while there is little evidence on impact, the notion of a shared educational curricula has intuitive sense and would better support the models of health care delivery that appear to be on the Canadian horizon. Some pilot testing of shared programs would be worth investigation.

Fifth, there is a debate over the necessity and impact of increasing the entry-level educational requirements for health professions. On the one hand, advocates cite increased skill mix, career opportunities and ability to work in an increasingly complex health care environment. Opponents cite increased time to train, cost to train and employ and raised expectations in terms of career advancement generating further loss of workers in the health system. This is clearly an area in need of further investigation and evidence.

Lastly, while there is information about medical education, there is very little about nursing education. According to Kazanjian (2000a), "it is not an overstatement to say that the quality of information on nursing education is quite poor and the quantity of available information is scant." Thus claims about increasing or decreasing enrolments and graduates are impossible to validate.

PROFESSIONAL PRACTICE AND SYSTEM ISSUES

i) Physician Focus

a) Changing Demographics

The makeup of Canada's physician population is changing and these changes affect health human resource planning.

The biggest change in the demographic makeup of Canada's physician population is the increasing number of women entering medicine. Data from the Canadian Medical Association

and provincial medical Colleges indicate that on average 30% of physicians currently in practice in Canada are women. According to the Canadian Association of Interns and Residents, the number of female medical residents in Canada now outnumbers males. Since 1993, more women than men enrolled in medical school and since 1996, women graduates outnumbered men (CIHI 2001). This is thought, by some, to be a problem leading to proposals such as biasing the entry requirements to medical school in favour of male applicants (Moore 2002).

Several Canadian and US studies have examined differences in practice patterns among male and female physicians (Boerma and van den Brink Muinen 2000; Chan 2002a; Chan 2002b; Chaytors et al. 2001;CPSO 2001; Gable et al. 2000; Reid et al. 2000; Slade and Busing 2002).

Chaytors et al. compared practice patterns for male and female family practice residents in both urban and rural areas of Alberta and found that male residents were more likely to perform medical procedures such as minor surgery, foreign body removal or joint aspiration; while female family physicians were more likely to perform basic gynecological and obstetrical procedures. Reid et al. (2000) also report that female family practitioners (especially those under 35 yrs) are significantly more likely than males to provide obstetric care of all types (e.g. pre-natal, intrapartum, newborn).

A US study (Gable et al. 2000) comparing male and female ophthalmologists found that women were more likely to work in salaried positions associated with managed care organizations or academic settings. They were also three times more likely to sub-specialize in pediatric ophthalmology while men were twice as likely to specialize in retinal surgery. Finally, they found that twice as many male than female ophthalmologists selected non-metropolitan practice settings.

Boerma and van den Brink-Muinen (2000) compared practice patterns between male and female family physicians and found that females are generally younger than their male counterparts, they more often worked part time, were more likely to work in partnerships or group practices and in cities (although not in “deprived” areas). They had fewer regular working hours per week, they had fewer office contacts per day and allocated slightly more time per patient, and had a lower total workload for patient care per week. They made fewer house calls and did less work outside office hours. However, statistical differences between males and females diminished significantly after controlling for part-time work.

When other characteristics of the person and the practice were taken into account, female GPs proved to be less involved in curative services with the exception of first contact for gynecological problems, but were more involved in health education, counseling and prevention programs, especially related to smoking cessation, alcohol use and diet (Boerma and van den Brink-Muinen 2000). These patterns have recently been validated by survey data from the College of Physicians and Surgeons of Ontario (2001).

A recent study by the College of Family Physicians of Canada indicates that male physicians reported working 8.9 hours more per week than female physicians. However, there were not statistically significant differences between the two groups in the mean number of clinical or medical services provided to patients (Slade and Busing 2002).

Much has been written about new graduates who are demanding a more balanced life style with shorter working days, more time off, and fewer on-call responsibilities, Known as the "get-a-life" generation, it is asserted that these changes are significant enough to affect general population access to primary care physicians. (Cooper 1994b; Carroll, et al. 1995; McKendry 1999). However, this does not seem to be supported by data from the Canadian Medical Association or the College of Family Physicians of Canada. For example, although 64% of physicians surveyed by the Canadian Medical Association indicated that their workload is heavier than what they would like, and 58% felt that their personal/family life is suffering because of their choice of career, over half of physicians (54%) nevertheless indicated they were actually working longer hours. Furthermore, analyses of work trends among physicians since 1982 does not support a significant increase in average hours worked per week for either sex: 53 hours per week (men) and 44 hours per week (women) in 1982 compared to 55 hours per week (men) and 47 hours per week (women) in 2000 (CMA 2001b; 2001c).

In the end, discrepancies may exist between expressed physician desires in terms of practice patterns, and actual outcomes. Woodward et al. (2001a) found that Ontario family physicians indicate that the *difference* between preferred number of hours worked per week and the number of hours actually worked has increased since 1993. In other words, although physicians would prefer to be working fewer hours per week they are actually working about the same.

Migration patterns are also often cited as a reason for changing physician numbers; however, data from Statistics Canada suggest that the number of Canadian physicians leaving Canada has always been under 1% of the total physician pool (CIHI 2001). This holds even in peak periods of migration such as the mid-1990s.

Lastly, there is a growing issue in the literature focused on race and ethnicity considerations when choosing a physician. There is some indication from the United States that patients may be seeking out physicians of their own race and ethnicity (Saha et al.,2000; Libby et al. 1997). These studies found that black and Hispanic Americans sought care from physicians of their own race because of personal preference and language, not solely because of geographic accessibility. Although this has not been identified as an issue in the Canadian literature, it may become important in future years in areas with a diverse ethnic mix.

b) Changing Styles of Practice

It is asserted that physicians in 2002 practice medicine, particularly primary care, differently than their counterparts of a decade ago. These changes are cited as contributors to access problems for citizens.

An increasingly contentious practice issue receiving attention in recent years is the question of "on-call" hours for physicians and whether or not physicians provide less after-hours coverage than they used to. The Canadian Medical Association (2001) reports that 25% of physicians do not provide any on-call services as part of their clinical practice.

Recent studies from the United States related to patient safety and medical error have increased attention on the question of on-call time. These studies have indicated that the way health

services are organized and delivered may adversely affect the quality of medical care being provided (Committee on Quality of Health Care in America 2001; Kohn et al. 1999). One implication of this growing body of literature is the push to decrease the frequency and overall amount of time spent on-call. The Institute of Medicine report, Crossing the Quality Chasm, indicates that individuals who have been awake for 24 consecutive hours function similarly to individuals with a blood-alcohol level of 0.10% - an unacceptable level in drivers, much less physicians providing care (Committee 2001). Rested physicians outperformed their sleep-deprived peers in tests of memory, visual attention, concentration and the performance of their routine clinical tasks. Wu et al. (1991) also found, when surveying residents about medical errors, that over 41% attributed the mistake to physical exhaustion. This has culminated in proposed federal legislation in the United States that would legally limit residents' work hours.

Similarly in Canada, several physician organizations have issued position statements calling for the reduction of physician work hours, especially in the frequency of "on-call" time (Ontario Association of General Surgeons 1999; Society of Rural Physicians of Canada 1999; CMA 1998; PAIRO 1999).

Another issue is the percentage of time physicians spend on non-patient care activities. Studies of managed care arrangements from the United States indicate increased involvement of physicians in administrative activities and a variety of non-traditional clinical activities that had not traditionally occupied physician's time (Schwartz et al. 1988).

As well, we are beginning to see changes in the comprehensiveness of services delivered in family medicine practices as physicians focus on one aspect of primary care rather than providing a full service practice. Schwartz et al. (1998) discuss increasing sub-specialization of primary care providers in areas such as drug abuse counseling, sports medicine, nutrition clinics and treatment of eating disorders. These trends are supported by data from the College of Physicians and Surgeons (2001).

Chan (2002) tracked the participation rates of general practitioners in Ontario in six non-office settings to assess whether family physicians were maintaining services such as emergency room shifts, nursing home visits or house calls. His research indicates that the range of services provided is not uniform. He found that the proportion of "office only" general practitioners and family physicians rose from 14% in 1989/90 to 24% in 1999/2000. These increases were consistent across physicians of all ages, practice locations and for both sexes. Of those physicians who limited their practice to "office only," significantly more were female, recent graduates or conversely 65 or older, were practicing in a city with a medical school, and were less likely to be rural physicians. Recent graduates were much more likely than older physicians to participate in emergency medicine (40% of recent grads versus 5% of physicians 65 or older); while older physicians had higher participation rates than recent grads in nursing home visits and house calls (20% and 57% respectively versus 11% and 37%). Female physicians had slightly higher participation rates in obstetrics (16% versus 11% for males).

Woodward et al. (1997) surveyed family physicians in Ontario regarding the spectrum of services offered in their practices. They asked about the following service restrictions: no minor surgery in the office, no antenatal or intrapartum care, no newborn care, no counselling or psychotherapy and no hospital care. They found that 45.7% of family physicians surveyed

indicated at least one restriction on the type of care provided. Women (49%) were more likely to restrict their family practices than men (41%). A follow-up study conducted six years later indicated increased percentages of family physicians restricting their care in some way, although there were slight increases in the proportion of respondents currently providing counselling, shared antenatal care and newborn care (Woodward et al. 2001a).

The Canadian Institute for Health Information (2001) has also published data showing differences geographically in primary care services. For example, 82.8% of family physicians in northern Ontario report providing palliative care services compared to 49.3% in Toronto or 69.3% across Canada. Similarly, 61.5% in northern Ontario report providing casting/splinting services compared to 16.7% in Toronto or 45.4% across Canada.

Another trend which may affect health human resource planning in Canada is that of integrated care delivery and the use of primary health care teams. Gosden et al. (2000) report in their UK study that general practitioners in south-east England would prefer a practice that had an extended primary health care team, that offered opportunities to develop outside interests, that offered a higher income, shorter hours and smaller patient-care lists.

Have all these changes in practice issues resulted in access concerns? It has certainly become more common in the last five years in Canada for patients to encounter "closed" primary care practices. Statistics from the College of Family Physicians of Canada 2001 survey indicate that 80% of family physicians in New Brunswick and 78% in Nova Scotia are no longer routinely accepting new patients. The national average was 69%, although 59% nationally indicated they might accept new patients under certain circumstances (CFPC 2001; Woodward et al. 2001a).

Patterson et al (2001) found that family physicians in Hamilton, Ontario are decreasingly available to their patients in hospital, and fewer of them are maintaining their hospital privileges. Similar findings were reported in an earlier study in London, Ontario (Bass et al. 1998).

Differences have also been found when comparing services provided in rural compared to urban centres. Chaytors et al. (2001) for example, found that the number and type of family practice procedures performed by male and female family practice residents in Alberta decreased steadily from rural to regional to metropolitan areas. Similarly, Reid et al. (2000) and Godwin et al. (2002) indicate that more family doctors serving rural areas are doing intrapartum care compared with doctors in urban areas. Chan (2001) also found that "office-only" family physicians in Ontario were less likely to be from rural areas. Although the question needs further study, these findings lead to the speculation that physicians in rural areas may provide more comprehensive primary care because they have fewer options to pass that care on to somebody else.

A number of Canadian studies have specifically analyzed the provision of obstetrical care by family physicians (Carroll et al. 1995; Ruderman et al. 1999; Kaczarowski and Levitt 2000; Reid et al, 2000; Godwin et al. 2002). Kaczarowski and Levitt (2000) found that general practitioners and family physicians throughout Canada are less likely to assist in intrapartum care than in previous years. However, as indicated above, family physicians practicing in rural or small communities (population less than 15,000), and female family practitioners are significantly more likely to provide obstetrical care. Additionally, interest in and intention at the end of

residency to practice obstetrics are predictive of increased likelihood of obstetric practice two years later (Godwin et al, 2002).

One area of new technology that may decrease the number of required physician resources is telehealth. There are studies indicating that the move to telehealth or tele-consulting may actually reduce the number of physicians required to meet population health needs (Nesbitt et al. 1999; Watanabe et al. 1999). An initial evaluation of a 1-800 line in Ontario indicates that almost 50% of callers were told to practice self-care and did not need to visit a health care professional (Ontario Ministry of Health and Long-term Care 2002).

c) Distribution of Physician Resources

One of the key issues not adequately addressed through analyzing physician numbers is the question of distribution and choice of practice location. Studies from the United States (Cooper, 1994; 1996), the United Kingdom (Gravelle and Sutton 2001) and Canada (Pong 1996) confirm that increasing the absolute number of physicians will not help achieve optimal distribution without new policy levers to manage location choice.

Rytan et al. (1998) in their study of 1722 individuals receiving a medical degree from a Canadian university in 1989, found that seven years later, one third had moved to a province other than the province where they had received their medical education and 11.2% had left Canada altogether. Apart from Ontario, British Columbia and the territories, all other Canadian jurisdictions experienced a net loss as a result of migration. Saskatchewan and Newfoundland lost over 50% of their medical trainees. Thus, assuming "home-grown" trainees will set up practice at home is unwise.

Gervas (2000) has argued that in countries without defined patient lists or primary care organized by defined geographic areas (like Canada, Australia, much of western Europe and the United States), physicians are likely to cluster around larger cities. Conversely, countries like the UK, Ireland, Italy and the Scandinavian countries, where primary health care is organized around defined geographic units or according to patient lists, the distribution of family physicians is more uniform across the whole country as each geographic unit has its own doctor. Research done by Gravelle and Sutton (2001), however, indicates that even in England and Wales inequality in the distribution of general practitioners persists. Their research also suggests the limited effectiveness of multi-faceted incentive programs in changing distributional inequities.

Coyte et al. (1997) studied the distribution of family physicians in Ontario. After controlling for practice density and the population's patterns of health care use, they compared areas of high versus low physician density. A key finding was that wide variations continue to exist among Ontario counties in terms of family physician density. Four of the five Ontario counties with teaching centres had physician densities significantly higher than the provincial average, confirming the UK findings of physician clustering around larger cities. On the other hand, they found that family physician distribution and patient access to a family doctor was not significantly lower in ministry-designated under-serviced areas. Fewer than 30% of the communities with this designation were in counties with adjusted family physician densities significantly lower than the provincial average. They conclude that further work is needed to determine real versus perceived shortages.

d) Recruitment and Retention Initiatives

To date, Canada has chosen not to assert direct control over physician distribution and location. Instead, a combination of policy "carrots" in the form of recruitment and retention programs, and policy "sticks" in the form of financial controls, have been used to encourage physicians to practice in areas designated as underserviced.

One of the most frequently applied "sticks" used by several provinces has been the policy of billing caps or reduced fees for new physicians choosing to practice in specific areas thought to have an adequate supply of physicians. This policy lever has been employed both to control the proportion of total health expenditures allocated to physician services and to control physician supply. In a market-allocation system like the United States, excess physician supply is almost a necessity in order to make market forces work. In Canada's system where health services are publicly-funded, an over-supply of physicians may lead to cost-inefficiencies. Reducing fees paid to physicians aims to achieve this goal (Katz et al 1997).

Powell and Nakata (2001) studied the effects of earning power on physician supply and distribution in the United States. They estimate that a $1.00 an hour decrease in net income increases the number of "inactive" physicians by 1.46 percent over a 2-year period. Extrapolating from this finding, the authors estimate that an earnings decline of $10.00 per patient care hour (influenced in the United States through managed care organizations' fee policies) motivates 11,000 physicians to retire early.

In Ontario, physician incomes have been affected by billing caps and discounted fees for new physicians practicing in oversupplied areas since 1997. Follow-up data indicates some "success" as the percentage of new graduates practicing in over-supplied areas fell from 40% in 1996 to 20% in 1999. This supports similar findings from the US. This program has been criticized, however, because it places the burden of solving physician distribution problems on the shoulders of newly-trained physicians.

There is also some question regarding the constitutionality of controlling location. New Brunswick's highest court has allowed the province to deny billing numbers to doctors in cities with enough doctors (Rombart v. New Brunswick 2001). Whereas in British Columbia, the courts have decided that restricting access to billing numbers based on geographic location is unconstitutional (Wilson v. British Columbia Medical Services Commission 1988 and Waldman v. British Columbia Medical Services Commission 1997). In both jurisdictions, the province argued that it needed the right to limit financial expenditures with respect to health care and that doctors have no constitutional right to practice in communities where their services are not needed. The New Brunswick court agreed with this argument and upheld the province's policy. In contrast, British Columbia courts have ruled that a doctor has the constitutional right to practice medicine anywhere in that province, and that a provincial policy restricting billing numbers to specific locations violated doctors' rights and deprived them of liberty or equality by precluding the doctor from pursuing a livelihood (Katz et al. 1997; Steinecke 2002).

Greater success has been met with incentive programs that use a medical education life-cycle approach to supporting physicians choosing to practice in rural areas (Society for Rural

Physicians of Canada 1998; CMA 2000). According to this approach, physician recruitment and retention efforts need to begin at the high school level and continue throughout the physician's career until the end of practice. A comprehensive approach that supports career opportunities, continuous learning opportunities, practice supports like locum coverage, and support for physicians' spouses is thought to be critical in successful initiatives. There is Canadian evidence that undergraduates or residents who spend part of their education and training experience in a rural area are more likely to be attracted to setting up practice in a rural area than individuals who have not been exposed to the experience during their training (Rourke 1993; Easterbrook et al. 1999).

Reports from a demonstration project on recruitment efforts in an Indiana hospital in the United States (Full 2001) support the success of policy packages targeted at areas identified as "health professional shortage areas." Once an area receives this designation, physicians practicing in this area receive federal loan waivers, International Medical Graduates receive visa extensions and are allowed to stay in the United States and Medicare reimbursements rates are increased by 10 percent. In addition, shortage areas are allowed to recruit from a pool of National Health Service Corps physicians – physicians trained specifically for work in rural or otherwise disadvantaged areas.

Although largely anecdotal, findings from the Indiana demonstration project are further supported by empirical work evaluating the factors that are independently predictive of rural primary care supply and retention. An analysis of the Physician Shortage Area Program in Pennsylvania showed independent predictive factors for choice of rural practice location were National Health Service Corps training, the benefits of an underserviced area (e.g. loan waivers, increased fees), freshman-year plans to practice family medicine, and a senior family practice rural preceptorship (Rabinowitz et al. 2001) The authors conclude that the most consistent finding from this study was "the powerful impact of background and career plans at the time of admission to medical school on future rural primary care practice and retention." Thus, focusing on what happens during and after medical school may not be as important in successful rural recruitment initiatives as focusing on recruiting the right candidates into medical school in the first place.

Two studies from the UK offer a mix of findings regarding physician recruitment and retention efforts (Taylor et al. 1999; Young and Leese 1999). Similar to previous studies, these studies confirm the finding that male family practitioners are more likely than females to continue practicing in remote areas and that higher fees (in terms of increased numbers of "deprivation" payments) may also have an effect on physician retention. Interestingly, Taylor et al. also found that family physicians practicing in a larger group of physician partners were more likely to stay in practice than their counterparts from a practice with one partner fewer, although they are not willing to speculate on the reasons for this finding. On the other hand, the analysis did not find that an overall "deprivation" index negatively influenced physician decisions to remain in practice, nor did the large number of very needy patients on the family physician's patient list. The authors acknowledge that the potential negative effects of these high demand areas (in terms of increased physician workload) on physician retention may be balanced out by increased physician incomes that result from "deprivation" payments.

Young and Leese (1999) also suggest that increased flexibility in work arrangements (e.g. part-time, job-share, temporary and short-term work) and a broader range of career development possibilities (e.g. research, management skills, part-time educational posts) would help in retention efforts.

An Alberta study (Szafran et al. 2001) confirmed that the choice of practice location is determined largely by the size of the community where the physician lived until 18 years of age. The percentage of medical residents brought up in rural areas who later went to rural practices and those brought up in metropolitan areas who later went to metropolitan practices were similar. Szafran et al. also found that factors influencing practice location among family practice residents varied by gender. The most important variable influencing practice location for male residents was type of practice while spousal influence was the most important determining factor for women. Female family physicians were also more influenced by the flexibility of working hours, familiarity of the medical community, availability of support facilities and staff and potential teaching opportunities – all factors more likely found in metropolitan and urban locations. The authors conclude that recruitment and retention programs will need to take these factors into account as the number of women entering medical practice continues to increase. Other studies from Canada (Turner et al. 1993a; 1993b; the Society of Rural Physicians 1998; Expert Panel on Health Human Resources 2001) suggest that the clinical and social support of fellow physicians may play an important role in recruitment and retention initiatives. All three reports indicate that a major concern of health care professionals working in rural or remote areas is maintaining a sense of professionalism and dealing with social isolation. This isolation increases professional stress, increases physician workloads, and decreases opportunities for continuing education, professional development and time off.

Studies from Canada have also found that intention to practice in a rural area, as indicated at the beginning of residency programs, is predictive of later practice location decisions (Turner et al. 1993a; 1993b; Ruderman et al. 1999). Many provincial recruitment and retention initiatives are focusing on increasing the number of medical students from rural areas and expanding rural training programs for residents in rural family medicine (McKendry 1999; Square 2001).

Historically, Canada has relied on internationally-trained medical graduates to provide clinical service. This has ranged from about 25% of the physician pool in Ontario to 40% in Saskatchewan. Do international graduates fill distribution gaps or duplicate services in areas with already higher levels of physician availability? Mick et al. (2000) noted that in the United States not all international graduates were located in high need or underserviced counties and that they were more likely than US graduates to be located in states with already large numbers of physicians. However, in those areas with highest need, international graduates were carrying a disproportionate burden of patient care.

e) Use of Non-physician Care Providers

In addressing reforms to health human resource planning the role of non-physician care providers needs to be considered (Cooper 1994a; Cooper, 1999). As the number of non-physician providers has grown, so too has the scope of their practice and responsibilities. In analyzing the scopes of practice granted to non-physician care providers through statutes and regulations, Cooper and colleagues (1998) discovered five trends. First, there is a wide range in the scope of activity. Second, more scope means more autonomy and authority. Third, these

activities overlap a subset of services typically provided by physicians (Hutchinson et al. 2001). Fourth, participation in providing those services is increasing. Fifth, this growth in scope and participation coincides with larger numbers of non-physician care practitioners being trained.

This increase in the numbers and roles of non-physician providers may have salutary effects on the provision of primary and secondary care. Hutchinson and her colleagues (2001) cite advantages to be gained in both areas by incorporating physicians' assistants into the NHS. They argue that in primary care, the introduction of physician assistants would improve patient satisfaction because physicians' assistants can spend more time with individual patients than can general practitioners. In secondary care, moreover, physicians' assistants would provide a satisfactory complement to reductions in the hours of junior doctors, without depleting the nursing pool.

Martin (2000) cites advantages that relate more to the geographical distribution of primary care providers. He notes that in underserved rural and urban areas, access to primary care is a pressing concern and physicians' assistants can play an important role in filling service gaps.

The US federal government recognized the role of physicians' assistants as early as in 1977, with the enactment of the *Rural Health Clinic Services Act*. This recognition came because physicians' assistants (along with nurse practitioners, and midwives) traditionally chose practice locations in rural areas when they trained there and had personal roots in a rural community (Hafferty and Goldberg 1986).

Many authors have stressed the need for collaborative practice in the face of inadequate human resources across Canada. Nurse practitioner initiatives begun in the 1990s involve most provinces and the 3 territories, and all aim at improving primary care access through collaborative practice. Way et al. (2001) write that "strategies to improve collaborative practice…by using nurse practitioners more effectively in the management of acute episodic and stable chronic illness, and to promote directional referral between nurse practitioners and family physicians, could assist in optimizing care delivery using available resources."

Canadian researchers have documented a number of benefits in using expanded role nurses in primary care settings but have also documented a number of barriers to increasing their use (Centre for Nursing Studies 2001). One of the key barriers is that provincial payment policies tend to restrict the use and autonomy of nurse practitioners despite their availability.

f) Scope of Practice

The use of non-physician care providers raises the issue of regulating scopes of practice, and in most jurisdictions in Canada, it remains an unresolved issue. Addressing the question of scopes of practice falls to provincial ministries of health together with their respective health regulatory Colleges. The regulation of health professionals is based on provincial legislation and varies from province to province. The exact types of health professionals that are included in provincial regulatory schemes varies from province to province as does the degree to which different health professionals' services are covered under provincial health insurance schemes.

In Quebec, recent legislation expanded the scope of nurses to facilitate the provision of surgical assistance (CIHI 2002). In Ontario, the *Regulated Health Professions Act* has moved away from

the concept of defined scopes of practice for each profession to a concept of overlapping scopes. The RHPA defines 13 controlled acts[1] that, if not done correctly and by a competent person, may harm patients. The Act designates which of these acts each of its health professions is allowed to perform. Physicians are allowed to perform 12 of the 13 acts, the one exception being the fitting of dentures. Other Ontario health professions perform only one controlled act (e.g. midwifery) and still others perform none (e.g. dieticians). All other clinical activity outside the 13 controlled acts is considered in the public domain and can be performed by anyone. Although considered progressive in the early 1990s when it was introduced, the controlled acts concept of the RHPA has met with difficulties as various professions unilaterally decide to expand their scopes and others have conflicting views regarding health delivery around shared controlled acts.

Nevertheless, because legislative models like the RHPA are based on the underlying concept of shared care and greater patient choice of care provider, other provinces are in the process of changing their legislation (Alberta and Newfoundland) and British Columbia has already done so.

Several speakers at a recent Ontario Hospital Association conference on scopes of practice cited the need to establish payment structures that prevent competition and duplication of services among health professionals as well as the need for a better definition of the legal and clinical responsibility of the physician in cases of shared care (Alder 2002; Carlisle 2002; Dickson 2002). No literature evaluating these issues nor the effectiveness of the controlled acts model versus previous scopes of practice models could be found.

The Canadian literature on the effectiveness and/or efficiency of substitutions of one health profession for another (apart from the nurse practitioner literature reviewed below) is also limited. Persaud et al. (1999) considered the substitution of optometrists and opticians in the place of ophthalmologists in forecasting future physician need in the vision sector, but have not yet published any evaluation studies on this topic.

More recently, Way et al. (2001) published a study evaluating the types of services provided by physicians and nurse practitioners in shared practice settings in Ontario. The authors looked at reasons for primary care visit and types of services provided, as well as recommendations for further care. They found that differences existed in both reason for a visit and nature of the services provided by each practitioner type. Patients more often visited nurse practitioners for periodic health examinations and family physicians for disease-management (e.g. management of cardiovascular disease other than hypertension). Nurse practitioners were more likely to be involved in providing disease prevention and supportive services, while family practitioners were likely to be involved in providing curative services and rehabilitative services. The provision of health promotion services was similar for both. Perhaps the most interesting finding, however, is that for those patients where follow-up visits were recommended, family practitioners were more

[1] The 13 controlled acts (paraphrased) are: 1) communicating a diagnosis identifying a disease or disorder; 2) performing a producer on tissue below the dermis, below the surface of the cornea or below the surface of the teeth; 3) moving the joints of the spine; 4) setting fractures or dislocations; 5) administering a substance by injection or inhalation; 6) putting an instrument, hand or finger in various body openings (e.g. ears, nasal passages, urethra/anus); 7) applying a form of energy for testing, treatment or diagnosis; 8) prescribing, dispensing or selling drugs; 9) prescribing or dispensing corrective lenses or contacts; 10) prescribing or dispensing a hearing aid; 11) fitting dentures or orthodontic appliances; 12) managing labour and delivering babies; 13) allergy challenge testing.

likely to recommend a return visit to a family practitioner, and nurse practitioners were more likely to recommend a return visit to a nurse. This finding does little to support the notion of shared care. The authors conclude that nurse-practitioners were underutilized with regard to curative and rehabilitative services, and comment on the lack of "bi-directional" referral. Although this study is limited to a small study group (2 nurse-practitioners and 4 family physicians over a 2-month period), it provides needed insight into questions of shared scopes.

Other studies from the UK and the United States have found no evidence that the quality of care provided by nurse practitioners in terms of acute care management and monitoring of chronic illnesses is lower than that provided by physicians (Shum et al. 1993; Brown and Grimes 1995; Zwarenstein et al. 1998; Kinnersley et al. 2000; Mundinger et al. 2000). And, a recent systematic review comparing nurse practitioners and family physicians found that patients were more satisfied with care from a nurse practitioner with no differences in health outcomes (Horrocks et al. 2002).[2]

However, the question of how best to increase inter-disciplinary cooperation remains unanswered.

g) Changes in Technology

Although there is little published research at present, two issues have been identified as potentially changing the patient-health professional relationship in a fairly dramatic fashion. First, the expansion of telehealth technology has enabled citizens in remote communities to access high-end specialty care and consultation in urban settings. What is not known at present is how widespread this technology will become and what impact it will have on medical resources in more remote and rural communities. A survey by Industry Canada identified over 70 telehealth projects in operation in 1999 and the number has likely increased since then (Pong and Hogenbirk 1999).

Two policy issues will dominate the discussion in the future as this technology diffuses through the system: how to regulate quality and deal with patient complaints, and, how to regulate the practitioners providing the service.

The second technologic change is the increased use of the internet by consumers. Consumers are able to find high and low quality health information on the internet but regardless of the source, the information often initiates the seeking of advice from health professionals. Again, the impact on the system of this pattern of behaviour is unknown. Initial studies have focused on the quality of the evidence base of the information and have often found it lacking in rigor and potentially harmful to patients (Latthe 2000; Croft 2002).

h) Key Issues for Physician Professional Practice

The composition of the medical profession in Canada is changing, particularly with women now making up more than half the incoming class of medical students and more than half of residents. Women do appear to make different career choices in medicine than their male counterparts. They are more likely to choose family practice than surgical or diagnostic specialties and more

[2] The study also found that nurse practitioners provided longer consultations and carried out more investigations than their physician colleagues.

likely to choose part time practice than their male colleagues. They spend more time with patients and therefore see fewer of them over time, they provide more gynecological services as well as have more of a focus on health promotion, counseling and health education activities. They are also more likely to work in a group practice. However, when comparing the full time practice of women to the full time practice of men, the differences are much less significant statistically.

There is a debate in the research about whether younger physicians are changing the balance between work and family life. The claim is that they are, and that they are opting for less total hours of work and less after hours work. The data, however, does not support the assertion of less hours of work as physicians report they are working the same number of hours they have done historically.

Patterns of migration are another area where it is asserted there are differences and that more physicians are leaving Canada than previously seen. However, the data indicate that physician migration out of Canada has never exceeded 1% of the total physician population even in times when the actual numbers have increased.

There are clear changes in the nature of practice – largely in the family medicine area. Family physicians are providing less service after hours or on call than they once used to. They are starting to sub-specialize, focusing on one area within family medicine such as sports medicine, rehab medicine, counseling and psychotherapy. As well, other services historically performed by family physicians such as emergency department shifts, nursing home visits or house calls appear to be on the decline. These differences are also seen across communities with different levels of specific services being provided in rural as opposed to urban areas. Family physicians in rural and remote areas appear to be providing a more comprehensive set of services than their counterparts in urban areas – potentially because other specialties are not available to fill the gap and referrals are not an option.

Despite good evidence that the use of non-physician care providers such as expanded role nurses or nurse practitioners does not compromise the quality of primary care provided, Canada does not appear to have taken full advantage of these personnel. In particular, provincial payment policies are a major barrier.

The distribution of physician resources is an issue that has bedeviled policy makers for decades. Because we do not exert control over where physicians locate their practices, we use negative and positive incentives to induce physicians to underserviced locations. Financial disincentives such as billing caps or discounted fees have been used to discourage set up in specific locations. These have met with some "success" but the burden has been borne by newly graduating physicians thus raising fairness issues. As well, the courts have had some concern as to whether governments can legally exert this control. More positive incentives have been used such as location bonuses, educational supports, locum relief, moving and housing allowances etc., also with some success. These supports appear to work in the short term but are less successful in retaining personnel over the long haul. What does appear to be a good predictor of retention in rural areas is the background of the individual and familiarity with the rural practice environment. This raises the possibility that getting the right type of individual to go to medical

school in the first place may be a more effective long term strategy than financial inducements after graduation. As well, female physicians are clearly more affected by employment opportunities for their spouse than their male counterparts. Given the predominance of women entering the profession, this will require significant attention in the future.

Lastly, the issue of changing and overlapping scopes of practice has yet to be fully explored in Canada. Regulatory and financial barriers are clear impediments to reform in this area.

ii) Nursing Focus

A variety of factors have been studied in Canada and abroad related to practice issues for nursing. Clearly, a key difference between nurses and physicians in terms of professional practice is that nurses must work where the jobs are offered. They have much less flexibility or choice than physicians do. As well, they are directly impacted when economic conditions decline and budgets are cut. Health care institutions in Canada close beds and decrease service in times of restraint. Nursing positions are eliminated (along with other salaried personnel) as a cost savings measure.

a) Changing Demographics

A predominant theme in the research literature is the aging of Canada's nursing workforce and of the nursing faculty needed to train new nurses (Buchan 1999a; 2001; Kazanjian et al. 2000; Peterson 1999; Ryten 1997). The Canadian Institute of Health Information reports that the average age of nurses in Canada in 2000 was 43, up from 41 in 1994. As well, the proportion of nurses in the 50-54 year age group rose 34% over the same six-year period. This shift, combined with the fact that nursing is predominantly a female work force, raises a number of distinct policy issues.

Buchan (1999a) explores the reasons for this trend in the UK, and the implications for policy makers and employers. As a result of an age shift between 1988 and 1998, the numbers of nurses and midwives nearing retirement age has increased, and the attitudes and requirements of many nurses are likely to change as they approach middle age. In general, according to Buchan, the lower participation rate of older age groups in nursing is related to problems with balancing work and domestic life, and with job satisfaction. For example, the rise of early retirement has been linked to financial status, caring responsibilities, the nature of employment, and the effect of retirement on a partner. This is pushing some countries to consider raising retirement age, or to allow phased retirement. Furthermore, NHS nurses 50+ are less likely to continue professional development than are younger groups. Buchan writes "the extent to which this is due to lack of commitment…lack of provision, or age discrimination, is not known." Among females, it has been attributed to the requirements of fulfilling roles at work and home. There is also a link to an older work force and higher rates of injury, particularly, lower back pain. This leads to increase absenteeism (CIHI 2001).

b) Quality of Work Life – Job Satisfaction

The quality of nurses' work life is a second variable studied in the literature. Both recruitment and retention efforts can be hampered by certain characteristics of nursing life that make it a less attractive profession. Reid (1990) notes that there is a shortage of nursing applicants because of private sector competition, low salaries, poor work conditions, and the high education

requirements. The results of *The Nursing Standard*'s 1996 survey on staffing levels also tell a troublesome quality-of-life story: 85% of the nurses surveyed disagreed with the statement that nurse morale was high; 52% had to work unpaid overtime to cover for vacancies; 52.6% said they had to fill vacancies with lower-grade staff than was necessary to do the work; 62.5% reported difficulty recruiting qualified nurses in their clinical area; 64% believe that levels of pay have worsened recruitment; over 90% said that job pressure had increased; and, while 56% still feel good about having entered nursing, 28% regret it.

However, Canadian data indicate that we have more applicants than available positions in undergraduate programs. In 1999, 12,000 applications were received for 5700 positions (CIHI 2001). Thus, it is possible students still see nursing as a desirable career path before they actually enter the work force and that their perspective changes once employed.

Nadeau (1991) and Donner (1997) have identified a number of job satisfiers and dissatisfiers for nurse managers. Satisfiers were:

- autonomy;
- challenge/crisis intervention/problem solving;
- positive attitudes of nursing staff;
- adequacy of supervision;
- contact with patients and families;
- working relationships with medical staff;
- evidence of the professional growth of staff;
- patient type/clinical specialty;
- amount of support provided for external educational opportunities;
- control over work hours.

Job dissatisfiers were:

- workload;
- lack of remuneration for overtime;
- lack of job security;
- inadequate support/resources;
- role ambiguity;
- budget pressures/constraints;
- rate and volume of organizational change;
- salary;
- lack of recognition and feedback from immediate supervisors;
- amount of paperwork.

Freeman and O'Brien-Pallas (1998) have identified a different set of factors influencing the job satisfaction of nurses on specialty units. They are:

- opportunity (extra-organizational job availability);
- routinization (a job/task found to be routine or repetitive);
- autonomy in the work place;
- job communication (information received about policies and procedures, roles and tasks);

- social integration (socialization and close relationships among nurses on a unit);
- distributive justice (the relationship of rewards/punishments to performance/output);
- promotional opportunity;
- pay;
- workload;
- general training;
- kinship responsibility;
- unit size;
- technology;
- uncertainty; instability; and variability.

Other factors that have been associated with nursing dissatisfaction include economic factors such as nonexistent or slow increases in real wages (Friss 1994 in Seago et al. 2001), an imperfectly competitive market (Yett 1975), or problems of geographic distribution (Yett 1970; Friss 1994).

Studies have found that organizational change can have a significant impact on the quality of work life if nurses are involved in that change. In particular, they have found that increased nurse specialization led to increased expertise, that increased competence contributed to positive views of job design, and that office workers with more expertise adapted better to job stress, resulting in more job satisfaction (Benner 1984; Tharenou 1979; Schuler 1977).

Another model for assessing the quality of nursing work life that more fully embraces the complexity of the issue is offered by O'Brien-Pallas and Baumann (2000). They divide determinative elements of the quality of nursing work life into internal and external dimensions. The elements in the internal dimension are:

- individual home/work interplay—job sharing, flexible schedules, etc;
- individual needs—attitudes, self-image, media influence, goals;
- the social/environmental context (climate, status, decision-making/management style);
- operations (care delivery, role specificity, technological demand/support);
- administration (policy, salary benefits, promotional career laddering).

The external dimensions are:

- client demand on the system (demographic changes, client empowerment, and lobby groups);
- health care policy (funding, care delivery, laws and regulations);
- the labour market (regional variation and nursing organization demands).

They analyse all these factors against a series of outcome measures such as retention, client satisfaction, nurse satisfaction, stress, group cohesion, commitment, motivation, and quality of patient care.

Duff (1990) commented on the NHS strategy for nursing saying that it did provide a framework for dealing with issues of quality of life and job satisfaction. A number of service facilities, and systems are covered by the action plans developed by a task force of senior nurses and personnel officers. The action plans contained information on a menu of elements to improve job satisfaction and the quality of nursing work life. The elements included:

- daily demand deployment (predictive systems based on outcomes, dependency, skill mix and cost);
- long-term demand (predictive systems needed to ensure accommodation of length-of-stay changes, and demographic shifts);
- supply, recruitment and retention (exciting advertising; career opportunities information; interview skills training; promoting nursing (to 12-14 year olds, and to mature entrants);
- benefit packages; access courses; mentor schemes (1 month for new members); induction programs;
- job flexibility;
- development programs; annual performance review; career seminars; counselling;
- exit interviews (identify reasons for disaffection);
- keep in touch programs (professional and social);
- return to nursing programs;
- sabbaticals.

The belief was that such a package demonstrated that the service valued those who work for it, an essential factor in retaining staff (Duff 1990). This belief also underlies suggestions that nurses need to be acknowledged as valuable resources (Ferrante 1993).

A key nursing recruitment and retention initiative, addressing many of the concerns identified above is the creation of "magnet hospitals" in the United States.

The American literature indicates that interest in magnet hospitals is growing. The American Nurses Credentialing Center has established a self-nominating system for hospitals seeking magnet designation. More than 85% of hospitals have applied. To maintain status, hospitals must be re-evaluated every 4 years. Some principles of magnet hospitals have been proposed in Australia, Brazil, Great Britain, Scotland, and Spain.

The term magnet hospitals refers to a group of hospitals that have been recognized for the quality of their patient care and nursing practice environments, and for their abilities for recruitment and retention. They got their start during a nursing shortage in the United States in the 1980s, when attempts were made to make nursing a more attractive career choice. Ultimately, 41 hospitals were cited for their high nurse satisfaction, low turnover, and low vacancy rates. These hospitals shared the following 5 attributes: the nurse executive belonged to the highest decision-making apparatus, indicating their status; nursing services were organized in a flat structure; decision-making was decentralized to units; administrative structures supported nurses' care decisions; and there was good nurse-physician communication. Through the 1980s into the 1990s, these hospitals continued to move to all-RN-staffing, increasing the ratio of patients to RNs, further flattened organizational structures, implemented shared governance, moved RNs to salary from hourly wages, and implemented flexible and varied care delivery models.

A study of 39 magnets each matched with comparison hospitals, found that the magnets demonstrated statistically superior outcomes, reflected by a lower 30-day mortality rates in Medicare patients. Patient satisfaction has also been found to be higher in magnet hospitals. Nurses working in magnet hospitals have reported more job satisfaction, and more support from hospital administrators. Magnet hospitals have also demonstrated better workplace safety for

nurses, who report lower levels of emotional exhaustion, and lower rates of needle-stick injuries. (Aiken et al.1994; Aiken and Sloane 1997; Aiken et al. 1997).

A comprehensive literature review on the effectiveness of magnet hospitals indicates very positive findings in terms of recruitment and retention potential for nursing human resources. Magnet hospital research has shown that nurse administrators in these hospitals display a distinct leadership style. They are visionary and enthusiastic (McClure et al. 1983; Kramer and Schmalenberg 1991; 1988a; 1988b; 1987); supportive and knowledgeable (McClure et al.1983; Kramer and Schmalenberg 1991); they maintain high standards and high staff expectations and value education and professional development of all nurses within the organization (Kramer et al.1987; McClure et al.1983; Kramer and Schmalenberg 1991; 1988a; 1988b;); they uphold positions of power and status within the hospital organization (Kramer et al.1987; McClure et al. 1983; Kramer and Schmalenberg1988a;1988b); they are highly visible to staff nurses and they are responsive and maintain open lines of communication (McClure et al.1983; Kramer and Hafner 1989; Kramer and Schmalenberg 1991; 1988a; 1988b; Kramer et al.1987); and they are actively involved in state and national professional organizations (Kramer and Schmalenberg 1988a; 1988b).

The research also looks at important elements of professional nursing practice among the staff nurses at magnet hospitals. Their ability to establish and maintain nurse-patient relationships (McClure et al. 1983; Kramer and Schmalenberg 1987; Kramer 1990); maintain autonomy and control (McClure et al. 1983; Kramer and Hafner 1989; Kramer and Schmalenberg 1991; 1988a; 1988b; Kramer et al. 1987) and the fostering of collaboration between nurses and physicians (McClure et al. 1983; Kramer and Hafner 1989; Kramer and Schmalenberg 1991; 1988a; 1988b; 1987) were all identified as important conditions for satisfaction and the creation of primary nursing policies.

In these settings, primary nursing involved nurses assuming 24-hour responsibility for a given caseload. They have accountability from admission to discharge, with direct care whenever possible, and they make use of multidisciplinary case management and the use of associate nurses (Manthey 1980; 1988; 1992; 1994). Underlying this delivery system is a philosophy that puts the nurse-patient relationship at the foundation of nursing practice. This supports the notion that autonomy is an important variable in job satisfaction and productivity (Clifford 1990).

Finally, the nurse-physician relationship is an important factor in this system. Two factors seem to foster nurse-physician collaboration: mutual respect for knowledge and competency; and mutual concern for the quality of care.

Any evaluation of magnet hospitals must consider the relationship between nursing practice and patient outcomes. In this line of research, the practice attributes identified above (autonomy, control, collaborative relationships) have been independent variables. Research at the University of Pennsylvania "has demonstrated the beneficial relationships between magnet hospitals…and patient outcomes. When compared with matched control hospitals, magnet hospitals showed lower mortality rates and higher patient satisfaction."

The high visibility of nurse executives remains highly relevant, as the power and status of nurses has expanded into integrated health systems and the community. Within the health care system,

as well, the existence of a visible leader is important for the success of restructuring efforts (Gelinas and Mantley 1995; Ingersoll et al. 1995; Clifford 1992). It is important to be seen as a leader in the nursing discipline who also understands institutional challenges (Clifford 1992). Good communication between the nurse executive and the staff is critical for effective shared governance and communication to those outside the institution is also important (Blendon 1996).

The role of the primary nurse as an integrator of care services on routine and emergency issues is also relevant (Rabkin 1982). This role is best assumed by nurses who have the most day to day clinical contact and knowledge of patient care (McClure 1990). Integration was found to promote "improved comprehensive follow-up care postoperatively, higher levels of patient satisfaction and nurse satisfaction, and a decreased length of stay…in the patient care units on which this model of care was maintained" (McHugh, et al. 1996; Hastings 1995; Rose and Reynolds 1995).

Finally, the issues of autonomy and control in a collaborative context remain relevant. Some studies have replicated the positive relationship between nurse autonomy and job satisfaction (Alpert et al. 1992; Cone et al. 1995; Weisman 1992; Grindell et al. 1996; Knaus et al. 1986; Shortell et al. 1991), and between autonomy, control, decision-making, and satisfaction (Kovner et al. 1994; Wong et al. 1993;Abbott et al. 1994).

c) Role of Nurses in Decision Making

An important part of nursing human resources strategies relates to the empowerment of nurses as political forces and as participants in health care planning. Judd and Ciliska (1985) note that the predominance of nurses in the provision of health care could give them more power in setting the course for health care. More involvement can help to develop skills and knowledge; to express commitment to a philosophy of health and health delivery; to develop a network with members of other disciplines and health care consumers; and to improve self-esteem and prestige.

One mechanism for increasing nurse participation in health care planning is through the mechanism of shared governance. According to O'May and Buchan (1999) shared governance "is a decentralized approach which gives nurses greater authority and control over their practice and work environment, engenders a sense of responsibility and accountability, and allows active participation in the decision-making process, particularly in administrative areas. It is an ongoing, dynamic process, a journey rather than an end. Shared governance has been called an answer to retention, shortages, advancing the profession, and expanding autonomy. Whether this concept is successful is unclear. O'May and Buchan (1999) write "evaluation… in practice is difficult due to the complexity of the concept, the variety of definitions, and the fact that implementation is often occurring in conjunction with other nursing management and practice innovations." A variety of study methods (time-series, longitudinal, etc.) have been used but results have therefore been mixed and inconclusive.

There are potential barriers to the successful involvement of nurses in planning from the management and staff perspectives. From the management perspective, the move from a hierarchical model to a flat one can be difficult, as managers perceive a loss of power. Formal processes to enhance involvement may have to be instituted. Frequent staff changes, or changes at crucial stages can threaten the process. From the staff perspective, motivation to participate

can be low at the outset. Timeliness of implementation and readiness for change are important considerations. Staff may be reluctant to take on new responsibility without new training and skills. Thus, training is an important accompaniment to the introduction of shared governance. Patience and flexibility are needed to deal with a more cumbersome decision-making process. Finally, in an era of cutback in health care, organizational and financial barriers can impede implementation.

d) International Recruitment and General Migration Issues

Another factor in assessing nursing supply is the growth in aggressive international recruitment of nurses (Buchan 2001). This measure is controversial for its potential to cause brain-drain (and shortage) in developing countries. In the past, nurse migration was based on motivation and contacts. Now, large-scale international recruitment is occurring.

The growth in international recruitment presents specific ethical and policy problems. Buchan (2001) has noted that some observers argue for regulating the international movement of nurses, or call for developed countries to compensate the developing ones. This threatens freedom of movement, and also poses practical difficulties associated with agreeing on a compensation scheme. Furthermore, deregulation and globalization point to increased nurse migration.

While international recruitment is an issue, much of the literature is focused on domestic issues. Writing about the UK experience, Buchan (1999) notes that flexible working patterns are a key element of the National Health Service human resource strategy. Flexibility enables workers to balance home (usually child care) and work commitments, including caring for partners/parents, to facilitate access to education, to allow sabbaticals, and to phase in retirements. In addition, career structures and payment systems need to be re-examined if older nurses are to be enticed to stay in the profession.

Educational incentives, such as student grants or bursaries, have been used to try to recruit nurses into specific jurisdictions but they appear to have only short-term benefits and are not enough to retain workers over the longer term (O'Brien-Pallas and Baumann 2000).

e) Key Issues for Nursing Professional Practice

The aging of the nursing work force in Canada and its effects on supply, injury and absenteeism are noted and need to be better understood. A large contributor to nurses leaving the profession appears to be the quality of nursing work life and job satisfaction. Numerous factors are cited in the literature as contributing to a positive or a negative work environment. They relate to economic, social, organizational and professional aspects of nursing care. Policies dedicated to improving these aspects of nursing work life appear to have success in recruiting and retaining nurses over the longer term.

The concept of a magnet hospital has been used in the United States and research indicates it is an effective and comprehensive approach to nursing work life. It is not yet widely used in Canada.

There is also some evidence that involving nurses in health care decision making more broadly and within the institutions where they work has some impact on retention.

There has been a marked increase in aggressive international recruitment campaigns, similar to those we have seen for physicians. This raises the issue of the ethics of enticing workers to leave their home countries set against a back-drop of international labour markets and global mobility.

Lastly, some have argued that the nursing "shortage" should be seen as a symptom of wider policy problems (Buchan 2002). Buchan argues that addressing nursing shortages not as a nursing problem but as a health care system problem would challenge current practice, power bases and vested interests. Therefore, wider system reform that would encompass clarity and balance in the use of nursing skills has not be systematically implemented.

iii) Work Place Issues

a) Factors Contributing to High Quality Work Places

The 2001 list of best places to work in Canada does not contain a single health care work place. It is not surprising then that recruitment and retention problems exist. The work place, particularly for nurses is another potential policy lever that can be used when planning health human resource needs. Analogous issues for physicians include work styles and balancing family and professional life but it is the physician who largely makes decisions in this regard. Many of the issues related to the work place have been reviewed under the nursing work life section. However, a few issues remain that relate to broad elements of the work environment and go beyond the issues specific to nursing.

This section draws heavily on a recent review of factors contributing to high quality health care work places recently released by Canadian Policy Research Networks Inc. (Koehoorn et al. 2002) It emphasizes the need to consider four components that can either enable or constrain the achievement of a high quality work place. The components are:

- the work environment (culture, human resource practices);
- job design and organizational structure including technology;
- employment relationships (trust, communication, leadership)
- industrial relations (relationships between employers, unions, professional associations).

Understanding the interaction of these components is vital to achieving a high quality work place able to attract and retain employees and can be adapted to any sector. One of the most promising areas of work is the link researchers are making between work place hazards and pressures and their effects on employee health. Physical working conditions and their concomitant health risks for employees have long been documented. However, evidence shows that the psychosocial aspects of the work environment are equally as important and that efforts to address the well-being of workers in this regard will have a positive payback. (Karasek and Theorell 1990; Siegrist 1996).

Another area of rich research information is the effect of job design and organizational structure on workers. According to Koehoorn et al. (2002) research has identified the following features of high quality work places:

- Varied tasks requiring a broad set of skills;
- Worker involvement in the whole job;

- Systems that allow workers to exercise discretion and provide autonomy in how the work is done;
- Feedback on performance;
- Opportunities for workers to have input on decisions that will affect their job and their work environment.

The health care sector is more unionized than some thus making industrial relations an important consideration in assessing the quality of work places. As well, professional associations in health care often wield significant clout and in the case of physicians, function as de facto unions with RAND check off and formal representation and negotiation rights. According to Koehoorn and colleagues (2002) "unions and industrial relations are largely invisible in discussions of creating high quality health care work places." They advocate the need for change, requiring a shift in union and management thinking, to forge a new relationship.

The authors recommend a series of initiatives to generate a stable funding environment, to generate more research to assist with planning efforts, to create a collaborative approach to staffing and planning future needs, to encourage a broader understanding of the determinants of a health work place to include psycho-social factors, to encourage greater efforts towards open communication and trust, to implement more flexible work arrangements that recognize work-family balance, and to create integrated human resource information systems to improve planning capacity.

A recent study commissioned by the Ontario Hospital Association (PricewaterhouseCoopers 2001) has highlighted again the need for the health care sector to become a leading edge work environment. Based on a review of research literature and an evaluation of best practices, the research team proposed a number of pilot projects to test innovative human resource strategies in Ontario hospitals.

b) Key Issues in Work Place Focus

The research literature provides a lot of information about the factors required to create a high quality work place. Only recently, has this research been applied to health care settings. However, there does not appear to be much consensus on priorities for action. One of the first steps will have to be some assessment of where to start based on what clearly makes a difference. As much of this evidence comes from a variety of disciplines, cross-disciplinary discussion and consensus is a must. As well, given the complexity of the industrial relations landscape, researchers, practitioners, union and management representatives will need to collaborate to generate positive change.

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