Nursing Shortages: Where and Why

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

There is evidence of a worldwide nursing shortage—including in Canada. In fact, a new report by the Canadian Institute for Health Information (CIHI) underscores registered nurses (RNs) as “a shrinking and aging work force.” Yet, Dr. Ginette Lemire Rodger, past president of the Canadian Nurses Association, noted that the nursing work force is an element important to the sustainability of the future health care system.

Further, the Association confirms that Canada will face a growing shortage of nurses over the next 15 years; specifically, it projects a shortage of 113,000 RNs by 2016, reflecting both expected supply and the increasing demand of an aging population.

Understanding Shortages

Nursing shortages occur when the demand for nursing services exceeds the supply of nurses in the work force. Shortages cannot be measured directly, but must be estimated on the basis of complex models of demand and supply. Demand is determined mainly by the prevalence of diseases, available technology (including advancement of drugs/vaccinations) and public expectations. On the other hand, the supply of nurses is determined by the number of active nurses and the amount of time they work.

A study of nursing in OECD (Organisation for Economic Co-operation and Development) countries summarizes the causes of current nursing shortages. As previous articles have shown, many are linked to working conditions:

- increased demand for nurses due to aging populations
- new technologies that increase the range of treatable conditions
- greater consumer activism
- a falling or slow-growing supply, due to fewer younger people entering the nursing work force
- a greater range of professional opportunities outside nursing
- the low social value given to nursing
- negative perceptions of nursing conditions
- an aging nursing work force
Arguments of Supply and Demand

To a large extent, the current shortage of nurses in the hospital sector is due to the fiscal restraint imposed on that sector in the early to mid-1990s. Other factors have also contributed to changes in nursing employment levels since then. According to supply-side proponents, deteriorating working conditions and stagnant wages have caused nurses to voluntarily leave for better employment prospects elsewhere, including the United States. By contrast, demand-side proponents argue that hospitals have reduced staff levels in response to a decline in inpatient use. As this article shows, both perspectives have merit.

Changing Demand Patterns

The demand for nursing services is determined by a number of factors, including both the size and demographics of the population. Population aging is particularly important as the age distribution of a population affects both the prevalence and patterns of disease.

Disease patterns of aging

With an aging population, the prevalence of age-related diseases is expected to increase. For example, administrative data from Nova Scotia shows that over the next 20 years—other factors remaining the same—there will be a significant increase in treatment requirements for diseases of the circulatory system (36%); neoplasm (29%); endocrine, nutritional and metabolic diseases and immunity disorders (25%); and diseases of blood and blood-forming organs (25%). However, demographics will decrease requirements in other areas, such as complications related to pregnancy, childbirth and the puerperium (12%). For paediatric patients, the prevalence of all diseases will decline.

Demand for RNs by hospital function

In order to fully understand shortages, we have to determine both demand and supply of nurses. Modelling the demand for nurses is a complex task. The Microsimulation Modelling and Data Analysis Division (MSDAD) of Health Canada has built a health human resources model that forecasts the demand for in-hospital and home care full-time equivalent (FTE) RNs per 100,000 population. The model was built using the Discharged
Abstract Data (2000) for all provinces and territories. Utilization-based demand was determined by using Resource Intensity Weights (RIW), which is a measure of the resources used by each discharged patient.

Using the model and a base year of 2001, Figure 1 shows demand forecasts for nurses in both the hospital and home care sectors up to the year 2025.

MSDAD’s model not only projects the aggregate demand for FTE in-hospital and home care RNs, it also breaks down the in-hospital demand for RNs by nursing function, such as paediatrics; medical and surgical; maternity and newborn; oncology; mental health; rehabilitation; critical care unit; operation room/recovery room; ambulatory; and home care.

Figure 2 shows projected demand for RNs by nursing function from 2005 to 2025. This includes all in-hospital RNs, as well as RNs working in home care. As expected, relatively higher growth in demand for RNs is forecasted in nursing functions associated with the treatment of older patients.

Figure 3 shows the projected growth for in-hospital FTE RNs per 100,000 population by province/territory for several nursing functions from 2005 to 2025. The forecasts for demand for different types of nurses will reflect the prevalence of different diseases, as well as the demographics. Overall, the model forecasts a growing demand in all provinces over the next 20 years for selected nursing functions related to aging, such as for medical and surgical, and operation room/recovery room services. However, for paediatrics nursing services most jurisdictions show a negative percentage change in growth, reflecting the aging of the population. British Columbia and Ontario are exceptions to this trend.

Supply of Nurses

Nursing supply is determined by a number of factors, such as the number of students entering nursing school, attrition rates, in- and out-migration, rates of retirement, rates of death, interprovincial migration, working conditions, job satisfaction, retention and more. A headcount of working nurses provides some information about supply, but in order to be a useful tool it must be transformed into FTEs, which reflect the actual labour supply of nurses (see Using Canada’s Health Data, page 44).
FTEs per 100,000 population provide a better picture of labour supply as they account for the actual supply serving a certain number of the population. Figure 4 shows the trend in RNs employment per 100,000 population, by employment status (full-time and part-time), casual status and FTE (per 100,000 population) from 1997 to 2005. Clearly, the number of nurses (headcount) is not a good indicator of labour supply because all nurses do not work the same number of hours—almost half of the total RN population works part-time. Figure 4 also shows that the total number of part-time and full-time RNs per 100,000 population remained more or less the same during this period, while there was a slight downward trend in the total number of casual RNs.

An aging nursing work force

The aging of the nursing work force also affects supply because of increased retirements and reduced working hours for the older nurses who remain in the work force. According to a 2006 report from CIHI, the average age of nurses was 44.6 years in 2004. That same year, 36% of the RN work force was aged 50 years or older, with almost 7% aged 60 or older. According to a CIHI study, the number of RNs eligible to practise increased by 3.4% (254,751 to 263,356) between 2000 and 2004. These figures include RNs employed in nursing, RNs not employed and RNs who failed to state their employment status. By contrast, the Canadian population grew by approximately 4% during the same period, from 30.7 million to 32.0 million.

In summary, it is apparent that in the next few years a good portion of RNs will retire or will be working fewer hours. Unless a considerable number of RNs enter the work force, the supply will not meet the needs of a growing and aging population.

Working conditions and supply

According to one study, poor working conditions are also affecting nursing shortages as older nurses leave the profession and fewer younger workers are attracted to it. The study focused on the need for nursing demand to match nursing resources to ensure a certain degree of predictability in the work environment. It also revealed that:

- Canada’s nursing shortage is due at least in part to a work environment that “burns out” the experienced and discourages new recruits.
- Nurses who are greatly stressed and vulnerable to injury have a higher absenteeism and disability rate than any other profession.
- Though increased workloads improve short-term productivity, they may increase long-term costs, as stress and illness among nurses lead to poor judgment and low productivity.

As discussed in other articles, this situation is exacerbated by the common practice of asking nurses to work overtime rather than staffing vacant or new positions.

Figure 5 illustrates the cycle which results in further nursing shortages and
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To Sum Up

According to the evidence, nursing shortages are affected by a complex mix of supply and demand factors. Canada’s supply of nurses will continue to be affected by demographics, recruitment and retention issues, and working conditions, while demand for nursing specializations will largely be driven by our aging population. From an empirical researcher’s perspective, projecting the future supply of nurses is a complex task since many of the exit/entry issues are a function of working conditions. These conditions will strongly determine whether individuals are attracted to and retained in the nursing profession, and will therefore be an essential factor in the formidable challenge of eliminating nursing shortages.


puts additional strain on working nurses. This disrupts care and makes planning difficult, resulting in considerable costs to the health care system and to the quality of patient care.

In part, working conditions are endogenous. This means that if total patient volume stays the same, then a reduction in nursing staff levels—all other things being equal—will lead to an increase in per-nurse workload—and a worsening of working conditions. This, in turn, leads to more nurses leaving the sector, thereby decreasing staff levels even more.

Recruitment and retention

Recruitment and retention are also key factors in nursing supply. According to a 2006 CIHI report, an average of almost 7 out of 100 RNs exit the profession annually. The exit rates vary from 1.4% in Manitoba to 6.3% in Prince Edward Island, with Yukon and Northwest Territories each exceeding 13%. As presented in Table 1, exit rates also varied by employment status. It should be noted that exit from one jurisdiction to another does not necessarily signal a loss to the Canadian health system; regardless, this still highlights the number and proportion of RNs who chose not to renew their license the following year.

One study emphasizes the significant impact of exits by mid-career nurses in their late 30s and 40s who have 15 or more years’ experience. This group has professional and corporate memory, patient expertise, and the experience and wisdom that young nurses depend on for coaching, mentoring and support.

Table 1: Exit Rate of RNs, by Employment Status, Canada, 2003-2004

<table>
<thead>
<tr>
<th>RN Employment Status</th>
<th>Number of RNs Employed</th>
<th>Exit Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>124,147</td>
<td>3.3</td>
</tr>
<tr>
<td>Part-time</td>
<td>77,380</td>
<td>3.3</td>
</tr>
<tr>
<td>Casual</td>
<td>25,468</td>
<td>7.3</td>
</tr>
<tr>
<td>Unknown</td>
<td>14,347</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>241,342</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Source: Canadian Institute for Health Information, 2006.