

**New Brunswick Health Human Resources
Supply and Demand Update 2008-2015**

**Health Workforce Planning
Office of the Associate Deputy Minister
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1 Project Description

1.1 Background

There are widespread indications that Canada is experiencing shortages in its supply of healthcare providers. In simple economic terms, a shortage occurs when demand exceeds supply. For years, the supply of health professionals has been characterized by boom and bust cycles. At times, planners have perceived an oversupply of healthcare providers and, at other times, a shortage. Cycles such as these are typical of markets where there are lags between when decisions are made – such as increasing training school enrollments – and when the impacts of these decisions become apparent. Policy makers now recognize that smoothing out these cycles requires an improved evidence base for health human resource (HHR) planning, including regular forecasting of future supply of, and demand for, health human resources.

As such, in 2002 the Department of Health in collaboration with the Department of Education and the former Department of Training, Education and Development, commissioned Fujitsu Consulting to conduct a Health Human Resources Supply and Demand Analysis for healthcare groups employed in both the public and private sectors in New Brunswick. The results of this study provided a profile of health occupations in the province and served to inform policy directions, decisions and planning around health human resources from a Department of Health perspective, but also for the educational sector and employers within the health sector.

The goal of the current study is to provide an update to the 2002 work by updating the forecast for the supply of, and demand for, healthcare professionals from 2008 to 2015. This update will inform health human resource planning and policy directions related to the Provincial Health Plan 2008-2012.

1.2 Objectives

The project objectives are as follows:

- 1.** Conduct a high-level environmental scan of current health system trends and issues as they affect the supply of, and demand for, health human resources;
- 2.** Identify the trends and issues that are common to the occupational groups involved in the study, as well as those that are unique to the occupation;
- 3.** Update research, statistics and assumptions to be used in the HHR Supply and Demand Forecasting Model (e.g. seat increases in training programs; demographics of provider population, etc.);
- 4.** Conduct a demographic analysis of current (based on 2007 registration data) composition of each health occupation for which data is available;
- 5.** Forecast, based on available information and data, the supply of, and demand for, health professionals for the years 2008 to 2015;
- 6.** Conduct a supply and demand gap analysis to identify potential ranges of human resource shortages and surpluses within occupations, based on available and sufficient information.

1.3 Intent and Philosophy

As stated in the World Health Organization (WHO) commissioned paper entitled *Integrating Workforce Planning, Human Resources, and Service Planning*¹: “Integrated health human resource planning involves estimating future requirements for human resources and identifying efficient ways of providing for those requirements. There is no unambiguous right number and mix of health professionals. Instead, health provider requirements will be determined by broader societal decisions about the level of commitment of resources to healthcare, the organization of delivery and funding for healthcare programs, and the level and mix of healthcare services. Although more may always be done in terms of service delivery to meet populations needs, whether more should be done will depend on what other things have to be forgone in order to provide the additional resources – considerations which are essentially subjective.”

Health Human Resource forecasting is a challenging exercise – both in measuring the supply of resources in each occupation, and even more so, in measuring demand for the services provided by these resources. As such, the intent of an exercise such as this characterized by the ultimate goal of highlighting the potential HHR issues and challenges that may come in the years ahead. This knowledge allows planners and policy makers to approximate the future as they strive to adopt sustainable system designs and plan for the resulting health human resources these systems will require.

The supply side of the equation is comprised of inputs that are largely measurable and more tangible in nature (current workforce numbers and ages, potential retirements, new graduates each year, ect.). However, current healthcare workforce data are still limited, which affects analysts’ ability to determine accurately the supply of many types of healthcare providers and the way in which they are utilized. Consequently, data-gathering activities for many healthcare professions are primarily limited to conducting head counts, and forecasting new entrants, potential retirements and other attritions from the workforce.

On the demand side, demand for healthcare services is dependant on a wide range of factors, including new diseases, new treatment options, better-informed consumers, new technologies and pharmaceuticals, changes in healthcare delivery, and an aging population. Furthermore, ‘upstream’ interventions characterized by a health promotion/population health approach also influences demand. As such, the impact is difficult to evaluate. Demand for health professionals is often approximated using utilization-based measures. Utilization is the degree to which the population uses the healthcare system. However, utilization-based measures do not take into account demand that is unmet in the system.

Determining the extent and immediacy of a human resource shortage situation in various health occupations requires a measured combination of health human resource forecasting estimates in concert with healthcare system knowledge and experience, which is often comprised of anecdotal information that is more difficult to measure, such as: longer wait times to get into certain health professionals; or the inability to attract a professional to a certain healthcare setting or region. However, employing this combination of inputs can inform health human resource and health system delivery planners, so that policy adjustments can be made well before a shortage situation is critical.

Despite data limitations that exist around many health occupations, it is believed that consideration of forecasting estimates, when combined with health system knowledge, experience and practical evidence is still a more prudent approach than static HHR planning, immobilized by fear of data limitations and imperfect information.

¹ Linda O’Brien-Pallas, Stephen Birch, Andrea Baumann, and Gail Tomblin Murphy. WHO 2001.

2 Approach and Methodology

2.1 Data Collection

Several data sources were used as the basis for occupational analyses and forecasting. The primary data source is the Department of Health's Service Provider Database (SPD) which is populated directly from the most recent membership year (in this case 2007), via registration forms submitted by association members. The following groups are part of the SPD:

1. Audiologists
2. Speech Language Pathologists
3. Physiotherapists
4. Occupational Therapists
5. Medical Laboratory Technologist
6. Medical Radiation Technologists
7. Registered Nurses
8. Licensed Practical Nurses
9. Social Workers

For all other groups included in the study, membership data was provided directly from the associations as per a prescribed Minimum Data Set (MDS)² created for the purposes of the HHR Update (provided in Appendix C). The following groups provided data, as available, in this format:

1. ECG/Cardiology Technologists
2. EEG Technicians (Electroneurophysiology Technicians)
3. Health Information Management Professionals
4. Primary Care Paramedics
5. Public Health Inspectors
6. Respiratory Technologists/Therapists
7. Dietitians
8. Psychologists

It is important to note, that it was not possible to conduct a forecast for all groups listed above, either due to small size of group or incomplete data. However, trends and issues related to supply of, and demand for, health human resources; and data analysis of current group membership/composition was conducted to the extent possible given available information.

2.2 High-Level Environmental Scan

The environmental scan was based on available information on the healthcare delivery system in New Brunswick in its current state, as well as plans for future adjustments in the delivery of healthcare and use of healthcare professionals in the province. This scan also took into account broad issues that could affect both supply of, and demand for, health human resources to the year 2015.

The environmental scan included, but was not limited to, the following resource materials³:

- The Provincial Health Plan 2008-2012
- The Provincial Health Plan 2008-2012: Major Initiatives

² Minimum Data Set (MDS) provided in Appendix C.

³ Complete list of resources; study participants; and references is provided in Appendix B.

- New Brunswick Health Human Resources Planning: Gaining Momentum
- Atlantic Health Human Resources Planning Study (2005)
- Canada's Health Care Providers, 1997 to 2006 - A Reference Guide (Canadian Institute for Health Information - CIHI)
- Moving Forward: Pharmacy Human Resources for the Future (September 2008)
- Occupation-specific Annual Reports and Research Papers, as available

2.3 Occupational Group Input

Stakeholders from the health occupational groups included in the study informed the Health Human Resources Supply and Demand Update by providing feedback on occupation-specific trends and issues as they affect HHR supply and demand in that occupation.

Input to this exercise was provided by: Associations; Regional Health Authorities; and a wide spectrum of Department of Health divisions (a full list is provided in Appendix B). This input was used to inform the update process and will continue to be used by planners on an ongoing basis. As well, the main themes for each group are included in subsequent sections under "Trends and Issues", as presented for each occupation. The template completed by the groups and titled "Trends and Issues for Health Occupations" is provided in Appendix D.

2.4 Labour Market Inputs

Labour market inputs include information received from the groups themselves; as well as training institutions (colleges and universities); Maritime Provinces Higher Education Commission; and the Department of Post Secondary Education Training and Labour (PETL).

This data includes information on training programs such as: length of program; number of seats; attrition rate; number of graduates; and plans for adjustments to programs (seat increases or decreases, new programs, etc.).

2.5 Health Human Resources (HHR) Forecast Model

As designed and created in 2002 for the original study, the HHR Supply and Demand Forecast Model is based on a common basic structure used for forecasting supply of, and demand for, human resources. The three components of such models are:

- Supply Side - available supply of HHR
- Demand Side - demand for HHR for the healthcare delivery system
- Gap Range Analysis - the interaction of supply and demand, and the resulting equilibrium or disequilibrium (positive or negative)

It is important to note that the availability of demand-side data remains limited at this time due to major reforms currently underway (e.g. HHR requirements associated with implementation of Provincial Health Plan initiatives). Therefore it is prudent for the current update of the HHR forecast model to largely depend on supply-side data elements. Supply side elements include such inflow/outflow factors as: new entries to occupation from training programs, and exits from occupation due to retirements, deaths, migration and other attrition.

The forecast period for the current update exercise is 2008 to 2015. Based on feedback received on the 2002 study from key stakeholders, the update was re-designed to forecast gap planning ranges versus point forecasts (single number). The range forecast incorporates plus or minus ten percent to account for variations in planning assumptions or policy and system changes that might occur but are not known at this time. The specific components and details of the model are presented in subsequent sections, and forecast model explanations and assumptions are presented in more detail in Appendix E.

2.5.1 *Supply –Side*

Supply of health human resources is determined by a number of factors, such as the number of students entering training institutions; attrition rates; net migration rates; rates of retirement; mortality rates; working conditions; job satisfaction; and a variety of other factors to recruitment and retention.

The supply-side formula for the forecasting model is as follows:

Current Stock + Increments - Exits

Current Stock – the current stock of individuals in an occupational group (head count method, not full time equivalents or FTEs, that are registered and working in the occupation).

Increments – based on available data, including:

New entrants – output from all training programs during the 2008-2015 period (sources known to provide supply the NB workforce in each occupation). The percentage expected to stay in NB or come to NB is estimated based on occupational research and historical trends.

Reserve Pool (where data exists) – includes the pool of inactive workers trained to work in an occupation but are currently not employed in that occupation (may either be unemployed or working in another occupation). The reserve pool is an important input from a policy perspective, as these workers may need to be provided an incentive to return to the workforce in that occupation.

Net Migration or Net Flows (in-migration, immigration, and out-migration) - individuals coming into NB from other provinces or countries, as well as those leaving NB. General provincial migration rates by age group and gender are utilized.

Exits – attrition from the labour force due to a variety of factors both temporary and permanent in nature, such as: short or long term disability, maternity leave, participation in training programs, retirement, death, emigration or out-migration; and non-retirement and non-death attrition due to lifestyle choices, continuing education, health issues, etc.

2.5.2 *Demand-Side*

The demand side of the model uses as its base the 2-year average public-sector vacancy rate for each occupation, as well as any private sector job postings over 2008. As discussed previously, the demand side presents challenges due to data limitations that do not allow the exact measurement of current and future demand in the system. As such, basic measures and best-informed data and information are used to approximate demand at this time. During the HHR policy and planning stages, planners' knowledge and experience must be considered in concert with the results of the numerical forecasting exercise.

Demand factors that are difficult to quantify include such things as public expectations, changes in the healthcare delivery system and the promotion of wellness strategies, which will all impact how healthcare resources are utilized in the system. These are the factors that must be taken into account by planners supplementary to the forecasting exercise.

2.5.3 *Supply and Demand Gap*

The supply and demand gap analysis requires that the supply and demand components of the forecast model interact to produce the resulting equilibrium/balance or disequilibrium/imbalance. The gap analysis predicts future shortages or surpluses by occupation within a range (based on sufficient information).

The gap analysis presents the difference between forecasted supply of health professionals in an occupation and perceived demand for professionals in that occupation, as well as the immediacy of that imbalance over the 2008-2015 forecast period.

Forecast model results for each health occupation are presented throughout Section 4, in the subsection for group, under the heading 'HHR Forecast'. And a summary table (Table 17) in Section 4.6 presents the gap ranges for all groups for select years: 2008, 2011, 2015. Of note, bracketed figures in the *+10%* and *-10% gap range* columns of the tables indicate shortage in that occupation for the given year.

It is important to note that occupational shortages are cumulative over time, in that, if status quo prevails and no actions are taken to redress the gap, it will mount and intensify over the forecast horizon given that each year builds on the previous year's forecast result. However, if actions are taken in a certain year to reduce the gap, there will be an associated reduction in forecasted shortages in subsequent years.

Evidence based best practices implemented to redress these forecasted gaps, particularly in crisis situations where all parties agree that status quo is no longer an option, can yield extremely positive results.

3 Overarching Trends and Issues Affecting HHR

The New Brunswick healthcare workforce is impacted by a wide range of factors coming from within the province, the region, across the country, and increasingly, internationally. There are a myriad of global issues all contributing to the raising concerns about future shortages in the healthcare workforce including: lower enrollment in many training institutions over the past decades; the lengthening of the period of study in many health programs; the older enrollment age of students; a trend towards earlier retirement; and the pending retirement of the baby boomers.

This section examines overarching trends and issues from various angles: the labour market in general; the healthcare workforce and healthcare delivery system in New Brunswick; and the socio-demographics of the New Brunswick population as they impact demand for healthcare in the province.

3.1 National Context

3.1.1 Labour Market – New Workers

Looking ahead, the growth in Canada's labour market will slow substantially. The period of rapid growth in the labour force is over. From 1991 to 2001, labour force growth was 9.5 percent, however demographic and economic projections call for very little net growth in the labour force by the second decade of this century. Baby boomers aged 37 to 55, made up 47 percent of the labour force in 2001 and ten years from now, one half of this group will be aged 55 or older, and 18 percent will be aged 60 or older. As the baby boom generation ages, it's members will be retiring. Even if they continue working, many will most likely reduce their work hours unless incentives exist to do otherwise.

According to the Atlantic Institute for Market Studies (AIMS), Canada's employment base will drop suddenly over the coming years as the country "steps off the edge of a demographic cliff". AIMS has determined that the country is entering an era of severe and worsening labour shortages. Since the 1960s about a quarter of a million people have entered the workforce each year, but with the baby boomer generation nearing retirement that number will drop significantly. Over the last 50 years the labour force in Canada grew by 200 percent. In the next 50 years, the labour force will only grow by 11 percent, which clearly supports the need for sustainable health system design reforms based on limited human resources in general.

3.1.2 Demographics of the Healthcare Workforce

In Canada the health workforce is aging as the 'baby boom' generation of health workers begins to reach retirement age. This reality poses health human resources planning challenges when coupled with the present labour force dynamic and the workforce generation gap challenges as discussed below.⁴

For the first time in history, the workforce spans four generations. This presents significant challenges and opportunities for health human resource planners as well as for managers at the institutional level. Different strategies may be required to entice and motivate the members of each generation, requiring an understanding of each generation's unique set of characteristics, values and perceptions of the ideal workplace.

⁴ Canadian Institute for Health Information (CIHI), December 2008.

According to the literature, each of these four generations is unique and markedly different from the others. The Veteran's group born between 1922 and 1945, value hard work and self-sacrifice. This group respects authority.

The baby boomers, those born between 1946 and 1964, tend to question authority. They value social status and are sometimes workaholics.

The generation Xers (born between 1965 and 1980) have tendencies toward self-reliance and value career security over job security. They are accustomed to direct and immediate communication and are more interested in achieving work-life balance.

Finally, the youngest generation in the healthcare workforce, generation Y (born after 1980), is comprised of people who tend to be more goal-oriented, desire immediate feedback and favor meaningful work.

This wide generational span equates to a broad spectrum of work desires and practices, which are currently impacting and will continue to impact the healthcare workforce significantly in coming years. The newer generation of workers is demanding increased job flexibility; opportunities for part-time employment; and less desire to work overtime hours and sacrifice lifestyle for work, which was very common in the veteran and baby boomer generations.

Increased awareness of this new workforce reality points to the need for HHR planners and policy advisors to rethink current work environments and the utilization of healthcare workers in general.

3.1.3 The Economics of Retirement

Ongoing economic uncertainty, market volatility and declining portfolio values in the 2008 are trends that raised serious issues for those already in retirement or actively planning for it. Of course, it is too soon to conclude that shrinking investment portfolios will result in workers postponing their retirement plans. However, early surveys and reports indicate that many workers are pushing back their anticipated retirement age.

Therefore it is prudent to consider that if retirement postponement decisions materialize and are prevalent in the healthcare workforce, the impact on the shortage situation forecasted herein could be muted somewhat in the near-to medium-term.

This changing retirement dynamic, however, may lend itself to new mentoring opportunities for job sharing arrangements between mature experienced professionals and new entrants to the healthcare workforce; as well as job sharing opportunities between these professionals and young mothers, who are both seeking part-time and/or flexible work opportunities.

3.2 Provincial Context

3.2.1 New Brunswick Population Demographics

There are two components to New Brunswick's demographics that will impact healthcare in the future – both from a supply and demand perspective.

First, is the declining population in the young age groups – from 2001 to 2006 there was a 9.1 percent decrease in the number of NB residents aged 0-14 years. As discussed in the previous section, the decline in the younger demographic has negative implications for future workforce numbers in the province. What this means is that there will be fewer younger people and they will be choosing to enter an even wider array of careers than ever before – with healthcare being just one sector they can choose from.

Second, as discussed above, though New Brunswick continues to experience a population decrease (738,133 in 1996, 729,997 in 2001 and 729,498 in 2006), it is the composition of the population that is important in terms of delivery of healthcare services. The aging baby-boomer generation will begin to create a large population bubble in the older age groups. As discussed previously, the incidence of age-related diseases is projected to rise, which will have a major influence on future demand for healthcare services and an associated increase in the requirement for certain types of health human resources.

3.2.2 Remuneration

A common thread amongst all healthcare occupations is concern about remuneration of workers as it affects recruitment and retention of qualified professionals. Remuneration or wage disparity impacts recruitment and retention in several ways – both from a regional, inter-provincial, and international perspective as New Brunswick competes for professionals that may be attracted to other jurisdictions; but also in terms of in-province competition for professionals in the public versus private sector.

3.2.3 Technology – New Brunswick’s Competitive Advantage

Many trends and issues affecting health human resources are anticipated to have a negative impact on the workforce in New Brunswick, however, the potential for technology’s positive influence on patient care and healthcare delivery in New Brunswick is immense. This rapidly advancing component of healthcare has the potential to be maximized in order to alleviate some human resource challenges and shortages in most every health occupation. In fact, technology is New Brunswick’s competitive advantage and the province is very well positioned to exploit the highly advanced technology sector that has been germinating and growing in NB over the past decade.

As an example, over a decade ago the Tele-Care pilot project was launched. The Tele-Care program is one example of successful use of technology to better patient care in the province by improving access to rural health, while at the same time increasing system efficiency. Other promising tele-health applications are emerging, especially the community based services.

3.2.4 Provincial Health Plan 2008-2012

The ‘Charter for Change’ stated that the role of nurses, nurse practitioners, pharmacists and other healthcare providers would be enhanced so as to improve patient access to primary healthcare. The Provincial Health Plan provides further detail by presenting the major initiatives that impact the demand for health human resources in the province, as follows:

Primary Health Care Access: Six new Community Health Centres (CHCs) will be established. These include two new rural CHCs in Rexton and Haut Madawaska; one new urban CHC in Fredericton; three new CHC satellite services (Centre communautaire Sainte-Anne in partnership with the new CHC in Fredericton; Centre Samuel de Champlain partnering with St. Joseph’s CHC in Saint John; and Saint-Isidore partnering with the CHC in Caraquet).

Primary Health Care Team Pilot: A pilot program will be pursued to establish primary health care teams to enhance collaborative service delivery in community-based physician practices. This will enable physicians to provide multidisciplinary support to their patients.

Extra-Mural Enhanced Access to Home Health Care Services: Additional Licensed Practical Nurses (LPNs) and rehabilitation support personnel will be added throughout the province and a pharmacist demonstration project will be implemented in one region to enhance access to home health care services.

Cancer Care – Radiation Therapy: In agreement with the Government of Canada, New Brunswick will establish a radiation therapy wait-time guarantee of eight weeks by March 2010. To this end, the Province will review, develop and apply strategic processes for supply-and-demand projections in order to ensure that the patient wait time guarantee is met.

In terms of specific HHR groups, the Provincial Health Plan commits the following.

Allied Health Care Professionals

The Department of Health will introduce a mentorship program for newly recruited allied health professionals, similar to what currently exists for nurses. The primary intent of this program will be to facilitate a seamless integration of new health professionals into the health-care team and foster a positive first impression of the workplace thus contributing to both recruitment and retention of specialized health professionals.

Enhanced funding will be provided for the New Brunswick Health Bursaries Program, which targets harder-to-recruit health-care professionals in the public sector.

A new provincial initiative focused on using the right mix of pharmacists, pharmacy technicians, pharmacy workers and technology will be undertaken to ensure that valuable pharmacist resources are used as effectively as possible in hospital settings.

Nursing

- The optimization of the roles of nursing care providers will continue with a focus on the registered nurse. A review of nurse utilization will be initiated to ensure RNs are utilized to their full potential in every sector of the health-care system.
- In collaboration with RHAs and stakeholders, the Department will establish a Quality Work Life and Attendance Management Committee to identify ways for employees to achieve and maintain regular attendance within a supportive work environment.
- A subsidy program will be developed for nursing faculty members to pursue graduate studies. Bursaries of \$10,000 will be offered each year.
- The Department will work the NBNU and stakeholders to develop a student loan forgiveness program for student nurses in the final year of their nursing program.
- A bursary program will be developed for student practical nurses in their final year at NBCC. LPNs who remain in the public sector will be able to apply for a bursary.
- A summer employment program for student practical nurses to improve job readiness will be put in place in cooperation with RHAs and nursing homes.

- A total of 75 new seats over the next three years will be added to LPN programs at NBCCs as a means to increase future supply (both Francophone and Anglophone).
- Primary health care nurse practitioner positions will be increase by 40 new positions over the next four years.
- In an effort to utilize nursing resources to their full potential, the Department will offer replacement cost and reimbursement of tuition fees for LPNs to complete medication administration programs.
- The Department will collaborate with RHAs, educational institutions and other stakeholders to asses learning needs and provide educational/professional development opportunities for nurses.

It is important to note, however, that the details and actual impact on health human resources from the initiatives presented above are still largely undetermined, but must be factored into future resource planning along with the results emanating from the current study.

4 Health Human Resource Supply and Demand Analysis, by Occupation

This section presents detailed information for each health occupational group. It should be noted that the Trends & Issues section is based on reported information provided by the occupational groups themselves and supplemented with available research. The scope of the current exercise did not allow for detailed substantiation of all the information being reported by the groups.

The 'Current Workforce Analysis' section for each group is based on 2007 data, the most current year of the membership data available when the exercise was conducted.

4.1 Social Sciences

4.1.1 Clinical Psychologists

Trends and Issues

Entry to Practice requirements

Currently a Masters' degree, a year of supervision and a pass on the written exam are the requirements for becoming a certified member of the College of Psychologists of New Brunswick (CPNB). As of July 1, 2011, a Ph.D. will become the new entry point to this position. In view of these new requirements, the College is working closely with New Brunswick universities to ensure that the programs offered meet CPNB requirements.

One of the Ph.D. program requirements is that students do an internship of 1600 hours in an accredited psychology department. Currently, there is one accredited internship program in the province. It is a partnership involving both the Stan Cassidy Centre for Rehabilitation and the Doctor Everett Chalmers' Hospital, both located in Fredericton.

Currently capacity for such internships across Canada will not meet the demand resulting from this new requirement. As such, accreditation and funding of additional psychology departments is key to ensuring that students can complete an internship, preferably in their home province, as studies show students often stay where they've completed their internship. Having additional funding for such accredited psychology internship programs in the province would also support recruiting and retention of Psychologists in general.

Currently, a limited number of Psychology services in the province would meet the necessary criteria to become accredited, adding a significant challenge to this new entry-to-practice requirement, which several jurisdictions across Canada do not support.

Public Sector Retention

The College indicated that psychologists in the public sector are leaving their jobs to work in the private sector for a variety of reasons. This presents challenges in terms of filling psychologist positions in the public sector, and often the positions are filled by health professionals who are not psychologist.

According to the profession, one of the factors contributing to this movement includes, but it not limited to, the lack of delineation/clarification of roles of mental health professionals, in that the distinct qualifications, role and benefit of Psychologist in the system is often not distinguished from other professionals, such as social workers and nurses, several of these health professionals having similar and complementary competency profiles.

Current Workforce Analysis

In 2007 there were 412 Psychologists registered to practice in New Brunswick. This is a significant increase (47 percent) from the 279 Psychologists recorded in 2002. The majority of this group is female, 267 or 65 percent, while 144 or 35 percent are male. The average age of this group is one of the oldest of all health occupations at 49 years, an increase from 46 years in 2002.

The distinguishing factor of the demographic analysis for this group is that when analyzing the 5-year age groupings, the highest percentage of this workforce (19 percent) is in the 60+ age range. Only 5 percent of this workforce is under the age of 30; 16 percent are in the 30-39 age range; 22 percent are between 40 and 49; and 24 percent are in the 50-59 age grouping. Age is unspecified for 15 percent of this professional group.

The retirement and replacement scenario for this group is critical, in that 30 percent of this workforce is currently 55 years of age or over (and this is not including the 60 individuals for which age is not specified). In addition, another 15 percent of Psychologists will enter the 55+ retirement zone within the forecast horizon. The high proportion of this workforce over 55 years of age may be characterized by the large number of psychologists who retire yet for many years still maintain a part-time private practice for which it is difficult to determine the full-time equivalency.

HHR Forecast

Due to insufficient data to populate the forecast model at the time of this HHR Update exercise, it was not possible to conduct a forecast for this group. However, the workforce analysis presented above, in terms of the retirement replacement scenario will present significant HR planning challenges for the Psychologist group within the forecast period.

4.1.2 Social Workers

Trends and Issues

Increasing Economic and Social Needs of Population

It is now widely acknowledged that economic and social problems are linked to dependence on social services. These types of problems are on the rise in New Brunswick. Subsequently, an increasing demand for services throughout the province is occurring. Furthermore, the changing demographics of the New Brunswick population in terms of aging, implies increased requirement for services offered by Social Workers specializing in gerontology in order to meet the needs of this growing cohort.

Recruitment and Retention

The 50+ age group of Social Workers in New Brunswick has increased since 2002, and hence replacing retirements will become more challenging, as there are not enough new social work professionals to replace those leaving the profession due to retirement. As such, it will be imperative to keep and attract

as many graduates as possible in coming years. It is believed by the profession that the development of a repatriation strategy targeting social work professionals is critical.

It is suggested by the profession that education programs should have specialized streams to reflect new clientele and the complexities encountered in terms providing service for an aging population, palliative care, etc.

In terms of retention, Social Workers are reporting an increasing workload/caseload throughout different areas of practice, as the 2002 Fujitsu report states, ‘unrealistic caseloads remain one of the primary disincentives to job satisfaction and retention...’ (p.61) and the profession believes this reality still applies.

Current Workforce Analysis

In 2007, there were 1512 Social Workers registered in New Brunswick, as compared with 1281 in 2002, an 18 percent increase in the workforce. However, of these 1512, a total of 82 registered Social Workers indicated on their 2007 registration forms that they are seeking employment in the field, which indicates they were not employed in the profession at that time. As such, the number of ‘active’ Social Workers would appear to be 1428; compared to 1185 active Social Workers in 2002.

The average age for this group is 49 years, a significant increase from 42 in 2002. This group is predominantly female (1236 or 82 percent), and of this female group 46 percent (41 percent of the total group) are in the childbearing age range (< 40 years), which presents HR challenges in terms of planning for short-term maternity leave and accommodating increasing desires for flexible and part-time employment.

In terms of the permanent replacement scenario due to retirements, there are currently 292 (19 percent) Social Workers within the potential retirement zone (55+). Another 10 percent of this workforce will enter the retirement zone within the forecast period.

HHR Forecast

Table 1 Social Workers Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	1428	(56)	(68)
2009	1436	(105)	(128)
2010	1447	(151)	(184)
2011	1462	(193)	(236)
2012	1480	(232)	(284)
2013	1501	(269)	(329)
2014	1523	(305)	(373)
2015	1547	(339)	(415)

(Bracketed figures indicate shortage)

The number of workforce new entrants is not anticipated to keep pace with retirements and other attrition over the forecast period. This expectation coupled with a significant shortage in this profession at present state, is causing the forecasted shortage situation for Social Workers to intensify significantly over the forecast period.

As noted in the previous section, the average age of Social Workers increased significantly from 42 years in 2002 to 49 years in 2007. The retirement scenario presents some risk and HR planning challenges for

this group, with approximately 30 percent of the group in the retirement zone. This risk continues to intensify beyond the forecast horizon as an even larger bubble of professionals (currently in the 40-50 age range) approach retirement.

The Department of Social Development (SD) has a Strategic Workforce Planning Initiative called “Effective People Strategy 2010”. This is a 3-year strategy adopted by Social Development in an effort to sustain and maximize its human resources. Of note, it was recognized that there are specific recruitment and retention issues for Social Workers within the child welfare programs. As such, an Attraction, Recruitment and Retention strategy specific to Child Protection was formulated to address this issue, which is also part of the Effective People Strategy.

4.2 Rehabilitation and Pharmacy Professions

The overarching trends and issues common to the Rehabilitation and Pharmacy professions, as they affect supply of, and demand for, human resources include:

Demographics of the Professions

Common with many of the health occupations, professionals in the areas of rehabilitation and pharmacy are predominantly young and female, which poses challenges for human resource planning in terms of meeting increasing demand for service while accommodating short-term leaves. As well, this new generation of workers (male and female) and post-maternity females desire more flexible work schedules and/or permanent part-time employment, which understandably, is a difficult balance in the face of increasing demand for services from these groups. Although it may be challenging from a “management” perspective, targeted HHR strategies, such as job sharing arrangements between young mothers of similar professions, may need to be further explored as this is a common characteristic of many health occupations.

Demographics of the Population

The aging population in New Brunswick will pose increased demand for the services provided by these occupations. An increasing rate of obesity and related disorders as well as other chronic conditions associated with aging will continue to put tremendous pressure on these professionals. Additionally, the aging cohort of baby-boomers are anticipated to desire an increased quality of life as they age; be it from rehabilitation services, drug therapy, etc. This cohort is also very informed and astute in terms of medical knowledge, hence there will be heightened demand for leading-edge treatment options to maintain health and/or regain health after injury and illness versus previous generations.

Requirement for Support Personnel

There is an identified need in the Rehabilitation and Pharmacy areas to optimize the utilization of formally trained support personnel in the delivery of these specialized services. Integrated use of support personnel will increase access to the high-demand services of these professions (i.e. reduce wait times), while alleviating professional workload issues associated with performing clerical and other non-professional duties that must be performed on a daily basis. Professionals can then delegate tasks and spend more time related to assessing, analyzing and developing treatment plans for patients. As well, increased focus by support personnel on maintenance programs and regular monitoring following clients’ discharge from regular treatment may reduce the need for clients to resume direct therapy due to current limited follow-up opportunities.

In the case of Rehabilitation Technicians, in 2007 CCNB (Campbellton Campus) introduced the first formal program in New Brunswick. The first group of students will graduate from this program in June 2009. As for NBCC, a market study to develop a formal training program within the School of Health (Saint John Campus) for these new service providers is underway.

4.2.1 Audiologists and Speech Language Pathologist (SLPs)

Trends and Issues

Aging Population and Service Demand

As discussed in various sections of this report, the overarching demographic issue, as identified by the Association of Speech Language Pathologists and Audiologists, that will impact Audiologists and SLPs over the next decade and beyond is the increasing aged population. In particular, the primary source of Audiology referrals are from this geriatric population. Stroke is the primary driver of SLP services in the adult population. Since the incidence of stroke increases with age, so too does the requirement for rehabilitation services.

Early Diagnosis

Widely accepted evidence shows that language skills are the number one predictor, both at school and in life. Research also supports the practice of ‘early intervention’, and in fact, current practice and research points to the need for intervention before the age of 30 months in order to achieve optimal outcomes.

As reported by the Social Workers’ group, economic and social problems are not only linked to dependence on social services, but children from these socio-economic backgrounds are recognized as a “high risk” population group, as far as incidence of language disorders. As these types of socio-economic problems rise, so do the risks of language disorders in infants and children.

Given this convincing evidence, new government funding was committed to the development of implementation of two major provincial initiatives aimed at preventing language disorders in infants and children. In 2000, a provincial initiative “Talk-With-Me”, which focuses on promoting early language skills and prevention of language disorders, was implemented. The main objective of this provincial program is to assist SLPs, Audiologists, and other early and appropriate interventions.

As well, in April 2002, NB became the second jurisdiction in Canada to fund and implement a provincial universal infant hearing screening program. Every baby born in New Brunswick is now screened for potential congenital hearing disorders before they are discharged from hospital. In the past, some of these hearing disorders would go undetected for the child’s first year or more, significantly impacting their language and social development skills.

Support Personnel

Research indicates that the current need for Speech Language Pathology and Audiology Assistants will continue to grow. As such, the inclusion of formally trained support personnel is crucial to increasing access to quality SLP and Audiology services in the province.

NBCC (Saint John Campus) is currently leading a market study for the development of a comprehensive, competency-based curriculum with firm grounding in physiological and functional speech/language/hearing disorders, as well as other congenital and/or acquired neurological disorders impacting mobility and activities of daily living.

This consultation exercise will also involve the creation of a provincial Advisory Committee whose mandate will be to oversee the development and implementation of this new “generic” rehabilitation program. This process will be very similar to the one adopted while developing and implementing the “Techniques de réadaptation” program offered at CCNB (Campbellton Campus) since September 2007.

As reported earlier, having formally trained support personnel fully integrated within the healthcare team should lead to a greater job satisfaction, which, in turn, will contribute to the retention of current professionals as well as to the recruitment of prospective SLP and Audiologists to the province.

Access to Technology

Telehealth related advancement in technology should be used to increase the productivity of SLPs. Such technology enables them to have more ongoing collaboration with other service providers, reduce travel time, and provide services to rural areas – key to service provision in New Brunswick.

Access to Francophone Services

There is a limited capacity for training SLPs who can deliver services in French. As such, these health professionals are highly in demand in rural New Brunswick, as well as in urban centers across Canada requiring Francophone services. As such, recruitment to rural, francophone communities remains challenging. Therefore, the availability of recruitment incentives is viewed as a priority.

Current Workforce Analysis

A pressing issue for the Audiology and Speech Language Pathology professions, as discussed in more detail below, is the predominantly female workforce coupled with a large portion of personnel in the under-40 childbearing age range. This presents challenges in meeting growing demand for service while accommodating one-year maternity leaves and increasing desire for permanent part-time employment once returning to the labour force in order to meet family demands while maintaining permanent employment.

Audiologists

There are 45 active Audiologists registered in New Brunswick, compared with 40 in 2002 – an increase of 12.5 percent over this time period. The majority of Audiologists are female (34 individuals or 76 percent). Of the 34 females in this group, 70 percent (24 individuals) are within the childbearing age range (under 40). This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to filling temporary positions for this time period.

The average age of this group has increased slightly from 37 years in 2002 to 38 years in 2007. A detailed age breakdown reveals that 26 percent of this workforce (12 individuals) are under 30; 36 percent (16 individuals) are in the 30-39 age group; 24 percent (13 individuals) are in the 40-49 age group; and 13 percent (6) are 50+.

The retirement scenario for this group is not critical within the current forecast period; with less than 5 percent of this group currently in the 55+ retirement zone, and another 10 percent to enter this zone within the 2008 to 2015 period.

Speech Language Pathologists (SLPs)

There are 179 Speech Language Pathologists in New Brunswick compared to 148 in 2002 – a growth in this workforce of 20 percent over this time period. The majority of SLPs are female, 165 or 92 percent, and a large number of these (57 percent) are in the childbearing age range (under 40 years of age).

A further age group analysis reveals the average age of this group to be 40.5 years, compared to 39 years in 2002. Of the total, 28 SLPs (15 percent) are under 30 years of age; 68 (37 percent) are in the 30-39 age group; 60 (33 percent) are in the 40-49 age group; and 23 (13 percent) are over 50 years of age.

The retirement risk for this group within the forecast period is fairly low, as only 5 percent of the group is currently in the 55+ retirement zone; and less than 10 percent are entering the zone in the 2008 to 2015 period.

However as with all the rehab groups the human resource planning challenge lies more in accommodating short-term leaves, as well as part-time and flexible working arrangements for the predominantly female under 40 demographic.

HHR Forecast

Audiologists

Table 2 – Audiologists Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	45	(2)	(2)
2009	48	(1)	(1)
2010	51	0	0
2011	54	1	1
2012	57	2	2
2013	59	2	3
2014	62	3	3
2015	64	3	4

(Bracketed figures indicate shortage)

The Audiologist workforce has made gains since the 2002 forecasting exercise, which forecasted a shortage of four Audiologists by 2007. As presented in the above table, there is relative equilibrium in this workforce over the forecast period, particularly if the system increases its concerted effort to ensure the proper skill-mix to optimize these resources.

If New Brunswick can expect to attract three new entrants per year into the Audiology workforce, as assumed in the forecast model, then it is estimated that there is sufficient supply to support expanded/increased requirements for these professionals as indicated under Trends and Issues in the preceding section.

Consistent with increased efforts towards wellness promotion, a trend to note that could potentially increase the demand for Audiologists may be the expansion of Audiologists into more community and work environments in order to prevent work and leisure related hearing impairments.

Speech Language Pathologists**Table 3 – Speech Language Pathologist Supply and Gap Forecast**

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	179	(9)	(11)
2009	187	(11)	(14)
2010	194	(14)	(17)
2011	201	(16)	(20)
2012	208	(19)	(23)
2013	215	(22)	(27)
2014	221	(25)	(31)
2015	226	(29)	(36)

(Bracketed figures indicate shortage)

The SLP workforce shortage situation has shown improvement since the 2002 forecasting exercise was conducted. At that time a shortage of 47 SLPs was predicted for 2007. Due to actions taken since that time in an attempt to moderate the forecasted shortage situation, such as the introduction of on-the-job trained SLP Aides within the province-wide Early Language Services (Talk with Me) and Rehab Assistants within the Extra-mural program, the forecasted shortage of SLPs out to 2015 is not as dire. However, the forecast presented in Table 3 still represents an HR planning challenge and will require vigilance to prevent the forecasted shortage from becoming reality.

The current shortage situation will intensify over the 2008 to 2015 period. The forecast model assumes an average of 13 entrants each year into the SLP workforce. However, based on historical figures this number varies widely year to year (between 8 and 13). The impact of this new entrant variability on a small workforce is important to recognize in that the shortage range on a yearly basis, as presented above, may be overstated or understated as a result.

4.2.2 Occupational Therapists (OT)

Trends and Issues

Demographics of the Profession

As discussed in detail in the Current Workforce Analysis presented below, the profession is relatively young (average age 36 years), and is predominantly female, thus a high number of professionals taking maternity leave continue to be a challenge for this profession in New Brunswick.

In the short run, this reality reduces the number of hours of service provided each year by reduced workforce due to one-year maternity leaves. However, in the long run, the low average age of the profession bodes well for the future due to low exits from the profession as a result of retirements.

Rate of Disability and Access to Occupational Therapists

New Brunswick continues to exceed the national average of citizens living with a disability (NB: 17.7 percent; Canada 15.5 percent). This is coupled with the fact that New Brunswick has fewer Occupational Therapists (27.7 per 100,000) than the Canadian average (30.9 per 100,000). These two factors (along

with persistently high rate of professionals out of practice due to maternity leave) limits access to Occupational Therapy services for the population.

Recruiting New Professionals

In the context of the challenges outlined above, recruiting new professionals to the profession will be key to meet the rehabilitative needs of New Brunswickers in the coming decade. Of course, investing in rehabilitative services means reducing the incidence of hospitalization in many cases and will save the public healthcare system resources in the future. In addition, as discussed previously, due to the aging population there will be a need for enhanced investment in areas that support independence to meet the needs of consumers and to lessen the predicted overwhelming burden on New Brunswick’s healthcare system.

Current Workforce Analysis

In 2007, 298 active Occupational Therapists were registered in New Brunswick, up 38 percent from 216 in 2002. This workforce is predominantly female (277 or 93 percent); and young, with an average age of 36 years, up slightly from 35 years in 2002.

There are 91 OTs (31 percent) under 30 years of age; 130 (44 percent) are in the 30-39 year age range; 58 OTs (19 percent) are in the 40-49 range; and only 19 (6 percent) are over 50 years of age. Of these 19 OTs in the 50+ age range; less than half are 55+; and only two are over the age of 60.

Due to the large cohort of professionals that entered the profession in the last decade, this is the youngest health occupational group in New Brunswick. As such, replacements for retirements within the forecast period are not an immediate challenge (approximately 6 percent of group are in or entering retirement zone between 2008 and 2015). The challenge instead is the movement of this largely female and young group through their careers; including one-year maternity leaves, desire for part-time and flexible employment; and then full re-entry and upgrading/skill enhancement for career advancement in the mid to latter stages of their career. This challenge also affects recruitment of new professionals as filling short-term leaves is often counter productive for long-term permanent employees.

HHR Forecast

Table 4 – Occupational Therapist Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	297	(8)	(10)
2009	307	(8)	(9)
2010	316	(7)	(9)
2011	325	(7)	(9)
2012	333	(8)	(9)
2013	342	(8)	(10)
2014	350	(9)	(11)
2015	357	(11)	(13)

(Bracketed figures indicate shortage)

The workforce shortage situation for Occupational Therapists has improved significantly since the 2002 forecasting exercise was conducted. At that time, a shortage of 41 OTs was predicted for 2007, representing 15 percent of the workforce. However, due to actions taken to prevent this outcome, the forecasted shortage situation did not prevail. In fact, the forecasted shortage of OTs between 2008 and

2015, as presented above, is relatively manageable to address, as at worst case (2015 high end of gap range) it only represents 4 percent of the projected 2015 OT workforce.

The forecast assumes 18 new OTs entering the New Brunswick workforce for each year of the forecasted period. As described in the previous section, this group has low retirement risk, thus the planning challenge for this group is based on the nature of the young female workforce and planning for short term maternity leaves, as well as accommodating employees' desire for more flexible work arrangements.

4.2.3 *Physiotherapy (PT)*

Trends and Issues

There is an array of emerging and established trends and issues that could influence the services provided by Physiotherapists in New Brunswick in the coming years, many of which are not unique to the province but will impact the profession broadly.

The needs of the population and health system will present a challenge to PTs in terms of being able to respond adequately to a variety of factors, such as: aging population, distribution of resources in province, changes in the health network, transition from acute diseases to diseases of a progressive nature, etc. The rapid growth and diversification of knowledge, evidence-based practice, workforce mobility, and the professional master's degree are all increased pressures on the qualification of professionals.

Masters Degree for Entry and Age of Graduates

The education of Physiotherapists is facing some challenging trends in terms of human resources. By 2010 all Physiotherapy programs in Canada will have changed to a Master's entry level as a minimum requirement to the profession. This may slow down enrollments to PT programs, and this reality coupled with the shrinking labour force has negative consequences for the profession in terms of those attracted to enter the profession versus another profession. The length of time it will take to train a Physiotherapist and the age at which they will now be entering practice could also have a negative impact on the numbers in the profession. Though it should be noted that a large percentage of students applying to the former Bachelor of Physiotherapy programs had previously completed another Bachelor program (e.g. Bachelor of Science).

The College of Physiotherapists of New Brunswick believes that mature graduate PTs leave more quickly on maternity leaves. Also, since there is currently a lack of part time and flexible work arrangements available to suit their lifestyle, they tend to leave the public sector in favour of private practice.

Public versus Private System

The College asserts that there is a continuing draw to private practice versus working in the public setting. This compounds the already long waiting lists in the public setting for care, and since many NB residents do not have personal health plans, their injuries may go untreated due to long wait times for a public sector PT. When patients are unable to access PT services in a timely manner, complications can arise and can then become more costly for the public system and/or workplaces.

Evolving and Future Practice

The advanced expertise and competencies of PTs should be recognized and utilized in the public setting in order to support recruiting/retaining and utilizing PTs for maximum effectiveness. In addition, the

aging population, increasing levels of obesity, and lack of physical exercise are accumulating to extreme levels all leading to severe health issues often requiring rehabilitation services.

The College states that PTs have skills for a broad and evolving role as primary care givers. National and international trends are seeing PTs being used in many more roles than in NB in primary and acute care.

In order to support an advanced scope of practice while optimizing the current scope of practice, there is an acute requirement for duly-qualified physiotherapy assistants in the public system to support the therapists and contribute to reducing waiting times for PT services in the public setting. As previously mentioned this need is now being addressed within NBCC.

Current Workforce Analysis

In 2007 there were 466 Physiotherapists registered in the province, which represents an increase of 12 percent over 2002 registrations at 417.

The majority of the profession is female (384 PTs or 82 percent), and the average age of the entire group is relatively young at 39 years old (a slight increase from 37 in 2002). Over 60 percent of this workforce is under 40 years of age; 25 percent are between 40 and 49 years of age; 12 percent are in the 50-59 age group; and 2 percent are over the age of 60.

To break this down further, this means that 6 percent of the PT workforce is in the 55+ potential retirement zone; and up to an additional 15 percent will enter this zone within the forecast period. These figures are fairly low, relative to other health professions, and bode well for Physiotherapy workforce in terms of managing replacements due to retirements within the 2008 to 2015 forecast period.

However, common with many groups included in this exercise, the ongoing challenge of a primarily female and young workforce is managing short-term leaves due to maternity and incorporating the associated work-life balance issues that result. This includes a desire for part-time and flexible work arrangements, which is often associated more with private practice than public. In addition, when PTs are out on maternity, resulting vacancies may put additional stress on remaining resources in terms of expectations to maintain consistent level of service. As such, the potential for overwork which weighs on general job satisfaction of this workforce will require close monitoring and strategic interim measures from managers to avoid these potential pitfalls, especially as it relates to the expected level of service.

HHR Forecast

Table 5 - Physiotherapist Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	465	(9)	(11)
2009	477	(7)	(9)
2010	490	(5)	(6)
2011	503	(2)	(3)
2012	516	1	1
2013	526	1	1
2014	532	(3)	(3)
2015	537	(7)	(8)

(Bracketed figures indicate shortage)

The Physiotherapy workforce in New Brunswick has shown significant improvement since the 2002 forecasting work was conducted. At that time, it was predicted that a shortage of 64 PTs would be the

reality for 2007, if status quo persisted. Due to actions taken after 2002 to redress this forecasted shortage, it did not materialize; and in fact, the gap situation is forecasted to improve further between 2008 and 2013; then with only slight deterioration out to 2015.

This forecast assumes 25 new entrants to the NB physiotherapy workforce per year over the forecast period. This group has similar human resource planning concerns as the occupational therapy profession in that retirement risk is low and challenges are related to the predominantly young and female workforce (replacing short-term maternity leaves and accommodating the desire for flexible work situations).

The future of this profession in terms of the shift from the acute care sector into home care, ambulatory care, long-term care and community services will impact the demand for PTs in the next decade. This increased demand will be combined with the changing scope and range of patient needs due to the growing aged population. Consequently, the need to ensure proper skill mix of service providers will be instrumental in meeting growing demands. Opportunities for close collaboration between PTs and other service providers such as Rehab Technicians and Kinesiologists will need to be explored further.

4.2.4 Pharmacists

Trends and Issues

Expanded Role

As stipulated by the Provincial Health Plan 2008-2012, the New Brunswick Pharmaceutical Society made amendments to the Pharmacy Act that gave pharmacists enhanced authority to prescribe certain medications as of October 30, 2008. This will be limited at first, and mainly confined to renewing existing prescriptions. However, there is a strong possibility that the pharmacist role in the primary healthcare delivery system may expand further in coming years.

This shift in emphasis from dispensing to outcomes-focused collaborative care is supported by education and training programs for pharmacists, as such this shift is well within the scope of practice of new pharmacists entering the system.

Role of Pharmacy Technicians

Due to the optimization of the role of pharmacists as described above, it is crucial that pharmacy technicians also work to their full scope of practice. To facilitate this optimal role there are issues that will need to be addressed in terms of training and regulation of this profession, such as: 1) Regulation – under the Pharmacy Act; 2) Certification – National Exam; 3) Accreditation of Technician programs; and 4) Standards of Practice and Quality Assurance.

It will be necessary to develop and support bridging programs for practicing pharmacists, pharmacy technicians and pharmacy assistants to upgrade their skills as necessary to practice to their full scope of practice in innovative roles as described above.

Demographics of Pharmacy Profession and Population

As with the professional labour force in general, the pharmacy profession is noting that there is an increasing proportion of pharmacy students entering pharmacy training later in life and graduating at an older age, which may shorten work expectancy. In addition, 65 percent of the workforce is female and a high proportion of females are the new entrants to the profession which presents challenges in terms of maternity leaves and the fact that the current generation of pharmacists do not desire to work long hours

and wish for some amount of flexibility in their schedule. This often results in pharmacists leaving the public sector to work in the private sector for higher wages and the opportunity for a more flexible work schedule. However, with community pharmacies introducing longer workdays, this trend is also evolving.

As discussed in previous sections, the aging baby boomer generation will impact professions and pharmacy is one of them in that this aging demographic may require and desire increased access to medications to treat illness and maintain quality of life.

Public versus Private Sector Pharmacy Practice

As discussed above, several issues drive the professional draw of pharmacists to the private sector or retail pharmacy practice: 1) wage disparity between public and private sector; and 2) desire by the new generation of pharmacists to have a more flexible work schedule. As such, staffing hospital pharmacies will continue to be a challenge. This is compounded by continually escalating wage rates of pharmacy jobs in the private sector, due to overall shortages in the profession.

The Society believes that public sector practice is often more fulfilling in terms of the job satisfactions that comes with increased clinical experience versus the largely dispensing role of retail pharmacists. Only a few years ago, this attractive component of public sector employment was not enough to keep professionals in the public setting versus the private, or attract new graduates who carry a significant debt load. However, the Hospital Pharmacy Network reports that in more recent years hospital pharmacies are becoming more attractive to more seasoned pharmacists seeking a higher level of clinical practice than what the community pharmacy is able to provide.

Current Workforce Analysis

There are 707 Pharmacists registered with the New Brunswick Pharmaceutical Society, compared to 567 in 2002, a 25 percent increase. There are 459 females (65 percent) and 248 males. The average age of this group is currently 41 years old, compared with 40 years in 2002.

Of the total, 15 percent of Pharmacists are under 30 years of age; 35 percent are between 30 and 39 years of age; nearly 30 percent are in the 40-49 age range; and 20 percent are 50+. There is currently only 5 percent of this workforce that are 60 years of age and over.

At present, the retirement scenario for this group is fairly modest, in that less than 10 percent of Pharmacists are currently in the 55+ retirement zone. However, by 2015 an additional 10 percent of the group will enter this zone.

Given that over 35 percent of this workforce are both female and in the childbearing age range, planning for short-term leaves related to maternity is a priority. And this, coupled with the reality that young professionals are increasingly demanding more flexibility in their work schedules and more opportunities for part-time employment and/or work sharing agreements.

The majority (approximately 80 percent) of pharmacists in New Brunswick work in the private sector in a retail setting, and approximately 20 percent work in the public system as hospital pharmacists.

HHR Forecast

Table 6 - Pharmacist Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	695	(23)	(29)
2009	696	(46)	(56)
2010	694	(71)	(87)
2011	692	(97)	(118)
2012	691	(120)	(147)
2013	685	(149)	(182)
2014	682	(175)	(214)
2015	680	(200)	(245)

(Bracketed figures indicate shortage)

On both a numerical and proportional basis, the forecast presented above is fairly consistent, in terms of the Pharmacist shortage situation, when compared with the 2002 forecasting results. In the 2002 HHR study, Pharmacists were the second highest priority group in terms of the predicted shortage situation. It was estimated that there would be a shortage of 210 pharmacists in 2007 (representing a gap of 28 percent over forecasted 2007 supply at that time).

As evidenced in the 2008 gap range (23-29) in Table 6, the 210 pharmacist shortage predicted for 2007 was curbed significantly due to a variety of supply side factors, including a targeted health bursary for pharmacists. However, the shortage situation at present state is anticipated to intensify significantly over the 2008 to 2015 period. If status quo persists and no actions are taken to redress the current gap, the pharmacist shortage is projected to reach approximately 33 percent of the workforce by 2015.

This current forecast assumes new entrants (pharmacy graduates) ranging from 25 to 29 over the forecast period (varies by year), which represents an increase from graduates from the 2002 study. This forecast includes current demand (represented by vacancies/postings) for both public and private sector pharmacists, but is not able to include any projected new demand for pharmacists due to lack of data around impact on the profession's human resources as a result of: expanded scope of pharmacy duties; new collaborative care practice models; and private-sector driven demand for this profession.

HHR policies aimed at optimizing the role of all pharmacy resources through utilizing the proper mix/ratio of pharmacy clerks, pharmacy assistants, pharmacy technicians and pharmacists to deliver services are required to ensure the shortage situation does not intensify as predicted.

4.3 Medical Technology and Medical Information Groups

There are a number of overarching trends and issues related to health human resources in the Medical Technology and Medical Information fields, which are already impacting the groups, or will be within the next decade. Most crucial will be the continual maximization of, and keeping pace with, advanced technology within these professions. It is postulated by researchers that medicine will change more in the next twenty years than in the past two thousand. Much of this change is anticipated to be due to advancing technology used in healthcare delivery and medical practice.

Over the past decade, New Brunswick has enjoyed a leadership role when it comes to utilizing technology in healthcare. However, continuing to be a leader will require an intensified focus on this sector of the healthcare delivery system. And indeed, maximizing the technology component present in all healthcare

occupations will be one facet of the solution necessary to meet the predicted health human resource shortage in coming decades.

4.3.1 *Cardiology Technology (ECG)*

Trends and Issues

Education and Training

The *Feasibility Study for a Proposed Program in Cardiology Technology*⁵ offered by NBCC's School of Allied Health was conducted in 2008, and concluded that, based on employers' feedback; current program capacity offered at CCNB (Campbellton Campus) is meeting the demand for these services. ECG services across the province are invited to participate in the students' clinical placements, as studies show that students often will remain where they were trained and/or did their clinical placements.

Amongst other findings from the study, it was also concluded that "survey responses would indicate that the demand for Cardiology Technologist in the next one to five years is slightly higher than the total supply coming from the current program offered at CCNB. A short-term increase of seats within the program could be explored."

As such, the study's detailed findings should be consulted in conjunction with the ECG forecast model results presented herein.

Advancing Practice and Increasing Responsibility

Advancing technology also advances and increases the workload and responsibility of ECGs, in that they are the professionals monitoring and programming pacemakers and implantable cardiac defibrillators, etc. Technology around such devices is advancing rapidly, which requires the skill set and knowledge of ECGs to advance rapidly as well. To advance skill sets and knowledge to keep pace with technology, consistent training is required.

As well, due to the increasing aged population and technologies employed with this cohort of patients, the rate of patients requiring testing of equipment (e.g. cardiograms, stress tests, pacemakers and holter monitors) continues to increase and will continue to as the aging demographic expands.

Current Workforce Analysis

There are 122 active ECG professionals registered in New Brunswick, up to 12 percent from 109 in 2002. The ECG group is predominantly female (118 or 97 percent), and the average age for the group is 39 years old, down from 40 years in 2002. Further age group analysis is difficult due to the fact that for 30 percent of this group (or 37 individuals) age information is not available.

For the remaining 85 members of the group, an analysis by 5-year age grouping reveals that there are equal proportions, 9 percent or 11 individuals, in all of the following categories: under 25, 25-29, 30-34, 35-39, 40-44, and 45-49 years. Additionally, 12 percent of the group (11 individuals) is in the 50 to 59 age range; and five individuals (4 percent) are over the age of 60.

The retirement replacement scenario for this group is not as dire as for many of the health occupations. At present, less than 10 percent of this group is in the 55+ potential retirement zone; and another 7 percent

⁵ Prepared for the NBCC Network by Tammy Fournier, March 2008.

will enter this zone within the forecast period. However, it must be considered that age is not known for 30 percent of this group, which may mean the retirement risk is understated.

Even accounting for the 30 percent of the group that cannot be analyzed, there is still a high percentage of ECGs that are both female and within the child bearing age range – 36 percent. This reality poses challenges for the occupation in terms of replacing for short-term maternity leaves, a trend identified for the majority of the health professional groups included in this exercise.

HHR Forecast

Table 7 - ECG Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	122	(4)	(4)
2009	126	(4)	(4)
2010	122	(11)	(14)
2011	126	(11)	(13)
2012	122	(18)	(22)
2013	127	(17)	(21)
2014	123	(24)	(29)
2015	128	(23)	(28)

(Bracketed figures indicate shortage)

As discussed in the previous section, due to the missing data element, ‘date of birth’, for 30 percent of this group (37 of 122 individuals), forecast model results for the ECG group must be interpreted with the following caution:

For forecasting purposes, ages for these individuals were distributed amongst the age groups proportionally, based on the known numbers in each age group as a proportion of the total. This results in potential for underestimation or overestimation of a shortage situation, depending on whether these individuals, in reality, are equally distributed amongst the age groups (as assumed in the forecast); or grouped disproportionately into either the younger or older age groupings.

The forecast presented above shows the current shortage situation of ECG Technologists intensifying over the forecast period. This is coupled with the knowledge that new entrants from the CCNB training program (8-9 graduates) only exit every other year, which is not anticipated to keep pace with attrition from this workforce due to retirements and other attrition factors. However, it should be noted that should market demand warrant it, CCNB would explore the possibility of admitting students every year, to allow 8-9 new entrants on an annual basis.

4.3.2 Neurophysiology Technologists (EEG Technicians)

Trends and Issues

Education and Training

The Association asserts that the new electrophysiology (EEG) course offered in Campbellton is not meeting expectations, in that the neurology component is seen to be deficient. There is the perception that new graduates’ level of knowledge is substandard, and that they are not well prepared to work in that occupation, even under supervision.

It is believed by some employers that the College has put too much emphasis on the ECG course at the expense of EEG and EMG. Graduates with a medical electrophysiology diploma are assumed to have the same amount of knowledge in all three areas, but this is not perceived to be the case as evidenced by poor national EEG exam results.

Shortage of Neurologists

The Charter of the Canadian Association of Electroneurophysiology Technologists states that technologists must work under the supervision of an electromyographer or neurologist. Currently in New Brunswick, many hospitals do not have a neurologist, and the tests done by the technicians or technologists must be sent elsewhere to be read, which can mean significant time lag to get results back.

Furthermore, if a physician reads the report and is not satisfied with the result, he/she can refer the patient to a hospital that has a neurologist, and the same tests are done again under the neurologist's supervision. This results in the province paying twice for the same tests, and results in significant time lag in the patient receiving definitive results.

As such, it may be warranted from the perspective of sustainable quality healthcare services to question whether or not, all hospitals should be expected to conduct quality, specialized EEG testing.

Current Workforce Analysis

There are 15 EEG professionals registered in New Brunswick, compared with 11 in 2002 (an increase of 36 percent). Of the 15, 12 EEGs (89 percent) are female and three are male. The average age for this group is 40 years old, up from 39 in 2002.

Five individuals (33 percent) are under the age of 30; 7 percent (1 individual) is in the 30-39 age group; five (33 percent) are in the 40-49 age group; three (20 percent) are between 50 and 59; and one individual is over the age of 60.

This group may have retirement replacement challenges within the forecast period – as upwards of 30 percent of this group will be within the 55+ retirement zone over this period. Additionally, short-term maternity replacements should be a human resource planning consideration due to the fact that five individuals, or 30 percent of the group, are females under the age of 40.

HHR Forecast

There are not sufficient numbers in this group to permit forecasting.

It may be timely to review how these scarce resources (15 in total) are allocated throughout the province to ensure they are utilized optimally.

4.3.3 Medical Laboratory Technologist (MLT)

Trends and Issues

Advancing Technology

There has been a significant growth in the numbers of diagnostic tests required for both inpatient and outpatient populations, driven in part by public expectations. Rapid changes in technology, automation

and robotics have the potential to affect the workload to the extent that a technician or an assistant, instead of a technologist, can operate the automated testing systems. This will affect the numbers of MLTs required as well as their scope of practice. These new technologies, however, will require MLTs to continually upgrade their skills, increasing the need for continuing education opportunities.

Shortage of Qualified Technologists

As with many health occupations, New Brunswick has an aging MLT population and the new graduate pool is not projected to meet current reduction in the workforce due to retirements. The profession believes senior technologists would remain in the workforce and mentor newer technologists if incentives were provided.

Although the current training programs cannot increase seats significantly, the current seat allocations for the program being delivered by NBCC may very well provide an avenue for increased capacity without increasing the resources, both human and financial.

As it stands, more than half of the training seats are technically 'reserved' for the articulated Bachelor of Sciences in Medical Laboratory stream currently being delivered at UNB Fredericton.

The New Brunswick Society of Medical Laboratory Technologists (NBSMLT), following a comprehensive exercise, recently concluded that it would not endorse a change to the current level of entry to practice (from diploma to a bachelor degree) being promoted by the Canadian Society of Medical Laboratory Technologists. As such, the current seat distribution no longer appears relevant or justified given that the workforce demands identified by the exercise conducted by the NBSMLT were for Medical Laboratory Technologists trained at the diploma level.

Support Personnel

Common with other health professionals, with ever-increasing workloads and advancing technologies there is an even greater need for formally trained support personnel (certified medical laboratory assistants) to achieve optimal use of medical laboratory resources.

NBSMLT supports the development and implementation of a formal training program at NBCC so that an increased number of formally trained medical laboratory assistants can help alleviate technologists' workload, specifically around performing clerical, technology operations and pre-analytical duties, so they can focus on analysis and interpretation of test results and spend more time working to their full scope of practice. Such a program is currently being delivered on a contract basis at the Centre of Excellence in Agricultural and Biotechnical Sciences (CESAB), a constituent of CCNB Edmundston (since September 2007).

Current Workforce Analysis

There are 662 MLTs registered in the province, compared to 653 in 2002; showing only slight growth in this workforce in a 5-year time frame. This workforce is predominately female (90 percent) and the average age of MLTs in New Brunswick is 44 years, up from 42 in 2002.

A further demographic analysis reveals that nearly 15 percent of the workforce is under 30 years of age; 23 percent are in the 30-40 age group; the majority, 34 percent, is in the 40-50 age group; and 28 percent are over 50 years of age.

Impending retirements will become an increasing challenge for this group – currently 10 percent are in the 55+ age range; and within the forecast horizon another 18 percent will enter this zone. Beyond the

forecast period the retirement situation intensifies further, as an additional 20 percent of this workforce will be eligible for retirement before 2020.

HHR Forecast

Table 8 – Medical Laboratory Technologists Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	658	(10)	(12)
2009	670	(7)	(8)
2010	681	(6)	(7)
2011	689	(6)	(8)
2012	696	(8)	(10)
2013	702	(11)	(14)
2014	706	(15)	(18)
2015	714	(16)	(20)

(Bracketed figures indicate shortage)

The MLT workforce situation has improved since the 2002-2007 forecast was conducted. At that time, a shortage of 127 MLTs was forecasted for 2007 (representing 16 percent of the MLT forecasted supply in 2007). However, due to a significant increase in MLT graduates (new entrants into the NB workforce) from between 18-22 per year to an average of 27 per year, the forecasted shortage situation did not become reality.

As presented in the table above, the shortage situation that currently exists is anticipated to moderate between 2008 and 2011, but then begins to intensify steadily to 2015, due to an increasing bubble of workers approaching retirement during that period, to which new entrants to the MLT workforce does not keep pace.

As discussed in the preceding section, addressing the MLT shortage by first ensuring that the current number of available training seats are dedicated to graduating MLTs at the diploma level, should be made a priority.

Retaining senior MLTs in the system longer and/or increasing the numbers and utilization of support personnel will be required, if the MLT shortage situation is to be alleviated in coming years.

4.3.4 Medical Radiation Technologists (MRT)

Of Medical Radiation Technologists (MRT), the Medical Radiological Technologist (X-Ray Tech) subset comprises about 80 percent, and the remaining 20 percent is comprised of: Nuclear Medicine, Magnetic Resonance Imaging, and Radiation Therapy (which includes Dosimetry, a specialty area of Radiation Therapy).

The top three drivers of need for MRT services are the prevalence of cancer, heart disease and injury. And on a global level, as with most health occupations, population and provider demographics play a key role in determining health human resource needs in this group in the coming years. As the potential patient population ages, then so does disease prevalence and rates of injury, thus increasing the need for MRT professionals.

Trends and Issues

Training for New Technologies

Technology is advancing rapidly in the medical radiation technology field. Training schools are challenged to keep ahead of technology when it comes to training new graduates and ensuring they are ready for the labour market. Instructors report they often lack the financial and human resources needed for continuing education and the development of new courses to meet the demand.

As an example, in the future, broader use will be made of devices such as CT scanners, PET scanners and MRIs. Diagnostic radiology, radiation therapy, and nuclear medicine now have this device in their field of practice, but only diagnostic radiology includes it in the skills profile.

As new devices appear and new procedures become ‘preferred practices’, older procedures may become obsolete, potentially balancing the required health human resources to deploy these new procedures.

In addition, Radiologists are increasingly delegating what was once considered “advanced” tasks to the technologists. This trend, paired with rapid technological progress, is consequently evolving the scope of practice of Medical Radiation Technologists.

Demographics of the Workforce and Population

Within 5 to 10 years retirements will begin to cause staffing problems across the province, unless of course referral patterns for medical radiation technology procedures change. On the basis of the changing demographics of the NB population, the over 60 demographic is expected to double by 2020. Both population realities (retirements in the profession and expanding 60+ patient group), in addition to technical complexity and the increase frequency among patients will mean increasing wait times for cancer treatments.

The competitive forces associated with growing national and international demand for MRTs could make it challenging to retain these professionals in New Brunswick.

Current Workforce Analysis

There are 543 Medical Radiation Technologists registered in New Brunswick as compared with 463 in 2002, an increase of 17 percent over this 5-year period. The majority of this group is female, 471 or 87 percent. The average age of the group is 41 years, compared to 40 years in 2002.

A further demographic analysis reveals that 22 percent of MRTs (121 individuals) are under the age of 30; just over 30 percent (170 MRTs) are between 30 and 39 years; 25 percent (134 MRTs) are in the 40-49 age grouping; 17 percent (92 individuals) are between 50 and 59; and 5 percent are over the age of 60.

Given that 256 out of 543 MRTs (47 percent) are both female and in the under 40 childbearing age zone; this workforce could be faced with challenges related to replacements for one-year maternity leaves.

Retirement replacement is an important HR planning consideration for this group. Currently, 13 percent of MRTs are in the 55+ potential retirement zone; and within the 2008 to 2015 period another 10 percent will enter this zone.

Table 9 – Medical Radiation Technologists Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	539	(5)	(7)
2009	538	(10)	(12)
2010	537	(14)	(17)
2011	537	(18)	(22)
2012	537	(22)	(27)
2013	536	(26)	(32)
2014	537	(29)	(35)
2015	538	(31)	(38)

(Bracketed figures indicate shortage)

The MRT workforce situation has improved since the 2002 forecasting exercise was conducted. At that time, it was predicted that by 2007 there would be a shortage of 86 MRTs (representing 17 percent of the forecasted supply/workforce in 2007). This situation did not prevail due to an increase in the number of new graduates entering the MRT workforce – amounting to approximately a 20 percent increase from the 2002-2007 to the 2008-2015 forecast period.

However, as presented in the table above, the current workforce shortage situation is anticipated to intensify steadily over the current forecast horizon if status quo prevails, which means that new entrants to the MRT workforce will not keep pace with exits from retirements and other attrition.

4.3.5 Respiratory Therapists (RTs)

Trends and Issues

Population Demographics and Service Provision

The aging population and associated increasing prevalence of chronic obstructive pulmonary disease (COPD) and other respiratory conditions will increase the need for RTs in the system. And the trend to decreasing in-patient stays will increase the demand for homecare services for patients with higher acuity due to these conditions.

Furthermore, traditional hospital-based services such as IV therapy, oxygen therapy, and blood sampling and analysis will more often be done in the home. This home care trend may be increasingly associated with private sector providers, which will also impact how RTs are employed in the system.

Expanding Role for Respiratory Therapy

The role of the Respiratory Therapist in the hospital and community is expanding rapidly. Areas that in the past have had shared respiratory services are experiencing a growing demand to have dedicated respiratory services for their patient population. These areas include the neonatal intensive care units and emergency departments. The role of the respiratory therapist in chronic and palliative care is growing rapidly as well, as patients are living longer and desiring to have a higher quality of life.

In addition, the scope of respiratory therapy has expanded to fill other roles in some regions, for example as anesthesia assistants. There is also call for RTs as educators in respiratory clinics for chronic disease management and in areas of sleep diagnostics.

Move to a Degree as Entry to Practice

There is a growing national consensus that Respiratory Therapy needs to move to a degree program as the entry to practice. This reflects the expanding curriculum and increasing clinical competencies those new graduates are required to have to begin their practice. It also reflects workplace demands to have Respiratory Therapists take part in a greater portion of care planning and program development and the expanded role as described above.

Current Workforce Analysis

There are 196 Respiratory Therapists registered to practice in New Brunswick, up only slightly from 193 RTs in 2002. This group is comprised of 144 (73 percent) females and 51 (27 percent) males. The average age for the group is relatively low, at 36.6 years, up from 34 in 2002.

A further age group analysis reveals that over 30 percent of this workforce is under the age of 30; nearly 40 percent are between the age of 30 and 40 years; 23 percent are in the 40-49 age group; and only 9 percent are over the age of 50.

These demographics bode well for low risk on this group stemming from retirements in the forecast horizon. Less than 20 percent of the group is 45 and over. And currently, only 3 percent of this group is in the 55+ retirement zone, with another 6 percent to enter this zone in the 2008-2015 period.

However, with 105 individuals (54 percent) being both female and under 40 years of age, similar to many groups the human resource challenge will lie in planning for short-term replacements due to one-year maternity leaves.

HHR Forecast

Table 10 – Respiratory Therapists Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	196	(4)	(4)
2009	208	3	3
2010	220	10	12
2011	231	16	20
2012	242	23	28
2013	253	29	35
2014	263	35	42
2015	273	40	49

(Bracketed figures indicate shortage)

The workforce situation for Respiratory Therapists has improved significantly since the 2002-2007 forecast was conducted. At that time, it was predicted that there would be shortage of 37 RTs by 2007 (representing 13 percent of the forecasted workforce in 2007). This shortage situation did not prevail in part due to the CCNB Respiratory Therapy training program that began since the 2002 work was conducted.

As discussed in the previous section the RT group is relatively young so retirements do not play a significant role in terms of exits from the profession during the forecast horizon. As such, the estimated

15 new entrants from the NBCC training programs are estimated to outstrip exits from retirements and other attrition, which contributes to supply significantly.

However, as is the case with all of the forecasted group, this scenario is based on status quo demand and does not account for any new demand in the system in coming years due to new programming; and an aging NB population and age related diseases/conditions that will require increased RT services. As well, this surplus situation may present an opportunity for RTs to optimize their full scope of practice in the role of Anaesthesia Assistants in order to alleviate challenges faced in the surgical access sector.

4.3.6 *Health Information Management (HIM) Professionals*

Trends and Issues

Aging Professionals

There will be a significant shortage of HIM professionals in the coming decade, as 50 percent of HIM professionals will be eligible for retirement. In addition to the loss of these employees, the Health Information Management profession will also be faced with a shortage of mentors to guide new professionals in their early careers.

Expanding Opportunities

The field of Health Information Management is expanding rapidly as healthcare moves into increasingly complex electronic management of information. Examples that impact the requirement/need for HIM professionals include:

- National Ambulatory Care Reporting System (NACRS) Coding
- One-Patient-One-Record (OPOR) Project
- Data Integrity Team
- New Privacy Legislation
- Cancer Registry
- Trauma Registry
- Prescription Drug Monitoring Program
- Health Informatics – with the evolution of the Pan-Canadian electronic health record, HIM professionals with an expertise in Health Informatics can provide recommendations on the adoption, adaptation and development of standards. This will ensure coordination of access, privacy and fundamental health information management concepts to create a highly effective and functional electronic health record (EHR) to be available whenever/wherever it is needed for patient care.

Recruitment and Retention

The Association had identified HR challenges related to language proficiency and recruitment. As well, regions are reporting that it is difficult to recruit qualified/experienced Health Information Management professionals as well as new graduates, as not all Regional Health Authorities are posting their positions externally. For candidates investigating training options and to qualify for financial assistance several funding agencies often require candidates to perform a career search to justify opportunities for employment in the field. Although there is a significant need for HIM professionals, a career/position search is often difficult and vacancies are not always evident.

Current Workforce Analysis

There are 113 Health Information Management professionals registered in New Brunswick, compared with 2002 records that show a total of 116 individuals in the Health Records occupations (69 Health Records Technicians and 47 Health Records Administrators). This is one of only two groups included in this study that has shown a drop in workforce numbers between 2002 and 2007.

The average age for the group is currently 45 years, as compared with an average age of 41 years for Health Records Techs, and 45 years for Administrators in 2002. The group is almost exclusively female (99 percent). In terms of 5-year age groupings, the highest percentage of this workforce is 45 to 49 years of age (30 individuals, or 27 percent).

A further demographic analysis reveals that fewer than 10 percent are under the age of 30; nearly 20 percent are in the 30-39 age group; 43 percent are between 40 and 49 years of age; 27 percent are 50-59 years old; and 4 percent are over the age of 60.

Twenty-seven percent of this group are in the under 40 years of age maternity zone which poses challenges for filling one-year maternity leaves for this occupation.

However, the larger challenge lies in the fact that there is currently 12 percent of this group in the potential retirement zone (55+); and another 20 percent entering this zone within the 2008 to 2015 forecast horizon. This demographic bubble of workers represents a risk to the profession in that replacing retirements will be an on going challenge, potentially beginning within five years and extending beyond 2015.

HHR Forecast

Table 11 – Health Information Management Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	113	(7)	(9)
2009	117	(11)	(13)
2010	123	(13)	(16)
2011	129	(15)	(18)
2012	132	(19)	(23)
2013	135	(23)	(28)
2014	130	(35)	(43)
2015	125	(47)	(57)

(Bracketed figures indicate shortage)

The 2002 HHR study identified the Health Information Management group as the top priority group in terms of shortages in the workforce. At that time, the shortage was estimated at 47 HIM professionals by 2007 (representing 30 percent of the forecasted 2007 supply of 105 professionals).

The 2007 membership data shows supply of 113 professionals, and despite the fact that this figure is roughly level with 2002 supply, the reality is that an increase in new supply over this 5-year time period kept pace with a high number of retirements. This was due to the addition of the NBCC program since the 2002 work was conducted. This increase in graduates (new entrants to the HIM workforce) significantly curbed the dire shortage situation (47 HIM professionals) predicted in 2002 for 2007. This is presented in the table above, which estimates a shortage range of 7 to 9 in 2008.

However, despite the fact that the NBCC program ensured that supply grew faster than anticipated between 2002 and 2007; it is still not projected to keep pace with perceived growing demand for this resource. Increasing demand, coupled with exits from the HIM workforce due to retirements, is anticipated to cause the current HIM shortage situation to intensify dramatically over the forecast horizon.

There have been persistent vacancies for these professionals between 2006-2008; if this trend continues, it is anticipated that demand (even status quo demand) will still outstrip supply growth to create the shortage situation presented in the table above.

Therefore, serious considerations will need to be given to the current demands placed on these health professionals. Decisions may be warranted in terms of what services the current workforce is able to sustain given the significant gap between available supply and demand.

4.4 Nursing Groups

A myriad of trends and issues common to the nursing groups are currently impacting human resources in the groups from a supply side perspective, but also from the demand for care perspective. These common trends and issues are presented below.

Quality Workplaces

The issues relating to quality workplaces for nursing care providers in New Brunswick have been identified as follows:

- Increased workloads
- Excessive/unsustainable overtime hours worked
- Lack of full-time positions
- Underutilization of RNs (not maximizing scope of practice)
- Lack of flexible working environments (to accommodate 'new workforce' desires)
- Lack of strong nursing leadership at all levels
- Job security
- Competitive compensation
- Access to healthy lifestyle programs
- Workplace safety issues
- Physical violence and emotional abuse in the workplace

Collaborative Model of Nursing Care Delivery

The distribution of RNs to LPNs in 2002 was 77 percent and 16 percent (remaining percentage is Personal Care Workers) respectively; and in 2008 was 73 percent and 20 percent. It is anticipated that this distribution will need to be realigned at a faster rate to keep pace with demand for nursing services in the coming years, accounting for advancing scopes of practice for both resources within a collaborative care model.

As evidenced in the statistics presented above, the LPN role has expanded significantly in the past 5-6 years and the expansion of the role of this nursing resource is anticipated to continue in the coming years in order to keep pace with demand for care from the population. At the same time, however, efforts must be focused on the practice of the interdisciplinary team as a whole. To advance the interdisciplinary team approach the knowledge and comprehension of each nursing care provider about their role on an interdisciplinary team must be developed and supported. It is likely that non-regulated care providers

(e.g. Personal Support Workers, Resident Attendants, etc.) will also have a role to play on such interdisciplinary teams as scopes of practice continue to advance for LPNs, RNs, and Nurse Practitioners.

Characteristics of 'New' Workforce

The work ethic, loyalty and commitment of employees is changing - there is growing evidence that it is fast becoming an 'employee market' due to ongoing and escalating shortages of healthcare professionals.

The way in which the young generation of workers desires to work is anticipated to greatly impact how healthcare is delivered. Employees will be less willing to work shift work and take on overtime hours at the level seen in the past.

Aging Population and Nursing Home Requirements

The aging demographic and recognition of future requirements in nursing homes is evidenced by the plans to increase nursing home beds to 700 by 2010. This reality will compound the nursing shortages and there is concern in the profession that Nursing Home Standards may no longer be possible to meet due to the shortages of RNs.

4.4.1 Registered Nurses

Trends and Issues

A study of nursing in OECD (Organization for Economic Co-operation and Development) countries summarizes the causes of the identified current nursing shortage as follows:

1. An aging nursing workforce
2. Increased demand for nurses due to aging population
3. New technologies that increase the range of treatable conditions
4. Greater consumer activism
5. Falling or slow-growing supply, due to fewer younger people entering the nursing workforce
6. A greater range of professional opportunities outside nursing
7. The low social value given to nursing
8. Negative perceptions of nursing conditions.

Aging Workforce

Since 2000 in New Brunswick, the absolute number of RNs aged 55+ years has doubled. This aging workforce poses RN planning challenges in terms of keeping pace with increased retirement numbers, when coupled with other permanent and temporary attrition from the nursing workforce.

Recruitment and Retention in Rural Areas

There has been a shift in healthcare professionals from rural areas to urban settings in New Brunswick. Recruiting and retaining RNs in rural areas in the province, coupled with linguistic requirements to service the population in these areas, will continue to be a challenge in the coming years as many professionals are drawn to larger centers. This rural to urban shift subsequently creates a gap in meeting the healthcare needs of the province's rural communities, which are increasingly comprised of an older population with increased healthcare needs.

Increased Age of Entrance and Completion of RN Education Programs

According to CIHI, among those RNs employed in Canada in 2005, 13.2 percent were aged 30 or older at the time of graduation (compared to 9.4 percent in 1995). Consistent with these statistics, nursing faculties are noting students entering programs are getting older, and this is compounded by the increased number of students requiring an additional academic year or portion of a year to complete program requirements. Often, financial and personal issues are influencing the trend to take longer than four years to complete BN program. This phenomenon has implications for the total contribution to nursing workforce in coming years.

Another new entry increment to the RN workforce in New Brunswick is nurses reentering the profession after an extended leave. This means that former RNs who do not currently meet the requirements for registration and wishing to return to nursing practice are required to complete the Nurse Refresher Program, which includes a clinical placement to meet requirement for registration. Unfortunately, however, the 2007 New Brunswick Refresher Program statistics continue to show a decrease in the number of enrollments from previous years.

Finally, there are no laddering programs available to LPNs to pursue education to become RNs. The attrition rate of such recruits would most likely be low due to their prior work experiences as care providers in the nursing workforce.

Quality Workplaces, Practices, and Nurse Outcome

Workplace design and practices impact the health of nurses and their job satisfaction. Linkages between quality workplaces, job satisfaction and workforce retention are strong. Quality workplaces are described as those that: a) foster professional respect, b) are friendly and collegial, c) provide opportunities for professional advancement; d) provide needed resources and are safe; and e) that provide economic rewards (job security, attractive salaries, good benefits).

It is perceived that the high overtime hours⁶ being worked by RNs in New Brunswick has a corresponding link to the rise in absenteeism due to illness and injury reported in the profession. High injury rates have been linked to work overload, job strain, and insufficient staffing. And despite the fact that New Brunswick is on par and in some cases better than the Canadian average with respect to number of full-time RNs⁷, it is perceived by the profession that an increase in full-time positions would alleviate some of this strain on the existing workforce.

In addition, workplace strategies are required to build relationships and foster teamwork among co-workers, supervisors and healthcare teams. This subsequently enhances the retention of nurses and overall quality of care. Creating organizational structures that encourage strong nursing and multi-disciplinary teams through team building and participatory decision-making are required. Generational differences and workplace expectations should be explored in building positive organizational cultures and understanding the factors that retain different age and generation groups. The quality of work life and workplace are key considerations in the design of nursing retention strategies.

⁶ In 2007-08 Regional Health Authorities paid the equivalent of 196 nursing FTEs (nurses, nurse managers and LPNs) for overtime, and 306 nursing FTEs for sick leaves.

⁷ CIHI - Regulated Nurses: Trends, 2003-2007. Percentage distribution of position status for New Brunswick nurses in 2007 was: Full-time - 63.3 percent NB versus 57.2 percent Canada. With NL and NS higher than NB with 70.8 percent and 64 percent, respectively. Part-time - 29.3 percent NB versus Canada 32.1 percent. NB was in the middle with five jurisdictions with higher percentage and five with a lower percentage. And Casual - 7.5 percent NB versus Canada 10.7 percent. With only MB lower than NB with 7.3 percent.

Current Workforce Analysis

In 2007 there were 9094 Registered Nurses registered in the profession, as compared with 8259 in 2001. This represents a growth in registrations of 10 percent over this time period. Of this total group, 8072 RNs are in active employment within the healthcare system, as compared with 7700 in 2002 (a 5 percent increase). To compare to a slightly different timeframe, based on CIHI statistics: between 2003 and 2006, the total number of registered nurses in New Brunswick increased by 6.9 percent, compared to the national growth rate of only 4.8 percent for the same period.

Of the 8072 active nurses, 7725 (96 percent) are female. And the average age of RNs as of 2007 is 44 compared with 43 years in 2002. According to a 2006 report from CIHI, the average age of nurses in Canada was 44.6 years in 2004.

Further age group analysis reveals that 3203 nurses are in the under-40 childbearing age range, which represents over 35 percent of the nursing workforce (similar to 2002 statistics). Additionally, 1153 active RNs (14 percent) are currently in the 55+ potential retirement zone; and over 1400 nurses (up to 20 percent) more will enter the retirement zone within the forecast horizon. As such, within the 2008 to 2015 forecast period between 30 to 40 percent of the RN workforce could retire.

Of course this number will vary depending on the age of retirement and how that is impacted by the current economic climate, which is anticipated to affect workers' retirement decisions. According to CIHI statistics for New Brunswick, approximately 62 percent of nurses who have retired within the past 5 years were between the ages of 55 and 59, while 34 percent were between the ages of 60 and 64. Based on this, CIHI estimates that approximately 1,200 nurses will retire over the next five years or approximately 240 nurses per year. This reality has dire planning consequences in light of the trends and issues presented previously.

Based on 2006 statistics from CIHI, 87 percent of New Brunswick nurses are reported being employed on a permanent basis, either full-time or part-time, while 7 percent are reported as being employed on a casual basis.

CIHI reports that New Brunswick nursing graduates makes up 86 percent of the New Brunswick nursing workforce (2006). This ranks New Brunswick third in Canada for domestic retention, and is higher than the national rate of 81 percent.

HHR Forecast

Table 12 -Registered Nurses Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	8012	(97)	(119)
2009	8012	(195)	(238)
2010	8007	(296)	(362)
2011	8012	(389)	(475)
2012	8033	(467)	(571)
2013	8077	(525)	(641)
2014	8118	(585)	(715)
2015	8159	(645)	(789)

(Bracketed figures indicate shortage)

The Registered Nursing workforce has made gains since the 2002 forecasting exercise was conducted. The forecasted supply of RNs at that time was 7047 by 2007, however, as presented in the table above the RN workforce growth was stronger than expected, to reach over 8000 by 2007. Due to a significant increase in new entrants (RN graduates) to the NB workforce, and lower than anticipated exits due to retirements and other attrition, the forecasted shortage situation of 1078 RNs by 2007 did not become reality.

However, as presented in the table above the current shortage situation is anticipated to intensify rapidly over the 2008 to 2015 forecast horizon. This is due to a myriad of factors as discussed in the previous section, which can be summed up as insufficient numbers of nursing graduates entering the workforce to replace the totality of workforce attrition, both due to retirements and attrition for other reasons (sick leave, turnover, etc.).

It is important to note, that the forecasting exercise was not able to incorporate demand side factors beyond current requirements (status quo) represented by vacancies in the system. As such, new demand for nursing services in general and RNs specifically, related to initiatives flowing from the Provincial Health Plan cannot be estimated at this time. Similarly, no assumptions have been included in the forecast related to resource and skill-mix optimization or other structural changes to how resources are utilized in the healthcare system.

CIHI reports that the nursing profession, in general, has a high participation rate, with most qualified nurses actually working in nursing positions. For this reason, it is not likely that the participation rate can be readily increased. In New Brunswick, this is evidenced by low numbers of new entrants to the nursing workforce coming from the Refresher Program. However, there is ample evidence to suggest that the nursing workforce can be used more efficiently; in particular by improving the terms and conditions of work and the utilization of the entire healthcare workforce with a collaborative care focus.

Nursing schools will need to increase, and at the very least maintain, enrollments to keep up with future exits from the workforce and escalating demand for nursing services as the baby boom generation ages. Yet, as is common with all professions, the pool of potential recruits will continue to shrink, due to low population growth and lucrative, competing career choices. Potential recruits can choose from a wide selection of health professions and countries in which to train and practice.

In such a competitive market, wages will only be one consideration; for many potential recruits, decisions will hinge on other factors, especially the terms and conditions of work. If current working conditions persist, qualified applicants may not be so eager to fill an increasing number of seats available in nursing schools across Canada.

It is apparent that in the next decade a good portion of RNs in the province will retire or will be working fewer hours. Unless a considerable number of RNs enter the workforce, the supply will not meet the needs of a growing and aging population, if the status quo model of delivering healthcare persists.

4.4.2 *Licensed Practical Nurses (LPN)*

Trends and Issues

Educational Preparation

The Association reports that the limited number of seats in the New Brunswick Community College system will continue to affect future supply of LPNs. They state that there are consistent complaints from

potential LPN students who are unable to get a seat in the program; and from employers who cannot find LPNs to hire.

The New Brunswick LPN program was recently changed to a two-year diploma program, which is longer than in some other provinces. This increase in program length resulted in a reduction of the number of seats being offered to students. NBCC reviewed the situation with the aim of adding 75 new regular seats. However, it is important to note that adding seats to LPN programs is not a stand-alone solution. More students in training programs must go hand in hand with an increase in the ability of hospitals to handle clinical placements of students. Additionally, the Community College system must be able to access and employ qualified instructors for the program.

Furthermore, in order to reduce the attrition rate, it is believed by the Association that the student selection process should incorporate more stringent screening of students applying to enter the program. More rigorous screening has the potential to ensure greater success for those completing the program (passing national exam) and fewer students exiting the program before completion. However, raising admissions standards must be carefully considered against the potential for discouraging interested applicants from applying for admission.

It is important to note that other nursing care providers such as the Resident Attendants in Nursing Homes could be interested in pursuing studies to qualify as LPNs if a subsidy for replacement of salary was available to them⁸.

Expanding/Optimizing the Role of LPNs

The demand for LPNs as well as their scope of practice and role is expanding in current employment situations. At the same time, LPNs are being introduced in areas where they never worked in the past such as the Extra Mural program and VON. LPNs in the system are often utilized as Rehab Assistants and in areas such as Phlebotomy, which are not LPN positions. And in nursing homes, LPNs are working as team leaders in some cases (in charge when there is no RN available).

As per the collaborative care model, optimizing the role of LPNs so as to maximize their scope of practice (consistent with training) could assist in offsetting some of the increasing RN workforce stress related to excessive overtime hours. However, this will require the increased use of skilled support personnel such as Personal Care Workers (PCWs) to allow full optimization of each nursing resource within the nursing care service.

Current Workforce Analysis

There are 3124 Licensed Practical Nurses registered in New Brunswick, this represents a 15 percent increase over 2002 registrations of 2701 LPNs. The average age of LPNs is 43 years, the same as in 2002.

A further demographic analysis reveals that over 40 percent of LPNs are in the under 40-year childbearing age range. The largest portion of this group, 43 percent, is between 40 and 54 years of age; and 15 percent are in the 55+ age grouping. Within the 2008-2015 forecast period, there could be upwards of 30 percent of this group in the 55+ potential retirement zone.

According to CIHI statistics, between 2003 and 2006, the total number of LPNs in New Brunswick increased by 8.9 percent. This compares to the national growth rate of only 6.6 percent for the same period. New Brunswick LPN graduates makes up 92 percent of the province's LPN workforce. This

⁸ A program to train Resident Attendants as LPNs was designed many years ago with the help of HRDC.

ranks NB forth among provinces for domestic retention, and is higher than the national rate of 90 percent. For the period 2003 thru 2007, the average annual retention rate for new LPN graduates entering the workforce is 87 percent.

CIHI statistics also show that in 2006, 79 percent of New Brunswick LPNs reported being employed on a permanent basis, either full-time or part-time, while 20 percent reported being employed on a casual basis.

A positive note in terms of supply of LPNs is the fact that they are less likely than RNs to move to another province following graduation. According to CIHI, in 2005 only 7.6 percent of Canadian LPN graduates were employed in a province or territory different from the one in which they graduated, this compares with a rates of 11.5 percent for RNs.

HHR Forecast

Table 13 - Licensed Practical Nurses Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	3124	(85)	(103)
2009	3218	(84)	(103)
2010	3117	(260)	(318)
2011	3158	(308)	(377)
2012	3149	(400)	(489)
2013	3211	(429)	(525)
2014	3171	(550)	(672)
2015	3198	(610)	(746)

(Bracketed figures indicate shortage)

The LPN workforce experienced strong growth over the 5-year period from 2002 to 2007. In fact, the 2002 forecasting exercise estimated that there would be 2591 LPNs in the NB workforce by 2007. This supply forecast underestimated growth that shows well in excess of 3000 LPNs currently working in New Brunswick.

It was predicted that there would be a shortage of 91 LPNs by 2007. Based on the forecasted shortage in 2008, as shown under 'Gap Range' in the table above, the forecast was appropriate.

However, the current shortage ranging from 85 to 103 LPNs rises rapidly over the 2008 to 2015 forecast period due to a combination of factors:

1. Vacancies in the system (representing status quo demand/requirements) rose by roughly 60 percent between 2002 and 2007.
2. Fewer LPNs are projected to be entering NB workforce during the 2008-2015 forecast period versus the previous 2002-2007 forecast period (averaging approximately 108 per year in current forecast versus 145 per year in 2002 forecasting exercise).
3. The LPN population has aged since the prior forecasting exercise. In face, the number of LPNs in the 50+ age group has risen significantly since 2002, which equates to an increase in exits from the workforce due to retirements within the forecast period.
4. There are large variations in the 'reserve pool' of new entrants to the LPN workforce between the two forecasting exercises. Reserve pool is characterized by LPNs registered with the Association

but indicate on their form that they are: 1) Employed outside occupation but seeking work in occupation; 2) Unemployed but seeking work in; or 3) On leave for other reasons and seeking work back in occupation. So in addition to new grads each year there are individuals in every occupation that are ready and willing to 're-enter' the workforce. It is unknown why the reserve pool varies so greatly between the two forecast periods (191 in 2002 data and 31 in 2007 data) and is most likely due to data inconsistencies. Whatever the reason it means that either the shortage forecasted in the 2002 forecasting exercise was underestimated; or the shortage in the 2008 exercise is overestimated. It is important to note, however, that at most this over and under estimation would amount to less than the +/- 10 percent gap range that is already incorporated into the current forecast.

Common with all occupations included in the forecast update, the LPN shortage presented above, assumes status quo demand persists, and at this time is not able to predict new demand for LPN services in the system stemming from Provincial Health Plan initiatives or other program delivery and structural changes that would assume greater or fewer LPNs would be required. This holds true for any future changes involving resource and skill-mixing optimization involving both the nursing services group and other support personnel.

4.4.3 Nurse Practitioners (NPs)

Nurse Practitioners continue to be introduced across the country and are effectively delivering healthcare in response to the health needs of people and communities. In New Brunswick, legislation authorizes the role of the primary healthcare nurse practitioner (PHC-NP). The PHC-NP is a generalist who offers comprehensive and continuous care to clients across the health continuum. Nurse practitioners work in various settings including community health centers, nursing homes, and physician- NP collaborative practices. The University of New Brunswick (UNB) and Université de Moncton (U de M) offer PHC-NP education as advanced nursing programs at the Master's level.

The NPs role is grounded in advanced nursing practice. The NP demonstrates depth and breadth of knowledge, synthesis of data, and use of complex skills and interventions. In addition, the NP role includes prescribing, ordering, and interpreting screening and diagnostic tests, and diagnosing, treating, and managing common acute and chronic illnesses. As a member of an interdisciplinary health team, the NP role is both autonomous and collaborative in nature.

Trends and Issues

Primary Healthcare Renewal

In 2006, the Canadian Nurse Practitioner Initiative (CNPI), led by the Canadian Nurses Association (CNA), released a pan-Canadian Framework for the sustained integration of nurse practitioners in primary healthcare. The NP service model is viewed as a potential solution for improving access to health services and improving service efficiency and effectiveness. Although the NP role is distinct from the role of other health professionals, it is believed that this service approach will also strengthen collaborative practice and contribute to primary care renewal.

A number of assumptions are shaping the current integration of Nurse Practitioners in the New Brunswick healthcare system. These assumptions must be re-considered as this project works toward the development of a future Framework for Nurse Practitioners in New Brunswick.

- More effective utilization of nurses and nurse practitioners is one solution to the issues of access, quality and cost of care.

- The advanced practice role of NP's is an effective and sustainable model of primary healthcare in New Brunswick.
- The primary healthcare NP role is the only NP role authorized in New Brunswick.
- As a member of an interdisciplinary team, the NP role is both autonomous and collaborative in nature.
- The entry-level educational requirement for a NP is a master's of nursing degree from an approved nurse practitioner education program in primary healthcare.

Increased Requirement for NPs

In 2003, Nurse Practitioners were introduced as part of the New Brunswick healthcare system. And the Provincial Health Plan (PHP) then confirmed the addition of 40 new primary healthcare nurse practitioner positions between 2004 and 2008 to work in various settings, including nursing homes, emergency departments, collaborative practices and Community Health Centers. The new PHP extended this initiative to add 10 more NP positions per year to the system between 2008 and 2012.

Current Workforce Analysis

The first Nurse Practitioner started working in New Brunswick in January 2003. In November of 2005 there were 22 registered NPs, and as of 2007 membership data there were 29 NPs registered in New Brunswick. The group at present is upwards of 50 NPs.

The NPs in the province, as per the 2007 membership data, are all female⁹ and the majority (15 individuals or 52 percent) are between 40 and 49 years of age. There are 6 NPs over the age of 50 (and 3 of these are over the age of 55); and 8 individuals (28 percent) are under the age of 40, and within the childbearing age range.

HHR Forecast

Table 14 - Nurse Practitioner Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	29	(5)	(6)
2009	44	0	0
2010	55	1	1
2011	68	4	4
2012	76	2	2
2013	96	10	13
2014	99	4	5
2015	103	(1)	(1)

(Bracketed figures indicate shortage)

As presented in the table above, the Nurse Practitioner scenario for the province over the 2008 to 2015 horizon is encouraging. The forecast assumes that there will be new demand for NPs, based on the Provincial Health Plan commitment to add 10 new NP positions per year over this time span. And the education system is projected to supply on average 12-13 new NPs to the system each year. These new additions vary widely from year to year (6 to 22 over the 2008 to 2015 period) depending upon the number of students enrolled in the programs (current and projected); whether they are part-time or full-time; and projected graduation date.

⁹ Since the 2007 membership report, a male NP came into the workforce.

As such, the forecasted supply of NPs is anticipated to meet the currently identified new demand for this resource, while accounting for retirements and other attrition from the workforce.

4.5 Other Occupations

4.5.1 Dietitians

Trends and Issues

Identified Future Needs

As New Brunswick moves towards a system of greater emphasis on primary healthcare and wellness, it is anticipated that Dietitians will play a key role in the initiatives identified in The Provincial Health Plan, including early childhood development, primary healthcare, and chronic disease management so as to improve and maintain population health. If these strategies are implemented, this will increase demand primarily for public health and primary healthcare nutrition services. Clinical dietitians will be also impacted since hospitalized patients will most likely present with increasing acute and often multiple medical conditions (i.e. a diabetic patient with cardiovascular and renal diseases) requiring more complex nutrition care.

There is an identified need in the system to work towards a systematic nutrition screening system, particularly for the growing aged population, and the need for clinical dietitians will increase once this necessary screening system is in place. The expected outcomes, including improved general health in the seniors' population will far exceed the initial cost required for implementing such a screening system.

Replacements During Leave

A survey conducted by the New Brunswick Association of Dietitians (NBAD) with the other Atlantic dietetic regulatory bodies and the national professional organization (Dietitians of Canada) found that 33 percent of all leaves (including maternity leave, filling a vacation position, etc.) took three months or more to be filled. The survey also found that 28 percent of the known vacancies were in rural areas, which are more challenging to fill on short-term basis.

During leaves many dietitians are not covered by a back-up resource, which results in an increase in wait times in clinical settings for outpatients. Wait times for ambulatory care dietitian services vary throughout the province but in some areas already exceed three months. The majority of facilities have only limited coverage (emergencies only) for inpatients, provided by a dietitian from another patient unit. Coverage may also have to be provided by another facility, which results in an ever greater increase in workload for the dietitian who is covering the growing wait times for outpatients.

Age of Dietitians

A survey conducted by the profession indicates that 50 percent of the province's Dietitians are 40 years of age or older, and 50 percent of those expecting to retire between the ages of 55-59. As such this bubble of workers will present longer-term replacement challenges unless there are conditions present to entice them to remain in the workforce. And in terms of the Public Health workforce, approximately 70 percent of dietitians working as Public Health Nutritionists are 40 or older.

Education and Retention of Graduates

In New Brunswick, the Université de Moncton is the only post-secondary institution that offers a degree in Nutrition. So students interested in pursuing nutrition studies in English must leave the province. Furthermore, no Public Health Nutrition Internship program exists in New Brunswick.

To become a Registered Dietitian requires completion of both an undergraduate degree plus practicum training (approximately one year in length). Only about 50 percent of University graduates will be successful in obtaining a practicum placement. Most go through a general practicum with limited public health nutrition exposure. Increasing the practicum placements and providing students the option to focus primarily on Public Health Nutrition are two avenues that would both, increase the number of dietitians and ensure dietitians have the right knowledge/skill-sets for the province's future needs.

Current Workforce Analysis

According to 2007 membership data shows 300 Dietitians registered in New Brunswick compared to 279 in 2002, an increase of 7.5 percent over this time period. The majority of Dietitians (291 or 97 percent) are female. Of the total, 17 percent are under 30 years of age; 26 percent are in the 30-39 age group; 31 percent are in the 40-49 age group; 17 percent are between 50 and 59 years of age; and only 2 percent are over the age of 60. Date of birth is missing for 22 (7 percent) of the group.

Given these demographics and the trends and issues identified for Dietitians, this group is also faced with challenges related to filling short-term maternity leaves, in that 42 percent of the group is both female and within the child-bearing age range (<40 years of age).

Near-term retirements do not pose a significant risk to the stability of this workforce, as only 6 percent of the group is 55 years of age or over. It should be noted, however, that another 13 percent of the workforce (38 individuals) will enter the retirement zone in the 2008-2015 period; and the survey indicated that a high percentage of workers expect to retire between the age of 55 and 59. Thus, replacing retirements over the longer time horizon of 8-10 years could become an increasing challenge for the occupation.

HHR Forecast

Table 15 – Dietitians Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	300	(1)	(1)
2009	309	7	8
2010	318	13	16
2011	325	19	24
2012	334	26	31
2013	342	32	40
2014	348	37	45
2015	353	41	50

(Bracketed figures indicate shortage)

Please note: due to missing date of birth for 22 individuals (7percent) in this group, the forecast model allocated these individuals proportionately amongst the age groups, based on known dates of birth for the

entire group. As such, forecast model results should be interpreted with more caution than for groups for which dates of birth are known for all individuals.

The workforce scenario for Dietitians to 2015 is a positive one, in that the supply of new professionals each year (on average 19 from internship programs and direct from universities) is projected to meet and surpass current (status quo) demand.

However, as discussed in the Trends and Issues section, finding replacements for short-term leaves particularly in rural areas, continues to be a challenge despite what the forecast indicates as an adequate supply of Dietitians in the province. It is also important to recognize that new initiatives and programming related to PHP initiatives, which may translate into new demand for this resource, cannot be factored into the model at this time. The potential for new demand for Dietitian services is discussed in more detail in the Trends and Issues section 'Identified Future Needs'.

4.5.2 *Primary Care Paramedics*

Trends and Issues

Workforce Demographics and Characteristics

Due to the high physical demands of this profession, most paramedics are attempting to leave active practice in their late 40's or early 50's. With changes to the federal pension legislation, paramedics fall under the public safety occupation designation, which will allow for earlier, un-penalized federal pensions at age 50. Given this legislation change, it may follow that the paramedic workforce will lose more workers before the typical retirement age of between 55 and 60 years.

Recruitment

Ambulance New Brunswick (ANB) indicates that they are becoming increasingly challenged to staff many rural stations in the province. There are 68 stations divided into four regions – North, South, East and West. They report that there have consistently been between 80 and 100 job postings amongst the stations in the past year. Eastern and Western regions attract the majority of applicants. In these two regions recruitment is not difficult from a clinical perspective; however, fulfilling the linguistic profile remains a challenge. In addition, attracting and retaining paramedics to the Northern and Southern regions has been increasingly difficult.

Current Workforce Analysis

According to the 2007 Paramedic Association of New Brunswick (PANB) membership data, there are 971 Paramedics registered in New Brunswick, a drop from 2002 when there were 998 active Paramedics registered. Of the 971, the majority 908 (94 percent) are Primary Care Paramedics; and 63 (6 percent) are EMTs. There is no gender information available for this group. The average age, at 36.6 years, is relatively young compared to other health occupations.

The age group analysis for the entire group reveals that 28 percent of Paramedics are under 30 years of age; 34 percent are between the ages of 30 and 39; 25 percent are in the 40-49 age range; and 12 percent are over the age of 50.

The majority of this workforce is employed on a full-time basis (over 70 percent); while less than 20 percent are casual workers; and approximately 10 percent are employed on a part-time basis.

The risk for this group does not appear to be from impending retirements – currently only 6 percent are in the 55+ retirement zone and another 6 percent of this workforce will enter the retirement zone within the forecast period. However, it is important to note that due to the physical nature of this work there is the increased potential for Paramedics to leave active/field duty at a relatively young age.

HHR Forecast

Table 16 – Primary Care Paramedics Supply and Gap Forecast

YEAR	SUPPLY	GAP RANGE	
		-10%	+10%
2008	967	(60)	(74)
2009	1022	(71)	(87)
2010	1093	(67)	(82)
2011	1162	(65)	(80)
2012	1230	(65)	(80)
2013	1295	(67)	(81)
2014	1358	(70)	(85)
2015	1420	(75)	(91)

(Bracketed figures indicate shortage)

As presented in the table above, a shortage of between 60 and 90 Primary Care Paramedics persists over the entire 2008 to 2015 forecast period.

As factored into the forecast model results, the current educational programs supplying the New Brunswick paramedic workforce are graduating approximately 100 paramedics per year. However, this annual new supply is not anticipated to keep pace with increasing demand for this resource, particularly when coupled with attrition from the workforce due to retirements and other exits.

The Association indicates that a range of issues exist that currently prevent further increasing the size of the educational programs; the primary issue being the system's capacity for clinical sites and adequate number of preceptor sites.

There is future potential for utilizing Paramedics in Advanced Care Paramedics in the Inter-Facility Transfer area, however, it is perceived that this additional role would not become reality within this forecast period.

The Department of Health and ANB are currently working on a targeted recruitment strategy to address some of the human resource issues for this group that have been presented herein.

4.5.3 Public Health Inspectors

Trends and Issues

Succession Planning

A large number of Public Health Inspectors in New Brunswick will be retiring in the next four to five years. The New Brunswick Branch of The Canadian Institute of Public Health Inspectors asserts that the technical and corporate knowledge that will be lost with these retirements is significant and the Department of Health should undertake the necessary measures to ensure knowledge transfer to incoming/new staff. This can be accomplished by ensuring new employees are hired well in advance of

anticipated retirements to ensure job mentoring and learning opportunities are available between retirees and new staff.

As well, the aggressive recruitment efforts of western provinces have significant impacts on New Brunswick's ability to recruit and maintain Public Health Inspectors who have the necessary certification, training and experience.

Sponsorship Program

In the late 1980's and early 1990's the Department of Health developed a sponsorship program for NB students due to a shortage of Certified Public Health Inspectors in the province and difficulty in recruiting them. Other provinces such as Nova Scotia, Newfoundland, etc. were already offering sponsorship programs to attract students. The program was developed for students who had already obtained a Science degree and were interested in a fast track program at one of the Universities offering Environmental Health programs leading to Certification as a Public Health Inspector. In return for sponsorship for two years in these specialized programs these students signed three-year service agreements with the Department. This program was very successful in recruiting students from NB who were interested in becoming Certified Public Health Inspectors and returning to NB for employment after completion of their studies. Currently, most of the individuals who were sponsored are still employed with the Department and some are now in leadership positions with the Department.

Opportunity for Advancement and Diversification

There currently exists limited or no opportunity for professional advancement for Public Health Inspectors in New Brunswick. Research and development projects in support of program advancement and health protection are minimal. New Brunswick currently employs its Public Health Inspectors in a general program whereby inspectors must deliver services for a broad range of public health issues including food safety, water quality, communicable disease, air quality, land use and development and on-site sewage disposal. Service delivery across such a broad spectrum makes it difficult for a Public Health Inspector to develop specialized knowledge in any one area and lengthens the time needed for an inspector to develop fully the ability to assess risk for a specific situation or program.

Practicum Training

Graduates of environmental public health programs wishing to become a certified Public Health Inspector must complete a practicum of at least 12 weeks with an employer and be monitored and evaluated by a certified Public Health Inspector. In New Brunswick, Public Health Inspectors have little time to spare given the high program demands and since programs are generally seen as understaffed, monitoring and evaluation of practicum students can become an onerous task for managers and field staff alike.

The proper training of practicum students in New Brunswick will ensure higher success rates for certification exams offered nationally and will make available to New Brunswick a greater pool of certified Public Health Inspectors from which to hire.

Current Workforce Analysis

In 2002 there were 46 Public Health Inspectors registered in the province. The average age was 42 years old. Data to support additional analysis for this group was not available at the time this study was conducted.

HHR Forecast

A forecast is not available for the Public Health Inspector occupation due to insufficient data.

4.6 Summary of HHR Forecasts by Occupation

Table 17 presents the summary of health human resource forecasts for ranges of shortages or surpluses, by group, over the 2008 to 2015 forecast period.

The range for each group (plus and minus 10 percent) is presented to allow planners to envision the potential highs and lows of forecasted shortages or surpluses for each group. The range also allows for recognition to be given to positive or negative impacts/influences on health human resources that were not possible to incorporate into a statistical forecasting model for a variety of reasons (limited data; unknown impact of changes to healthcare delivery model, etc.)

It is important for the reader to recognize that gaps (shortages/surpluses) are cumulative in nature, in that, if nothing is done to redress the gap in the base year (2008 or time t), then it forms the base of the next year's forecast ($t+1$) and so on, taking into account all positive and negative supply and demand factors each year of the forecast period (2008-2015).

The occupational groups are presented in order of descending magnitude based on the human resource gap (shortage or surplus) as a percentage of forecasted supply at the end of the forecast period (2015), as calculated in the final column of the table. Note, all figures in brackets indicate a shortage. Occupations with a percentage gap of within plus or minus 5 percent is considered relative equilibrium of supply and demand.

Table 17 – HHR Forecast Summary – All Occupations (2008, 2011, 2015)

<i>Professional Groups</i>	2008			2011			2015			<i>Gap as % of Supply*</i>
	<i>Supply</i>	<i>Gap Range</i>		<i>Supply</i>	<i>Gap Range</i>		<i>Supply</i>	<i>Gap Range</i>		
		-10%	+10%		-10%	+10%		-10%	+10%	
Health Information Management Professionals	113	(7)	(9)	129	(15)	(18)	125	(47)	(57)	-41%
Pharmacists	695	(23)	(29)	692	(97)	(118)	680	(200)	(245)	-33%
Social Workers	1428	(56)	(68)	1462	(193)	(236)	1547	(339)	(415)	-24%
Licensed Practical Nurses	3124	(85)	(103)	3158	(308)	(377)	3198	(610)	(746)	-21%
Cardiologist Technologists – ECGs	122	(4)	(4)	126	(11)	(13)	128	(23)	(28)	-20%
Speech Language Pathologists	179	(9)	(11)	201	(16)	(20)	226	(29)	(36)	-14%
Registered Nurses	8012	(97)	(119)	8012	(389)	(475)	8159	(645)	(789)	-9%
Medical Radiation Technologists	539	(5)	(7)	537	(18)	(22)	538	(31)	(38)	-6%
Paramedics	967	(60)	(74)	1162	(65)	(80)	1420	(75)	(91)	-6%
Occupational Therapists	297	(8)	(10)	325	(7)	(9)	357	(11)	(13)	-3%
Medical Laboratory Technologists	658	(10)	(12)	689	(6)	(8)	714	(16)	(20)	-2%
Physiotherapists	465	(9)	(11)	503	(2)	(3)	537	(7)	(8)	-1%
Nurse Practitioners	29	(5)	(6)	68	4	4	103	(1)	(1)	-1%
Audiologists	45	(2)	(2)	54	1	1	64	3	4	5%
Dietitians	300	(1)	(1)	325	19	24	353	41	50	13%
Respiratory Therapists	196	(4)	(4)	231	16	20	273	40	49	16%

*NOTES

1. Bracketed figures indicate shortage.
2. Final column – ‘Gap as % of Supply’: groups are ranked in order of priority re: mid-point of gap range (shortage/surplus) as percentage of 2015 forecasted supply – minus sign indicates shortage.
3. ‘Gap as % of Supply’ ranging from +/- 1 to 5 percent are groups considered to be in relative HR equilibrium at end of forecast period (includes: OTs, MLTs, PTs, NPs, and Audiologists).

4.7 New Service Providers

4.7.1 Midwives

The World Health Organization (WHO) states that midwives are “the most appropriate and cost-effective care providers to be assigned to the care of normal pregnancy and normal birth, including risk assessment and the recognition of complications’.

This recognition is coupled with the reality that Canada is experiencing a sharp decline in the number of physicians who are practicing obstetrics or providing maternity care. In fact, fifteen years ago 28 percent of physicians provided intra-partum care, but by 2004 this rate fell by more than half to 13 percent.

As such, the Provincial Health Plan 2008-2015 states that the Government of New Brunswick will introduce legislation, in consultation with midwives and other stakeholders, to regulate the practice of midwifery in New Brunswick. An implementation plan will be developed to bring midwives into the public healthcare system, as well as a strategy to recruit and retain midwives in the province.

The Midwifery Model of Care Working Group presented the following information to the Department of Health in February 2008.

Implementation and Workforce Requirements

Given the assumption that two midwifery clinics will be set up initially, one in an urban setting and one in a rural setting. As presented in the table below, it is anticipated that four midwives will be introduced into the system in 2010, followed by four per year afterwards according to identified needs in various regions.

Midwives work best in a team setting where they can share on-call for after hour service requirements, and will be grouped in a team of four in each integration site.

Year	Total
2010	4
2011	4
2012	4
Total	12

With the actual structure of the healthcare system in New Brunswick and with an increment of one new region per year, midwives should be integrated in all regions in New Brunswick by 2015.

As soon as midwifery legislation is passed before the Legislative Assembly of New Brunswick, a human resources plan will be developed and implemented in cooperation with the Department of Post Secondary Education, Training and Labour.

Midwives deliver most of the care to their patients in the community. They provide prenatal or postnatal care in community clinics or client’s homes and intra-partum care in hospitals or at home. They organize their practice to ensure women receive safe, individualized and personalized care.

4.8 Alleviating HHR Shortages - Considerations, Implications and Actions

4.8.1 Considerations

There are several overarching considerations that are woven throughout this report and apply to all health occupational groups within the 2008 to 2015 forecast horizon and beyond, when determining how to address supply and demand gaps within each group. These global considerations are as follows:

New Labour Force is Shrinking

As discussed in detail in Section 3.1.1 looking ahead, the growth in Canada's labour market will slow substantially. Over the last 50 years the labour force in Canada grew by 200 percent, while in the next 50 years, the labour force will only grow by 11 percent. This means that there is immense competition amongst 'careers' for potential workers entering the labour force, hence fewer will enter the health professions in general. As such, ensuring easier access to post-secondary health education by adopting alternative distance delivery models would allow a new pool of potential students to consider these health programs.

Demographics of the Healthcare Workforce

The Young Female Component

The healthcare workforce is predominantly female (approximately 85 percent) and many occupations, as discussed in preceding sections, also have a large cohort of workers who are under 40 years of age. This young and female combination poses challenges for human resource planning in terms of meeting increasing demand for service, while accommodating short-term leaves related to childbearing. As well, this new generation of workers (both male and female) and post-maternity females desire more flexible work schedules and/or permanent part-time employment which is a difficult balance in the face of increasing demand for services from these groups at least in the current system. Opting for more patient focused service delivery models may allow for a more diverse and flexible workweek.

The Baby Boomer Component

The two issues related to the baby boomer portion of the healthcare workforce are: 1) working fewer hours; and 2) retiring. Baby boomers aged 37 to 55, made up 47 percent of the labour force in 2001 and ten years from now, one half of this group will be aged 55 or older, and 18 percent will be aged 60 or more. As the baby boom generation ages, its members will be retiring. Even if they continue working, many will reduce their work hours. However, it is important to recognize that the current economic climate may impact the timing of retirement decisions and reduction of working hours.

4.8.2 Implications and Actions

Optimization of Provider Roles

Evidenced by the forecasted shortages presented in this report, and despite the fact that all but two occupations increased their supply during this period, few would argue that the current healthcare system faces a potential health human resources crisis and is no longer sustainable in status quo form. As such, a timely comprehensive and thorough review of how healthcare services are planned and delivered is warranted.

There is a common agreement in the healthcare system that optimizing the utilization of resources and ensuring that health professionals work collaboratively and to their full scope of practice is one key to the current and future challenges facing the healthcare delivery system. In addition, having the right skill-mix and ratio between support personnel and health professionals within the many groups will be instrumental so that this desired outcome can be achieved.

To support this outcome, education system planners should consider the introduction of inter-professional learning opportunities as part of the regular programming - as it is crucial that service providers are prepared for such collaboration. A paradigm shift towards services delivered based on clients' needs as opposed to service providers' is essential if the healthcare system is to evolve along the spectrum of increased role collaboration and optimization of health human resources.

Key lessons learned in the Atlantic Health Human Resources Planning Study (2005) are consistent with the above statements, thus reinforcing the need for policy direction to expedite and facilitate this "culture" change within the healthcare planning and delivery system.

New Seats in Programs

Opening new seats in health training programs has been employed in the past as a way to increase supply in specific occupations. However, due to the shrinking labour force this tactic may not be as effective in the future. In fact, since the 2002 Fujitsu Report (which recommended seat increases in training institutions for a range of occupations, and resulted in additional seats), there have been anecdotal reports from New Brunswick Universities that it is becoming an increasing challenge to attract students to fill these seats. However, programs delivered within the college network seem to have the opposite issue, the demands for admissions often exceeding their capacity, largely due to lack of physical space.

In addition, it is becoming increasingly difficult to recruit instructors for programs and to maintain clinical sites for placements.

Exploration of New Ways of Working

Due to the forecasted shortages anticipated for many healthcare professions, it is critical that new ways of working be explored, in order to recognize the different "motivating" realities at both ends of the workforce age spectrum.

Most young professionals are seeking more flexible work environments and they choose to fit their work to their life not vice versa. Due to these changing dynamics related to the new generation of professionals, flexible hours, on-site daycares, physical fitness facilities, mentoring and on-the-job training opportunities, job sharing, and investment in the ongoing improvement of skills, will all need to be considered as base level working conditions of the future workforce.

On the other end of the spectrum is the bubble of aging workers, and commonly the age of 55 is touted as the age of retirement of these baby boomers. However, this generation could be coaxed to stay in the workforce longer if greater flexibility and innovation were injected into the healthcare delivery system to allow for flexible and part-time hours with the goal that these retired or semi-retired baby boomers would impart their accumulated knowledge to the younger generation through coaching and mentoring.

International Recruitment

Opportunities exist to enhance access to a number of healthcare professionals, including the internationally educated health professionals (IEHP).

A comprehensive approach is required to reduce barriers to practice for IEHP and enable them to successfully integrate into the New Brunswick workforce. Regulatory, institutional and cultural barriers often hamper the opportunities for immigrants to obtain licenses and professional employment. This results in multi-tiered negative outcome. First, for the IEHP's who are unable to use their skills; for the population who are deprived of a means for improving access to expert healthcare; and finally, for healthcare employers who are struggling with labour shortages.

An integration framework including: 1) Comprehensive Information, if possible before the professional immigrates; 2) Profession Specific Assessment and Gap Analysis; 3) Education and Bridging; and 4) Integration within the community, are important components of a process to be successful in attracting, integrating and retaining health professionals to New Brunswick.

5 Other Legislation and Policy Directions Impacting HHR

5.1 New Brunswick Self Sufficiency Agenda's Population Growth Strategy

As presented in 'It is Time to Act - Towards New Brunswick's Population Growth Strategy'¹⁰, the demographic challenges facing the province include:

- Low fertility rates;
- Declining birth rate;
- Declining and aging population;
- Significant out-migration, particularly of youth, to other provinces; and,
- Small immigrant intake, well below the national share.

These trends present an important challenge to the continued improvement and sustainability of health, education, and other social programs in New Brunswick in the decades to come.

The report states that in 2006, approximately 1,600 new immigrants landed or indicated that New Brunswick was their final destination. Government has set a number of ambitious targets for increasing immigration (5,000 new immigrants annually by the year 2015) and the retention of newcomers (increase current retention rate from 60 percent to 80 percent by the year 2015). Other targets will be established for the retention of youth and repatriation of former New Brunswickers.

The success of the Population Growth Strategy has important implications for health human resource planning in the province, from both a demand and supply perspective, such as a larger population requiring healthcare services; but also presumably a larger cohort of young people feeding into the healthcare workforce to provide these services.

The implications of the Strategy, specifically the goal of 5000 new immigrants per year to 2015, must be considered along with other HHR planning considerations within this current forecast period and beyond.

5.2 Framework for Pan-Canadian Health Resources Planning

In Fall 2007 the Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources released a document entitled *Framework for Collaborative Pan Canadian Health Human Resources Planning*¹¹. The Department of Health played a major role in the development of the Framework and endorses its content.

The Framework not only identified challenges and priorities for collaborative action but also set out tangible and specific actions that jurisdictions could take together to achieve a more stable and effective health workforce.

The Framework also presented an example of a conceptual model for health human resource planning. The conceptual model presents the essential elements of health human resource planning in a way that captures the dynamic interplay of a variety of factors and includes the range of elements that must be taken into account when determining the human resource needs of a jurisdiction.

¹⁰ Population Growth Secretariat, Government of New Brunswick.

¹¹ Health Canada, September 2005, Revised March 2007.

As indicated in the model, the determination of health human resource needs is not solely based on population needs but also include the design of the healthcare service delivery models that will be implemented to meet the population needs. It is these delivery models that will have a direct impact on the human resource requirements. As noted in the conceptual model presented in the Framework document, there are many other elements that will also impact the health human resource requirements. Elements such as the current supply, the production, the resource deployment and utilization, the efficient mix of resources both human and non-human and provider outcomes all play a key role in determining the health human resource needs of jurisdiction.

6 Conclusions ~ Healthcare Transformation in New Brunswick

Healthcare costs are the single largest item in the provincial budget and constitute 40 percent of all government spending. Furthermore, approximately 75 percent of hospital system costs are spent on the remuneration of health professionals. Over the past five years, government spending on healthcare grew at an average of nearly 8 percent per year, while revenues increased by about 5 percent annually. Clearly, this trend cannot be sustained, as concluded in the Provincial Health Plan ‘Transforming New Brunswick’s Health-care System’.

This Health Human Resource Supply and Demand Update presents a compelling and dire scenario of the state of the future healthcare workforce, if current practices prevail, and the model of delivering healthcare in this province does not evolve to reflect the coming budgetary and HHR challenges.

This scenario is compounded by evidence, as presented in the PHP document¹², including: the increased demand for healthcare associated with an aging population, unparalleled growth in drug costs, significant expenditures for advanced diagnostic equipment, and major investments to implement the electronic health record are but a few of the cost pressures facing the healthcare system, not to mention increased public expectations as to what access to healthcare means.

Given the predicted health workforce shortages, few would argue that new efforts are required to retain healthcare professionals and to ensure that their skills are utilized as effectively and efficiently as possible, not only to increase their productivity, but also their job satisfaction. These efforts will need to focus on improving the quality of work life in a system that has been described by some as demanding, bureaucratic, chaotic and impersonal.

As such, issues of professional roles, competency profiles, accountability, relationships and scopes of practice will need to be addressed. It is recognized that these issues are complex, broad and often overlapping, but again they are of paramount importance to achieving optimal outcome, thus contributing to the future sustainability of the New Brunswick healthcare system.¹³

There is sound evidence that the time for a decisive departure from the status quo model of delivering healthcare in New Brunswick has come. Based on current data, maintaining status quo, in terms of current level of expenditures, will be done at the expense of other public service requirements such as housing, social services, education, and many others. Knowledge of this reality brings forth immense responsibility for the Department of Health and the New Brunswick Government to adopt a sustainability framework by which all decisions around expenditures would be made.

Appropriate planning and management of health human resources (HHR) is key to ensuring that Canadians have access to the health providers they need, now and in the future. Collaborative strategies are to be undertaken to strengthen the evidence base for national planning, promote inter-disciplinary provider education, improve recruitment and retention, and ensure the supply of needed health providers

¹² Provincial Health Plan 2008-2012, Page 7

¹³ Page 7

7 APPENDIX A - Health Human Resources Update Advisory Committee and Terms of Reference

Mr. James Ayles Consultant, HHR Workforce Planning Department of Health	Ms. Alice Thériault Chief Nursing Officer & Nursing Resources Advisor HHR Workforce Planning Department of Health
Ms. Sonya Hull Consultant Crescent Management Consulting	Ms. Michèle Roussel Allied Health Professional Resources Advisor HHR Workforce Planning Department of Health
Ms. Lyne St-Pierre-Ellis Director & Physician Resources Advisor HHR Workforce Planning Department of Health	Ms. Claudette Landry (Acting/Beth McGinnis) Acting Director, Public Health Practice & Population Health Department of Health
Ms. Tracey Newton Healthcare Consultant – Clinical Services Hospital Services Department of Health	Mr. John Estey Director, Mental Health Department of Health
Mr. François Varin Healthcare Consultant Hospital Services Department of Health	Mr. Dan Coulombe Director of Operations NB Cancer Network Department of Health
Ms. Jean Bustard Provincial Director of Extra Mural Program & Rehab Services Hospital Services Department of Health	Ms. Susan McKinley Consultant, Nursing Home Services Department of Social Development
Mr. Pascal Robichaud Director of Post-Secondary Affairs Department of Post Secondary Education, Training and Labour (PETL)	Mr. Gerald Ingersoll Director of Corporate & Learning (re NBCC) Department of Post Secondary Education, Training and Labour (PETL)
Ms. Bronwyn Davies Director, Primary Healthcare Department of Health	Ms. Line Croussette Directrice des services Académiques CCNB - Bathurst

Health Human Resources
Supply and Demand Analysis Update
Department of Health - Health Workforce Planning

**Advisory Committee
Terms of Reference**

1. PURPOSE

To provide advice and guidance to the Health Workforce Planning Branch of the Department of Health regarding issues that relate to the Health Human Resources Supply and Demand Update.

2. BACKGROUND

The release of the *Health Human Resources Supply and Demand Analysis* in 2004 presented a detailed look at the current supply and future demands for health occupations in New Brunswick up to the year 2007.

To build upon the investments and tools developed during the original study, Health Workforce Planning will conduct a follow-up with the specific objective of updating the data and assumptions necessary to re-run the forecast models up to the year 2015.

3. ACTIVITIES

- Review assumptions used in the original study to determine if they are still relevant and applicable to the update.
- Review new assumptions and any additional information submitted by the health occupations for the purpose of the update.
- Identify issues that have arisen since the completion of the original study that should be addressed in the update.
- Identify new and additional sources of information that can be utilized to help the Department of Health improve its understanding of trends and issues impacting the health workforce.

4. MEMBERSHIP

The Advisory Committee will have 15 members consisting of representation from:

- Department of Health
- Department of Post-Secondary Education, Training and Labour
- Department of Social Development

The chair will be assumed by a member of the Health Workforce Planning Branch.

5. MEETINGS

The Advisory Committee will meet as determined by need.

8 APPENDIX B - Contributions, Acknowledgements and References

The following individuals and organizations graciously provided information and data contributing to this report.

Regional Health Authorities and healthcare institutions (including Stan Cassidy Center for Rehabilitation)

New Brunswick Community College system:

Betty Brown – NBCC, Saint John

Jocelyn Landry – CCNB, Campbellton

Maritime Provinces Higher Education Commission (MPHEC):

Dawn Gordon

Health Professional Group Representation:

- College of Psychologists of New Brunswick
- New Brunswick Association of Social Workers
- The New Brunswick Association of Speech Language Pathologist and Audiologists
- New Brunswick Association of Occupational Therapists
- College of Physiotherapists of New Brunswick
- New Brunswick Pharmaceutical Society
- New Brunswick Society of Cardiology Technologists
- New Brunswick Health Information Management Association
- New Brunswick Medical Radiation Technology Association
- New Brunswick Society of Medical Laboratory Technologist
- New Brunswick Association of Respiratory Therapists
- Nurses Association of New Brunswick
- New Brunswick Nurses Union
- Association of New Brunswick Licensed Practical Nurses
- New Brunswick Association of Dietitians
- Paramedic Association of NB
- Ambulance New Brunswick/NB EMS
- Canadian Institute of Public Health Inspectors - New Brunswick Branch

Reports and Publications Consulted

In addition to the studies, reports and publications referenced in the body of the document, the following sources of information were consulted in the development of this report:

Med-Emerg Inc. *The Atlantic Health Human Resources Planning Study*. 2005.

Canadian Institute for Health Information (CIHI). *Measuring the Retention of Registered Nurses in Canada: A Study of 2000-2004 Registration Data*. 2006

Ibid. *Bringing the Future into Focus: Projecting RN Retirement in Canada*. 2003.

Canadian Pharmacists Association. *Moving Forward: Pharmacy Human Resources for the Future*. 2008.

Health Canada. *Framework for Collaborative Pan-Canadian Health Human Resources Planning*. September 2005; Revised March 2007.

Ibid. *The Working Conditions of Nurses: Confronting the Challenges*. 2007

Ibid. *Nursing Shortages: Where and Why*. 2007

9 APPENDIX C - Minimum Data Set

Requirements from Health Occupational Groups / Professional Associations

The following dataset was requested for the most recent membership year (preferably 2007).

Data Element	Description / Instructions (if applicable)
Unique identifier #	To maintain anonymity please apply unique identifier to each member (suggested method is to strip names from file and use Registration Number as identifier).
Year of Birth	
Gender	Male Female
Health Region employed	Region 1 (total region) Region 1B Region 1SE Region 2 Region 3 Region 4 Region 5 Region 6 Region 7 Unknown Out of Province
Health Region of residence	Same as above
Language	'Language of preference' or 'ability', if available; or clearly indicate data element description related to available language information English French English and French Unknown
Name of Registering/Licensing Body	
Registration #	See number 1, if used as unique identifier
Registration Status	Active Inactive Temporary Retired Student Unknown
Certified	Certified in occupation to practice Yes No
Credential	Description/name of highest credential
Field of Practice	Clinical Management Education Research Other
Working in Occupation	Yes No
Unemployed	If known
Seeking employment	If known
Health Sector employed	Hospital Extramural

	<p>Nursing home Special Care home Physician's office Community Health Centre Mental Health Services Public Health Services Government Academic Private Sector Other</p>
Employment Sector	<p>Provincial Health system (Health, Social Development, RHAs, etc.) Provincial Government other (Crown Corps, WHSCC, Justice, etc.) Federal Government Private sector</p>
Employment status	<p>Permanent Full-time Permanent Part-time Permanent Temporary Casual Leave of Absence (LOA) Unknown</p>

10 APPENDIX D - Trends and Issues Template

The following Trends and Issues Template was completed by the representative bodies for all occupations included in this study.

TRENDS AND ISSUES TEMPLATE FOR HEALTH OCCUPATIONS

Please consult with relevant representatives from your group who may have input re: trends and issues as they affect health human resources for your occupation, in the 2008-2015 timeframe. These representatives may include your group’s Council, Board, Elected representatives, Executive Director, Registrar, etc.

The trends and issues affecting your group that are communicated as part of this process will inform the HHR planning process in conjunction with Supply and Demand forecast model results. For background information to help you in this process, you may wish to refer back to the 2002 Fujitsu Report (Section 5), on which this update is based, to look at trends and issues provided in the section for each group, that were identified for your group at that time.

Required Contact Information	
Name of Group	
Name and Position of Primary Contact	
Phone (primary contact)	
E-mail (primary contact)	

Trends and Issues for Group/Occupation as they relate to supply of, and demand for, health human resources. Please identify the top three trends and issues and keep your total response to within approximately 400 words.

Trend/Issue #1:
Trend/Issue #2:
Trend/Issue #3:

Thank you for your valuable collaboration on this initiative!

11 APPENDIX E - HHR Forecasting Model Explanations and Assumptions

Forecast Model Factor	Explanations and Assumptions
SUPPLY-SIDE	
New Entrants	Varies by occupation depending on educational/training sources and projected graduates for 2008-2015 (Embedded in Forecast Model for each group under 'New Entrants' spreadsheet tab)
Reserve Pool	Entered into model as a percentage by age-group depending on occupation (based on length of training programs; age of graduates; etc.) Applied for small number of occupations for which data was available Re-entered to workforce at a rate of 50-100 percent for each year of forecast period; depending on size of pool and characteristics of group.
Retirements	10 percent applied to 55-59 age group 30 percent applied to 60-64 age group 100 percent retire at 65+
Exits (Attrition not related to out-migration, death or retirement)	Based on current CIHI information re: attrition; supported by 2002 Fujitsu Supply and Demand Analysis research: 2.5 percent for 'Nursing' and 'Social Sciences' groups 2.0 percent for 'Rehabilitation and Pharmacy' and 'Other Occupations' 1.0 percent for 'Medical Technology and Medical Information' groups
DEMAND-SIDE	
Vacancies/Postings	Varies by occupation for public and private sector, as supplied by: Region Vacancies is median vacancies over the 2006 to 2008 time period to account wide variation in quarterly data FCS - Nursing Home RN-LPN-RA Vacancy Survey May 2008 Department of Social Development Ambulance NB / NB EMS Private sector postings on: careerbeacon.com, NBJobs (October 2008) Vacancies/postings, as per above, used as proxy for each year of forecast period
Planned New Positions	Incorporated for occupations for which information is available re: required human resources for new health system programming/initiatives