# PARAMEDIC SHORTAGE: A CALL FOR ACTION

## NATIONAL HUMAN RESOURCE REVIEW

MARILYN PIKE EHS SENIOR DIRECTOR, NOVA SCOTIA; CHRISTINE GIBBONS RESEARCH OFFICER

## EXECUTIVE SUMMARY

**Introduction:**

The following paper discusses the challenges currently being faced by many Canadian provinces in their efforts to maintain an adequate supply of Advanced Care Paramedics (ACPs). In addition, causal factors predictive of a countrywide shortage of ACPs are examined. This paper is supplemented by a Nova Scotia case study, which documents the specific supply issues Nova Scotia is facing. In adding this case study, Nova Scotia hopes to encourage other provinces to conduct similar reviews, through which the data and evidence necessary to an understanding of the ACP supply and demand issue, can be used to inform a national strategy designed to avert a countrywide shortage of ACPs.

A shortage of ACPs, in combination with an aging population and shortages in other aspects of the health care sector, will continue to increase pressure on the health care system.

**Current Situation:**

In Canada, there are over 20,000 paramedics. Of these, approximately 2700 are advanced care paramedics (ACPs).[1]

A number of factors are contributing to the current ACP supply challenges facing many provinces in Canada. These include: the demographic composition and characteristics of currently practicing ACPs; the relatively low number of Primary Care Paramedics (PCPs) training to become ACPs; competition between provinces for ACPs; and competition between urban and rural municipalities for ACPs.

All of these factors are contributing to the current ACP supply issues being experienced by many provinces in Canada. One of the main concerns is the competition between provinces for ACPs. For example, provinces such as Ontario are aggressively recruiting ACPs from other provinces. According to the Ontario Paramedic Association, “there is a much higher percentage of non-Ontario trained paramedics from [ACP level] accredited programs [working in Ontario]. The east coast (Nova Scotia, New Brunswick, Prince Edward Island) is the primary source of these paramedics.”[2]

## TABLE OF CONTENTS

**Introduction** ................3
**Current Situation**........4
**Key Issues**.....................7
**Recommendations**.......11
**Challenges** ...................12
**Conclusion**....................16
**Appendix A**..................16
**Appendix B**..................17
**Appendix C**..................20
**Special Thanks**............20
**Bibliography**.................21
**Endnotes**.......................23

**Key Issues:**

There are a number of key issues influencing ACP supply and demand. These are:
•lack of wage parity between provinces,
•challenging working conditions,
•lack of adequate assistance for continuing education,
•lack of sufficient educational institutions/seats able to prepare ACPs,
•absence of a career ladder,
•average age of attrition/ retirement of paramedics in Canada.

Added to these issues is a lack of tracking/monitoring of ACP turnover rates and exit interviews, which identify the reasons for ACPs leaving one province to work in another. No single issue is causing the supply challenges, however in combination these issues significantly impact retention and recruitment of ACPs in Canada.

**Recommendations:**

A long-term strategy to address the human resource planning needs of the emergency pre-hospital care sector, with specific reference to ACPs, needs to be developed. A Canadian Paramedic Advisory Council mandated to create such a strategy, with broad representation from federal/provincial/territorial governments, other health care professions, professional associations, employers, as well as educational institutions needs to be established.

The council's primary responsibility of developing the human resource planning strategy, would address two key elements: 1) a comprehensive recruitment and retention strategy and 2) a plan to facilitate nationwide data collection/tracking/monitoring and trending.

**Potential Challenges to Implementation:**

A number of factors will influence the implementation of a human resource strategy for ACPs. Three challenges are: the wide range of emergency pre-hospital service providers in Canada; lack of adequate data collection; and lack of outcomes based research in the emergency health services field. The potential impacts of these three challenges must be addressed.

**Conclusion:**

The current and impending ACP supply challenges in Canada will shortly begin to pose problems for emergency pre-hospital systems and services. These supply challenges will affect the provinces' ability to provide effective emergency pre-hospital care. This issue needs to be addressed before it becomes the problem currently being experienced in other health professions, e.g., nursing and medicine. An opportunity to be proactive rather than reactive and to apply the lessons learned from other health professions currently exists.

# SECTION 1: INTRODUCTION

Paramedics comprise one of the largest groups of health care professionals in Canada. Paramedics perform a variety of activities in the pre-hospital care sector. They are primarily responsible for treating patients experiencing life-threatening emergencies using sophisticated procedures and protocols, ensuring patients are transported to an appropriate health care facility in a safe and expedient manner, and providing nurses and physicians with crucial patient care information that contributes to the continuity of care.

Of the 20,000 paramedics in Canada, approximately 2700 are advanced care paramedics (ACPs).[3] The ACP designation is second only to Critical Care Paramedics in terms of skills and responsibility. ACPs are able to administer a variety of medications, e.g., diuretics and thrombolytics and perform life-saving medical interventions, such as, percutaneous and surgical cricothyroidotomy[4]. Without ACPs, patients would have to wait until they were in hospital to receive these treatments, thereby affecting patient outcomes.

Currently, the scope of practice of ACPs differs slightly across Canada, which makes comparisons between provinces difficult. Each province is in the process of transitioning to the National Occupational Competency Profiles (NOCPs) developed by the Paramedic Association of Canada and Human Resources Development Canada. The NOCPs detail the competencies for each classification of paramedicine in Canada. The Canadian Medical Association has adopted these profiles as part of its accreditation criteria for paramedicine programs. Use of these profiles will allow for better comparisons between provinces.[5]

Some provinces are attempting to solve their own supply problems, by recruiting ACPs from systems and services in other provinces. This is currently the situation with Ontario. According to the Ontario Paramedic Association, "there is a much higher percentage of non-Ontario trained paramedics from [ACP level] accredited programs [working in Ontario]. The east coast (Nova Scotia, New Brunswick, Prince Edward Island) is the primary source of these paramedics."[6]

Based on demographic information from Statistics Canada, survey data from the Paramedic Association of Canada and discussions with industry experts, there is currently a very limited supply of ACPs throughout Canada. This situation is expected to worsen within the next decade. A shortage of ACPs will decrease the provinces' ability to provide quality, emergency pre-hospital care. Challenges that such a shortage will present for provinces and territories will be exacerbated by an aging population and shortages in other parts of the health care system.

In order to effectively address the current limited supply and the potential long-term supply challenges, there is a need to better assess the situation within each province. In so doing, provincial, as well as, national supply concerns can be addressed.

# SECTION 2: CURRENT SITUATION

Marked shortages exist in many health care professions in Canada. The shortages of nurses and physicians, for example, have been widely publicized in the media and have been given much attention by federal/provincial/territorial governments. A number of councils and commissions have dealt with or are dealing with these issues, e.g., the Advisory Committee on Health Delivery and Human Resources, the Canadian Nursing Advisory Committee, and the Task Force on Physician Supply in Canada.

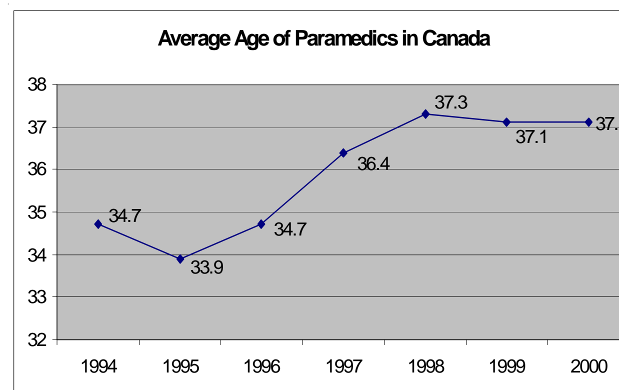
The reports generated by these councils and commissions conclude that there are fewer nurses and physicians employed in their respective fields, fewer persons training to be nurses and physicians and the need for health care professionals is rising with Canada's aging population. These reports detail what is happening with nurses and physicians, however there are shortages in many health professions throughout the health care sector, e.g., medical laboratory technologists.

The findings above, regarding nurses and physicians, are applicable to ACPs. A relatively low number of primary care paramedics (PCPs) are training to become ACPs and currently practicing ACPs are aging. The current limited supply of ACPs and potential future shortage require the same degree of scrutiny and planning that has informed the Task Force on Physician Supply and the Nursing Strategy.

## 2.1 Demographic Composition and Characteristics of ACPs

One of the reasons underlying the impending ACP shortage is the demographic composition of paramedics in Canada. The average age of all paramedics in Canada in 2000 was 37.1 years.[7] (See Figure 2.1)

**Figure 2.1**




*Source: Canadian Institute for Health Information*

This is especially troubling considering that ACPs are typically older than PCPs, given the required experience and expertise at the ACP level. Before a PCP can train to become an ACP, all PCP training and one to three years experience as a PCP must be completed. A 1996 survey conducted by the Paramedic Association of Canada (PAC) indicated that paramedics in the advanced levels of training in their province, i.e., ACP, typically:

- are located in larger urban areas;
- have more 'on-duty' hours than paramedics trained at less advanced levels;
- are older than those educated at a less advanced level;
- have had their ACP certification for approximately three to five years;
- are employed full time with an EMS organization; and
- have worked for a number of EMS organizations.[8]

The average age of paramedics (37.1 years) is young in comparison with other professions (nurses 43, physicians 45, all health professionals 40.8)[9]. However, what is troubling is how it compares to the estimated average age of attrition/retirement

for paramedics in Canada (40 years). This is explored in greater detail in section 3.6.

**2.2 Relatively Low Number of ACP Graduates**

There are currently 12 Canadian Medical Association (CMA) accredited schools/ organizations in Canada that offer advanced care paramedicine courses.[10] Of those 12, three currently offer extension or outreach programs to accommodate learners who are working while completing their studies. Two of these extension/ outreach programs are located in Alberta and both require students to travel to school for several sessions throughout the program. The third is offered in rural communities in NS, e.g., Middleton. A challenge outreach programs experience is difficulty in meeting clinical requirements, as the result of low call volumes and preceptor availability. Therefore, while these programs are more flexible than the traditional programs, they do not sufficiently meet the needs of rural paramedics.

The majority of these programs are two years in length with an average ACP tuition cost set at $12,000. This price includes tuition, books, labs, etc. It does not include travel costs or additional expenses related to any practicum or relocation to practicum sites. These 'extra' costs can be very substantial; depending on the distance the student must travel. Many of the ACP programs are offered in central urban centres, i.e., Halifax, Charlottetown, Calgary, Edmonton and Winnipeg.

A survey of Canadian schools[11] that provide ACP level training indicates that there are on average 332 students graduating per year from ACP programs (see Figure 3.3, page 9). This number is not per school or per province, but represents the total number of yearly ACP graduates countrywide.

Further analysis is required in two (2) areas: 1) capacity of current paramedicine programs, and 2) PCP interest in pursuing ACP designation. In this analysis, the applicant to enrollment ratio for each paramedicine school in Canada needs to be evaluated. This ratio will help to inform a recruitment and retention strategy for ACPs.

**2.3 Competition Between Provinces**

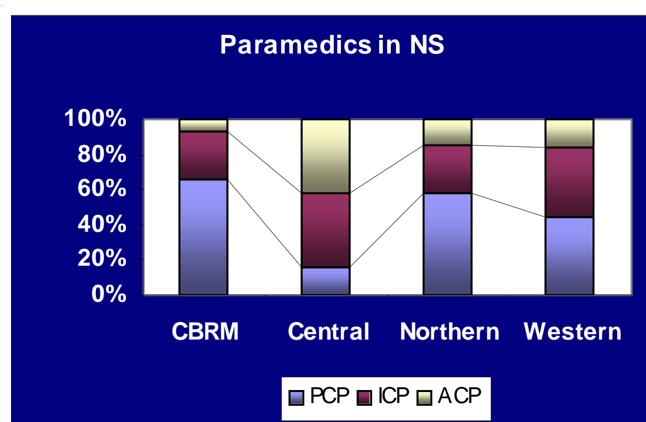
One of the main concerns for many provinces is the competition between provinces for ACPs. As mentioned earlier, other provinces are aggressively recruiting ACPs from provinces like NS. Having provinces take ACPs from one another makes it very difficult to effectively manage the limited supply of ACPs. While "raiding" of systems provides a temporary solution it does little to remedy the actual problem and contributes nothing to the long-term solution.

**2.4 Competition Between Urban and Rural Municipalities**

Given the skill level and competencies that ACPs possess, high call volume areas tend to be more appealing. High call volume areas typically give ACPs the opportunity to use their skills and make critical decisions about patient care more often than lower call volume areas. This leads to a concentration of ACPs in urban centres and shortages in rural areas, where call volume is generally low. Nova Scotia is a case in point. In terms of total paramedics within a particular region, the highest percentage of ACPs can be found in the central region of the province, which is comprised mainly of the Halifax Regional Municipality (HRM). HRM accounts for approximately 40% of Nova Scotia's population.[12] Figure 2.2 demonstrates that in the central region, ACPs account for 42.47% of the total number of

paramedics in that region,[13] as compared to the Cape Breton Regional, Northern, and Western regions where ACPs account for 7.88%, 14.43% and 16.38% respectively.

**Figure 2.2**




*Source: Emergency Health Services, Nova Scotia*

As the total number of ACPs in Canada gets smaller, the imbalance between urban and rural areas will become more pronounced. The strong competition within provinces for ACPs, will lead to a disproportionate number of younger, more mobile ACPs in highly concentrated urban areas.

In developing a national strategy, provinces must keep this in mind so as not to disadvantage rural areas.

**Section 2.5 Challenges**

Currently, most provinces are collecting paramedic human resource data, on their own or in conjunction with their paramedic association. However, in order to collect meaningful data that can be used to develop a national strategy, a consistent minimal data set used by all provinces is required. This data set would include, but is not limited to, the following elements: age, paramedic classification, age of attrition/ retirement and exit reasons. With each province using a consistent minimal data set effective, collaborative, long-term solutions could be developed.

# SECTION 3: KEY ISSUES

There are a number of key issues that will influence the future of ACPs in Canada. These are:
•lack of wage parity between provinces,
•challenging working conditions,
•lack of adequate assistance for continuing education,
•lack of sufficient educational institutions/seats able to prepare ACPs,
•absence of a career ladder,
•average age of attrition/ retirement of paramedics in Canada.

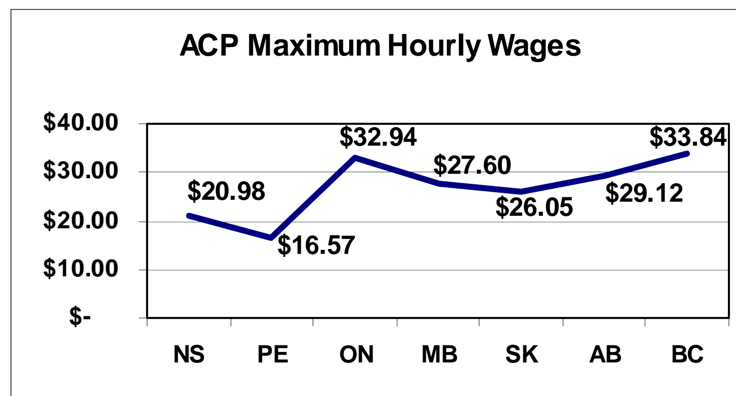
In addition, there is a lack of tracking/monitoring of ACP turnover rates and exit interviews, which identify the reasons for ACPs leaving one province to work in another.

### 3.1 Lack of Wage Parity Between Provinces

The lack of wage parity between provinces in Canada for ACPs is demonstrated in Figure 3.1. In this graph, the maximum hourly wage for ACPs in each province is provided. British Columbia currently offers the highest hourly wage at $33.84 followed by Ontario at $32.94. Figure 3.2 identifies the percentage of ACPs in each province. Ontario employs the most ACPs at 44%, followed by Alberta at 39% and BC at 7%.

It is of interest to note that while BC pays the highest hourly wage it employs significantly less ACPs than Ontario and Alberta. The reasons for this require further exploration.

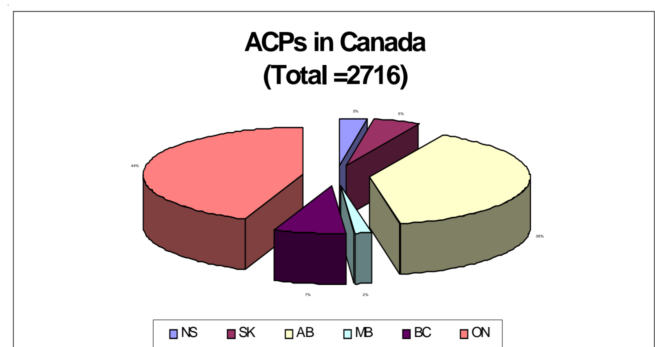
**Figure 3.1**[14]




*Source: Manitoba Health Labour Relations, February 2004.*

Based on this data, it seems likely that the ability to pay does impact the recruitment and retention of ACPs. However, higher wages are not the only consideration in an ACP's decision to choose one workplace over another. Working conditions, educational opportunities, cost of living and career advancement are all factored into the decision.

**Figure 3.2**[15]




*Source: 2003 Survey of Canadian EHS/EMS services and systems*[16]

Lack of wage parity *within* provinces creates as many issues as lack of wage parity *between* provinces. A case in point exists in Ontario where the downloading of emergency health services to the municipalities has created a situation where municipalities with the financial means are offering financial incentives that exceed those being offered by other less well off municipalities. For example, ACPs in Northern Ontario are offered a maximum hourly wage of $28.16, while ACPs in cities such as Ottawa are offered a maximum hourly wage of $32.94.[17]

**3.2 Challenging Working Conditions**

There are a variety of workload issues influencing ACP supply in Canada, such as shift work, stress, and call volume. These issues are affecting the distribution of paramedics throughout the country and their effects will become more evident as the supply of ACPs decreases.

According to the Paramedic Association of Canada, ACPs are typically found in high call volume areas and have more on-duty hours[18] than PCPs. This, combined with the strain of shift work and the stress of working on more critically ill patients, makes it difficult for ACPs to continue working in the field as they get older.

These workload issues and their effects on ACPs and their work satisfaction levels need to be considered in developing a recruitment and retention strategy for ACPs.

**3.3 Lack of Adequate Assistance for Continuing Education**

Given the cost of tuition, inadequate financial support, and the lack of availability of distance/ outreach programs, a large number of PCPs are finding it difficult to acquire the necessary training to transition to the ACP level. Having many of the schools located in urban centres, makes it problematic for students as they typically do not receive enough financial assistance to cover the costs of a move to an urban centre or the costs associated with traveling back and forth from a school to their home community. Even if PCPs can obtain adequate financial assistance (from their employer, student loans, personal loans, etc.) they typically cannot afford to take the necessary time away from work to complete ACP training.

Paramedics living in rural areas are further disadvantaged in obtaining the clinical time or 'patient contacts' required to complete their ACP training. Because of the lower call volumes in rural areas, it typically takes paramedics in these areas much longer to complete their clinical training.

With the relatively small number of ACP graduates per year, the supply of ACPs is already quite limited. This problem will continue to worsen if enrollment is not increased. Enrollment will not increase unless PCPs are given adequate assistance to enhance their education to the ACP level.

As mentioned in the section 2.2, the capacity of paramedicine schools in Canada and PCPs interested in obtaining training to become ACPs needs to be examined in greater detail. Provinces also need to identify the barriers that exist for PCPs wanting to train to become ACPs. Each province would benefit from a survey of PCPs to determine if all barriers have been captured in this paper. These survey results should be included in the provincial case studies.

A plan to increase the number of PCPs training to become ACPs is a vital piece of a human resource planning strategy for ACPs.

### 3.4 Lack of Sufficient Educational Institutions/Seats

It is unlikely that the current number of seats within the 12 institutions offering ACP training can meet any significant increase in demand. Among these 12 schools offering ACP training, there are approximately 361 seats available. Most of these schools are already at full capacity.[19] As the barriers listed above are addressed, i.e., lack of adequate assistance for continuing education, it is likely that more PCPs will want to train to be ACPs. This increase cannot be accommodated, given the current number of seats and institutions available to train ACPs. Therefore, in addressing the other barriers to training ACPs, the number of seats available for these students must be closely examined.

**Figure 3.3**[20]

### 3.5 Absence of a Career Ladder

The continuing evolution of "Emergency Medical Services" to Emergency Health Services; of ambulance drivers and attendants to paramedics; of hearses and trucks to ambulances, has led to a rise in the education and qualifications of individuals entering this relatively new field of paramedicine. This in turn has led to an increase in expectations and a desire to contribute to this newly emerging profession in a variety of ways. Other professions allow their practitioners to maintain their connectedness to their core body of knowledge or specialty while at the same time providing opportunities for growth, challenge and increasing levels of responsibility through roles in education, research, advanced clinical care and administration. Currently, this generally remains unavailable to the majority of paramedics.

Offering paramedics opportunities to transition to roles which involve building on their clinical skills, will help to motivate PCPs to become ACPs. Paramedics want to be able to share their knowledge of patient care, service delivery, and system design by teaching and conducting research. The establishment of a career ladder for paramedics will help develop these opportunities.

In addition, a career ladder will assist with recruitment, motivation and retention. It is a critical ingredient to the success of a long-term human resource strategy directed at ACPs.

### 3.6 Attrition/Retirement

Dr. Ed Cain, Provincial Medical Director for Emergency Health Services Nova Scotia attributes a variety of workload issues, such as stress, shift work and the absence of a career ladder, as reasons for ACPs leaving the profession in their forties.

Survey data from the Paramedic Association of Canada (which indicates a currently aging paramedic population, most pronounced in the ACP population), demographic distributions of paramedics in provinces, such as Alberta and Nova Scotia (where only 25% and

22% of paramedics, respectively, are over the age of 40), and the relatively low numbers of ACP graduates would seem to support this.

**3.7 Lack of Tracking/ Monitoring**

Few provinces are currently tracking information related to the turnover of ACPs and their exit reasons. In a survey of provincial government departments responsible for EHS/EMS, three returned data regarding paramedics' reasons for leaving. In Manitoba, the #1 reason for leaving was to find work in another province and in Saskatchewan, this reason was #2. This data did not indicate why paramedics chose one province over another.[21]

In order to better understand why paramedics are choosing to work in one province over another or why they are leaving the profession, provinces need to begin tracking and monitoring this information. This information will be a key component in a national recruitment and retention strategy.

The difficulty with each of these indicators, ACP turnover rates and exit reasons, is that while they do give significant information about the supply of ACPs in Canada, they do not capture the complete picture. There is currently limited information on the incoming supply and the projected demand for ACPs. This information is essential to a national strategy regarding human resource planning for ACPs. All provinces need to begin tracking human resource information, so that a comprehensive analysis of the supply and demand for ACPs can be completed.

Each of these key issues must be addressed in the development of a long-term, collaborative strategy regarding the human resource needs of ACPs.

# SECTION 4: RECOMMENDATIONS

Provinces need to work collaboratively to solve the current supply issues and potential future supply challenges. To do this, the formation of a Canadian Paramedic Advisory Council is recommended. In addition, each province is encouraged to complete a case study using the attached Nova Scotia template. In this way, the advisory council, using the information contained in the case studies, will be in a position to develop a national human resource planning strategy that focuses on retention and recruitment and increased data collection.

**4.1 Canadian Paramedic Advisory Council**

The first step in effectively addressing the limited supply of ACPs and the potential future shortage is the establishment of a Canadian Paramedic Advisory Council. This council to have representation from all provinces and territories, professional associations, educational institutions and employers. Representation from other health care professionals, i.e., physicians, nurses and medical laboratory technologists would also be included.

The council's review of the provincial case studies will provide a better understanding of the supply challenges, the contributing factors, and how they might be addressed. The next major task of the council will be the development of a long-term strategy to address the human resource planning needs of paramedics in general, with specific reference to ACPs. Two main elements of this strategy will be a comprehensive recruitment and retention strategy and a plan to facilitate increased data collection.

This strategy is to take into account the different structures of EHS systems/services in the country and the variety of financial and human supports available. Since, the ACP supply challenges will soon begin to pose problems for some provinces, especially with the recruitment and retention of ACPs, this strategy needs to be developed in a timely manner.

The strategy will build on the following elements:

a. Comprehensiveness, taking into account what is happening with other health care professions;
b. Consistency, across jurisdictions;
c. Collaboration with strategies developed for other health professionals;
d. Support nationally; and
e. Integration between the pre-hospital sector and other parts of the health care sector through innovative programs and services.

**4.2 Comprehensive Recruitment and Retention Strategy**

The advisory council will be tasked with the development of a comprehensive recruitment and retention strategy. This strategy to effectively address the human resource planning needs of paramedics, as well as take into account what is happening with other health care professionals. This strategy needs to recognize paramedics as lifelong learners, educators, researchers and administrators. In other words, it must establish a career ladder for paramedics. Strategy effectiveness will be compromised if it is developed in isolation from recruitment and retention strategies developed for other health care professionals.

**4.3 Plan to Increase Data Collection**

A significant contributing factor to the success of this strategy will be the council's commitment to increasing data collection in the pre-hospital sector in Canada. To effectively address the human resource planning needs of

paramedics in general and ACPs in particular, provinces and territories need to be able to definitively demonstrate the extent of the supply challenges, the reasons behind them and the implications for the health care system and patients. To do this, provinces must establish, through the advisory council, common data collection methods and capabilities, with respect to human resource information. Increasing trending and projection capacity is important to the success of EHS systems and services across the country.

These two key deliverables should be completed within the first two years of the council being established. It is essential that the council itself be established in a timely manner so that it might address the impending ACP supply challenges before they become major problems that affect patient care.

A number of factors will influence the implementation of a human resource strategy for paramedics. Three challenges are: the wide range of emergency pre-hospital service providers in Canada; lack of adequate data collection; and lack of outcomes based research in the emergency health services field. The potential impacts of these three challenges are addressed in the following section.

### 5.1 Canadian EHS/EMS

In Canada, as well as in many other countries, there is a wide range of emergency pre-hospital care service deliverers, from government to private operators. As well, there are a variety of accountability models for the delivery of emergency pre-hospital services. In some provinces the service is managed or regulated by the provincial government and in others the management of these services has been transferred to municipalities or district health authorities.

How emergency health services are delivered (privately or publicly) who the providers are accountable to (government or district health authorities) and how they are accountable (via performance-based contracts or level-of-effort contracts[22]), will directly affect how systems and services respond to the ACP shortage.

How a system or service operates determines how many ACPs it needs and how they are utilized. A provincial system typically deploys ACPs to those areas of the province where their skills and competencies are most needed. In a province in which there are a number of private operators, the distribution of ACPs will not typically be based on need throughout the province, rather they will distributed according to the deployment plans/strategies of the individual operators. Within the district or territory of a private operator, ACPs may be distributed according to need, however province-wide distribution under this system design will not typically be based on need. Provinces need to identify the strengths and weaknesses of the system design model deployed within their province when developing a national strategy to deal with the limited ACP supply and potential future supply challenges.

Below is a brief overview of the types of emergency pre-hospital services and systems in Canada.

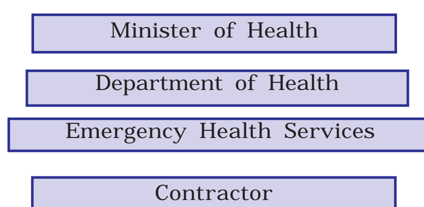
### *5.1.1 Accountability Models & Service Delivery*

Currently, there is a wide range of ground ambulance service providers in Canada. There are sophisticated pre-hospital care systems that are regulated by the province and incorporate the use of ground ambulance services with air ambulance services and trauma care through a central communications/dispatch centre, e.g. Nova Scotia. There are services that focus solely on ground ambulance services, where the province has limited standard setting authority and the service is delivered by private operators or district health authorities, e.g. New Brunswick. And there is a system where ground ambulance services are both managed and delivered by the province, e.g., British Columbia.

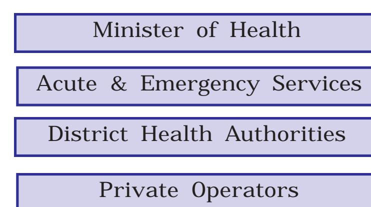
This wide range of systems and services has resulted in inconsistencies in data collection methods and capabilities, especially with respect to human resource information. For provinces that are integrally involved in either the delivery or management/regulation of ground ambulance services, data collection may be easier than for provinces in which the service is managed and delivered by municipalities, district health authorities, or private operators. The former typically has greater access to system data and therefore is better able to conduct data collection. The latter typically must rely on the service provider for information and has limited authority regarding the type of data and methods by which that data is collected, except in the instance of performance-based contracts that clearly specify incentives and disincentives for the collection of data.

Not only are there a range of service providers and systems in Canada, there are also a number of accountability models on which these services and systems are based. Although these models differ from one system to another, there are three basic accountability models for ground ambulance systems and services in Canada. First, a ground ambulance system that is regulated by the province and delivered by a contractor through a performance-based contract, e.g., Nova Scotia.

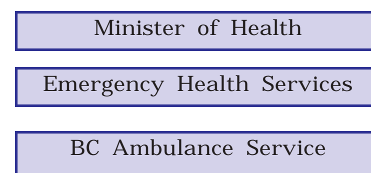
The Nova Scotia system is based roughly on the following model:




Second, an accountability model that sees the Ministry of Health download responsibility to a DHA or municipality who in turn contract out to a variety of private operators, e.g., Saskatchewan, Ontario, Prince Edward Island. A very basic rendition of Saskatchewan's accountability model is:




Third, British Columbia has a unique structure in that ground ambulance services are both managed and delivered by the province. British Columbia's accountability structure is basically as follows:




The differences between these accountability models may seem subtle, but they significantly impact the data collection methods and capabilities of provinces, with respect to human resource data. For instance, in Nova Scotia the province has a performance-based contract with a contractor for the delivery of ground ambulance services. This contract stipulates that all data, records and patient

information is the property of the province and the contractor is obligated to provide the province with immediate and unimpeded access to this information. The contract also stipulates what information must be collected, e.g., paramedic crew configurations[23]. This has been effective for Nova Scotia in trending data, i.e., as it relates to human resource planning for paramedics. Nova Scotia has immediate access to this data and is able to use it as required.

The accountability structure in British Columbia, in which the province is both regulator and operator of ground ambulance services, significantly affects that province's ability to collect system data. British Columbia can determine what data needs to be collected, by who and by what means. This has the potential to facilitate data collection in the British Columbia service.

The accountability model used by Saskatchewan, Ontario, Prince Edward Island and other provinces and territories has created significant challenges in data collection methods and abilities. For example, Saskatchewan is currently unable to report on the average age of paramedics, attrition rates, and the most common reasons for paramedics retiring/leaving, etc.

How emergency health services are delivered, whom providers are accountable to and how they are accountable, will all directly impact the implementation of a human resource strategy for paramedics in Canada.

### *5.1.2 Data Collection*

Inconsistencies in data collection methods and capabilities make it difficult for provinces to compare the data that is collected. This will affect further investigation into the impending ACP shortage and will impede any potential solution that is implemented. An example of these inconsistencies is the classification of paramedics.

Although, as previously mentioned, the Paramedic Association of Canada in collaboration with Human Resources Development Canada has recently developed National Occupational Competency Profiles, (which detail the competencies and provide for consistent classification of paramedics in Canada[24]) many provinces are currently using a variety of labels, i.e., Emergency Medical Technician. Use of consistent classifications would positively impact data collection efforts.

It is encouraging that some provinces are developing solutions to deal with the challenges associated with data collection. For example, ground ambulance services in Saskatchewan are delivered by district health authorities (DHAs) and the Saskatchewan government has developed a standard reporting form that each DHA must adhere to. This will assist the Saskatchewan government in conducting research in and on its ground ambulance service. Building on this process, the Saskatchewan government could request standardized human resource data from each of its DHAs.

One method of enhancing data collection is the development of paramedic colleges and associations in each province. This would make paramedicine more like other health professions, e.g., physicians and nurses. Currently there are associations in each province, however only a few have colleges responsible for licensing and regulating paramedics. The main responsibility of the associations is to lobby for paramedics. For example, the Paramedic Association of Canada has the following listed as some of its main activities: lobbying government, speaking to the media, and representing paramedics nationally on health related issues. Colleges

could be tasked with developing and maintaining provincial registries, as well as licensing paramedics. This is the situation in Alberta, where the Alberta College of Paramedics resides. Alberta submitted the most comprehensive and detailed human resource data among all provinces when surveyed for this paper. This is due mainly to the effectiveness of the Alberta College of Paramedics. Other provinces should consider the Alberta model in establishing or improving their provincial registry.

The data collection capacity of provinces and territories will greatly impact the development of a human resource strategy for paramedics.

### *5.1.3 Outcomes Based Research*

A third challenge for Canadian EHS/EMS systems is the lack of outcomes based research to support the use of advanced life support in EHS. This directly impacts analyses of the projected demand for ACPs. In EHS systems there are typically two types of care provided, basic life support (BLS) and advanced life support (ALS). There has been major debate in recent years about the need for ALS in EHS systems. First, there is no clear consensus on what is meant by ALS. To some it is the provision of any medication beyond oxygen or the performance of any invasive procedure or electrical therapy beyond automatic defibrillation. There is debate about the type of medications that would be termed ALS vs. BLS. Some would exclude the provision of what is termed symptom relief medications, e.g., aspirin and sublingual nitroglycerin and classify these as BLS. Second, the lack of integration between pre-hospital, emergency department, in hospital and other health databases and the small number of pre-hospital based researchers make it difficult for systems to produce outcomes based research.

The conclusions of the debate over the need for ALS will significantly impact the formulation of a human resource strategy for paramedics, as it will serve as the basis for assertions regarding the projected demand for ALS providers, such as ACPs.

The fact that studies, to date, have not definitively answered the ALS debate should not, however, halt the development of the ACP human resource strategy. There are a number of studies currently examining the need for ALS, e.g., the Ontario Pre-hospital Advanced Life Support Study and the EMS Outcomes Project. Provinces should begin the development of the ACP human resource strategy now and incorporate the results of these studies once they are published. If provinces wait until the results of these studies are published, they will already be feeling the negative effects of the limited ACP supply and solutions may be harder to devise.

# SECTION 6: CONCLUSION

Challenge: There is currently a limited supply of advanced care paramedics across Canada and it appears that this situation will continue to deteriorate in the coming years. Provinces need a better understanding of what is happening not only within their own province, but also nationally in terms of ACP turnover, recruitment, and retention. In addition, approaches and strategies that facilitate collaboration between provinces on this issue need to be established to prevent a long-term shortage of ACPs. The issue and the solutions are larger than any one province's ability to resolve.

This challenge needs to be addressed in a timely manner. It would seem that the first step in addressing this issue is to establish a Canadian Paramedic Advisory Council, out of which will stem a long-term strategy to deal with the human resource planning needs of paramedics.

# APPENDIX A PARAMEDIC CLASSIFICATIONS

The Paramedic Association of Canada (PAC) and Human Resources Development Canada (HRDC) developed National Occupational Competency Profiles (NOCPs) which detail the professional competencies of paramedics in Canada. They have established four levels of paramedics: Emergency Medical Responder (EMR), Primary Care Paramedics (PCPs), Advanced Care Paramedics (ACPs) and Critical Care Paramedics (CCPs). In the fall of 2002, the Canadian Medical Association adopted these standard competency profiles and has begun to use them in accrediting paramedicine schools and training programs.

The NOCPs will assist the provinces in establishing a common understanding of what paramedics are responsible for. Once all provinces have made the transition to the NOCPs, data analysis will be easier as professionals will be comparable across the country. All provinces are currently signing the Mutual Recognition Agreement and have agreed to use the NOCPs as a reference in the classification of paramedics.

Detailed descriptions of each of these classifications can be found in the National Occupational Competency Profiles for Paramedic Practitioners located on the PAC website.[25]

Emergency Medical Responder (EMR) may be responsible for initial assessments, the provision of safe and prudent care, and in Saskatchewan, Manitoba, Newfoundland and Alberta the transport of a patient to the most appropriate health care facility. "First Responders" (as found in a tiered response, industrial and/or recreational setting) may be included within the EMR level. The EMR competency profile does not include controlled or delegated medical acts.

Primary Care Paramedics (PCP) are trained to perform basic patient care and automated external defibrillation, administer symptom relief medications, maintain peripheral intravenous locks or infusions, calculate, monitor and adjust flow rates, and recognize and manage complications of intravenous catheters and infusions.

Besides having the essential competencies of PCPs, Advanced Care Paramedics (ACP) can initiate and maintain intravenous therapy including intraosseous access, perform cardioversion, manual defibrillation and external pacing, and administer a wider range of medications.

# APPENDIX B
# IMPLEMENTATION GUIDE

Critical Care Paramedics have the essential competencies of ACPs as well as the training to: prepare for and transport patients via air ambulance; perform rapid sequence intubation; insert chest needle decompression catheter and heimlach valve; and administer an even wider range of medications.[26]

The following is a guide for implementing the recommendations in Section 4 of this paper. This guide offers five principles that will assist in effectively implementing those recommendations and will help to mitigate potentially negative effects of the challenges addressed in Section 5.

### B.1 Guiding Principles

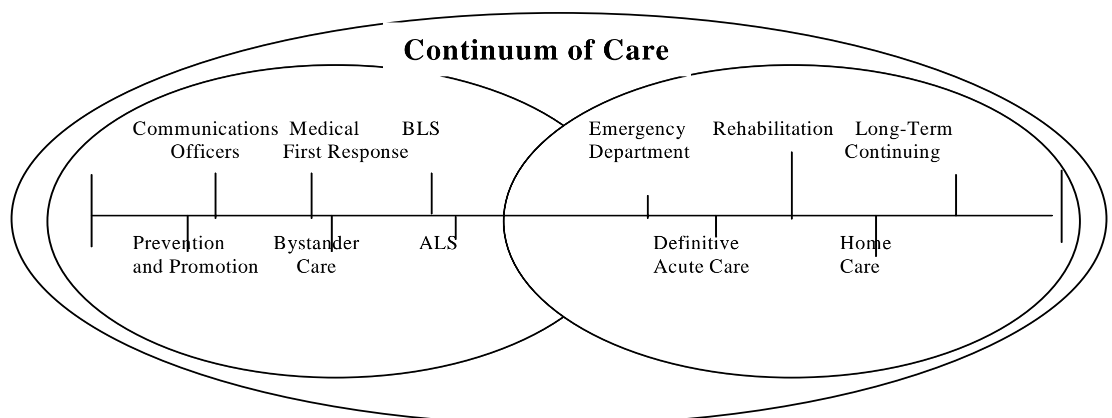
The human resource planning strategy for ACPs will build on the following elements:

a. Comprehensiveness, taking into account what is happening with other health care professions;
b. Consistency across jurisdictions;
c. Collaboration with strategies developed for other health professionals;
d. Support nationally; and
e. Integration between the pre-hospital sector and other parts of the health care sector through innovative programs and services.

#### *B.1.1 Comprehensiveness*

This strategy will examine the ACP shortage in terms of the entire care continuum demonstrated in Figure B.1.
The health care system in Canada encompasses all aspects of the continuum of care, from injury prevention and health promotion to rehabilitation and long-term/ home care. In order for the health care system to be effective, all aspects of the care continuum need to work together. Thus, any strategy, which is developed to address human resource planning issues affecting one part of the continuum, must take into account what is happening with the other parts. It follows that a strategy to address human resource planning issues for advanced care paramedics (ACPs), must take into account the challenges facing nurses, physicians and other health care

**Figure B.1**[27]



professionals, such as medical laboratory technologists.

***B.1.2 Consistency***

The strategy will provide for consistency across jurisdictions in Canada. There needs to be consistent terminology as well as consistent data collection methods and capabilities. As mentioned in section 5.2.1, there is currently a lack of uniformity in the classification of paramedics and there is a lack of consensus as to how different classifications relate to one another. Provinces are working together, through the Mutual Recognition Agreement, to solve this problem.

In addition, all provinces need to establish similar minimum data sets. This will improve the ability to trend/project and do research in the pre-hospital sector. Enhancing data collection capacity is a key component of many of the human resource strategies that have been developed for other health care professionals. In order to analyze national trends, all provinces need to be collecting the same or similar data. For example, all provinces should be collecting data on the number of paramedics eligible for retirement in the coming years and the estimated attrition rates for paramedics in each system. This data would substantially increase the Canadian Paramedic Advisory Council's ability to draw appropriate and relevant conclusions about the human resource issues facing the pre-hospital sector in Canada.

Developing similar minimum data sets, with respect to human resource information, in each province is crucial to the success of an ACP human resource planning strategy.

***B.1.3 Collaboration***

A number of strategies have been developed to address human resource planning needs of health care professionals, i.e., nurses and physicians. Because many of the issues contributing to the ACP shortage are similar to those affecting nurses and physicians, any strategy that is developed to address the ACP supply challenges in Canada must incorporate some of the key elements of the strategies developed for other professions. Each of these strategies has four key deliverables: the establishment of an advisory council, an increase in data collection capacity, a communications strategy and a recruitment and retention strategy.

A potential advantage of aligning the ACP human resource planning strategy with other human resource strategies is the linking of the prospective Canadian Paramedic Advisory Council with advisory councils for other health professionals, e.g., the Canadian Nursing Advisory Committee. The Canadian Paramedic Advisory Council should have representation from other health professionals. By linking these councils and committees on issues of mutual concern, the Canadian Paramedic Advisory Council could be the source of needed collaboration between health care professionals.

***B.1.4 Support***

National support and recognition of the importance of paramedicine and its influence on the entire health care system, will positively impact the effectiveness of a human resource strategy for ACPs. National support will assist a Canadian Paramedic Advisory Council in developing national standards, e.g., for reporting.

Soliciting national support should not be an overwhelming task given the recent findings of the Romanow Commission. One of the key areas that the commission made recommendations in was Health and Human Resource Planning. The commission formally recognized the importance of maintaining competent, professional, satisfied

health care workers. By following through on the recommendations of the Romanow Commission and by supporting the council in general, national support for the ACP human resource strategy could positively impact the council's ability to achieve its key deliverables.

### *B.1.5 Integration*

A human resource strategy for ACPs must allow for more integration between the pre-hospital sector and other aspects of the health care system. To do this, the strategy must explore innovative ways of delivering health care. For example, there is potential for collaboration between public health and emergency health services systems in such areas as public education; injury control/prevention and immunizations. Involving paramedics in these types of activities could help provinces address ACP workload concerns, in that ACPs want variety in their workload. They want to make decisions and exercise their skills to their fullest capacity.

This would also help public health care professionals in meeting the needs of the populations they serve, by providing them with the necessary human resources that may be lacking as a result of nursing shortages across the country[28].

Thus, a human resource strategy for ACPs should allow for and encourage integration between the pre-hospital sector and other aspects of the health care system. Not only would this provide for a heightened role for paramedics in public health and community based programs, it would also add needed human/physical resources to those programs.

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In conclusion, an effective, long-term human resource strategy for paramedics will be built on the following elements:

1. Comprehensiveness
2. Consistency
3. Collaboration
4. Support
5. Integration

# APPENDIX C

Canadian Medical Association accredited schools who offer ACP training:

Justice Institute of British Columbia Paramedic Academy--New Westminster, BC

Augustana University College--Camrose, AB

Northern Alberta Institute of Technology--Edmonton, AB

Professional Medical Associates--St. Albert, AB

Southern Alberta Institute of Technology--Calgary, AB

Saskatchewan Institute of Applied Science and Technology--Regina, SK

Winnipeg Fire Paramedic Service--Winnipeg, MB

Conestoga College--Kitchener, ON

Durham College--Whitby, ON

The Michener Institute for Applied Health Sciences--

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Prince Edward Island Department of Health and Social Services, Acute and Continuing Care

Saskatchewan Health, Acute and Emergency Services Branch

Ontario Paramedic Association

Augustana University College, Alberta

Canadian College of Emergency Medical Services, Alberta

Conestoga College, Ontario

Holland College, Prince Edward Island

Justice Institute of British Columbia

Paramedic Academy, British Columbia

Medicine Hat College, Medicine Hat

Northern Alberta Institute of Technology, Alberta

Portage College, Alberta

Professional Medical Associates, Alberta

Southern Alberta Institute of Technology, Alberta

Saskatchewan Institute of Applied Science and Technology, Wascana Campus, Saskatchewan

Winnipeg Fire Paramedic Service, Manitoba

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**1** Christine Gibbons. 2003 Survey of Canadian EHS/EMS services and systems.

**2** Ontario Paramedic Association

**3** Christine Gibbons. 2003 Survey of Canadian EHS/EMS services and systems.

**4** A cut is made in a thin part of the voice box (larynx) called the cricothyroid membrane. A tube is inserted and connected to an oxygen bag.

**5** See Appendix A for more details on Canadian paramedic competencies.

**6** Ontario Paramedic Association

**7** "Canada's Health Care Providers". Canadian Institute for Health Information. www.cihi.ca

**8** Paramedic Association of Canada. www.paramedic.ca

**9** "Canada's Health Care Providers". Canadian Institute for Health Information. www.cihi.ca

**10** See Appendix C for a list of these schools.

**11** Gibbons, Christine. 2003 Survey of CMA approved paramedicine schools.

**12** Nova Scotia Provincial Government. www.gov.ns.ca

**13** Emergency Medical Care, Inc.

**14** Manitoba Health Labour Relations, February 2004. As mentioned earlier, not all provinces have transitioned to the use of term ACP. Thus, it is necessary these hourly wages are for the highest paramedic classification in each province, which may or may not be equivalent to the national ACP classification.

**15** There are no ACPs registered in New Brunswick, Prince Edward Island, and Quebec. Also, while there are two ACPs in Newfoundland, they currently do not deliver care at the ACP level and therefore have not been included in this analysis.

**16** Christine Gibbons. 2003 Survey of Canadian EHS/EMS services and systems.

**17** Manitoba Health Labour Relations, February 2004.

**18** ACPs typically have less downtime than paramedics trained at less advanced levels. This translates into more on duty hours, as they are called into assist on calls responded to by paramedics trained at less advanced levels. For example, a crew comprised of two PCPs may request the assistance of an ACP to deliver medications to a patient that PCP are not authorized or trained to give.

**19** Gibbons, Christine. 2003 Survey of CMA approved paramedicine schools.

**20** *Ibid.*

**21** The only other province to return data on this subject was British Columbia. In BC, the number one reason for leaving the province was "Unknown".

**22** Performance based contracts contain specific performance standards which must be met by the contractor throughout the life of the contract. If these standards are not met, the regulator of the contract has the option of penalizing the contractor, e.g. financially, as per the terms of the contract. Level-of-effort contracts require contractor's to attempt to meet specific requirements. There are no penalties or disincentives for not achieving those standards.

**23** Paramedic crew configurations refer to the composition of paramedic teams working in the ground ambulance system. For example, the contractor must report if a crew has one PCP and one ACP or two PCPs or two ACPs, etc. This helps Nova Scotia trend the level of care that is being delivered in the province.

**24** www.paramedic.ca

**25** *Ibid.*

**26** www.gov.ns.ca/health/ehs

**27** Christine Gibbons, 2002

**28** This could have the long-term effect of establishing a more comprehensive approach to health care.