PARAMEDICS

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Paramedics

Introduction

The core role of paramedics is to provide emergency-based care and connect individuals to more specialized care. Paramedics are tasked with a significant responsibility and a large scope of practise that has steadily increased in recent years: today, the role of paramedics across Canada often includes many other forms of community-based care. There are more than 30,000 licensed paramedics in Canada; however, demand for their services has been increasing, leading to shortages in many regions (Brown, 2018; National Occupational Competency Profile for Paramedics, 2011; Paramedic Association of Canada [PAC], 2015).

As paramedicine is an evolving profession, and as advancement has occurred at different stages across Canada, there are several different classifications of paramedics and terms used to refer to them. "Paramedic" is the most common professional title; however, some provinces have other levels of paramedics with different education requirements and scopes of practise called "emergency medical assistants" (EMAs) or "emergency medical technicians" (EMTs). In general, the term "paramedic" encapsulates three levels of practise (primary care, advanced care and critical care) that are distinct from EMAs, EMTs and "emergency medical responders" (EMRs). The National Occupational Classification (NOC) includes EMRs under the umbrella term "nurse aides, orderlies and other patient services associates" and their responsibilities are distinct from those of paramedics. For the purposes of this chapter, "paramedics" will be used to refer to providers of all emergency services outlined by the PAC's national competencies (National Occupational Competency Profile for Paramedics, 2011).

History of the Profession

There is evidence of emergency services dating as far back as 900 CE, before the existence of any other formal emergency system or "paramedics" as a professional title. Table 1 provides a timeline of the evolution of the profession. Historical content is based on literature from the province of Ontario.

TABLE 1: Historical timeline of paramedicine development in Canada

Early 1900s	Improvements in morbidity become apparent thanks to paramedics' efforts. For example, the use of splints to treat femur fractures decreased mortality from 80% to 20%.
1939–1944	Organized ambulance efforts and aeromedical transport are first used during the Second World War.
1945–1957	The term "medic" gains widespread currency during the Korean War. The war also leads to the increased use of helicopters for aeromedical transport.
1957	Specially trained medics start delivering care directly in the field and perform the first demonstration of a Hopkins external defibrillator on a human.
1959	As an experiment, Russian physicians go out into the community to explore the impact they could have on patient outcomes. They find that advanced life support (ALS) techniques could significantly affect patient care—and conclude that assistants trained in ALS could produce the same results.

1960s	Paramedics start using portable radio telemetry to send electrocardiograms to physicians in emergency departments. This decade also sees the development of the 911 emergency telephone system, which is still in use today.
1963	The use of CPR and artificial respiration gains currency in hospitals and among paramedics to improve pre-hospital care. However, due to laws prohibiting non-physicians from administering advanced care, many trained paramedics are unable to practise.
1970s	EMS programs are introduced in community colleges.
1975	The *Ambulance Act* is adopted in Ontario to regulate the authority and responsibility for emergency services, including licensing, qualifications and standards.
1980s and 1990s	Community college EMS programs are expanded and separated into programs with distinct curricula and techniques for primary, advanced and critical care paramedics.
1990s	The Ontario Prehospital Advanced Life Support Study (OPALS) determined the effectiveness of paramedics performing advanced life support skills. This led to the expansion of advanced care skills for all paramedics throughout the province of Ontario. The three different levels of paramedic were created to clarify the different skill sets of paramedics (PCP, ACP, CCP).
2000s	The scope of practise for paramedics expands to allow them to provide more community medical services in collaboration with physicians and nurses. Paramedics begin providing wound care, vaccinations and follow-up services on medication compliance, helping to reduce the burden on hospitals and busy emergency departments (Choi et al., 2016). Municipal Emergency Medical Service operators change name to Paramedic Services. Paramedics of all levels see further broadening of their scope of practise through stroke and heart attack care and management, and community paramedicine roles.
2020	Paramedics in many municipalities across the province take on additional roles in public health during the COVID-19 pandemic, from conducting COVID-19 swabs to helping with vaccine clinics and vaccinations of homebound individuals.

Source: Ontario Paramedic Association (2015).

Education and Training

Paramedicine in Canada is provincially regulated, with each province having its own educational requirements. All provinces require paramedics to complete an educational program and pass an exam for entry to practise (CIHI, 2017a). Candidates trained elsewhere in the world may have to provide evidence of their training before writing the appropriate examination for their region in Canada. Throughout their careers, paramedics are often required to undertake regular continuing medical education and training (which varies by province and level of paramedic).

Each province requires paramedic trainees to:

- Complete a recognized paramedic training program: PCP, ACP or CCP;
- Pass a provincial registration examination, which might vary depending on the paramedic level (applicable in most provinces); and
- Register with a provincial regulatory authority or the provincial government.

Most paramedic programs in Canada are offered at the college level, with most requiring two years of study. In some provinces, paramedicine is offered as a university undergraduate program. Some programs and provinces have adopted a competency-based education approach using the National Occupational Competency Profile (NOCP), which sets the minimum education requirement for each level of paramedic.

National Occupational Competency Profile

The NOCP for paramedics was developed in 2001 by a multidisciplinary panel to establish competencies for paramedic practise. This profile was updated in 2011 and includes the addition of health promotion and public safety (National Occupational Competency Profile for Paramedics, 2011). It is important to note that this document is a set of guidelines and is not nationally mandated. The NOCP is currently in the process of being updated.

The eight competency areas set out in the 2011 NOCP for paramedics are:

- Professional responsibilities;
- Communication;

- Health and safety;
- Assessment and diagnostics;
- Therapeutics;
- Integration;
- Transportation; and
- Health promotion and public safety.

Additional training requirements

Physical demands

In addition to the skills and knowledge outlined above, paramedics must also be able to meet the challenging physical strength demands of the job (Coffey et al., 2016). They must be able to physically transfer patients on a stretcher, as well as access patients in a wide variety of settings while also carrying equipment such as cardiac monitors, airway bags and medication gear. In high-density areas, paramedics may be required to ascend and descend multiple flights of stairs (Coffey et al., 2016; Kluth & Strasser, 2006; Lavender, Conrad, Reichelt, Meyer, & Johnson, 2000; Maguire, O'Meara, Brightwell, O'Neill, & Fitzgerald, 2014). They must be able to complete all these tasks safely for themselves, their peers and their patients (Coffey et al., 2016; Conjoint Accreditation Services & CMA Conjoint Accreditation Services, 2012; Kluth & Strasser, 2006).

Transportation demands

Paramedics spend a great deal of their time driving ambulances. Due to the urgent nature of the job, they must be able to get to patients as quickly as possible (Lavender et al., 2000). This means they must have excellent driving skills. They must also be able to efficiently prepare, unload and load an ambulance for each call.

In addition to working on land, many paramedics also work in flight or air medical transport via planes or helicopters. Paramedics are also trained to offer emergency medical services to patients in remote locations or who are in critical need of specialized treatment (Kortbeek & Buckley, 2003; Mitchell, Tallon, & Sealy, 2007). These services are often contracted by private companies funded by private, public and not-for-profit agencies in Canada.

Community paramedicine as a professionalization strategy in Ontario

One way to understand the shift in the role of paramedics from an emergency, acute-care focus to a primary care role called community paramedicine (CP) is through the sociological lens of professionalization. CP is grounded in the notion that paramedics are uniquely positioned to provide mobile healthcare in the community and may be important actors in addressing broader, systemic healthcare system problems, such as a lack of access to home care or gaps in the provision of primary care (Agarwal & Brydges, 2018; Guo, Bing et al., 2017).

According to sociological theories of professionalization, CP can be characterized as an innovative and enterpreneurial initiative. In Ontario, it initially began as grassroots programs, with paramedics working with other local actors to identify challenging areas of service provision and determine how they could help address specific needs. For instance, one CP program partnered with local housing authorities and other community supports to provide preventative healthcare and social support to older adults living in social housing (Agarwal & Brydges, 2018).

Over the past 20 years, CP programs have been moved out of these local innovation sites (where contexts are unique) and transformed in both scope and delivery to serve a new context. While the original goals of CP were largely focused on decreasing paramedic service calls, they have since broadened to include a focus on social isolation, social support and chronic disease (Agarwal & Brydges, 2018; Dainty et al, 2018).

Additionally, in Ontario, local health authorities responsible for funding and delivering home and community care and primary care services recently began to partner with paramedic services. These partnerships are significant, with CP's formalization in these organizations allowing for programs to expand in some areas. Further, these relationships have aligned CP with other key health policy priorities, such as interprofessional collaboration and patient-centered care. For instance, some community paramedics have worked as an extension of a primary care team (Bigham et al., 2013). There are also meaningful qualitative findings highlighting the patient-centered nature of CP. Community paramedics can serve as a source of both instrumental and social support, and deliver this care while ensuring flexiblity in addressing patient needs (Agarwal & Brydges, 2018; Dainty, Seaton, Drennan, & Morrison, 2018).

As just one aspect of professionalization—with the others including self-regulation, an expanding emergency scope of practise, and evolving education and research—some important elements of CP (and its place within the broader healthcare system) will require further conceptual clarification. Structural factors, such as existing legislation and regulations, may need modification to allow for a meaningful expansion of CP that supports and aligns with the roles of other healthcare providers. CP may also require the paramedic community to broaden existing education standards to meet the requirements of new roles in the field of primary care.

Brydges, M. "The New Politics of Professionalization: the Case of Ontario Paramedics". Oral presentation at Canadian Health Workforce Conference (October, 2018)

Scope of Practise

Paramedic services are part of emergency medical services (EMS), an interconnected system of services that also includes police and fire services, emergency medical dispatch, and ambulance communications. In this role, paramedics provide care to patients before and during transfers to receiving medical facilities, such as hospitals (PAC, 2015). Paramedics are trained clinicians who provide a range of advanced life support care, including advanced trauma care, pre-hospital point-of-care testing, medication administration, and cardiac and stroke care. In recent years, paramedics have also started providing community-based care in a distinct model of care commonly referred to as community paramedicine (Choi, Blumberg, & Williams, 2016).

Paramedics are also public safety officers who communicate with dispatch officers, police officers, public safety personnel (e.g., Canadian Border Services officers, RCMP officers), medical service providers, patients and their families (Canadian Institute for Health Information [CIHI], 2017a; Choi, Blumberg, & Williams, 2016; Coffey, MacPhee, Socha, & Fischer, 2016; Government of Canada, 2005). According to the NOC 2011, paramedics are employed by a variety of organizations across a number of sectors, including public paramedic services or EMS, private ambulance services, hospitals, fire departments, government departments, factories, mining companies and other private sector organizations such as nursing homes.

There are three levels of paramedics in Canada: primary care paramedics (PCPs), advanced care paramedics (ACPs) and critical care paramedics (CCPs) (CIHI, 2017b). PCPs are entry-level paramedics who have completed a paramedic education program (usually a diploma program or, in some provinces, an undergraduate degree) and provide emergency care that includes a number of controlled medical interventions. ACPs have additional education and a broader scope of practise that includes more medications and complex interventions. Finally, CCPs have the most advanced training available in Canada and are able to provide specialized care including invasive procedures and additional pharmacological treatments (National Occupational Competency Profile for Paramedics, 2011). CCPs are sometimes referred to as mobile intensive care units (Toronto Paramedic Association, n.d.).

The care paramedics are trained to provide can vary greatly by level—from complex medical interventions to medication administration. While transportation is part of the role, they are also responsible for many other medical duties. Further, the scope of practise varies depending on the level of training and education a paramedic has received.

As the scope of practise has expanded, the responsibilities and competencies of paramedics have become more extensive. Table 2 outlines the scope of practise in Canada (Bowles, van Beek, & Anderson, 2017).

This list is not exhaustive and does not include social health content, which has been identified as an educational need for community paramedics. Community paramedic roles are still being developed and there are varying training and educational requirements. Some provinces, such as Saskatchewan, have formal training programs for community paramedics (Saskatchewan Polytechnic), while other provinces such as British Columbia and Ontario offer a variety of training options (Centennial College, Justice Institute of BC).

Specialized paramedic teams

In addition to paramedics who provide traditional emergency pre-hospital care, there are a number of specialized teams that are trained to respond to unique needs. These can include rural-area emergencies, marine accidents, natural disasters or explosives. Available funding is often not adequate for all paramedics to be trained and equipped to respond to these emergencies, so smaller teams are developed to respond to issues not covered in traditional practise (Popov et al., 2007). Each of these teams has its own set of requirements and training that extend beyond the general curriculum (Professional Paramedic Association of Ottawa, n.d.). Examples of special teams include:

- **Bike units**

  Paramedics in these units travel on bikes, allowing them to be agile and mobile in urban areas where ambulance access may be difficult due to traffic or crowds. Most often, bike units provide care to individuals on bike paths, in parks and in areas of congregation.

- **Marine units**

  Paramedics on these teams are trained to provide care in marine environments. They can support dive operations, river patrol and rescue operations. They also provide education to and engage with members of the community, such as swimmers and boaters, who use public waters.

- **Support units**

  These teams have specialized training to support emergency services with a variety of community safety issues. These include search and rescue missions, threats of explosives, and situations at heavily populated events or in areas where public safety is at risk. Members of these teams collaborate with police and fire personnel to remove threats and protect the safety of the community.

- **Tactical units**

  Members of these teams are trained to respond to dangerous events that could include hostage situations, active shooters or high-risk police operations. They often serve as an additional support team for emergency services and coordinate multi-agency incidents.

- **High-risk transfer units**

  The specialty of these units is the safe transfer of high-risk patients. These units were established in 2014 as a response to the Ebola virus outbreak. Members are trained to implement stringent safety precautions when highly contagious pathogens might be present and deliver patients safely to isolated medical care.

TABLE 2: Paramedic practise in Canada

Practise settings	Care	Patient disposition
Uncontrolled: • At the patient's side • Out-of-hospital care (e.g., home visits) ***Location-based:*** • Events (e.g., sports, concerts, mass gatherings) • Industrial sites • In community (e.g., "store front") ***Community-based:*** • Home visits • Blood pressure/diabetes clinics ***Facility-based:*** • In-hospital (e.g., emergency department [ED], triage, code team) • In-facility (e.g., extended care) • Rural ED	***Emergency:*** • Emergency responses • Urgent responses • Non-emergency/routine responses • In-hospital code/cardiac arrest responses ***Urgent/ongoing care:*** • Interfacility monitoring and intervention • Triage or monitoring (e.g., in-hospital/ED) ***Definitive:*** • Treatment and bypass (e.g., trauma, stroke, STEMI) • Treatment and release (e.g., diabetes) • Treatment and referral (e.g., blood pressure clinic, home visits) • Interprofessional/team-based care (e.g., IPP team in ED, paramedic/nurse staffing rural ED) • Primary and prevention	***Transportation to care:*** • Ambulance calls • Airevac ***Transportation between care settings:*** • Interfacility transfers • Critical care transfers ***Care in place (no transportation):*** • Treatment and release • Treatment at point of care (e.g., in-facility, ED) • Treatment and referral

Source: Bowles, van Beek, & Anderson, 2017.

Expanded use of community paramedicine

In response to growing demands on Canadian emergency departments, increasing usage of paramedic services and an aging population, community paramedicine (CP) is a field of paramedic practise that is emerging across the country (O'Meara, Stirling, Ruest, & Martin, 2015). CP is an umbrella term that describes:

> A model of care whereby paramedics apply their training and skills in "non-traditional" community-based environments, often outside the usual emergency response and transportation model. The community paramedic practises within an "expanded scope," which includes the application of specialized skills and protocols beyond the base paramedic training. The community paramedic engages in an "expanded role," working in non-traditional roles using existing skills. Additional training could include patient assessment, clinical skills, and familiarity with other healthcare providers and social services available in a local community. (Guo, Corabian, Yan, & Tjosvold, 2017)

CP aims to reach beyond the traditional emergency responsibilities of paramedics and fill gaps in healthcare delivery. Community paramedics provide non-acute medical care in variety of community settings such as shelters, patients' homes or social housing buildings (Agarwal et al., 2018; O'Meara et al., 2015). The goal of CP programs is to help individuals and their healthcare teams proactively address the individual's health to avoid non-urgent trips to the emergency department and connect them to additional healthcare services. CP also helps paramedics gain recognition for their abilities to improve community health and well-being by providing them with opportunities to practise autonomously as independent health professionals beyond the traditional transportation role (CSA Group, 2017).

Regulation of the Profession

In Canada, each province has its own regulatory authority and governing legislation for paramedics. In some provinces (Alberta, Nova Scotia, New Brunswick, Saskatchewan and Manitoba), paramedics are part of a self-regulating college. Other provinces are regulated by a government body. In Ontario for example, paramedics are regulated by the Ministry of Health, which contracts an organization called a Base Hospital to oversee advanced paramedic skills. There is currently no regulatory authority in any of the territories, which rely on municipally hired paramedics and contracted air ambulances to provide care to their residents (Bowles, van Beek, & Anderson, 2017; Fjeldheim et al., 2014).

In 2008, provincial regulators of the profession began to collaborate in an effort to standardize compliance among the provinces. The Canadian Organization of Paramedic Regulators was formed with the objective of improving labour mobility within the profession. Table 3 presents the various regulating authorities and current legislation, as well as the year regulation was established in each province.

TABLE 3: Regulatory authorities and legislation of the paramedic profession

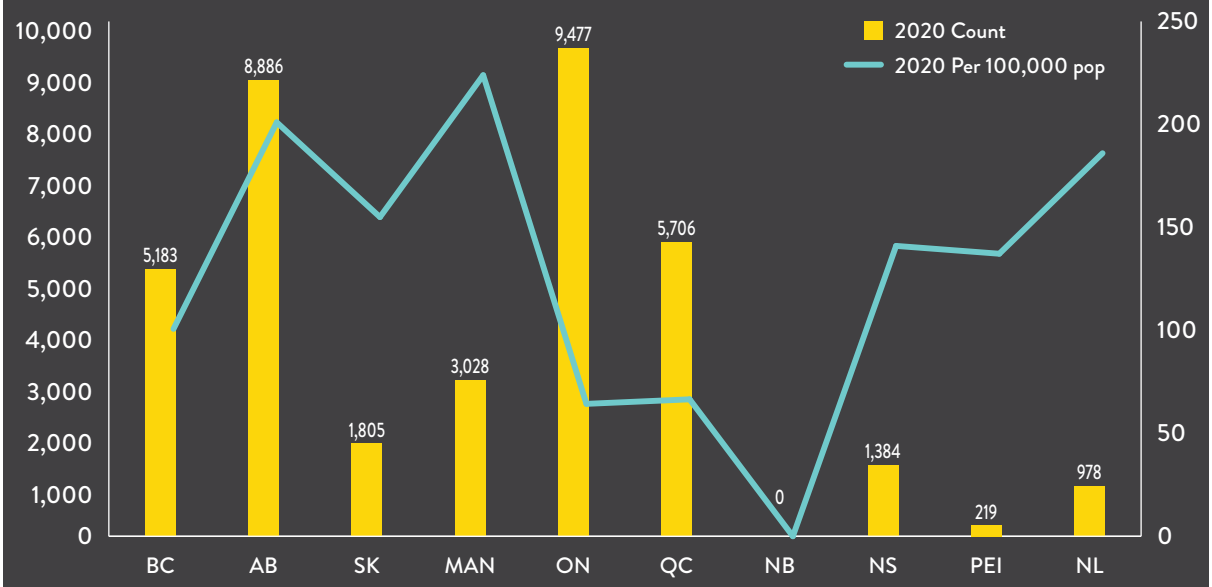
Province	Regulatory Authority	Year of regulation
British Columbia	Emergency Health Services Act	1974
Alberta	Alberta College of Paramedics	2008
Saskatchewan	Paramedics Act, 2007	2009
Manitoba	Emergency Medical Response and Stretcher Transportation Act, 2014	1984
Ontario	Ambulance Act, 1990	1968
Québec	Loi sur les services préhospitaliers d'urgence (Act Respecting Pre-Hospital Emergency Services)	2011
New Brunswick	Paramedic Act	2006
Nova Scotia	Paramedics Act, 2017	2005
Prince Edward Island	Emergency Medical Technicians Act	1972
Newfoundland and Labrador	Regional Health Authorities Regulations	2010

Source: Canadian Organization of Paramedic Regulators, 2016; CIHI, 2017b.

Demographics

Demographic information for paramedics in Canada is limited. Figure 1 presents 2020 (and 2018 data) on the number of paramedics employed in traditional roles. It does not include paramedics in non-conventional roles such as administrative or private services. It shows that the number of paramedics is over 36,000 and an overall provider to population ratio of 90.7 (CIHI, 2020). The gender distribution for paramedics is 64% male and 36% female, but more women have been entering the profession over time. Unlike other professions 20 to 30% of paramedics are under 30 years of age.

Figure 1: Paramedics—count and per population rates in Canadian provinces and territories, 2020 (*2018 data)



Source: Canadian Institute for Health Information, 2022, Health Workforce Database.

Representation of Women in Paramedicine — A Perspective from Alberta

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According to the Canadian Institute of Health Information, female paramedics constitute between 30-40% of the paramedic workforce across the provinces. Female paramedics, non-binary, and people of color and Indigenous people are underrepresented in the paramedicine profession and in formalized leadership roles. Emerging research indicates women in paramedicine face numerous challenges to advancement in leadership roles.

Contributing to the advancement of the profession in similar ways as their colleagues in areas such as education, best practise and operational innovation women are still underrepresented in formal leadership roles. It is difficult to determine the leadership aspirations of the many women working in the paramedicine profession without further exploration due to the lack of published research in this area.

In response to the lack of representation of women in formal leadership roles in EMS in Alberta, a group of women who work in various positions of authority in publicly funded health organizations initiated a conversation on how to increase representation within the profession. Personal experiences of challenges in moving forward our careers, despite gaining further educational and professional credentials, and the lack of mentorship opportunities served as a motivation to work together to identify ways of improving diversity, inclusion and equity in EMS and paramedic related organizations.

The successful implementation of a safe, competency driven, patient-centred health system requires a workforce is representative of the people that are served by the system. Recent evidence has shown that the lack of female representation in health leadership and workforce has resulted in the misunderstanding and silence of women's health concerns in medical research and literature (4,5,6).

While history matters, and change needs to be carefully managed, new thinking and innovation matter more to a health system cracking under pressure. Our group has experienced and recognized systemic and cultural barriers to women, and people of diverse backgrounds in our workforce that prevent advancement to formal leadership roles, despite an abundance of contributions to the profession. We have heard from other women in paramedicine who still experience many obstacles, from unconscious bias in hiring and tokenism, to outright sexism. Front line female paramedics are still questioned by their patients and partners about their professional competency—if they can drive, if they can lift, and the archaic idea that women who want to have families cannot possibly fit the demanding role of paramedic leadership. Characterizing leadership traits across gender constructs prevents the focus on skills and abilities and limits the dialogue to a narrow review of historical approaches. This narrative limits progress, and reverts to an old trope of whether women are able and if men are superior in the paramedic role.

Informed, diverse leadership creates well-rounded, relevant decisions and further develops problem recognition and solving capacities in all levels of leadership and the workforce. Supporting diverse views and understanding current workforce strengths and weaknesses through intentional action is part of the future women in paramedicine want to champion. Through our groups' collective experiences we have recognized the many women who provide mentorship, leadership, and act as positive role models for the paramedic workforce and an opportunity exists to enable them to rise to the same platform as their male counterparts. Women in paramedicine have demonstrated their determination for a better future by becoming leaders in their ongoing pursuit of learning and higher education in a system that historically provides very little support or sponsorship, and few opportunities to develop common ground for growth to occur.

As we started work in our group and in our organizations in addressing these issues, we have also heard from other women in paramedicine who are creating networks, developing support and learning opportunities, sharing experiences, and helping others to navigate the pathways to leadership roles. We have witnessed the increasingly rapid spread of formal and informal communities of women in paramedicine that are pushing for increased representation in leadership roles, and are confident that through increased attention, persistent advocacy and tangible support from our male allies that real change in our profession is possible. Ignoring diversity in the workforce no longer serves the advancement of paramedicine or the improvement of health care delivery, and groups such as ours will continue to push forward solutions and advocate for purposeful representation at all levels of leadership in our profession.

Funding of Services and Delivery Models

Paramedic services in Canada are funded through a combination of sources. Provincial health systems generally fund the 911 system, and other costs are charged back to municipal or provincial governments or covered by private health insurance plans (*Canada Health Act*, 2005).

There are 13 EMS systems in Canada that use a broad range of funding models. These models range from government-funded at all three levels of government to subsidized programs and those that depend on payment from individuals or their health insurance plans.

Paramedic and emergency services may be operated through government or regional programs or privately contracted. Paramedics can be employed in a number of settings, including municipally run services or programs, hospitals or fire departments (Symons & Shuster, 2004).

Key Issues for the Profession

Due to the unpredictable, high-risk nature of the profession, paramedics are subject to a number of psychosocial issues, and there are several important factors that can influence a paramedic's mental, physical and social health (Fjeldheim et al., 2014; Maguire et al., 2014). It is important to note that much of the research examining rates of illness, injuries and fatalities uses samples of public safety personnel that include firefighters, police officers and some nursing positions, not just paramedics.

Shift work

Like many other health professionals, paramedics generally work in shifts. Although there are regulations governing how many consecutive hours a paramedic can be on duty and how much time is required between scheduled shifts, they may still work 12- to 24-hour shifts for several days in a row before having any days off. Shift work has been associated with a number of negative physical and psychological health outcomes (Costa, 1996; Guadagni, Cook, Hart, Burles, & Iaria, 2018; Sofianopoulos, Williams, & Archer, 2012; Vedaa et al., 2016). It has been shown to increase the risk of mental disorders and chronic fatigue, and to negatively influence work-life balance. These risks can be particularly pronounced for paramedics due to the unpredictable nature of their role (Hegg-Deloye et al., 2013). For example, increased fatigue and lower alertness may increase risk when responding to emergency calls. Another study determined that paramedics' empathy responses were negatively affected by lack of ample, quality sleep (Guadagni et al., 2018).

Physical health, occupational injuries and fatalities

Burnout, the physical demands of the job and exhaustion related to shift work all increase paramedics' risk of occupational injury (Lavender et al., 2000; Maguire et al., 2014; Reichard, Marsh, & Moore, 2011). Paramedics report consistently high numbers of work-related injuries, with one 2005 study indicating that 30% of paramedics are injured on the job annually (Reichard & Jackson, 2009; Reichard et al., 2011; Heick, Young, & Peek-Asa, 2009). Many of these injuries are a result of strains and sprains from the significant physical demands of the job. However, the literature suggests that land and air traffic accidents are also often responsible for injuries and fatalities (Maguire et al., 2014; Reichard & Jackson, 2009; Reichard et al., 2011).

Mental health

There is an increasing recognition that paramedics are susceptible to a variety of emotional and psychological conditions as a result of their work, including post-traumatic stress disorder (PTSD), anxiety, depression, burnout and suicide. Recent research suggests an interaction between specific emergency calls (critical incidents) and more chronic workplace stressors (such as shift work, high call volumes and lack of resources) places paramedics at increased risk of these forms of operational stress injury (Declercq, Meganck, Deheegher, & Van Hoorde, 2011; Halpern, Maunder, Schwartz, & Gurevich, 2012b, 2012a; Regehr, Goldberg, Glancy, & Knott, 2002).

Further, paramedics' variable working schedules, lack of sleep and exposure to violence also places them at higher risk of anxiety and depression (Reichard et al., 2011). Evidence indicates that women and men paramedics are subject to similar levels of violence and abuse in the workplace (Boyle, Koritsas, Coles, & Stanley, 2007). A 2014 study on trauma exposure among public safety personnel found that paramedic trainees were exposed to high rates of trauma (Fjeldheim et al., 2014). Trauma exposure includes witnessing severe vehicle accidents and violence. As a result of this exposure, paramedics have increased risk of mental illness, suicidal ideation and PTSD (Carleton et al., 2018; Drewitz-Chesney, 2012; Streb, Häller, & Michael, 2014). Recently, there have been calls to address the mental illness risks by increasing resources and implementing systemic changes to this profession.

Impact of the COVID-19 Pandemic

Paramedics were on the frontlines of the COVID-19 pandemic. In addition to caring for patients with COVID-19, paramedics' took on public health roles, assisting with conducting COVID-19 swabs and delivering COVID-19 vaccines (City of Toronto, 2021; CP24, 2021). Paramedics faced increased stress, workload, and low morale during the pandemic (Culbert, 2020; Boechler et al, 2021; Oliphant et al, 2022). Emerging research is beginning to examine the impact of the COVID-19 on paramedics (Boechler et al, 2021; Oliphant et al, 2022). Pressures caused by the pandemic, particularly during the omicron wave in 2021/2022, also strained paramedic resources and there were reports of paramedic service shortages in many provinces (City News, 2022; CTV News, 2022).

Conclusion

Paramedic practise in Canada includes EMRs, PCPs, ACPs and CCPs, and each has different responsibilities and requires different levels of training. Regardless of level or jurisdiction, it is recommended that paramedics follow a national competency framework that includes the eight key areas outlined by the NOCP. Community paramedicine is an emerging field in the profession that allows for paramedics to care for members of communities in non-hospital settings. This new type of practise could relieve some of the pressure on Canadian emergency departments. Paramedics face a number of issues that may increase their risk of negative health outcomes, including burnout and PTSD. As paramedics continue to gain more autonomy and adjust to increased responsibility, further research is needed to understand how legislative and regulatory changes are affecting both the public and the members of this profession.

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Acronyms

ACP	Advanced care paramedic
ALS	Advanced life support
CCP	Critical care paramedic
CIHI	Canadian Institute for Health Information
CP	Community paramedicine
CPR	Cardiopulmonary resuscitation
ED	Emergency department
EMA	Emergency medical assistant
EMR	Emergency medical responder
EMS	Emergency medical services
EMT	Emergency medical technician
NOC	National Occupation Classification
NOCP	National Occupational Competency Profile
PAC	Paramedic Association of Canada
PCP	Primary care paramedic
PTSD	Post-traumatic stress disorder

Paramedic Association of Canada Chapters

Ambulance Paramedics of British Columbia

Alberta Paramedic Association

Association of Saskatchewan Paramedics

Paramedic Association of Manitoba

Ontario Paramedic Association

Corporation des Paramédics du Québec

Paramedic Association of New Brunswick

Paramedic Association of Prince Edward Island

Paramedic Association of Newfoundland and Labrador

Canadian Armed Forces – Royal Canadian Medical Service Association

Canadian Paramedic Partner Agencies

Canadian Organization of Paramedic Regulators

Paramedic Chiefs of Canada

The Alliance of Canadian EMS Honour Guards

Canadian Paramedic Memorial Foundation

Accreditation Canada

Paramedic Association of Canada

Canadian Paramedic Regulatory Colleges Section

Self-regulating provinces:

Alberta: Alberta College of Paramedics
https://abparamedics.com

Saskatchewan: Saskatchewan College of Paramedics
https://collegeofparamedics.sk.ca

Manitoba: Manitoba College of Paramedics
https://collegeparamb.ca

Nova Scotia: College of Paramedics of Nova Scotia
https://www.cpns.ca

New Brunswick: The Paramedic Association of New Brunswick
https://www.panb.ca

Government regulated:

BC: Emergency medical assistants licensing board:
https://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/partners/colleges-boards-and-commissions/emergency-medical-assistants-licensing-board

Ontario: Ministry of Health and Long-term Care, Emergency Health Services Branch
https://www.health.gov.on.ca/en/pro/programs/emergency_health/edu/standards_exams.aspx

Quebec : services préhospitaliers d'urgence (SPU) au Québec
https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/education/publications-adm/cegeps/services-administratifs/Programmes-etudes-techniques/PE19-181A1-Soins-Prehospitaliers-Urgence.pdf

PEI: EMS Board of Prince Edward Island
https://www.princeedwardisland.ca/en/service/emergency-medical-technician-emt-licence-application

Newfoundland and Labrador: Newfoundland and Labrador Paramedic Regulation
https://www.gov.nl.ca/hcs/ehps/nlpr/

References

Agarwal, G., Angeles, R., Pirrie, M., McLeod, B., Marzanek, F., Parascandalo, J., & Thabane, L. (2018). Evaluation of a community paramedicine health promotion and lifestyle risk assessment program for older adults who live in social housing: a cluster randomized trial. *CMAJ*, *190*(21), E638–E647. https://doi.org/10.1503/cmaj.170740

Agarwal, G., & Brydges, M. (2018). Effects of a community health promotion program on social factors in a vulnerable older adult population residing in social housing. *BMC Geriatrics*, *18*. https://doi.org/10.1186/s12877-018-0764-9

Bigham, B. L., Kennedy, S. M., Drennan, I., & Morrison, L. J. (2013). Expanding Paramedic Scope of Practise in the Community: A Systematic Review of the Literature. *Prehospital Emergency Care*, *17*(3), 361–372. https://doi.org/10.3109/10903127.2013.792890

Boechler, L., Cameron, C., Smith, J. C., Ford-Jones, P., & Suthers, P. (2021). Impactful Approaches to Leadership on the Front Lines of the COVID-19 Pandemic: Lived Experiences of Canadian Paramedics. *Healthcare Quarterly (Toronto, Ont.)*, *24*(3), 42-47.

Bowles, R. R., Beek, C. van, & Anderson, G. S. (2017). Four dimensions of paramedic practise in Canada: Defining and describing the profession. *Australasian Journal of Paramedicine*, *14*(3). Retrieved from https://ajp.paramedics.org/index.php/ajp/article/view/539

Boyle, M., Koritsas, S., Coles, J., & Stanley, J. (2007). A pilot study of workplace violence towards paramedics. *Emergency Medicine Journal*, *24*(11), 760–763. https://doi.org/10.1136/emj.2007.046789

Brown, R. (2018). The Aging Population in Canada: A Shift in Paramedic Services Delivery – Canadian Paramedicine News. Retrieved July 4, 2018, from https://canadianparamedicine.ca/the-aging-population-in-canada-a-shift-in-paramedic-services-delivery/

Canada Health Act. (2005, May 16). Canada Health Act – Frequently Asked Questions. Retrieved from https://www.canada.ca/en/health-canada/services/health-care-system/canada-health-care-system-medicare/canada-health-act-frequently-asked-questions.html

Canadian Institute for Health Information. (2017a, December 7). Paramedics. Retrieved July 4, 2018, from https://www.cihi.ca/en/paramedics

Canadian Institute for Health Information. (2017b, December 7). Paramedics | CIHI. Retrieved September 23, 2018, from https://www.cihi.ca/en/paramedics

Carleton, R. N., Afifi, T. O., Turner, S., Taillieu, T., Duranceau, S., LeBouthillier, D. M., … Asmundson, G. J. G. (2018). Mental Disorder Symptoms among Public Safety Personnel in Canada. *The Canadian Journal of Psychiatry*, *63*(1), 54–64. https://doi.org/10.1177/0706743717723825

CBC News. January 7, 2022. Ambulances in rural Manitoba increasingly sitting idle due to staff shortages. https://www.cbc.ca/news/canada/manitoba/manitoba-ambulances-staff-shortages-1.6308061

Choi, B. Y., Blumberg, C., & Williams, K. (2016). Mobile Integrated Health Care and Community Paramedicine: An Emerging Emergency Medical Services Concept. *Annals of Emergency Medicine*, *67*(3), 361–366. https://doi.org/10.1016/j.annemergmed.2015.06.005

City News Calgary. January 6, 2022. Paramedic shortage causes delay in ambulances calls through holidays: HSAA. https://calgary.citynews.ca/2022/01/06/alberta-ems-ambulance-shortage/

City News. January 4th, 2022. GTA hospitals, paramedic services experiencing critical staff shortages amid COVID surge. https://toronto.citynews.ca/2022/01/04/covid-ontario-toronto-brampton-hospitals-paramedics-staffing/

City of Toronto. (2021). City of Toronto readying Paramedic and Fire Services to support mobile vaccination of vulnerable communities. https://www.toronto.ca/news/city-of-toronto-readying-paramedic-and-fire-services-to-support-mobile-vaccination-of-vulnerable-communities/

Coffey, B., MacPhee, R., Socha, D., & Fischer, S. L. (2016). A physical demands description of paramedic work in Canada. *International Journal of Industrial Ergonomics*, *53*, 355–362. https://doi.org/10.1016/j.ergon.2016.04.005

Conjoint Accreditation Services, & CMA Conjoint Accreditation Services. (2012). *Guidelines for paramedic programs on the use of the Paramedic Association of Canada's (PAC) 2011 National Occupational Competency Profile (NOCP) in the Canadian Medical Association (CMA) conjoint accreditation process*. Canadian Medical Association.

Costa, G. (1996). The impact of shift and night work on health. *Applied Ergonomics*, *27*(1), 9–16. https://doi.org/10.1016/0003-6870(95)00047-X

CP24. (2021). Paramedics bring COVID-19 vaccines to homebound seniors across Ontario. https://www.cp24.com/news/paramedics-bring-covid-19-vaccines-to-homebound-seniors-across-ontario-1.5369265?cache=yes%3FclipId%3D263414%3FclipId%3D89531

CSA Group. (2017). Community paramedicine: Framework for program development. *Defence Research and Development Canada*, 38.

CTV News. Jan 9 2022. Up to 50 percent of ambulances unstaffed in B.C.'s Lower Mainland this week. https://bc.ctvnews.ca/up-to-50-per-cent-of-ambulances-unstaffed-in-b-c-s-lower-mainland-this-week-1.5733660

Culbert, L. (2020). Vancouver Sun. COVID-19: Stress on the front line of the fight against the pandemic in B.C. https://vancouversun.com/news/local-news/covid-19-stress-on-the-front-line-of-the-fight-against-the-pandemic/

Dainty, K. N., Seaton, M. B., Drennan, I. R., & Morrison, L. J. (2018). Home Visit – Based Community Paramedicine and Its Potential Role in Improving Patient-Centered Primary Care: A Grounded Theory Study and Framework. *Health Services Research*, *53*(5), 3455–3470. https://doi.org/10.1111/1475-6773.12855

Declercq, F., Meganck, R., Deheegher, J., & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in emergency personnel. *Journal of Traumatic Stress*, *24*(1), 133–136.

Drewitz-Chesney, C. (2012). Posttraumatic Stress Disorder Among Paramedics: Exploring a New Solution With Occupational Health Nurses Using the Ottawa Charter as a Framework. *Workplace Health & Safety; Thousand Oaks*, *60*(6), 257–263. http://dx.doi.org.myaccess.library.utoronto.ca/10.3928/21650799-20120516-51

Fjeldheim, C. B., Nöthling, J., Pretorius, K., Basson, M., Ganasen, K., Heneke, R., … Seedat, S. (2014). Trauma exposure, posttraumatic stress disorder and the effect of explanatory variables in paramedic trainees. *BMC Emergency Medicine*, *14*(1), 11. https://doi.org/10.1186/1471-227X-14-11

Government of Canada, D. of F. (2005, February 23). Budget 2005: Budget Plan – Annex 8 – Tax Measures: Supplementary Information [Budget]. Retrieved September 20, 2018, from https://www.cbc.ca/news2/background/budget2005/documents/budget05/bp/bpa8e.htm

Guadagni, V., Cook, E., Hart, C., Burles, F., & Iaria, G. (2018). Poor sleep quality affects empathic responses in experienced paramedics. *Sleep and Biological Rhythms*, *16*(3), 365–368. https://doi.org/10.1007/s41105-018-0156-8

Guo, Bing, Corabian, Paula, Yan, Charles, & Tjosvold, Lisa. (2017). *Community paramedicine: Program characteristics and evaluation* [Review]. Retrieved from Institute for Health Economics website: https://www.ihe.ca/publications/community-paramedicine-program-characteristics-and-evaluation

Halpern, J., Maunder, R. G., Schwartz, B., & Gurevich, M. (2012a). Identifying, describing, and expressing emotions after critical incidents in paramedics. *Journal of Traumatic Stress*, *25*(1), 111–114.

Halpern, J., Maunder, R. G., Schwartz, B., & Gurevich, M. (2012b). The critical incident inventory: characteristics of incidents which affect emergency medical technicians and paramedics. *BMC Emergency Medicine*, *12*(1), 10.

Hegg-Deloye, S., Brassard, P., Jauvin, N., Prairie, J., Larouche, D., Poirier, P., … Corbeil, P. (2013). Current state of knowledge of post-traumatic stress, sleeping problems, obesity and cardiovascular disease in paramedics. *Emerg Med J*, emermed-2012-201672. https://doi.org/10.1136/emermed-2012-201672

Kluth, K., & Strasser, H. (2006). Ergonomics in the rescue service—Ergonomic evaluation of ambulance cots. *International Journal of Industrial Ergonomics*, *36*(3), 247–256. https://doi.org/10.1016/j.ergon.2005.10.002

Kortbeek, J. B., & Buckley, R. (2003). Trauma-care systems in Canada. *Injury*, *34*(9), 658–663. https://doi.org/10.1016/S0020-1383(03)00158-X

Lavender, S. A., Conrad, K. M., Reichelt, P. A., T. Meyer, F., & Johnson, P. W. (2000). Postural analysis of paramedics simulating frequently performed strenuous work tasks. *Applied Ergonomics*, *31*(1), 45–57. https://doi.org/10.1016/S0003-6870(99)00027-7

Maguire, B. J., O'Meara, P. F., Brightwell, R. F., O'Neill, B. J., & Fitzgerald, G. J. (2014). Occupational injury risk among Australian paramedics: an analysis of national data. *The Medical Journal of Australia*, *200*(9), 520. https://doi.org/10.5694/mja14.10941

Mitchell, A. D., Tallon, J. M., & Sealy, B. (2007). Air versus ground transport of major trauma patients to a tertiary trauma centre: a province-wide comparison using TRISS analysis. *Canadian Journal of Surgery*, *50*(2), 129–133.

National Occupational Competency Profile for Paramedics. (2011). Retrieved from http://www.paramedic.ca/uploaded/web/documents/2011-10-31-Approved-NOCP-English-Master.pdf

Oliphant, A., Faulds, C., Bengall, S., & Nouvet, E. (2022). At the front of the front-line: Ontario paramedics' experiences of occupational safety, risk and communication during the 2020 COVID-19 pandemic. International Journal of *Emergency Services*.

O'Meara, P., Stirling, C., Ruest, M., & Martin, A. (2015). Community paramedicine model of care: an observational, ethnographic case study. *BMC Health Services Research*, *16*(1). https://doi.org/10.1186/s12913-016-1282-0

Ontario Paramedic Association. (2015). 'History of Paramedics in Ontario.' https://www.ontarioparamedic.ca/before-9-1-1/history-of-paramedics-in-ontario

Paramedic Association of Canada. (2015). Voluntary professional organization of paramedicine practitioners in Canada. Retrieved June 29, 2018, from Paramedic Association of Canada website: https://paramedic.ca/

Popov, D. A., Schwartz, B., Mazurik, L., Cheskes, S., Rotolo, P., Silver, D., & MacInnis, G. (2007). Multi-Disciplinary Special Teams Provide Emergency Medical Services Systems with the Capability to Handle Disaster Situations in a Reliable, Safe, and Economical Manner. *Prehospital and Disaster Medicine*, *22*(S1), S34–S35. https://www.cambridge.org/core/journals/prehospital-and-disaster-medicine/article/multidisciplinary-special-teams-provide-emergency-medical-services-systems-with-the-capability-to-handle-disaster-situations-in-a-reliable-safe-and-economical-manner/52A3C40F65BB860A1EE86F3C6F8601E8

Professional Paramedic Association of Ottawa. (n.d.). Special Operations. Retrieved March 26, 2019, from Professional Paramedic Association of Ottawa website: https://www.ottawaparamedics.ca/special-ops/

Regehr, C., Goldberg, G., Glancy, G. D., & Knott, T. (2002). Posttraumatic Symptoms and Disability in Paramedics. *The Canadian Journal of Psychiatry*, *47*(10), 953–958. https://doi.org/10.1177/070674370204701007

Regher, C. (2005). BRINGING THE TRAUMA HOME: SPOUSES OF PARAMEDICS. *Journal of Loss and Trauma*, *10*(2), 97–114. https://doi.org/10.1080/15325020590908812

Reichard, A. A., & Jackson, L. L. (2009). Occupational injuries among emergency responders. *American Journal of Industrial Medicine*, *53*(1), 1–11. https://doi.org/10.1002/ajim.20772

Reichard, A. A., Marsh, S. M., & Moore, P. H. (2011). Fatal and Nonfatal Injuries Among Emergency Medical Technicians and Paramedics. *Prehospital Emergency Care*, *15*(4), 511–517. https://doi.org/10.3109/10903127.2011.598610

Sofianopoulos, S., Williams, B., & Archer, F. (2012). Paramedics and the effects of shift work on sleep: a literature review. *Emerg Med J*, *29*(2), 152–155. https://doi.org/10.1136/emj.2010.094342

Streb, M., Häller, P., & Michael, T. (2014). PTSD in Paramedics: Resilience and Sense of Coherence. *Behavioural and Cognitive Psychotherapy*, *42*(4), 452–463. https://doi.org/10.1017/S1352465813000337

Symons, P., & Shuster, M. (2004). International EMS Systems: Canada. *Resuscitation*, *63*(2), 119–122. https://doi.org/10.1016/j.resuscitation.2004.06.010

Toronto Paramedic Association. (n.d.). Scope of Practise. Retrieved September 23, 2018, from Toronto Paramedic Association website: https://www.torontoparamedic.com/scope-of-practise/

Vedaa, Ø., Harris, A., Bjorvatn, B., Waage, S., Sivertsen, B., Tucker, P., & Pallesen, S. (2016). Systematic review of the relationship between quick returns in rotating shift work and health-related outcomes. *Ergonomics*, *59*(1), 1–14. https://doi.org/10.1080/00140139.2015.1052020