CSA GROUP RESEARCH

Health in the North

The Potential for Community Paramedicine in Remote and/or Isolated Indigenous Communities

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Executive Summary

Canada's North is comprised of a sparsely populated area and represents approximately 40% of Canada's landmass, yet accommodates fewer than 200,000 people who call it home. The percentage of Peoples of Indigenous heritage is substantial in this area, including 86.3% in Nunavut, 52% in the Northwest Territories, and 23% in Yukon.[1]

Poor social determinants of health in First Nations and Inuit communities, such as overcrowded housing, high unemployment, and unsafe drinking water, are cited as contributing to poorer health outcomes.[2] While essential differences in society, culture, and traditions exist among and within First Nations and Inuit People and communities, they share similar macro-level gaps in healthcare and health services. Health services in Northern communities are characterized as a patchwork of programs and services delivered by multiple levels of government.[3] With the vast majority of care focused within the physical walls of nursing stations, there is essentially no professional first response or home-based chronic disease care. Long-term recruitment and retention problems among rural health workers have also contributed to inequitable health service access for rural, isolated, and remote communities in the North.

In response, new healthcare models with flexible workforce roles are emerging, including "expanded scope of practice" (ESP) paramedic roles. In Canada, this practice, termed "community paramedicine," has evolved from the grassroots, with local paramedic services developing flexible models of collaborative care to meet the needs of underserviced and high-needs populations.

This report presents the results of an exploratory study that follows CSA Group's published research report on "Canada's North,"[4] which examined the broad-based societal challenges and unique needs of people living in this region, to determine opportunities to contribute to the sustainability of improved health outcomes for the North and its People. This research aims to understand the health and healthcare needs of Canada's Indigenous Peoples living north of the 60th parallel and within Northern Ontario, including the Territory of Nishnawbe Aski Nation (NAN). This research includes an exploration of ideas and actionable steps towards meeting the health service gaps in remote and isolated areas, involving and engaging Northern communities in discussions on access to healthcare, and learning what effective and culturally safe practices are available to potentially adapt innovative ways of care, including community paramedicine, as a service for these communities.

This report outlines the numerous health and healthcare issues in Northern communities and provides recommendations for the potential role of community paramedicine in addressing these issues.

Introduction

The vast geography north of the 60th parallel, as well as the area of Northern Ontario predominantly inhabited by members of Nishnawbe Aski Nation (NAN), is home to peoples of ancient cultures whose resilience is unmatched by any society on the planet. Expansive, isolated, and remote, it is fittingly referred to as Canada's last frontier.

Health Canada's definition of remote and isolated communities has been adopted for this project:

> "Remote" refers to communities that have infrequent flights, frequent phone or radio disruptions, and no roads in or out of the community.
>
> "Isolated" refers to communities that have regularly scheduled flights, good telephone and radio services, and road access in winter only. Most communities fall into this category.[1]

These unique parts of Canada are home to First Nations, Métis, Inuit, and Inuvialuit People, who have developed their traditions based on a deep-rooted love of, dependence on, and respect for the land that has sustained them for centuries. The interdependence of Indigenous individuals, families, and communities that act together as a central unit with the land is the key component of this society's vitality and preservation.

The health and well-being of this group of Canadians is being continually challenged by issues such as climate change and environmental degradation, which affect the North far more than in the South. The effects of climate change are also affecting the already tenuous transportation routes and food supplies to this region. Moreover, what has been termed an "accelerated evolution," resulting from an influx of Western thought, communications, food, and culture in recent history, presents perils to cultural preservation, contributes to native population efflux, and poses relatively new threats to well-being through the resurgence of infectious diseases and emergence of chronic disease. Disruptive forces such as economic development, the current and future construction of strategic transportation routes, and the introduction of new technologies and foods that were historically absent from Indigenous diets all create risks to the sustainability of Indigenous culture and values.[4] Communities also suffer multigenerational trauma from residential schools, poor social conditions, including the suicide crisis, and high rates of prescription drug abuse.[1] Food insecurity is endemic; for example, it is estimated to affect 75% of Nunavummiut households.[5, 6] The social determinants of health are transforming rapidly in Canada, yet remain highly inequitable in Northern communities. This, along with much higher rates of injury, is magnifying a growing gap between the health status of Indigenous Peoples and that of the general Canadian population. Because First Nations and Inuit communities have limited access to the provincial and territorial health services based in larger centres, the 1979 Indian Health Policy commits Health Canada to provide funding for the delivery of health services in remote First Nations and Inuit communities. Health Canada's funding supports 85 health facilities, which have collaborative healthcare teams that are led by approximately 400 nurses. The facilities provide services to approximately 95,000 First Nations individuals and 40,000 Inuit people. When health services are not available within First Nations and Inuit communities, Health Canada provides medical transportation benefits to First Nations individuals. In 2013–2014, Health Canada spent $103 million for clinical and client care services in Manitoba and Ontario, and $175 million for medical transportation benefits in the two provinces.[1] Despite governments' well-intentioned efforts to provide healthcare services, there are barriers to meaningful initiatives to promote culturally safe care among jurisdictions and governments, and across communities and belief systems.

The per capita cost of medical transport and out-of-community services ($2,060 per person annually) is indicative of a care system that could be improved by strengthening local primary care services. In southern Canada,[7] community paramedicine has been shown to offer a unique, external-facing health services provider that has dramatically decreased the need for medical transportation by providing people with collaborative care at home. Our research and analysis suggest that the success rate for community paramedicine would be at least equally high in the North.

"Momentum is building at many levels to close the gaps in the social determinants of health for Indigenous Peoples."

In the vast majority of communities in Canada's North, there are no paramedics as professional first responders, let alone providers of community paramedicine services.[8] Community paramedicine, a grassroots-driven innovation,[9] is a promising model of care that is further explored in this research report as part of a standards-guided best practice in the North. This report considers its suitability to meet many of the health and healthcare gaps in the North by referring to its dramatic successes in the more populated southern areas of Canada and in Australia, as well as its potential to evolve and be adapted as a culturally safe practice.

Community paramedicine is becoming increasingly recognized as an effective and efficient solution to meet the evolving healthcare needs of Canadians regardless of their geographic location. In such regions as Ontario's geographically dispersed rural Renfrew County and the isolated Brier Islands of Nova Scotia, paramedics are expanding their roles from traditional emergency response to practising increased levels of primary and preventive care where gaps in services exist. From working in clinics, to addressing primary care service shortages, to providing regular home support for chronic disease management, community paramedics are filling important roles, including point-of-care testing, wound care, and immunizations.[10]

Standards for community paramedicine, such as CAN/CSA-Z1630-17, *Community paramedicine: Framework for program development*,[11] provide key guidelines and principles for the development and application of community paramedicine programs designed to meet local needs. In this complex and challenging field, developing standards for an innovative practice can help to ensure sustainability, continual improvement through evaluation, and knowledge transfer across jurisdictions.

Canada has an increasing admiration and respect for the culture of Indigenous Peoples and their resilience over centuries, and momentum is building at many levels to close the gaps in the social determinants of health for Indigenous Peoples.

Objectives

This research report is intended to:

- identify key health challenges facing Canada's Northern remote and/or isolated communities;
- produce a synthesis of published academic literature related to this topic;
- investigate the potential role of a community paramedicine service in addressing these challenges; and
- assess the opportunity for the implementation of a standards-based solution.

The following research questions guided this work:

- What are the health service needs of remote and/or isolated Indigenous communities?

- How can community paramedicine bridge some of the gaps in service delivery and monitoring, and provide continuity of care, health promotion, and illness prevention?
- What would be the right approach in engaging Indigenous communities in this dialogue (e.g., cultural considerations)?

Methodology

General

To address the research questions, the following methods were used:

- a targeted literature review of Canadian and international sources;
- development of a high-level needs assessment to identify major health service gaps;
- a stakeholder consultation and engagement process; and
- a second focused literature review to validate observations from the consultation and engagement phase.

Literature Review

A literature search was conducted on Canadian and international articles published from 1998 through to the present. The major databases used were PubMed, CINAHL, and ProQuest. Additionally, grey materials from websites including CSA Group, Paramedic Associations, and Health Canada were surveyed. The search terms entered combined the following: "community paramedicine," "Indigenous," "community," "engagement," "remote," "isolated," "health," and "wellness."

The following types of peer-reviewed articles were included in the search:

- randomized controlled trials (RCTs), quasi-experimental studies, and review articles such as systematic reviews and case studies;
- Canadian, U.S., and international studies in English;
- studies that focused on Indigenous health and wellness status, Indigenous community engagement, and isolated and remote community paramedicine; and
- studies that included outcomes such as health service utilization.

Articles were analyzed for relevance, and a total of 38 articles met the criteria for inclusion in the initial literature review. Articles were then grouped by common subjects:

- Indigenous and Western biomedical concepts of health;
- Indigenous communities and engagement;
- community paramedicine; and
- health services in isolated and remote communities.

Summary of Relevant Articles Reviewed

Thematic identification and analysis of the literature determined the following topics related to Indigenous life and well-being:

- health as defined by Indigenous Peoples and identification of gaps in health services;
- healthcare service needs for Northern Indigenous communities;
- Indigenous community engagement; and
- sustainable solutions for health programs in remote and isolated and Indigenous communities through community paramedicine.

An important purpose of the literature review was to gain insight into what health means in the Indigenous context. Too often healthcare programs and resources are aimed at an individual's departure from health (i.e., disease), and fail to address the underlying constituents of either health or ill-health. To understand and effectively reduce health disparities and promote equity, it is necessary to recognize how cultural differences, our economic conditions, our living and social conditions, and our level of formal education determine our understanding of what health means.[13]

The findings of the literature review informed both the community and stakeholder engagement process and specific topics for discussion throughout the project. It was imperative to bring the differing concepts of health among Indigenous and non-Indigenous Peoples that were identified in the review into all the discussions. Both the health concepts and Indigenous Peoples' community ownership of service development and delivery were subjects that had to be acknowledged in the consultations.

Stakeholder Consultation and Engagement

The second part of the research involved consulting and engaging with stakeholders across wide geographical representation and positions in communities, organizations, and governments pertaining to Northern Indigenous health and healthcare.

A two-fold approach was developed for the Northern engagement:

1. Engage communities and community members in discussions regarding the above concepts.
2. Engage representatives of senior level government and organization officials in dialogue.

The list of stakeholders approached and/or engaged with is provided in Appendix A.

A culturally sensitive and safe approach was employed by incorporating the author's previous experience with Indigenous Peoples, augmented by findings of the literature review. Care was taken to acknowledge that Indigenous concepts of health are different from those of the general population, and that it is essential that programs for Indigenous communities be co-designed with local stakeholders.

Stakeholder engagement was conducted in person and through telephone consultations with community membership, leadership, and government officials across Canada to further explore these topics and validate the outputs of the literature review. The approach most often used was to employ previous relationships with Northern communities and Indigenous Peoples and stakeholders to engage persons and organizations in consultation, either directly or indirectly. In areas where there were no previous contacts, a knowledge of government structures was used to identify and reach out to stakeholders through cold calling.

In-person consultations were held in Northwestern Ontario, with later follow-up in Toronto through conferences and meetings with Nishnawbe Aski Nation Health Executives and Directors. Discussions were also held in person with representatives of the Department of Health and Social Services of the Northwest Territories (NT) in Yellowknife, as well as with community members in Tuktoyaktuk. Telephone consultations were held with senior government officials with Indigenous Services Canada and the governments of Nunavut and the Yukon.

Following the stakeholder engagement stage of this project, a second focused literature review was undertaken to better understand and validate observations made in the field phase. This included additional literature from Nishnawbe Aske Nation that had not been available online.

Research Findings

The main themes identified in the two literature reviews were also the major topics of discussion with Northern communities and officials. In today's landscape, the definitions of health and wellness are being re-explored, and the structural barriers of colonialism and current reconciliation attempts are well appreciated as opportunities to consider a new paradigm. Community engagement represents the major challenge in introducing a new paradigm, which needs to be defined by engagement at a grassroots level.

First Nations and Inuit People are looking to welcome Western thought and approaches. The caveat is that any knowledge transfer be mutually beneficial. Our input is wanted and welcomed; however, as southern Canadians, we need to consider how to assist in a time of transformative shift, in the face of many barriers to engagement, and how to respect the considerations for providing culturally safe care.[12]

The following key themes emerged through the research:

1. The expanding gap in health status among Indigenous Peoples is unacceptable.

"How do we see health? For us, it comes from the land, the food, the earth which makes it. We need to see what makes the good food and see that it is medicine for us."

First Nations Community Chief,
Nishnawbe Aski Nation

2. Western approaches to health are distinctly different from those of Indigenous Peoples.
3. Structural barriers to community engagement must be overcome to develop sustainable solutions.
4. Essential services are absent in many isolated and/or remote communities.
5. Community paramedicine appears to be a welcome model of care that is highly adaptable to ameliorating health status and health services in the North.

1. Gap in Health Status

The literature is clear and consistent in reporting a marked gap between the health status of Canada's Indigenous Peoples and that of the general population. The poor state of Indigenous health is well known and frequently reported.[14, 15, 16, 17, 18, 19] In addition to the disproportionate prevalence of mental health problems and addiction disorders,[14] the prevalence of chronic diseases such as diabetes, hypertension, renal disease, and cancer is markedly elevated in Indigenous Peoples, compared to the general population.

The social determinants of health (as described by the Public Health Agency of Canada) for Indigenous Peoples have been drastically altered by colonization.[14, 15, 16, 20] These social determinants have a meaningful place in Indigenous concepts of health, but they tend to not be addressed by the traditional Western biomedical approach to disease. The provision of health services to Indigenous Peoples must take an approach that incorporates this broader concept of health.

First Nations individuals face significant health challenges. While the life expectancy of the First Nations population increased between 1980 and 2010, it was about eight years shorter in 2010 than the life expectancy of other Canadians. First Nations communities also have higher rates of chronic infectious disease and mental health and substance abuse issues. Poor social determinants of health in First Nations communities, such as overcrowded housing, high unemployment, and unsafe drinking water also contribute to poorer health outcomes.[2]

A decade ago, type II diabetes mellitus was unheard of among Nunavummiut. It has now become an emerging epidemic among the Inuit.[21] The prevalence of chronic disease in Indigenous Peoples is at least 1.5 times higher than in the general population. The rates of infectious diseases and re-emergent tuberculosis are skyrocketing, and Type II diabetes mellitus shows a rapid acceleration among Indigenous Peoples.[17] Based on health status profiles, Indigenous Peoples have a higher level of health needs, particularly in terms of chronic disease prevention and management. In addition, the prevalence of chronic diseases, such as diabetes and chronic kidney disease, is disproportionate for First Nations communities; these diseases have also become prevalent among the Inuit within the past twenty years.[22] The trajectory towards increased morbidity and mortality is higher among Indigenous persons with chronic disease. Among other factors, it can be argued that this is a result of decreased access to culturally safe healthcare among Indigenous Peoples living in remote and isolated communities in Canada. The evidence paints a picture of an Indigenous population in dire need of help and attention.[1, 22]

Despite significant attempts to act on the social determinants of health, the forces of changing employment conditions, food security, income, education, housing, and social environments have outpaced efforts to contain chronic, infectious, trauma-related, and mental health problems.

Interviews with key informants emphasized that the current status quo and the expanding gap in health status among Indigenous Peoples is unacceptable.

2. Indigenous and Western Concepts of Health

It is important to recognize that any approach to the provision of additional health services to remote and/or isolated Indigenous communities involves providers who have been trained and educated in the Western biomedical paradigm of health and healthcare. Often such initiatives fall short of the holism exemplified by Indigenous definitions of health.

Indigenous notions of health make a direct linkage and interconnection between the individual and the community, which is not as evident in Western concepts. In Indigenous health, the community is far greater than the sum of the individuals. Accordingly, southern healthcare providers embarking on service to Northern communities are well advised to be conscious of their impact on the community, as well as individuals. Historically, this kind of awareness has been rare. Colonialism and the relocation and residential schooling of Indigenous Peoples are argued to have had a devastating intergenerational effect on their well-being. The residential school legacy is Canada's most marked blemish; from the 1940's, children were forcibly removed from their homes and placed in residential schools, where many faced horrific abuse, with the last school closing in 1996.[13]

Self determination and regaining control over Indigenous Peoples' environment are critical to achieving Indigenous health.[13] The mission statement of the Assembly of First Nations (AFN) on health reflects the relationship between health, the Indigenous individual, and societal sovereignty over decision making:

> We, as First Nations peoples, accept our responsibility as keepers of Mother Earth to achieve the best quality of life and health for future generations based on our traditions, values, cultures, and languages. We are responsible to protect, maintain, promote, support, and advocate for our inherent, treaty and constitutional rights, holistic health, and the well-being of our nations. This will be achieved through the development of health system models, research, policy analysis, and communication, and development of national strategies for health promotion, prevention, intervention, and aftercare.[13]

Given the complexity and confusion of jurisdictional responsibility for care provision, any new service should aim to reduce the top-down administrative nature of care. When introducing new services in Indigenous communities, enabling community control over managerial decision-making is advised.

Western approaches to health and healthcare are distinctly different from those of Indigenous Peoples, and need adaptation to become culturally safe and more consistent with Indigenous beliefs. Indigenous Peoples in Canada have ancient, culture-specific philosophical foundations and practices that continue to provide them with guidance in everyday life. In their healing process, these imperatives provide guidance to those who experience physical, psychological, emotional, or spiritual distress — individually, in a family, or in a community.[22]

Research into Indigenous health has been largely focused on non-Indigenous notions of health (i.e., disease and treatment).[23] The World Health Organization definition of health at Alma Ata (1978) states:

> Health, which is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity, is a fundamental human right and ... the attainment of the highest possible level of health is a most important world-wide social goal whose realization requires the action of many other social and economic sectors in addition to the health sector.[24]

There is a political dimension to these definitions. The positive Western definition of health, which is taken as a human right, requires a hefty commitment of resources

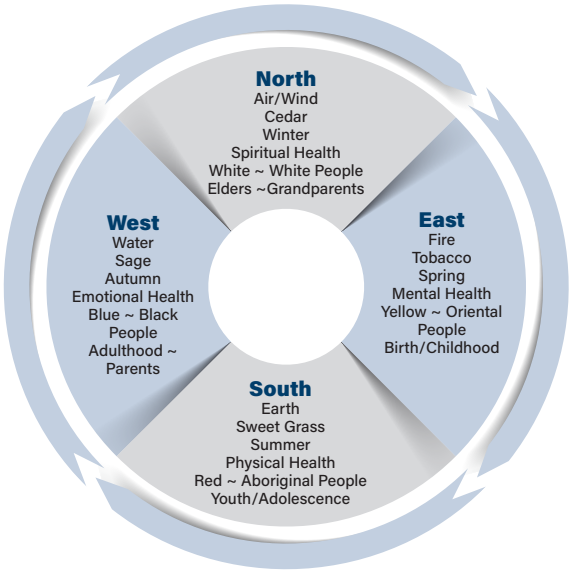
to help achieve the desired ends, and this has implications for attributions of responsibility for health.[24]

Teachings received from First Nations and Inuit Elders point to fundamental philosophical differences in health concepts among Indigenous and non-Indigenous people, differences that are reflected in the expansionist actions of European settlers in contrast to Indigenous Peoples' balance with the earth. Similarly, the Australian Aboriginal* account of health is viewed as being explicitly holistic.

> Aboriginal health is not just the physical well-being of an individual but is the social, emotional, and cultural well-being of the whole community in which each individual is able to achieve their full potential, thereby bringing about the total well-being of their community. It is a whole-of-life view and includes the cyclical concept of life-death-life.[25]

For Indigenous Peoples, health is a matter of determining all aspects of their life – including control over their physical environment – of dignity, of community self-esteem, and of justice. It is not merely a matter of the provision of doctors, hospitals, medicines, or the absence of disease and incapacity.[23]

The Medicine Wheel concept from Native American culture provides a model for how Indigenous Peoples see themselves:



There is an intellectual self, a spiritual self, an emotional self, and a physical self. Strength and balance in all quadrants of the Medicine Wheel can produce a strong, positive sense of well-being, whereas imbalance in one or more quadrants can cause symptoms of illness.[24]

Absent from any Western definition of health is mention of the need to balance the physical and the spiritual selves that are delineated in the teachings of the Medicine Wheel. Considering the pursuit of health more broadly, and as involving a balance with the spiritual self, helps identify the fundamental needs to be met for First Nations society and culture. Above all, this is the connection to the land and the spiritual source.

3. Structural Barriers

Structural barriers to community engagement need to be overcome to develop effective and sustainable solutions for the North.

Funding, responsibility, and accountability for healthcare services belong to federal, provincial, territorial, and local governments in large and small communities. Navigating a veritable maze of funding sources for numerous programs and services is challenging, particularly when contemplating the introduction of a new service, determining the stakeholders involved in addressing gaps in services, and improving overall community health.

The 2002 Romanow Commission succinctly summarized that the state of Indigenous health requires national attention.[3] Multiple discussions with Indigenous community members and leaders during the Commission's research made it apparent that they felt that they had not benefited from (and in some cases even resented) numerous attempts, through projects and evaluations, which they felt had done little or nothing to improve their health. For Indigenous Peoples, the message was clear: they are willing to explore new ways of doing things, but the new models must show a demonstrable improvement in health. Any program evaluation metrics must incorporate this principle.

*The term "Aboriginal" is used in this report solely for purposes of consistency with original reference sources. The term "Indigenous" is now recognized in Canada as the most appropriate term to describe First Nations, Inuit, and Métis People.

"Our People have been entrenched by the Indian Act for so long that it's a challenge to get them to accept there's another way."

First Nations Community Chief,
Nishnawbe Aski Nation

Federally funded services are administered by the territorial governments for their area of jurisdiction, and the First Nations and Inuit Health Branch of Health Canada has recently become part of the new Ministry of Indigenous Services Canada, which funds healthcare in Indigenous communities where access to provincial services is limited. Among the health facilities provided in this manner, the types and levels of care may vary based on differing degrees of funding. Large centres might be far away, and the local experience of nurses might vary as a result of different applications of the nurses' scope of practice. Against this backdrop, circumstances have combined to make the "nursing station" the central point of care for the Indigenous Peoples in remote and isolated regions considered in this report.

The provision of care varies, and sometimes even fails, because many programs are caught in a jurisdictional divide, with no funding available. For example, discussions with federal and territorial governments regarding ground-based emergency medical services (EMS) using the Inuvik-Tuktoyaktuk Highway, which provides a land connection to the northern community of Tuktoyaktuk, showed a definite lack of clarity regarding jurisdictional responsibility. The Government of the Northwest Territories has allocated few resources for EMS services in the Territory, and local fire and police department response is generally the current form of first responder services.

Jurisdictional issues will be highly relevant in the design and governance of a Northern community paramedicine model of care that seeks collaboration with multiple other providers who themselves have differing accountabilities. Many of these accountabilities and responsibilities are rapidly changing, particularly with the 2017 creation of the new federal Ministry of Indigenous Services Canada. Similarly, the July 2017 tripartite signing of the Charter among Nishnawbe Aski Nation, the Province of Ontario, and Canada will formalize the commencement of the Health System Transformation for NAN.[26]

4. Gaps in Health Services

The complexity of jurisdictional responsibilities continues to be at least a partial source of healthcare gaps, especially in remote and/or isolated communities.[2] The Romanow Report identified "conflicting views about constitutional responsibilities for Aboriginal healthcare."[3] Such conflict has arisen from a historical separation of jurisdiction for care of the Canadian Indigenous population from that of the rest of the population.[3] While efforts have been made to address these issues, according to the Office of the Auditor General (2015), "clear results for First Nations individuals had not yet been achieved."[2]

At the present time, a gap is apparent regarding pre-hospital, pre-nursing station care:[2, 20]

> Nursing stations are typically the first point of contact for accessing clinical and client care services for First Nations individuals living in remote communities.[27]
>
> It appears that pre-hospital care, which is governed by varying organizational and government levels in southern Canada, is generally left to lay persons and the community

"Canadian Indigenous healthcare has been aptly described as a "confusing mix" and a "patchwork of programs and initiatives."
(Romanow, 2002)

> to provide care prior to arriving at the nursing station. Regarding an example of a remote Indigenous community, it is reported that "In Sachigo Lake, ... there are no paramedical or 911 services."[20]

Orkin et al. (2016) are less complimentary in their assessment:

> Without formal paramedicine systems in many remote First Nations communities in Canada, bystanders, friends, and family members shoulder the responsibility to transport severely ill and injured patients to local nursing stations and clinics. The result is a fragile and unpredictable chain of survival. In spite of the occasional heroic success story, these informal systems are an unsafe and unreliable patchwork of community goodwill and clinical near-misses. All are characterized by inadequate training, tragic underfunding, and inexcusable inequity.[8]

The Orkin paper also speaks of the nursing shortage in this environment: "Health Canada already struggles with significant vacancy rates among rewarding and lucrative nursing positions."[8]

A serious gap in services exists in the North as the result of numerous geographical and historical factors, and essential services, particularly emergency response, ground ambulance, and home visitation, are unavailable in most communities.

The allocation of healthcare resources has been based upon historical costs and negotiated funding with communities, and a loose adherence to per-capita formula funding. In view of accelerated change within Indigenous communities, characterized by the recent emergence of chronic disease, it is no surprise that historically based budgets have not kept up with people's needs.[19]

Management of chronic disease is best performed as a patient- and family-centric enterprise in partnership with a healthcare and community support team. This presents additional challenges in remote and/or isolated communities due to transportation logistics and unreliable communications systems that are more time consuming and are occasionally interrupted.

5. Role for Community Paramedicine

A community paramedic is defined as a paramedic who has completed a formal and recognized educational program and has demonstrated competence in the provision of health education, clinical assessment and monitoring, point-of-care diagnostics, and treatment modalities within or beyond the role of traditional emergency care and transport.[9]

> Community paramedicine programs have emerged throughout Canada and internationally in an effort to maximize efficiencies in patient care and resources. These programs provide an innovative model of care that helps to improve access to additional support services for seniors and patients with chronic health and social issues. The development and expansion of these programs allows paramedics to apply their education and skills beyond the traditional role of emergency medical responders. These programs help to support high users of paramedic services to avoid emergency room visits and hospitalizations and

> can potentially delay entry to long-term care. The aim of these programs is to improve patient outcomes and decrease costs in a way that supplements, but does not replace, services delivered by other healthcare providers. These programs can help to provide a more sustainable, integrated, patient-centred system.[11]

British, American, Australian, and Canadian community paramedic models all exhibit very close similarities, and stakeholders have shared information and developments at the International Roundtable on Community Paramedicine (IRCP).[28] Literature from the USA gives a further description of community paramedicine as:

> An emerging field in healthcare where emergency medical technicians (EMTs) and paramedics operate in expanded roles in an effort to connect underutilized resources to underserved populations. Community paramedics are also seen as part of an emerging concept of mobile integrated healthcare which proposes to integrate the larger spectrum of community healthcare and technology: telemedicine, mental health, social services, nurse triage lines, and public safety.[27]

The peer-reviewed literature on community paramedicine pertains primarily to urban and rural environs, and focuses particularly on clients who are heavy users of the healthcare system. Nonetheless, the evidence on this service illustrates a viable model in which an adaptable provider uses an expanded skill set to meet local needs. Ashton et al. (2016) further describe the innovative and unique aspect of such a provider:

> Chronic disease is largely mediated by social determinants of health. Social determinants are those factors affecting people's health as a result of societal and community pressures that positively or negatively affect health. Community paramedicine, in addition to providing primary assessment, treatment, prevention, and management, as well as a healthcare navigation function to address health and social conditions, operates in the realm of the social determinants of health by meeting people where they are, at home.[9]

Reports from Australia indicate that the flexibility and skill set of community paramedics can be leveraged to service remote and isolated communities. O'Meara (2004) speaks of a remote Australian community, Mallacoota, a town with volunteer ambulance attendants, no hospital, and a medical staff that was "stressed."[29] Following a community needs assessment and engagement of local leaders, the community successfully planned and lobbied for a community paramedicine program to meet its needs.

Community engagement and partnerships are seen as essential by Stirling et al. (2007):

> Expanded scope paramedics in rural locations can improve healthcare beyond direct clinical skill by active community engagement that expands the capacity of other community members and strengthens links between services and communities. As health services look to gain maximum efficiency from the health workforce, understanding the intensification of effort that can be gained from practitioner and community coalitions provides important future directions.[30]

The paramedic's role is now expanding both formally and informally to provide primary healthcare, improve emergency response capabilities, and strengthen community healthcare collaborations in rural and remote communities. In terms of ongoing monitoring, remote patient monitoring in homes by community paramedics is very much a promising practice that allows paramedics to manage and serve a larger clientele.[9] In Australia, rural and remote community paramedics have often provided a wider range of services than the traditional metropolitan paramedic; over the last few years, however, these roles are becoming increasingly formalized, and services are closely analyzing how paramedics can be best utilized in these locations. Healthcare roles are also being redesigned internationally, and the new models are becoming widely accepted by both healthcare providers and consumers.[31, 32, 33]

The major theme expressed by the literature on community paramedicine is the importance of service providers' flexibility and adaptability in meeting local community themes by using the core and expanded skill sets of paramedics.[9] It is important to note, in connection with flexibility and adaptability, that education and training programs for community paramedics are becoming more rigorous and formalized.[34] Additionally, the growing literature and the development of research frameworks for community paramedicine are providing an evidentiary basis for these programs.[34] Finally, in what may be a differentiating characteristic for

community paramedicine, this health profession is evolving with a specific awareness of, and is tailored to address, the social determinants of health that lie beyond conventional healthcare.[35]

CAN/CSA-Z1630-17, *Community paramedicine: Framework for program development,* states:

> The overall goal of any program should be to promote the patient's access to the right care, delivered by the right provider, at the right time, resulting in the best outcomes and the most effective and efficient use of resources. The foundation of any program will be dependent on stable and sustainable partnerships among numerous community-based agencies, teams and organizations.[11]

This statement should be central to any consideration of developing programs in Canada's Northern Indigenous remote and isolated communities, a locale where the best of southern intentions have often proven incorrect, unsustainable, and injurious. Community paramedicine programs should provide seamless and integrated care pathways along and within each patient's continuum of care, and function to assist patients in navigating the healthcare system. This involves an understanding that it is the responsibility of all partners to ensure that optimum patient care is provided, and that there is a shared responsibility and accountability for a patient's care.

To date, standard ambulance services have not been sustainable in First Nations and Inuit communities. This observation may be explained by several reasons. Notably, given the small size of most remote and/or isolated communities – usually less than 1,000 people – it is unlikely that the call volume would be adequate to support a full-time first-response paramedic system.

However, the ad hoc community paramedicine programs that have been used in Canada and the Rural Expanded Scope of Practice Paramedic Program in Australia appear perfectly adapted to meet the needs for emergency response, transport, and assistance in effectively and sustainably managing chronic disease.[9]

In the ad hoc model, when the community paramedics are not involved in emergency response or transport, they are busy with regular home monitoring of clients with chronic disease. The current prevalence of chronic disease cannot be understated. In one community that was engaged in this project, the percentage of people with chronic disease needing home care and monitoring was estimated to be 10%. This is thought to be a typical number. It is also important to note that supporting clients with chronic disease is time- and resource-intensive; optimally it takes place largely in the client's home, where a more holistic view can be had, and plans can be made by providers and community members with the patient at the centre. Community paramedicine offers opportunities to deliver this care.

Analysis: Health Service Gaps

A high-level needs assessment performed for this report identified two major health service gaps relevant to the practice of community paramedicine:

1. pre-nursing station/hospital care and safe transport; and
2. home-based chronic disease management.

Air ambulance transfers are provided to transport clients from remote or isolated communities to urban centres when necessary, but there are no local ground ambulance services in the vast majority of Northern Indigenous communities. First-responder service is a matter of goodwill, and is often a matter of community resources contributed by people without formal training. Transport to airlift from the nursing station is usually made by any method determined to be most expedient, be it by snowmobile or a community or nursing station van. In such situations, trained and skilled ground ambulance paramedics would be certain to provide a higher level of care, and a greater potential to achieve improved health outcomes in virtually any situation, including the "golden hour" for treatment following a traumatic injury and responses to acute medical emergencies.

Healthcare resources in the North are increasingly required to address the burden of chronic disease, and as noted, morbidity and mortality rates are climbing steeply in Northern Indigenous communities. Home-based care is preferred as the solution to this issue, along with addressing the social determinants of health.

"We don't just want better ways to manage diabetes; we want to eradicate diabetes among our People."

First Nations Community Chief,
Nishnawbe Aski Nation

Community paramedicine has already demonstrated the potential to extend high-quality, home-based, collaborative care beyond urban centres and concentrated populations, and could offer significant benefits to Canada's remote and isolated communities.

The current and emerging literature provide new emphasis for the three essential elements of a framework for community paramedicine set out in CAN/CSA-Z1630-17:

The right care

Care must be of a nature to satisfy and complement First Nations and Inuit notions of health. Community paramedicine has the advantage of providing healthcare service directly within the environment of the social determinants of health, in the community and home. Given the adaptability of community paramedicine and its constant engagement with locals, individual providers will come to understand the needs and beliefs of Indigenous Peoples through didactic and experiential learning, and deliver culturally safe care.

The right provider

The depth of intergenerational trauma among Indigenous communities and Peoples needs to be acknowledged in developing effective and sustainable health services in Canada's North. Community paramedics become an embedded part of the community, and their role in the community must be informed by the community members themselves. In order to ensure the right provider, a consultative approach must be undertaken with communities. Engagement processes should involve dialogue regarding the right provider and be guided by Indigenous Peoples themselves.

The best approach might be to frame the introduction of the service in terms of an expanding role and scope of practice for community paramedics. The current literature and the nature of Indigenous healthcare as a separate sector in Canada both suggest that an open-ended program is required: its scope and approach must anticipate expanding in order to meet developing needs and to fit with the environment.[19] The evidence surveyed in preparing this report suggests, however, that community paramedicine is capable of meeting such requirements and offering "the right provider."

The right time

Community paramedicine addresses a major health gap in pre-hospital care. Additionally, while paramedics might be headquartered within local facilities, such as nursing stations, their culture and practice are far more external-facing. Accordingly, emergent care, mentoring, and teaching emergent care would be foundational elements of their practice in the community and surrounding areas. Additionally, "the right time" preferably has to do with the preventive and health promotion aspects of care; community paramedics are well trained and educated in this area.

Conclusions

The challenges of developing and implementing a novel, innovative service in the complex environment of Canada's North, where no model of paramedicine currently exists, are significant. Still, given the absence of community paramedics, let alone first-responder paramedics in Northern and Indigenous communities, there is an urgent need to develop such a service for Northern communities, in order to tackle the numerous health and healthcare issues identified in our research.

Addressing the healthcare needs and service gaps in remote and/or isolated and Indigenous communities across Canada is no small undertaking and is fraught with complexities. This report contends, however, that community paramedicine can address the two major service gaps that have been identified, and that if it is developed from a pan-Canadian Northern perspective, it will meet needs on the ground in a sustainable manner.

A process of community engagement is essential in determining the fundamental concepts of health, health needs, and health services that will inform community paramedic services. However, engaging members within the communities and mobilizing change are seen as challenging by First Nations community leaders themselves. Using stakeholder consultation and engagement to understand Northern health needs is not easy, given differing cultural beliefs and various barriers to authentic community engagement. Once the needs are determined, it will likely be a daunting task to alter the current health service resource profile, due to significant uncertainty regarding jurisdictional responsibilities. Despite the challenges, programs for health and healthcare services will work best if they are developed in close collaboration with Indigenous Peoples, who wish to define their own needs rather than having them defined for them.

As demonstrated in our research, there appears to be a ready fit between the serious fundamental health service needs of Northern communities and a community paramedicine model that can be adapted for their needs and, in some areas, built from the ground up where no paramedic service currently exists. This needs to be further developed and tested through an implementation/pilot project, to share information across jurisdictions and regions, and to develop a standardized framework for implementation, ongoing evaluation, and continuous refinement of effective community paramedicine services.

An implementation pilot project aimed at field testing the standards approach is likely to yield far greater returns, in terms of translation into action across this vast region of Canada, than a community paramedicine pilot project would achieve alone. Our research has demonstrated that most remote and isolated communities do not have basic professional first-response services, and therefore a model guided by a standard is welcomed. CAN/CSA-Z1630-17 can be used as a valuable resource and starting point for co-developing a service to meet the urgent health needs and address the health service gaps identified by our research. Its application in Northern Indigenous communities will require further local consultation and planning as part of a pre-implementation phase, to obtain inputs on the requisite elements of adaptation to local culture, culturally safe practice, and specific needs. It is recommended that this standards-based initiative be addressed through further stakeholder engagement and consultation at all levels of government. A by-product of this process may be guidelines for such engagement in a highly complex environment where many needs have been identified to close the health status gap.

Continuing discussions and dialogue have been maintained since the close of this research project, and continue to be highly constructive in developing a standards-based approach that may help address health issues in the North.

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Appendix A

PERSONS & ORGANIZATIONS CONSULTED

Nishnawbe Aski Nation Health Transformation Executive Team

Health Directors of Nishnawbe Aski Nation

Chiefs of Nishnawbe Aski Nation

Office of the Assistant Deputy Minister, Indigenous Services Canada

Department of Health, Yukon

Department of Health and Social Services, Northwest Territories

Department of Public Safety, Northwest Territories

Office of the Assistant Deputy Minister (Operations), Nunavut

Mayor and Council, Tuktoyaktuk

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