



WILL IT BE THERE?

A REPORT ON HELICOPTER EMERGENCY MEDICAL SERVICES IN BC



By The BC Forest Safety Ombudsman, Roger Harris, February 1, 2017

ABOUT THE FOREST SAFETY OMBUDSMAN

The Office of the Forest Safety Ombudsman was established in 2006 by the BC Forest Safety Council, designed to enhance safety in the BC Forest Sector and support the efforts of the BC Forest Safety Council.

The Forest Safety Ombudsman is appointed by the forest industry through the BC Forest Safety Council, and has a mandate to:

- Receive, investigate, provide comment or make recommendations about alleged acts, omissions, and improprieties that may affect safety in the sector.
- Investigate issues about policies, practices, and procedures within BC's forest sector.
- Act on his or her own initiative to identify and make recommendations to resolve systemic problems within the forest sector.

ABOUT THE BC FOREST SAFETY COUNCIL

The **BC Forest Safety Council (BCFSC)** is the health and safety association (HSA) for forest harvesting, sawmills, and pellet manufacturing in BC.

The **BCFSC** works with forest sector employers, workers, unions, contractors and provincial government agencies to support industry in implementing changes necessary to eliminate fatalities, serious injuries and establish a safety culture in the forest sector.

The **BCFSC** was created in September 2004 with a mandate to improve the health and safety of forest workers. It is funded by industry through WorkSafeBC assessments.

More information on the **BCFSC** and the Forest Safety Ombudsman is available at www.bcforestsafesafe.org



EXECUTIVE SUMMARY

Nearly three-quarters of all people who die of trauma-related conditions in northern BC do so before they can be brought to a hospital ~ In northwestern BC, this number is 82%, compared with 12% in Metro Vancouver.

If you live or work near an urban centre in British Columbia, you will likely expect that if you suffer an injury in an accident, you will be transported to a medical facility in less than an hour. If you live or work in rural BC, there are no such assurances.

Consider what happened to a faller working in a remote part of Haida Gwaii in 2014: it took in excess of five hours after his leg was crushed by a fallen tree to transport him to a hospital in Queen Charlotte City, a distance that would have taken about 20 minutes by helicopter. It took another six hours to get him to a hospital in Vancouver. And not only did his journey take a total of 11 hours, but it included two separate boat trips, a stint riding in a mechanic's vehicle over an unserviced resource road, and an hour of waiting before being told that a helicopter was not being sent.

By the time the faller finally received appropriate medical attention, he had to have his leg amputated below the knee, a result that might have been avoided had he been transported to a hospital in a timely manner. A review by WorkSafeBC of the transportation of the injured Faller on Haida Gwaii indicated that nothing went wrong and the appropriate means of transporting the worker were utilized.

~ There are other cases of workers and residents in rural parts of the Province having to wait unacceptable amounts of time to receive medical treatment. In one situation, it took emergency response teams 24 hours to transport a stroke victim from a location three hours north of Fort Nelson to a critical care facility in Dawson Creek, a trip that would have taken less than an hour by helicopter. In another case, a worker waited over 12 hours at the site of his accident north of Prince George before he was finally rescued and transported to a hospital; an incident still under review by WorkSafeBC.

3 Are disproportionate response times justified?

A number of people interviewed with the **BC Ambulance Service (BCAS)** and **BC Emergency Health Services (BCEHS)** for this report suggested that if you lived or worked in remote parts of the province, you had “made a choice” and could not expect to have the same level of service that you would receive in a larger urban centre. It is not surprising that rural services lag those in the urban centres when those responsible for providing a provincial service have already conceded this point.

Although it is beyond the scope of this report to determine whether this is a reasonable assertion to make in terms of the various levels of provincial services (such as fire, police, roads, etc.), the Office of the Forest Safety Ombudsman is of the view that the location of an injured forestry worker – or indeed, a resident of the Province – should not be a determinant of whether or not that worker receives adequate emergency services in the event of an accident.

Arguably, it seems fair that resource workers and their families who are based in rural parts of British Columbia and generate a substantial portion of the province's wealth should expect to have equal access to adequate emergency response.

The Oxford Dictionary defines an emergency as “a serious, unexpected, and often dangerous situation requiring immediate action”. As British Columbians, people have come to expect that emergency response organizations are mandated to provide support in a reasonable amount of time: if we need police, they will be there; if we need a fire truck, one will be dispatched; if we need an ambulance, one will be available that can transport us to the nearest medical facility within a critical time frame that ensures the best medical outcome.

While there may be policy and regulatory complexities to overcome, it is clear that



Is it possible to respond quickly to medical emergencies in all parts of the Province?

there are no technical or infrastructure barriers preventing BC from mandating that all workers and residents in the Province have access to emergency response times that do not involve hours of arduous travel to reach a medical facility in the unfortunate event of an accident.

The decision by government not to provide those services is simply a choice.

Indeed, other jurisdictions, with a similar geography to BC, have been able to mandate emergency response times that are far superior to those in this Province. Washington State, for example, has legislation that ensures that 99% of their population (not just those on work sites) are within a 60-minute response time to a Level 3 trauma centre. Alaska – again with a similar geography to BC and with a population of roughly 700,000 people – has 31 dedicated helicopters in the State, and this ensures that every resident is within 60 minutes of a trauma centre.

Why This Topic?

The findings of this report clearly indicate that there are serious gaps in the provision of emergency medical transportation services to people living and working in rural parts of the Province. This gap threatens the safety of forestry workers – as well as residents – who seemingly have little or no guarantee that they will have access to timely medical transportation in the event of an emergency.

This review has been undertaken as part of the mandate of the BC Forest Safety Ombudsman, specifically as part of the Office’s responsibility to “identify and make recommendations to resolve systemic problems within the forest sector”.

This report initially focused on the effectiveness of the Helicopter Emergency Services (HEMS) strictly from a forest worker perspective. However, because the emergency medical transportation system is so inter-related, it was difficult to entirely separate out issues also affecting the general public. Therefore, some of the observations and recommendations contained in this report apply not only to the forestry sector but also to all residents of the province.

As part of the research for this report, the Ombudsman’s Office spoke to a number of organizations and groups, including: rural community leaders, economic development organizations, **WorkSafeBC, BCAS, BCEHS, Western Silvicultural Contractors’ Association, Provincial Ministries, Transport Canada**, helicopter service providers and individuals with an interest in this topic. Additionally, numerous reports, audits, and articles on the topic were considered (See Appendix 1).

Acknowledgements: *The time that our Office has taken to review HEMS has been far longer than we would normally have liked. Much of this has been due to the extensive technical information reviewed as well as the significant amount of interest and contributions our office received from individuals, organizations, industry, government ministries and agencies.*

We would like to express our appreciation to all of those who contributed to this report. No matter where individuals positioned themselves on issues, everyone we interviewed shared a desire to see patient services improved.

¹ Squires, Roberta. 2014.



Organization of Report

THE REPORT HAS BEEN ORGANIZED INTO FOUR PARTS:

Part 1 Introduction & Complexities. Provides an introduction to HEMS and outlines some of the complexities related to the provision of emergency medical services. These include: the number of organizations involved in emergency response, the role of employers, extraction and transportation, equipment, and the use of private helicopter providers.

Part 2 Rural Urban Divide. Explores the discrepancies that exist between rural and urban areas of the Province in emergency medical services.

Part 3 Observations & Considerations.

Part 4 Recommendations.

1. Introduction & Complexities

HELICOPTER EMERGENCY MEDICAL SERVICES (HEMS) is the universal term that refers to an air ambulance service, which in British Columbia is provided by the BC Ambulance Service (BCAS). The BCAS, established in 1974, is the sole provincial ambulance service in BC and provides ambulatory services both on the ground and in the air. In BC, the Emergency Health Services Act provides direction to the Provincial Health Services Authority, which governs specialized entities such as the BC Cancer Agency, BC Centre for Disease Control, and BC Emergency Health Services. BCEHS oversees the BCAS, which is the largest provider of emergency health care in Canada, and one of the largest in North America.

In BC, HEMS is utilized primarily to transport critically ill patients between medical facilities. It is also used for responding to accidents where medical transport via air, versus ground, is required.

The provision of HEMS in BC is a complex topic that is shaped by a number of factors. These include:

NUMBER OF ORGANIZATIONS:

The list of groups involved in some aspect of emergency response in BC includes fire departments, Emergency Management BC, BCEHS, Search and Rescue organizations, RCMP, BCAS, and employer organized response teams. Each of these groups is uniquely organized and funded and may be local, provincial, or national in scope. Some are governed by collective agreements, while others are staffed by volunteers or contractors and the role of each organization in emergency response varies depending on the situation and their respective mandates. This can result in a number of organizations attending a single event, each providing services that in some cases may complement each other, but in others provides significant overlaps. In many situations First Responders and Ambulance attendants will respond to an accident scene but only one has the legislated authority to transport a patient to a hospital. As many First Response organizations are local, they may reach the accident scene first, but they do not have the legal ability to transport accident victims to a hospital. First Responders are a well-trained local resource that with some additional training and the removal of legislative barriers could be a valuable asset for BCAS to call upon.



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ROLE OF EMPLOYERS:

For potential job-related accidents, WorkSafeBC regulations require that employers must have an emergency transportation plan for their employees in the event of an accident. Typically, this means that if a worker is injured on a job-site – such as a faller in the woods – then the employer has the responsibility of transporting that worker to a place where he or she can then be transferred to **BCAS** personnel for transportation to the nearest medical facility. **BCAS** has strict safety requirements for their staff, and do not allow their own workers to retrieve a person except where easily accessible – roadside or helicopter pad/air strip.

While WorkSafeBC regulations provide the requirement, they are silent on how those obligations under the regulations can be achieved. For small contractors, this is no easy task as it requires relationships with a variety of helicopter service providers and possibly other industries to put in place a system/process that ensures there will be HEMS available to them for rescue and transportation in event of an accident.

One example of a collective approach is the **Coast Harvesting Advisory Group (CHAG)**, a task force established in 2012 by coastal licensees, timberland owners, contractors (**Truck Loggers Association**) and the United Steelworkers, who have worked to create partnerships between service providers and industry to ensure timely provision of HEMS for their workers. **CHAG** has made some progress on the issue, but while the regional, cross-industry and government approach may work for them, the model may not transfer easily to other regions, as it requires an adequate level of industrial activity, an available/accessible air transportation infrastructure, and an organization with the ability, responsibility and capacity to take the initiative of developing those partnerships.

EXTRACTION & TRANSPORTATION:

Forestry workers, and others in remote and rural parts of the Province, often work in areas that are not easily accessible. Because **BCAS** crews are not mandated or trained for extraction, this means that it is possible that an injured worker could require transportation twice – once to move from the site of an accident, and a second time to move to a medical facility. In BC, the first trip would be undertaken by a search and rescue organization (unless the employer is able to move the worker) and the second trip would be undertaken by **BCAS**, either through a ground ambulance or possibly through an air ambulance.

In some situations this could result in two helicopters attending the same site – one for extraction and the other for transportation. This is unnecessary, inefficient, and cost prohibitive when a single properly equipped helicopter is capable of performing both functions. Similarly, rescuing a worker by helicopter only to transfer him or her to a land based ambulance seems to defy logic, when presumably the helicopter could just keep flying and reach a medical facility much faster.

Certainly, if a helicopter and crew were properly equipped and trained, then it could perform both functions, which would save time, money, and likely result in a better outcome for the injured worker.

² www.bcehs.ca/our-services/operating-entities/bc-ambulance-service.



EQUIPMENT:

Under this heading equipment refers to both the equipment and method of extracting accident victims to either the roadside or directly to a medical facility and the type of helicopter used for extraction/transportation.

LONGLINE/HOISTING: For rescue operators, extracting an injured person from a site with a helicopter is achieved through longlining or hoisting. A longline is a two phased process that requires a person to be suspended on a cable outside of a helicopter and moved to a site where they would be transferred to a ground-based (possibly air) ambulance for transport to a medical facility. Hoisting, on the other hand is a single-phase process that allows a person to be lifted from the accident site directly inside the helicopter for transport to a medical facility.

Longlining

In BC, longlining is the accepted practice used by Search and Rescue organizations. It is seen as a reliable, proven technology with lower equipment costs, and large numbers of people are trained in its use. It also supports the current BCAS model in which land-based units are typically dispatched for medical transportation once someone is rescued.

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Hoisting

Hoisting, while less common in BC – other than by the **Royal Canadian Air Force's (RCAF)** search and rescue helicopter out of Comox on Vancouver Island – has widespread use internationally. It is seen as safer, provides greater flexibility, training is more focused and targeted (helicopter crews only), and most important, once a patient is brought into the helicopter they can be flown directly to a medical facility, significantly reducing travel time and potentially improving the health outcomes. The opposition to shifting to a more widespread use of hoisting appears to be predominately fiscal:

- i. Hoisting would require the use of larger more expensive helicopters whose range may be limited due to the increased weight associated with the hoisting equipment itself. The effect of this could be to increase the cost per helicopter as well as increasing the total number of helicopters required to service the Province.
- ii. Longline equipment is less expensive, portable and SAR organizations are trained in its use.

Both longline and hoisting methods have pros and cons, and determining which one to use is predicated on a variety of factors. However, many people and organizations both outside and inside government interviewed for this report advocated for an increased use of hoisting. If hoisting became a more common practice across government, it would benefit other government service activities where crews need to be deployed or extracted into remote or difficult terrains.

Neighbouring jurisdictions with similar terrain to BC – Alberta, Washington State, and Alaska – use hoisting as their primary method for both extraction and medical transportation.



“...hoisting may significantly improve patient outcomes by reducing the time for patients to receive medical attention.”

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HELICOPTER:

The greatest number of submissions we received were concerning the type and role of helicopters in extraction and medical transportation. Currently **BCAS** has a contract helicopter fleet consisting of Air Ambulance Sikorsky S76 helicopters. “These aircraft are primarily used in patient transfers within a 100-mile radius of its Richmond or Prince Rupert bases to or from hospitals, airports and/or on-scene calls”³. While the Sikorsky S76 is adequate for the transportation of patients, some important questions were raised regarding its use in the more rural and remote regions of the province. As an example, most helicopters in the north are equipped with skids rather than wheels to enable access to more varied terrain, something that is viewed as critical for operating in remote regions.

The case for which is the appropriate helicopter for the job in the end will be defined by the role it is being asked to perform. The concept of a single type of helicopter serving a single function may be the easiest for the service deliverer but may not be in the best interest of the patient. With the various conditions and terrain found in the Province, the type of equipment required to deliver HEM services may need to be as varied in order to adequately service the region in which it operates.

Combining aspects of rescue/extraction with medical transportation and making more widespread use of hoisting may significantly improve patient outcomes by reducing the time for patients to receive medical attention.

A major barrier for **BCAS** having their employees participate in extraction is “employee safety” as their personnel are not trained or equipped to operate off-road, while other groups like Search and Rescue volunteers are qualified to undertake that work and may also be trained as first responders. Utilizing hoisting provides the ability to deploy **BCAS** or First Responders directly to the accident site to prepare patients for transfer, eliminating the need for **BCAS** personnel to have to navigate off-road to reach accident sites. A large group of skilled and trained first responders already exist in Fire Departments and Search and Rescue groups across the province. Enhancing their role to allow them to transport patients when needed would create greater flexibility in the system by making a greater number of people available to **BCAS**.

If hoisting were to be common practice in more locations, larger helicopters would be required. The additional weight attached to hoisting equipment could have an effect on the operating range and both of these conditions would require additional equipment to be able to service the entire Province. All of this could increase the cost to deliver helicopter emergency medical services and this seems to be the more substantive barrier to adopting this practice.

USE OF PRIVATE HELICOPTERS:

The **BCAS** may contract outside private helicopter companies to support their air assets when necessary, in order to ensure there are adequate resources available for emergency medical transportation. However, the requirements that **BCAS** has laid out for private contractors can exceed the requirements that **BCAS** sets for its own helicopters. This renders the private contractor service more costly and seems designed to limit the option of contracting services outside of **BCAS**. This approach could prevent the Province from developing a comprehensive network of available private air resources to support **BCAS** assets.



“that in rural or remote regions of the Province, there is little confidence that a helicopter will be dispatched if you need transportation from a rural or remote accident site.”

2. Rural Urban Divide

The availability and level of emergency medical services in BC is distinctly split down urban and rural lines. Quite simply, the closer to a larger urban centre you live or work, the greater the options available to you in terms of rescue, transportation and medical facilities. The more rural your location, the fewer the options and the longer the response times. **BCAS** has concentrated its assets and full time trained personnel within the larger urban centres where call volumes are high; with fewer air assets in the north, **BCAS** rely mainly on a dedicated, volunteer, part-time workforce, predominantly utilizing a land-based ambulance response to respond to emergencies.

While it may be accepted that rural communities cannot support the same level of medical facilities as those found in large urban centres, it is not acceptable that they should also lack an equal level of emergency medical transportation services. In fact, as the distance to the nearest medical facility increases, access to HEMS in rural and remote communities should be enhanced, not reduced.

Equally, the more remote the region, the broader the criteria should be for deciding when HEMS is dispatched over a land-based unit. While the current protocols for dispatch seem to work in more populated, urban areas with medical facilities close by; in remote regions where distances are greater, weather, communications and infrastructure less predictable, it may make sense to add other factors – such as comfort of the patient, time, location, proximity to medical facilities – on an equal footing with severity into the protocol mix when considering whether to dispatch air or land-based transportation to an accident site.

It is clear from discussions with organizations and individuals – as well from a review of various reports, audits and articles that have been written over the years – that in rural or remote regions of the Province, there is little confidence that a helicopter will be dispatched if you need transportation from a rural or remote accident site. This lack of confidence in emergency air response is coupled with fewer medical facilities in rural areas, which has significant impacts on the quality of life for residents in those communities.

It is worth noting that in many cases, the highest-risk occupations are disproportionately located in remote or rural regions where more accidents are likely to occur. Aside from issues of equity and safety, the rural-urban divide is problematic in a Province that generates a substantial amount of its wealth from rural and remote regions and that seeks to attract skilled workers to those regions. Indeed, health care – or lack of it – plays a critical role in attracting investment and people into rural communities.

TWO TIERED PROCESS:

Emergency response in BC is implemented through a two-tiered approach. The first tier is comprised of initial ground-based responders and the secondary tier is supported by air-based crews. **BCAS** also has an Autolaunch program where in some scenarios both a land and air based response is dispatched, but this service is not available across the entire Province.

The tier one response is the default approach utilized by **BCAS**, and an air-based response is employed only in certain circumstances depending on a variety of factors that are captured in **BCAS** dispatch protocols.



There are some significant advantages to incorporating the use of hoisting over the current practice of longlining.”

Determining when to dispatch air resources is likely affected by budgetary restraints and the fact that remote and rural regions represent ‘lower call volumes’ make it difficult to justify the allocation of resources to those areas. The counter arguments to these rationale are two-fold: first, when all factors are considered, HEMS may in fact be more cost effective than ambulances in the total overall cost to the health care system when you factor in patient outcomes to the equation ; and second, if you apply the logic of using low call volumes as a determinant of allocating emergency medical resources to an area, then conceivably a community with little or no crime or fire could find themselves without those services as well. It simply is not a reasonable argument to make.

3. Observations & Considerations

Based on our review of materials and interviews with a diverse number of organizations, individuals, and government agencies, the following conclusions can be drawn about emergency medical transportation in British Columbia. While the following recommendations speak specifically to the current Legislation, the Observations & Considerations could, if adopted, improve response and travel times for accident victims and significantly improve their chances for a positive medical outcome.

A. Faster care results in less overall health care costs: It is an accepted fact the quicker an accident victim can access medical care, the better the medical outcomes, the shorter the period of time for rehabilitation resulting in an overall lower cost to the health care system. As emergency response is one component of the cost, investing more in ensuring patients receive timelier treatment, could result in overall savings to the cost of moving a patient through the system.

B. There are no technical, or infrastructure barriers to the delivery of helicopter emergency medical services within that critical first hour to each and every resident of BC, regardless of where they live. The decision by government not to provide those services is a choice.

C. There is an urban-rural divide in emergency medical services. If you live in rural BC you will not receive the same level of medical emergency response as someone living in a larger urban centre, an observation made by individuals with both the BCAS and BCEHS. Emergency equipment and personnel is concentrated in larger urban centres, with fewer air assets in the north relying mainly on a dedicated but volunteer and part-time workforce.

Rural communities currently are impacted twice in reduced access to medical care and reduced access to emergency medical transportation. In remote communities, as the distance to the nearest medical facility increases, the access to HEMS should be enhanced not reduced.

D. Providing emergency medical transportation is a government responsibility: While there is a role for employers in ensuring there are adequate emergency plans in place, true confidence in the ability to access HEMS for industries or the public can only come from having a publicly funded dedicated resource available within a region.

³ Squires, Roberta. 2014.



“If hoisting were to be adopted, the skills sets of the BCAS personnel could also change.”

Similarly, a network of private HEMS assets to support BCAS core services would help secure medical transportation to all areas of the Province. Policies that may inadvertently be preventing helicopter companies from providing services to BCAS need to be reviewed.

E. The protocols for dispatching ground or air emergency response may not work as well in rural BC as it does in urban centres. The more remote the region, the broader the criteria should be for deciding when HEMS is dispatched over a land-based unit. Factors such as distance to medical facilities, time and comfort of the patient should be included in the decision of whether to dispatch a helicopter or ground ambulance.

An individual with a broken leg in Vancouver versus someone with the same condition in Fort Laird or Bob Quinn are two entirely different scenarios from a patient comfort and medical outcome perspective. In one case, a land-based ambulance trip is measured in minutes, the other in hours over vastly inferior road and weather conditions.

4. Recommendations

1. BC consider mandating – through legislation or policy – guaranteed timelines for the public to be able to access Trauma 3 level care, similar to other jurisdictions.

a. Establishing guaranteed timelines will direct BCAS to put in place the necessary assets, protocols and procedures that will ensure a patient focused service delivery model.

2. BC undertake a review of the effectiveness of the legislation as it pertains to the provincial emergency ambulance service. The BCAS was originally established in 1974. A lot has changed since then.

a. The Emergency Health Services Act puts significant limitations on the ability to access and utilize other potential service providers. Section 5.2 however, does provide the minister with flexibility. Expanding the scope of practice and the role of First Responders in the transportation of accident victims to medical facilities would allow them to be better utilized. A patient focused system needs more flexibility, not less.

b. Health services in BC have been regionalized with the establishment of five Regional Health Authorities, the First Nations Health Authority, and the Provincial Health Authority. Like policing and fire protection, there may be value to administering some aspects of the services from a local and regional perspective – services can be tailored to meet the dynamics of the communities and region being served, and geography can be considered when designing transportation systems, protocols and allocating resources. The value of having BCAS set provincial standards could be maintained while transferring certain procedures and processes to more regionalized bodies.

³ “The corporation must comply with any general or special direction made by order of the minister with respect to the exercise of the powers and the performance of the duties of the corporation.” Government of British Columbia, Emergency Health Services Act (RSBC 1996).



“ Factors such as distance to medical facilities, time and comfort of the patient should be included in the decision of whether to dispatch a helicopter or ground ambulance.”

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3. EMBC and BCAS expand the use of hoisting in the Province of BC.

- a. There are some significant advantages to incorporating the use of hoisting over the current practice of longlining. The answer may not be in utilizing one method over the other but rests with incorporating both methods and developing a plan that uses the right technology in the right place at the right time with the flexibility to evolve over time and respond to incidents as required.
- b. If hoisting were to be adopted, the skills sets of BCAS personnel could expand with additional training, incorporating the deployment of medical crews directly to the accident site to prepare a patient for extraction and transport to a hospital without additional transfers from helicopter to ground ambulance or another helicopter.



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