

Planning for a Rapid-Response Medical Helicopter Service in North Central BC



Prepared for Northern BC H.E.R.O.S.

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Introduction

BC Northern H.E.R.O.S. (H.E.R.O.S.) has identified the need for a dedicated, rapid-response helicopter emergency medical system (HEMS) in North Central-Interior British Columbia. Such a system stands to have a critical impact in reducing response times for transport in medical emergencies that occur in the rural and remote areas of this region. It will also ultimately help to improve rescue and survival rates of those critically injured, sick or in distress.

In October 2015, H.E.R.O.S. approached the Community Development Institute (CDI) at UNBC to conduct an in-depth examination of existing helicopter rescue operations and different models of HEMS from across Canada. The objective of the study was to develop an understanding of different existing service and funding models, how they evolved, key success factors and lessons learned.

This information and the past experiences of other jurisdictions provide valuable insights into the types of services that may or may not be viable in the region in and around Prince George. The research sheds light on the types of challenges that HEMS encounter and approaches to overcoming the barriers and sustaining the service over time. As such, the findings will inform an action plan to guide H.E.R.O.S. in moving forward with and achieving their goal to secure HEMS in North Central-Interior BC.

This report provides some background on the provision of HEMS in British Columbia. It details the methodology used to conduct the research and contains summary descriptions of each of the systems, the histories and lessons learned from each of the interviews. A discussion of recurrent themes and some observations from the CDI Project Team conclude the report.

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Community Development Institute at UNBC

Methodology

HEMS in Canada differ by province. There is also variation in the types of services provided between regions within British Columbia. This study therefore included several BC providers, as well as services in Alberta, Manitoba and Ontario. It also sought information from BC Emergency Health Services, which is the department of the provincial government that oversees emergency ambulatory services across BC.

The initial list of HEMS providers, which was developed in collaboration with BC Northern H.E.R.O.S., was comprised of:

- North Shore Rescue Team – North and West Vancouver, BC
- ORNGE - Ontario
- Phoenix Heli-Flight/ Local H.E.R.O. Foundation – Fort McMurray
- Shock Trauma Air Rescue Society (STARS) – Grande Prairie, Edmonton, Calgary, Saskatoon, Regina and Winnipeg
- Summit Helicopters - Kamloops
- Wildcat Helicopters/BC Air Rescue – BC Interior (Kelowna)

These systems share the fact that they all have round-the-clock access to a helicopter to provide rescue emergency response services to rural and remote regions. At the same time, they represent a mix of private, public and partnership approaches and funding models. All but one of these providers (Summit Helicopters) agreed to participate in the study.

Information on each of the systems listed above was obtained through an in-depth interview. These interviews were guided by the same set of questions, developed in advance with input from the client. They probed different aspects of the governance and funding structures of each of the systems, how they were established, how the need for the service was originally identified and demonstrated, lessons learned since their establishment and key factors contributing to their success and sustainability. Supplementary details were obtained from program websites.

BC Emergency Services was also interviewed as part of the study. As this entity of the Province is not a provider of HEMS per se, questions were adapted for this interview. Appropriate to the role of BC Emergency Services, questions focused more on the context of air-based medical emergency services in BC, how the need for such services is determined, and the model by which existing HEMS are organized and funded.

Summary of Findings

ORNGE

ORNGE is a federal not-for-profit organization, funded almost exclusively by the Ontario government. It provides air ambulance service and medical transport to transplant patients and people across Ontario who are critically ill or injured. ORNGE's mission is transporting patients safely to the health care that they need.

Serving a population of more than 13 million people in a region of over one million square kilometers, ORNGE has the largest air ambulance and critical care land ambulance fleet in Canada. The organization has a staff of approximately

650, including 140 pilots, 110 critical care paramedics and 40 advanced care paramedics, 45 air maintenance engineers and 80 communications officers. They perform more than 18,000 patient transports per year, 98% of which are inter-facility (i.e. picking up, dropping off and transferring patients between hospitals).

ORNGE's fleet consists of ten AW139 helicopters, which they own (they are also in the process of leasing another), eight PC12 single engine fixed wing aircraft and two Sikorsky helicopters, which are being phased out. In addition, they rely on five contract charter carriers to do part of their work. Contractors have dedicated fixed wing



SNAPSHOT SUMMARY

Organizational Structure: Federal, not-for-profit

Governance: Board of Directors that reports to the Ontario Minister of Health

Geographic Scope: Province of Ontario

Funding: Government-funded

Staff: ~650 total, including 140 pilots, 150 paramedics, 45 engineers, 80 communications officers

Fleet: 10 AW139 helicopters; 2 Sikorsky helicopters, 8 PC12 fixed wing plus charterer carriers

Missions per Year: 18,000 patient transports – 98% inter-facility

aircraft, meaning that these are available to ORNGE, but not necessarily in ambulance livery. Contracted services are mostly in the north and mainly for non-urgent services.

The CEO of ORNGE reports directly to the Minister of Health; and the geographical and operational scope of ORNGE's services, as well as levels of care provided, are defined by their Performance Agreement with the Ontario Ministry of Health. Search and rescue work, including extrications, are officially outside of their mandate.

History & Evolution

ORNGE was established in 2005. Prior to its existence, air ambulance services in Ontario were provided by two private commercial helicopter companies and several local agencies. The Ontario Government had oversight, but levels of care varied widely across the province. Service to some regions of the province, particularly areas in the southwest where there was developed land but no easy road access to trauma centers, was slow or lacking. In response, the previous (original) CEO of ORNGE had the vision to amalgamate services and establish a single air ambulance service organization for Ontario. He eventually succeeded with ORNGE.

Under the leadership of this original CEO, the organization underwent some significant upheaval and became the subject of a highly public and political financial scandal. In 2011, the CEO was fired and government took steps to terminate the company.

ORNGE was re-launched in 2012 with a new CEO and a considerably more prescriptive Performance Agreement. A fresh Board of Directors was also appointed.

The organization now operates by a much stricter set of controls and greater oversight by the Minister. While the organization has charitable status, it does not use it due to residual reputational damage from the controversy. Criminal investigation of the former CEO is still underway. This incident undoubtedly induced greater scrutiny of air ambulance services across the country and stronger protocols around the use of this extremely expensive type of care.

Challenges

Notwithstanding the fact that it is almost entirely funded by government and not required to do any fundraising, ORNGE's primary ongoing challenge is funding. Costs are rising by approximately 6% per year and the fleet is in need of continual improvements. Air-based services are also highly regulated. However, with budgets for safety and maintenance essentially predetermined, there are very few avenues by which to reduce costs.

Another key challenge ORNGE faces is the high risk environment in which they operate. In addition to the safety issues associated with air-based medical services, which translate into high insurance costs, ORNGE's risk register identifies environmental risk and reputation risks.

Maintaining the types of specialized, highly trained employees that ORNGE requires presents another challenge. Staffing with certainty – within a unionized environment – can be difficult. They also face challenges related to staff

attrition. They find that there is a relatively high turnover of pilots, in particular, and the costs of training medevac pilots is in the range of \$100,000.

KEYS TO SUCCESS

- *Obtaining funding which is both satisfactory and sufficient.*
- *Developing novel approaches to building efficiencies, i.e. through data integration and the integration of systems with other players: clinicians for example.*
- *Establishing a good supply chain for aircraft, parts and equipment.*
- *Relationships with colleges and universities to recruit to the field of emergency medicine - and to train paramedics and pilots.*

STARS

STARS is a not-for-profit, community based, critical care response system for rural and remote health. Its headquarters are in Alberta; however, the organization has six bases and provides services in Saskatchewan and Manitoba, as well as some areas of

British Columbia, specifically Dawson Creek, Fort St. John, Cranbrook and Fernie.

STARS' focus and vision is "saving lives through partnership, innovation and leadership". STARS' mission is to provide a safe, rapid, highly-specialized medical emergency transport system for the critically ill and injured. Their fleet consists of eight Airbus Helicopters BK117 and three AgustaWestland AW139, all of which have been specially outfitted for helicopter EMS operations. At any given

time, one helicopter is the primary, in-service aircraft at each of STARS' bases and is available to respond to missions.

The helicopters in the fleet are rotated in as back-up and support aircraft when one of the primary helicopters is out of service for scheduled maintenance or repair. Back-up aircraft also play a significant role in training activities and community outreach events.

With this fleet, STARS flew 3,084 missions from their six bases in Alberta, Saskatchewan and Manitoba in 2014/15. However, the physical transport of patients is just one



SNAPSHOT SUMMARY

Organizational Structure: Not-for-profit, community-based

Governance: Board of Directors

Geographic Scope: 6 bases in Alberta (HQ), Saskatchewan, Manitoba

Funding: Government (% differs by province), fundraising and other revenue-generating operations

Staff: ~500 total, including 100 part-time physicians and 200 operation staff, as well as hundreds of volunteers

Fleet: 8 Airbus Helicopters BK117, 3 AgustaWestland AW139

Missions per Year: 3,084 in 2014/15

component of what they do. STARS patient transports are but one of four mutually reinforcing spheres of activity:

(1) Emergency medical communications – which includes a 24-hour emergency medical communications centre that coordinates up to 50 people to provide timely information to emergency service providers for critically ill and injured patients as well as a range of services for industry partners.

(2) Patient care and transport – which involves coordinating physician consults and patient transport. Every air transport involves a nurse medic on board and a physician on the phone.

(3) Education and research – which involves a 12-week critical care flight individual accreditation program, created and delivered by STARS staff. It includes training for nurses and paramedics; STARS' nurses and paramedics are trained for 21 weeks on top of their critical care designations by critical care physicians. STARS also offers a mobile education program that provides specialized critical care skill training to STARS crews and other emergency care providers. STARS accepts residents for a four week Transport Medicine elective to expose medical students to the helicopter emergency medical services (HEMS) world. They also have an Operational Outreach Program, which facilitates the exchange of information between STARS and the organizations they serve, ensuring the most effective patient care and transport possible.

(4) Fundraising and community partnerships – which conducts in the order of 400 events in Alberta per year and is responsible for fundraising over \$24M annually from over 48,000 donors.

Unique to this organization, STARS' model includes all aspects of the emergency medical response system, starting from training the paramedics, nurses and physicians; through to providing medical consults and determining if and/or what type of transport is necessary, and deploying that aircraft with staff to pick up and transport the patient. While perhaps best known for its helicopter air ambulance services, STARS physicians through the communications centre consult, triage and provide advice on a far greater number of emergency medical situations; rotary wing aircraft are deployed on only a fraction of these. Physicians apply specific criteria when determining if and when to launch helicopters to respond in emergency situations. Aircraft are only deployed when this highly risky and expensive mode of response can be adequately justified – and only upon the medical recommendation of a highly trained, critical care physician. In some cases, depending on the situation, they may advise that a team of emergency medical professionals be flown to the site, rather than vice versa.

STARS is a stand-alone, charitable not-for-profit entity. It is run by a 22-member volunteer Board of Directors that spans the three provinces in which it operates. The single parent company encompasses the air service operations, the foundation and Aviation Inc.

The company has a total of approximately 500 employees, including roughly 300 operations staff (including 100 part-time physicians), engineers and pilots; approximately 30 in the dispatch centre; and 100 back office staff (communications, finance, IT). STARS also has hundreds of volunteers that assist with a wide variety of administrative tasks and events.

STARS' four spheres of work link them closely with the public health systems of the jurisdictions in which they operate. This system integration – and a close partnership with the provincial health system - is key to the way the organization operates. Government financial support is also a central component of STARS' funding model.

While the level of public funding varies by jurisdiction, a minimum of a quarter of STARS' budget (such as is the case in Alberta) is covered by government funding. In Manitoba, funding from Manitoba Regional Health represents 90% of the budget of services provided in this province. In Saskatchewan, the provincial government covers half of STARS' costs.

Services provided in the eastern regions of BC are presently billed through to Alberta Health; and Alberta Health in turn refers those charges to BC Ministry of Health. While STARS would consider expanding services in BC, they would first require a specific mandate and budget support from the Province. While over the years, STARS has built a robust fundraising base of community supporters through the oil and gas industry in Alberta, in provinces such as Manitoba, where they lack these pre-existing fundraising networks, they have required that government support close to 100% of their costs.

Fundraising and revenue generated by industry site registry and monitoring services to industry comprise the remainder of STARS' budget, which in 2014/15 was \$77.7 Million.

History & Evolution

STARS was first established in 1985. It was started by two emergency physicians, motivated by the experience of having several patients pass away who could

have been saved had they been more swiftly transferred to care. For many years, a single helicopter was leased from a commercial operator. For the first decade, nobody involved in the transports, apart from the pilots, received payment for any of the services and missions carried out by the organization.

Over time, and following a number of tragic incidents, the need for rapid-response medical transport for the critically ill and injured became more apparent and the demand for STARS' services grew. However, it wasn't until 1999, 14 years after being established, that STARS secured its first contract with the Province of Alberta. It expanded services into Saskatchewan and Manitoba at the request of those governments. And it is only at a government's request would it expand into British Columbia or elsewhere.

STARS conducts a very detailed needs analysis when considering expanding into a new area. Designed to determine whether there is ample demand to support service, their analysis looks at statistics on the types of emergency calls, the age of patients and the level of care required. It considers the availability of advanced life support in the region as well as the level of support provided by existing/potential ground-based and fixed wing services. It examines population demographics and trends. Perhaps most importantly, it considers the geography of the region. Fixed wing aircraft are typically preferred for being less risky and less expensive. They therefore consider helicopter services mainly only for rural areas where there are no roads or places for planes to land.

Challenges

Money represents the primary ongoing challenge faced by STARS. Helicopters are expensive to purchase, operate and maintain. Insurance costs in the industry are very high. Training is also a major expense. As a result, STARS is committed to continuous innovation. They are constantly seeking new ways to generate revenue (apart from philanthropy) to support their mission, create and respond to new opportunities.

KEYS TO SUCCESS

- *Building system and community reliance on them by clearly and effectively conveying the impact of what they do, and by establishing meaningful, mutually beneficial partnerships with government, industry, universities and community, i.e. Designing and delivering critical care emergency training, accepting medical residents; offering to be the single point of contact to activate and dispatch a range of volunteer search and rescue agencies, etc.*
- *Remaining nimble and committed to continuous and absolute innovation: always looking for new ways (apart from philanthropy) to generate funds to support their mission.*

North Shore Rescue

North Shore Rescue (NSR) is a mountain search and rescue team based in Vancouver. This not-for-profit charity and society is run by a team of approximately 40 volunteers skilled in search and rescue operations in mountain, canyon and urban settings. Their mission has five components: (1) establishing an organization to search for, rescue and assist persons in distress; (2) education; (3) assisting other organizations with similar purposes; (4) providing assistance to civil authorities; and (5) providing advice and expertise.



NSR's primary operating area is the north shore of Vancouver; however, they do at times provide services in support of other search and rescue (SAR) teams in BC and Washington. They work in close partnership with the RCMP and BC Ambulance. The focus of NSR's role is finding people and extracting them from the field to safety. While NSR's team includes several emergency critical care

paramedics and physicians, these individuals are not part of every response team. As with any SAR organization in BC, members are trained in and expected to use basic life saving measures as and to the best of their ability. However, as individual is found and extricated, they are to BC Ambulance.

NSR missions regularly involve helicopters and they use private helicopter companies for these air-based rescues. While they have relationships with several

SNAPSHOT SUMMARY

Organizational Structure: Not-for-profit

Governance: Board of Directors

Geographic Scope: Vancouver north shore

Funding: Fundraising; SARS operations reimbursed by government

Staff: 40 volunteers; contracted pilots

Fleet: Contracted helicopter, equipped for HEMS missions

Missions per Year: 90 missions in total, exact number of helicopter missions unknown.

companies, NSR sources Talus Helicopters for the majority of their missions.

Talus has three aircraft that are appropriately equipped for HEMS. Should all three of Talus' aircraft be engaged, they inform NSR in advance. Talus also has pilots on call, who are skilled in search and rescue operations, i.e. long line rescue. When the need arises, NSR relays the mission specifics to Talus, and Talus sources an adequately skilled pilot for the job.

NSR performs approximately 90 missions annually, a good number of which involve helicopters. They do not, however, have dedicated aircraft assigned for these missions. Two of the volunteers on the team are tasked as Air Operators and responsible for ensuring that there is at least one aircraft that is available to them 24 hours a day. These individuals are also responsible for knowing the response times of that available aircraft.

Due to costs, NSR has never considered purchasing their own aircraft. To date, with the system they have in place, operating in close proximity to well-equipped service providers, they have never found themselves without access to aircraft when needed.

NSR is run by an eight-member volunteer Board of Directors. Their constitution and bylaws have remained relatively consistent through time. Since their inception, they have also remained funded primarily through donations.

Today, as with all SARs organizations in BC, NSR is reimbursed by Emergency Management BC for the cost of rescue missions, provided those costs adhere to provincial guidelines. They receive \$150,000 through a gaming grant from the Province of BC. The team receives funding and administrative support from the North Shore Emergency Management Office. The remainder of their \$500,000 annual budget is covered by donations.

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The team has established two endowment funds with the West Vancouver Community Foundation to establish a guaranteed source of funds for future needs. They also rely heavily on donations from individuals.

History & Evolution

NSR was established in the 1960s, making it one of the oldest search and rescue teams in Canada. Initially, it was created as a military-related civil response team. Over time, the nature of calls changed to reveal a greater need for mountain rescue. The number of calls NSR receives increases steadily year by year. Approximately 25% of their calls involve patient injuries or death.

Challenges

NSR's main challenge relates its heavy reliance on philanthropy. It is difficult to grow donations at the same rate that demand for their services is increasing. NSR is fortunate enough to operate in a densely-populated region that generates the highest call volumes in the province. The strong media coverage they receive helps to drive donations. Still, they struggle to generate the funds required to cover operational, maintenance and training budget needs.

BC Search and Rescue Association, the provincial association of SAR teams, is currently in discussions with the Province to develop a new funding model for organizations like NSR. BC Emergency Services also indicated that they were looking at some of the more organized and sophisticated SAR in the province with an eye to enhancing their role in the field of emergency medical transport.

NSR faces challenges associated with being a completely volunteer-run organization. Search and rescue work can be extremely taxing on volunteers.

The team is comprised of diverse, highly skilled individuals all with busy lives outside of NSR. Rescues can be difficult and time consuming. Volunteer burnout is an ongoing concern.

KEYS TO SUCCESS

- *Doing what they do well – gaining the respect of key stakeholders and the community.*
- *Maintain a focus on their objectives: do rescues and educate people.*
- *Publicity about what they do and the impact of their services.*
- *A strong core of dedicated individuals.*

Local H.E.R.O. Foundation – Phoenix Heli-Flight Inc.

Phoenix Heli-Flight Inc. (Phoenix) is a privately-owned charter helicopter company operating from its main base and headquarters at the Fort McMurray airport. Phoenix services a wide variety of industries including exploration, wildlife surveys, utilities, oil and gas, forestry, construction, infrastructure maintenance, corporate transport, general transportation of personnel and freight and wildfire suppression. Phoenix also provides HEMS to Fort McMurray and the Wood Buffalo area. Its HEMS are provided by a not-for-profit subsidiary: Local H.E.R.O. Foundation.



The mission of Local H.E.R.O. Foundation is saving lives. To this end, it promotes and delivers dedicated helicopters to northern Alberta. They service anywhere within fuel range (~250 Mile area).

The Foundation conducts approximately 100 emergency missions per year. All of these calls come to them from Alberta Health in accordance with specific criteria pertaining to both the nature/seriousness of the call and the location of the emergency. The Province pays Phoenix a validated rate for each of these calls, but reimbursements from the Province represent less than a third of their annual budget of approximately \$3.5M. The City of Fort McMurray covers half and the remainder is financed by the oil industry (primarily the “super majors” such as Suncor, BP, Shell).

SNAPSHOT SUMMARY

Organizational Structure: Not-for-profit foundation

Governance: Board of Directors

Geographic Scope: ~250 mile fuel range around Fort McMurray, Alberta

Funding: 50% - City of Fort McMurray, 50% oil and gas industry and Province of Alberta

Staff: None dedicated. Pilots, ops staff come from Phoenix Heli-Flight; paramedics from the local fire department

Fleet: EC135 T2e Airbus Helicopter plus seven stretcher-equipped helicopters that provide coverage as necessary

Missions per Year: Approx. 100

The Foundation does conduct some fundraising, but donations are limited. STARS, which also operates in Alberta, has a much greater capacity to conduct marketing and fundraising activities; the Local H.E.R.O. Foundation cannot compete.

Central and unique to the Local H.E.R.O. Foundation is the partnership they have with the local fire department. In Fort McMurray, the fire department and ambulance functions are integrated such that all firefighters are paramedics. There is also always an Emergency Management Technology (EMT) Paramedic on duty at each of the four fire halls in town. When calls come into Local H.E.R.O. Foundation, they also go to the fire department. Paramedics/firefighters go immediately to Phoenix Heli-flight facilities at the Fort McMurray airport, and together with a Phoenix pilot, they travel to the scene. There is not a helipad at the Fort McMurray hospital; patients are therefore flown back to Phoenix airport facilities then transported to hospital via ground ambulance.

Prior to establishing this partnership, Phoenix would conduct missions with health professionals rushed away from the hospital. In many cases, however, they came in hospital scrubs and were ill prepared for the emergency conditions on scene. Firefighters/paramedics, by contrast, have the advantage of being trained and equipped specifically to deal with conditions at the scene of an emergency. They also have the appropriate vehicles to transport them quickly to the airport.

Local H.E.R.O. Foundation owns one EC135 T2e Airbus Helicopter, which accommodates two pilots, two paramedics and one patient. The pilots use night-vision goggles. During the day, they have an additional seven stretcher-equipped aircraft in the Phoenix fleet that can be deployed as necessary to

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support HEMS missions. These aircraft are also brought into service should the EC135 T2e require maintenance.

This capacity to provide back-up within the fleet is hugely significant in terms of cost savings and service reliability. Local H.E.R.O. Foundation benefits from economies of scale of being part of a larger commercial operation. This experience in the commercial helicopter business has also been an advantage in dealing with the wide range of Transport Canada requirements that the Foundation aircraft must adhere to.

It costs Phoenix approximately \$3.5M annually to run their HEMS operations. They turn a marginal profit on these services (~9.5%) to account for the significant risk assumed by this type of operation. Industry supporters of Local H.E.R.O. Foundation are aware of and comfortable with this profit margin. The service they provide is valuable enough to them and they appreciate the need for Phoenix to have some buffer to the risks and high costs of running the service.

History & Evolution

Paul Spring, the President of both Phoenix Heli-Flight and Local H.E.R.O. Foundation has been involved in medevac services in the region for over 20 years. Initially, Phoenix provided the services on an ad hoc basis, but saw a need to expand the services to meet the demand of emergencies that happened after dark.

In the early years, they would respond to calls that came to them but then be stuck to find a payer to reimburse them for the costs of the mission. For over six years, Phoenix, with the support of emergency physicians in the region, lobbied

the Province of Alberta to obtain financial support for the service. Eventually, Spring took a different approach and gathered a group of oil companies (with admirable worker health and safety standards) in Calgary and pitched the idea of an industry-funded emergency medical helicopter service. The companies present agreed to fund the service, so Spring ordered a helicopter for purchase.

As the new aircraft was being built, Phoenix ran the service with a leased helicopter but encountered resistance when it came to collecting payment from industry. Despite their expressed need for the service, companies were hesitant to pay a for-profit entity for a service they felt should ultimately be covered by Alberta Health. In response, Spring established Local H.E.R.O. Foundation in 2013 as a not-for-profit and separated the HEMS work from the commercial operations of Phoenix Heli-flight.

This separation and new model worked for a time but the operation encountered a new set of challenges when Alberta underwent a major political upheaval that included the resignation of Premier Redford and the departure of both the Minister of Health and the CAO in Fort McMurray. At the same time, several of Phoenix's industry contacts changed companies and Local H.E.R.O. Foundation found itself at risk of bankruptcy.

As a last resort, Phoenix launched a social media campaign to save Local H.E.R.O. Foundation. By that point, the community of Fort McMurray had become familiar with the HEMS work of Phoenix and the campaign resulted in a community outcry. Shortly after, the city council of Fort McMurray unanimously approved money to keep the Foundation going. Oil companies agreed to pitch in, and the city and industry went together to seek support from the Province.

At this time, the Foundation was successful in negotiating a slightly more favourable rate with the Province, but is still working with Alberta Health to establish a new payment model that would see government supporting a third of their costs. Ideally, the Foundation would also like to move away from a fee-for-service model so as to enable them to help more people.

Challenges

Funding has been the preeminent, ongoing challenge of running Local H.E.R.O. Foundation. Phoenix struggled for years to communicate the need for their services to government. A valid business case did not suffice. It was not until they were on the brink of shutting down that the community rallied and they received attention and support. It is worth noting that was only because the community had become used to their services that Local H.E.R.O. was able to generate this response from the community. It is much more difficult to mobilize support around a service that may be needed, but does not yet exist.

In addition to securing government funding, Phoenix has been challenged in garnering industry support due to the lack of clarity that surrounds the responsibility for emergency medical transport. Some industry players are motivated to fund the service to mitigate the worker safety risks, but many believe these costs should be covered by government and are therefore reluctant to pay.

KEYS TO SUCCESS

- *Partnering with the local fire department and ambulatory paramedics. (Phoenix estimated that having dedicated paramedics on staff would cost approximately \$185,000 per month.)*
- *Perseverance and dedication of a champion committed to making their vision a reality.*
- *Being situated within a commercial helicopter business so as to benefit from economies of scale and fleet backup.*
- *A core of industry supporters that see value in the service.*

BC Air Rescue – Wildcat Helicopters

Wildcat Helicopters (Wildcat) is a for profit enterprise that specializes in fire suppression work. After providing search, rescue and aero medical support on an ad hoc contract basis for BC Ambulance for over a decade, the company has teamed up with Vernon SAR and Emergency Management BC to conduct a two-year pilot project to provide HEMS in BC's Interior. This pilot, called BC Air Rescue, operates out of Wildcat's headquarters in Kelowna. It serves a region of 720 square kilometres that spans from Valemount in the north to Osoyoos in the south, Lillooet and Williams Lake in the west to Cranbrook in the east.



BC Air Rescue is owned and operated by Wildcat Helicopters – and the pilot project to date has been financed completely by this corporation. The owners, however, are hopeful to receive government support for the service and continue to lobby to have this support realized.

The primary helicopter dedicated for use by BC Air Rescue is a Bell 412, which has been equipped with dual patient capacity, winching capacity of 600 pounds and the latest paramedical resources. The Bell 412 has the capacity to fly three hours without refueling.

The BC Air Rescue Team consists of the owner, vice-president and chief pilot at Wildcat, an advanced care paramedic, and a primary care paramedic who is also a

SNAPSHOT SUMMARY

Organizational Structure: Pilot project of a for profit commercial operation

Governance: Owned and operated by Wildcat Helicopters

Geographic Scope: 720 km region around Kelowna, BC

Funding: 100% Wildcat Helicopters; with SARS operations reimbursed by the Province

Staff: A team comprised of Wildcat pilots and operations staff and Vernon SARS members

Fleet: Bell 412 Helicopter, with backup from Wildcat fleet

Missions per Year: Not available

member of the Vernon SAR and a director for Avalanche Canada. The Wildcat staff are aviation specialists, trained and highly-experienced in emergency rescue procedures and equipment. When BC Air Rescue is called to perform a rescue, they are ready and flying in less than five minutes. After getting geographical coordinates of the incident scene, they fly to Vernon Search and Rescue centre to pick up the paramedical crew.

The key advantage cited by BC Air Rescue is the quality and speed at which they can access an incident location and their ability to administer critical care treatment, including the initiating of intravenous lines, to a patient within an hour, thus greatly enhancing the chances of survival and reducing downstream medical costs.

History & Evolution

When first established, Wildcat's predominant focus was in the area of heli-logging and seismic work. In 2003, they began to shift into fire suppression and essentially created their own market in this field of work. They lobbied government for 12 years. Eventually, government began to require that its contractors specialize in fire suppression and Wildcat landed six of eight government-issued contracts.

For over a decade, Wildcat has maintained service agreements with BC Ambulance to provide services on call. Wildcat continues to hold an agreement, but receives very few calls. When calls do come in, they respond with Wildcat helicopters; the BC Air Rescue team is deployed on calls that come in through Vernon SAR.

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Challenges

Aviation is a complex, specialized and expensive industry. Very often, helicopter services are not tendered in a way that makes financial sense for operators. Wildcat Helicopters toiled for over a decade to educate and find champions within government to change the way services were tendered. Their primary focus initially was on the need for fire suppression services. They have launched BC Air Rescue as a two-year pilot because they also perceive a gap in services for air-based search and rescue in the region. Now, they are working through BC Air Rescue to bring attention to this need and gain support for a program they are presently financing themselves.

KEYS TO SUCCESS

- *Being associated with an existing helicopter operation.*
- *Possessing expertise and experience in the different types of helicopters, their capacities and what is required for medical emergency rescues has ensured that they have the best possible aircraft for the work that they do.*
- *Perseverance in working with government to convey their message.*

Current Context

In BC, air-based emergency response and medical transport is delivered by the BC Emergency Health Services (BCEHS) through the BC Ambulance Service. BCEHS is also responsible for ground-based ambulance service. It is the only agency in North America that operates ground, fixed-wing and rotary-wing ambulance service on a provincial scale. The majority of its transports are inter-facility.

The Critical Care Transport (CCT) Program of BCEHS provides specialized, emergency patient care and transport for critically-ill or injured patients throughout the province via air as well as ground ambulances. A separate, specialized Infant Transport Team (ITT) provides emergency medical care to paediatric, neo-natal and high-risk obstetric patients.

The ITT uses two helicopters, two fixed-wing airplanes and five ambulances outfitted with specialized equipment to provide emergency patient care. The ITT is based at the BC Children's Hospital in Vancouver.

The aviation component of the CCT uses six dedicated airplanes, four dedicated helicopters and can call on approximately 40 pre-qualified charter aircraft across the province. Aircraft bases are located in Prince George, Kelowna, Kamloops, Nanaimo and Vancouver. Two of the helicopters are based in Vancouver; with one in Prince Rupert and the other in Kamloops.

A mix of factors determines the number and location of helicopters, including patient demographics (current and future) and the location of tertiary care

services. Geography and weather conditions are also significant considerations. BCEHS periodically conducts needs analyses to determine that resources match demand. Such a study was recently completed for the provincial air ambulance system.

This most recent study consisted of two phases to examine current and future demand for both pre-hospital events (i.e. accidents, traumas) and inter-facility transfers. In looking at patient demand, the study looked at how many times EHS got a call to transfer a patient from either ground or air, i.e. the air ambulance demand. It also explored what would be required to enhance service or to meet future demand for example, by activating air-based responses for emergencies that occur more than three hours away from a facility by ground rather than the five hours away, as is the current policy.

The study looked at three years of data on long distance transfers (from Jan 2012-Dec 2014) encompassing approximately 40,000 data points from 6,000 patient transfers per year. The data was analyzed to show how many of these transfers could have been done by air given geographic and weather realities, and how many transfers would have been better for the patient if done by air, taking into consideration the time necessary to mobilize aircraft, reach the patient; and transport the patient to tertiary care. The study looked at three years of historical data on service demand by patient demographics. It also developed forecasts for future demand based on changes that are anticipated in different population segments.

The scope of the study was province-wide, but the findings did reveal a clear picture of where there are regional gaps in service. They also informed a prioritization of these gaps.

The study results and this set of priorities WERE scheduled for public release before August 2016 but have not, at the time of this report, been released. In the meantime, BCEHS has indicated that the north central region (around Prince George), Northeast BC (around Fort St. John) and Southeast BC (around Cranbrook) are among areas of the province identified as having service gaps and standing to benefit from air-based emergency medical response. It was not disclosed where on that list of the provincial priorities the north central interior region stands, which is the region of most interest to Northern BC H.E.R.O.S.

Recurrent Themes

The five helicopter medical emergency systems examined through this research all have distinct models of operating. However, there are a number of recurrent themes that emerged from the interviews around the challenges associated with starting and sustaining this type of service.

- **Cost Challenges:** Helicopter services are costly to run. Helicopters are expensive aircraft to operate and maintain as well as subject to high insurance costs. Most of the HEMS covered by this research established their service with leased aircraft, which has the added advantage of releasing them from the concerns of liability insurance etc. However, over time, anecdotal evidence indicates that the costs of leasing run approximately 20% above that of ownership.

In addition to infrastructure costs, specialized flight-ready paramedics and emergency trained pilots are expensive to train and subject to high turnover. Further, being highly regulated, there are limited avenues by which to reduce the costs of running HEMS.

Although operators are compensated for the costs of medical emergency missions, all of the systems examined by this research expressed frustration with the government rates of reimbursement. Without exception, funding was identified as the primary and ongoing challenge of operating HEMS.

- **Partnerships:** All of the HEMS highlighted different partnerships as being key to their success: partnerships with the community, SARS teams, BC Emergency Management BC, local health professionals, etc. These relationships play a key role in establishing a base of support for the HEMS. In the case of STARS, providing site registration and work alone monitoring for industry, for example, they represent a source of revenue.

A number of HEMS highlighted strategic partnerships they had established or were hoping to establish with training and education institutions to aid with recruitment. STARS' partnership with the universities for training medical residencies provides not only labour for their operations, but a means of securing the organization's sustainability as the system is now dependent on STARS for this training component.

- **Integration with the Health System:** All of the HEMS explored by this study shared a close working partnership with the health system. Many of the interviewees referenced the importance of obtaining "buy-in" from the health system. This relationship and integration with health professionals was identified as being absolutely central to their operation.

The nature of this partnership differed by HEMS. ORNGE and STARS are essentially synonymous with the emergency medical systems in Ontario and Alberta respectively. Wildcat/BC Air Rescue NSR are integrated through the relationship that has been established for Search and Rescue organizations. Local H.E.R.O. Foundation is integrated through its working relationship with the municipal fire/ambulance departments of Fort McMurray. In all cases, these partnerships have evolved over time

as trust and credibility has been established - and re-established with changes in leadership.

- **Importance of Perseverance and a Dedicated Leader/Core Group:** All of the HEMS covered by this study recounted the vital role played by one or more dedicated individuals in both establishing the service and keeping it going. Apart from ORNGE, all of the systems were started by these individuals volunteering their time and resources. In many cases, it was several years before any of the services landed funding to cover their costs.
- **Connections to a Helicopter Operation:** Several of the HEMS underscored the advantages and economies of scale to be gained by having HEMS in some way connected with an existing helicopter operation. Having access to technical expertise on rotary-wing aircraft was seen as beneficial in regards to the operation and maintenance of the fleet, as well as for sourcing the most suitable aircraft and equipment. Existing operators have the advantage of being familiar with Transport Canada regulatory requirements. Having a larger fleet also establishes back-up aircraft so as to enable 24-7 dedicated service.
- **Community Support:** Having local community support for the work that they do was another key factor that emerged from the research. Even ORNGE, which is a fully government-funded system underscored the importance of reputation, community support and public trust within their risk registry and recounted the significant blow taken when the organization was subject to financial scandal.

It is key to note that this support was in most cases only built by providing the service for a period of time. Local H.E.R.O. Foundation, for example, while saved at one point by an upsurge of community support, was clear that this response would not have been received had they not already been providing the service, built community familiarity and comfort with their services and demonstrated their impacts.

STARS is perhaps best known for its efforts in communicating its impacts and generating this community support. However, they too were clear about the fact that building that foundation of support takes time, and when operating in jurisdictions other than Alberta where they have that established widespread public recognition and credibility, they require much greater financial backing from government, at least in the short term.

- **A Clear Need:** Community support, partnerships and integration with the health system are all predicated on a widely-perceived need and demand for HEMS. Many of the HEMS have worked and continue to work to communicate the need and advantage gained by having HEMS in the region(s) where they operate. Regrettably, many of the interviewees indicated that it sometimes takes a crisis in order for that need to be recognized. They talked about the importance of gaining emotional buy-in from stakeholders in the beginning: “having a solid business case isn’t enough”.

The importance of understanding the specific need profile (i.e. the types of emergencies, patient demographics, etc.) in relation to ground resources and tertiary care options, was also key to having the need

recognized – and to ensuring that resources are spent on the most appropriate aircraft, equipment and services.

- **Not-for-Profit Status/Alignment with Public Health Care:** All of the HEMS included in this research have evolved to operate their services under a not-for-profit model. This is in part as a means of gaining access to the health system. It is also related to gaining community support. Interestingly, even Local H.E.R.O. Foundation, which initially acquired support from industry players who approved a small profit margin to account for the risks at stake in providing HEMS, encountered reluctance from clients to pay a commercial entity for HEMS services. Therefore, while this service began as a for-profit entity, it quickly was restructured as a not-profit in order to sustain itself.

Concluding Observations

Notwithstanding the diversity of service models, jurisdictions and funding structures covered by this research, all of the HEMS interviewed clearly identified with the H.E.R.O.S.' present challenge of justifying the need and attracting the resources necessary to establish a rapid-response HEMS in North-Central – Interior BC. All of the HEMS have required a great deal of time, leadership and dedication in order to nurture the partnerships, system integration and buy-in necessary to function. Once founded, the value of HEMS services is quickly and widely validated. However, without exception, they continue to struggle to cover the costs of operation and remain financially viable.

HEMS occupies an ambiguous position within the health care system attributable to the fact that it encompasses some roles similar to those of emergency response units (fire and police) and others more akin to primary health care providers (physicians and nurses). More importantly, HEMS is not funded as an essential health service. In contrast, the funding of HEMS differs by jurisdiction and may include municipal tax levies, provincial subsidies, user charges, third party insurance, and/or a combination of funding sources.

In BC, inter-facility transfers and emergency transfers from remote communities, are funded differently than emergency search and rescue transports. For this reason, knowing the precise nature of the need in North-Central and Interior BC will be important in moving forward and establishing strategic partnerships.

The provincial needs analyses study yet to be released by BCEHS may provide all the justification necessary to establish HEMS in the north central interior.

However, should this region not figure as a top priority for expanded HEMS, it will be important to remember that the scope of the provincial study is aligned with the mandate of BCEHS. It therefore reflects patient need only in relation to out-of-hospital and inter-facility health services and not that resulting from emergency search and rescue incidents, for example.

The relationship with BCEHS will be critical regardless of the nature of patient need. However, partnerships with the community, local SARS teams, health professionals and commercial helicopter operators will be equally vital in H.E.R.O.S.' future success.

The five existing HEMS included in this study also represent potentially valuable future partners. All of the interviewees expressed a willingness to talk further to H.E.R.O.S. and assist them with their mission. Nurturing relationships and maintaining lines of communication with these various sources could prove to be beneficial. While this study has provided insights on the structure, history, governance and lessons learned of these operations, building a multi-jurisdictional alliance of HEMS will be undoubtedly advantageous in addressing ongoing challenges moving forward.

Appendix A: Summary Matrix of HEMS

HEMS Operation	Organizational Structure	Governance	Geographic Scope & Coverage	Funding	Staff	Fleet	Missions per Year
ORNGE	Federal not-for-profit	Board of Directors reports to Minister of Health	All of Ontario – 13 million people; > 1 million square km.	Government funded	Approx. 650, including 140 pilots, 150 paramedics, 45 engineers, 80 communications officers	10 AW139 helicopters, 2 Sikorski helicopters, 8 PC12 fixed wing and 5 chartered carriers	18,000 - 98% of which are inter-facility
STARS	Community-based not-for-profit	22-member Board of Directors	6 bases in Alberta (HQ), Saskatchewan and Manitoba	Combination of government, fundraising, other revenue-generating operations. Breakdown differs by province	Approx. 500, including 100 part-time physicians and 200 operations staff as well as hundreds of volunteers	8 Airbus Helicopters BK119, 3 AgustaWestland AW139	Approx. 3,100
North Shore Rescue Team	Not-for-profit	8-member Board of Directors	Vancouver north shore	Approx. 70% from fundraising; 30% government grants. Some admin support from local emergency management office.	40 volunteers; contracted pilots	Contracted helicopter equipped for HEMS missions	90 SARS missions in total; exact number involving helicopters unknown
Local H.E.R.O. Foundation – Phoenix	Not-for-profit foundation	Board of Directors	~400 km fuel range around Fort McMurray	50% City of Fort McMurray; 50% oil and gas industry and Province of Alberta	None dedicated. Pilots, ops staff come from Phoenix Heli-Flight; paramedics from local fire dept.	EC135 T2e Airbus Helicopter plus seven stretcher-equipped helicopters that provide coverage as necessary	Approx. 100
BC Air Rescue - Wildcat	Pilot project for a commercial operation	Owned and operated by Wildcat	720 sq-km region around Kelowna	100% Wildcat Helicopters	Team comprised of Wildcat pilots and operations staff and Vernon SARS members	Bell 412 Helicopter with backup from Wildcat fleet	Not available