Community-Based First Aid:

A Program Report on the Intersection of Community-Based Participatory Research and First Aid Education in a Remote Canadian Aboriginal Community

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Abstract
Context. Community-based first aid training is the collaborative development of locally relevant emergency response training. The Sachigo Lake Wilderness Emergency Response Education Initiative was developed, delivered, and evaluated through two intensive five-day first aid courses. Sachigo Lake First Nation is a remote aboriginal community of 450 people in northern Ontario, Canada with no local paramedical services. These courses were developed in collaboration with the community, with a goal of building community capacity to respond to medical emergencies.
Issue. Most first aid training programs rely on standardized curriculum developed for urban & rural contexts with established emergency response systems. Delivering effective community-based first aid training in remote aboriginal communities required specific adaptations to conventional first aid educational content and pedagogy.
Lessons Learned. Three key lessons emerged during this program that used collaborative principles to adapt conventional first aid concepts and curriculum. (1) Standard algorithmic approaches may not be relevant nor appropriate. (2) Relationships between course participants and the people they help are relevant and important. (3) Curriculum must be attentive to existing informal and formal emergency response systems. These lessons may be instructive for the development of other programs in similar settings.

Context

This paper considers the intersection of conventional first aid education and the remote fly-in aboriginal community of Sachigo Lake First Nation in sub-Arctic Canada (see Box 1). This intersection highlighted incompatibilities between standard first aid and local community needs. These were addressed through a community-based collaboration and the development of a unique, community-specific first aid program.

Over the past three years, through a process of community consultation and collaboration, the Sachigo Lake Wilderness Emergency Response Education Initiative (SLWEREI) was developed, delivered and evaluated. This unique community-based first aid program involved two intensive five-day first aid training courses for lay community members held in 2010 and 2012. Through two courses, the program has trained 26 adults, approximately 5 percent of the community population.

Training centred on providing essential life-support in emergency situations, with a focus on patient transport and the provision of adaptive care in low-resource and wilderness settings. Course curriculum and pedagogy were based on community priorities, needs and feedback received through community consultation.

1 Community consultation was both formal and informal involving an initial 3 day site visit
2 and needs assessment, formal interviews with key stakeholders focused on curriculum
3 and pedagogy, survey feedback from course participants, and conversations with
4 community members over the telephone and during the weeks we have spent in
5 Sachigo Lake First Nation over the last three years.
6
7 Curriculum covered topics ranging from basic trauma care and cardiopulmonary
8 resuscitation to mental health first aid, diabetic emergencies, and safe patient transport.
9 The courses spent little time in a classroom setting with the majority of learning focused
10 on practical skills training and simulation with debrief. The SLWEREI was based on a
11 simple premise, buttressed by World Health Organization and American Heart
12 Association guidelines: in underserviced settings, first response education may enhance
13 community resilience and capacity to manage emergencies and save lives[1,2].
14
15 The purpose of this paper is not to present the research details or outcomes of this
16 initiative; these have been described elsewhere[3,4]. Rather, this paper reports on
17 curricular and pedagogical lessons learned as our team developed a unique first aid
18 training program. The specific adaptations to first aid educational content and
19 methodology required to deliver effective community-based training in remote aboriginal
20 communities has not been described elsewhere.

Box 1. Sachigo Lake First Nation

Sachigo Lake First Nation is a remote aboriginal community of 450 people in northern Ontario, Canada with no local paramedical services. The community is accessible by plane throughout the year, and by seasonal ice road for several weeks during the winter. Full-time nursing staff provides services at a local nursing station. A family physician visits the community for 2–3 days per month. To get to the Nursing Station, patients may be transported by snow machine, ATV, boat or truck. Hospital care is provided hundreds of kilometres away in Sioux Lookout, with transport times rarely less than 4 hours. Patients are transported to hospital by air ambulance.

21
22 **Issue: Standard First Aid and Community-Based First Aid**
23
24 First Aid is ‘the assessment and interventions that can be performed by a bystander (or
25 by the victim) with minimal or no medical equipment[2].’ First aid emerged from a
26 paramilitary tradition, rooted in the International Red Cross[5]. In North America,
27 organizations such as the Amercian Heart Association (AHA), National Life Saving

Society, and the Red Cross outline the scope and principles of conventional first aid education.

As a field of clinical practice, First Aid arises from a tradition of algorithmic guidelines, universal practice standards, strictly delineated levels of certification and scopes of practice, and a normative and a fundamentally positivistic approach to health and physiology. The notion that health emergencies are adequately similar across cultures and geographies forms a central premise of "standard first aid", permitting a universal and algorithmic bystander response and educational model. Clinical protocols and first aid practice have been rooted in the simplification of diagnostic, therapeutic, and transport decisions for sick patients, coupled with a drive to provide simple and universal approaches to emergencies through basic training for non-clinicians. This model for immediate and on-scene clinical care and transportation has proven tremendously successful across a variety of settings from the battlefield to shopping centers, and first aid training programs have been recognized internationally as an essential form of health protection and promotion[6]. Non-conventional first aid programs have been successful at improving outcomes in low-resource contexts with minimal paramedical services in places such Ghana, Northern Iraq, Cambodia and Uganda[7,8,9,10].

Over a period of years, our team has worked with Sachigo Lake First Nation to analyze the pedagogy and curriucula of conventional courses. Through this partnership, we customized a first aid training curriculum specifically suited to Sachigo Lake First Nation. Our collaborative approach revealed incompatibilities between standard first aid and the lived experience and needs of the Sachigo Lake community. Our customized first aid program and experience captures several lessons learned that we now identify as central to first response capacity-building and first aid programs in remote settings. Together, these core concepts describe what we call "community-based first aid" (CBFA), a community-oriented approach to first aid education.

Lessons Learned

We distilled several concepts into three lessons that are described in detail in each of the following sections.

Box 2. Lessons Learned

1. Standard algorithmic approaches may not be relevant nor appropriate.
2. Relationships between course participants and the people they help are relevant and important.
3. Curriculum must be attentive to existing informal and formal emergency response systems.

First Aid Education Pedagogy in a Unique Context

In a community-based first aid program, standard first aid approaches may be neither relevant nor appropriate. Our experience taught us that standard first aid curricula face limitations in a remote, aboriginal community such as Sachigo Lake. To build a first response curriculum for this program, we drew on basic life support and first aid resources from the Heart & Stroke Foundation, American Heart Association and the European Resuscitation Council; wilderness medicine programs from Wilderness Medical Associates International; and emerging mental health first aid materials from the Mental Health Commission of Canada. We discovered quickly, that these conventional first aid resources face two serious limitations for effective capacity building in a remote setting like Sachigo Lake.

First, these sources often assume an advanced literacy and the cultural and cognitive dominance of the written word among learners. Our participants had a wide range of literacy levels, but few participants learned primarily from text. We identified that these first aid curricula place heavy emphasis on flow charts and acronyms — both of which led to significant challenges for our participants. For example, some conventional first aid curricula use the acronym "AVPU" when assessing a patient's level of consciousness to represent **A**wake, responds to **V**oice, responds to **P**ain, or **U**nresponsive. We found through early course simulations that prompting learners to use this acronym as a memory tool was leading to confusion and flustering students. This issue was not specific to one or two students, but a challenge expressed by all students. Assessment of the patient's level of consciousness was altered to an intuitive approach, requiring participants to identify if the patient was behaving normally, abnormally, or unresponsive, and to identify if the level of consciousness was improving or worsening. Through consultation, we focused on similar assessment principles but phased acronyms out of

the curriculum as they were found to be a stumbling block, rather than a helpful cognitive aid.

Second, conventional curricula also emphasize pathophysiology, requiring trainees to develop health and physiology literacy in order to understand and provide emergency care. For example, Heart & Stroke Foundation resources on stroke and myocardial infarction are laden with graphics about atherosclerosis and thrombosis. While these pathophysiological teachings serve some learners well, we also observed how this approach could distract participants from the essential steps involved in responding to a family member with signs of stroke or chest pain. Our program did not treat pathophysiological knowledge as a pre-requisite for problem solving and decision-making. Pathophysiology was addressed in our curriculum when questions arose from participants. Participants were not taught to identify symptoms of a myocardial infarction in order to make first response decisions because this would require an unnecessary cognitive link between symptoms, pathophysiology, and first response decision-making. Instead, participants were taught a generalized approach to patients complaining of chest pain, requiring only a link between observed symptoms and behaviours, and first response actions. Our approach focused on symptom recognition, critical decision-making, safety, and treatment.

Third, we found both conventional and wilderness first response algorithms contextually and geographically inappropriate. Seemingly universal instructions like 'call 911', 'wait for the ambulance' or 'go to your nearest emergency department' appear throughout commonly available first aid programs. This provides incomplete or inappropriate training to first responders who provide care over extended periods in settings without ambulances or formalized dispatch services.

In Sachigo Lake, where there is no paramedical nor 911 services, using conventional urban first aid materials re-emphasized service inequities without providing meaningful training alternatives. Our program focused not on when to call for help, nor on protocols, but on relying on oneself and each other to identify a problem, think critically about the situation, and to initiate an appropriate treatment based on the situation. A significant amount of time was spent discussing which patients needed to be transported to the nursing station, how, how quickly, and by whom. While similar principles are taught in

conventional first aid courses, the emphasis is on the fact that there is a professional coming to help in an emergency. This is not the case in remote communities such as Sachigo Lake.

Conversely, wilderness medicine curricula offer an emphasis on remote settings and delays in accessing professional care, but this approach implies a specific notion of ‘wilderness’ that may alienate an indigenous community from their traditional environment and way of life. Further, wilderness medicine curricula often are designed for the person who occasionally travels in a remote context. Our program participants articulated a sense of home, safety, and comfort in remote parts of the boreal forest, which was incongruous with discourses and imagery of intrepid adventurers and rescue helicopters that dominate wilderness medicine approaches. Helicopters do not have the range to reach Sachigo Lake First Nation. As such, to reach the Nursing Station or an aircraft, patients are transported by a combination of snow machine, ATV, boat or truck, depending on location and season.

In Sachigo Lake, presenting wilderness medicine materials might inappropriately convey that our participants’ traditional way of life is inherently or unacceptably dangerous. For example, it is common for members of Sachigo Lake to travel alone or in small groups to hunt and fish in the region surrounding the community. While this might represent a health or safety risk to outsiders, locals in Sachigo Lake understand traveling in their local region and wilderness surroundings as a safe and normal activity. As part of the program curriculum, simulations were based on this context. During simulations, participants had only the materials and resources that they would have with them while traveling by snow machine or boat, such as a tarpaulin, a gun, an axe, a sleeping bag, rope, tape, food, water, and an extra set of clothes. To manage mock patients, they were instructed to use the materials and equipment they would carry routinely to stabilize, treat, and transport patients to the nursing station in their community. Significant periods of time were spent debriefing simulations, discussing ways to improvise splints, bandages, or transportation packages. Our curriculum offered approaches to emergency management suited for extended patient care in remote settings.

Developing a community-based first aid program with a remote First Nations community highlights subtle conflicts between the culture of first aid and the context in which it was

being taught. Neither conventional urban programs nor alternative wilderness first response curricula offer training that is particularly well suited to an isolated, aboriginal community like Sachigo Lake First Nation. Delivering community-based first response curricula may reveal similar geographical or cultural themes in other unique settings.

First Aid Delivery in a Small Close-Knit Community

Community-based first aid programs must consider the relationships between course participants and the people they may help. Conventional structured approaches to teaching first response, whether designed for the general public or for professional rescuers, are developed under the assumption that the majority of responses involve patients who are strangers. 'You are walking along the street and you suddenly come across an elderly man who has collapsed....', and so the scenario plays out. This "stranger assumption" in standard first aid education, where the victim is identified as an anonymous individual identifiable only by their pathology or clinical problem is incongruous in a tightly-knit community such as Sachigo Lake, where everyone is a friend or a family member.

The stranger assumption in standard first aid creates barriers in a remote community by disregarding existing well-developed relationships. Course participants in Sachigo Lake approached first aid role-play scenarios not as an individual within a community of strangers, but within a network of existing interwoven relationships. Our community-based first aid education program adapted to meet the needs in a community where everyone is a friend or family member. Patients had names, rescuers were related, first response necessarily involved close friends. These relationships weare important community resources. For example, during training exercises, relationships and personal connections to the patient were mentioned frequently and were treated as an asset in the provision of personalized, appropriate, and holistic care. Conventional medical and professional models might identify these relationships as a liability, conflict, or problematic barrier to dispassionate decision-making. In Sachigo Lake, we sought to use these relationships as an asset, to involve close family members from within the community as a health resource, and to build community resilience by strengthening the health capacity of families rather than addressing community needs exclusively through access to health professionals.

As part of the 2012 course, we added a module on mental health curriculum that focused on three key areas: thoughts of suicide or self-harm, substance misuse and intoxication, and disorganized behaviour. These themes were identified by the community as priority topics based on their shared experience and previous incidents. Mental health and substance abuse issues disproportionately impact aboriginal population compared to the rest of Canadian population. Suicide is one of the largest contributors to premature death on reserve in Canada, with aboriginal populations suffering three times the potential life years lost due to intentional injury compared to the general population [11]. There were several suicide attempts in 2011 in Sachigo Lake, all among young people. All were non-fatal. Similarly, substance abuse is a major issue in the region, with some remote communities reporting a narcotic addiction rate of 70% among their adult population [12]. In a survey investigating the severity of substance misuse problems as reported by Aboriginal Canadians, 83% of locally elected leaders reported alcohol and illegal drugs as problems in their community [13]. When a layperson provides first aid to a stranger, one would rarely encounter someone who would disclose their suicidal thoughts. Our needs assessment and evaluation identified that although mental health first aid is rarely considered part of a conventional life-saving first response program, mental health emergency skills were as important to local responders as trauma management or cardiopulmonary resuscitation. In this small, remote aboriginal community, where everyone is a family member or close friend, the mental health curriculum was central to meeting community needs and building local capacity to manage emergencies in a holistic and realistic fashion.

Language and curricula need to embrace established relationships for a community-based course to connect with community priorities and to reflect the community in which they live. We believe that community-based first aid programs can enhance community capacity by adapting curriculum to recognize these existing and important relationships.

Formal and Informal Systems

Community-based first aid education must be attentive to existing informal and formal emergency response systems. Conventional first aid training is intrinsically reliant on the existence of an identifiable transition point between bystander first aid providers and a formal health care system. Red Cross or American Heart Association Guidelines, for example, assume that first aid providers will intersect with a formal system of

professional providers outside the hospital. In many Canadian communities, informal emergency response involves a bystander performing a varying level of first aid, and using a telephone to dial 911 dispatch services. Once dispatch services are contacted, a formal system is activated, and a patient's care will flow from paramedical to hospital care. In settings where emergencies are not addressed in this manner, developing local capacity requires that planners understand how a community responds to an emergency to be able to enhance systems without supplanting, bypassing, or ignoring them.

In Sachigo Lake, there is no formal dispatch or paramedical services. The activation of formal emergency services begins when the patient arrives at the nursing station. All pre-nursing station care is provided through an informal system. Trying to understand this informal system has been part of the collaboration. In Sachigo Lake, this informal system is complex, situational, seasonal, adaptive, and well understood by community leaders. Our observation is that, in many cases, it is also extremely effective. Patients requiring urgent care often receive treatment and transport to the nursing station within minutes. In many cases, nearly the entire community responds to an emergency. Hence, nearly all available resources are present.

During course development and delivery in Sachigo Lake, curriculum and simulations allowed participants to activate and enhance both formal and informal response systems. Just as course delivery was unique because everyone on course was a friend or family member, so too has it was also distinct because of a shared experience of an informal emergency response system.

In a final large simulation on course, community members responded to a mock plane crash where four patients had been critically injured. This simulation was based on a previous aircraft crash in the community, and other similar incidents in the region. Participants responded to the incident, stabilized, packaged, and transported the four patients to the Nursing Station where two nurses on-duty received the patients. This simulation integrated an informal pre-nursing station response system with professional nursing care, and it was seen as a success by course participants, local government, nursing staff, and course instructors. This simulation represented a unique intersection of community-based methods and first aid education where the conventional interface between layperson and professional emergency systems were modified to meet the

needs in this remote community. Understanding how individuals in a community respond informally to an emergency, is a latent strength in the community that can be reinforced through adaptive curricula. Other communities may have similar informal response systems that can be enhanced through a similar approach to community-based first aid. Community-based first response training initiatives must be mindful of these informal systems, and find ways to enhance, rather than supplant or undermine them.

Conclusions

Conventional first aid education relies on the notion that protocols and approaches to managing emergencies are universal across all settings. In a remote aboriginal community in northern Canada with no paramedical services, such algorithmic approaches to first response were inappropriate. Our collaborative approach to community-based first aid, revealed three lessons that we hold central to building capacity in a remote community through the development of an education program. They stand in contrast to principles of "standard" and "universal" first aid that have previously dominated this field. Our observations may be instructive for the development of other programs in similar settings.

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References

1. World Health Organization (2005) Prehospital trauma care systems. Geneva: World Health Organization.
2. Markenson D et al. Part 17: First Aid : 2010 American Heart Association and American Red Cross Guidelines for First Aid. *Circulation* 2010; 122: S934-S946.
3. Orkin A, VanderBurgh D, Born K, Webster M, Strickland S, et al. (2012) Where There Is No Paramedic:The Sachigo Lake Wilderness Emergency Response Education Initiative. *PLoS Medicine* 2012; 9(10): e1001322.
4. Born K, Orkin A, VanderBurgh D, Beardy J. Teaching wilderness first aid in a remote First Nations community: the story of the Sachigo Lake Wilderness Emergency Response Education Initiative. *International Journal of Circumpolar Health* 2012, 71: 19002.
5. Moorhead C. *Dunant's dream: War, Switzerland and the history of the Red Cross.* New York: Cambridge University Press: 1998.
6. International Federation of the Red Cross. "First Aid". Online: http://www.ifrc.org/what-we-do/health/first-aid-saves-lives/. (Accessed 27 January 2013).
7. Tiska MA, Adu-Ampofo M, Boakye G, Tuuli L, Mock CN A model of prehospital trauma training for lay persons devised in Africa 2004. *Emergency Medical Journal* 2004; 21: 237.
8. Husum H, Gilbert M, Wisborg T, Van Heng Y, Murad M. Rural prehospital trauma systems improve trauma outcome in low-income countries: a prospective study from North Iraq and Cambodia. *Journal of Trauma* 2003; 54: 1188.
9. Husum H, Gilbert M, Wisborg T (2003) Training pre-hospital trauma care in low-income countries: the 'Village University' experience. *Medical Teach* 2003; 25: 142–148.
10. Jayaraman S, Mabweijano JR, Lipnick MS, Caldwell N, Miyamoto J, et al. (2009) First things first: effectiveness and scalability of a basic prehospital trauma care program for lay first responders in Kampala, Uganda. *PLoS ONE* 2009; 4:e6955.
11. Health Canada. "Potential years of life lost due to suicide and unintentional injury. Online: http://www.hc-sc.gc.ca/fniah-spnia/diseases-maladies/2005-01_health-sante_indicat-eng.php#potential (Accessed 17 June 2013).
12. Calveson R. *Prescription opioid-related issues in Northern Ontario*. Toronto, ON: Centre for Addiction and Mental Health, 2010. Available: http://intraspec.ca/aboriginal/NothernOntarioAreaReportPrescription_April2010.pdf (Accessed 17 June 2013).
13. Health Canada. *Evaluation strategies in Aboriginal substance abuse programs: A discussion*. Ottawa : Health Canada, 1998. Available: http://www.hc-sc.gc.ca/fniah-spnia/pubs/substan/_ads/1998_rpt-nnadap-pnlaada/index-eng.php#a3_3_2_1_2 (Accessed 17 June 2013).