

Development of a Training Module for the Management of Cold Water Induced Hypothermia Delivered via a Mobile Tele-Simulation Unit

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The Background

Newfoundland and Labrador (NL) (with a relatively cold climate and freshwater temperature) has a significant proportion of its population participate in winter recreational activities around water. As such, there exists an inherent risk of ice-related injuries and hypothermia. If cold water submersion occurs, humans succumb to severe hypothermia quickly. So, quick recognition and management of hypothermia is critical to the short- and long-term outcome of the individual. Training the general public en masse to enable rapid recognition and response to common injuries has the potential to reduce associated morbidity and mortality.

Simulation-based education has become an essential tool in medical, marine and first aid training. It provides learners with a safe environment to hone their skills and has been shown to be superior to traditional clinical teaching methods. Using a common injury relative to our home province, a public education simulation case was designed utilizing specific learning objectives. The case is supplemented with post-simulation didactic teaching to reinforce the principles of self-protection, ice safety and basic aquatic patient recovery.

Like many provinces and nations with a significant rural population, Newfoundland and Labrador faces several challenges in the provision of services, like education and outreach programs, to its population as a whole:

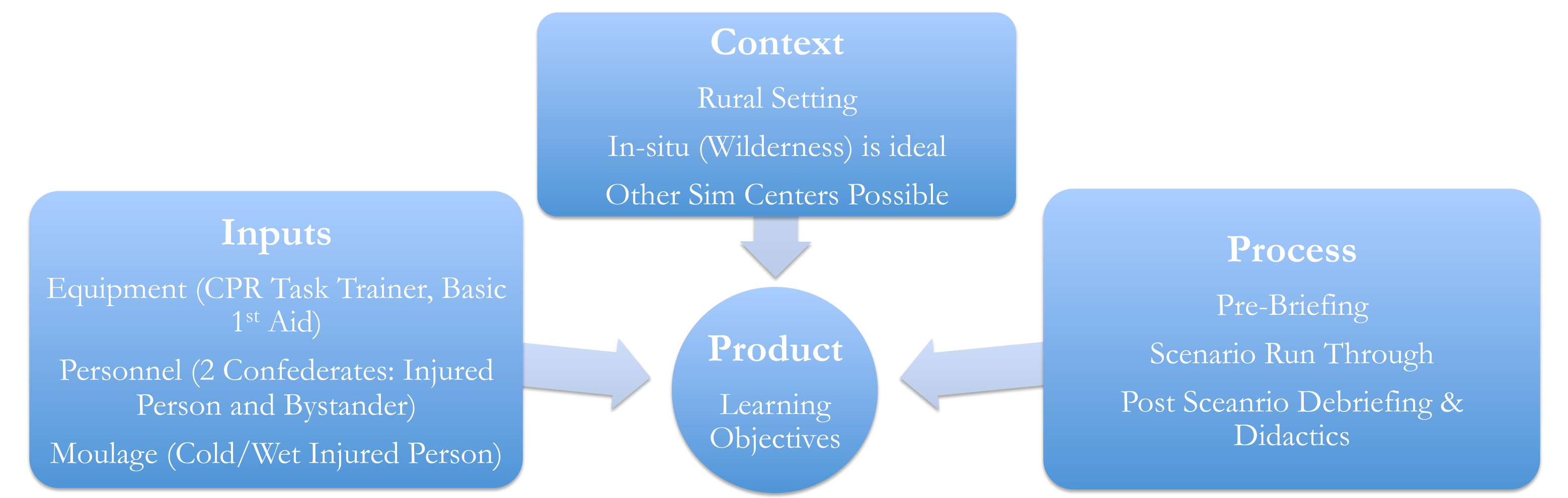
- o Many low-population communities separated by a vast geographically landscape
- o Limited resources in rural/remote areas (equipment, experts, etc)
- o Significant time and financial resource commitment to bring members of smaller centers together

This module proposes a novel solution to the provision of relevant education to medical and non-medical members of the community.

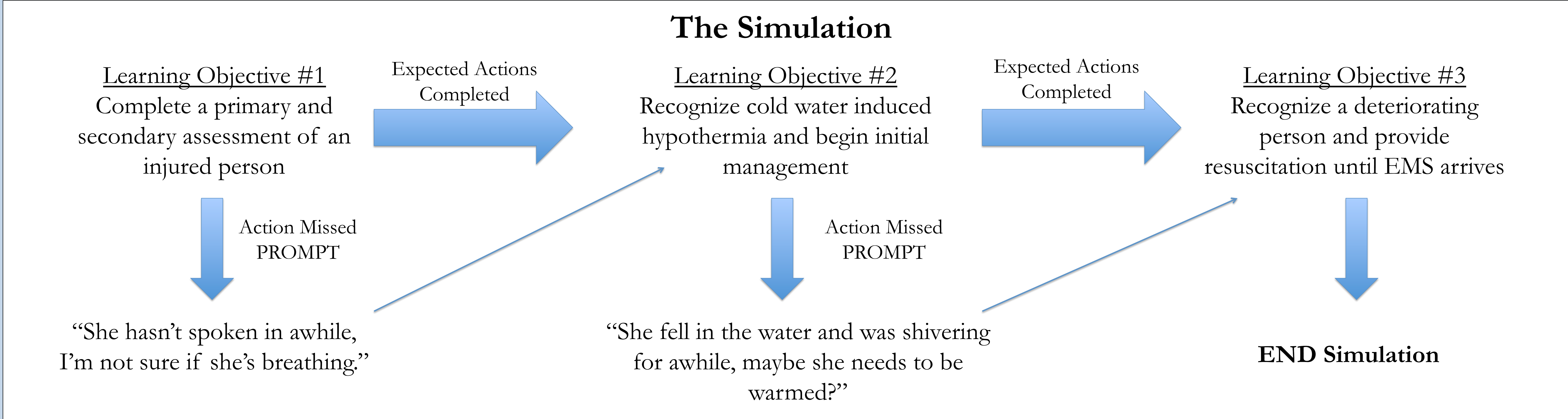
The Case

The simulation is designed to occur over approximately 10mins followed by a debrief session. The learner is provided with: *“You are a visitor to Little Falls, a rural community situated in central NL. You decide to take a bike about 15 minutes outside of the town. As the bike takes you past one of the many neighboring ponds you admire the glistening of the fresh snow and ice. While taking in the view, you suddenly notice two individuals by the water’s edge. One of them is clearly in distress and the second does not seem to be moving. Upon approaching them, the young male tells you his girlfriend just fell through the ice and he had to drag her back to shore. He says that she doesn’t seem herself now and he hasn’t been able to get her moving much for the past 20 minutes. As an experienced biker, you know some basic first aid and have a few first aid supplies in your bag. You offer to help the couple.”*

The Context-Inputs-Process-Product Model is used to provide the parameters for the case for the facilitators:



The Simulation



The Expected Actions

Expected Action	Finding/Outcome	Completed
Learning Objective #1		
Assess Level of Consciousness	Incoherent response to verbal stimulus	
Assess Airway/Breathing	Patient is taking shallow, slow breaths (RR=6, hypoventilation)	
Assess Circulation	Patient shows signs of poor perfusion (pallor, HR=36 BPM). No blood loss	
AMPLE History	Environmental allergies. Events preceding as described in the case	
Head-to-Toe Assessment	Patient shows no signs of trauma but extremities are tinged blue and victim is soaking wet. The victim is not shivering	
Learning Objective #2		
Call for Help/Activate EMS	EMS provides an ETA of 20 minutes	
Initiate Rewarming	No improvement or change despite efforts	
Position Victim Comfortable	No improvement or change despite efforts	
Learning Objective #3		
Reassessment of Injured Person	Patient is unresponsive. No visual signs of breathing.	
EMS Update	EMS provides an updated ETA of 5 minutes	
Use Proper Barrier Devices		
Initiate BLS Protocol	After 5 minutes of proper BLS: END SCENARIO	

The Delivery



This simulation training module aims to act as a representative example of the type of public education required to minimize the morbidity and mortality associated with injuries in rural environments. To accomplish this vision, an innovative model to link the experienced educator and debriefer to the rural population can play a key role.

One innovation under development is the Mobile Tele-Simulation Unit (MTU). This portable device is a simulation lab that can be transported anywhere in the province and used to connect learners to facilitators in larger centers through tele-communications (video/audio conferencing) software. The goal of the MTU is to provide training in rural/ remote areas while overcoming logistical challenges often associated, such as Travel, lack of equipment, cost, etc.

Although initially developed for medical trainees, the MTU can expand outside the field of medicine and be used as a public education tool. By partnering with communities whose medical professionals will already be receiving training, the general public also has the opportunity to utilize the unit. It overcomes the obstacle of having no trained facilitators in remote areas and takes advantage of the MTU mobility. By providing increased training opportunities to both our medical and non-medical community members, a safer environment for our province is created.

Although hypothermia is the injury focus in this module, education on other injuries could benefit from public education efforts using similar resources (eg. bone/joint injuries, wilderness survival or wound care).

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