

2016

## Establishing Community, Academic, and Industry Partnerships to Support Experiential Learning Within a Community-Based Research Collaborative

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### Recommended Citation

Gamble, B., Manis, D., & Wax, R. (2016, November 2-6). Establishing Community, Academic, and Industry Partnerships to Support Experiential Learning Within a Community-Based Research Collaborative. Paper presented at the *Higher Education in Transformation Symposium, Oshawa, Ontario, Canada*.

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## PARTNERSHIPS TO SUPPORT LEARNING

Establishing Community, Academic, and Industry Partnerships to Support Experiential Learning

Within a Community-Based Research Collaborative

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Presented at the Higher Education in Transformation Symposium

November 2 - 4, 2016 in Oshawa, Ontario, Canada

### Author Note

This research is supported by the Canadian Institutes for Health Research (CIHR) # 212804.

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### Abstract

Sudden cardiac arrest (SCA) is a common but potentially reversible cause of death. Unfortunately, few communities have attempted to improve survival using a holistic approach to resuscitation science including preventative, clinical, and rehabilitative care. The Durham Region Resuscitation Research Collaborative (DRRRC) has been established to identify research priorities, leverage regional community and health care services, and provide experiential learning and training opportunities within the resuscitation science continuum of care. Our objective is to provide an overview of the DRRRC and to present the collaborative learning experiences that link learners, stakeholders, research, and knowledge users in a community-based resuscitation laboratory. We used a case study approach that illustrated the opportunities for learning within the context of DRRRC's first initiative focused on improving community-based cardiopulmonary resuscitation (CPR). To date, this community-based resuscitation laboratory has included: one-second year and four fourth year undergraduates, and one medical resident. Learners engaging with the co-investigators and stakeholders have experienced learning opportunities that support the development of critical thinking skills and problem solving in the real world to support strategies to increase bystander CPR.

*Keywords:* health care, community connected experiential learning, cardiopulmonary resuscitation

Establishing Community, Academic, and Industry Partnerships to Support Experiential Learning  
Within a Community-Based Research Collaborative

This paper identifies and describes the community-connected experiential learning opportunities for learners within the Durham Region Resuscitation Research Collaborative (DRRRC). The initial priority identified through the engagement of DRRRC stakeholders was to increase bystander cardiopulmonary resuscitation (CPR) in the Durham region. The identification of new areas of research, integration of findings into practice, and quality improvement for early CPR response incorporates numerous experiential learning opportunities for learners. We therefore focus on early CPR response to illustrate experiential learning opportunities in the DRRRC.

We start with an overview of the DRRRC to situate the learning experiences. To date, six learners have been involved in DRRRC projects. We describe each project highlighting the different types of experiential learning as well as pertinent details about the experiences.

**Durham Region Resuscitation Research Collaborative (DRRRC)**

DRRRC was established in 2014 as a partnership between Lakeridge Health Corporation, a community-based hospital, and the Faculty of Health Sciences (FHSc) at the University of Ontario Institute of Technology (UOIT), both of which are situated in the Durham region in Ontario, Canada. DRRRC is supported and guided by the DRRRC Advisory Council whose membership includes a variety of stakeholders representing different perspectives. As well, the DRRRC incorporates broad stakeholder collaboration (e.g., academia, pre-hospital care, emergency medicine, hospitals, public health, the Durham Board of Education, long-term care facilities, patient advocates, and industry). The overall goal of DRRRC is to establish a community based resuscitation laboratory to improve outcomes from out of hospital sudden

cardiac arrest (SCA). SCA is a significant public health problem, resulting in approximately 40,000 cardiac arrests<sup>1</sup> per year in Canada where 85% occur outside of hospitals in public spaces or in homes (Heart and Stroke Foundation of Canada [HSFC], 2016). SCA is a common but potentially reversible cause of death.

The DRRRC, using a holistic approach, incorporates integrated knowledge translation strategies to improve outcomes from SCA. The links in the chain of survival (Figure 1) offer a framework from which to build a regional resuscitation collaborative and to support experiential learning opportunities. A key component of experiential learning is the connection with the community to provide learners with opportunities to participate in experiences outside of the classroom (Government of Ontario, 2016). Opportunities that expand across the continuum of care to include pre-arrest care (e.g., healthy choices), clinical care (e.g., advanced care) and post-arrest care (e.g., rehabilitation). Early CPR response is one of the links in the chain of survival that can make a difference in SCA outcomes (Eisenberg et al., 1990).



*Figure 1.* Resuscitation Chain of Survival (Heart and Stroke Foundation of Canada [HSFC], 2016. Retrieved from [https://resuscitation.heartandstroke.ca/guidelines/chain\\_of\\_survival](https://resuscitation.heartandstroke.ca/guidelines/chain_of_survival))

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<sup>1</sup>It is important to recognize the difference between a cardiac arrest and heart attack. A cardiac arrest is defined as “an unexpected loss of heart function, breathing and consciousness,” which if not treated immediately, will result in sudden cardiac death. A heart attack occurs “when blood flow to a portion of the heart is blocked” (Mayo Clinic Staff, 2016, para. 1, 2).

### **Community-Connected Experiential Learning and the DRRRC**

All learners involved with the DRRRC to date have collaborated with an interdisciplinary team of stakeholders outside of the classroom in the community to complete their projects. Learners managed their own learning throughout the learning experience drawing on DRRRC resources and mentorship as needed. The curriculum was not well defined, as extending the chain of survival to include pre-arrest and post-arrest care in the community is a novel new field of study. Each learner was responsible for delivering outcomes that were clearly defined and measurable requiring learners to think and act as a professional. All projects were student lead. The experiential learning experiences have, to date, engaged four learners. Two additional learners have yet to start their practicums at the time of the authoring of this report; however, their projects have been included to further illustrate the variety of learning experiences within DRRRC. A description of the six learning opportunities follows.

#### **Background Report for DRRRC Planning Meeting**

The first DRRRC planning meeting to engage stakeholders was held in 2014. Representatives from academia, pre-hospital care, emergency medicine, hospitals, public health, Durham Board of Education, long-term care facilities, patient advocates, and industry attended the meeting.

To prepare our stakeholders prior to the initial DRRRC planning meeting we realized it was important to provide a report or literature review on cardiac arrest epidemiology, resuscitation science, and systems interventions that can improve SCA survival. As indicated previously, DRRRC involves an interdisciplinary team representing diverse perspectives. As a result, we wanted to ensure our stakeholders each had a good understanding of the current

literature. Particular focus was paid to the Durham Region, where the DRRRC is situated to improve outcomes from SCA.

John<sup>2</sup> was a medical resident who had previously worked as a paramedic. Mentored by the DRRRC's medical lead, John conducted an extensive review of the literature. This task provided John with the opportunity to engage with stakeholders to apply his previous learning as a paramedic to tackle a real life problem and to produce a report based on a literature review that was used as a background paper for the first DRRRC planning meeting.

The recommendation made by John based on his literature review provided the evidence to acknowledge the important role bystander CPR plays in enhancing outcomes after out of hospital SCA. Those in attendance at the planning meeting supported John's recommendation of increasing bystander CPR as the first priority for the DRRRC.

### **Identification of Public Health Interventions and DRRRC Infographic**

The literature review conducted by John was supplemented by an additional literature review conducted by the fourth year undergraduate student, Myuri, during her practicum placement. Myuri was enrolled at that time in the UOIT FHSc Health Sciences Comprehensive Program with a focus on public health. One of the DRRRC's co-investigators and John mentored Myuri. John had an opportunity to practice his mentoring skills through his support of Myuri as she identified relevant literature on public health interventions at the pre-arrest stage. This information was included in the report for the first DRRRC planning meeting.

Upon completion of the DRRRC report, Myuri suggested and created an infographic to supplement the report completed by John. Infographics are useful tools for communicating in efficient fashion complex information (Kraus, 2012). Myuri used the skills and knowledge she acquired during her undergraduate studies to complete both the literature review and infographic.

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<sup>2</sup>Note: we do not use the real names of the learners

**PulsePoint to Enhance CPR Bystander Response**

Early and effective bystander CPR in the community is key to improving SCA outcomes (American Heart Association [AHA], 2010). However, bystanders are often unable to assist as they are unable to locate resources (e.g., automated external defibrillator [AED]) or do not have the skills or confidence required to perform CPR. There are positive indicators of increased public response using current educational and training approaches in resuscitation science, although training alone does not necessarily increase the rate of bystander CPR (Sasson, Rogers, Dahl & Kellermann, 2010). The use of mobile applications may be a facilitator to learning and performing CPR during an out-of-hospital SCA event.

PulsePoint is a mobile application, created by industry for both iOS and Android smartphones, to alert people of someone nearby who is having a SCA. A recent clinical trial reported in the *New England Journal of Medicine* indicated that the use of a mobile-dispatch similar to PulsePoint increased the rate of bystander CPR (Ringh et al., 2015). However, the identification of PulsePoint as a potential tool to increase bystander CPR is only the first step. We established that an implementation strategy to integrate the software into practice for out-of-hospital SCA.

Rahi is currently enrolled in the FHSc' Medical Laboratory Sciences Program at UOIT. He is mentored by one of the DRRRC's co-investigators. Building on course knowledge and his technical training, he has been key to the identification and coordination of key stakeholders and the early planning involved in identifying potential strategies to implement PulsePoint. He has also created the DRRRC website. Both experiences have provided Rahi with the opportunity to develop critical thinking skills (e.g., development of the website) and problem solving (e.g., coordination and maintaining of relationships in support of DRRRC). He is currently enrolled in

a summer course focused on team building and leadership. Rahi looks forward to applying this knowledge to his experiential learning experience with DRRRC to further foster the coordination and maintenance of DRRRC stakeholder partnerships to implement and to evaluate the effectiveness of PulsePoint in the Durham region.

### **Crowd-Sourcing Campaign to Identify Automated External Defibrillator**

Early defibrillation can additionally increase the likelihood of SCA survival (AHA, 2010). Portable Automated External Defibrillators (AED) are used to treat SCA in conjunction with CPR. AED application is most effective if performed promptly after the SCA (Capucci et al., 2002; Weisfeldt et al., 2010). A number of AEDs exists within the community (e.g., schools, casinos, gyms, etc.). However, laypersons that are often first to arrive at a SCA scene may not know the location of the nearest AED.

Daria, a trained paramedic, completed a practicum placement during the fourth year of her UOIT undergraduate Allied Health Sciences Program. Recognizing the importance and immediacy of knowing the location of AEDs, she undertook the task of developing a crowd sourcing campaign to identify AEDS in the Durham region. Daria was mentored by one of the DRRRC's co-investigators and engaged with industry, emergency services, and community agencies to develop the guidelines. The management and research skills she gained from the classroom complemented her experience as a paramedic to produce an implementation guideline to build a community AED registry in Oshawa through a crowd sourcing campaign. The contest will engage community members to locate unregistered AEDs within the community and upload photos of the AEDs to an application called PulsePoint AED on their smart phone.

**Fall 2016 Experiential Learning Opportunities**

Two fourth year undergraduate learners from UOIT's FHSc will begin practicum placements with the DRRRC in Fall 2016. Each placement will require the learners to engage with stakeholders as well as SCA survivors. The practicums provide learners the opportunity to apply research skills acquired during classroom instruction in the research courses offered by their programs. The two DRRRC co-investigators will mentor the following learners: (1) Connie is enrolled in the FHSc's Allied Health Sciences Program. She also brings to the practicum placement 17 years of nursing experience. The goal of her research practicum is to document the views of resuscitated and non-resuscitated patients towards family witnessed resuscitation using semi-structured interviews and thematic analysis; and (2) Roberto is enrolled in the FHSc's Health Sciences Comprehensive Program. He has no experience in either training or working in the health care field. The goal of Roberto's practicum is to describe the experience of first responders performing CPR in the community. Roberto will also use semi-structured interviews and thematic analysis to conduct his research.

**Summary of Experiential Learning Opportunities**

As evidenced in the learning examples presented, learners have actively participated in a variety of community-connected project-based learning experiences with an array of stakeholders outside of the classroom. This has required learners to further develop their problem solving skills and critical thinking. As previously indicated, the DRRRC is focused on extending the chain of survival to include many areas currently under researched in the Durham region. Learners have tackled real world problems within the context of DRRRC with the goal to increase out-of-hospital SCA survival.

The experiences to date have required learners to collaborate with industry, community agencies, local government, and health care institutions. The learners' connection with the community has varied ranging from onsite experiences (e.g., Daria's development of guidelines for a crowd-sourcing campaign), virtual experiences (e.g., Rahi's experiences with PulsePoint and the DRRRC website), and a combination of both or a hybrid approach (e.g., Myuri's interaction with John and development of an infographic). Currently, all learners either have a career in health care or intend to work in the health care field. The four learners to date have indicated that experiential learning opportunities have provided them with further insights to the complexity of the health care system and the important contribution of an integrated knowledge translation (iKT) approach to research. A key principle of iKT is to engage knowledge users as equal research partners throughout the entire research process (Canadian Institutes of Health Research [CIHR], 2012). This approach to doing research applies the principles of knowledge translation to all components of the research process, such as the creation of knowledge (e.g., interview data; knowledge implementation strategies; authoring reports on findings for dissemination to research partners); and quality improvement activities (e.g., formal and informal feedback mechanisms from the research partners) (CIHR, 2012). Through participation in the experiential learning opportunities within the DRRRC, learners indicated that an iKT approach provided insight into the relevance and usefulness of the products they produced. Specifically, they appreciated the opportunity to work on projects that can potentially make significant differences for out-of-hospital SCA outcomes in the Durham Region.

It is also important to note that learners are not the only ones who have benefited from the experiential learning opportunities. The DRRRC has also benefited. The participation of learners has augmented the DRRRC's ability to advance the research agenda through added

human resources to execute projects. The mentoring of future researchers and learners' participation is explicitly asked by granting agencies in reports on the success of funding projects. The accumulation of research activities and successes, including learner activities, will likely enhance the ability of the DRRRC to attract additional future grant funding and recruit undergraduate and graduate learners for future experiential learning opportunities. All of these factors create a potential for exponential growth of the DRRRC activities including experiential learning opportunities and improved health for the Durham region community.

### **Next Steps**

Additional learning opportunities will include experience with both qualitative and quantitative research studies as we develop and implement further initiatives and identify research priorities to support resuscitation science across the continuum of care or the Resuscitation Chain of Survival. Further, collaborative undertakings, such as the DRRRC, provide excellent learning opportunities for learners and help them develop key skills that have practical application within the real world. In fact, the research we undertake will provide examples and evidence for other geographical areas and educational institutions.

The development of assessments for experiential learning can be challenging, as the learning needs, opportunities, and outcomes vary depending on the learner and the specific project within the DRRRC as research evolves. The current assessment strategies employed have included journaling, reflective thought, and poster presentations at research days hosted by UOIT. The DRRRC in collaboration with the FHSc is in the process of developing additional assessment strategies that include elements of both reflection and self-assessment to evaluate and to enhance the learners' experiential learning. This activity will be ongoing as new projects arise within the DRRRC and the learning needs of learners evolve. To that end, we will create a

template that guides learners and instructors to help them identify the assessment(s) appropriate for each unique situation to measure success in the process and the individual project outcomes.

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