

# Partnering with Public Health to Improve Cardiac Arrest Outcomes in the Durham Region

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## Abstract

Resuscitation Science is envisioned as a continuum of care that extends across pre-hospital interventions, resuscitation, and post resuscitation. This study reports on public health's contributions within the pre-clinical setting towards extending the Chain of Survival following cardiac arrest. I conducted document synthesis from September 2013 to March 2014 using CIHR guidelines as part of an extensive systemic review. Subsequently, I wrote a report in preparation for the Durham Region Resuscitation Research Collaborative's (DRRRC) upcoming "Planning Day" following the CIHR's "Guide to Knowledge Synthesis." During May to August 2014, I collaborated with the research team and helped to prepare various works that will be used to engage the DRRRC's stakeholders before the collaborative launches in fall 2014 including: an infographic, a stakeholder questionnaire, an executive summary, sections for the DRRRC's literature review and biographical information for the DRRRC's team website. Overall, the literature suggests that the proposed efforts of the DRRRC could benefit all residents of the Durham Region and counteract the escalating rate of occurrence of cardiac arrest by potentially increasing multidisciplinary care within the region.

## Introduction

Cardiac arrest is a leading cause of mortality across North America, with 70% of cases occurring outside of the clinical setting in the community and home (Mader et al., 2012). The survival rate of cardiac arrest rarely surpasses 5% (Vaillancourt, Stiell, & Wells, 2008). The Chain of Survival (Figure 1) is a series of time-sensitive interventions to increase survival chances following cardiac arrest (Wax, Burgomaster, & Gamble, 2013). The interventions expand the continuum of care from pre-clinical interventions, resuscitation in the clinical setting to post-resuscitative care in the community and home. Pre-clinical interventions are governed by public health as it primarily focusses on healthy lifestyles and screening and also on preparing a response to cardiac arrest (WHO, 2014). Public health's response to cardiac arrest is based on educating and training laypeople in CPR and also ensuring that Emergency Medical Services (EMS) are prepared (WHO, 2014). Research has demonstrated that cardiac arrest survival rates increase as a result of early intervention in the community and home (Vaillancourt et al., 2008).

## Purpose

The DRRRC seeks to extend the Chain of Survival for cardiac arrest patients and survivors by identifying and sharing effective strategies with various stakeholders to counteract the escalating rates of cardiac arrest and also to increase survival rates after cardiac arrest.

## Methods

I conducted document synthesis according to CIHR guidelines from September 2013 to March 2014 as part of an extensive systemic review. Then I organized key findings into an annotated bibliography. Subsequently, I wrote a report in preparation for "Planning Day" using the criteria outlined in the CIHR's "Guide to Knowledge Synthesis." During May-August 2014, I created an infographic by using Microsoft PowerPoint to illustrate public health's role in the pre-clinical phase of the Chain of Survival for the DRRRC's stakeholders. The infographic outlines the Chain of Survival itself, the impact of cardiac arrest, and initiatives to improve performance and outcomes. Subsequently, I helped to prepare a stakeholder questionnaire with my supervisor Dr. Brenda Gamble by using MachForm software. The questionnaire is still in its preliminary stages. The purpose of the questionnaire is to obtain the impressions of the stakeholders for various parts of the literature review and also demographic information in an attempt to better organize the proposed "Planning Day." Furthermore, I wrote sections on health promotion strategies and the long-term outcomes of cardiac arrest that will be used in the DRRRC's literature review. Additionally, I helped to compile biographical information for the DRRRC's team members that will be used on the collaborative's website. Finally, I wrote an executive summary of the DRRRC's literature review that will be sent to the collaborative's stakeholders.

## Results

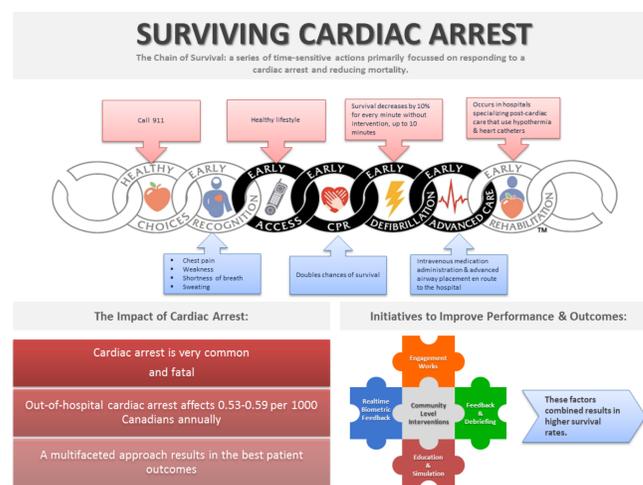


Figure 1. Infographic outlining cardiac arrest to engage DRRRC stakeholders.

## DRRRC Stakeholder Questionnaire



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5%

Section A. We would like to know about your overall impression of the report.

1) The literature synthesis report has been created to act as a primer for the DRRRC Planning Day. What is your overall impression of the literature synthesis report?

Totally unacceptable

Unacceptable

Neutral

Acceptable

Perfectly acceptable

Do not know

2) Is there any information that you feel should be ADDED/REMOVED to the report for Planning Day?

No

Yes, please specify:

Table 1. Challenges that prevent the delivery of early CPR during OHCA.

| Challenges to Early CPR Delivery                   |
|--|
| • Failure to recognize cardiac arrest              |
| • Differences in quality of postresuscitation care |
| • Low rates of bystander CPR                       |
| • Inconsistencies in CPR quality                   |
| • Limited defibrillator availability and usage     |
| • Delayed EMS response                             |

## Discussion & Conclusions

Cardiac arrest is a public health issue which is currently being treated primarily by various areas within emergency medicine. Despite public health implementing various interventions in the pre-clinical setting, many require improvements to effectively extend the Chain of Survival for cardiac arrest patients and survivors. Public health can further extend the Chain of Survival by focussing on bystander CPR and AED application interventions in the pre-clinical setting as they most significantly increase survival rates following out-of-hospital cardiac arrest (OHCA). Research indicates that additional interventions are especially needed to counteract bystander disinterest in CPR training and hesitancy to intervene as reversal of these factors can significantly extend the Chain of Survival (Vaillancourt et al., 2008). Finally, public health should consider collaborating with other disciplines since cardiac arrest is a collective population health issue that is complex in nature (Low & Thériault, 2008).

Research shows that it is best treated with a multidisciplinary care approach. The DRRRC holds great potential towards extending the Chain of Survival and identifying areas for future research.

## Acknowledgments

I wish to acknowledge the CIHR for funding the Durham Region Resuscitation Research Collaborative.

I wish to acknowledge and thank my supervisor Dr. Brenda Gamble immensely for all of the inspiration, wisdom, and support she provided throughout the duration of HLSC4998, HLSC4999, and summer 2014.

I wish to acknowledge and sincerely thank Dr. Randy Wax, Dr. Kirsten Burgomaster, and Dr. Brenda Gamble for giving me the opportunity to partake in this project and further develop my student research skills.

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