CorHealth Ontario

Advancing cardiac, stroke and vascular care

Ontario Paramedic 12-Lead ECG Guidelines

September 2017

Introduction

CorHealth Ontario proudly advises the Ministry of Health and Long Term Care, Local Health Integration Networks, hospitals, and care providers to improve the quality, efficiency, accessibility and equity of cardiac, stroke and vascular services for patients across Ontario. CorHealth plays an integral role in enhancing health system improvements in Ontario through the use of a more proactive, comprehensive and transparent approach to the planning, funding, performance management, and ongoing quality improvement of cardiac and vascular systems of care in Ontario. In partnership with the MOHLTC, and other stakeholders, CorHealth's mandate will includes emphasis on improved system design, capacity planning, funding policy, and performance measurement and management.

In 2011, the Ontario ST-Elevation Myocardial Infarction (STEMI) Working Group (WG) was established to address variation in STEMI management and to standardize STEMI care across the province. The WG membership is comprised of interventional cardiologists, emergency department physicians, base hospital (BH) medical directors, paramedic chiefs and paramedics. CorHealth uses the expertise of the WG to inform recommendations through best practice, published literature and expert consensus. In June 2013, the document *Recommendations for Best-Practice STEMI Management in Ontario*[1] was published which clearly defined the goals for STEMI care in Ontario.

In keeping with best practices regarding timely diagnosis of STEMI, the WG has undertaken to recommend that the basic Paramedic college curriculum include standard learning guidelines related to 12-Lead electrocardiogram (ECG) acquisition and interpretation across the province. Furthermore, the ACC/AHA 2013 STEMI Guidelines state that Paramedic personnel should perform an ECG on arrival at the scene if the patient's symptoms suggest STEMI[2]. This document was developed to support the existing provincial education program for ECG acquisition and STEMI identification for all Paramedics as outlined in **Priority Recommendation 6** within the *Recommendations for Best-Practice STEMI Management in Ontario.* The guidelines defined in this document may be utilized by Paramedic college educators to plan the program curriculum.

Background

The primary focus of the Network is to develop a standardized provincial system of STEMI management and access to optimal reperfusion therapy. The ECG is the primary diagnostic tool used for the identification of STEMI. Recognizing the critical role of Paramedics in pre-hospital identification of STEMI, Paramedics must be equipped with appropriate ECG education. The recommendations in this document were prepared utilizing the following steps:

[1] Cardiac Care Network of Ontario (CCN). (2013). Recommendations for Best-Practice STEMI Management in Ontario. Toronto: CCN.

[2] O'Gara, P., Kushner, F., Ascheim, D., Casey, D. J., Chung, M., de Lemos, J., et al. (2013). 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol, 61*, e78-140.

- Conducted a survey of the 25 Ontario colleges and private institutions that offer the Paramedic program;
- Performed a gap analysis of current state education; and
- Developed standardized curriculum recommendations related to 12-lead ECG education.

Survey Results

The survey of the 25 Ontario colleges and private institutions revealed variation and gaps in the current paramedic curriculum, specifically, the 12 and 15 Lead ECG acquisition and interpretation. The following are highlights of findings:

- The response rate was 85% (21/25);
- There was a wide range of didactic time dedicated to ECG topics (3 to 70 hours);
- The passing grade ranged from 60% to 80%;
- 12-Lead acquisition and rhythm interpretation are incorporated in all curricula including:
    - STEMI recognition (100%); and
    - STEMI mimics (57.14%).
- There was strong messaging from the respondent faculty coordinators who indicated that:
    - 12 and 15 Lead ECG with simulation should be a compulsory part of the curriculum;
    - There is struggle to cover the course material within the 2-year paramedic program;
    - There should be an increase in length and depth of the paramedic course; and
    - 12-Lead ECG interpretation should be a core basic paramedic competency.

Paramedic Scope of Practice

The Paramedic Association of Canada (PAC) has developed the National Occupational Competency Profiles (NOCP) that outlines the scope of practice for the different levels of paramedics according to certification and clinical knowledge and skills[3]. The NOCP contains integrated competency sets describing the entry-to-practice expectations for each paramedic level. The levels are characterized as follows:

[3] National Occupational Competency Profile for Paramedics October 2011, Paramedic Association of Canada

Primary Care (PCP) - The PCP has successfully completed a recognized education program in paramedicine at the primary care paramedic level. PCPs constitute the largest group of paramedics in Canada.

Advanced Care (ACP) - The ACP has successfully completed a recognized education program in paramedicine at the advanced care paramedic level. ACP education builds upon the PCP competencies, and ACPs apply their added knowledge and skills to provide enhanced levels of assessment and care.

Critical Care (CCP) - The CCP has successfully completed a recognized education program in paramedicine at the critical care paramedic level. This is currently the highest level of paramedic certification available in Canada.

Paramedic practice in the province of Ontario falls under the medical supervision of emergency physicians within the BH programs. Through BH, paramedics receive the required medical delegation, skills certification, continuing education and training.

Recommendations

Based on the gap analysis from the survey results, alignment with the BH and NOCP guidelines, the following are the recommendations as core components for the 12-lead ECG education:

1. Basic cardiac anatomy and physiology;
2. 12-Lead ECG basics;
3. 12/15-Lead ECG acquisition;
4. Basic rhythm/arrhythmia interpretation;
5. Correlation of diagnostic 12/15-lead ECG to anatomy;
6. Acute Coronary Syndrome (ACS); and
7. System of STEMI care:
    a. Bypass protocol including components of transfer of accountability communication;
    b. Goals of out-of-hospital care of STEMI patients; and
    c. Reperfusion therapy and treatment benchmarks.