A Standardized Template for Measuring and Reporting Telephone Cardiopulmonary Resuscitation

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Abstract

Background: Bystander cardiopulmonary resuscitation (CPR) improves out-of-hospital cardiac arrest (OHCA) survival. Telephone CPR (TCPR) comprises CPR instruction given by emergency dispatchers to bystanders responding to OHCA and the CPR performed as a result. TCPR instructions improve bystander CPR rates, but the quality of the instructions varies widely. No standardized system exists to critically evaluate the TCPR intervention.

Methods: Investigators developed a novel, standardized system to analyze audio recordings of suspected OHCA calls from a large regional 9-1-1 dispatch center. As the initial step of a TCPR quality improvement initiative, baseline data were obtained from October 2010 to November 2011. Dispatcher recognition of CPR need, delivery of TCPR instructions, and bystander CPR performance were documented.

Results: A total of 590 calls were analyzed. CPR was indicated in 317 calls and already in progress in 94. Dispatchers recognized the need for TCPR in 176 (79%) remaining calls. CPR instructions were started in 65/223 (29%) and bystander CPR resulting from TCPR instructions was started in 31/223 (14%). Median time intervals were: recognition of CPR need [88s (IQR: 44, 104.5)], initiation of CPR instructions [176s (IQR: 139, 207)], and first chest compression [251s (IQR: 189, 306)].

Conclusion: It is feasible to employ a simple data collection and reporting system for critical evaluation of the TCPR intervention. A standardized methodology for measuring TCPR is necessary to perform on-going quality improvement, to establish performance standards, and for future research on how to optimize bystander CPR rates and OHCA survival.

Introduction

Bystander initiated cardiopulmonary resuscitation has been shown to increase survival, however it is performed in less than half of all out-of-hospital cardiac arrests. Dispatch-assisted CPR, also known as Telephone CPR, has been shown to double rates of bystander CPR and provides an opportunity to systematically increase bystander CPR rates and survival on a large scale.

TCPR instruction is defined as real-time CPR guidance offered to callers by emergency dispatchers or other trained call-takers. The goal is to provide bystanders with “just-in-time” instructions to identify whether the victim is in cardiac arrest and instruct the bystander to perform CPR prior to the arrival of trained rescuers.

Many believe that one of the system factors responsible for the enormous variability in OHCA outcomes across communities is the quality and timeliness of the TCPR process.

The purpose is to describe the development and application of descriptive terms, a codified measurement tool, and a standardized reporting format for assessing the quality of TCPR.

Methods

Five hundred and ninety suspected cardiac arrest audio recordings of emergency dispatch calls were obtained from a large regional combined fire and law enforcement dispatch center.

Investigators developed and utilized an electronic web-based 21-element data collection tool to capture relevant dispatcher/bystander interaction data in cases of suspected OHCA.

In addition to the development of the data collection tool, 6 key TCPR metrics were derived in accordance to the American Heart Association guidelines and measured in each of the audio recordings.

Inter-rater reliability was also assessed by having call listeners analyze an identical set of 25 calls. The reproducibility of data analysis between call listeners was statistically evaluated.

Results

We describe the successful development, application and assessment of an inter-rater reliability of a standardized TCPR measurement tool that can be used to evaluate an EMS system’s process for providing TCPR. Future study is required to evaluate whether this tool can be widely used at other centers and has the potential to aid systems in increasing the rate of bystander CPR and to improve OHCA outcomes.

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