Minnesota CARES Toolkit
MN CARES PROGRAM TOOLKIT

This toolkit is free to EMS agencies interested in implementing the Minnesota CARES program. The materials have been developed to provide step-by-step instructions for implementing program and useful materials to assist you in the process.
Table of Contents

Overview 3
Introduction 4
Key Players 5
EMS Agencies 6
Hospitals 7
CAD System 8
HIPAA 9
Review 10
Reports 10
Steps for Implementations 11
Case Timeline 12
Articles 13
Letters of Support 14
Overview

An ongoing registry of cardiac arrest is the major tool to improve cardiac arrest survival. While cardiac arrest resuscitation comprises only a small fraction of all EMS calls, such events are an excellent surrogate to quantify overall EMS system performance. Cardiac arrest activates the entire EMS system, from community bystanders through hospital care. The tools in this kit will enable and individual agency to be enrolled in the Cardiac Arrest Registry to Enhance Survival (CARES) and begin surveillance of out-of-hospital cardiac arrest and EMS performance.

The goal of the CARES program is to establish a model for unifying all essential data elements to evaluate care for out-of-hospital cardiac arrest. The CARES system builds this model by working with EMS agencies, hospitals, and computer aided dispatch (CAD) systems. These sources enable efficient data collection that is essential for improving cardiac arrest care. The collection and reporting system is provided by a restricted-access, secure, internet database developed by Sansio, a leading SAAS (software as a service) company based in Duluth, MN and managed locally by CARES program staff at the Minnesota Resuscitation Consortium (MRC). All participants can view their own statistics and de-identified, community-aggregate statistics.

CARES is 1 of 6 partner states participating in a national effort to monitor cardiac arrest and improve survival. Thanks to a grant from the Medtronic HeartRescue Foundation, Minnesota has launched a statewide effort to collect OHCA data using the CARES platform modified for each state.

![CARES Platform Image]
Introduction

Upwards of 200,000 persons suffer out-of-hospitals cardiac arrest (OHCA) and receive attempted resuscitations each year in the United States, making OCHA a leading cause of death among adults.

Nationally, few communities actively monitor and report their survival rates from OHCA. The range of survival in these communities for ventricular fibrillation is anywhere from 2% to 50%. This difference is striking since the approach to the care of these patients is uniform and there is no evidence that patients in one part of the country are different biologically from another.

The CARES (Cardiac Arrest Registry to Enhance Survival) Program is a collaborative effort to reduce mortality and improve care. Using the Utstien style of statistics from OHCA. CARES is capable of identifying and tracking all cases of cardiac arrest in a defined geographic area. The ultimate goals of CARES is to help local EMS administrators and medical directors identify who is affected, when and where cardiac arrest events occur, which elements of the system are functioning properly, which elements need more work, and how changes can be made to improve emergency cardiac care, and in turn cardiac arrest outcomes.

CARES is secure, Web-based data management system in which participation communities enter local data and generate their own reports. This reduces time involved in registering events, tracking patient outcomes with hospitals, and calculating response intervals. Multiple reporting features can be generated and monitored continuously through secure online access by CARES participants and allow for longitudinal, internal benchmarking.

Presently, the odds of surviving an episode of out-of-hospital cardiac arrest in the United States vary by a factor of 10 to 20, depending on the community in which it occurs. Such extreme disparities indicate a real opportunity to increase survival by identifying specific areas where care can be improved. CARES enables communities to rigorously assess all aspects of OHCA care. Just as important, CARES enables a community or system to track changes in care so that effective progress can be measured.

Please refer to the CARES website (https://mycares.net) for additional program information. Contact the Minnesota CARES coordinator for additional information: lucinda@umn.edu or call (612) 626-4040
Key Players

Any **EMS agency**-public and private- that transport a CA patient

Communications Centers

Hospitals

*Resources needed:*
Computer and Internet
EMS Agencies

Working with CAREs staff, EMS agencies develop an all-inclusive plan for identify cardiac arrest in their system. Because each system is unique it is necessary to brainstorm methods for identification of each and every cardiac arrest.

Inclusion Criteria:

- Out-of-Hospital non-traumatic cardiac arrest
- Patient assessed by organized EMS personnel
- Patient received either:
  - External defibrillation by lay public responders or EMS personnel
  - Chest compression by EMS personnel

These criteria identify which events initiate a CARES entry. Typically 1-2 people at each agency assure case identification and data entry. Data entry is supported by a complete data dictionary. The CARES Coordinator is available for support and troubleshooting. Data are submitted via desktop data entry or batch uploads.
Hospitals

A professional and collaborative relationship with the hospital is an important component because it enables complete follow-up of patients transported to the hospital. Communication with the hospital orients them to the project and CARES website, addresses any HIPAA concerns, and defines the plan for coordinated follow-up. An automatic email to the hospital contact is generated when a case is entered into CARES as arriving at the hospital.

The hospital contact is a key person identified at each local receiving hospital and has their own long-on to the CARES website. The hospital contact logs into the website periodically, typically weekly or monthly, to view cases requiring follow-up. Hospital contact only access patients that have been transported to their facility. Patient identifiers are a needed component for hospitals to identify patients needing follow-up. Hospital questions include emergency department outcome, deposition location, important procedures and interventions, and neurological status at time of discharge using the Cerebral Performance Category Score. Completion of CARES information requires only a few minutes for patients who die in the hospital and a few additional minutes for those who survive. CARES staff are available to work with hospital to explain the activity and help address challenges in finding patients and entering outcomes.

<table>
<thead>
<tr>
<th>Part I: Hospital Section - Please complete the following questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Room Outcome</td>
</tr>
<tr>
<td>Resuscitation terminated in EP</td>
</tr>
<tr>
<td>Admitted to ICU/CCU</td>
</tr>
<tr>
<td>Admitted to floor</td>
</tr>
<tr>
<td>Transferred to another acute care facility from the EP</td>
</tr>
</tbody>
</table>

Treatment Yes                                                    No  Unknown

Hospital procedures

- PCI performed?
  - Yes, No, Unknown

- Was a cardiac cather placed?
  - Yes, No, Unknown

- CABG performed?
  - Yes, No, Unknown

- Was an ICD placed?
  - Yes, No, Unknown

Hospital Comments
CAD System

Successful resuscitation depends in part on timely care. Accurate measure of when care is delivered is critical to understanding patient outcome. Different systems have different sources to capture clock times. Sometimes these times are available from EMS, other times through the use of computer-aided dispatch (CAD). The CAD information can assure accurate times corresponding to the atomic, universal clock. This information can be available through paper records or may be electronically exported/imported to EMS. CAD records are matched to a case based on date, approximate time, location, all event information identified by EMS during the initial CARES report. CARES staff works with each agency to help identify the best approach to capture essential time elements.

<table>
<thead>
<tr>
<th>Response and Treatment Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time call received at dispatch center</td>
</tr>
<tr>
<td>Time First Responder dispatched</td>
</tr>
<tr>
<td>Time of First Responder en route</td>
</tr>
<tr>
<td>Time Ambulance dispatched</td>
</tr>
<tr>
<td>Time for Ambulance en route</td>
</tr>
<tr>
<td>Time First responder arrived at scene</td>
</tr>
<tr>
<td>Time Ambulance arrived at scene</td>
</tr>
<tr>
<td>Time EMS arrived at patient side</td>
</tr>
<tr>
<td>Time Ambulance left scene</td>
</tr>
<tr>
<td>Time Ambulance arrived at ED</td>
</tr>
</tbody>
</table>
What about HIPAA?

- The CARES system uses a secure Web database with restricted access for authorized users.
- Has software that collects and links data sources to create a single de-identified record for each event.
- Uses a simple HIPAA-compliant methodology to protect confidentiality.
- CARES is a public health activity as described by 45 CFR § 164.512 (b) and is authorized by sections 301 (a) and 317 (k)(2) of the Public Health Service Act.
- The CDC considers this to be a quality improvement intervention and public health surveillance activity, for which disclosure of protected health information by covered entities is authorized by 45 CFR § 164.512 (b) of the Privacy Rule.
- When the case has been audited and is free from any errors or questions, identifiers are then ‘scrubbed’ from the case by CARES staff.

In conclusion: CARES is HIPAA compliant
**Review**

The CARES database allows for real time self-made reporting features. CARES cases are audited individually and manually to ensure accuracy and data integrity. CARES staff will work with Agency personnel to assure a constructive, positive process. Reporting features can then be used to develop system improvement. Data can be filtered and complied in many different ways to create meaningful reports for hospitals and EMS agencies. Currently CARES is implementing additional reporting feature that will enhance the utility and ease of generating report.

**Reports**

Utstein is the recognized international standard for reporting out-of-hospital cardiac arrest. The Utstein recommendations are an attempt to develop and present consensus definitions so that systems can reasonably assess their performance and identify areas for improvement.
Steps for Implementation

• Contact Minnesota CARES Coordinator: Lucinda Klann at lucinda@umn.edu or 612-626-4040.

• Identify all EMS agencies that care for and/or transport cardiac arrest among that geographic area.

• Identify all receiving hospitals.

• Complete EMS Agency Application – the CARES Coordinator can help.

• Communicate and work with system stakeholders, such as CAD, ambulance companies, hospitals, medical directors, etc.

• The MNCARES Coordinator will work with you to:
  o Approach local hospitals to inform them of CARES and seek buy-in.
  o Identify a contact person at each hospital.
  o Set up a log-in for data entry personnel, any one needing access to reports, and hospital contacts. Each person will have a log-in unique to their needs (i.e. data entry only, reports only, hospital only).
  o A mechanism and plan to obtain 100% case identification.
  o Set a stat date to being entering cases.
  o Provide training for data entry.

• Begin entering cases. As cases accrue being running reports.
Case Timeline

Example Case of Cardiac Arrest

Step 1 – Cardiac Arrest event occurs in the field and received care by EMS personnel.

Step 2 – EMS agency collects incident report forms and patient care records from the EMTs and Paramedics that responded and treated the patient. EMS-liaison, identified data entry person, gathers this information along with CAD times.

Step 3 – Data is entered into mycares.net or directly uploaded in batches. When the patient is transported to the hospital, the receiving hospital is chosen from the drop down list. An automatic email is sent to the hospital’s CARES contact.

Step 4 – For patients transported, the hospital’s CARES contact logs into CARES, identifies the patient based on identifiers provided by EMS, reviews the medical record, and answers the questions related to the hospital care and outcome of the patient. 
Note: Step 4 does not occur when the patient dies in the field and does not require any hospital information.

Step 5 – The case is audited by CARES. When all of the information is complete, is logical and there are not further questions, the case is then ‘scrubbed’ of all identifiable data. This data will now be included in regional and national reports.
Articles

The following is a proof-of-concept article for the CARES system and can be used as a resource regarding the rationale, design, and scope of CARES.

Out-of-Hospital Cardiac Arrest Surveillance — Cardiac Arrest Registry to Enhance Survival (CARES), United States, October 1, 2005—December 31, 2010

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Abstract

Problem/Condition: Each year, approximately 300,000 persons in the United States experience an out-of-hospital cardiac arrest (OHCA); approximately 92% of persons who experience an OHCA event die. An OHCA is defined as cessation of cardiac mechanical activity that occurs outside of the hospital setting and is confirmed by the absence of signs of circulation. Whereas an OHCA can occur from noncardiac causes (i.e., trauma, drowning, overdose, asphyxia, electrocution, primary respiratory arrests, and other noncardiac etiologies), the majority (75%—85%) of such events have a cardiac cause.

The majority of persons who experience an OHCA event, irrespective of etiology, do not receive bystander-assisted cardiopulmonary resuscitation (CPR) or other timely interventions that are known to improve the likelihood of survival to hospital discharge (e.g., defibrillation). Because nearly half of cardiac arrest events are witnessed, efforts to increase survival rates should focus on timely and effective delivery of interventions by bystanders and emergency medical services (EMS) personnel. This is the first report to provide summary data from an OHCA surveillance registry in the United States.

Reporting Period: This report summarizes surveillance data collected during October 1, 2005—December 31, 2010.

Description of the System: In 2004, CDC established the Cardiac Arrest Registry to Enhance Survival (CARES) in collaboration with the Department of Emergency Medicine at the Emory University School of Medicine. This registry evaluates only OHCA events of presumed cardiac etiology that involve persons who received resuscitative efforts, including CPR or defibrillation. Participating sites collect data from three sources that define the continuum of emergency cardiac care: 911 dispatch centers, EMS providers, and receiving hospitals. OHCA is defined in CARES as a cardiac arrest that occurred in the prehospital setting; had a presumed cardiac etiology, and involved a person who received resuscitative efforts, including CPR or defibrillation.

Results: During October 1, 2005—December 31, 2010, a total of 40,274 OHCA records were submitted to the CARES registry. After noncardiac etiology arrests and missing hospital outcomes were excluded from the analysis (n = 8,585), 31,689 OHCA events of presumed cardiac etiology (e.g., myocardial infarction or arrhythmia) that received resuscitation efforts in the prehospital setting were analyzed. The mean age at cardiac arrest was 64.0 years (standard deviation [SD]: 18.2); 61.1% of persons who experienced OHCA were male (n = 19,360). According to local EMS agency protocols, 21.6% of patients were pronounced dead after resuscitation efforts were terminated in the prehospital setting. The survival rate to hospital admission was 26.3%, and the overall survival rate to hospital discharge was 9.6%. Approximately 36.7% of OHCA events were witnessed by a bystander. Only 33.3% of all patients received bystander CPR, and only 3.7% were treated by bystanders with an automated external defibrillator (AED) before the arrival of EMS providers. The group most likely to survive an OHCA are persons who are...
Letters of Support

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention

October 20, 2008

Bryan McNally, MD, MPH
Assistant Professor of Emergency Medicine
Section of Prehospital and Disaster Medicine
Department of Emergency Medicine
Emory University School of Medicine
531 Ashbury Circle – Annex, Suite N340
Atlanta, Georgia 30322

Dear Dr McNally:

This letter serves as verification of a grant of authority from the Centers for Disease Control and Prevention (CDC) for you to conduct the public health activities described here, acting as a public health authority pursuant to the Standards for Privacy of Individually Identifiable Health Information promulgated under the Health Insurance Portability and Accountability Act (HIPAA) [45 CFR Parts 160 and 164]). Under this rule, covered entities may disclose, without individual authorization, protected health information to public health authorities " . . . authorized by law to collect or receive such information for the purpose of preventing or controlling disease, injury, or disability, including, but not limited to, the reporting of disease, injury, vital events such as birth or death, and the conduct of public health surveillance, public health investigations, and public health interventions . . . " The definition of a public health authority includes " . . . an individual or entity acting under a grant of authority from or contract with such public agency . . . . "

The Section of Pre-hospital and Disaster Medicine in the Department of Emergency Medicine at the Emory University School of Medicine is acting under a cooperative agreement with the CDC to conduct the CARES (Cardiac Arrest Registry to Enhance Survival) Program which is authorized by sections 301(a) and 317(k)(2) of the Public Health Service Act. The purpose of the CARES Program is to help local communities identify and track cases of cardiac arrest and identify opportunities for improvement in the treatment of out-of-hospital cardiac arrest. The CDC grants this authority to Emory University School of Medicine for purposes of this project. Further, the CDC considers this to be a quality improvement intervention and public health surveillance activity, for which disclosure of protected health information by covered entities is authorized by 45 CFR § 164.512(b) of the Privacy Rule.

Sincerely,

Paula W. Yoon, ScD, MPH
Division for Heart Disease and Stroke Prevention
Centers for Disease Control and Prevention
Bryan McNally, MD, MPH  
Assistant Professor of Emergency Medicine  
Section of Prehospital and Disaster Medicine  
Department of Emergency Medicine  
Emory University School of Medicine  
531 Asbury Circle – Annex, Suite N340  
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Sincerely,

Paula W. Yoon  
Division for Heart Disease and Stroke Prevention  
Centers for Disease Control and Prevention
September 9, 2011

Demetris Yannopoulos, MD
Medical Director
Minnesota Resuscitation Consortium
Division of Cardiology
University of Minnesota

Dear Dr. Yannopoulos,

In an effort to improve survival rates following sudden cardiac arrest in Minnesota, the Heart Disease and Stroke Prevention Unit at the Minnesota Department of Health (MDH) is committed to partnering with the Minnesota Resuscitation Consortium in their collection and analysis of sudden cardiac arrest data. This collaboration will support Objective 2.1 from the Minnesota Heart Disease & Stroke Prevention Plan 2011-2020: Provide consistent, evidence-based and timely acute care for Minnesotans experiencing sudden cardiac arrest.

MDH will work with MRC staff to generate standardized reports for all Minnesota cases, and custom reports as requested by MRC-participating emergency medical and clinical partners. MDH will also assist with the development of data-driven questions to meet the quality improvement needs of participating hospitals and EMS agencies. MDH agrees to serve as the final repository for a de-identified dataset, collected through the CDC-funded CARES (Cardiac Arrest Registry to Enhance Survival) data portal. This dataset will conform to MDH's definition of data de-identification, retaining age, sex, and zip code information. It will not include the following personal information: name, address, city, or birthdate. These de-identified data will be used by MDH and the MRC for surveillance of sudden cardiac arrest events, EMS response, and survival.

We look forward to partnering with the Minnesota Resuscitation Consortium staff in their work to promote and implement community and emergency medical systems programs and to improve survival from sudden cardiac arrest across the state of Minnesota.

Sincerely,

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