

## Chest Compression–Only CPR as Effective as Standard CPR

Bohm K, Rosenqvist M, Herlitz J, et al. Survival is similar after standard treatment and chest compression only in out-of-hospital bystander cardiopulmonary resuscitation. *Circulation* 2007;116:2908–12.

### Study Overview

**Objective.** To compare 1-month survival rates among patients given bystander-administered standard cardiopulmonary resuscitation (CPR; chest compression plus mouth-to-mouth ventilation) or single-mode CPR (chest compression only).

**Design.** Retrospective cohort study.

**Setting and participants.** All patients with out-of-hospital cardiac arrest who received bystander-administered CPR and reported to the Swedish Cardiac Arrest Register between 1990 and 2005 were included. Crew-witnessed (ambulance staff, police, health care provider) cases of out-of-hospital cardiac arrest were excluded. Baseline characteristics of the patient, bystander, and nature of the cardiac arrest as well as ambulance response time were collected. The first recorded rhythm was defined as ventricular fibrillation, pulseless electrical activity, or asystole.

**Main outcome measure.** Survival at 1 month.

**Main results.** Among 11,275 patients, 73% ( $n = 8209$ ) received standard CPR, and 10% ( $n = 1145$ ) received compression-only CPR. One-month survival was not significantly different between patients who received standard CPR and those who received compression-only CPR (7.2% vs. 6.7%, respectively). With respect to ambulance response time, there were no differences in 1-month survival between standard CPR and compression-only CPR when the delay was short ( $\leq 8$  min; 11.5% vs. 9.5%) or long ( $> 8$  min; 2.7% vs. 1.8%).

**Conclusion.** One-month survival rates were not significantly different between out-of-hospital cardiac arrest patients receiving standard CPR and those receiving compression-only CPR.

### Commentary

Patients who experience an out-of-hospital cardiac arrest have a relatively small chance for survival. Bystander CPR has been shown to improve survival in patients with ventricular fibrillation [1]. However, only a minority of individuals properly trained to perform CPR administer it when confronted with an out-of-hospital cardiac arrest patient [2]. The reasons for this are unclear, but fear of contracting infectious agents has been documented [3,4].

This study by Bohm et al describes the Swedish experience with over 9000 cardiac arrests. Patients who received compression-only CPR appeared to have similar 1-month survival rates as compared with those who received standard CPR. The reason why patients received compression-only CPR instead of standard CPR is unknown. During the time period evaluated (1990–2005), only standard CPR was taught, and patients received compression-only CPR when standard CPR was not feasible (eg, when lying or sitting in a difficult position). Of note, this was an observational study, and although the authors adjusted for some confounding factors, they could not adjust for severity of illness or comorbid conditions. Additionally, all patients had a cardiac arrest and not a respiratory arrest; mouth-to-mouth ventilation is probably more important in patients with respiratory arrest.

Chest compression–only CPR is simpler to perform and

### Outcomes Research in Review SECTION EDITORS

**Ashish K. Jha, MD, MPH**  
Brigham and Women's Hospital  
Boston, MA

**Ula Hwang, MD, MPH**  
Mount Sinai School of Medicine  
New York, NY

**Salomeh Keyhani, MD, MPH**  
Mount Sinai School of Medicine  
New York, NY

**Nirav R. Shah, MD, MPH**  
New York University School of Medicine  
New York, NY

**Robert L. Huang, MD, MPH**  
Vanderbilt University Medical Center  
Nashville, TN

**Mark W. Friedberg, MD, MPP**  
Brigham and Women's Hospital  
Boston, MA

**Marc M. Triola, MD**  
New York University School of Medicine  
New York, NY

**Jason P. Block, MD, MPH**  
Brigham and Women's Hospital  
Boston, MA

could stimulate more people to start CPR earlier. This version of CPR eliminates the possibility of infection and allows a dispatcher to instruct a bystander how to initiate CPR while simultaneously performing chest compressions on a dying patient. In fact, dispatcher-assisted CPR with chest compression only and dispatcher-assisted standard CPR result in similar survival rates [5].

**Applications for Clinical Practice**

Chest compression-only CPR seems to be a viable alternative to standard CPR with mouth-to-mouth ventilation in cardiac arrest. A randomized controlled trial is currently underway to provide more information as to whether standard CPR or chest compression-only CPR is more effective.

—Review by Robert L. Huang, MD, MPH

Copyright 2008 by Turner White Communications Inc., Wayne, PA. All rights reserved.

**References**

1. Cobb LA, Fahrenbruch CE, Walsh TT, et al. Influence of cardiopulmonary resuscitation prior to defibrillation in patients with out-of-hospital ventricular fibrillation. *JAMA* 1999;281:1182-8.
2. Swor R, Khan I, Domeier R, et al. CPR training and CPR performance: do CPR-trained bystanders perform CPR? *Acad Emerg Med* 2006;13:596-601.
3. Brenner BE, Kauffman J. Reluctance of internists and medical nurses to perform mouth-to-mouth resuscitation. *Arch Intern Med* 1993;153:1763-9.
4. Hew P, Brenner B, Kauffman J. Reluctance of paramedics and emergency medical technicians to perform mouth-to-mouth resuscitation. *J Emerg Med* 1997;15:279-84.
5. Hallstrom A, Cobb L, Johnson E, Copass M. Cardiopulmonary resuscitation by chest compression alone or with mouth-to-mouth ventilation. *N Engl J Med* 2000;342:1546-53.