Tips from Other Journals

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Is Compression-Only CPR More Effective Than Standard CPR?

Background: There has been increasing interest in cardiopulmonary resuscitation (CPR) using compressions alone over compressions plus rescue breathing. Besides theoretically improving cerebral perfusion, chest compressions may be preferable to rescue breathing among bystanders performing CPR. Animal models and a previous randomized human trial have found some clinical benefit in persons who received only chest compressions, compared with a traditional approach of compressions plus rescue breathing. Rea and colleagues conducted a randomized controlled trial of CPR compressions with or without rescue breathing among patients with potential cardiac arrest to determine which method is more effective.

The Study: Participants were identified from 911 system calls. Eligibility was determined if the 911 dispatcher concluded that the person was unconscious and not breathing normally, and if the caller was willing to perform CPR with the dispatcher's assistance. Callers were randomized to be instructed to give chest compressions alone, or chest compressions plus rescue breathing in a 15:2 ratio, until the arrival of emergency medical services (EMS) personnel. The primary outcome was survival to hospital discharge, with a secondary outcome of favorable neurologic status at the time of hospital discharge (defined as no worse than moderate cerebral disability). Patients with cardiac arrest attributed to trauma, drowning, or asphyxiation (e.g., choking), who were younger than 18 years, and who were already receiving CPR were excluded. Patients also were excluded retrospectively if they were later determined by EMS personnel to not have been in cardiac arrest.

Results: A total of 1,941 participants were included in the study, with an average EMS response time of 6.5 minutes from dispatch to arrival at the scene. No significant differences were seen between groups regarding survival to hospital discharge (12.5 percent for compressions alone versus 11.0 percent for compressions plus rescue breathing), or in the likelihood of survivors having favorable neurologic status (14.4 versus 11.5 percent, respectively). Among patients who were determined to have had a cardiac cause of arrest, compression-only CPR was associated with better neurologic status at discharge (18.9 percent for compressions alone versus 13.5 percent with compressions plus rescue breathing), although overall survival rates remained similar (5.0 versus 7.2 percent, respectively).

Conclusion: The authors conclude that giving bystanders CPR instructions to use chest compressions alone does not increase overall survival compared with instructions to use chest compressions plus rescue breathing, although in this study it did somewhat improve neurologic outcomes in patients who had a cardiac cause of arrest. These results support a strategy for laypersons that emphasizes chest compressions and minimizes rescue breathing.

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Source: Rea TD, et al. CPR with chest compression alone or with rescue breathing. *N Engl J Med.* July 29, 2010;363(5):423-433.

EDITOR'S NOTE: Several points from this study deserve mention. First, the study used CPR provided by bystanders with assistance from 911 dispatchers. Although it strengthens the argument for compression-only CPR, it is ▶

unknown whether these results are applicable to CPR provided by health care professionals in or out of the hospital setting.

Second, it could be argued that one of the treatment arms might yield better outcomes when the patient's cardiac arrest is witnessed, because the study included patients with and without witnessed collapses. However, a separate study also reported that adding rescue breathing to chest compressions in witnessed cardiac arrest does not improve survival over chest compressions alone.[1]

Finally, a subtle finding from this study underscores an important point. Although CPR can improve the odds of survival, the chances of remaining neurologically intact are still grim: only 14.4 percent of CPR survivors were discharged from the hospital with little or moderate cerebral disability, whereas most patients had severe neurologic impairment or were in a coma or vegetative state. This is considerably lower than in-hospital CPR estimates; out of the 68 percent of patients with good neurologic status initially, 58.7 percent still had good neurologic status after CPR.[2] Such statistics should be considered when counseling patients about their own advance directive status.—K.T.M.

REFERENCES

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2. Peberdy MA, Kaye W, Ornato JP, et al. Cardiopulmonary resuscitation of adults in the hospital: a report of 14720 cardiac arrests from the National Registry of Cardiopulmonary Resuscitation. *Resuscitation.* 2003;58(3):297-308. ■