Survival rates for elderly patients receiving in-hospital resuscitation (CPR) did not improve from 1992 to 2005

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You don't have to be Michael Jackson to have this problem: The odds of surviving cardiac arrest after getting CPR in a hospital are slim and have not improved in more than a decade, a big Medicare study concludes.

A study of elderly patients receiving CPR in the hospital shows that rates of survival did not improve from 1992 to 2005. During that period, the proportion of hospital deaths preceded by CPR rose, and the proportion of patients who were successfully resuscitated and later discharged home fell. The researchers found that 18.3 percent of the Medicare beneficiaries age 65 and older who underwent in-hospital CPR survived to discharge.

Elderly black patients were more likely to receive CPR, but less likely to survive, partially because they were more likely to be treated in hospitals with lower rates of post-CPR survival and perhaps more likely to request that resuscitation be attempted, according to the report, which was published today in The New England Journal of Medicine. The adjusted odds for survival for black elderly patients were 23.6 percent lower than for similar white patients. Older age, being a man, having more co-existing chronic illnesses, and residing in a skilled nursing facility before hospitalization also lessened the chances of survival, according to this study's findings. Higher income did not improve survival.

The researchers looked at records of 433,985 patients who both received CPR in U.S. hospitals from 1992 to 2005 and had Medicare coverage through the Old-Age and Survivors Insurance Fund, but who were not recipients of Social Security Disability Income or enrolled in an HMO.

The first author of the study is Dr. William J. Ehlenbach, senior fellow, Division of Pulmonary and Critical Care Medicine at Harborview Medical Center and the University of Washington (UW) in Seattle, and the senior author is Dr. Renee D. Stapleton, formerly of the UW and now at the Division of Pulmonary Care, University of Vermont College of Medicine.

"CPR has become the default response to cardiac arrest in or out of the hospital," the researchers noted. The authors conducted the study because it was unclear whether advances in CPR or in care after cardiac arrest have improved outcomes.

"Of significant concern," they wrote, "is our finding that the proportion of patients who died in the hospital after previously having undergone in-hospital CPR has increased during a time of more education and awareness of the limits of CPR in patients with advanced chronic illness and life-threatening acute illness."

They added that although Do Not Attempt Resuscitation orders became more common during the 1980s, their availability has not effectively decreased the frequency of administering CPR to patients who are unlikely to benefit.

One possibility for their findings, the researcher noted, is that attempts to enhance the delivery of CPR have been less successful than changes in out-of-hospital resuscitation efforts, such as bystander CPR and automatic defibrillators, trained emergency response units, and dispatchers providing CPR instruction over the phone, that have contributed to improved survival. The findings might also reflect changes over the years in the type and severity of illness, the underlying causes of the cardiac arrest, or the initial heart rhythm abnormality that made the heart stop beating. For example, people whose cardiac arrest occurs from ventricular fibrillation or fluttering or from an

abnormally rapid heart rate are more likely to survive than someone whose heart shows pulseless electrical activity. In addition, heart disease has declined in the United States, but critical illnesses such as severe sepsis leading to irreversible shock have increased.

The researchers also found that patients who were successfully resuscitated and later discharged were more likely to be sent to a health-care facility than to return home. They added that this finding might reflect the trend toward shorter hospital stays or it could be due to neurological or functional damage from the cardiac arrest.

A limitation of the study, according to the researchers, is that the Medicare claims data do not contain potential predictors of survival after CPR, such as severity and type of underlying illness, the type of heart rhythm problem preceding cardiac arrest, patient location in hospital, and time to defibrillations. Knowing such factors, they explained, may also help in understanding differences in survival associated with race and hospital.

The researchers hope the study provides information useful to older patients and their doctors when deciding whether to choose to attempt resuscitation. They also hope their findings stimulate efforts to understand the association between race and survival to eliminate disparities, and to learn more about the specific factors associated with the incidence of CPR and the rate of survival for patients of all races.

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