

Medication for Out-of-Hospital Cardiac Arrest: For Which Patients Is It Effective?

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FROM *N ENGL J MED*

A recent double-blind, randomized trial that compared parenteral amiodarone, lidocaine, and saline placebo for patients who experienced out-of-hospital cardiac arrest found that overall, neither medication resulted in a significantly higher survival rate nor better neurological outcomes.¹ However, among a subgroup of patients whose cardiac arrest was witnessed by a bystander, the rate of survival to hospital discharge was significantly higher with amiodarone or lidocaine than with placebo.

Researchers studied 3,026 adults who had nontraumatic out-of-hospital cardiac arrest and shock-refractory ventricular fibrillation or pulseless ventricular tachycardia. These patients were treated in accordance with local emergency medical service (EMS) protocols that complied with American Heart Association (AHA) guidelines for advanced life support. After one or more shocks failed to end ventricular fibrillation or pulseless ventricular tachycardia, patients were randomly treated with one of three parenteral preparations: lidocaine (993 patients), a recently approved cyclodextrin-based formulation of amiodarone that is designed to reduce hypotensive effects (974 patients), or a normal saline placebo (1,059 patients). The initial treatment consisted of two syringes that were administered by rapid bolus. If the ventricular fibrillation or pulseless ventricular tachycardia persisted after this initial dose, a supplemental dose (one syringe) of the same drug was administered. The average time to treatment with these drugs was 19 minutes from the initial call to EMS. On arrival at the hospital, patients were treated with usual postcardiac arrest care in accordance with AHA guidelines.

The primary outcome was survival to hospital dis-

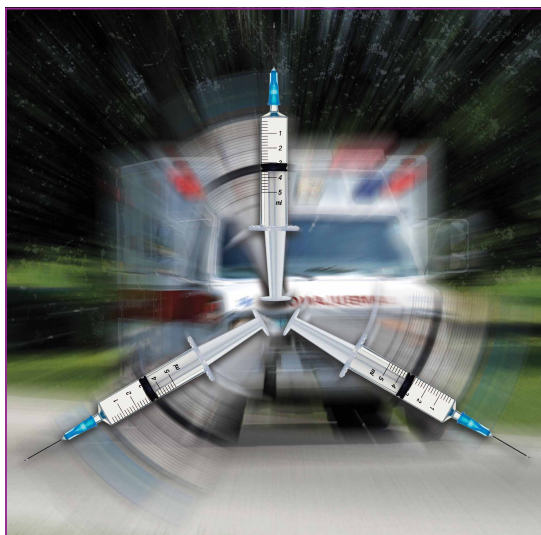
charge. The secondary outcome was survival with favorable neurological status at discharge, which was defined as a score of ≤ 3 on the modified Rankin scale, indicating the ability to conduct daily activities independently or with minimal assistance.

The hospital survival rates were 23.7% for patients who received lidocaine, 24.4% for those who received amiodarone, and 21.0% for those who received placebo. The differences in survival rates for each drug compared to placebo, and one drug compared to the other drug, were not statistically significant. Rates of survival with favorable neurological status were similar among all three groups.

However, among 1,934 patients who experienced a witnessed out-of-hospital cardiac arrest, each drug was associated with a significantly higher rate of survival (5 percentage points) compared to placebo. In these patients, the survival rate was 27.8% with lidocaine, 27.7% with amiodarone, and 22.7% with placebo. This absolute risk difference was significant for lidocaine versus placebo and for amiodarone versus placebo, but not for lidocaine versus amiodarone.

Researchers said patients who have a witnessed out-of-hospital cardiac arrest presumably have “early recognition of cardiac arrest, a short interval between the patient’s collapse from cardiac arrest and the initiation of treatment, and a greater likelihood of therapeutic responsiveness.” In an accompanying editorial, Joglar and Page² said EMS personnel should consider using lidocaine or amiodarone when a patient’s cardiac arrest is witnessed.

1. Kudenchuk PJ, Brown SP, Daya M, et al; Resuscitation Outcomes Consortium Investigators. Amiodarone, lidocaine, or placebo in out-of-hospital cardiac arrest. *N Engl J Med*. 2016;374(18):1711-1722.
2. Joglar JA, Page RL. Out-of-hospital cardiac arrest—are drugs ever the answer? *N Engl J Med*. 2016;374(18):1781-1782.



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Emergency Medicine Editor-in-Chief Neal Flomenbaum, MD, Is Honored at Two Medical School Graduations on the Same Day

On Wednesday, May 25, 2016, *Emergency Medicine* Editor-in-Chief Neal Flomenbaum, MD, emergency physician-in-chief (1996-2016) and emergency medical services (EMS) medical director (1996-) at New York Presbyterian Hospital, professor of clinical medicine at Weill Cornell Medical College, was honored at two New York City medical school graduations.

First, at the midday Weill Cornell Medical College commencement exercises in Carnegie Hall, Dr Flomenbaum helped present the second annual “Neal Flomenbaum, MD, Prize for Excellence in Emergency Medicine,” a \$50,000 award endowed by a generous gift named for Dr Flomenbaum by Jeanne and Herbert Seigel. A few hours later, at the Lincoln Center commencement exercises of his alma mater, Dr Flomenbaum received the “Albert Einstein College of Medicine 2016 Lifetime Achievement Award,” for, according to Einstein Dean Allen M. Spiegel, MD, his “extraordinary career in emergency medicine and... many contributions to the health and welfare of underserved communities and all populations in New York City.”

Dr Flomenbaum has dedicated his life to ensuring the highest quality emergency care for patients; to educating and training students, residents, and attending physicians; and to helping establish and support the specialty of emergency medicine. Dr Flomenbaum’s accomplishments include coauthoring and coediting eight editions of the leading medical toxicology textbook, two editions of a text on diagnostic testing, and more than 150 research and review papers, book chapters, and editorials. He has served as a senior examiner for the American Board of Emergency Medicine, senior consultant to the NYC Poison Control Center, a fellow and the founding chair of the New York Academy of Medicine Section on Emergency Medicine, and

chair of the Medical Advisory Committee to NYC EMS. Prior to joining the Weill Cornell faculty in 1996, Dr Flomenbaum held academic appointments at Einstein, New York University, and SUNY/Downstate Schools of Medicine.

He received his bachelor’s degree from Columbia College in 1969, and his MD from Albert Einstein as an alpha omega alpha member of the class of 1973. Dr Flomenbaum completed an internal medicine residency at Einstein/Jacobi Medical Center in the Bronx. In 1996, Dr Flomenbaum arrived at what was then New York Hospital-Cornell University Medical Center after serving as associate director of emergency medicine at Jacobi/Einstein and NYU/Bellevue Hospitals, and then as chairman of emergency medicine at SUNY/Long Island College Hospital.

According to the Dean of Weill Cornell Medical College, its Division of Emergency Medicine “has grown significantly in the last 20 years under the leadership of Dr Neal Flomenbaum and is operating at a scale and scope [of] an academic department.” At Weill Cornell, Dr Flomenbaum created the nation’s first fellowship and division of geriatric emergency medicine (GEM) in 2005, a decade before GEM fellowships were offered at other academic centers around the country; he also created divisions of medical toxicology, EM/critical care, and other traditional EM subspecialties. Dr Flomenbaum most recently embarked on creating a new fellowship and division of Women’s Health Emergencies.

Since 2006, Dr Flomenbaum has also been editor-in-chief of *Emergency Medicine*, the oldest and one of the most widely read journals for the specialty. His incisive monthly editorials on current concerns in emergency medicine and emergency departments are available at www.emed-journal.com and at www.NYMeDED.org.



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