In an Emergency
At Home or in the Hospital

Treating patients who have myocardial infarctions with intravenous clot-busting drugs at home or in an ambulance significantly reduces the time to treatment and increases the numbers of heart attacks that are stopped in progress. However, patients whose hearts stop in the hospital may find themselves waiting precious minutes while a person skilled in defibrillation is found to restart their heart, said an expert at the American Heart Association Scientific Sessions.

In a session on emergency care at the 72nd Scientific Sessions of the American Heart Association in Atlanta, physicians discussed the difficulties and successes in providing treatment for sudden death and myocardial infarction quickly. For example, Evert Lamfers, MD, a physician with the Canisius-Wilhelmina Hospital in Nijmegen, the Netherlands, compared 227 patients treated with antithrombolytics before they reached the hospital with 269 patients who were treated with such drugs while in the hospital.

“We looked for the aborted myocardial infarction,” said Dr Lamfers. “If you can abort a bank robbery, you can abort a myocardial infarction as well.” He said that the myocardial infarction was aborted in 4.5% of patients treated while in the hospital and in 12% of those who received prehospital treatment. “Furthermore, we found that those with an aborted myocardial infarction had good mortality—zero at 12 months.” According to Dr Lamfers, “Using prehospital treatment in our own region means we can gain 63 minutes in treatment of the myocardial infarction and treat about 28% of patients in the ‘gold hour’ (right after the symptoms of the attack start).”

In the United States, the American Heart Association and the American College of Cardiology support the use of antithrombolytics as soon as possible, said Mary Fran Hazinski, RN, MSN, of Vanderbilt University Medical Center and a moderator of the media session dealing with emergency care. Dr Lamfers’ study showed that using the drugs can stop a myocardial infarction in progress and save heart muscle, with all the associated implications for long-term survival. However, the American Heart Association and the American College of Cardiology think that prehospital use of these drugs is not indicated unless it can shorten the time to antithrombolytic therapy by ≥90 minutes.

Dr Lamfers noted that, as is usual in Europe, a physician is present with the emergency ambulance team and is in constant contact with cardiologists at the hospital when the decision to use the clot-busters is made. “The general practitioner arrives, the ambulance arrives, and the ambulance crew does an ECG and has it analyzed by the cardiac care physician,” he said. Eminase was used in Dr Lamfers’ study because it could given in a bolus.

No matter how quickly prehospital caregivers treat a patient, they cannot start until the patient calls for an ambulance. Stuart Sheifer, MD, a cardiology fellow at Georgetown University Medical Center in Washington, DC, studied the records of 102 339 patients to determine what factors may influence a quick or delayed arrival at the hospital in patients who think they are having a heart attack. Dr Sheifer noted that 29.4% of people in this group of patients arrived at the hospital >6 hours after the onset of symptoms.

The factors most strongly associated with late arrival at the hospital were race, sex, and socioeconomic status. “Everyone but white men who were not poor were at high risk” for late arrival, said Dr Sheifer. Poor black women had the highest risk of late arrival. The most important predictor for arrival, Dr Sheifer noted, is whether a patient “interprets the symptoms as cardiac in origin and serious in nature” and whether he or she has a pre-existing understanding of risk factors.

Although the population he studied was entirely Medicare-based, Dr Sheifer said he thinks that issues of insurance are important. People need to enter the health care system and “feel comfortable that they won’t be robbed of all the money they have available,” he said. Those are barriers, and they may make it difficult for people to seek care.

Patients who arrive at the hospital may find that the facility is ill-prepared to deal with sudden death should it occur in that setting, said Mary Ann Peberdy, MD, an assistant professor of medicine at Virginia Commonwealth University’s Medical College of Virginia. Most studies of automated external defibrillators have occurred in out-of-hospital settings; Dr Peberdy found that these devices might have a place in the patient’s room as well.

“Hospitals now find themselves in a catch-up situation,” said Dr Peberdy. “Management of the first few minutes of sudden death is vitally important, in or outside the hospital.” Most hospital personnel recognize the difficulties involved when a patient in a noncritical area of the hospital experiences sudden cardiac arrest. Patients must wait for a physician or a person trained in advanced life support to perform defibrillation. “Traditionally, performing defibrillation required a fair amount of training and experience,” she said. In some cases, this training and experience is limited to physicians and critical care nurses. Patients must wait for the physicians to arrive on the scene. If the manual defibrillator in not in a convenient location, treatment can be delayed even further.
Dr Peberdy conducted a study in a hospital in which non-critical care nurses were trained and equipped with automated external defibrillators. Over 5 years, 210 cardiac arrests were recorded. The nurses treated 36% of the patients, and the conventional hospital team treated 64%. The nurses defibrillated 69% of their patients within 1 minute of the event, whereas the hospital team defibrillated 42% of their patients during the same period of time. Survival rates were higher in the group treated by the nurses (45% versus 31%), she said.

Automatic external defibrillators “provide the technology for hospital-based first responders to employ defibrillation without waiting for other people to arrive on the scene,” said Dr Peberdy. In many studies, a 5-minute in-hospital delay occurs while waiting for someone trained in advanced cardiac life support to arrive on the scene. In the prehospital field, people can provide advanced cardiac life support and defibrillation in better time.

“It is shocking that hospitals are not that fast,” said Dr Peberdy. The use of automatic external defibrillators on airplanes, in casinos, and in other public places has received rapid acceptance, but hospitals have been slow to implement this technology. Consequently, survival has remained stagnant. In response to many hospitals’ apparent unpreparedness, the Joint Commission on the Accreditation of Health Care Organizations recently released new standards and guidelines for resuscitation in the hospital setting, said Dr Peberdy. These guidelines mandate that there be appropriate quality improvement and feedback to people providing resuscitation. Despite these stringent requirements, Dr Peberdy said, hospitals are lagging. In a survey of Virginia hospitals, only 14% had automatic external defibrillators available.

“We know that early defibrillation saves lives and improves lives,” said Dr Peberdy. “Nurses can be trained to use automatic external defibrillators and retain these skills over time. It is our hope that hospitals will more widely accept the technology that is available. I would not want us to have to ask ourselves if we would rather have a myocardial infarction in a casino or an office building than in a hospital.”

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