

# AHA Spearheads STEMI Response Initiative

*'Mission: Lifeline' aims to improve public education and develop treatment and accountability protocols.*

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A community-based push to create standardized response systems could decrease mortality and streamline acute care for patients suffering an ST-elevation myocardial infarction.

The American Heart Association's ambitious "Mission: Lifeline" program will go far beyond past efforts at improving treatment times through public outreach and education, Dr. Alice Jacobs said at a press briefing. "Regrettably, prior public awareness campaigns and community-based interventions have not yet been effective in reducing the time from symptom onset to first medical contact, or in increasing the number of patients who use emergency medical services [EMS] to get to hospitals where they can receive the appropriate care. We must have a system in place that will do this."

The need for systematic reform, beginning with patient education and continuing through emergency response and hospital systems, is sadly obvious, she said. "Despite the proven benefits of quickly restoring blood flow to the heart muscle during a heart attack, 30% of STEMI patients do not receive any reperfusion therapy," neither fibrinolytics nor primary percutaneous coronary intervention (PCI), said Dr. Jacobs, director of the cardiac catheterization lab at Boston Medical Center. "And only 50% of those who get fibrinolytics and 40% of those who undergo PCI do so within the recommended time frames."

Last year, the AHA convened a conference to devise an organized method of ad-

ressing these issues. The group's recommendations have been published in the journal *Circulation* (DOI:10.1161/CIRCULATIONAHA.107.184043).

The ideal system would combine several key elements, she said.

► **Public education.** "We must start with patient education," Dr. Jacobs said. "People need to understand the signs and symptoms of a heart attack, and the importance of activating the EMS system as quickly as possible." Half of STEMI patients drive themselves to the hospital or get a ride from family or friends, "resulting in a delay of the treatment that EMS could provide."

► **Improving EMS diagnosis of STEMI.** "In the ideal scenario, the cath lab would be activated by EMS from the field, or by the emergency physician from the hospital, and the patient would be brought directly to the cath lab without wasting time in the emergency room," Dr. Jacobs said. "If EMS systems have the personnel, training, and appropriate resources, they can acquire, interpret, and transmit 12-lead electrocardiograms that can show the patient is having a STEMI heart attack."

► **Quick, efficient transfer to hospitals equipped with cardiac catheterization teams.** The majority of STEMI patients go to hospitals without on-site primary PCI capabilities, Dr. Jacobs said. Unfortunately, transfer delays are all too common. "Transfers are often a matter of the patient waiting for the next available ambulance. Under this system, patients transported to a non-PCI-capable hospital would remain on the stretcher with EMS personnel in attendance until the decision is made about whether to transport to a PCI-capable re-

ceiving hospital, which is always available and never on diversion, 24 hours a day, and 7 days a week."

► **Hospital incentives and certification.** "We will be working with payers and policy makers to ensure that mechanisms are in place for appropriate reimbursement," Dr. Jacobs said. This may eventually translate into one treatment fee that is split between the transporting, referring, and receiving organizations. A STEMI Center Certification program will establish treatment and accountability protocols for both referring and receiving hospitals.

Achieving these goals won't be quick or easy, said Dr. Raymond Gibbons, president of the American Heart Association. Stakeholders on every level—from patients in the community to local hospitals, legislators, insurance companies, and the federal government—will have to cooperate before Mission: Lifeline can become a reality across the country.

The AHA will play a pivotal role in bringing these parties together, Dr. Gibbons said, beginning with an assessment of EMS effectiveness for STEMI patients. The AHA will use this information to construct a basic response system that can be tailored to different regions. The group will also convene meetings at the state and local levels to identify ways to implement the system, and to evaluate pilot programs.

Funding these systems, Dr. Gibbons said, will be largely left to localities. AHA will provide support in seeking the money necessary for implementation—industry grants, for example—but the group won't be contributing financially to any individual project.

"As an example, there may be a need to purchase the 12-lead equipment and train EMS staff," Dr. Gibbons said. "The AHA can look for mechanisms to support that. In the past, we have placed automatic ex-

ternal defibrillators with first-responder units by advocating for state grants or donor support. We're confident that similar tactics can be employed with Mission: Lifeline."

A few AHA-led pilot programs are already underway, Dr. Gibbons noted. A 2004 grant from The Annenberg Foundation made it possible for Los Angeles to create a response system that relies on 12-lead ECG readings by EMS providers. The AHA Greater Southeast Affiliate has convened a state-level STEMI task force and helped introduce a legislative bill to develop emergency angioplasty centers for STEMI patients. And in Texas, a task force met in January to discuss ways to more effectively manage STEMI patients.

Although establishing such a response system is an enormous challenge, the payoff is just as big, said Dr. Tim Henry, interventional cardiologist and director of research at the Minneapolis Heart Institute. Four years ago, the facility instituted a two-pronged standardized care system for STEMI patients based on their distance from a regional PCI-capable facility.

"Our approach involves different protocols for patients who live within either 60 miles [zone 1] or 60-210 miles [zone 2] from these hospitals. Our median time from the STEMI referral hospitals to balloon inflation at the receiving hospital is now 96 minutes for those in zone 1 and 118 minutes in zone 2."

Outcomes have been very good, he said. "The in-hospital mortality for these patients is now 4%, even with 15% of them being older than 80 years. And close to 98% are getting appropriate adjunctive medication, which increases long-term survival. It's been exceptionally successful and proves that you can indeed develop these regional systems that will improve outcomes." ■

## Bariatric Surgery Reduced Left Atrial Size in Small Study

BY MITCHEL L. ZOLER  
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NEW ORLEANS — Good outcomes from bariatric surgery in morbidly obese patients continue to accumulate.

In a series of 12 patients at one center with severe systolic heart failure, bariatric surgery was safe and led to improved left ventricular function, Dr. Gautam V. Ramani said at the annual meeting of the American College of Cardiology. An independent report showed that gastric bypass surgery led to a significant reduction in left atrial size in a randomized, prospective study with 409 patients, Dr. Sheldon E. Litwin reported in a poster at the meeting.

"Left atrial volume is a powerful, long-term prognostic factor for survival; it's considered the hemoglobin A<sub>1c</sub> of the heart," Dr. Litwin said in an interview. "Our

findings suggest that gastric bypass surgery may lead to improved cardiovascular outcomes. So far, no one has proven that gastric bypass surgery leads to fewer deaths, but we think that reduced left atrial volume is a harbinger of a mortality effect." This study was the largest prospective study reported to date of bariatric surgery for morbid obesity, said Dr. Litwin, professor of medicine and director of noninvasive imaging at the University of Utah, Salt Lake City.

His study enrolled patients with a body mass index (BMI) of more than 40 kg/m<sup>2</sup>, or more than 35 if they also had secondary complications from obesity. About 85% of the patients were women, and their average BMI was about 45. The patients were randomized to either gastric bypass with Roux-en-Y

after 2 years showed that patients who had surgery lost an average of 96 pounds and had an average drop in BMI of 15.5. There was no significant change in weight or BMI in the patients who did not have surgery.

At baseline, the average left

**'So far, no one has proven that gastric bypass surgery leads to fewer deaths, but we think that reduced left atrial volume is a harbinger of a mortality effect.'**

atrial size in all patients was about 57 mL, measured by echocardiography. Two years after surgery, left atrial volume fell by an average of 2.5 mL in the surgery patients and increased by an average of 4 mL in control patients.

The second study reviewed 12 patients with severe systolic heart failure who underwent bariatric

surgery at the University of Pittsburgh during 2001-2006. Their average BMI was 53, and their average age was 41 years. All patients had a left ventricular ejection fraction of less than 45%, with an average ejection fraction of 22%. Three patients had New York Heart Association class II heart failure, seven patients had class III heart failure, and two patients had class IV heart failure.

Eight patients had laparoscopic Roux-en-Y surgery, two had a gastric sleeve placed laparoscopically, one had gastric banding placed laparoscopically, and one underwent gastric bypass by open surgery (after initial laparoscopic surgery wasn't successfully completed).

The average postoperative length of hospitalization was 3 days. By 1 month following surgery, the only complications

were pulmonary edema in one patient and acute renal failure in another, but both conditions resolved after 1 month.

At 1 year after surgery, the average BMI was 40 and the average left ventricular ejection fraction was 35%, a statistically significant improvement over baseline. At follow-up, nine patients had class II heart failure, and three had class III.

"Despite the small study size and retrospective data, bariatric surgery was safe in patients with severe, systolic heart failure," said Dr. Ramani, a cardiologist at the University of Pittsburgh. "Bariatric surgery should be offered to obese patients with heart failure before they develop end-organ dysfunction and renal failure."

Bariatric surgery should also be considered for morbidly obese patients who would otherwise be candidates for heart transplantation, he added. ■