Standardized Chest Pain Pathway Improved Outcomes

BY MITCHEL L. ZOLER

ORLANDO — A standardized pathway for assessing and managing patients who come to the emergency department with chest pain led to a "remarkable" reduction in patient deaths and readmissions during the first 4 years of use, based on a review of about 3,000 patients.

In an emergency department that has hundreds of residents on the staff, the standardized assessment, stratification, and treatment tool used at St. Luke's-Roosevelt Hospital Center in New York makes patient management uniform and helps every physician provide the same high level of care, Emid F. Aziz, D.O., said while presenting a poster at the annual meeting of the American College of Cardiology.

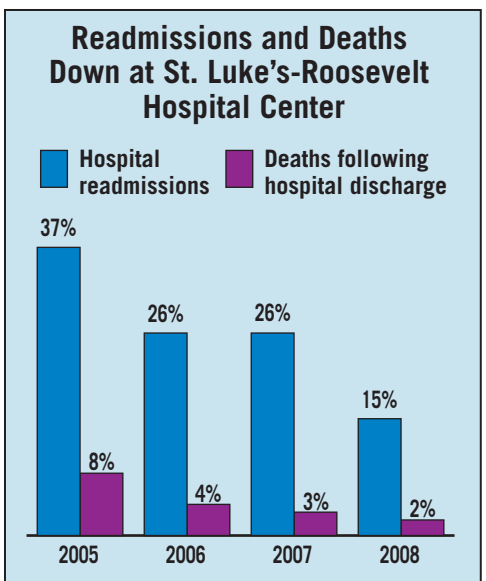
The Priority, Advanced, Intermediate, or Negative (PAIN) risk stratification and treatment pathway, introduced in 2004, provides a step-by-step plan for assessing and treating patients who arrive at the emergency department with chest pain, said Dr. Aziz, coordinator of the advanced cardiac admission program. The pathway features a series of decision trees that guide physicians through risk stratification with a simple algorithm. The pathway also involves detailed, preprinted chart and order forms that leave little room for deviating from the best-practice treatment course.

During June 2005–March 2008, 3,041 chest pain patients who were admitted to the St. Luke's emergency department were stratified into one of four categories. In 2005, 8% of these patients died following their hospital discharge, a rate that steadily dropped during subsequent years and reached 2% during the first 3 months of 2008. The readmission rate was 37% in 2005, and then steadily fell to a 15% rate in early 2008. (See box.)

Concurrent with these improved outcomes has been broader use of evidence-based medical treatments. By early 2008, 96% of patients were prescribed an antiplatelet drug, 87% were on a beta-blocker, 79% were on an angiotensin-converting enzyme inhibitor, and 75% were on a statin. These levels of drug use were far above the 2005 rates, and also exceeded contemporary U.S. averages, Dr. Aziz and his associates reported.

The therapeutic steps designated for each category follow what is considered current standard of care. Patients identified with an ST elevation myocardial infarction, for example, are slated for treatment with nitroglycerin, oxygen, clopidogrel, aspirin, an intravenous beta-blocker, a high-dose statin, and heparin, and quickly go to coronary catheterization and revascularization. Other pathway options take patients who don't qualify for immediate revascularization to thrombolytic therapy, and those who have a more equivocal presentation go to the coronary care unit for additional assessment. ■

Readmissions and Deaths Down at St. Luke's-Roosevelt Hospital Center



Note: Results based on 3,041 patients presenting with chest pain from June 2005 to March 2008.

Source: Dr. Aziz

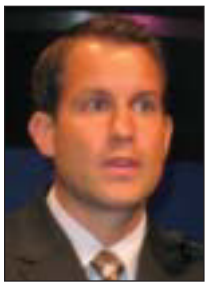
ELSEVIER GLOBAL MEDICAL NEWS

Low Copeptin Levels Effectively Ruled Out MI

BY MITCHEL L. ZOLER

ORLANDO — Adding a new serum stress-marker test to the standard cardiac troponin assay allowed researchers to rule out acute MI with nearly 100% accuracy in 756 chest pain patients who presented to the emergency department.

The institution of an acute MI screening protocol that includes the new test for the stress marker copeptin plus the test for cardiac troponin—as well as ECG results and clinical findings—"may obviate the need for prolonged stay in the emergency department and troponin retesting after 6 hours in [about] two-thirds of patients," a step that could have significant medical and economic benefits, Dr. Tobias Reichlin said at the annual meeting of the American College of Cardiology.



Copeptin testing 'may obviate the need for prolonged stay in the emergency department.'

DR. REICHLIN

"A holy grail has been a simple blood test that works early on" to rule out or rule in an acute MI, noted Dr. Christopher P. Cannon, a cardiologist at Brigham and Women's Hospital in Boston. The test for copeptin looks "very promising" as part of an early screen, he added.

Copeptin is the C-terminal peptide that's removed from the vasopressin prohormone, and is a surrogate marker for endothelial stress, said Dr. Reichlin, a researcher in the department of biomedicine at the University of Basel (Switzerland). Copeptin is stable ex vivo for several days, and in healthy people exists in the blood at a median concentration of about 4 pmol/L.

The APACE (Advantageous Predictors of Acute Coronary Syndromes Evaluation) study examined the efficacy of using copeptin along with serum levels of cardiac troponin to rule out MI in chest pain patients who were seen in the emergency departments of several centers during April 2006–April 2008. A final adjudicated diagnosis made independently by two cardiologists identified 131 patients (17%) as definitely having an acute MI. About two-thirds of those patients had a non-ST elevation MI, and the rest had an ST elevation MI. The remaining 625 patients included 46% with noncardiac chest pain, 16% with unstable angina, 13% with noncoronary cardiac chest pain, and 9% with chest pain of unknown origin. Their average age was 62 years, and about two-thirds were men.

Copeptin levels were significantly higher among patients who were later confirmed to have ST elevation MIs, and were also significantly elevated in patients with non-ST elevation MIs, compared with patients who had any other type of chest pain.

During the first 4 hours after symptom onset, the copeptin level averaged 32 pmol/L among the MI patients. During the same period, cardiac troponin levels remained low, averaging about 4 mcg/L. More than 10 hours after symptom onset, the average copeptin level in the MI patients fell to about 10 pmol/L, whereas the average troponin level rose to about 30 mcg/L.

An analysis of the diagnostic accuracy of copeptin and troponin levels together by a receiver-operator curve showed that measuring those two analytes could account for 96% of the MI diagnoses.

Using a copeptin-level cut point of 14 pmol/L, combined with a standard troponin cut point, produced a sensitivity for diagnosing MI of 97.7% and a specificity of 76.3%, which resulted in a negative predictive value of 99.4% and a positive predictive value of 46.4% in the 756 patients studied, Dr. Reichlin said. If the analyte criteria had been applied to those patients, about two-thirds could have been quickly discharged from the emergency department with an MI ruled out.

Dr. Reichlin acknowledged that the number of patients studied was too small to allow a definitive conclusion.

The study was investigator initiated and received no commercial funding. Dr. Reichlin said he had no financial interests to report. ■

Inpatient Atrial Fib Medications Cost $400 Million Annually

BY BRUCE JANCIN

ORLANDO — Prerequisite inpatient initiation of sotalol or dofetilide with telemetry monitoring adds at least $395 million annually to the health care costs of Americans with atrial fibrillation, according to a new economic analysis.

Development of new rhythm-control agents suitable for outpatient initiation because of low proarrhythmic potential could therefore result in substantial economic savings, not to mention the quality of life gain by avoiding a multiday hospitalization, Dr. Michael H. Kim noted at the annual meeting of the American College of Cardiology.

Sanofi-Aventis, sponsor of this economic study, is awaiting a decision from the Food and Drug Administration about its antiarrhythmic drug dronedarone (Multaq). It was recently recommended for marketing approval for treatment of atrial fibrillation (AF) by an FDA advisory committee.

Dronedarone is a close chemical relative of amiodarone, but without the older agent's substantial pulmonary and thyroid toxicity. Like amiodarone, dronedarone has a low proarrhythmic potential, making it suitable for initiation in outpatient settings.

Dr. Kim and coworkers analyzed billing records for 4,847 AF patients hospitalized for initiation of sotalol and 2,443 admitted for initiation of dofetilide (Tikosyn). The economic information was provided by the Premier Perspective database, which is owned by 200 not-for-profit U.S. hospitals and health systems.

ACC/American Heart Association guidelines recommend sotalol be started with in-hospital telemetry monitoring. For dofetilide it is not just a recommendation—the FDA requires a minimum 3-day hospital stay, along with special training and certification in the drug's use on the part of the prescribing physician.

In this study, patients starting on sotalol for AF were hospitalized for a median of 2 days and those initiating dofetilide stayed for 3 days. For 89% of patients, the attending physician was a cardiologist. The mean total AF-related inpatient costs were $3,278 in the sotalol group and $3,610 in the dofetilide group. Most of this expense was for hospital room and board, according to Dr. Kim of Northwestern University, Chicago, who disclosed that he serves as a research consultant to Sanofi-Aventis. ■