Clinical Digest

Emergency Medicine

A Useful Prediction Rule for Chest Pain?

When patients present to the emergency department (ED) with chest pain, it's no easy task to differentiate between the type that requires admission and treatment and the type that allows patients to be released safely after a brief evaluation. Of the many algorithms developed to help clinicians in the task, none has proven effective in preventing inappropriate discharges, and guidelines developed by the American Heart Association and the Agency for Health Care Policy and Research suggest early discharge only for patients with evidence of an alternate diagnosis.

For these reasons, researchers from the University of British Columbia, St. Paul's Hospital, and the Center for Health Evaluation and Outcome Sciences, all in British Columbia, Canada, set out to develop a clinical prediction rule that would: require no prolonged observation, extensive rule-out protocols, or provocative testing; miss less than 2% of patients with acute coronary syndrome (ACS); and allow at least 30% of patients without ACS to be discharged within three hours. They studied a total of 769 patients over age 25 who had anterior or lateral chest pain with no clear traumatic or radiologically evident cause and no terminal noncardiac illness.

Outcome diagnoses assigned at 30 days indicated that 77 (10%) of patients had definite acute myocardial infarction (AMI), 88 (11.4%) had definite unstable angina, 29 (3.7%) had possible unstable angina, 32 (4.2%) had adverse events (AE) but no ACS, and 543 (70.6%) had no AE or ACS. Using these data, investigators derived a clinical prediction rule for very low risk ACS: an initial electrocardiogram (ECG) within normal limits (acceptable abnormalities included T-wave flattening but not ST deviation or T-wave inversion), no previous ischemic chest pain, and age younger than 40 years. For patients older than 40 years, criteria for early discharge include: normal initial ECG, no previous ischemic chest pain, low risk pain characteristics (defined as pain not radiating to the arm, neck, or jaw and not increasing with a deep breath or palpation), and an initial isoenzyme of creatine kinase with muscle and brain subunits (CK-MB) level of less than 3 µg/L—or if not, a normal ECG and no CK-MB or troponin increases at two hours.

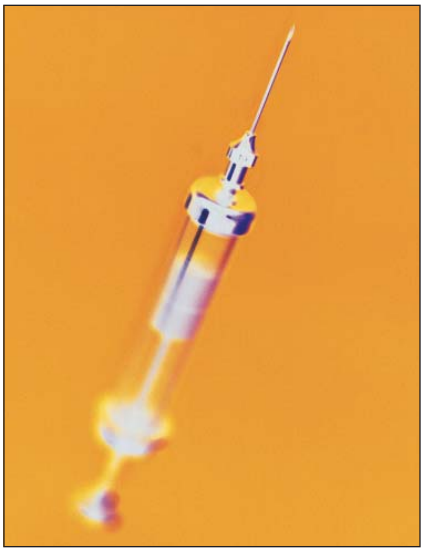
Using data collected within two hours of arrival, the rule was 98.8% sensitive, identifying all but two patients with unstable angina, and it would have allowed appropriate discharge of 32.5% of patients without ACS. Researchers are beginning to validate the Vancouver Chest Pain Rule in an independent, multicenter cohort study. They say it has the unique potential to identify very low risk patients for appropriate early discharge and, subsequently, to improve the diagnostic decision making process in the ED.

Source: *Ann Emerg Med.* October 19, 2005 (early online release).

Preventive Medicine

Importance of Flu Shots in Patients with Cancer

It's important for all at-risk patients to get their flu shots, but particularly patients who have cancer. If they're hospitalized with flu-related infections, they're 10 times more likely to die than



the general population, say researchers from MD Anderson Cancer Center, Houston, TX. Among those living with cancer, the very young and the very old have the highest risk of hospitalization and death from influenza, with the impact being greatest on those aged 65 and older (as in the general population).

Using the Nationwide Inpatient Sample, the researchers analyzed data on more than 64,000 influenza-related hospital discharges occurring over a four-year period and involving patients with cancer. Patients over 65 years of age made up more than 75% of the study population.

More than 9% of the patients with cancer and flu complications died in the hospital and 32% needed further skilled care. The average length of stay was six days. Compared to patients who had other types of cancers, patients with blood or lung cancer tended to stay longer, needed ventilation more often, and had a higher risk of death.

When the researchers generalized their estimates from 16,000 annual hospitalizations and nearly 1,500 an-

nual deaths to the U.S. population living with cancer, they found annual rates of hospitalization and death in this group were at least four times higher than those reported for the general population. And when compared to the general population who are not considered to be at elevated risk for flu complications, hospitalization rates were five to 10 times higher for patients with cancer under the age of 65 and three to five times higher for patients with cancer over the age of 65.

Their findings also indicate that, compared with children in the general population, the risk of hospitalization was up to eight times higher for children with cancer from birth to age four and up to six times higher for those aged five to 14.

Source: *Cancer.* 2005;104:618–628.

CARDIOLOGY

A New Clue to CVD Risk

Measuring the size of the left atrium is a noninvasive way to help identify the risk of cardiovascular death (CVD), say researchers from the University of Kuopio, Kuopio, and Savonlinna Central Hospital, Savonlinna, Finland. They reached this conclusion after analyzing data from 830 men in the Kuopio Ischaemic Heart Disease Risk Factor Study, a longitudinal, population-based study. Left atrium size, they suggest, is a "nontraditional clinical risk stratifier," but it may serve an important role in predicting preclinical CVD. Although this measure can be obtained readily with any echocardiographic system, researchers say its prognostic value with regard to CVD remains largely unexplored.

During 13 years of follow-up, 135 men died, including 69 who died of cardiovascular disease. There was a direct relationship between the left atrial diameter, classified in tertiles, and the risk of CVD: After adjusting for other risk factors and the use of antihypertensive medications, men with a left atrial size greater than 43 mm had more than twice the risk of CVD (a relative risk of 2.34), compared to men with a left atrial size less than 39 mm. The relative risk for all-cause death was 1.95.

Large left atrial diameter as indexed by height and body surface area also was a strong predictor of CVD risk. After adjustments, when diameter was divided by height, a one unit increment in this variable elevated CVD risk by 1.11 times—and those men with a height-indexed left atrial dimension greater than 25.2 mm/m had 2.48 times the CVD risk, compared to those with a left atrial dimension less than 22.5 mm/m.

The excess risk appeared mostly in the highest tertile of left atrial size, the researchers say. The relationship between left atrial size and mortality did not remain statistically significant in this group when left ventricular hypertrophy was taken into account. In fact, the findings suggest that left ventricular hypertrophy can be considered one of the most important echocardiographic risk predictors in addition to left atrial size.

The researchers cite a hypothesis that left atrial size represents the integration of left ventricular diastolic performance over time. Hence, they say, left atrial volume provides a long-term view of the diastolic dysfunction, regardless of the loading conditions and filling pressure at the time of examination. In their study, 18% of the men had left ventricular hypertrophy.

Source: *Arch Intern Med.* 2005;165:1788–1793.

INTERNAL MEDICINE

Should Anemia Be Treated in Heart Failure?

A reduction in hemoglobin (Hb) over time is a warning sign for patients with moderate to severe heart failure, say investigators from the Valsartan Heart Failure Trial (Val-HeFT). A sustained decline in Hb, they found, was independently associated not only with higher mortality and morbidity but also with increased risk of death—even in patients who were not anemic at baseline.

Several factors, including albumin, diastolic blood pressure, glomerular filtration rate, B-type natriuretic peptide (BNP), and C-reactive protein, were independently associated with anemia at baseline and changes in Hb. Although baseline anemia and BNP were related, anemia was associated with outcomes independently of BNP, suggesting that these variables may have their effects through different mechanisms. Moreover, dilated left ventricles or lower left ventricular ejection fractions were not significantly more prevalent among patients with anemia at baseline, and increases in Hb over 12 months were not associated with greater improvement in left ventricular size and function.

In this study, decreases in Hb averaging 1.6 g/dL over 12 months in patients with a mean baseline Hb of 14.2 g/dL were associated with a higher risk of adverse events than minimal changes in patients whose mean baseline Hb was 13.7 g/dL. The researchers suggest that keeping Hb well into the normal range is ideal. They caution, however, that their data didn't demonstrate that an average increase in Hb from 13.3 to 14.4 g/dL lowered the risk of morbidity or mortality.

Source: *Circulation.* 2005;112:1121–1127.