# Five Types of MI Will Make Up New Definition

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BARCELONA — The definition of acute myocardial infarction is about to change.

A worldwide task force with representatives from five major cardiology and health groups developed a new definition of acute MI that includes five distinct categories. The new definition will be formally released early next year, Dr. Kristian Thygesen said at a joint meeting of the European Society of Cardiology and the World Heart Federation.

The task force included representatives of the American College of Cardiology, the American Heart Association, the European Society of Cardiology, the World Health Organization, and the World Heart Federation. This membership was designed to broaden worldwide representation; the last revision of the MI definition, in 2000, was criticized because it came from a group that represented only the ACC and the ESC, said Dr. Thygesen, a professor of medicine and cardiology at Aarhus (Denmark) University.

The five types of acute MI compose five separate situations that produce myocardial ischemia and myocardial-cell death:

**1.** A primary coronary event, such as plaque rupture or dissection.

**2.** A problem of oxygen supply and demand, such as coronary spasm, coronary embolism, arrhythmia, anemia, or hypotension.

**3.** Sudden cardiac death that includes signs and symptoms of myocardial ischemia, such as ECG changes, but which produces death before a blood sample can be obtained or when death occurs during the lag period before serum markers appear in the blood.

**4.** Percutaneous coronary intervention.

**5.** Coronary artery bypass grafting.

The key tool for diagnosing an acute MI remains measurement of the serum level of troponin, although when this is not available it's possible to instead use the serum level of creatine kinase–MB mass.

For MI types 1 and 2, the troponin or creatine kinase–MB level should be above the 99th percentile, compared with an appropriate control using an assay with a cut-off independent of assay imprecision of 10% or less.

The serum assay needs to be complemented with additional evidence of myocardial ischemia, such as characteristic ECG changes, or evidence of a new loss of myocardial viability such as a new, regional, wall-motion abnormality seen with imaging. ECG changes can include left bundle branch block, or an ST-segment elevation in leads V2 and V3 of at least 0.2 mV in men or at least 0.15 mV in women, or an elevation of at least 0.1 mV in another lead. The threshold of 0.15 mV for leads V2 and V3 in women is new; the threshold had been 0.2 mV for everyone.

Patients who meet the serum-marker criteria but do not have accompanying evidence of ischemic heart disease are considered to have myocardial necrosis, not infarction. This could be caused by heart failure, renal failure, arrhythmia, or other disorders.

Diagnosing a type 4 infarction—PCI-related MI—requires the serum marker to exceed three times the 99th percentile of a matched control. Patients with a level that's above the 99th percentile but falls short of three-times this level are considered to have myocardial necrosis.

Diagnosing a type 5 infarction, CABG-related MI, requires the serum marker to exceed five times the 99th percentile of a matched control. Patients with a level that's above the 99th percentile but falls short of five times have myocardial necrosis.

For both types 4 and 5, the serum marker of a MI must be supported by either ECG or imaging changes indicative of ischemia. In the case of a CABG-related MI, this could also include evidence of coronary-graft occlusion.

The new definition also includes the category of prior MI, which refers to an old ischemic and necrotic event that produced thinned or scarred myocardium. ■

# Men With Gout Have 26% Higher Risk of Acute Myocardial Infarction

Men with a history of gouty arthritis have a significantly higher risk of developing an acute myocardial infarction, reported Dr. Eswar Krishnan of the University of Pittsburgh, and his associates.

"This study is the first to show that among men with no previous history of coronary artery disease, gouty arthritis is a significant independent correlate of subsequent acute [MI]," they reported.

The results revealed a significantly greater number of acute MI events in men with gout (odds ratio, 1.26). The study also found that hyperuricemia is an independent risk factor for acute MI (OR, 1.11).

The finding comes from an evaluation of the Multiple Risk Factor Intervention Trial (MRFIT) data. Researchers of MRFIT, a randomized controlled trial of 12,866 men with a mean age of 46 years, followed the group prospectively for approximately 6.5 years. Initial evaluation included BP and cholesterol measurement (Arthritis Rheum. 2006;54:2688-96).

Men with a history of diabetes, acute MI, a high cholesterol level (350 mg/dL or higher), a diastolic blood pressure of greater than 115 mm Hg, and body weight greater than 150% of desirable weight were excluded. In the original trial, the participants were randomized to a special intervention program that promoted smoking cessation and blood pressure and cholesterol reduction versus usual care, Dr. Krishnan and his associates reported.

**—Sarah Pressman Lovinger**