

Criteria used for HEART score calculation

The HEART score, defined by Six et al.¹, has been validated in both a multinational validation study and meta-analysis²⁻⁴. It is comprised of 5 components: history (0-2 points), electrocardiogram (ECG, 0-2 points), age (0-2 points), risk factors (0-3 points) and troponin level (0-2 points). HEART score is a summation of all 5 components.

History: Subjective assessment of history was classified as nonspecific (0 points), moderately suspicious for clinically significant coronary artery disease (1 point), or highly suspicious (2 points). This classification was manually extracted from the history and physical (H&P) documented by the emergency medicine provider. If not explicitly documented, the researcher extracting data reviewed only the subjective portion of the H&P and assigned a score before reviewing patient outcomes.

ECG: ECG findings were classified as normal (0 points). 1 point assigned for the presence of left bundle branch block, complete right bundle branch block, pacemaker rhythm, or typical abnormalities of left ventricular hypertrophy. Significant ST depression (>0.5 mm) in the absence of bundle branch block or LVH was assigned 2 points. For this study, ST elevation meeting ischemic criteria was also included after excluding repolarization abnormalities and diffuse ST elevation with PR depression consistent with pericarditis. All ECGs were retrospectively reviewed by a single physician blinded to the patient's medical and encounter history. Only the first ECG obtained during the encounter was scored.

Age: Age was scored as <45 years (0 points), 45–64 years (1 point), and >65 years (2 points). The documented age at the time of the encounter was used.

Risk Factors: Risk factors included diabetes mellitus, hypertension, current smoking within the last 90 days, hypercholesterolemia, family history of coronary artery disease, myocardial infarction, or sudden cardiac death in a first-degree relative before age 65, and obesity (BMI >30 kg/m²). The number of risk factors was summed, with 0 points assigned for no risk factors, 1 point for 1–2 risk factors, and 2 points for ≥3 risk factors or a personal history of atherosclerosis (prior myocardial infarction, percutaneous coronary intervention, coronary artery bypass grafting, cerebrovascular accident, transient ischemic attack, or peripheral arterial disease). Only risk factors documented at the time of the encounter were included.

Troponin: The first high-sensitivity troponin (hs-cTn; Roche Diagnostics, Indianapolis, IN, USA) drawn at each encounter was scored as follows: 0 points if the value was below the gender-specific cutoff (≤13 ng/L for females, ≤18 ng/L for males), 1 point if the hs-cTn was above the gender-specific cutoff but ≤52 ng/L, and 2 points if the hs-cTnT was >52 ng/L. These cutoff values were defined based on the initial hs-cTnT thresholds used in published 0/1-hour algorithms for ACS rule-in⁵ and were incorporated into our institution's chest pain clinical decision pathway, the "Acute Chest Pain Optimal Care Pathway" (Figure 1).

Reference

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3. Fernando SM, Tran A, Cheng W, et al. Prognostic Accuracy of the HEART Score for Prediction of Major Adverse Cardiac Events in Patients Presenting With Chest Pain: A Systematic Review and Meta-analysis. *Acad Emerg Med.* 2019;26(2):140-151. doi:10.1111/acem.13649
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