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Use of the HEART Score in the Evaluation and Management of Emergency Department Patients with Chest Pain

Why is this topic important? Patients with chest pain lacking clear evidence of acute coronary ischemia present a frequent challenge to the emergency department (ED) physician who seeks to balance a safe disposition home for ongoing care with a potentially unnecessary admission. The HEART (History, ECG, Age, Risk factors, and Troponin) score offers an evidence-based management algorithm for those patients with 'low to moderate risk for short-term harm' chest pain in the ED.

How will this change my clinical practice? The HEART score is a risk-stratification tool that uses information available at the time of presentation for ED chest pain patients. The score seeks to identify a patient's short-term risk for major adverse cardiac events (MACEs). In recent studies (original, validation, meta-analyses), subjects with a low HEART score (0 to 3) have less than 3% risk (2.5%) of a MACE at six weeks after presentation. The HEART pathway may help to identify ED chest pain patients to safely decrease cardiac testing and reduce length of stay by increasing early discharge rates.

Synopsis Focus Points: Emergency physicians are recommended to use the HEART score and pathway as a clinical decision aid. Depending on local and individual patient resources, patients with a low (0 to 3) HEART score may be discharged from the ED with follow up.

Background:

The American College of Cardiology/American Heart Association (ACC/AHA) recommend serial cardiac markers followed by some sort of provocative or objective cardiac testing in patients with chest pain outside clear evidence of cardiac ischemia. (1) The criterion standard used by cardiologists – the TIMI and GRACE scores – stratified patients with proven or highly suspected acute coronary syndromes (ACS), not patients who presented to the ED with chest pain. This creates a potential referral bias.

The HEART (History, ECG, Age, Risk factors, and Troponin) score is a composite risk-stratification tool that uses information readily available to the emergency physician at the point when a disposition and plan must be made. (2,3) The original study by Six et al. showed a 2.5% rate of MACE in subjects presenting with a HEART score of 0 to 3. (4) In a validation study that compared HEART to TIMI and GRACE scores, there was a 1.7% rate of MACE in subjects at six weeks. When evaluating the same patient, the score is reproducible and reliable between physicians. (5) Two recent meta-analyses of HEART score studies confirm these findings. (6, 7) Green et al., later performed a methodologic appraisal of the literature and reported that the original score may have important weaknesses in interrater reliability and outcome selection. They reported that the summary performance showed pooled sensitivities of 96% to 97% with lower than previously reported confidence interval bounds of 93% to 94% (8). These authors wrote that they believed the HEART score not to be as reliable as previously regarded.

The HEART pathway incorporates the score into a clinical algorithm with serial troponin tests. A single-center randomized controlled trial demonstrated no deaths in the HEART Pathway group at one-year, although one-year cardiac-related hospitalizations and ED visits were increased using the HEART pathway. (9) The ACEP Clinical Policy on Non–ST-Elevation Acute Coronary Syndromes recommends the HEART score can be used as a clinical prediction instrument (ACEP Level B). (10) For some clinicians, even a 2% risk is high, but given potential efficient outpatient diagnostic capabilities and progressively tighter criteria for admission, the HEART score offers an ED valid and relevant risk assessment tool. Its extant and ubiquitous nature makes the HEART score an important point-of-reference, but clinicians should be cautioned that the approach to chest pain, in particular, should be patient-, context-, and resource-specific.

This is Level 1a evidence. (11)

References:

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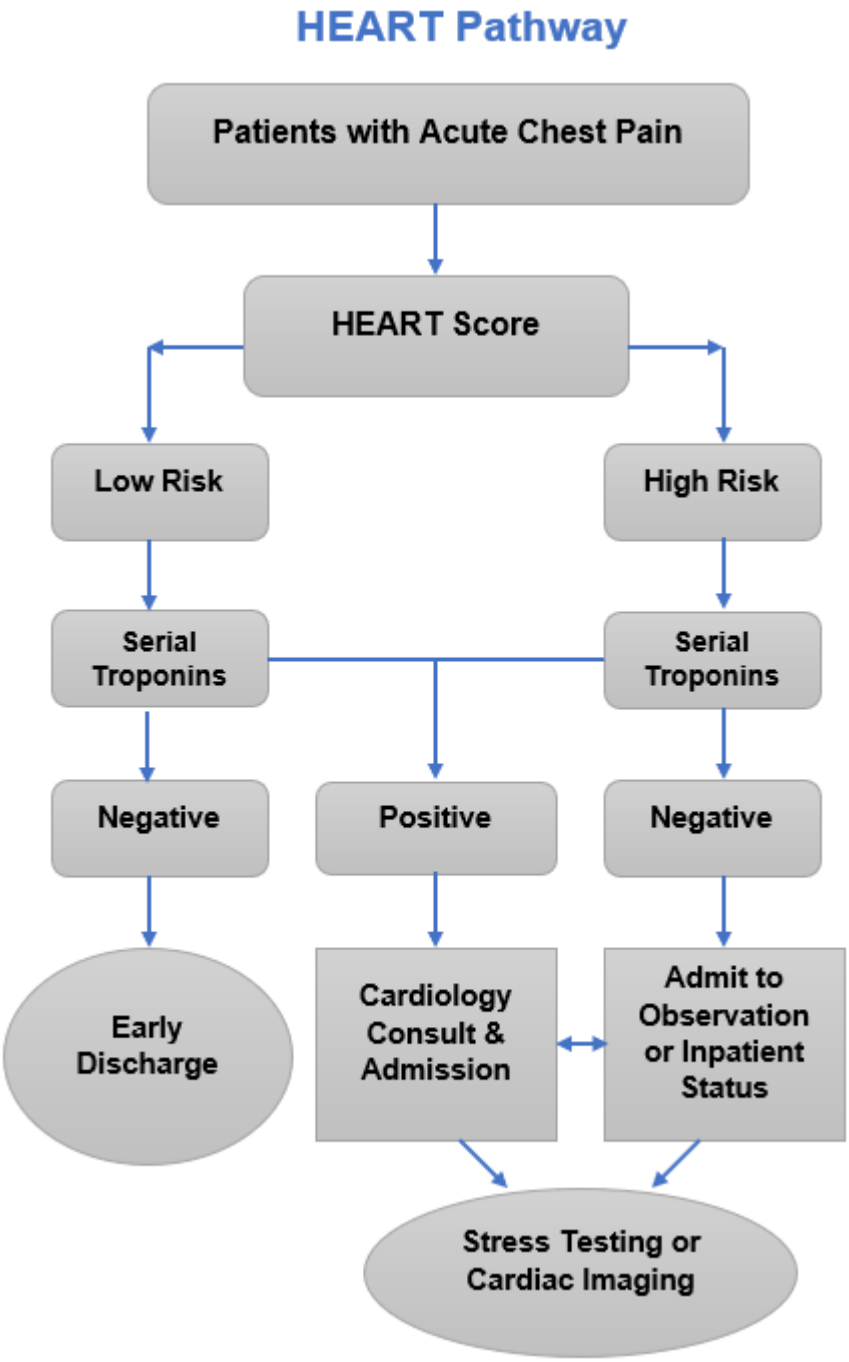
11. https://www.cebm.net/2009/06/oxford-centre-evidence-based-medicine-levels-evidence-march-2009/

The HEART Score for Chest Pain Patients in the ED		
History	• Highly Suspicious • Moderately Suspicious • Slightly or Non-Suspicious	• 2 points • 1 point • 0 points
ECG	• Significant ST-Depression • Nonspecific Repolarization • Normal	• 2 points • 1 point • 0 points
Age	• ≥ 65 years • > 45 - < 65 years • ≤ 45 years	• 2 points • 1 point • 0 points
Risk Factors	• ≥ 3 Risk Factors or History of CAD • 1 or 2 Risk Factors • No Risk Factors	• 2 points • 1 point • 0 points
Troponin	• ≥ 3 x Normal Limit • >1 - < 3 x Normal Limit • ≤ Normal Limit	• 2 points • 1 point • 0 points
Risk Factors: DM, current or recent (<one month) smoker, HTN, HLP, family history of CAD, & obesity		
Score 0 – 3: 2.5% MACE over next 6 weeks → Discharge Home **Score 4 – 6:** 12 - 16% MACE over next 6 weeks → Admit for Clinical Observation **Score 7 – 10:** 72.7% MACE over next 6 weeks → Early Invasive Strategies		

Reference:
Salim Rezaie, "The HEART Score: A New ED Chest Pain Risk Stratification Score", REBEL EM blog, January 10, 2014. Available at: https://rebelem.com/heart-score-new-ed-chest-pain-risk-stratification-score/



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Resources for additional learning:
https://pubmed.ncbi.nlm.nih.gov/?term=heart+score+acute+coronary+syndrome
http://thesgem.com/2016/04/sgem151-groove-is-in-the-heart-pathway/
https://rebelem.com/is-it-time-to-start-using-the-heart-pathway-in-the-emergency-department/

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