RI ACEP
Clinical Policies Committee

Guideline: Safe Disposition of Low-Risk Chest Pain
03/2017

Purpose:

Implement a validated guideline to aid in the safe disposition of patients who might otherwise be considered for admission to a hospital or chest pain observation unit.

- Reduce overall length of stay and resource-utilization; increase early discharge rate
- Maintain a very low predicted 4-6 week Major Adverse Cardiac Event (MACE) rate. MACE: AMI, PCI, CABG, death

Chest pain is a common and high-risk ED presenting complaint. Extensive research has been done on this topic leading to the development of numerous scoring algorithms in an attempt to identify patients at high-risk for Acute Coronary Syndrome (ACS).   High-risk patients are relatively easy to identify in the ED and admitting such patients to the hospital for further treatment and diagnostics is justified. Extremely low-risk presentations also do not pose a significant diagnostic dilemma. The disposition of lower-risk patients that might be considered for observation admission vs. outpatient follow-up can be a challenge in the ED setting.   Very few scoring systems have focused on the undifferentiated ED patient population while also incorporating high-sensitivity troponin (TnI). Physicians are justifiably concerned about the possibility of an adverse event occurring after discharge, and the potential morbidity, mortality, and legal ramifications.

A validated approach for efficient and safe disposition of low-risk CP patients is the application of the HEART score in conjunction with, when indicated, an additional 3-hour TnI. A HEART score of 3 or less can safely predict a low 6 week MACE occurrence. Adding a second negative 3-hour TnI to the same low HEART score reduces the MACE rate to as low as 0.2% at 30 days. The HEART score does allow for clinical judgment regarding the history of symptoms. Clinical judgment and shared decision-making is always encouraged when deciding on the disposition of ED patients with chest pain.   Availability of timely outpatient follow-up should also be factored into the disposition decision.

What is the HEART Score?

H = History

E = ECG

A = Age

R = Risk Factors

T = Troponin

HEART ❤️

HEART score for chest pain patients		
History	Highly suspicious	2
	Moderately suspicious	1
	Slightly suspicious	0
ECG	Significant ST-deviation	2
	Non specific repolarisation disturbance / LBTB / PM	1
	Normal	0
Age	≥ 65 years	2
	> 45 and < 65 years	1
	≤ 45 years	0
Risk factors	≥ 3 risk factors or history of atherosclerotic disease*	2
	1 or 2 risk factors	1
	No risk factors known	0
Troponin	≥ 3x normal limit	2
	> 1 and < 3x normal limit	1
	≤ 1x normal limit	0
		Total

*Risk factors for atherosclerotic disease:

Hypercholesterolemia   Cigarette smoking
Hypertension   Positive family history
Diabetes Mellitus   Obesity

Score 0-3: original study 2.5% MACE at 6 weeks. Subsequent validation study (Backus, et al, 2013) predicts 1.7% MACE at 6 weeks. With the addition of a negative 3 hour TnI, MACE 0.2% at 30 days.

Score 4-6: 20.3% MACE original; 16.6% validation study at 6 weeks

Score 7-10: 72.7% MACE original; 50.1% validation study at 6 weeks

Note: Validation study had some limitations; 2440 patients, observational study, Netherlands, 10 hospitals; varied TnI cut-off values, 2% patients lost to follow-up.

Summary:

Patients with a primary complaint of CP and a HEART score 0-3 can be safely discharged with timely outpatient follow-up. It is generally recommended that a second 3-hour troponin be added to further reduce the likelihood of MACE. Clinical judgment and shared decision-making should be employed regarding the necessity of the second TnI (duration and pattern of symptoms) as well as to the discharge decision in general.

Six, A J, B E Backus, and J C Kelder. 2008. Chest pain in the emergency room: value of the HEART score. *Netherlands heart journal : monthly journal of the Netherlands Society of Cardiology and the Netherlands Heart Foundation*, no. 6. http://www.ncbi.nlm.nih.gov/pubmed/18665203.

Backus, B E, A J Six, J C Kelder, M A R Bosschaert, E G Mast, A Mosterd, R F Veldkamp, et al. 2013. A prospective validation of the HEART score for chest pain patients at the emergency department. *International journal of cardiology*, no. 3 (March 7). doi:10.1016/j.ijcard.2013.01.255. http://www.ncbi.nlm.nih.gov/pubmed/23465250.

Mahler SA et al. The HEART Pathway Randomized Trial Identifying Emergency Department Patients With Acute Chest Pain for Early Discharge. Circ Cardiovasc Qual Outcomes March 2015; 8 (2): 195 – 203. PMID: 25737484

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