

Clinical Practice Committee Statement:
Telemetry Bed Usage for Patients with Low Risk Chest Pain
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Authors: Jack Perkins, MD FAAEM
Michael McCurdy, MD FAAEM

Reviewers: David Cheng, MD FAAEM
Sergey Motov, MD FAAEM
Michael Winters, MD FAAEM
Steve Rosenbaum, MD FAAEM

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Every year, more than 8 million Americans present to the emergency department (ED) with chest pain, making it the 2nd most common complaint in the ED [1]. Although <5% of low-risk chest pain patients are found to have an acute myocardial infarction (MI) [2], many are admitted to the hospital for further evaluation. Telemetry monitoring in patients with low-risk chest pain is highly utilized, despite the lack of quality data to support its use. In fact, it rarely detects clinically meaningful dysrhythmias, may lead to unnecessary tests and procedures, is expensive, and significantly increases ED boarding due to patients awaiting inpatient telemetry beds [3, 4].

Executive Summary

- 1) Insufficient data exist to support telemetry use in low-risk chest pain patients.
- 2) Patients who are at low risk for significant 30-day morbidity and mortality and are therefore unlikely to benefit from telemetry monitoring should have a normal first set of cardiac enzymes and a Goldman risk score of zero (normal/non-diagnostic ECG plus none of the following: hypotension, rales above the bases, or pain worse than baseline angina).

The 2004 American College of Cardiology (ACC)/American Heart Association (AHA) guidelines for inpatient telemetry monitoring provide recommendations on how to best screen for dysrhythmias, ischemia, and QT interval abnormalities in adults[5]. These guidelines are based almost exclusively on expert opinion due to the dearth of pertinent clinical trials. The vague and confusing nature of these guidelines is highlighted in the Class I recommendation to keep all “rule-out MI” patients on telemetry until 24 hours after they are pain free. However, “Chest Pain Syndromes” is a separate subject in the guidelines under Class II recommendations. This ambiguity has undoubtedly facilitated the common practice of admitting all chest pain patients to telemetry.

Low-risk chest pain is defined by the ACC/AHA as those patients with a normal or “near-normal” ECG (unchanged from prior or no ST or T wave changes in contiguous leads), normal cardiac enzymes, normal cardiac rhythms, and normal hemodynamics [6]. Although various risk prediction scores exist, the one most commonly utilized is the Goldman risk scoring system [7], whose components include: 1) ischemic changes on ECG; 2) systolic blood pressure <100 mmHg; 3) bilateral pulmonary rales above the bases; and 4) pain worse than baseline angina. According to Goldman et al, a normal ECG and ≤1 of these risk factors is categorized as “low risk” meaning the

patient has a $\leq 5\%$ chance of a major cardiac event (e.g. CABG, MI, death) at 30 days. For the purposes of this statement we will utilize the above referenced Goldman criteria to define “low risk” chest pain. However, based on the following data, we believe a negative first set of cardiac enzymes should be included in this definition.

Several studies in the past few decades have evaluated the utility of telemetry monitoring in patients with low-risk chest pain. One of the first studies addressing the utility of telemetry monitoring was prospectively completed by Estrada et al on 2240 patients admitted to a telemetry unit [8]. Of the 1225 patients admitted for chest pain only 4 (0.3%) were transferred to the ICU for dysrhythmias. A more pertinent prospective study by Hollander et al utilized the Goldman risk score and initial cardiac enzymes [9]. They reviewed 1029 low-risk patients with negative initial cardiac enzymes admitted to telemetry beds. Even though 15 (1.5%) patients eventually ruled in for MI and another 121 (11.8%) were diagnosed with unstable angina, none of the 1029 study patients had sustained ventricular tachycardia or ventricular fibrillation. Two of the 1029 patients died during the study but both were due to non-cardiac causes. A study by Durairaj et al applied the Goldman risk score algorithm to patients with and without chest pain admitted to an inpatient telemetry unit [10]. They classified 318 patients as “very low-risk” (Goldman score of zero) chest pain and none of these patients had any major complications during the first 72 hours of hospital admission. The final study reviewed for this statement was a retrospective trial by Saleem et al involving 105 consecutive patients admitted for suspected ACS [9]. Two-thirds of the patients were older than 60 yet none experienced any events while on telemetry. A 2007 meta-analysis supports the data above by concluding that a subgroup of chest pain patients with a normal ECG and normal cardiac biomarkers can safely be admitted to an unmonitored bed [12].

Telemetry bed availability is a valuable and scarce hospital resource that should be used in an efficient and appropriate fashion. Currently, most hospitals mandate that all patients being evaluated for ACS require telemetry monitoring. However, the literature does not support this practice for all patients presenting with chest pain. In fact, based on the ACC/AHA guidelines, the validated Goldman risk scoring system, and the literature evaluating the utility of telemetry for low-risk chest pain patients, we endorse the following recommendations:

- 1) Developing a more standardized definition of low-risk chest pain will be useful for future studies on the utility of telemetry monitoring.
- 2) The subset of chest pain patients who can be safely discharged from the ED has yet to be fully identified.