

Need to Know: CJEM Journal Club

Outcome of applying the European Society of Cardiology (ESC) 0/1-hour algorithm in patients with suspected myocardial infarction

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Ratings: Methods – 3/5 Usefulness – 4/5

INTRODUCTION

Background

The European Society of Cardiology (ESC) recommends the 0/1-hour troponin dosage algorithm for rapid triage of patients with chest pain and suspected non-ST segment elevation myocardial infarction (MI).

Objectives

To determine safety, performance, and applicability of the 0/1-hour troponin triage algorithm when routinely applied in the emergency room

METHODS

Design

Prospective cohort study

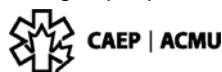
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outpatient management with a 0,1% occurrence of 30-day MACE. The remaining patients (12%) were treated as inpatients without justification provided, and 28% of these patients underwent revascularization therapy with 0,2% of 30-day MACE. The overall 30-day MACE in the “rule-out” category was 0,2% and does not include revascularization therapy. The algorithm was strictly adhered in 94% of patients’ encounters with an average time between the blood draws of 65 minutes. The median time to discharge from the ED or transfer to a hospital ward was 2 hrs, 30 min.

APPRAISAL

Strengths

- Patient-oriented outcomes.
- Strong internal validity due to high adherence to algorithm.
- A complete patient follow-up for 30-day MACE – no lost to follow-up.

Limitations

- Data collection performed in EDs where 0–1 h protocol is already a standard of care and clinicians’ awareness of the goal of the study sets a potential Hawthorne effect.
- Level and specialty of the clinicians performing the evaluation are unknown.
- Potential selection bias: recruitment method is unknown.
- Current algorithm cutoffs are only applicable to hs-cTnT assay (Elecsys 2010 high-sensitivity troponin T) not available in all EDs.
- No standardization of the “rule-out” patient cohort ED or post-ED management. Decision criteria to admit patients and to investigate as outpatients were not described. Early access to stratification testing and revascularization could have led to lower rates of 30-day MACE in this group.
- Revascularization was not considered as a primary outcome or an MACE. Interestingly, in the “rule-out” cohort, 4.4% of patients underwent revascularization following their ED visit.

CONTEXT

This study builds on the emerging literature showing the capacity of high-sensitivity troponin assays and short interval blood draws to reduce MI diagnosis delays and therefore allows for a more rapid initiation of adequate therapy. The ESC 0/1 hour algorithm appears to be safe and to effectively decrease time to ED discharge with a 30-day MACE rate of 0.1% in the outpatient cohort of 1,619 patients. Furthermore, a recent study showed the 0/1 hour TnT protocol to be non-inferior to the standardized 0/3 hours hs-cTnT protocol.¹

BOTTOM LINE

The ESC 0/1 h hs-cTnT algorithm allows for safe early discrimination of patients presenting to the ED with chest pain and suspected NSTEMI in the presented cohort.² Nevertheless, 4.4% of patients in the “rule-out” low-risk group underwent revascularization procedure, which was not considered an MACE in this study. Moreover, this algorithm is not applicable to early presenters (< 3 hrs), patient with ongoing pain, or known renal insufficiency. Further studies acknowledging the safety with the different types of troponin assay are required for general applicability.³

Keywords: Cardiac disease, emergency medicine, evidence-based medicine

Competing interests: None declared.

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