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RAPID-CPU: a prospective study on implementation of the ESC 0/1-hour algorithm and safety of discharge after rule-out of myocardial infarction

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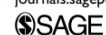


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under-represented in observational studies and the limited clinical experience in patients presenting with symptoms other than chest pain or angina.^{13–16}

Another issue is the lack of a clinically validated acceptable event rate after discharge. All-cause mortality rates between 0.1% and 2% have been suggested to be acceptable based on a survey among physicians who were asked to give their expectation on 30-day mortality rates.¹⁷ In observational studies physicians were usually unaware of investigational biomarker results and protocols, and patients were discharged at the discretion of the attending physician. Adding to this dilemma, there are only few randomised biomarker-based trials evaluating the safety of discharge in low-risk patients, either using high-sensitivity troponin (hsTn) assays in combination with validated clinical scores,^{18,19} a dual biomarker strategy combining copeptin with cardiac troponin,⁸ or an accelerated diagnostic protocol using hsTn I measurements 2 hours apart, together with electrocardiography (ECG) and either the thrombolysis in myocardial infarction (TIMI)^{9,20} or the emergency department assessment of chest pain (EDACS) score.²⁰ Moreover, incremental evidence comes from a large pre and post-implementation study on 31,332 patients providing findings on the lower length of emergency department (ED) stay and increased rates of discharge within 6 hours, and night shift 1 physician). The nursing team consists of experienced nurses working in a three-shift system (day shift 3, swing shift 3, night shift 2 nurses), with a ratio of one nurse per five patients. The ED is under the permanent supervision of a senior cardiologist who is responsible for the decision to admit or discharge, and for the indication and timing of an invasive strategy. There is unlimited access to coronary angiography or other diagnostic resources as per the required criteria for certification of a CPU.²² Patient disposition, times and treatments were collected in a 6-month pre-implementation period followed by the implementation on 1 January 2017 that encouraged the use of the ESC 0/1-hour algorithm as the primary diagnostic strategy, and subsequently a post-implementation period of another 6 months to demonstrate changes.

Exclusion criteria comprised the following: (a) repeated presentations beyond the index admission ('frequent flyer'); (b) patients referred from other hospitals for early or primary percutaneous coronary intervention (PCI) without receiving a standard diagnostic work-up; (c) diagnostic set of hsTnT samples not available (e.g. missing initial or consecutive blood sample); (d) patients with ST-segment elevation myocardial infarction (STEMI) were registered but were excluded for this analysis. A consort diagram illustrates the screening process (Figure 1).

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