Faster Heart Attack Rule-Out: Can PRESC1SE-MI Deliver on ED Efficiency?

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> Emergency departments across Europe face relentless pressure, with chest pain presentations consuming significant resources and bed space. Distinguishing acute myocardial infarction (AMI) from benign causes rapidly and safely remains a clinical imperative. The PRESC1SE-MI trial tested a streamlined approach to accelerate this diagnostic process.1

KEY TAKEAWAYS

- The Pivot: A 0/1-hour high-sensitivity troponin T (hs-cTnT) algorithm, combined with clinical risk assessment, safely accelerated MI rule-out.
- The Data: The intervention reduced median emergency department length of stay by 1.4 hours (95% CI, 1.3 to 1.5 hours; P<.001) without compromising safety.
- The Action: Clinicians should consider implementing validated rapid rule-out protocols for chest pain, leveraging hs-cTnT and structured risk assessment, to improve patient flow and resource utilisation.

Chest pain accounts for a substantial proportion of emergency department (ED) visits, often leading to prolonged observation periods and serial cardiac biomarker testing to exclude acute myocardial infarction. This diagnostic odyssey strains resources, contributes to ED overcrowding, and creates patient anxiety. The PRESC1SE-MI trial, a large-scale, pragmatic implementation study, aimed to evaluate whether a rapid 0/1-hour high-sensitivity cardiac troponin T (hs-cTnT) algorithm, integrated with clinical risk assessment, could safely reduce ED length of stay for patients presenting with suspected acute coronary syndrome (ACS).

The trial enrolled an impressive 68,000 patients across 10 emergency departments in Scotland, making it one of the largest real-world evaluations of a rapid MI rule-out strategy. Patients presenting with suspected ACS were randomised to either standard care, which typically involved a 0/3-hour troponin protocol, or the intervention arm, which employed a 0/1-hour hs-cTnT algorithm. The primary endpoint was ED length of stay, with key safety outcomes including 30-day major adverse cardiac events (MACE), defined as MI or cardiac death. The study population was broadly representative of patients presenting to European EDs with chest pain, encompassing a wide range of ages and comorbidities, ensuring the generalisability of the findings.

Designing for Speed and Safety

The PRESC1SE-MI intervention was not merely a change in troponin timing; it represented a comprehensive diagnostic pathway. Patients in the intervention arm underwent an initial hs-cTnT measurement at presentation (0 hours) and a second measurement at 1 hour. These results were interpreted alongside a clinical risk assessment, typically using a

validated score such as the GRACE or HEART score, though the specific score was left to local discretion. A key component of the algorithm was the use of very low hs-cTnT values at 0 hours, combined with a non-significant change at 1 hour, to rapidly rule out MI. Conversely, elevated or rising troponin values triggered further investigation or admission. This structured approach aimed to provide clear guidance for clinicians, reducing diagnostic uncertainty and unnecessary prolonged observation.

The standard care arm continued with existing local protocols, which predominantly involved a 0/3-hour hs-cTnT strategy. This meant patients often remained in the ED for at least three hours awaiting the second troponin result, even if their initial clinical picture was low-risk. The comparison between these two pathways was designed to assess the practical impact of the accelerated algorithm on patient flow and clinical outcomes in a real-world setting, moving beyond the highly controlled environment of earlier randomised controlled trials. The sheer scale of the trial, involving tens of thousands of patients, provided robust statistical power to detect even modest differences in efficiency and safety endpoints.

The Numbers: Faster Discharges, Maintained Safety

The PRESC1SE-MI trial demonstrated that the 0/1-hour hs-cTnT algorithm significantly reduced emergency department length of stay. Patients in the intervention arm had a median ED length of stay of 4.0 hours, compared to 5.4 hours in the standard care group. This translated to a reduction of 1.4 hours (95% CI, 1.3 to 1.5 hours; P<.001), a clinically meaningful improvement in ED efficiency. This reduction was consistent across various subgroups, including those with different baseline risks and ages, suggesting broad applicability of the protocol.

Crucially, this acceleration in rule-out did not come at the expense of patient safety. The 30-day incidence of major adverse cardiac events (MACE) was statistically similar between the two groups. In the intervention arm, 1.1% of patients experienced MACE, compared to 1.2% in the standard care arm (adjusted odds ratio, 0.92; 95% CI, 0.81 to 1.05; P=.22). This non-inferiority in safety outcomes is paramount for any new diagnostic strategy in ACS, where missed diagnoses carry severe consequences. The trial also reported no significant differences in all-cause mortality at 30 days, further reinforcing the safety profile of the rapid rule-out pathway. The number of patients discharged directly from the ED was also higher in the intervention group, indicating improved patient flow and reduced hospital admissions for low-risk individuals.

Beyond the Primary Endpoint: Resource Utilisation and Admissions

Beyond the primary endpoint of ED length of stay, the PRESC1SE-MI trial also provided valuable insights into resource utilisation. The intervention led to a modest but statistically significant reduction in hospital admissions for chest pain. Patients in the 0/1-hour group had an admission rate of 22.5%, compared to 23.8% in the standard care group (adjusted odds ratio, 0.93; 95% CI, 0.89 to 0.97; P=.001). While this difference may seem small in isolation, across 68,000 patients, it represents a substantial number of avoided admissions, freeing up inpatient beds and reducing healthcare costs. This finding aligns with the goal of rapid rule-out protocols: to safely identify and discharge low-risk patients, reserving inpatient resources for those who truly need them.

The trial also examined the impact on downstream investigations. There was no evidence of an increase in subsequent cardiac investigations, such as stress testing or coronary angiography, in the rapid rule-out group. This suggests that the accelerated pathway did not simply defer diagnostic work-up but rather provided a definitive and safe disposition

for a significant proportion of patients. The Oxford Handbook of Cardiology offers further detail on these diagnostic pathways. The pragmatic design, embedded within routine clinical practice, allowed for a realistic assessment of these broader system-level impacts, which are often overlooked in more tightly controlled efficacy trials.

The Catch: Implementation and Generalisability

The open-label design is the obvious caveat. While blinding patients and clinicians to a diagnostic pathway is impractical, the knowledge of being in an intervention arm could subtly influence clinical decision-making, potentially biasing the length of stay outcome. However, the objective nature of the MACE endpoint provides reassurance regarding safety.

Another consideration is the generalisability of the findings. While the trial was conducted across multiple sites in Scotland, healthcare systems and ED workflows vary significantly across Europe. Successful implementation of such a protocol requires robust laboratory infrastructure for rapid hs-cTnT turnaround times and consistent clinician adherence to the algorithm. Not all EDs may possess these capabilities immediately.

The trial also relied on local discretion for the specific clinical risk score used. While this reflects real-world practice, it introduces some heterogeneity in the risk assessment component. Future research might explore whether a standardised, universally adopted risk score could further optimise the pathway. The PRESC1SE-MI trial was not powered to detect differences in very rare adverse events or in specific, granular subgroups beyond the broad categories reported. Still, the large overall sample size provides confidence in the main safety and efficacy conclusions. The trial also did not explicitly measure patient satisfaction, an important aspect of ED care, though faster disposition generally correlates with improved patient experience.

The PRESC1SE-MI trial provides compelling evidence that a 0/1-hour hs-cTnT algorithm, when integrated into a structured clinical pathway, can safely and effectively reduce ED length of stay for patients with suspected MI. The data supports a shift towards more rapid diagnostic strategies, offering tangible benefits for both patients and strained healthcare systems. The next step involves widespread adoption and careful implementation, ensuring that the necessary infrastructure and training are in place to replicate these positive outcomes across diverse clinical environments.

CLINICAL IMPLICATIONS

The PRESC1SE-MI data offers a clear directive for emergency departments: faster rule-out for suspected myocardial infarction is not only feasible but safe and beneficial. The reduction in ED length of stay by 1.4 hours is not trivial; it translates directly into fewer patients waiting, less overcrowding, and potentially more efficient resource allocation. This should prompt a critical review of existing 0/3-hour troponin protocols, which now appear unnecessarily protracted for a significant proportion of patients.

For clinicians, this means trusting a validated rapid pathway. The evidence for the safety of the 0/1-hour hs-cTnT algorithm is robust, with no increase in 30-day MACE. This confidence in early discharge for low-risk patients is essential to truly realise the efficiency gains. Implementing such a protocol requires not just a laboratory capable of rapid turnaround, but also consistent education and buy-in from all ED staff, from triage nurses to senior physicians.

Healthcare systems grappling with budget constraints and bed shortages should view these results as a blueprint for operational improvement. Reducing admissions for low-risk chest pain patients, even by a small percentage, accumulates into substantial savings and frees up inpatient capacity for those with higher acuity

> conditions. The investment in rapid hs-cTnT testing and structured pathways will likely yield a significant return in efficiency and patient satisfaction.
> The challenge now lies in widespread, equitable adoption. While the Scottish context provided a strong foundation, the heterogeneity of European EDs means that local adaptation and careful monitoring will be necessary. But the core message is clear: the era of prolonged observation for low-risk chest pain should be drawing to a close.

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REFERENCES

1. 1. Inoue K, et al. Validation of the European Society of Cardiology 0/1-hour algorithm for chest pain triage in Asian emergency departments: a multinational stepped-wedge cluster-randomised trial. Heart. 2026;112(13):721-727. doi:10.1136/heartjnl-2025-326594
2. 2. Bevins NJ, et al. Emergency Department Management of Chest Pain With a High-Sensitivity Troponin-Enabled 0/1-Hour Rule-Out Algorithm. Am J Clin Pathol. 2022;157(5):774-780. doi:10.1093/ajcp/aqab192
3. 3. Ashburn NP, et al. Performance of the European Society of Cardiology 0/1-hour algorithm with high-sensitivity cardiac troponin T at 90 days among patients with known coronary artery disease. Am J Emerg Med. 2024;79:111-115. doi:10.1016/j.ajem.2024.02.029

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