

# A Handheld Point-of-Care High-Sensitivity Cardiac Troponin I Analyser Outperforms Laboratory Testing for Myocardial Infarction Rule-In in Older Adults: Advancing Novel Gerontechnology for Ageing Populations

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**Background and Objectives:** Chest pain often signals myocardial infarction (MI) in older adults, where prompt diagnosis is vital for better outcomes. **While cardiac troponin (cTn) assays remain the cornerstone for confirming MI, they can be less precise in older adults due to naturally elevated baseline levels.** A novel handheld point-of-care (POC) high-sensitivity (hs) cTnI analyser offers rapid testing but requires validation in this group. This study aimed to compare the diagnostic accuracy of the POC hs-cTnI assay with a laboratory hs-cTnI assay in older adults presenting with chest pain.

**Methods:** This cross-sectional study included consecutive patients aged  $\geq 65$  years presenting with chest pain to an emergency department. Blood samples were collected at 0 and 3 hours for both assays. The final diagnoses made by the attending physicians served as the gold standard.

**Results:** Among 337 participants (mean age 77.4 years), both assays exhibited similar sensitivity (100%) and negative predictive values (100%) for blood samples collected at both time points. However, the POC assay outperformed the laboratory assay in terms of specificity (0 hours: 90.5% vs 79.8%,  $p < .001$ ; 3 hours: 87.8% vs 77.7%,  $p < .001$ ) and positive predictive value (0 hours: 24.4% vs 13.2%; 3 hours: 12.5% vs 7.3%).

**Conclusions:** **The POC analyser matches laboratory methods for safely ruling out MI while providing stronger confidence in ruling in the condition among older adults.** This novel gerontechnology tool holds promise for faster decision-making in diverse settings—including ambulances and clinics—helping to support timely care, reduce unnecessary transfers, and enhance quality of life for ageing populations.



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