Chest Pain Units and Centers in the High-Sensitivity Troponin Era: Clinical Performance, Implementation Barriers, and Equity

Oluwakorede Akele, MD[1], Viha Bhatt[2], Evans Osuji, MD[3], Muhammad Kamal, MBBS[1], Vaishvik Patel, MD[1], Ahmed Alghazwy, MD[1], Juyong Lee, MD, MS, PhD[4]

1. Department of Medicine, University of Connecticut School of Medicine, Farmington, CT
2. University of Connecticut, Storrs, CT
3. Department of Medicine, Johns Hopkins University Bayview Medical Center, Baltimore, MD
4. Pat and Jim Calhoun Center, University of Connecticut School of Medicine, Farmington, CT

Saint Francis Hospital
Trinity Health

RESEARCH DAY

Trinity Health Saint Francis Hospital

BACKGROUND

Chest pain units (CPUs) and centers (CPCs) organize acute assessment through dedicated units, hospital programs, or referral networks. Their value depends on both dependable clinical care and patients' ability to access and complete it.[1]

OBJECTIVE

Integrate diagnostic and operational evidence with implementation barriers to identify priorities for safe, sustainable, and equitable CPU/CPC care.

REVIEW APPROACH

Targeted narrative review of diagnostic pathways, service organization, implementation, and equity. PubMed/MEDLINE searches, citation tracing, guidelines, and implementation literature informed the synthesis. Searches were updated in September 2026. Dedicated CPU/CPC evidence was distinguished from general emergency department (ED) pathway studies. No pooled effect estimate was calculated.

SELECTED EVIDENCE

Setting / design	Finding and interpretation
Dedicated CPU Historical trial[2,3]	972 patients: admission 37% with CPU care versus 54% with routine care. The later ESCAPE trial did not reproduce this reduction.
General ED pathway Canadian cohort[4]	14,027 patients: adherence 35.9% overall and 22.1% in indeterminate-risk patients. Adjacent pathway evidence.
Dedicated CPU Follow-up cohort[5]	275 patients: 61.8% completed scheduled stress testing within 72 hours. Demonstrates a care-completion gap.
CPC accreditation Observational analysis[7]	171 hospitals, 52,674 STEMI presentations: selected reperfusion measures improved. Mortality benefit was not established.

Historical stress-testing practice does not justify routine urgent testing after a contemporary low-risk rule-out.[1]

Limitations: narrative selection, heterogeneous service models and clinical eras, predominantly observational implementation evidence, and few modern comparisons of dedicated, virtual, and hybrid CPUs.

Selected references

1. Kontos MC, et al. J Am Coll Cardiol. 2022;80:1925-1960. doi:10.1016/j.jacc.2022.08.750
2. Goodacre S, et al. BMJ. 2004;328:254. doi:10.1136/bmj.37956.664236.EE
3. Goodacre S, et al. BMJ. 2007;335:659. doi:10.1136/bmj.39325.624109.AE
4. Hill J, et al. West J Emerg Med. 2026;27:205-213. doi:10.5811/westjem.48701
5. Story M, et al. Am J Emerg Med. 2016;34:790-793. doi:10.1016/j.ajem.2015.12.083
6. Zhou S, et al. Implement Sci. 2022;17:36. doi:10.1186/s13012-022-01207-6
7. Yu L, et al. Sci Rep. 2025;15:17103. doi:10.1038/s41598-025-02151-3
8. Varnavas V, et al. Herz. 2018;43:78-86. doi:10.1007/s00059-016-4527-0

INTEGRATED CARE PATHWAY

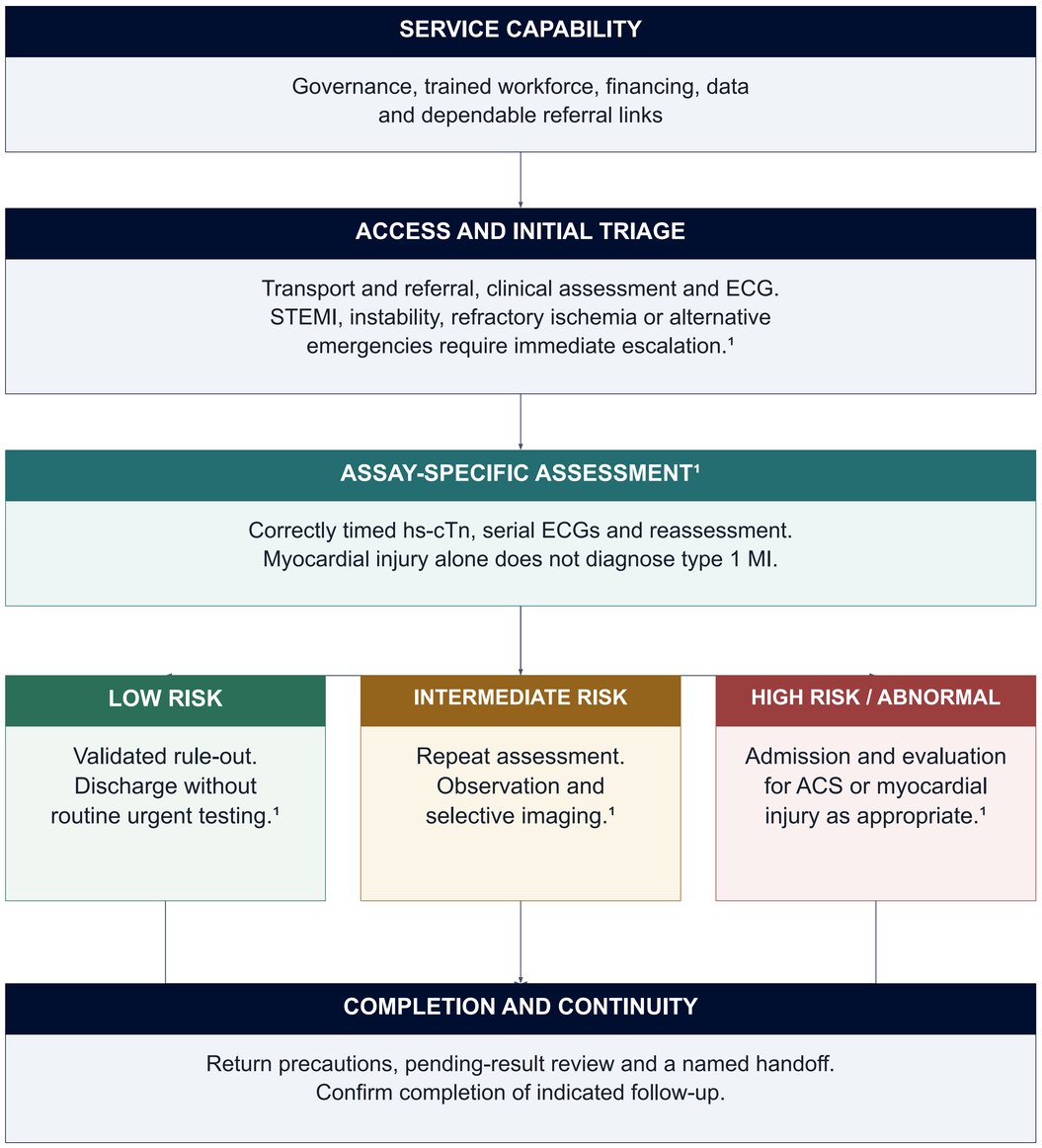


Figure 1. Proposed framework linking capacity, risk-based care and completion. Not externally validated. hs-cTn, high-sensitivity cardiac troponin; ACS, acute coronary syndrome; MI, myocardial infarction.

MEASURING SUCCESS

Safety: 30-day death and MI, missed acute diagnoses, and unplanned return visits.

Execution: Sampling and laboratory turnaround, risk-concordant testing, documented override, and completed indicated follow-up.

Reach and sustainability: Eligible-hospital adoption, failed transfers, operating costs, staff burden, and subgroup gaps in access and outcomes.

IMPLEMENTATION PRIORITIES

Barrier	Candidate response
Fragmented roles Staff turnover[6]	Named owners, protected coordination time, cross-training and accountable handoffs.
Laboratory delay Protocol deviation[1,4]	Assay-linked orders, correct timestamps, escalation for delays, and review of clinician overrides.
Financial constraints Reporting burden[6]	Fund operational readiness, reuse audited data, and measure total costs and patient burden.
Uneven geographic reach Transfer gaps[8]	Capability-based networks, receiving-center agreements, and review of failed or delayed transfers.
Unequal pathway entry Incomplete follow-up[5]	Audit subgroup differences. Schedule indicated care and address language, insurance and transport barriers.
Declining performance Changing technology[6,7]	Repeat training and audit after staffing or protocol changes. Evaluate point-of-care tests and AI prospectively.

These are proposed responses requiring prospective evaluation. Accreditation alone does not establish equitable access or durable clinical benefit.

CONCLUSIONS

CPU/CPC quality requires clinical reliability, equitable reach, and completed care.

Priorities are dependable assay-specific pathways, clear intermediate-risk plans, supported referral networks, and accountable follow-up. Future studies should compare service models using safety, access, total cost, and patient-reported outcomes.

UCONN HEALTH