

Updated Review of the Emergency Department Assessment of Chest Pain Score (EDACS)

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Abstract

The Emergency Department Assessment of Chest Pain Score (EDACS) was developed to identify low-risk chest pain patients who could be safely discharged after a short evaluation. In the original derivation and validation study (Than 2014), EDACS combined with the accelerated diagnostic protocol (ADP) achieved 99–100% sensitivity for major adverse cardiac events (MACE) and identified approximately 45% of patients as low risk. The tool has been validated across multiple settings, demonstrating very high sensitivity and negative predictive value for major adverse cardiac events while identifying a larger proportion of patients as low risk compared with other commonly used chest pain scores. This makes EDACS a valuable rule-out tool that supports safe early discharge when incorporating troponin and ECG data.

I. HOW TO USE

When to Use

Patients with chest pain or other anginal symptoms requiring evaluation for possible acute coronary syndrome who may be potentially low risk and appropriate for early discharge from the emergency department. While initially created without ECG or biomarkers, it should now be considered as part of the EDACS-ADP (accelerated diagnostic protocol), which includes ECG and troponin testing at 0h and 2 hours.

Pearls / Pitfalls

- The EDACS-ADP study included any symptoms >5 minutes that were worth working up for possible ACS.
 - This is a broader definition than other studies like the Vancouver Chest Pain Score which only included chest pain patients specifically.
- The EDACS-ADP safely identifies a higher proportion of patients as low-risk for MACE than other ACS clinical decision scores.
- The EDACS score places substantial weight on age, making it less likely for older adults to be classified as low-risk (though may reflect underlying risk profile).
- Like other chest pain evaluation studies, the primary outcome was MACE (major adverse cardiac event), as defined by any of the following:
 - ST-elevation or non-ST-elevation MI.
 - Need for emergency revascularization.
 - Death from cardiovascular causes.
 - Ventricular arrhythmia.
 - Cardiac arrest.
 - Cardiogenic shock.
 - High atrio-ventricular block.
- The goal of these rules is to identify a low-risk population that needs less testing than higher-risk patients (it is a rule-out rule to identify patients at low risk of cardiac disease, and therefore is not terribly specific).
- Goals for sensitivity of the rule were $\geq 99\%$, which was achieved in the original derivation study.
- The score was created initially without ECG or biomarkers but should now be considered as part of the EDACS-ADP (accelerated diagnostic protocol), which does include ECG and troponin testing at 0h and 2 hours.
- While known CAD and cardiac risk factors are included in the final model for clinical relevance and to improve face validity of the score, note that they were not statistically identified as independent variables in the multivariate logistic regression, and as such there may be a paradoxical decrease in predicted risk after the cutoff age of 50 years. Inclusion of these variables did not affect the tool's performance (Than 2014).

Why to Use

Patients requiring serial blood testing (serial troponin markers typically at 0 and 6-hours to rule out myocardial infarction; many emergency departments now use 0/1hr or 0/2hr high-sensitivity troponin pathways) and further risk stratification require an extended emergency department evaluation. The authors of this study were able to find a low-risk group of patients (~45%) that could safely be discharged from the ED after two biomarkers, ECG, and history and physical exam.

II. NEXT STEPS

Advice

Barring other concerning features for acute coronary syndrome or other life-threatening causes of chest pain (pneumothorax, pulmonary embolism, cardiac tamponade, aortic dissection, esophageal rupture, etc), patients that meet the low-risk criteria can be considered for discharge with close follow-up with their primary care physician after negative 0-hr and 2-hr troponin testing.

Patients who do not meet the low-risk criteria should be ruled-out for myocardial infarction per normal chest pain guidelines and protocols.

Management

- **For low risk patients:** consider other causes of chest pain due to aortic, esophageal, pulmonary, cardiac, and abdominal, and musculoskeletal sources prior to discharge.
- **For not low risk patients:** treat per usual chest pain protocols, including but not limited to consideration of aspirin, nitroglycerin, and serial ECGs and biomarkers at minimum.

Critical Actions

Low Risk: patient can be considered for discharge to early outpatient follow-up investigation).

Not Low Risk: proceed with usual care and further observation.

III. EVIDENCE

Evidence Appraisal

In the original paper, the EDACS-ADP was 99-100% sensitive for correctly identifying patients as low-risk and identified 45% of its cohort as low-risk. In the original EDACS-ADP cohorts, the prevalence of MACE in the study overall was 13-15%. A notable strength is the score was derived prospectively.

A 2015 U.S. single-center secondary analysis of the HEART Pathway RCT evaluated the EDACS-ADP

among 282 patients in the emergency department with suspected acute coronary syndrome. The protocol identified 66.7% as low risk, with 1.1% experiencing 30-day MACE (88.2% sensitivity, 98.9% NPV).

A 2016 prospective, pragmatic randomized controlled trial of 558 patients in New Zealand ([Than 2016](#)) comparing the EDACS-ADP and ADAPT-ADP found that the EDACS identified a higher proportion of low-risk patients (41.6% vs. 30.5%) with both groups having a NPV of 100%. However, the primary outcome of the proportion of patients safely discharged within 6 hours was the same in EDACS and ADAPT-ADP groups (32.3% vs. 34.4% respectively).

A 2016 retrospective external validation ([Flaws 2016](#)) of 763 patients in Vancouver, Canada found the EDACS-ADP to have a 100% sensitivity and 100% negative predictive value, while correctly identifying 41.6% of its cohort as low risk.

A very large 2018 retrospective study of 118,822 patients treated in the Kaiser system in Northern California from 2013-2015 ([Mark 2018](#)), compared the modified HEART score to the original and simplified EDACS rules and found that while all scores predicted low risk 60-day MACE (NPVs of >99% in all cases), the original EDACS identified a larger proportion of low risk patients (60.8%) vs. the HEART score (51.8%) or simplified EDACS (48.1%).

A 2021 systematic review and meta-analysis of 11,578 patients found the EDACS score to have a pooled sensitivity of 96% and specificity of 61% for major adverse cardiac events within 30 days. Approximately half of all chest pain patients were classified as low risk, with fewer than 1% experiencing a major adverse cardiac event. While the tool shows strong overall accuracy for early discharge decisions, it relies on consistent application of serial troponin testing.

A 2025 prospective observational study in Turkey ([Ozkan 2025](#)) of >800 patients with chest pain found that EDACS alone identified low risk with 95.8% NPV, while EDACS-ADP identified low risk with 99.0% NPV.

Formula

Addition of the selected points; points assigned below. If score is <16, patient can be evaluated in the “low risk” group with non-ischemic ECG and negative 0h and 2h troponins. These patients with these two additional features are low-risk for major adverse cardiac event.

If score is ≥16 or ECG shows new ischemia or 0h troponin is positive, then the patient is not low-risk and not appropriate for early discharge (note: If the first troponin is negative and the patient is in the low-risk group, but the 2nd troponin is positive, this patient no longer qualifies as low-risk).

A negative ECG means there are no new or concerning signs of ischemia. This includes no ST-segment eleva-

tion or depression, T-wave inversion, or other pathologic changes that are suggestive or concerning for ischemia or myocardial injury.

Facts & Figures

Low Risk Cohort

EDACS ≤ 16 and

If ECG shows no new ischemia (e.g., no ST-segment elevation or depression, T-wave inversion, or other pathologic changes suggestive of ischemia or myocardial injury) and

0h and 2h troponin both negative

Recommendation: safe for discharge to early outpatient follow-up investigation (or proceed to earlier inpatient testing).

Not Low Risk Cohort

EDACS ≥ 16 or

ECG shows new ischemia (e.g., ST-segment elevation or depression, T-wave inversion, or other pathologic changes suggestive of ischemia or myocardial injury)

0h or 2h troponin positive

Recommendation: Proceed with usual care with further observation and delayed troponin.

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