Validation of the European Society of Cardiology 0/1-Hour Algorithm for Rule-out and Rule-in of Acute Myocardial Infarction

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Declaration of interest

- I have nothing to declare

Disclosures

- **Swiss National Science Foundation**

- Schweizerische Herzstiftung
  Fondation Suisse de Cardiologie
  Fondazione Svizzera di Cardiologia

- University Hospital Basel

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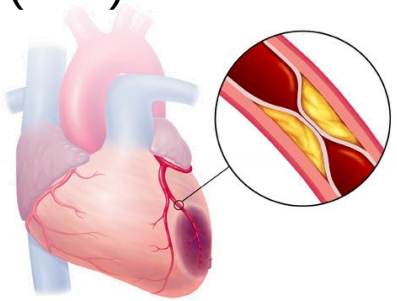
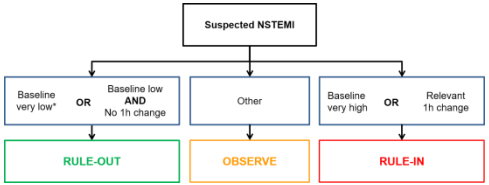
Background

- 10% of all ED consultations suspected acute myocardial infarction (AMI)
- **AMI:** common & acute life-threatening condition



- **Rapid diagnosis** and treatment is critical: “Time is muscle”
- **Rapid rule-out** of major medical and economic importance:
  - timely detection and treatment of alternative causes of acute chest pain
  - consider discharge from ED / outpatient management in many of them
- The European Society of Cardiology (ESC) suggests the use of the **0/1-Hour Algorithm** for rapid rule-out and rule-in of Non-ST-Segment-Elevation Myocardial Infarction (NSTEMI)



- Its safety has been questioned

Hamm C, et al. N Engl J Med 1997; 337:1648 / Roffi M, et al. EHJ 2016; 37, 267-315. / Pickering J, et al. Circulation 2016; 134: 1532-1541.

Methods

- **Aim:** To validate the diagnostic performance of the ESC 0/1-Hour Algorithm

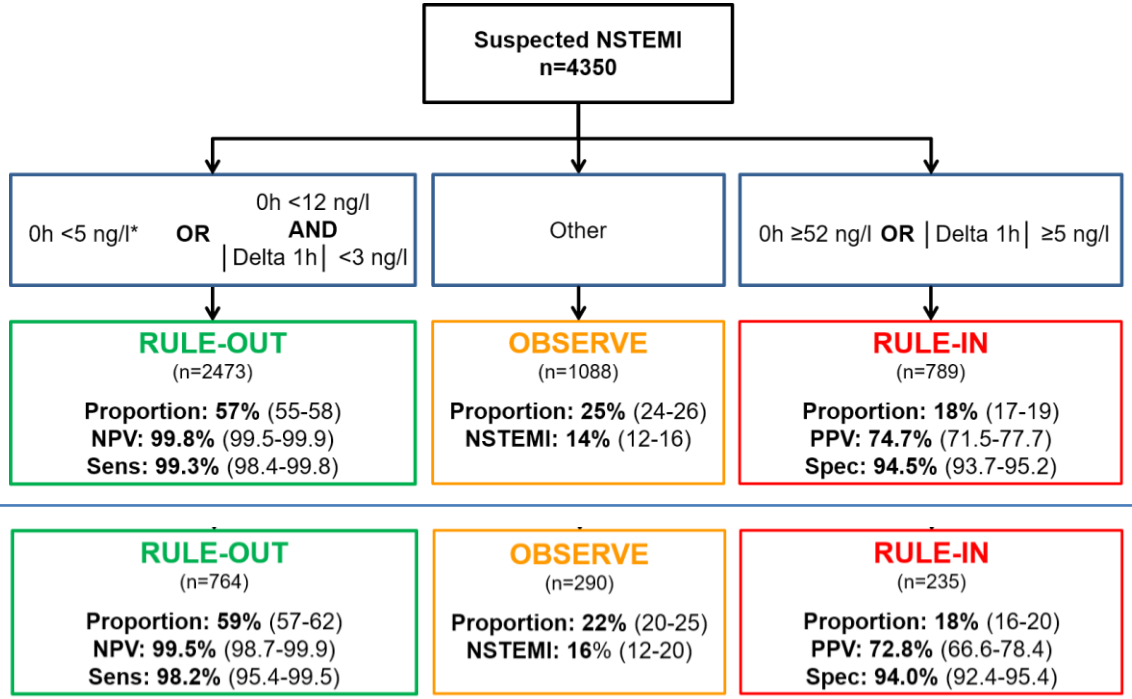
- **Population:**
  - pooled patient-level data from two prospective studies *(APACE and BACC)*
  - unselected patients presenting with symptoms suggestive of MI to the ED
  - 14 centers in **six European countries**
  - patients with STEMI excluded

- **Final diagnosis:** centrally adjudicated by two independent cardiologists.

- **Investigational biomarkers:** Hs-cTnT (Elecsys) and hs-cTnI (Architect) blood concentrations were measured at presentation and after one hour.

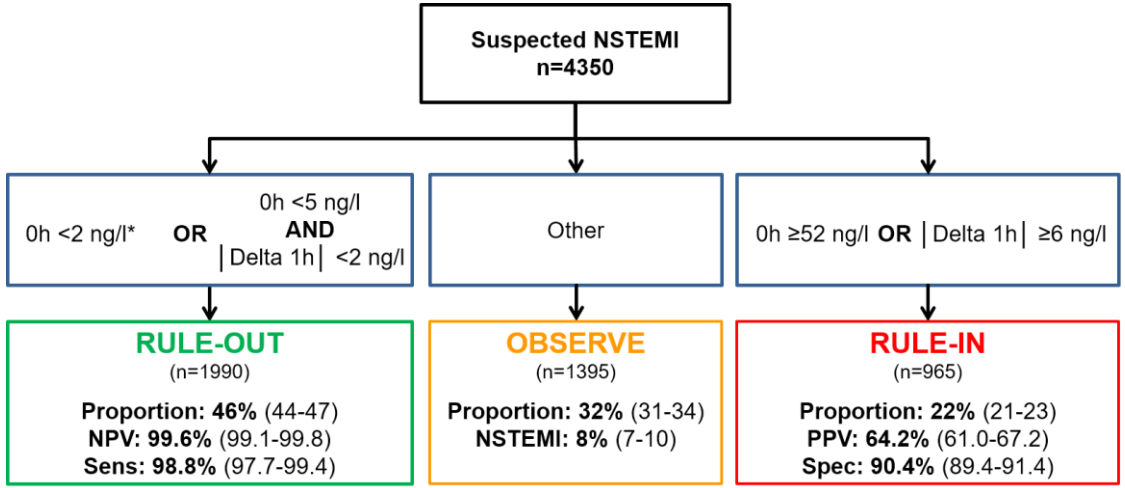
Results – ESC 0/1-Hour Algorithm

A **High-sensitivity cardiac troponin T**
(Elecsys®)



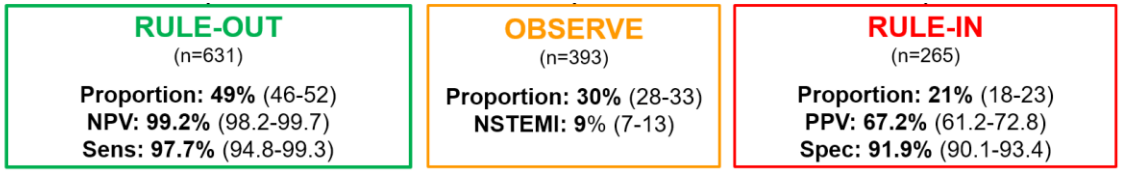
Results – ESC 0/1-Hour Algorithm

B **High-sensitivity cardiac troponin I**
(Architect®)



Early presenters

n=1289



Conclusions

I. The **ESC 0/1-Hour Algorithms** using high-sensitivity cardiac troponin T and I are **very safe and effective** in triaging patients with suspected NSTEMI.

II. Largest-ever subgroup analysis in **early presenters confirmed** very high safety.