

Diversion of ST-elevation myocardial infarction patients for primary angioplasty based on wireless prehospital 12-lead electrocardiographic transmission directly to the cardiologist's handheld computer: a progress report

Clemmensen P, Sejersten M, Sillesen M, *et al.* *J Electrocardiology* 38 (2005): 194-198

Objective: To report preliminary data from a larger ongoing trial evaluating prehospital 12-lead ECG transmission to a cardiologist's handheld device in patients with symptoms suggesting ACS

Background:

- DANAMI-2: Danish RCT on PCI vs thrombolytic therapy in STEMI found a 40% relative reduction in composite primary end point (death, disabling stroke, and reinfarction within 30 days) associated with primary PCI
- Identified treatment delays up to 3 hrs before pPCI partially due to delays of ~50 min at referring hospitals prior to transfer to cath site

Methods:

- 2 Invasive hospitals, 7 referral hospitals in Copenhagen, Denmark
- Preliminary data from 15 month period (Nov 2003- Feb 2005)
- All patients from a region of Copenhagen with acute, non-traumatic CP had a prehospital ECG recorded and transmitted wirelessly to a cardiologist's hand held device at an invasive hospital (simultaneously a stationary central computer also receives the ECG)
- Inclusion criteria for pPCI redirection:
 - 1) Symptom duration <12 hr
 - 2) ECG criteria:
 - a) Anterior MI: $\geq 2\text{mm ST}\uparrow$ in ≥ 2 of I, aVL, V₁-V₆
 - b) Inferior MI: $\geq 1\text{mm ST}\uparrow$ in II, III, aVF, V₅, & V₆ or $\geq 2\text{mm}$ in ≥ 2 of these
- If criteria for pPCI redirection not fulfilled or if unable to contact the attending cardiologist, patients transported to referral hospitals and treated with routine protocols
- During transport patients treated with ASA, O₂, heparin, clopidogrel, and nitroglycerin with continuous ECG and BP monitoring (all pt accompanied by a physician specializing in anaesthesia or ICU)

Results:

- 408 ECGs with 93% transmission success rate
- 113 (28%) diverted for pPCI [91 (81%) actually received pPCI, 17 (15%) diagnostic angiography only, 4 (3.5%) thrombolysis, 1 (0.5%) CABG]
- Ambulance on-scene time \uparrow 7minutes (p<0.05) compared to historic controls (no ECGs)
- Overall hospital treatment time reduced among diverted patients from 94 min (historic control from DANAMI-2 study) to 40 min (p<0.01)

Bottom Line: Transmission of prehospital ECGs directly to attending cardiologists using handheld devices can significantly lower time to reperfusion in pt with STEMI