**P1747**

# Reducing the delay from first medical contact to reperfusion in patients with acute myocardial infarction in metropolitan and adjacent rural areas: data from a regional myocardial infarction registry

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**Background:** Time from symptom onset to reperfusion in STEMI patients has been described to depend on a fast and valid pre-hospital STEMI diagnosis which not only decreases pre-hospital, but also in-hospital treatment delays. A publicly funded, prospective joint intervention program (QS-Notfall) has been initiated within our regional myocardial infarction (MI) registry (B2HIR) between hospitals and emergency medical services (EMS). The objective of the program is to reduce care delays of MI patients by supporting emergency care personnel in diagnosing STEMI trough real-time telemedical ECG counselling and by introducing a respective e-learning platform: “STEMI recognition made easy!”

**Methods:** Comprehensive baseline data on pre-hospital and in-hospital care have been collected from EMS and hospital records of all 1927 STEMI diagnosed patients with symptom onset <24 hours at 24 hospitals (with metropolitan and rural location) in 2016. The dataset reported here delineates the situation before the implementation of systematic ECG-related interventions.

**Results:** Pre-hospital phase: Mode of hospital admission of STEMI patients comprised physician-escorted EMS (60%), EMS w/o an escorting physician (10%) in the city, referral by a primary care physician (10%), and self-presentation to the emergency department (14%). Some patients were primarily admitted to a non-PCI-capable hospital and underwent secondary transfer to a PCI-capable hospital. The respective percentages were found to differ between the metropolitan (4%) and rural areas (17%),

**Treatment delays:** Time from symptom onset to arrival of the EMS took 33min (median) in the city and 38 min in rural areas. Time between EMS arrival and ECG recording was 16 min and did not differ between metropolitan and rural sites. The delay from ECG recording to arrival at the hospital was 32 min in the city and 44 min at rural sites. Door to balloon time was similar (63 min) at both regions. Time delay from symptom onset to reperfusion for STEMI patients without physician escorted EMS was up to 370 min and differed according to the admission mode.

**Shortest care:** Patients, who alarmed the EMS and were cared for by physician escorted EMS, were brought to a PCI-capable hospital, and were directly admitted to the cath-lab, bypassing the emergency room, attained a delay from symptom onset to ECG recording of 48 min in the city and 37 min at rural areas. The delay from ECG recording to reperfusion was 67 min at urban sites and 77 min at rural sites in these fastest-treated patients. At metropolitan and rural sites 18,5% and 11% of patients belonged to this group, respectively.

**Conclusion:** This pre-interventional baseline dataset shows that guideline-prescribed care delays are attainable for patients with acute MI. But the proportion of patients with optimal care delays is small and needs to be increased considerably, which is the objective of our ongoing joint intervention QS-Notfall program.