

## **Determinants of Door-to-balloon time in STEMI Patients: Data from the Berlin Myocardial Infarction Registry (BMIR)**

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### **Background**

Our current STEMI guidelines from 2012 recommend that patients should receive primary PCI within 60 minutes after admission to a hospital with PCI facilities. The BMIR is a joint registry of hospitals within the metropolitan area of Berlin, prospectively collecting data on treatment and outcome of patients with myocardial infarction since 1999. In the BMIR, 93% of STEMI patients have been treated with primary PCI in the period between April 2008 and 2011. However, the goal of a door-to-balloon time (DTBT) <60 minutes was not yet reached comprehensively. Therefore we analyzed our database for factors associated with longer (or shorter) DTBT.

### **Method**

Between April 2008 and end of 2011, the BMIR collected data from 10,984 patients with acute myocardial infarction; 4168 were STEMI patients with primary PCI after direct admission to a hospital with PCI facilities (excluding patients with inter-hospital transfer).

### **Results**

Median DTBT was 78 minutes (IQR: 50; 122). The 60 minute time line was achieved in 34% of all patients. DTBT was longer for older patients and women (age <65yrs., ♂ 73 min, ♀ 79 min; age 65-75 yrs., ♂ 81 min, ♀ 83 min; age ≥75yrs., ♂ 82 min, ♀ 95 min; all median). DTBT increased with time between symptom onset and hospital admission (≤1h, 73 min; 1-3h, 74 min; 3-6h, 76 min, >6h, 88 min). Patients with first medical contact through the physician-escorted emergency medical services (EMS) had a shorter DTBT (70 min. vs. 102 min. without EMS), as well as patients arriving at hospitals on weekdays during regular working hours (66 min vs. 85 min.). The shortest DTBT was found in patients treated by the physician-escorted EMS and admitted to a hospital on weekday during regular working hours (55 min.). In this group of patients (n=957), 55% had a DTBT <60 min. The longest DTBT were found with patients with self-admittance to hospitals outside of regular working hours (109 min.).

### **Conclusion**

Our analysis identified the following factors determining DTBT: age, sex, time between symptom onset and hospital admission, type of pre-hospital care, and time of hospital admission; some of these factors appear interrelated.

These data show a potential for improvement. Since patients treated by the physician escorted EMS and admitted within regular working hours have the shortest DTBT, use of the physician-escorted EMS should be promoted for first medical contact, and in-hospital logistics, in particular outside of regular working hours may require optimization.