

Time of Admission, Quality of PCI care, and Outcome of Patients with ST-Elevation Myocardial Infarction

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Purpose

There is a debate whether patients with acute myocardial infarction admitted to hospital outside normal working hours experience higher mortality rates than those admitted within normal working hours. Our study aimed to determine whether differences in hospital mortality between patients admitted in- and off-normal working hours with ST-elevation myocardial infarction (STEMI) could be reduced within the special logistical setting of Berlin with the physician escorted Emergency Medical Services (EMS).

Results

Fig. 1: Baseline characteristics for STEMI patients with PCI, differentiated for patients with or without physician-escorted EMS in %

Baseline characteristics in %	STEMI patients with PCI			STEMI patients with PCI with physician-escorted EMS			STEMI patients with PCI without physician-escorted EMS		
	In-hours (n = 829)	Off-hours (n = 1302)	p	In-hours (n = 514)	Off-hours (n = 841)	p	In-hours (n = 315)	Off-hours (n = 461)	p
Age in years (mean ± std)	63.9±12.9	62.9±12.8	0.067	64.5±12.6	63.5±12.7	0.209	63.1±13.5	61.8±12.9	0.159
Female	31.8	29.7	0.300	33.8	29.8	0.125	28.7	29.6	0.786
Hypertension	71.7	72.2	0.843	73.0	75.0	0.441	69.7	67.1	0.473
Smokers	47.4	50.4	0.204	45.9	50.1	0.155	49.8	50.9	0.772
Diabetes mellitus	23.2	24.3	0.574	22.2	26.4	0.093	24.7	20.4	0.165
Hypercholesterolemia	48.6	49.4	0.745	48.3	49.3	0.736	49.2	49.6	0.920
Previous infarction	15.4	16.0	0.702	15.9	17.8	0.378	14.5	12.8	0.484
Renal failure	9.8	10.3	0.688	10.5	10.9	0.821	8.7	9.3	0.748
Atrial fibrillation on admission	6.2	5.3	0.414	7.4	5.2	0.095	4.2	5.6	0.359
Cardiogenic shock on admission	7.5	8.6	0.379	9.9	10.6	0.721	3.5	5.0	0.323

Fig. 3: Hospital mortality for STEMI patients with PCI, differentiated for patients with and without physician-escorted EMS in %

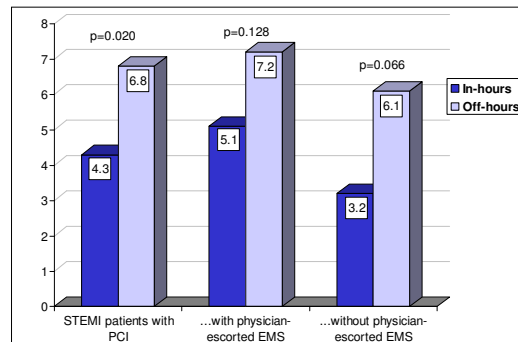


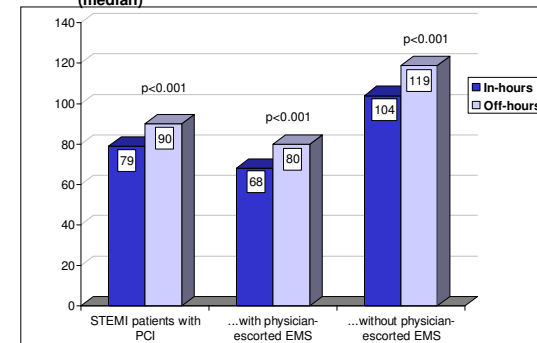
Fig. 4: Influence on hospital mortality for STEMI patients treated with PCI, differentiated for patients with and without physician-escorted EMS (Odds ratios; 95% confidence interval)

Adjustment variables	STEMI patients with PCI	STEMI patients with PCI with physician-escorted EMS	STEMI patients with PCI without physician-escorted EMS
	n=2131	n=1355	n=776
Age in years	1.06 (1.04-1.09)	1.05 (1.02-1.09)	1.10 (1.04-1.15)
Female	1.02 (0.58-1.80)	0.90 (0.44-1.84)	1.06 (0.39-2.88)
Cardiogenic shock on admission	26.68 (15.26-46.66)	30.84 (15.81-60.15)	20.31 (6.47-63.71)
Diabetes mellitus	1.71 (0.98-2.96)	1.57 (0.78-3.19)	2.79 (1.10-7.10)
Renal failure	1.81 (0.94-3.51)	0.80 (0.31-2.07)	5.10 (1.93-13.45)
Previous infarction	1.24 (0.66-2.35)	1.38 (0.62-3.04)	1.32 (0.44-3.99)
Door-to-balloon time >162 min (3 rd quart.)	1.50 (0.86-2.62)	1.85 (0.90-3.77)	1.00 (0.38-2.59)
Physician-escorted EMS	0.63 (0.36-1.11)	-	-
Off-hours / in-hours	2.50 (1.38-4.56)	1.61 (0.79-3.27)	5.85 (1.78-19.28)

Methods

This study analyzes data from the Berlin Myocardial Infarction Registry (BHIR) and comprises 2131 patients with STEMI treated with percutaneous coronary intervention (PCI) in 2004-2007. The results for patients admitted during in- and off-normal working hours were compared.

Fig. 2: Door to balloon time for STEMI patients with PCI, differentiated for patients with or without physician-escorted EMS in minutes (median)



Hospitals participating in the third phase of the BHIR since 1.1.2007

- Caritas-Klinik Pankow
- Charité Campus Mitte
- Charité Campus Virchow
- DRK-Kliniken Westend
- DRK-Kliniken Köpenick
- Gemeinschaftskrankenhaus Haselhöhe
- Helios Klinikum Buch
- Jüdisches Krankenhaus
- Königin Elisabeth Herzberge
- Krankenhaus Lichtenberg
- Martin-Luther-Krankenhaus
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Summary and conclusions

Patients admitted off-hours experienced longer door-to-balloon times and greater hospital mortality than did those admitted in-hours. The differences observed between patients admitted in-hours and off-hours were reduced through physician-escorted EMS that prepared patients' treatment paths.

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I, Heinz Theres, DO NOT have a personal financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.