EFFECT OF AN ACUTE CORONARY SYNDROME TRIAGE PROTOCOL IN AN EMERGENCY DEPARTMENT ON THE DOOR-TO-BALLOON TIME FOR PATIENTS WITH MYOCARDIAL INFARCTION

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INTRODUCTION

Patients with a ST-elevation myocardial infarction (STEMI) should be identified and treated as soon as possible, since time to treatment is strongly associated with the likelihood of survival. International guidelines recommend primary percutaneous coronary intervention (PCI) within 90 minutes after first medical contact, the so-called door-to-balloon time.

To shorten door-to-balloon times a new protocol "ACS triage ED" has been introduced in January 2010 within the Emergency Department (ED) of Medisch Spectrum Twente (MST). Before introduction of the new protocol patients with STEMI were identified after evaluation by a physician. Emergency nurses now use a monitor with computer algorithm interpretation of the 12-lead ECG to identify STEMI.

OBJECTIVE

Evaluation of the effect of the ACS triage ED protocol, executed by emergency nurses, on the door-to-balloon time and outcomes in patients undergoing primary PCI for a myocardial infarction admitted through the ED.

METHODS

- Patients with chest pain in the ED of MST who underwent primary PCI
- Primary outcome: door-to-balloon time
- Secondary endpoints: infarct size (CK value), length of stay (ED and hospital) and mortality
- Comparing before and after implementation
- Data collection: ED, hospital and PCI databases and cardiology medical records

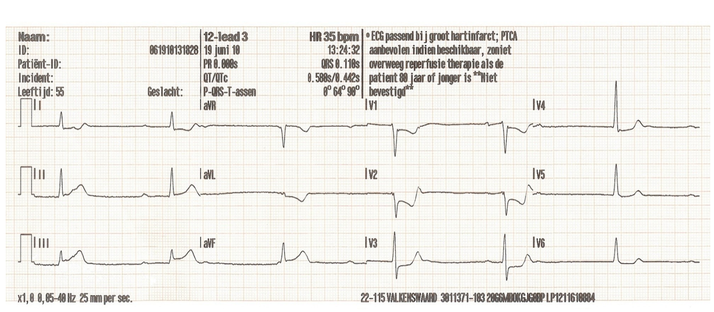
Door-to-balloon time in patients with chest pain in the ED who underwent primary PCI

	Before intervention 01/01– 31/12 2009 (n=29)		After intervention 15/03-15/06 2010 (n=7)	
	n	median (5-95 percentiles)	n	median (5-95 percentiles)
Door-to-balloon time (min)	29	115 (37 - 5957)	7	139 (93 - 5236)
STEMI	20	88 (33 - 1984)	4	120 (93 - 138)
non-STEMI	9	1518 (142 - 4337)	3	277 (198 - 277)
by time of arrival				
regular hours (8am-5pm)	12	135 (33 - 6523)	0	-
off-hours (5pm-8am, weekends)	17	99 (40 - 2491)	7	139 (93 - 277)
Infarct size (peak CK value, ng/ml)	29	835 (96 - 6554)	7	980 (386 - 1936)
STEMI	20	1071 (110 - 6772)	4	1458 (642 - 7361)
non-STEMI	9	486 (90 - 1256)	3	532 (386 - 532)
Length of stay in ED (min)	29	31 (2 - 189)	7	67 (18 - 96)
STEMI	20	31 (2 - 91)	4	49 (18 - 73)
non-STEMI	9	40 (1 - 126)	3	95 (20 - 95)
Length of stay in hospital (days)	29	5 (1 - 11)	7	5 (3 - 14)
STEMI	20	5 (1 - 11)	4	6 (3 - 13)
non-STEMI	9	5 (2 - 6)	3	5 (4 - 5)
30 day follow-up		%		%
presence of chest pain	10	34.5	1	14.3
death	2	6.9	0	0.0
re-admission	3	10.3	1	14.3

RESULTS

After the intervention compared with before:

- Median door-to-balloon time in STEMI increased, in non-STEMI decreased
- Infarct size increased
- Median length of stay in ED longer
- Median length of stay in hospital unchanged
- Presence of chest pain, mortality and re-admission at 30 day follow-up comparable



CONCLUSION

After the introduction of the new protocol a longer median door-to-balloon time was registered in patients with STEMI undergoing a primary PCI after admission through the ED of MST. Time of arrival during off-hours and hemodynamic instability at arrival were identified as possible reasons for delay in these patients. Infarct size and length of stay in ED appeared to be worse, but may have been caused by the poorer health status at arrival of these patients. For patients with non-STEMI, the median door-to-balloon time appeared to be shorter in the after group.

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