London Ambulance Service NHS Trust

ST Elevation Myocardial Infarction Report 2005-06

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Introduction

The information below relates to patients who, between 1st April 2005 and 31st March 2006, were diagnosed by London Ambulance Service NHS Trust (LAS) crews using a 12-lead ECG, as suffering an ST-elevation myocardial infarction (STEMI).

Information for this report was collected from the Patient Report Forms (PRFs). Additional data were collected from 12-lead ECG rhythm strips, LA26b forms and Emergency Operations Centre (EOC) records. Where possible, hospital outcomes were collected from the Myocardial Infarction National Audit Project (MINAP) database, the NHS Strategic Tracing Service (NSTS) or directly from the receiving hospital.

Data were collected from 716 STEMI patients in total. This number has almost doubled since the previous report due to the incorporation of illness code 87 (confirmed MI by 12-lead ECG).

This report presents LAS-wide figures.

Patient Information

The average age of the STEMI patient was 64 (19-100) years and the majority of patients were male (73%). As seen last year, there was a difference in the average age when looked at by gender. For male STEMI patients, the average age was 61 years and for females it was 71 years.

Type of Infarct

As in previous years, the most common types of infarcts documented were Anterior (45%) and Inferior (40%).

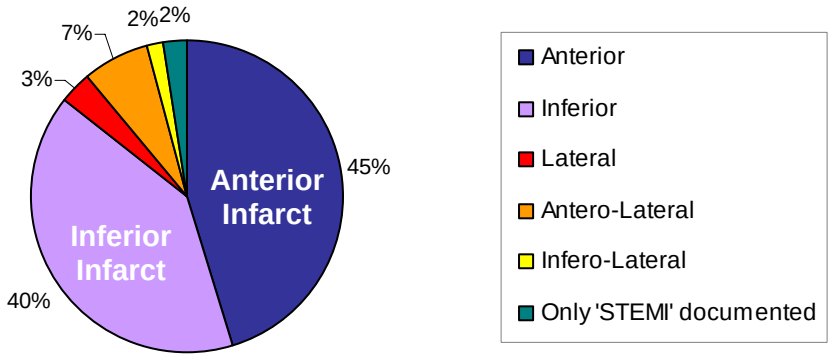

Figure 1. Type of Infarct

Time of Call for Help

The majority (19%) of emergency calls requesting help for the STEMI patient were received between 10am and 1pm.

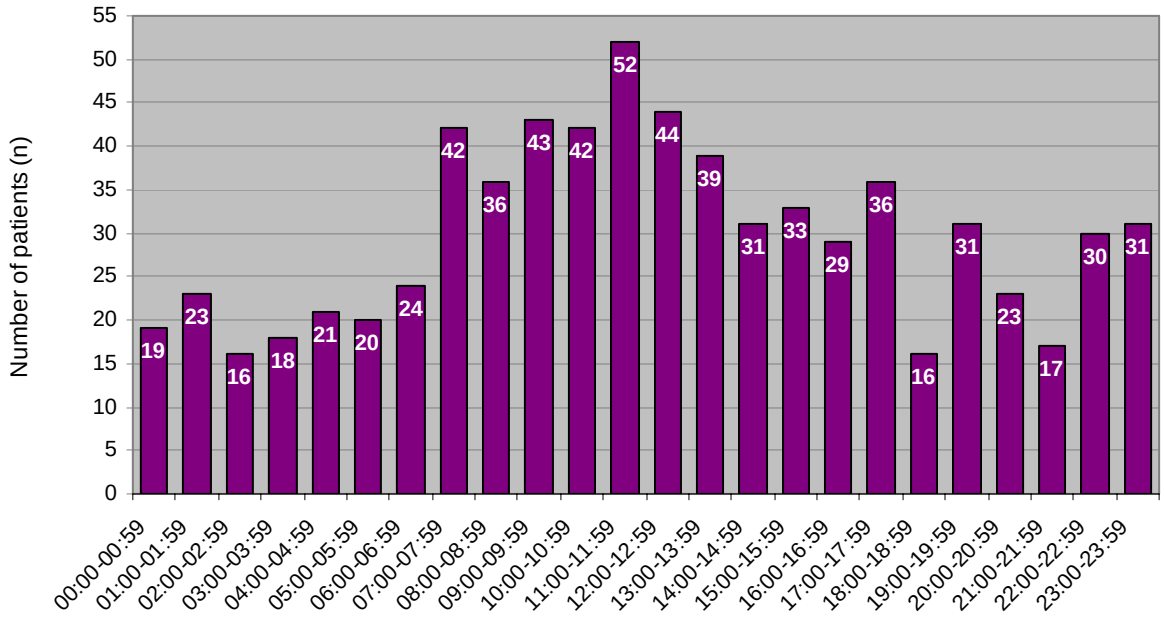

Figure 2. Time of 999 Call

Aspirin

The National Service Framework for Coronary Heart Disease (NSF CHD)[1] states that, with the exception of known contraindications (such as patient refusal or reduced consciousness), aspirin should be given in all cases of suspected heart attack.

83% of STEMI patients were administered aspirin by LAS crews. 4.5% had taken aspirin before the arrival of the LAS and for 8% aspirin was contraindicated. Thus, 4.5% of patients who should have received aspirin did not, and no reasons for this were documented on the PRF.

Pain Scoring

An initial pain assessment was recorded on 97% of PRFs (including 66% of PRFs with a numerical pain score and 31% of PRFs with another form of pain assessment documented). 3% of patients did not have any form of initial pain assessment documented on the PRF. This figure has improved since 2004/05.

84% of patients had a final pain assessment recorded (66% of PRFs with a numerical pain score and 18% of PRFs with another form of pain assessment documented). Again, these figures represent an improvement from 2004/05.

[1] *Department of Health National Service Framework for Coronary Heart Disease* (2000), HMSO, London.

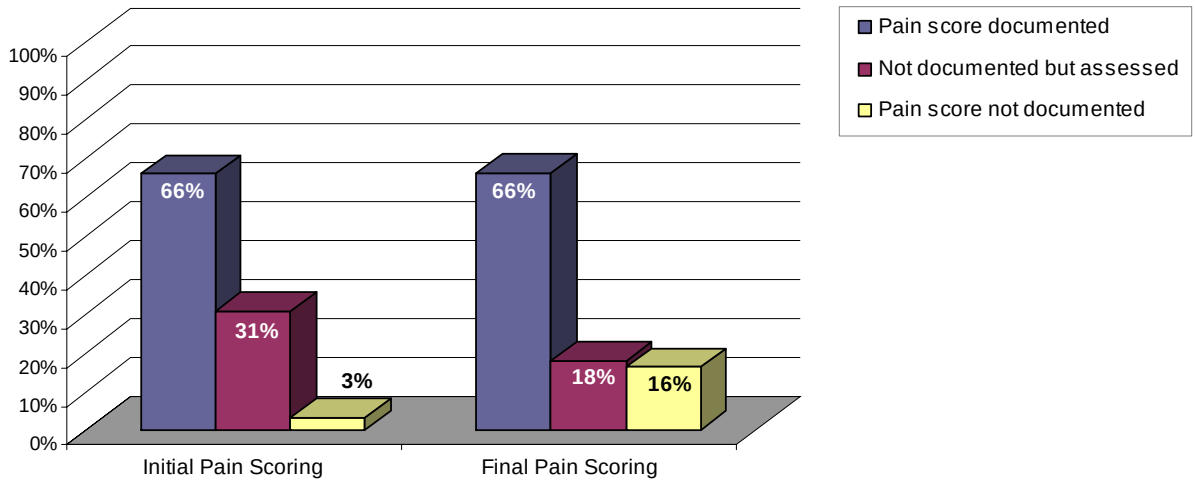

Figure 3. Pain Scoring

Response Times for all STEMI Patients

The NSF CHD states that people with a suspected myocardial infarction must be attended within 8 minutes of calling for help by an individual who is equipped with, and trained in the use of, a defibrillator. 74% of STEMI patients were attended by LAS crews within the 8 minute target, showing no change compared to last year.

Since 2004/05, the average on scene time for all STEMI patients has increased from 25 minutes to 27 minutes.

Time Interval	Number of patients^	Average Time (minutes)	Range (minutes)
999 call* – arrival on scene	715	7	0 - 64
Arrival on scene – arrive patient	552	1	0 - 18
Arrival on scene – leave scene	705	27	8 - 75

^ *Number of patients with both times available.*

* *Time when the incident location and the patient's chief complaint have been obtained (ORCON time).*

Conveyance Location

The LAS can convey STEMI patients directly to a Cardiac Catheter Laboratory for primary angioplasty (PCTA) at the following hospitals: London Chest; Hammersmith; Harefield; Heart Hospital; St Mary's; King's College; St George's; Royal Free and St. Thomas'.

Of the 716 STEMI patients included in this report, one third (33%; n=239) were taken directly to a Cardiac Catheter Laboratory. During this reporting period, direct access to Cardiac Catheter Laboratories was still in the pilot phase and the number of STEMI patients transported will have increased since then.

Response Times for STEMI Patients Taken Direct to a Cardiac Catheter Laboratory

	Number of patients^	Average Time (minutes)	Range (minutes)
999 call* – arrival at Cardiac Catheter Lab	239	48	24 - 98
Leaving scene – arrival at Cardiac Catheter Lab	236	14	3 - 43

^ Number of patients with both times available.

** Time when the incident location and the patient's chief complaint have been obtained (ORCON time).*

Response Times for STEMI Patients Receiving Primary Angioplasty

120 STEMI patients (17%) were confirmed as receiving primary angioplasty treatment. Of these, 88 (73%) were admitted directly to a Cardiac Catheter Laboratory and 32 (27%) were initially transported to A&E by LAS crews.

	Number of patients^	Average Time (minutes)	Range (minutes)
999 call* – primary PTCA *(call to balloon)*	102	96	50 - 186
Arrival at hospital – primary PTCA *(door to balloon)*	101	50	7 - 137

^ Number of patients with both times available.

** Time when the incident location and the patient's chief complaint have been obtained (ORCON time).*

Response Times for STEMI Patients Taken Direct to A&E

The NSF CHD recommends that ambulance trusts should transfer suspected heart attack patients to hospital in less than 30 minutes from the time of the call. In 2005/06 the LAS took on average 43 minutes.

	Number of patients^	Average Time (minutes)	Range (minutes)
999 call* – arrival at A&E *(call to door)*	470	43	22 - 140
Leaving scene – arrival at A&E	465	8	1 - 36

^ Number of patients with both times available.

** Time when the incident location and the patient's chief complaint have been obtained (ORCON time).*

Response Times for STEMI Patients Receiving Thrombolysis

130 STEMI patients (18%) were confirmed as receiving thrombolytic treatment (129 of these patients were taken directly to A&E and 1 patient was initially taken to a Cardiac Catheter Laboratory).

The average call-to-needle time has increased from 60 minutes in 2004/05 to 66 minutes. In addition, the NSF CHD states that thrombolysis should be given within 60 minutes of calling for professional help. Of the STEMI patients who received a thrombolytic drug and had call-to-needle times available, 55% (n=69) did so within the 60 minute call to needle target. This is a slight decrease on 2004/05 (down from 62%).

	Number of patients^	Average Time (minutes)	Range (minutes)
999 call* – thrombolysis *(call to needle)*	126	66	33 - 269
Arrival at hospital – thrombolysis *(door to needle)*	124	25	6 - 238

^ Number of patients with both times available.

** Time when the incident location and the patient's chief complaint have been obtained (ORCON time).*

Patient Outcome

286 patients had hospital discharge data available and 249 (87%) were discharged alive. Of those discharged alive, the average stay in hospital was 5 days.

Conclusions

The findings of this report demonstrate that the majority of STEMI patients receive from the LAS the care that they should according to the NSF CHD guidelines.

Since 2004/05, documentation has improved for initial & final pain scoring and aspirin administration. However, 10 patients did not have any form of pain assessment documented the PRF.

LAS response times have also seen a slight increase since 2004/05, with average on scene times increasing by 2 minutes, to 27 minutes. Call-to-door and door-to-needle times have also increased, from 40 minutes to 43 minutes and 20 minutes to 25 minutes respectively. Combining our average call-to-door time of 43 minutes with the average in-hospital door-to-needle time of 25 minutes, this explains why it is difficult to meet the Healthcare Commission target of call-to-needle within 60 minutes. On average, our STEMI patient call-to-needle time has increased by 6 minutes in 2005/06 (from 60 minutes to 66 minutes) resulting in a decrease in the percentage of LAS STEMI patients receiving thrombolysis within the target (62% to 55%).

Points for Action

Crews must be encouraged to facilitate data collection and the reporting of clinical care by:

- Ensuring both an initial and final numerical pain score (especially before and after treatment) is documented on the PRF.
- Clearly documenting reasons for delays as these can be recorded by the receiving hospital on MINAP and may result in this incident being excluded from the Healthcare Commission thrombolysis target.
- Correctly documenting the destination hospital name, code and ward to allow accurate identification of patients directly transported to a Cardiac Catheter Laboratory.
- Using illness code 87 for all patients with a confirmed MI by 12-lead ECG.