



ST Elevation Myocardial Infarction Report 2004-05

Authors: Dr Rachael Donohoe and Debbie Evans, Clinical Audit and Research Unit

Introduction

The information below relates to patients who, between 1st April 2004 and 31st March 2005, 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 primarily collected from the Patient Report Forms (PRFs). Additional data was collected from LA26b forms, 12-lead ECG rhythm strips and Central Ambulance Control records. Where possible, hospital outcomes were collected from the Myocardial Infarction National Audit Project (MINAP) database and call to needle times reported.

Data was collected from 362 STEMI patients in total. This number has increased significantly from the previous report due to the incorporation of illness code 87 (confirmed MI by 12-lead ECG) from 1st November 2004.

Patient Information

The average age of the STEMI patient was 66 (24-95) years and the majority of patients were male (77%).

Interestingly, there was a difference in the average age when looked at by gender. The average age for male STEMI patients was 63 years. However for female STEMI patients, the average age was 73 years.

Type of Infarct

The most common types of infarcts documented were Anterior (44%) and Inferior (42%).

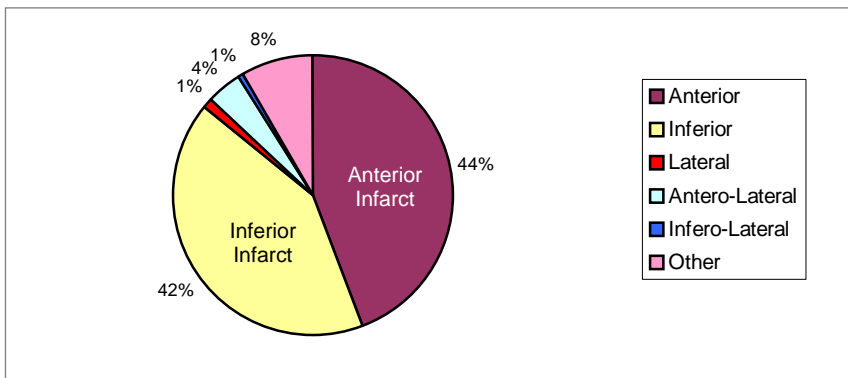


Figure 1. Type of Infarct

Time of Call for Help

The majority (22%) of emergency calls requesting help for the STEMI patient were received between 9am and noon.

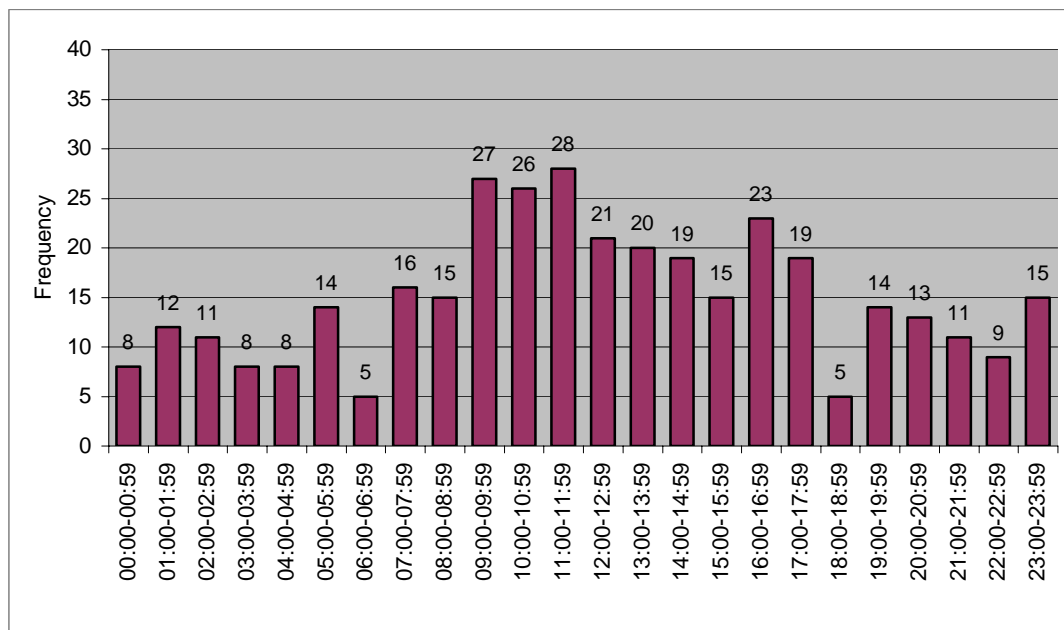


Figure 2. Time of 999 Call

Treatment Information

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% were administered aspirin by LAS crews. 2.5% of STEMI patients had administered aspirin before the arrival of the LAS. A further 5.5% exhibited a contraindication for aspirin administration. 9% of patients were not administered aspirin by LAS crews and there were no exceptions or reasons for this non-administration documented on the PRF.

Pain Scoring

Initial pain scores were recorded on 59% of PRFs. A further 33% of patients had their pain assessed using a method other than the numerical rating system. 8% of patients did not have any form of initial pain assessment documented on the PRF.

Interestingly, more patients (62%) had a final pain score recorded and a further 16% had pain assessed using another method. 22% of patients did not have any form of final pain assessment documented on the PRF.

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

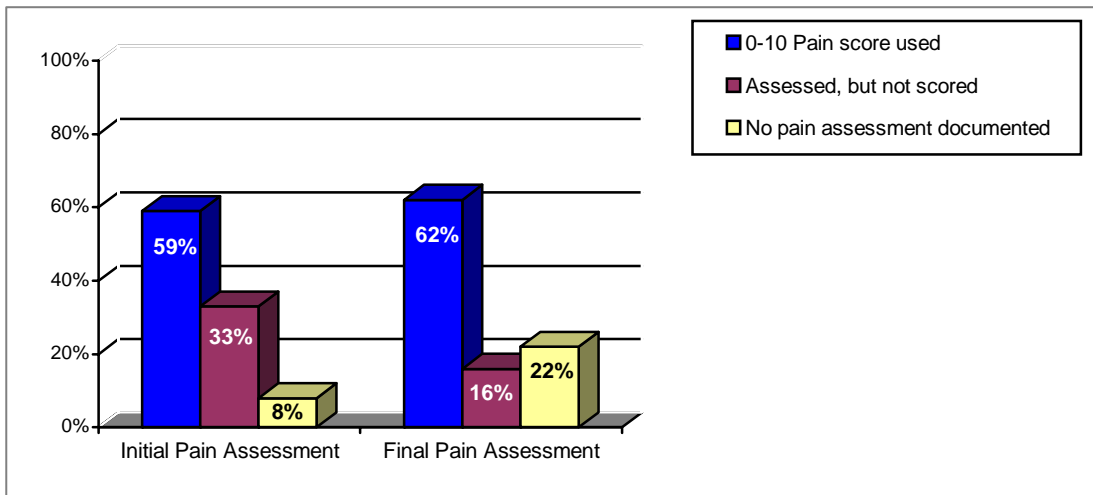


Figure 3. Pain Scoring

Pain Relief

The Joint Royal Colleges Ambulance Liaison Committee (JRCALC) National Clinical Guidelines and the NSF CHD state that (with the exception of patient refusal and known contraindications) analgesia should be administered to all patients with an acute myocardial infarction to relieve pain.

39 patients (11%) who had an initial numerical pain score of between 5 and 10 (moderate to severe pain) reported subsequently that their pain had either increased or stayed the same. Of these, 56% (n=22) were administered pain relief (Entonox, Nalbuphine or Tramadol) or had a valid exception documented. Therefore 44% of patients (n=17) who were in constant or increasing, moderate to severe pain at the time of their initial set of observations, did not receive any pain relief and there were no exceptions or reasons for this non-administration documented on the PRF.

Response Times

Time Interval	Average Time (minutes)	Range (minutes)
999 call* – arrival on scene	7	1 - 77
Arrival on scene – arrive patient	1	0 - 8
Arrival on scene – leave scene (<i>on scene</i>)	25	6 - 79
Leave scene – arrival at hospital	8	1 - 59
999 call* – arrival at hospital (<i>call to door</i>)	40	21 - 101
Arrival at hospital – thrombolysis** (<i>door to needle</i>)	20	0 - 118
999 call* – thrombolysis** (<i>call to needle</i>)	60	30 - 159

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

** Includes only those patients who received a thrombolytic drug (excludes primary angioplasty).

Call to arrival on scene

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.

Call to door

The NSF CHD also recommends that the time interval from the call for professional help to arrival at hospital should be within 30 minutes. 15% of patients arrived at hospital within 30 minutes of the emergency call, with the average call to door time taking 40 minutes.

Call to needle

The NSF CHD states that thrombolysis should be given within 60 minutes of calling for professional help. 62% (n=51) of the STEMI patients who received a thrombolytic drug did so within the 60 minute call to needle target.

Primary angioplasty

The London Ambulance Service can convey STEMI patients directly to a Coronary Care Unit or Cardiac Catheter Lab 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; Royal Brompton and St. Thomas'. Since publishing this report, the Royal Brompton has left the direct access primary angioplasty scheme.

Only 14 patients had primary angioplasty times available for analysis.

	Average Time (minutes)	Range (minutes)
Arrival at hospital – primary PTCA	64	25 - 143
999 call* – primary PTCA	107	80 - 186

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

All response intervals were examined and 7 outliers (extreme response times) were identified. Reasons for the extreme response times included: waiting on scene for a conveying ambulance; dispatch delays due to Amber or Green call categorisation, and long waiting times at hospital prior to reperfusion treatment. Removal of the outliers from the response time analysis resulted in slight reductions in average call-to-needle, call-to-PTCA, door-to-needle and door-to-PTCA times (60 mins to 58 mins, 107 mins to 100 mins, 20 mins to 19 mins and 64 mins to 58 mins respectively). All remaining average time intervals were unaffected.

Patient outcomes

110 patients had hospital outcome data available (obtained from the MINAP database) and 101 (92%) were discharged alive.

Of those discharged alive, the average stay in hospital was 9 days.

Conclusions

The findings of this report demonstrate that the majority of STEMI patients receive from our crews the care that they should according to both the NSF CHD and JRCALC clinical guidelines. However, the findings also highlight a lack of documentation of pain assessment and pain relief. Both of these issues were raised in the previous report and along with recent LAS clinical audits (Sickle Cell Crisis² and The Use of Tramadol³) indicate an ongoing concern for the LAS.

Our finding that only 56% of patients in constant or increasing, moderate to severe pain were administered pain relief (or had a valid exception for non-administration) is consistent with the results from the National NHS Patient Survey 2004⁴ which found that 19% of patients across England felt that their pain was not controlled adequately or only controlled to some extent by the ambulance crew.

It is possible that our pain management is better than that which is reported on the PRF. For example, crews may be routinely undertaking pain assessment, but just not documenting it. However, it is extremely unlikely that crews are administering pain relieving drugs, without documenting it. Crews should be reminded of the medico-legal risks of poor documentation.

Points for Action

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

- Placing 12-lead ECG rhythm strips in the envelopes provided for submission to Mark Whitbread. These strips should be clearly labelled with the date, CAD and call sign (or PRF ID) so they can be matched to the correct PRF.
- Using illness code 87 for all patients with a confirmed MI by 12-lead ECG.
- Undertaking pain assessment for all patients, especially before and after the administration of pain relief treatment.
- Clearly documenting exceptions to treatment, especially the non-administration of pain relief drugs.

² A snapshot clinical audit examining the management of Sickle Cell Crisis, August 2004, LAS.

³ A snapshot audit examining the use of Tramadol in the London Ambulance Service, May 2004, LAS.

⁴ National NHS Patient Survey Report 2004 – Ambulance Services, Healthcare Commission.