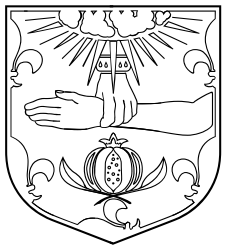
MYOCARDIAL INFARCTION NATIONAL AUDIT PROJECT

NATIONAL DATA QUALITY ASSESSMENT

December 2003



Myocardial Infarction National Audit Project
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Introduction:

The Myocardial Infarction National Audit Project (MINAP) was established in 2000 as a response to the NSF and in particular to the standard relating to the care of heart attack patients. Successful implementation of this standard was identified as: "people with a suspected heart attack will receive professional assessment and, where appropriate, be treated with thrombolytic (clot dissolving) drugs within an hour of calling for medical help or of 999".

MINAP collaborates with the Central Cardiac Audit Database (CCAD); CCAD have developed a system to collect and analyse data from all acute hospitals in England and Wales. 100% of hospitals in England are submitting data to MINAP and 17 out of 18 Welsh hospitals are also submitting data. During the last quarter of 2003 (Quarter 4, October – December) 81% of eligible patients received thrombolytic therapy within 30 minutes of arriving at hospital. This compares with less than 40% when MINAP first started. MINAP has, therefore, clearly demonstrated improvements in the care of heart attack patients.

Maintenance of data quality is crucial to MINAP as analyses are used to inform many organisations about the care of heart attack patients, including hospitals and Strategic Health Authorities, CHI, and the Department of Health. It is clearly essential that MINAP analyses are of the highest quality for them to be meaningful. There are four key areas in data quality: completeness, accuracy, timeliness and consistency. The percentage of completeness for 11 key fields is monitored online and the database also contains inbuilt consistency checks. The timeliness of data upload is also monitored regularly and over 82% of hospitals upload data at least once a month. This data quality study allows us to examine consistency in detail. This report presents the overall % of observed agreement for each field between data on the MINAP database and data from case-note re-audit. Individual hospital reports showed hospitals their most frequent discrepancies and helped them to understand areas of data weakness.

Previous Data Quality Studies:

MINAP previously carried out Data Quality Studies in 2001 and 2002. The aim of these studies was to produce a monitoring framework for systematically ensuring data quality and to also promote local discussion, investigation and action on data quality.

The methodology employed by the previous two data quality studies involved hospitals carrying out a retrospective audit of cases selected from the MINAP database. Hospitals were sent paper forms and were asked to validate each field in the MINAP core data set by comparing what was entered onto the MINAP database to what was recorded in the medical notes. The onus was on the case note auditor as to whether there was agreement between the database and the medical notes. The paper forms were then returned to MINAP for collation and analysis and the results were fed back through the publication of a Data Quality report.

Feedback from the 2002 Data Quality Study indicated that while hospitals found an annual data quality exercise was useful, collection of all fields was very time consuming. As it was also agreed that the validation exercise should be performed annually, the number of fields that required validation was limited to twenty.

For the 2003 Data Quality Study, MINAP has adopted the recommendations of the previous Data Quality Studies and has developed a novel on line validation methodology with the assistance of CCAD.

Methods:

An online Data Validation Tool was developed by CCAD in Lotus Notes for the 2003 Data Quality Study. This eliminated the need for paper forms. Validation of only 20 fields from the MINAP core data set was requested in order for the study to be less time consuming and have less of an impact on hospitals' resources. Hospitals were asked to validate the following fields from the MINAP Core Data Set (version 5):

Core Data Set Number:	**Field Name:**
2.01	Admission diagnosis
2.02	Method of admission
2.03	ECG determining treatment
2.04	Where was aspirin given
2.14	Cardiac enzymes/markers raised
2.17	Diabetes
3.1	Date/time onset of symptoms
3.02	Date/time call for help
3.07	Was reperfusion attempted
3.08	Reason thrombolytic treatment not given
3.09	Date/ time of reperfusion
3.01	Justified delay before treatment
3.11	Where was initial reperfusion treatment given
4.01	Date of discharge
4.02	Discharge diagnosis
4.03	Bleeding complications
4.08	Discharged on aspirin
4.11	Echocardiography
4.15	Date of referral for investigation/intervention

Hospitals identified patients via the patient case record number and the date and time of admission (core data set number 3.06); although hospitals were not asked to validate the date and time of admission, some hospitals chose to.

CCAD randomly selected 25 cases for each hospital with an admission diagnosis of definite myocardial infarction from October 2002 to September 2003 and hospitals were asked to re-audit 20 cases; the extra 5 cases were spares in case of missing notes. The

selected cases were displayed in the Data Validation Tool, showing the fields to be re-entered with the available options to re-enter the data. Hospitals were then asked to re-enter the 20 cases held in the MINAP database on the CCAD server against information in the medical notes. The auditor was blind to the data already stored on the MINAP database.

A letter inviting hospitals to participate in the 2003 Data Quality Study and instructions for using the Data Validation Tool were sent to every hospital submitting data to MINAP. Participation in the 2003 Data Quality Study was voluntary. The MINAP Steering Group agreed that from 2004 participation in the study will be mandatory.

Results:

100 hospitals participated in the 2003 Data Quality Study and many more hospitals expressed an interest in the study but felt unable to complete the study for 2003 within the short timeframe set. This level of participation is an improvement on last year when only 76 hospitals participated in the study. Once hospitals completed the study, the data was collated and analysed by the CEEU. There were a total of 1976 cases with both the original MINAP data and study re-audit data.

The analysis examined agreement between data originally entered on the MINAP database and that which was recorded in the medical notes in the re-audit. The observed percentage of agreement was computed for each field, and this 'agreement score' can vary from 0% to 100%.

Appendix A shows the overall agreement scores for each field for the 1976 cases from all 100 hospitals in the study.

An overall data quality score from all 100 hospitals has also been calculated. Hospital scores ranged from 48 to 94, the median score was 72, with the inter-quartile range between 65 and 78. Thus, one quarter of hospitals had scores of below 65 and one quarter had scores above 78.

Hospitals were given access to the Data Validation Tool in Lotus Notes; the tool contained the data originally entered onto MINAP, as well as the data entered during the study. This enabled hospitals to identify their discrepancies and we asked hospitals to explore the nature of their most frequent discrepancies and to consider if there was a systematic problem, which led to this. The exercise has taken place during the period when MINAP was moving from the old to the new data set and this has inevitably had an impact on some aspects of data completeness. Learning lessons from the fields with the most frequent disagreements is probably the best way of making the biggest improvements in the future quality of the MINAP database.

There are some issues that should be taken into account when looking at these results. In April 2003, the MINAP Core Data Set (version 3) was updated and re-released and the new set (version 5) contained new fields as well as new options. For this Data Quality

Study the data fields and their options were selected from the MINAP Core Data Set (version 5) and not from version 3 even though some hospitals were still using the old core data set. Core Data Set Items 2.17 Diabetes and 4.03 Bleeding complications are both new fields that were not in the old core data set and this explains why there is poor agreement for these two fields. It should also be taken into account that some of the Date/Time fields were difficult to re-audit, as these fields are not always recorded in medical notes.

Conclusions/lessons learnt:

Half the validated fields achieved over 80% observed agreement and the median data quality score for all 100 hospitals was 72%. The areas of weakness vary from hospital to hospital.

Hospitals can ensure that their data is of higher quality in a number of ways:

- Creating audit reports in Lotus Notes: Audit reports give detailed analysis of a hospital's data for a given quarter and provide a means for hospitals to examine their practice.
- Exporting data to Microsoft Excel: Lotus Notes now also contains a facility that allows hospital to export their data from Lotus Notes into Excel; this function allows hospitals to check what data has been uploaded to MINAP.
- Clinical Helpdesk: MINAP also operates a clinical helpdesk for hospitals and can assist with interpreting the core data set and also help with analysis queries.
- Technical Helpdesk: CCAD operate a technical helpdesk and can assist with any problems relating to Lotus Notes.
- 'Data Quality' view in Lotus Notes: This allows hospitals to monitor their data completeness for 11 key fields.

There were a number of limitations to this study which we will address in future studies:

- The information requested may not always be available in the hospital notes. (example 'date and time of call for help') We plan, as far as possible, that fields chosen in future will be those be normally available in the clinical record of a patient having myocardial infarction.
- The changeover of the MINAP dataset will not be a problem in future years.
- We asked that data should be validated by someone who had no responsibility for original data entry. We accept that this may not always be possible, and no longer think that data re-entry by the same individual who may have entered the original record is unacceptable.

2004 Data Quality Study:

From 2004 the annual Data Quality Study will be mandatory to all hospitals participating in MINAP. The same methodology as the 2003 Data Quality Study will be employed although hospitals will be given more time to complete the study. The fields selected will also reviewed with the intention to have fields that are more realistic to re-audit. The

results of the 2004 Data Quality Study will be available online in a new financial year report currently being developed for hospitals.

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Appendix A: % observed agreement between MINAP data and 2003 re-audit data

CDS No:	CDS Field Name:	Overall: (1976 cases)
3.06	Date/time of admission	96
2.01	Admission diagnosis	90
2.02	Method of admission	83
2.03	ECG determining treatment	92
2.04	Where was aspirin given	78
2.14	Cardiac enzymes/markers raised	81
2.17	Diabetes	22
3.07	Was reperfusion attempted	97
3.08	Reason thrombolytic treatment not given	50
3.1	Justified delay before treatment	64
3.11	Where was initial reperfusion treatment given	85
4.02	Discharge diagnosis	87
4.03	Bleeding complications	34
4.08	Discharged on aspirin	84
4.11	Echocardiography	73
3.01	Date/time onset of symptoms	67
3.02	Date/time call for help	68
3.09	Date/ time of reperfusion	84
4.01	Date of discharge	20
4.15	Date of referral for investigation/intervention	75

Median Data Quality Score of 100 Hospitals:	**72**
Inter-quartile Range:	**65-78**
Range:	**48-94**