YEAR TWO

Death following a first time, isolated coronary artery bypass graft

Interim Report - Data Year 2005/6

A report of the National Confidential Enquiry into Patient Outcome and Death (2007)

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NCEPOD

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Summary

- Although data returns for the first year of the study have improved, the return of completed surgical, anaesthetic and organisational questionnaires remains disappointing for the current data collection year.
- The return of relevant casenotes remains disappointing.
- Although there has been some improvement in the reporting of clinical data fields to the CCAD database, there are still some units unable to identify and supply basic clinical data for matching purposes.
- 13/15 independent units did not have formal pre-operative MDT meetings; 11/15 did not hold morbidity/mortality meetings on a regular basis. 18/37 NHS units did not have formal pre-operative MDT meetings; only 1/37 did not hold morbidity/mortality meetings on a regular basis.
- There appears to be a lack of clarity in the way in which key components of the EuroSCORE are derived, this limits the use of this tool for risk stratification purposes.
- The timely return of data remains slow; although this can be compensated for in the first and second years of the study, failure to return data in a prompt manner in the final year will affect the overall value of the study.

NCEPOD

Recommendations

- **All cardiac units in the UK should be equipped to record those standard data fields which form the components of EuroSCORE. There should be clarity about how and when those data are calculated, to ensure risk stratification is valid.**

- **Medical Directors must take overall responsibility for ensuring that cardiac units comply with the requirement to participate in the work of NCEPOD. There must be a clearly recognised Audit Lead in each cardiac unit and they should be fully supported to provide complete data.**

- **Whether treatment is undertaken in the NHS or independent sector, clinicians should have access to multidisciplinary team planning and audit.**

YEAR TWO

Introduction

In 2003 The National Confidential Enquiry into Patient Outcome and Death (NCEPOD), was approached by the Society of Cardiothoracic Surgery (SCTS) to carry out an independent study to examine the impact of organisational factors on outcome following first time coronary artery bypass grafting (CABG).

While there has been much research performed to identify clinical risk factors associated with patient outcome following CABG[1], there has been limited research conducted on the impact of organisational factors on patient outcome[2]. The aim of the current study is to identify whether there may be identifiable changes in care processes, including the functioning of cardiac teams, that impact on patient outcome following a first time isolated CABG.

The first interim report focused on the EuroSCORE, the most commonly used system for assessing clinical risk in cardiothoracic surgery[3], and problems with the accuracy of these data. This second report examines the figures for the return of data for second year of the study (1st April 2005 – 31st March 2006); it also updates figures for the return of first year data (1st April 2004 – 31st March 2005). All counts were taken in September 2006, and data returned after that is not included in this report. The report also looks at the measurement of left ventricular function (LV function).

NCEPOD

This study incorporates an element of a case-control; where data are available deceased patients have been matched to a control patient; a patient with similar risk factors (age, gender, LV function, diabetes and operative priority), who underwent the same procedure and was discharged alive from the episode of care. Matching provides the ability to control for factors we know have an impact on patient outcome, such as age and diabetes. The matching process is discussed in more detail and the case-control data are presented at the end of this report; this interim report only presents case-control data for the first year of the study.

Again only data which cannot introduce bias to the ongoing study will be described. Any cases reviewed in the first or second year that had been marked, by a group of advisors, as less than satisfactory and a cause for concern were dealt with promptly by the standard NCEPOD method for such cases. These cases were those where the advisor group felt that the pattern of practice fell below a standard, which indicated that the practitioner or team or Trust was likely to put current and future patients at risk if not addressed.

1	To what extent does variation in referral and admission processes affect outcome?
2	To what extent do institutional approaches to retrospective multidisciplinary case review and audit vary?
3	To what extent does the scheduling of operations affect outcome?
4	To what extent does the in-hospital process of reviewing unstable cases affect outcome?
5	Was the operation performed appropriate for the patient and the circumstances?
6	To what extent does variation in the anaesthetic process affect outcome?
7	To what extent does variation in prospective multidisciplinary case planning affect outcome?
8	To what extent does variation in patient investigation processes affect outcome?
9	To what extent does the identification and management or peri-operative complications affect outcome?
10	To what extent does the appropriateness of postoperative facilities and support affect outcome?
11	To what extent does variation in medical or interventional management pre-operatively affect outcome?
12	Is continuity of care and communication a factor that affects outcome?
13	Are there identifiable changes in care processes that could reduce the influence of comorbidities on outcome?

Key

To be included in case-control analysis

To be dropped from case-control analysis

Never intended for case-control

Figure 1. Study questions

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Method

NCEPOD has continued to use the same method as used in the first year, and as described in the first report.

Overview of data returned

Hospital participation

The number of sites participating in the second year of the study has increased from 54 to 60; this is due to increased participation of hospitals in NCEPOD studies. Of these sites, 58 supplied a complete dataset concerning deaths following first time isolated CABG for the time period 1st April 2005 – 31st March 2006. The remaining two sites were only able to supply partial death data, (Figure 2). The reason that these sites were unable to supply data for the whole of the second year is unknown but of concern.

Sites were given the option of informing us if there had been any changes in organisational facilities available. Of the 60 sites participating 47 (70%) sites have currently returned an organisational questionnaire indicating whether or not there had been any changes in the second year, or informed us that there have been no changes. As commented in the first year's report it is disappointing that all centres who had agreed to participate in the study did not return organisational questionnaires for the second year, especially as a fully completed questionnaire was not required.

Advisor groups

All the casenotes and questionnaires were anonymously peer reviewed by a panel of advisors, comprised of cardiothoracic surgeons, cardiothoracic anaesthetists and cardiologists.

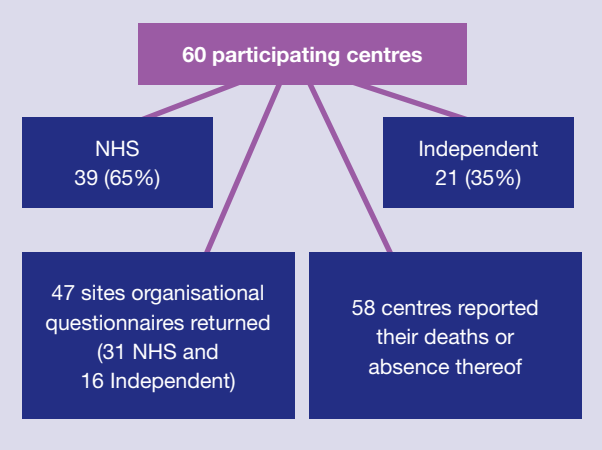

Figure 2. Hospital participation

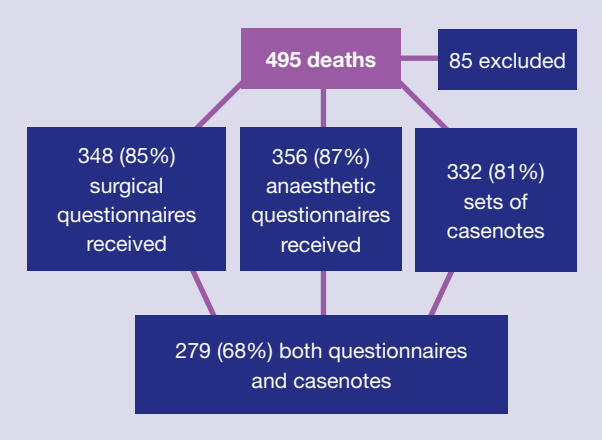

Figure 3. Year one data return update

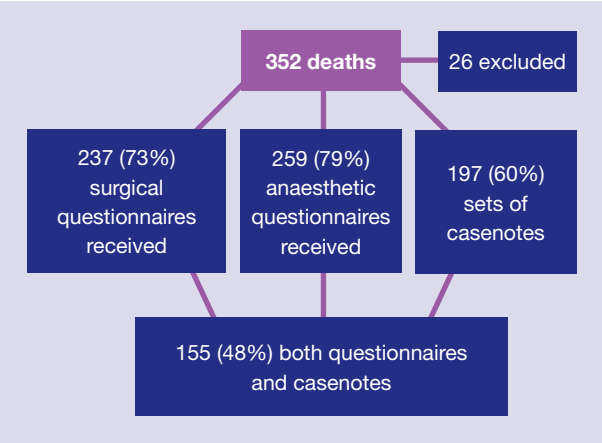

Figure 4. Overview of year two case data

Case data collection

These data were true as of 20th September 2006. Data returned after this date are not included in these figures (they will however be included in the final report).

At the end of the second year of data collection a total of 847 deaths over two years have been reported to NCEPOD.

Overview of year one data returned - update (Figure 3)

Since the publication of the first report in March 2006 an additional 15 deaths have been reported to NCEPOD for the time period 2004/05 and clinicians have returned further questionnaires. It is possible that the effect of the first interim report has been to motivate clinicians to make additional returns during the course of the second year of the study. These late returns could not be included in the case-control aspect of the study. Similarly late returns in the second year will be accepted in the third year, but this trend cannot continue into the final year and much valuable data will be lost. Furthermore these late returns could not be included in the case-control aspect of the study.

Overview of year two data (Figure 4)

At the time of publication the number of deaths reported to NCEPOD was less than last year. It is impossible to verify if this reflects the true number of deaths from isolated first time CABG. Once again the number of clinician questionnaires and casenotes returned is disappointing. The fact that the total number of paired questionnaires and casenotes returned was less than 50% is of concern and may have major repercussions to the third year of the study.

Results

Organisational data

The following analysis was carried out on the first year organisational data. In two instances, one questionnaire was returned to cover two sites; therefore the following analysis has been completed using data from 52 questionnaires.

Multidisciplinary case planning

Only four out of 52 units had a written protocol for case planning. One unit did not answer this question. Of those units that did have a written protocol, all were NHS.

Formal pre-operative meetings were held in 21/52 units; of those units where meetings were held 19 were NHS and two independent. Of those units who did not hold meetings, 13 were independent and 18 NHS. Respondents were asked to indicate how often these meetings were held and who was involved with them. In terms of frequency, where an answer was given, meetings were held between once a week and once a month, the most commonly given answer was weekly (16/20 units). Cardiologists, cardiothoracic surgeons, anaesthetists and nursing staff were among the most frequently cited attendees of these meetings. Records available for pre-operative meetings included patients' casenotes, correspondence, for example referral letters, and results of investigations including echocardiography and angiogram. In other instances it was noted no records were available at pre-operative meetings. In terms of record keeping, in units where formal pre-operative meetings occurred, 12/20 units did

not keep a record of attendance. One respondent from a unit where meetings are held did not indicate how often meetings were held, who was involved, what records were available, and whether a record of attendance was kept.

In 43/48 units there was no agreed written protocol for reviewing non-surgical coronary interventions such as percutaneous coronary intervention (PCI). This was in place in only 3/48 sites. In 2/48 sites this was unknown. Four sites did not record an answer for this question. Of the sites who did have a written protocol, one was NHS and two independent.

Multidisciplinary review and audit

In 40/52 departments; 36 NHS and four independent, multidisciplinary team (MDT) morbidity/mortality meetings were held on a regular basis; within these units, most meetings were held on a monthly basis. A variety of specialties were represented at these meetings, including all grades of surgeon and anaesthetist, cardiology, nursing and pathology. Of units who did not hold morbidity/mortality meetings on a regular basis, 11 were independent and one NHS; the main reasons given for not holding meetings were 'small number of patients'; and 'surgeons/ anaesthetists come from different hospitals'.

Respondents were asked to indicate how information is given back to clinical teams. The most commonly cited answers were via minutes of the meeting, from discussion at meetings, and via clinical governance/effectiveness.

In 38/49 units, the quality of care for each patient was not graded after morbidity/mortality meetings. Three units did not answer this question. Where the quality of care was graded, discussion examined the appropriateness of care, any deficiencies in care, and expected, unexpected and avoidable outcomes. Of units where the quality of care was graded, six were NHS and three independent. In two units it was unknown whether the quality of care was graded.

Left ventricular function

LV function is important in the determination of the management and treatment of cardiac patients in terms of decision to revascularise[4]. A number of methods are available to assess this, though many are limited by their invasiveness, cost and lack of repeatability[5]. Previous studies have shown there to be significant levels of intra- and inter observer, and inter institutional variability in the measurement of ejection fraction (EF) using echocardiography[6]. The measurement of Left Ventricular Ejection Fraction (LVEF) is a component of the EuroSCORE[7], patients with a LVEF <30% score 3, and those with LVEF between 30-50% score 1. Accurate measurement of LVEF is essential for the accurate risk stratification of patients undergoing cardiac surgery.

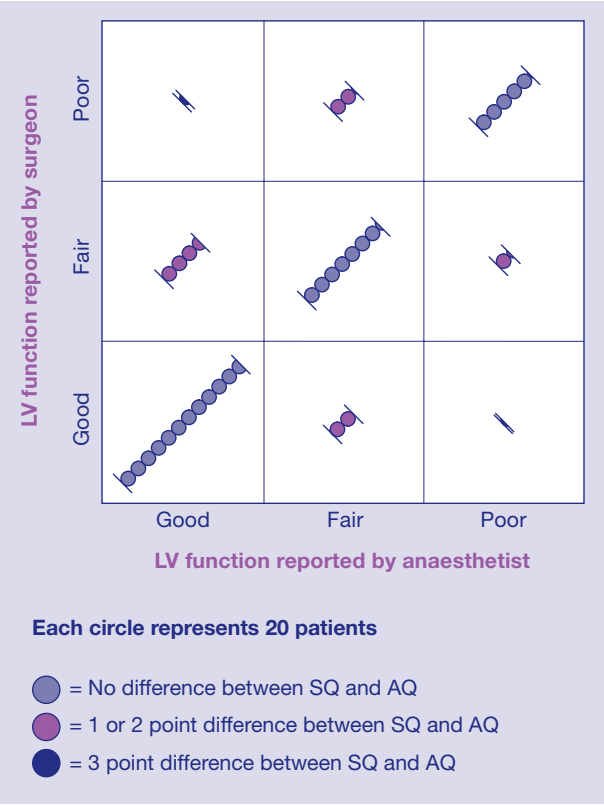

Figure 5. The LV function reported by anaesthetist and surgeon for the same patients (n = 660)

Where both a surgical and anaesthetic questionnaire were returned, among the cases there was a discrepancy in the answer given between the surgeon and anaesthetist in 28% (134/477), and amongst the control patients there was again a discrepancy of 28% (51/183). Figure 5 shows the pattern of the discrepancies between the LV function reported by the surgeon and that reported by the anaesthetist for all patients (cases and controls).

There are a number of possible explanations for the discrepancies in scoring LV function. Firstly, although there is a standard definition of LV function based upon a numerical percentage score of LVEF derived from the angiogram or echo assessment[a], this is often not present in the notes. Secondly, particularly in the urgent, emergency and salvage cases, there may well have been deterioration of LV function between the initial routine assessment and the point at which the procedure is undertaken. It is likely in these cases that the surgeon will use an assessment based upon the clinical operative findings, rather than reporting an earlier finding from an elective assessment. In contradistinction, the anaesthetist will probably have referred to the initial assessment when he/she undertakes his/her pre-operative assessment of the patient. Finally of course, there is the possibility that bias is introduced, either subconsciously or not. This highlights one of the limitations of comparing results, based upon a risk assessment system, which ultimately can be subjectively manipulated by the clinicians to suggest that they are operating upon sicker patients. The relatively low number of measured and recorded LVEFs in the immediate pre-operative period, particularly in the urgent/emergency patients, casts doubt upon the validity of this factor as an accurate risk assessment parameter. Nashef et al[7] based the evaluation of risk factors upon “credibility, availability and resistance to falsification”.

In terms of priority and the measurement of LV function, data from the surgical questionnaire indicate a higher percentage of patients with good LV function are admitted electively as opposed to as an urgent/emergency/salvage case (Figure 6).

In terms of discrepancy in LV function measurement between the surgical questionnaire and anaesthetic questionnaire, and the priority of the patient amongst the cases, there are a higher number of discrepancies in LV function between surgeon and anaesthetist amongst patients admitted for salvage/emergency/urgent procedures, 32% (99/310) than amongst those patients admitted for elective procedures, 18% (35/196).

[a] Left ventricular function is defined as follows: Good = LVEF > 50%, Fair = LVEF 30-50% and Poor = LVEF < 30%. These definitions were included in both the surgical and anaesthetic questionnaires.

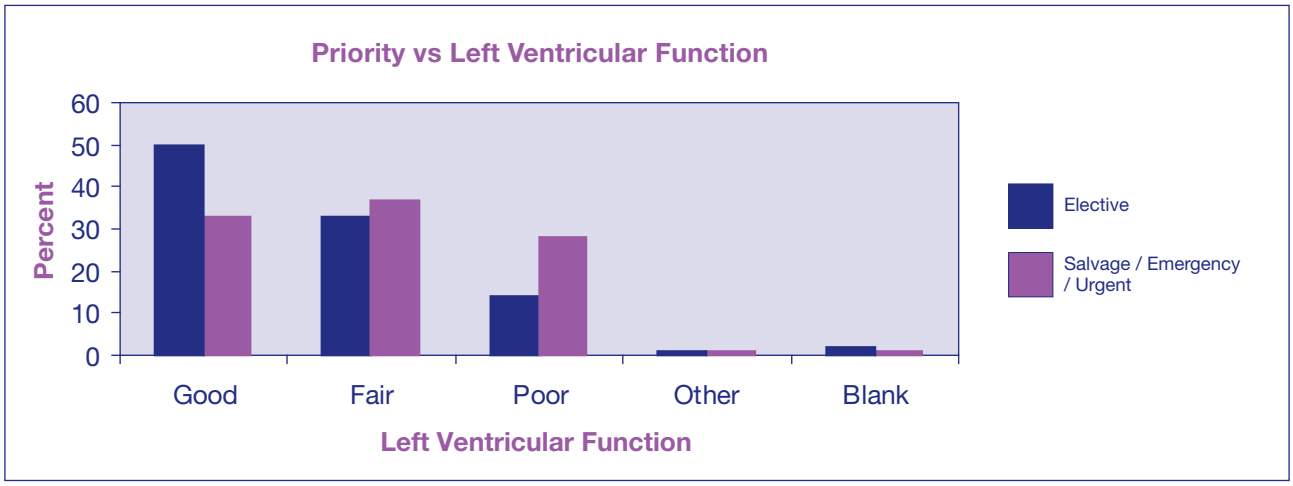

Figure 6.

Amongst the control sample, there was a discrepancy in the recording of LV function between the surgical and anaesthetic questionnaires in 35% (37/106) of salvage/emergency/urgent cases, compared to 17% (14/81) among elective cases.

Of the 173 cases where the EuroSCORE matrix indicated LV function was good/fair, and a measurement of LV function was given later in the questionnaire, the answer given in the matrix reflected accurately that given later in the questionnaire in 164 cases; this means there were seven cases (4%) where the surgeon indicated LV function was good/fair in the EuroSCORE matrix, and later went on to state to LV function was poor. Of these patients one patient was salvage, two emergency and four elective.

Of the 109 cases where LV function was indicated to be poor in the EuroSCORE matrix, and a measurement was given later in the questionnaire, the answer given in the matrix reflected accurately the value stated later in 100 cases. This means there were nine cases (8%) in which there is a discrepancy between the answers given in the questionnaire. Of these nine cases, two patients were salvage cases, five urgent and two elective.

Of the 42 control cases where the LV function was indicated to be good or fair in the EuroSCORE matrix, and a measure of LV function was given later in the questionnaire, the answer given later accurately reflected that stated in the matrix in 93% of cases (39/42). In 7% (3/42) of cases where LV function was scored as good or fair in the EuroSCORE matrix, the LV function was later marked as poor. In all 28 cases where LV function was marked as poor in the EuroSCORE matrix, the answer given later in the questionnaire accurately reflected this answer.

Case-control

The use of case-control analysis is new to NCEPOD and in this study it supplements our traditional methodology. This is an epidemiological method perhaps most famous for its use in establishing the linkage between lung cancer and smoking[b].

Case-control analysis has been used in the present study to examine the association between various clinical and organisational processes and outcome. Wherever possible, for each death following CABG, a patient who underwent CABG and survived has been identified, who is matched in terms of the following risk factors: age, sex, left ventricular function, presence of diabetes and the urgency of the operation. This matching was performed using information primarily from the Central Cardiac Audit Database (CCAD). In some instances the information from CCAD did not reflect that subsequently obtained from questionnaires and casenotes.

Thirteen areas of clinical and organisational process were selected for scrutiny within this study. For each area where case-control analysis is appropriate, a definition of "poor practice" was defined following discussion between members of the expert group[c].The objective of the case-control analysis is formally to test whether the definitions proposed are associated with death following CABG. It should be stressed that, at this stage, the proposed definitions of poor practice do not constitute NCEPOD findings or recommendations. The number of these hypothetical definitions that can formally be tested over the course of the study has been determined based on a sample of the data gathered during the first year, taking due account of sample size considerations.

Case-control data collection

The controls for the first year's patients who died following isolated first time CABG were collected, (Figure7). It was intended that CCAD would be used to identify matching controls. Unfortunately many centres do not supply data to CCAD and consequently NCEPOD had to directly request patient data from these centres to permit matching. Many of these centres do not have information systems that collect information on one or more of the matching risk factors: age, sex, left ventricular function, operative priority or diabetic status for patients having CABG.

Consequently many of the centres were not able to supply the data requested by NCEPOD. Of the 54 sites who participated in the first year, only 40 sites were able to provide controls for the matching process.

Eighteen thousand, three hundred and forty-five control patients were entered into the matching process. Of the 399 deaths reported to NCEPOD, 123 cases had to be excluded due to lack of adequate data for matching. Of the 276 cases with complete data, 274 were matched to a patient that survived. In two cases no suitable control patients were found.

Questionnaires were sent to the consultant surgeon and consultant anaesthetist involved and notes were requested for controls. These controls were also subject to anonymous peer review by a panel of advisors.

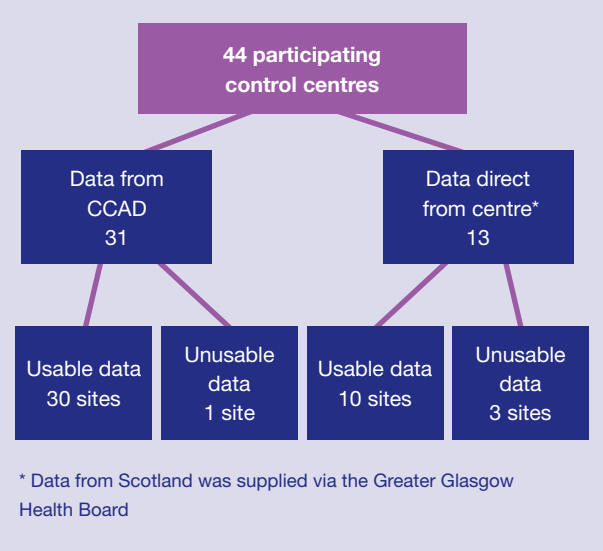

Figure 7. Hospital participation – year one control data

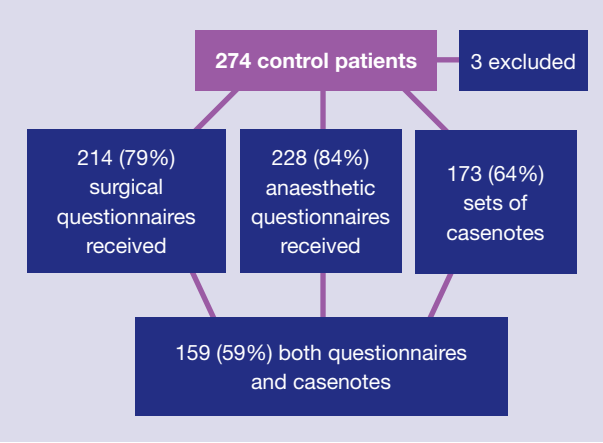

Figure 8. Overview of year one control data returned

[b] This involved gathering data concerning known risk factors, such as age and sex, for a sample of individuals with lung cancer. Each patient was then randomly matched to an individual with the same risk characteristics but free of the disease, matching being done independent of information about smoking history. The smoking history of each pair of individuals was then compared. There was an anomalously high number of lung cancer patients who were smokers matched to non-smokers without the disease. This suggested (but did not establish beyond any doubt) a causal link[8].

[c] At inception a group of experts were formed to steer this project. The group comprises cardiothoracic surgeons, cardiothoracic anaesthetists, cardiologists, a pathologist, an intensivist and a lay representative.

Case-control analysis

Prior to collecting any data, definitions of "poor practice" were defined for two areas of practice:

continuity of care and communication;

management of comorbidities.

These definitions have been tested using a sample of the 274 matched case-control pairs from the first year of the study. From Figures 3 and 8 it can be seen that much data concerning these patients were not supplied. In 244 of the 274 pairs, at least one item of data was available for each patient (case and control). Data concerning half of these pairs (122) were used in the analyses presented below; the remainder have been retained for use, along with year two and year three data, in testing definitions of poor practice proposed concerning other areas of clinical and organisational process.

Continuity of care and communication

Data relating to this rather broad topic were combined from a number of sources. For the purposes of the case-control analysis, "poor practice" was defined as

one of:

- **either the surgeon or the anaesthetist not feeling at ease with the theatre team for the operation;**
- **either the surgeon or the anaesthetist not feeling that there was stability within the theatre team for the operation;**
- **consent for the operation being obtained by a senior house officer rather than a more senior doctor;**
- **consent for the operation being obtained by an individual whose specialty was not cardiothoracic surgery.**

or any two of:

- **the operation occurring in an institution that does not have an information sheet describing CABG surgery which is given to patients;**
- **possible anaesthetic complications not being described adequately during the consent process (in the view of the anaesthetist);**
- **possible complications not being noted on the consent form;**
- **the risk of death not being quoted on the consent form.**

		Care received by patient that survived	
		good	**poor**
Care received by patient that died	**good**	52	**27**
	poor	**31**	12

Table 1. The number of matched pairs of patients that fell into each of four categories defined by the care received with respect to the *continuity of care and communication*. See the text for the definition of poor practice used for the purposes of this analysis.

If data concerning a particular feature of care were missing, it was assumed that the associated criterion for "poor practice" was not met.

The sample of first year data used in this analysis consisted of 122 matched pairs of a patient that died following CABG and a patient that survived. Each pair was categorised according to whether one or other or both of the patients experienced poor care as defined above. The results are shown in Table 1.

To assess whether there is any association between poor practice in this area and outcome we calculated the odds-ratio (a measure of the risk associated with poor care). In this instance the odds-ratio is 31 / 27 = 1.15. This result is not statistically significant and we do not conclude that there is an association between poor practice and outcome for this aspect of care.

Management of comorbidities amongst elective and urgent patients

A large amount of data concerning this topic were available from the anaesthetic and surgical questionnaires to inform the clinical advisors reviewing the care of each patient. The definition of "poor practice" proposed for the purposes of the case-control analysis was based on a subset of these data. The pre-operative management of comorbidities was defined as poor if

the patient had respiratory disease and this was considered by either the surgeon or the anaesthetist not to have been reasonably managed.

and / or

the patient had renal disease and this was considered by both the surgeon and the anaesthetist not to have been reasonably managed.

Again, if data concerning a particular feature of care were missing, it was assumed that the associated criterion for "poor practice" was not met.

		Care received by patient that survived	
		good	poor
Care received by patient that died	good	95	0
	poor	5	0

Table 2. The number of matched pairs of patients that fell into each of four categories defined by the care received with respect to the *management of comorbidities*. See the text for the definition of poor care used for the purposes of this analysis.

For 100 of the 122 matched pairs of patients, both the patient that died and the patient that survived were reported to have undergone an elective or urgent operation and the remaining 22 pairs were removed from the analysis. Each pair was categorised according to whether one or other or both of the patients experienced poor care as defined above. The results are given in Table 2.

Again the result of this analysis is not statistically significant and we do not conclude that there is an association between poor practice and outcome for this aspect of care.

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Participation Cases

As of 20th September 2006

Trust/Group	No. of sites	No. of cases	Surgical q. received	Anaesthetic q. received	Casenotes received
North Glasgow University Hospitals Division	2	47	41	36	26
Lothian University Hospitals Division	1	12	8	10	7
Grampian University Hospitals Trust	1	18	15	17	13
Golden Jubilee National Hospital	1	1	0	1	0
Bart's and The London NHS Trust	2	30	11	13	16
Blackpool, Fylde and Wyre Hospitals NHS Trust	1	16	16	16	16
Brighton and Sussex University Hospitals NHS Trust	1	16	16	16	16
BMI Healthcare	6	2	0	0	0
BUPA	4	0	-	-	-
Capio Healthcare UK	1	0	-	-	-
Cardiff and Vale NHS Trust	1	11	8	10	5
Central Manchester & Manchester Children's University Hospital NHS Trust	1	14	14	13	14
Classic Hospitals	1	1	1	1	1
Cromwell Hospital	1	3	1	3	3
Guy's & St Thomas' Hospital NHS Foundation Trust	1	33	20	26	23
Hammersmith Hospitals NHS Trust	1	15	9	13	8
HCA International	3	11	6	7	9
Hull and East Yorkshire Hospitals NHS Trust	1	21	17	15	11
King Edward VII Hospital	1	2	2	2	2
King's College Hospital NHS Trust	1	13	13	12	9
Newcastle upon Tyne Hospitals NHS Trust	1	21	20	21	21
Nottingham City Hospital NHS Trust	1	13	10	9	8
Nuffield	3	0	-	-	-
Oxford Radcliffe Hospital NHS Trust	1	25	23	24	24
Papworth Hospital NHS Foundation Trust	1	34	32	32	34
Plymouth Hospitals NHS Trust	1	12	7	11	10
Royal Brompton and Harefield NHS Trust	2	30	21	26	22
Royal Group of Hospitals & Dental Hospitals & Maternity Hospitals (NI)	1	24	18	17	13
Sheffield Teaching Hospitals NHS Foundation Trust	1	31	28	28	25
South Manchester University Hospitals NHS Trust	1	16	13	16	10
South Tees Hospitals NHS Trust	1	18	18	18	18
Southampton University Hospitals NHS Trust	1	24	21	24	15
St Anthony's Hospital	1	0	-	-	-
St George's Healthcare NHS Trust	1	15	11	12	15
St Mary's NHS Trust	1	13	6	6	5
Swansea NHS Trust	1	12	2	4	2
The Cardiothoracic Centre Liverpool NHS Trust	1	51	37	46	22
The Leeds Teaching Hospitals NHS Trust	1	19	19	12	18
The Royal Wolverhampton Hospitals NHS Trust	1	17	13	17	13
United Bristol Healthcare Trust	1	17	17	17	16
University College London Hospitals NHS Foundation Trust	1	17	13	14	9
University Hospital Birmingham NHS Foundation Trust	1	14	13	9	12
University Hospital of North Staffordshire NHS Trust	1	13	11	10	10
University Hospitals Coventry and Warwickshire NHS Trust	1	20	20	18	15
University Hospitals of Leicester NHS Trust	1	14	14	13	13

Data from two sites not complete for year two.

Controls

As of 20th September 2006

Trust/Group	No. of sites	No. of cases	Surgical q. received	Anaesthetic q. received	Casenotes received
North Glasgow University Hospitals Division	2	10	8	8	6
Lothian University Hospitals Division	1	11	8	8	4
Grampian University Hospitals Trust	1	5	4	5	4
Golden Jubilee National Hospital	1	NA	NA	NA	NA
Bart's and The London NHS Trust	2	20	6	12	1
Blackpool, Fylde and Wyre Hospitals NHS Trust	1	7	7	7	7
Brighton and Sussex University Hospitals NHS Trust	1	4	4	4	4
BMI Healthcare	6	NA	NA	NA	NA
BUPA	4	0	-	-	-
Capio Healthcare UK	1	0	-	-	-
Cardiff and Vale NHS Trust	1	7	4	4	2
Central Manchester & Manchester Children's University Hospital NHS Trust	1	7	7	7	7
Classic Hospitals	1	0	-	-	-
Cromwell Hospital	1	0	-	-	-
Guy's & St Thomas' Hospital NHS Foundation Trust	1	9	5	8	1
Hammersmith Hospitals NHS Trust	1	7	7	4	6
HCA International	3	10	6	7	6
Hull and East Yorkshire Hospitals NHS Trust	1	10	10	9	7
King Edward VII Hospital	1	0	-	-	-
King's College Hospital NHS Trust	1	0	-	-	-
Newcastle upon Tyne Hospitals NHS Trust	1	3	3	3	3
Nottingham City Hospital NHS Trust	1	3	1	2	1
Nuffield	3	0	-	-	-
Oxford Radcliffe Hospital NHS Trust	1	7	5	5	5
Papworth Hospital NHS Foundation Trust	1	23	23	23	23
Plymouth Hospitals NHS Trust	1	0	-	-	-
Royal Brompton and Harefield NHS Trust	2	4	1	4	0
Royal Group of Hospitals & Dental Hospitals & Maternity Hospitals (NI)	1	0	-	-	-
Sheffield Teaching Hospitals NHS Foundation Trust	1	9	9	9	8
South Manchester University Hospitals NHS Trust	1	10	10	9	3
South Tees Hospitals NHS Trust	1	15	15	15	15
Southampton University Hospitals NHS Trust	1	9	8	7	4
St Anthony's Hospital	1	3	0	2	0
St George's Healthcare NHS Trust	1	5	4	3	4
St Mary's NHS Trust	1	5	5	5	5
Swansea NHS Trust	1	0	-	-	-
The Cardiothoracic Centre Liverpool NHS Trust	1	8	4	8	0
The Leeds Teaching Hospitals NHS Trust	1	14	11	10	11
The Royal Wolverhampton Hospitals NHS Trust	1	0	-	-	-
United Bristol Healthcare Trust	1	22	22	22	22
University College London Hospitals NHS Foundation Trust	1	7	6	6	4
University Hospital Birmingham NHS Foundation Trust	1	9	6	7	5
University Hospital of North Staffordshire NHS Trust	1	3	0	0	0
University Hospitals Coventry and Warwickshire NHS Trust	1	5	5	5	5
University Hospitals of Leicester NHS Trust	1	0	-	-	-

This is an indicator of number of cases matched, not an indicator of who did or did not supply data. A unit with 0 cases may have supplied the matching data but have had no controls selected from their unit.

YEAR TWO

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The recommendations contained in this report represent the view of NCEPOD, which was arrived at after a careful consideration of the available evidence. Health professionals are expected to take it into account when exercising their clinical judgement. It does not, however, override their individual responsibility to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

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Publication of future reports

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