1 Inpatient survey 2010: Sampling Problems

1.1 Introduction

For the 2010 adult inpatient survey, trusts were asked to submit their sample to the Co-ordination Centre for final quality control checks before any questionnaires were mailed out. This sample checking procedure was introduced for the 2006 inpatient survey and was found to be useful for identifying sampling errors and avoiding the common mistakes that can result in delays to the survey process, and problems with poor-quality samples. This document describes the errors made in sampling and the recommendations made by the Co-ordination Centre to correct these. Errors are divided into major (those requiring re-sampling) or minor (those that could be corrected before final data submission). This document also demonstrates the continual overall improvement seen in the quality of submitted samples since the sampling checking protocol was implemented.

This document should be used by trusts and contractors to become familiar with past errors and to thus prevent these from recurring. If further assistance is required, please contact the Co-ordination Centre on 01865 208127.

1.1 All errors

There were 9 major errors noted in the sample checking phase and the Co-ordination Centre advised 7 trusts to redraw their sample (sometimes more than once). This compares favourably to 2009 when there were 19 major errors spread across 17 trusts, and to 2008, when there were 24 major errors spread across 16 trusts. Going back further, 2007 saw 28 major errors spread across 23 trusts and 2006 38 major errors spread across 28 trusts.

Despite the large decrease in the number of major errors, this year did see a slight increase in the number of minor errors from 39 in 2009 to 41 this year. However, this still shows substantial improvement from previous years when both 2008 and 2007 saw 70 minor errors and 2006 saw 141.

	2010	2009	2008	2007	2006
Major errors	**9**	**19**	**24**	**28**	**38**
Minor errors	**41**	**39**	**70**	**70**	**141**

1.2 Major errors

Nine major errors were identified during sample checking in 2010, spread across 7 trusts. Errors are classified as major if they require the trust to resample, or to remove or replace patients from the sample. If major errors are not corrected, the trust's survey data cannot be used by CQC for regulatory activities such as monitoring trusts' compliance with the essential standards of quality and safety and the trust will be reported as not submitting data for the national survey.

Major errors	2010	2009	2008	2007	2006
Inclusion of ineligible patients (based on route of admission information)	6	5	n/a	n/a	n/a
Consecutive admissions	2	3	4	2	3
Randomised sampling	1	4	5	9	10
Sampled incorrect period	0	2	3	3	1
Screened single night stays	0	2	0	1	1
Incorrectly excluded by age	0	1	4	0	1*
Zero night stay patients included	0	1	0	2	2
Inclusion of private patients	0	0	3	0	1†
Inclusion of maternity/termination of pregnancy patients	0	0	2	8	8
Excluded some hospital sites	0	0	1	1	0
Inclusion of psychiatry patients	0	0	1	0	0
Incorrectly excluded by specialty code	0	0	0	2	4
Other	0	1	1	0	7
Total	**9**	**19**	**24**	**28**	**38**

Inclusion of ineligible patients (based on route of admission information)

This information field asks the acute trust to include the two-digit route of admission code for each patient. Route of admission information was first asked for in 2008 when trusts coded each patient simply as 'emergency' or 'planned'. Supplying the full route of admission information provides more information about each patient and allows ineligible patients to be identified and excluded.

Six trusts had patients in their sample whose ineligibility was identified by their route of admission codes. This happened in small numbers-with the highest being 16 ineligible codes-and were usually patients admitted through maternity services.

In these cases trusts were informed of this issue, reminded of the eligibility criteria and asked to resubmit having replaced the ineligible records.

Random samples

Some trusts submitted samples that led us to suspect they were randomised samples of all patients seen over a period of one or more months. Typically, the earliest date of discharge was very close to the start of the month (usually the 1st of the month) and the latest date of discharge at the very end of the month. As trusts were instructed in the guidance manual to sample back from the end of one of three possible months, the last day of the month should always be the latest discharge date. However, all cases where the earliest date of discharge was in the first few days of the month were investigated further, initially by comparing the 2009 sample to that of previous years, and then contacting trusts to seek resolution and reassurance on the issue.

* In 2006, one trust incorrectly excluded patients who were 16 years old and thus eligible for the survey. In the 2007 sampling errors document, this trust was coded as "other" because there were no other examples of this occurring. In this document, they have been recoded to match this category of major error.

† In 2006, one trust incorrectly included private patients in their sample. In the 2007 sampling errors document, this trust was coded as "other" because there were no other examples of this occurring. In this document, the have been recoded to match this category of major error.

One sample submitted to the Co-ordination Centre were detected as using random sampling methods and we requested that the trusts re-draw the sample and to resubmit it for final approval. This is a slight improvement on last year when two trusts made this error.

Sampled by consecutive admission date

In 2010 two trusts submitted samples with unusually brief maximum lengths of stay, indicating that at some point in the process the list had been sorted by date of admission. After closer investigation this was confirmed to be the case.

This major error was observed in three samples in 2009, four samples in 2008 and two samples in 2007. The trusts that made this mistake in 2010 had maximum lengths of stay of 8 and 18 days, particularly unusual because their maximum lengths of stays for 2009 were 87 and 90 days respectively.

This error can occur at multiple stages of the sample generation and, because of this, it is very difficult to convince trusts that this error has occurred. For example, a trust may generate a large initial sampling frame that conforms to all the inclusion criteria, then generate a second list once the exclusion criteria have been applied, then another list of 900 patients to be sent to the National Strategic Tracing Service (NSTS), and a final list of 850 patients to be sent to the Co-ordination Centre. If any of these lists are sorted by admission date rather than discharge data, this error could occur.

Both trusts were asked to resubmit sample lists to the co-ordination centre.

Sampled incorrect period

In previous years trusts have sampled periods not prescribed by the survey guidance. This can be a failure to sample from the end of the month or sampling outside of the three months specified in the guidance. Despite two trusts doing this in 2009, no trusts made this error in 2010.

Screened single night stays

In previous years trusts have made the mistake of excluding from the sample patients that only stayed in hospital for one night. Two trusts made this mistake in 2009, but none did so in 2010.

Incorrectly excluded by age

Previously, in order to be sure that no patients under the age of 16 were included in the sample, trusts have excluded all the patients born in the most recent eligible year. In the case of the 2010 survey this was 1994 and one trust made this error. This is not permissible because it also excludes eligible patients just above the age cut off.

In 2010 although some trusts submitted samples without patients born in 1994, when queried by the coordination centre acceptable assurances were given that no patients had been wrongfully excluded on this basis. Equally, all trusts submitting year of birth data as 1994 were asked to confirm that patients were aged 16 at the time of sampling.

Zero overnight stay patients included

To be eligible for the survey, patients must stay overnight in hospital. For the purposes of this survey, this requires that their discharge date is at least one day later than their admission date. In

the past trusts have failed to recognise this when drawing their sample, but in 2010 no trust made this error.

Inclusion of private patients

The national inpatient survey only samples NHS patients and specific instruction is provided in the guidance manual to exclude all private patients. As in 2009, no trusts in 2010 mistakenly included some private patients in their samples, an improvement from 2008 when three trusts made this error.

Inclusion of maternity/termination of pregnancy patients

The guidance manual explicitly stated that maternity patients were to be excluded from the sample, as in all previous inpatient surveys in the NHS patient survey programme. These patients were defined as:

> "Any patients coded with a main specialty of 501 (obstetrics) or 560 (midwife) and admitted for management of pregnancy and childbirth, including miscarriages, should be excluded from the sample".

In addition, any patients admitted for a planned termination of pregnancy are also excluded from the survey due to issues of privacy and sensitivity.

This year no samples were submitted to the Co-ordination Centre containing patients who should have been excluded under these criteria. This was the same last year but compares favourably to previous years: four trusts in 2008 and eight trusts in both 2006 and 2007 submitted samples containing patients with main specialties of obstetrics or midwifery.

Excluded some hospital sites

As last year no trusts made the error this year of excluding some hospital sites when drawing their sample. In 2008, one trust made this error by excluding their new children's hospital on the mistaken assumption that all patients treated there would be too young to participate.

Inclusion of psychiatry patients

The guidance manual states that patients admitted to hospital for primarily psychiatry reasons should not be included in the sample, as in all previous inpatient surveys in the NHS patient survey programme. As In 2009, no trusts included patients admitted for psychiatric reasons, but in 2008 one patient was admitted under the specialty of learning disability.

1.3 Minor errors

Forty-one minor errors were identified during sample checking in 2010, spread across 28 trusts. Errors are considered to be minor if resampling or replacement of patients is not necessary. Trusts that have made minor errors are advised that corrections would need to be made to the sample information before the final data set was submitted to the Co-ordination Centre at the close of the survey.

Minor problems	2010	2009	2008	2007	2006
Incorrect PCT coding	15	9	26	19	30
Missing or incorrect route of admission data	8	10	8	n/a	n/a
Incorrect ethnic or gender coding	5	7	18	12	19
Missing or incorrect treatment centre data	4	5	1	6	12
Main specialty miscoding	3	1	4	6	0
Date format used	3	0	3	6	22
Incorrectly calculated Length of Stay (LOS)	3	5	9	11	15
Treatment coding used instead of main specialty	0	0	1	7	16
Other	0	2	0	3	27
Total	**41**	**39**	**70**	**70**	**141**

Incorrect PCT coding

Incorrect coding of PCT of referral was a common cause of minor errors in 2010, detected in fifteen trusts' samples. This is substantially higher than 2009 when only 9 trusts made this error.

The issues detected were:

- missing codes
- SHA code used instead of PCT code
- Five-digit codes used
- Outdated PCT codes

Missing or incorrect route of admission data

This information field asks the acute trust to include the two-digit descriptive code as used within the NHS Commissioning Data Sets. In 2008, the Co-ordination centre asked for a simple coding of 'emergency' or 'planned' therefore the change in data requested in 2009 was responsible for some of the errors that occurred when completing this data field. In 2009 10 trusts made this error, this fell to 8 for 2010.

The main issues were:

- Missing codes
- Use of basic codes '1' and '2'
- Incorrect codes
- Invalid codes used

Incorrect ethnic or gender coding

In total, three trusts did not code patients' ethnicity as specified in the guidance manual. This is an improvement on 2009 when 7 trusts had not coded ethnicity as specified.

Two of the three trusts coded cases for whom ethnicity was not known incorrectly. .Rather than leaving the cell blank these trusts chose to use the code of '99' or '999'.

In 2010, two trusts miscoded gender information. This is a rise from 2009 when no trusts made this error. One of the trusts simply had one missing case while the other had used the codes of 'M' and 'F', rather than the specified '1' and '2'.

Incorrectly calculated Length of Stay

Three trusts had cases where they did not calculate length of stay correctly, down from 5 trusts in 2009, 9 trusts in 2008, 11 trusts in 2007 and 15 trusts in 2006. For one trust this was simply a data entry error with one case where '2009' had been mistakenly inputted instead of '2010', for the second trust three cases had accidentally swapped the admission and discharge dates and the third had simply miscalculated 216 cases.

All trusts were informed of this issue and asked to rectify it, before their samples were once again checked to ensure no ineligible patients had been included as a result.

Missing or incorrect treatment centre data

In 2010 4 trusts did not include correct treatment centre data for all patients in their samples.The most common problems were incorrect coding (for example all patients erroneously coded as treatment centre admissions) and missing codes. This represents an improvement of one from 2009 although is still greater than the 1 trust that made this mistake in 2008.

Date format used

Three trusts submitted samples with dates in date format, rather than in numeric form as specified in the guidance. This meant that the coordination centre had to change these files before they could be properly checked. In 2009 no trusts made this error.

Main specialty miscoding

No trusts miscoded in the 'main specialty on discharge' data field. In last year's survey one trust made this mistake, simply by leaving the column blank.

Treatment coding used instead of main specialty code

As last year no trusts made the error of submitting treatment codes rather than main specialty code. When specialty codes were first assessed for inclusion in the 2005 adult inpatient survey, the Co-ordination Centre was informed that treatment codes were deemed to be both unreliable and more likely to disclose the actual treatment (and by inference the condition) of the patient.