NHS HOSPITAL DATA QUALITY
TOWARDS BETTER DATA FROM SCOTTISH HOSPITALS

An Assessment of SMR01 and Associated Data 2004 - 2006

Scotland Report
September 2007
Background and Introduction

1) SMR01 records are analysed for a wide range of purposes, including medical research, clinical governance, epidemiology, performance management and resource allocation. It is important for users of SMR01 data to be aware of the level of accuracy in recording when using the information generated from such databases and ISD therefore monitors the accuracy levels by undertaking routine quality assurance assessments and publishing the results. For the vast majority of analyses of SMR01 the data are fit for purpose in producing summary statistics.

2) This report contains details of the quality of recording of selected data items for both Scotland and for individual hospitals. Certain hospitals have been grouped together to allow peer comparison. It is expected that this report will be of interest to clinical staff, medical records managers, information managers and analysts in NHSScotland, to the Scottish Executive and to other users of SMR information. The report has been produced as part of ISD’s continuing commitment to quality and in order to help measure the overall quality of the data, to promote accountability and openness and to give feedback to NHSScotland.

3) A large part of this report deals with clinical coding. In SMR01 records, hospital diagnoses are coded using the ICD10 classification. The Main Condition and up to five Other Conditions can be recorded. Up to four operations or procedures can be recorded using the OPCS4 coding classification.

4) In this project, if ISD were unable to determine the accuracy of recorded data, the record was excluded from accuracy calculations for the data item in question. In previous assessments the recorded data had been presumed correct unless evidenced otherwise. When this report makes comparisons between current and previous Data Quality Assurance (DQA) data – for example, between current and previous clinical coding accuracy – the accuracy rates are recalculated on the previous basis.

5) Coding accuracy figures are generated by assessing the clinical coding recorded in an SMR01 record against the relevant content of the full medical record. For 17 hospitals where the coders do not have access to the full medical record ISD identify cases where errors in coding appear to be related to the non-availability to the coders of clinical information, and show the potential effects of this non-availability on coding accuracy. ISD regards a standard accuracy rate of 90% at 3-digit level as the recommended minimum target rate for clinical coding for Main Condition, Other Conditions, Main Operation/Procedure, and Other Operations/Procedures. This is based on the advice of ISD’s service-led Data Quality Issues Group following the results of the 1996-97 SMR01 QA project.

6) An ISD assessor has more time to carry out the assessment of an SMR01 than a hospital coder is usually given to code it. Also, information which had been unavailable to the coder may later be available to the assessor. The use of the full medical record (including the discharge summary) ensures a standard assessment process is applied to all hospitals. The assessment demonstrates the level of accuracy and completeness possible if the necessary information is provided to the coder in a timely fashion.
7) ISD classifies errors in recorded data according to their potential impact. **Major errors** in recorded data are so described because they are more likely to have an adverse effect on the subsequent value of that data than are **minor errors**.

Definitions of major and minor clinical coding errors can be found on website at [http://www.isdscotland.org/data_quality_assurance](http://www.isdscotland.org/data_quality_assurance)

8) Previous SMR01 assessments have shown that most non-clinical data items (eg admission and discharge dates, GP Practice code) have been recorded with an accuracy of between 95% - 100%.

9) Links to our website are provided to show the data behind specific graphs in this report. Also, further details on various other topics relating to this report can be found on our website at: [http://www.isdscotland.org/data_quality_assurance](http://www.isdscotland.org/data_quality_assurance)

10) Currently certain non-operative procedures (scans, intravenous infusions, injections, blood transfusions) must be recorded on SMR01 if they are mentioned in the Discharge Summary. ISD must assess SMR01 clinical data according to this rule. However, known inconsistencies in the recording of such procedures make it useful to remove them from the analysis of assessment data. Unless otherwise stated, all accuracy rates for operations/procedures are calculated with these non-operative procedures excluded. Non-operative procedures comprise 27% of the recorded Main Operations in the sample.
Executive summary

1) This report covers the findings of the DQA project assessment of SMR01 and Associated Data which covers 5430 SMR01 records (1.75% sample of 3 months’ data) across 38 NHS acute hospitals for inpatient and day case discharges during time period 2004 to 2006. The report presents accuracy rates for clinical coding and some non-clinical data items. It also makes comparisons between the current findings and previous DQA assessments, in particular with the assessment published in 2004, which covered discharges between 2000 and 2002.

2) The overall accuracy of Main Condition coding was 88%. This is similar to the results from four previous SMR01 quality assurance assessments (QAs) going back to 1992 (see page 6). It is slightly lower than the 90% minimum target level recommended by the Data Quality Issues Group.

3) The accuracy of Main Operation coding at 3-digit level has decreased by 2%, from 95% to 93%. This slight decrease may be seen in the context of results from SMR01 QAs on page 7. It exceeds the 90% minimum target level recommended by the Data Quality Issues Group.

4) 42% (16 hospitals) achieved or exceeded the 90% minimum target level for Main Condition coding. Three of these hospitals attained 95% accuracy and higher – Glasgow Victoria Infirmary, Edinburgh Royal Infirmary and Caithness General Hospital.

5) 89% (34 hospitals) achieved or exceeded the 90% minimum target level for Main Operation. 16 of these hospitals achieved 95% and higher, with Gilbert Bain Hospital in Shetland achieving 100% accuracy.

6) The accuracy rate for diagnoses coded in Other Conditions was 72%. Only two hospitals achieved the 90% minimum target level with Victoria Infirmary Glasgow at 90% and Dr Gray’s Hospital in Elgin at 91%. Most of the major errors involve under-recording of diagnoses rather than incorrect coding of diagnoses.

7) The accuracy of Main Condition coding is 88% in both inpatient and day case SMR01 episodes. The accuracy rate for Main Operation coding is 92% for in-patient episodes and 95% for day cases.

8) A new analysis of Main Condition and Main Operation coding for a number of defined groups of disease codes (eg coronary heart disease) and operation codes (eg upper and lower gastrointestinal endoscopy) is included in this report. This is intended to reflect the ‘fitness-for-purpose’ of the data for some analyses in these specific areas. For example, the group of coronary heart disease codes used by the Coronary Heart Disease Program was recorded with 94% accuracy but with 99% completeness (see page 19).

9) Not all coders have equal, full access to clinical information regarding the episodes they are coding. For the 17 hospitals where the coders do not have access to the full medical record, ISD found that, 44% of the major errors in Main Condition, 37% of major errors in Main Operation, and 60% of major errors in Other Conditions, occurred in cases where information allowing correct coding was not available to the coders in the documents to which they had access.

10) Clinical coding could be made easier if clinical staff in some hospitals were more aware of SMR01 recording rules and guidelines. Improved discharge summaries could also help the coding staff and improve national data quality. ISD produces a leaflet about the doctors’ role in coding and this can be sent out on request www.isdscotland.org/isd/5103.html.

11) There is a statistically significant difference in the accuracy of coding Other Conditions between coders who have access to the full medical record and those who only have access to the discharge summary. This however is still a fairly minor difference.

12) The data suggest that if the discharge summary were available to all clinical coders, and if full use were made of it, then across Scotland coding accuracy could improve from 88% to 95% for Main Condition, from 72% to 81% for Other Conditions and from 93% to 96% for Main Operation.
13) Accuracy of Consultant/HCP responsible for care is calculated at 91%. When we compare with the previous project and recalculate accuracy on the same basis, there is a drop of 3%. This has an impact on clinical governance as this data is essential to the processes of feedback from the national database to consultants, e.g., via eSCRIPS and the Scottish Arthroplasty Project.

14) Waiting List Date is completely accurate for 76% of the records, an improvement of 3% since the last assessment in 2000-2002, when recalculated on the same basis. However, 87% of all the dates were within seven days of the correct date (see page 26).

15) In addition to the SMR01 data items, strands of work were included in this QA from other ISD programmes, on the recording of ethnic group, on quantifying clinical coding resources and on the use of ICD10 code F19 (mental and behavioural disorders due to multiple drug use and use of other psychoactive substances) in an SMR01 context. The Substance Misuse Team at ISD know that in one third of SMR01s where drug misuse is recorded, the particular substances involved are not specified in the coding. ISD’s assessment suggested that the non-specific F19 code could have been replaced by more specific drug misuse codes in 82% of such records.

16) Only five of the 38 hospitals assessed routinely recorded the patient’s ethnic group at the point of admission. One of these hospitals was not using best practice. Staff should be made aware that patients should be asked to self-classify their ethnicity using the current 2001 Scottish Census categories available in the NHS Scotland Data Dictionary.

17) This is the first time that national figures on the clinical coding workforce involved in SMR01 coding across Scotland broken down by NHS Board area have been made available (see pages 29-30).

18) Key recommendations:

- Clinical staff should be aware of recording rules and guidelines for clinical coding so that they are in a better position to provide the appropriate information to coders.
- Better discharge summary and better extraction of information could improve accuracy.
- The Waiting List Date should be recorded as the date the decision is made to place a patient on the waiting list.
- ISD should be notified of locum Consultants so they can be added to the national Consultant reference file in a timely fashion.

Further recommendations can be viewed on page 31 of this report.
Conclusions

1) This report shows that very little change has been observed in the accuracy in SMR01 of both Main Condition and Main Operation over the past fifteen years. The accuracy rate has remained fairly static at around 88% for Main Condition and between 91% and 95% for Main Operation. Within this project, we found that if the information on the discharge summary had been available to the clinical coders in a timely fashion, and had been extracted correctly by them, the errors could have been reduced by 57% for Main Condition and 41% for Main Operation.

If clinical staff improved the information they provide to the clinical coders via the discharge summary and if clinical coders improved on the extraction of the information provided by the clinicians, the accuracy of both the Main Condition and Main Operation would be well above the recommended 90% minimum target.

2) In common with previous similar DQA studies, there is a marked variation in recording accuracy across hospitals.

3) The new analysis of Main Condition and Main Operation coding was introduced for a number of defined groups of disease codes (eg coronary heart disease) and operation codes (eg upper and lower gastrointestinal endoscopy), see pages 16 to 24. For each of the groups of codes examined the group accuracy rate was higher than the national average accuracy rate quoted above. For example, when recorded as Main Condition the group of codes describing coronary heart disease (page 19) has 94% accuracy (positive predictive value), 99% completeness and 93% sensitivity.

4) There is continuing under-recording of co-morbidities in Other Conditions. Information to enable correct coding for a third of Other Conditions omitted or miscoded was contained in the discharge summary. ISD are implementing new guidelines on the recording of Other Conditions in October 2007.

5) Recommendations are made both within the individual hospital reports and this report. ISD hope that these recommendations are acted upon by the hospital staff who can influence the changes required to enable the clinical coding staff to receive the best possible information in a timely manner. The Clinical Coding Tutors at ISD each receive copies of the hospital reports for their areas and are available to discuss any training aspects both for clinical coders and for clinical staff so that optimum results can be achieved. ISD’s Clinical Coding Review Group chaired by a Consultant in Public Health Medicine and consisting of other coding experts meets regularly at ISD to discuss coding issues (including those raised during this project) and to maintain a consistent approach to clinical coding across the country.

6) There has been a deliberate effort made to make this project more clinically focussed. In order to further engage with all staff involved in the clinical coding process, the DQA team have offered NHS Boards the opportunity to host a presentation of findings. It is our hope that clinicians will also be able to attend the presentations and where this is not possible, the DQA team have developed their website with links throughout this report so that clinical staff and others can also access the findings.

7) An area of some concern was that of the recording of ethnicity. Only five hospitals out of the 38 acute hospitals assessed recorded this information at the point of admission, three other hospitals thought it was sometimes recorded albeit not at the point of admission. In order to meet the requirements of the Race Relation Act 2000 and Fair for All policy initiatives and the Scottish Health Council target, this needs to improve.

8) Most of the data in this study was for the period prior to the implementation of the timeliness targets. As such, it is not thought that these targets themselves will have made any impact. However, NHS Boards will be aware of the need to balance the need for timely data along with highly accurate data.
Clinical coding issues at Scotland level

Clinical coding accuracy - DQA data from 1992 to 2006

The figures come from the current and previous SMR01 DQA projects. The 1996-97 and 2000-02 national SMR01 QA reports are available on ISD’s DQA web pages at www.isdscotland.org/isd/2700.htm.

1) The main changes in SMR01 recording just prior to and during the 14 year period covered in the charts are

- from April 1990, introduction of OPCS4.2
- from April 1996, introduction of COPPISH (Core Patient Profile Information in Scottish Hospitals) and move from ICD9 to ICD10.

Bars on the columns show 95% confidence intervals. When appropriate, all charts in this report show 95% confidence intervals (see page 10, point 6, for a fuller description).

2) In the current project, if the ISD assessors were unable to assess the Main Condition or Main Operation because of the lack of clinical information, the record was excluded from accuracy calculations for the data item in question. (In previous assessments the Main Condition or Main Operation had been presumed correct unless evidenced otherwise). In the above charts the current accuracy rates have been recalculated on the old basis. This recalculation had minimal effects on the accuracy rates - the accuracy of Main Condition increased from 87.8% to 87.9%, of Main Operation including non-operative procedures from 90.4% to 90.6%, and excluding non-operative procedures 93.2% with no change.

3) In this assessment, for each hospital ISD took a 1.75% random sample of the most recent 3-month block of data where SMR01 submissions to the national database had reached 90% of those expected. A minimum sample size of 75 records was used for smaller hospitals. Samples were stratified by specialty.

National Main Condition and Main Operation accuracy rates have been fairly steady over the course of these five DQA projects.
Main Operation figures before 2000-2002 include the non-operative procedures. For comparison these procedures are included in the figures for 2000-02 and the current QA.

National Main Condition and Main Operation accuracy rates have been fairly steady over the course of these five DQA projects.

4) The 1992, 1994 and 1996-97 Main Operation accuracy rates have been recalculated on the same basis as 2000-02 where omitted Main Operations were included as errors and credit was given in the accuracy rates for coders having correctly recorded no operation.

The 2000-02 Main Operation accuracy rate excludes the non-operative procedures X29, X33, X35, and X55.

The current Main Operation accuracy rate excludes the non-operative procedures X29 to X38 and X55.

OPCS4 codes for excluded ‘non-operative procedures’

- X29 Continuous infusion of therapeutic substance
- X30 Injections of therapeutic substance
- X31 Injections of radiopaque material
- X32 Exchange blood transfusion
- X33 Other blood transfusion
- X34 Other intravenous transfusion
- X35 Other intravenous injection
- X36 Blood withdrawal
- X37 Intramuscular injection
- X38 Subcutaneous injection
- X55 Other operations on unspecified organ

(this code was used for scans and some other imaging procedures in OPCS4.2)
Clinical coding accuracy – data at Scotland level

Clinical coding accuracy for conditions, operations & procedures

All SMR01s must have a Main Condition. The accuracy rates for Other Conditions and for Main and Other Operations measure both accuracy and completeness i.e. errors here can include ‘missing’ codes, where DQA have found information in the medical record that was not recorded in the national file.

the recommended minimum target accuracy rate for 3-digit level clinical coding is 90%

1) The 3-digit level accuracy rate for Main Condition is 88%. This is unchanged since the last DQA project (2000-02).
2) The 3-digit level accuracy rate for Other Conditions is 72%. This is 2% lower than that reported in the last project (2000-02).
3) The 3-digit level accuracy rate for Main Operation is 93%. This is 2% lower than that reported in the last project (2000-02).
4) The 3-digit level accuracy rate for Other Operations is 95%.
5) 3-digit level accuracy rates give the proportion of codes free from major errors.
6) 4-digit level accuracy rates give the proportion of codes free from both major and minor errors. They cannot be higher than 3-digit level accuracy rates.

The 4-digit level accuracy rates are:
- Main Condition 81%
- Other Conditions 70%
- Main Operation 84%
- Other Operations 93%
Clinical coding accuracy – inpatients and day cases

The recommended minimum target accuracy rate for 3-digit level clinical coding is 90%.

1) The 3-digit level accuracy rate for Main Condition is 88% for both day case and inpatient SMR01s.

2) The assessed sample of SMR01s comprised 32% day case and 68% inpatient episodes.

3) The 3-digit level accuracy rates for Other Conditions are 71% for day case and 72% for inpatient SMR01s. These rates are well below the recommended minimum target.

4) Main Operations for day cases have a higher accuracy rate than inpatients by 3%.

5) Other Operations for day cases have a higher accuracy rate than inpatients by 4%.

6) It is perhaps not surprising that the accuracy rate for operation coding for day cases is higher than that for in-patients for both Main and Other Operations due to the precise nature of a limited range of operations/procedures to be carried out in a day case setting.
Main Condition accuracy by hospital

- The recommended minimum target accuracy rate for 3-digit level clinical coding is 90%.

**Large General Hospitals**

1. Scotland accuracy rate for Main Condition is 88% which is just below the recommended minimum target of 90%.

2. The charts on this page show the Main Condition accuracy rate by hospital grouped by hospital size to allow peer comparison.

3. Main Condition 3-digit level accuracy ranges from 70% - 98% across the hospitals in the sample.

4. 16 hospitals in total (42%) achieved the recommended minimum target of 90% or over with three hospitals achieving 95% or over.

5. Not all coders have equal, full access to clinical information regarding the episodes they are coding. In the 17 hospitals where the coders did not code from the full medical record, 44% of Main Condition major errors occurred where the coders had not received the relevant information. If this information had been available to and correctly utilised by the coders, Main Condition accuracy would have increased from 88% to 93%, an improvement of 5%.

6. The charts include 95% confidence intervals (CIs). A CI indicates how reliable the coding accuracy rate is as an estimate of the true coding accuracy for the hospital. If 20 similar samples were taken, the accuracy rate would lie within the confidence interval 19 times and outside it once. For example, Main Condition accuracy would be expected to lie between 90.7% and 98.5% for Victoria Infirmary 19 times out of 20.

**Teaching Hospitals**

**Small General Hospitals**

**Children’s Hospitals**

see p33 for key to abbreviations
Main Operation accuracy by hospital

**the recommended minimum target** accuracy rate for 3-digit level clinical coding is 90%.

1) **Accuracy rate for Scotland for Main Operation as a whole is 93%, which is above the minimum recommended target of 90%.

2) The charts on this page show the Main Operation accuracy rate by hospital grouped by hospital size to allow peer comparison.

3) Although the accuracy rate for Scotland is 2% lower than in the 2000-02 project, all except four of the hospitals achieved the **recommended minimum target** of 90% with 16 hospitals achieving 95% and over. Gilbert Bain Hospital in Shetland achieved 100%.

4) Not all coders have equal, full access to clinical information regarding the episodes they are coding. In the 17 hospitals where the coders did not code from the full medical record, 37% of Main Operation major errors occurred in cases where the coders had not received the relevant information. If this information had been available to and fully utilized by the coders, Main Operation accuracy would have increased from 93% to 96%, an improvement of 3%.

see p33 for key to abbreviations
3) During this project the main standard for recording co-morbidities has been that published in Coding Guidelines 3, June 1999 (www.isdscotland.org/isd/4629.htm). ISD assessed the sampled records according to this standard.

4) The majority of recording errors found in Other Conditions involved under-recording. The chart above is not exhaustive. It shows some of the groups of conditions most frequently encountered (and under-recorded) as co-morbidities.

ICD10 code groups:
- Malignant neoplasms: all C codes
- Diabetes: E10 – E14
- Mental and behavioural disorders: all F codes
- Diseases of the nervous system: all G codes
- Hypertensive diseases: I10 – I15
- Coronary heart disease: I20 – I25
- Non coronary heart disease: I05 – I09, I26 – I28, I30 – I52
- Cerebrovascular disease: I60 - I69
- Chronic lower respiratory diseases: J40 – J47
- Diseases of the digestive system: all K codes
- Symptoms, signs & abnormal findings: all R codes
- Injury and poisoning: all S and T codes
5) The 1999 guideline states that common chronic conditions “in general….must be recorded on SMR01” and lists as examples diabetes, ischaemic heart disease, COPD and asthma. Despite this, these conditions (including the named examples) are heavily under-recorded as co-morbidities. For example the chart shows that, overall, chronic lower respiratory diseases (including chronic obstructive pulmonary disease (COPD) and asthma) are under-recorded as co-morbidities by 48%, and diabetes is under-recorded by 44%.

6) ISD’s previous SMR01 QA project ([www.isdscotland.org/isd/2700.html](http://www.isdscotland.org/isd/2700.html)) reported similar levels of under-recording.

7) ISD are aware that the coding of co-morbidities can present coders with a number of problems, even assuming that the information available to them is adequate.

8) ISD plan to release a new standard – a Coding Guideline – for implementation on 01 October 2007. This is an expansion and clarification of the previous standard, intended to make the task of selecting relevant co-morbidities easier.

9) Not all coders have equal, full access to clinical information regarding the episodes they are coding. In the 17 hospitals where the coders did not code from the full medical record, 60% of Other Conditions major errors (both under-recording and miscoding) occurred in cases where the coders had not received the relevant information. If this information had been available to and fully utilised by the coders, Other Conditions accuracy would have increased from 71% to 84%, an improvement of 13%.
Clinical coding accuracy - by Specialty

**Main condition - 3 digit accuracy by grouped specialties**

<table>
<thead>
<tr>
<th>Specialty Grouping</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental specialties</td>
<td>76</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>223</td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>426</td>
</tr>
<tr>
<td>Medical/clinical oncology &amp; haematology</td>
<td>396</td>
</tr>
<tr>
<td>Paediatric specialties</td>
<td>304</td>
</tr>
<tr>
<td>General &amp; vascular surgery</td>
<td>1054</td>
</tr>
<tr>
<td>Other surgical specialties</td>
<td>793</td>
</tr>
<tr>
<td><strong>All specialties</strong></td>
<td>5430</td>
</tr>
<tr>
<td>Medical specialties</td>
<td>1971</td>
</tr>
<tr>
<td><strong>Cardiac &amp; thoracic surgery</strong></td>
<td>52</td>
</tr>
</tbody>
</table>

1) In the charts, some specialties with higher numbers of cases are presented separately, while others are grouped.

2) The random samples extracted from the national database for each hospital were stratified by specialty.

3) Overall 27 specialties were represented by fewer than 100 cases each.

4) The number of cases in each grouping is given in brackets after the name.

5) Further information on coding accuracy in individual specialties will be shown on the DQA website.

**Main operation - 3 digit accuracy by grouped specialties**

<table>
<thead>
<tr>
<th>Specialty Grouping</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatric specialties</td>
<td>261</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>200</td>
</tr>
<tr>
<td>Medical specialties</td>
<td>1492</td>
</tr>
<tr>
<td>General &amp; vascular surgery</td>
<td>920</td>
</tr>
<tr>
<td><strong>All specialties</strong></td>
<td>4355</td>
</tr>
<tr>
<td>Other surgical specialties</td>
<td>746</td>
</tr>
<tr>
<td>Dental specialties</td>
<td>76</td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>407</td>
</tr>
<tr>
<td><strong>Cardiac &amp; thoracic surgery</strong></td>
<td>50</td>
</tr>
<tr>
<td>Medical/clinical oncology &amp; haematology</td>
<td>102</td>
</tr>
</tbody>
</table>

**Specialty groupings**

- Medical specialties
  - A1 General medicine, A2 Cardiology, A9 Gastroenterology, AB Geriatric medicine, AG Renal medicine, AH Neurology, AQ Respiratory medicine

- Paediatric specialties
  - AF Paediatrics, CA Paediatric surgery, D8 Paediatric dentistry

- Medical/clinical oncology & haematology
  - AD Medical oncology, H2 Clinical oncology, J4 Haematology

- General & vascular surgery
  - C1 General surgery, C11 General surgery (excl. vascular), C12 Vascular surgery

- Other surgical specialties
  - C2 Accident & emergency, C3 Anaesthetics, C5 Ear Nose & Throat, C6 Neurosurgery, C7 Ophthalmology, C9 Plastic surgery, CB Urology

- Cardiac & thoracic surgery
  - C4 Cardiothoracic surgery, C41 Cardiac surgery, C42 Thoracic surgery

- Dental specialties
  - D1 Community dental practice, D3 Oral surgery, D4 Oral medicine

- Analysed as single specialty
  - C8 Orthopaedics; F2 Gynaecology
1) The discharge summary and the full medical record – the case notes – are the sources most frequently used. 60% of the SMR01s in this assessment were coded from the full medical record, 23% from the discharge summary.

2) Before and during each hospital assessment ISD gathered specific information on the source documents used by the coders. The source documents used vary both between and, often, within hospitals – for example, between specialties or directorates.

3) This within-hospital variation means that it is difficult to make a meaningful, hospital-level comparison of the effects of differing documentation on coding accuracy. A comparison can be made using records aggregated across hospitals, grouped according to the documentation used to code them.

4) The figures suggest that there is little advantage in using the full medical record to code Main Condition. It is reasonable to expect the discharge summary to be a good source of information regarding Main Condition.

5) There is a statistically significant difference¹ in the accuracy of coding Other Conditions between full medical record users and discharge summary users. The difference is 2.9% with 95% confidence levels 1.1% to 4.7%. The accuracy rate for users of the full medical record as seen above is higher than for users of the discharge summary. This suggests that the accuracy of Other Conditions may be slightly improved by the use of the full medical record. There is no statistically significant difference for Main Condition, Main Operation or Other Operations.

6) The information in the discharge summary has, potentially, great importance for coders, even when they also have access to other clinical information.

7) These data suggest that if the discharge summary was available to all clinical coders, and if full use was made of it, then across Scotland coding accuracy would improve

- Main Condition accuracy from 88% to 95% (95% CI 0.9%, 0.6% respectively), an improvement of 7%
- Other Conditions accuracy from 72% to 81% (95% CI 0.7%, 0.6% respectively), an improvement of 9%
- Main Operation accuracy from 93% to 96% (95% CI 0.7%, 0.6% respectively), an improvement of 3%

8) ISD realise that the information content of discharge summaries can vary greatly. Sometimes this information is insufficient to allow the clinical coder to record the patient's conditions accurately according to national coding rules. Clinical staff who are aware of rules and guidelines for clinical coding are better placed to provide information to coders. To assist this awareness ISD produce a leaflet entitled 'National health information - the doctor’s role', which is available on request from ISD.

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¹ As confirmed by performing a hypothesis test to compare two unpaired or independent proportions (at 95% confidence levels). See Altman, Practical Statistics for Medical Research, chapter 10, section 10.3.
Accuracy of recording within defined groups of diagnosis and operation/procedure codes

1) The following seven tables show accuracy and completeness of recording for seven groups of clinical codes - three groups of diagnoses recorded as Main Condition and four groups of procedures recorded as Main Operation. ‘Correct coding’ has a broader meaning here than elsewhere in this report. A group code is classed as being ‘correctly recorded’ when assessment shows that ANY code from that group should be recorded – in other words the recorded code ‘hit the group target’.

2) The areas of the tables are colour-coded:

- **Correct** - episodes where a group code was correctly recorded in Main Condition or Main Operation

- **Over-recorded** - episodes where a group code was recorded in Main Condition or Main Operation and a non-group code should have been recorded instead

- **Under-recorded** - episodes where a non-group code was recorded in Main Condition or Main Operation and a group code should have been recorded instead

3) In these tables:

   - **Accuracy**\(^2\) means the percentage of cases where the Main Condition or Main Operation code **recorded on SMR01** hit the group target

   \[
   \frac{\text{correct}}{\text{correct} + \text{over-recorded}} \times 100
   \]

   - **Sensitivity** is the number of times the group was correctly recorded as a percentage of the true number of times it should have been recorded

   \[
   \frac{\text{correct}}{\text{correct} + \text{under-recorded}} \times 100
   \]

   - **Completeness** is the net balance of recorded, under-recorded and over-recorded group codes as a proportion of the true number of group codes required as Main Condition or Main Operation in the sample

   \[
   \frac{\text{correct} + \text{over-recorded}}{\text{correct} + \text{under-recorded}} \times 100
   \]

Group completeness figures are useful when counting the numbers of cases falling into the group. e.g. they may be of use when producing summary statistics for a group at national level

Group accuracy figures are more relevant when selecting cases for more detailed analysis e.g. when using record linkage for further analysis. Group sensitivity indicates how the number of selected cases compares with the true number of cases

4) An interpretation of the tables is shown on page 17

5) ISD have a number of similar analyses concerning other groups of codes available on the DQA web pages.

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\(^2\) Accuracy, for the statistically minded, is the positive predictive value (or PPV)
Main condition

Cerebrovascular disease as Main Condition – accuracy and completeness

<table>
<thead>
<tr>
<th>Main Condition - code which should have been recorded</th>
<th>Non CVD</th>
<th>SMR Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebrovascular disease (CVD)</td>
<td>G81</td>
<td>I72</td>
</tr>
<tr>
<td>G45</td>
<td></td>
<td>R55</td>
</tr>
<tr>
<td>I60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I67</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non CVD</th>
<th>G81</th>
<th>I72</th>
<th>R55</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Legend

- **Group correctly coded**
- **Group over-recorded**
- **Group under-recorded**
- **Group recorded on SMR01**

See overleaf for description of ICD10 codes.

1) **Interpreting the table** – refer to definitions on page 16.

The column immediately to the left of the green areas lists the ICD10 codes that had been recorded as Main Condition in the SMR01 records. The third row, commencing G45, lists the codes that ISD found should have been recorded.

The table contains 97 records which had a code from the CVD group (G45, I60 – I69) recorded as SMR01 Main Condition.

ISD found that 92 of the 97 recorded CVD codes hit the group target, and so we can say that the recorded CVD group codes were (92/97*100) = 94.8% accurate. In five (5/97*100) = 5.2% of the 97 cases ISD found that CVD should not have been recorded as the Main Condition – i.e. CVD was over-recorded.

We saw above that CVD was over-recorded in five cases. Therefore it is possible to calculate a net balance between recorded (correct + over-recorded) and true (correct + under-recorded) codes and express this as ‘percentage completeness’. The CVD group is recorded in Main Condition with (92+5/92+9)*100 = 96.0% completeness – i.e on balance CVD is 4% under-recorded.

2) The group was recorded with 94.8% accuracy (95% CI = 4.4%), 91.1% sensitivity and 96.0% completeness.
3) This group of ICD10 codes (G45 and I60 - I69) is the ‘cerebrovascular disease’ group used by ISD’s Coronary Heart Disease and Stroke Programme.

4) Coding rules preclude I69 from appearing in Main Condition.

**Description of ICD10 codes**

<table>
<thead>
<tr>
<th>CVD codes</th>
<th>Non-CVD codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>G45</td>
<td>G81 Hemiplegia</td>
</tr>
<tr>
<td>I60</td>
<td>I72 Other aneurysm</td>
</tr>
<tr>
<td>I61</td>
<td>I51 Complications and ill-defined descriptions of heart disease</td>
</tr>
<tr>
<td>I62</td>
<td>M62 Other disorders of muscle</td>
</tr>
<tr>
<td>I63</td>
<td>R07 Pain in chest and throat</td>
</tr>
<tr>
<td>I64</td>
<td>R55 Syncope and collapse</td>
</tr>
<tr>
<td>I65</td>
<td>R93 Abnormal finding on diagnostic imaging of other body structures</td>
</tr>
<tr>
<td>I66</td>
<td>S72 Fracture of femur</td>
</tr>
<tr>
<td>I67</td>
<td>T81 Complications of procedures, nec</td>
</tr>
<tr>
<td></td>
<td>Z03 Medical observation and evaluation for suspected diseases and complications</td>
</tr>
</tbody>
</table>
## Main Condition - code which should have been recorded

<table>
<thead>
<tr>
<th>Main Condition as recorded on SMR01</th>
<th>CHD codes</th>
<th>Non CHD codes</th>
<th>SMR Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I20</td>
<td>I21</td>
<td>I22</td>
</tr>
<tr>
<td>CHD</td>
<td>49</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>I21</td>
<td>1</td>
<td>74</td>
<td>3</td>
</tr>
<tr>
<td>I22</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>I24</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>I25</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>QA total</td>
<td>50</td>
<td>78</td>
<td>9</td>
</tr>
</tbody>
</table>

### Non CHD codes

<table>
<thead>
<tr>
<th>Non CHD chapter I codes</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>chapter J codes</td>
<td>2</td>
</tr>
<tr>
<td>chapter K codes</td>
<td>1</td>
</tr>
<tr>
<td>chapter L codes</td>
<td>1</td>
</tr>
</tbody>
</table>

### Legend

- **Group correctly coded**
- **Group over-recorded**
- **Group under-recorded**

**Number of required codes**: 242

---

1) The group was recorded with 94.2% accuracy (95% CI = 3.0%), 93.4% sensitivity and 99.2% completeness.

2) This group of ICD10 codes (I20 – I25) is the ‘coronary heart disease’ group used by ISD’s Coronary Heart Disease and Stroke Programme.

### Interpretation of table – see page 17

---

### Description of ICD10 codes

<table>
<thead>
<tr>
<th>CHD codes</th>
<th>Non-CHD codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I20</td>
<td>Angina pectoris</td>
</tr>
<tr>
<td>I21 / I22</td>
<td>Acute myocardial infarction / Subsequent myocardial infarction</td>
</tr>
<tr>
<td>I23</td>
<td>Certain current complication follow acute myocardial infarct</td>
</tr>
<tr>
<td>I24</td>
<td>Other acute ischaemic heart diseases</td>
</tr>
<tr>
<td>I25</td>
<td>Chronic ischaemic heart disease</td>
</tr>
<tr>
<td>C34</td>
<td>Malignant neoplasm bronchus and lung</td>
</tr>
<tr>
<td>I codes</td>
<td>Non-CHD Diseases of circulatory system</td>
</tr>
<tr>
<td>J18</td>
<td>Pneumonia, organism unspecified</td>
</tr>
<tr>
<td>M79</td>
<td>Other soft tissue disorders</td>
</tr>
<tr>
<td>R codes</td>
<td>Symptoms and signs</td>
</tr>
<tr>
<td>S20</td>
<td>Superficial injury thorax</td>
</tr>
<tr>
<td>Z53</td>
<td>Procedure cancelled</td>
</tr>
</tbody>
</table>
1) The group was recorded with 98.7% accuracy (95% CI = 1.8%), 95.5% sensitivity and 96.8% completeness.

2) The group comprises all ICD10 fracture codes. Not all of these were recorded in Main Condition in the assessed sample.

3) Fracture codes not recorded in Main Condition were those found in ICD10 categories T02, T08, T10, T12 and T14. Coders are trained to avoid these codes where possible because they are much less site specific than the ‘S codes’.

Interpretation of table – see page 17

Description of ICD10 codes

Fractures

- S02 Skull and facial bones
- S12 Neck
- S22 Rib(s), sternum and thoracic spine
- S32 Lumbar spine and pelvis
- S42 Shoulder and upper arm
- S52 Forearm
- S62 Wrist and hand
- S72 Femur
- S82 Lower leg, including ankle
- S92 Foot, except ankle

Non fracture codes

- I67 Other cerebrovascular diseases
- J18 Pneumonia, organism unspecified
- J69 Pneumonitis due to solids and liquids
- M25 Other joint disorders, not elsewhere classified
- M79 Other soft tissue disorders, not elsewhere classified
- S60 Superficial injury of wrist and hand
- S81 Open wound of lower leg
- S97 Crushing injury of ankle and foot
- Z09 Follow-up examination after treatment for conditions other than malignant neoplasms
- Z47 Other orthopaedic follow-up care
Main operation

Coronary angioplasty, angiography and other cardiac catheterisation as Main Operation – accuracy and completeness

<table>
<thead>
<tr>
<th>Main Operation - code which should have been recorded</th>
<th>Cardiac catheterisation</th>
<th>Other procedures</th>
<th>SMR Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>K49</td>
<td>K50</td>
<td>K57</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac catheterisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QA total</td>
<td>30</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Operation omitted on SMR</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QA under-recorded</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Number of required codes</td>
<td>93</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legend</th>
<th>Group correctly coded</th>
<th>Group over-recorded</th>
<th>Group under-recorded</th>
<th>Group recorded on SMR01</th>
</tr>
</thead>
</table>

1) The group was recorded with 96.8% accuracy (95% CI = 3.6%), 97.8% sensitivity and 101.1% completeness.

2) A number of new codes for percutaneous coronary interventions have been added to OPCS4.3.

3) The group comprises procedures carried out in cardiology “cath labs”.

Interpretation of table – see page 17

Description of OPCS4.2 codes

<table>
<thead>
<tr>
<th>Cardiac catheterisation</th>
<th>Other procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>K49 Transluminal balloon angioplasty of coronary artery</td>
<td>X55 Other operations on unspecified organ *</td>
</tr>
<tr>
<td>K50 Other therapeutic transluminal operations on coronary artery</td>
<td></td>
</tr>
<tr>
<td>K51 Diagnostic transluminal operations on coronary artery</td>
<td></td>
</tr>
<tr>
<td>K57 Other therapeutic transluminal operations on heart</td>
<td></td>
</tr>
<tr>
<td>K58 Diagnostic transluminal operation on heart</td>
<td></td>
</tr>
<tr>
<td>K63 Contrast radiology of heart</td>
<td></td>
</tr>
<tr>
<td>K65 Catheterisation of heart</td>
<td></td>
</tr>
</tbody>
</table>

* this code was used for scans and some other imaging procedures in OPCS4.2
Fracture manipulation, reduction and fixation as Main Operation - accuracy and completeness

1) The group was recorded with 98.6% accuracy (95% CI = 2.8%), 97.1% sensitivity and 98.6% completeness.

2) The group comprises procedures for the treatment of fractures - manipulation under anaesthetic, open/closed reduction and fixation.

Interpretation of table – see page 17

<table>
<thead>
<tr>
<th>Main Operation - code which should have been recorded</th>
<th>Other procedures</th>
<th>SMR Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fracture fixation &amp; manipulation</td>
<td>Other procedures</td>
<td></td>
</tr>
<tr>
<td>W19 (11)</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>W20 (13)</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>W21 (2)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>W22 (2)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>W23 (2)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W24 (9)</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>W25 (1)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>W26 (1)</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>QA total</td>
<td>11</td>
<td>68</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other procedures</th>
<th>SMR Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>X48 (1)</td>
<td></td>
</tr>
<tr>
<td>X55 (1)</td>
<td></td>
</tr>
</tbody>
</table>

Number of required codes: 70

Legend
- Group correctly coded
- Group over-recorded
- Group under-recorded
- Group recorded on SMR01

Description of OPCS4.2 codes

Fracture fixation and manipulation

- W19: Primary open reduction of fracture of bone and intramedullary fixation
- W20: Primary open reduction of fracture of bone and extramedullary fixation
- W21: Primary open reduction of intraarticular fracture of bone
- W22: Other primary open reduction of fracture of bone
- W23: Secondary open reduction of fracture of bone
- W24: Closed reduction of fracture of bone and internal fixation
- W25: Closed reduction of fracture of bone and external fixation
- W26: Other closed reduction of fracture of bone

Other procedures

- T12: Puncture of pleura
- X48: Immobilisation using plaster cast
- X55: Other operations on unspecified organ*

* this code was used for scans and some other imaging procedures in OPCS4.2
### Upper gastrointestinal endoscopy as Main Operation – accuracy and completeness

#### Main Operation - code which should have been recorded

<table>
<thead>
<tr>
<th>Main Operation as recorded on SMR01</th>
<th>Upper gastrointestinal endoscopies</th>
<th>Other procedures</th>
<th>SMR Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>G14</td>
<td>G17</td>
<td>G19</td>
<td>G43</td>
</tr>
<tr>
<td>Upper gastrointestinal endoscopies</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>QA total</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other procedures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G55</td>
<td>T87</td>
<td>X33</td>
<td>X55</td>
</tr>
<tr>
<td>Operation omitted on SMR</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QA under-recorded</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Legend

- **Group correctly coded**
- **Group over-recorded**
- **Group under-recorded**
- **Group recorded on SMR01**

#### Number of required codes

| Number of required codes | 253 |

#### Interpretation of table – see page 17

1) **The group was recorded with** 99.6% accuracy (95% CI = 0.8%), 93.7% sensitivity and 94.1% completeness

2) **OPCS4.2 Upper gastrointestinal endoscopy codes are** G14 – G19 and G43 – G45

### Description of OPCS4.2 codes

- **Upper gastrointestinal endoscopies**
  - G14: Fibreoptic endoscopic extirpation of lesion of oesophagus
  - G15: Other therapeutic fibreoptic endoscopic operations on oesophagus
  - G16: Diagnostic fibreoptic endoscopic examination of oesophagus
  - G17: Endoscopic extirpation of lesion of oesophagus using rigid oesophagoscope
  - G18: Other therapeutic endoscopic operations on oesophagus using rigid oesophagoscope
  - G19: Diagnostic endoscopic examination of oesophagus using rigid oesophagoscope
  - G43: Fibreoptic endoscopic extirpation of lesion of upper gastrointestinal tract
  - G44: Other fibreoptic therapeutic endoscopic operations on upper gastrointestinal tract
  - G45: Diagnostic fibreoptic endoscopic examination of upper gastrointestinal tract

- **Other procedures**
  - G55: Diagnostic endoscopic examination of duodenum
  - T87: Diagnostic endoscopic retrograde examination of bile duct and pancreatic duct
  - X33: Excision or biopsy of lymph node
  - X55: Other blood transfusion
  - Other operations on unspecified organ*

* this code was used for scans and some other imaging procedures in OPCS4.2
Colonoscopy and sigmoidoscopy as Main Operation - accuracy and completeness

1) The group was recorded with 96.4% accuracy (95% CI = 2.3%), 97.6% sensitivity and 101.2% completeness.

2) OPCS4.2 Colonoscopy and sigmoidoscopy codes are H20 – H28.

Interpretation of table – see page 17

Description of OPCS4.2 codes

<table>
<thead>
<tr>
<th>Colonoscopy and sigmoidoscopy</th>
<th>Other procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>H20  Endoscopic extirpation of lesion of colon</td>
<td>Other endoscopic lower bowel operations</td>
</tr>
<tr>
<td>H21  Other therapeutic endoscopic operations on colon</td>
<td>Non-endoscopic lower bowel operations</td>
</tr>
<tr>
<td>H22  Diagnostic endoscopic examination of colon</td>
<td>T24 Primary repair of umbilical hernia</td>
</tr>
<tr>
<td>H23  Endoscopic extirpation of lesion of lower bowel using fibroptic sigmoidoscope</td>
<td>X29 Continuous infusion of therapeutic substance</td>
</tr>
<tr>
<td>H24  Other therapeutic endoscopic operations on lower bowel using fibroptic sigmoidoscope</td>
<td>X33 Other blood transfusion</td>
</tr>
<tr>
<td>H25  Diagnostic endoscopic examination of lower bowel using fibroptic sigmoidoscope</td>
<td>X38 Subcutaneous injection</td>
</tr>
<tr>
<td>H26  Endoscopic extirpation of lesion of sigmoid colon using rigid sigmoidoscope</td>
<td></td>
</tr>
<tr>
<td>H27  Other therapeutic endoscopic operations on sigmoid colon using rigid sigmoidoscope</td>
<td></td>
</tr>
<tr>
<td>H28  Diagnostic endoscopic examination of sigmoid colon using rigid sigmoidoscope</td>
<td></td>
</tr>
</tbody>
</table>
Recording of substance misuse using non-specific F19 code

Recording of mental and behavioural disorders due to psychoactive substance use:
more specific ICD10 codes (F10 - F18) which should have been used in cases where the non-specific F19 code is recorded

1) We know that at present approximately one third of SMR01 forms recording drug misuse using ICD10 codes F10 - F19 are coded to the non-specific F19 code denoting “mental and behavioural disorders due to multiple drug use and use of other psychoactive substances”. ISD’s Substance Misuse team asked DQA to examine the use of F19, in particular to uncover any specific substance misuse information ‘masked’ behind it.

2) ISD assessed 403* SMR01s from 16 hospitals across Scotland. The non-specific F19 code was coded in each record. The case notes were examined to see if they contained information, relevant to the episode, which identified the substance(s) involved, allowing the use of more specific F10 – F18 codes.

3) For each substance category the chart shows the percentage of the sample where ISD found information identifying the category, but where the corresponding specific F10 – F18 code had not been recorded. The bracketed figure shown beside each category title shows the number of cases. For example there were 240 cases (60% of the sample) where opioid abuse was recorded in the case note information, but was not coded in the SMR01. More than one code from F10 – F19 can be recorded in an SMR01 episode, and so a single record can be counted in more than one category.

4) The specific coding of alcohol and substance misuse is complicated because ICD10 (vol 1 p 324) instructs coders to use F19 in certain circumstances involving multiple substances.

5) In 10% of cases ISD could find no substance-specific information, merely a statement such as “drug abuse”, which could only be recorded by F19. In a further 8%, although ISD found specific information allowing the use of one of the more specific F10 – F18 codes, the non-specific F19 was also found to be correctly recorded – for example, in cases where the clinician stated that the patient was an intravenous drug abuser (IVDA) (leading to F19) and ISD also found statements describing alcohol abuse (allowing the use of F10).

6) In August 2005 (after this data was sampled) ISD issued Coding Guidelines 16 August 2005 (www.isdscotland.org/isd/4629.html) to encourage coders to use specific F10 – F18 codes.

* The original sample comprised 100% of national SMR01s with discharge dates between 01/04/2004 – 31/03/2005 where F19 had been recorded. This totalled 842 records from 39 hospitals. Due to resource constraints ISD only assessed in the 16 hospitals where there were 10 or more cases in the sample. This totalled 760 records, or 90% of the original sample. ISD were only able to assess 403 (48% of original sample) of these records due to time constraints or due to unavailability of case notes.
Non-clinical coding issues at Scotland level

Waiting List Date accuracy

Large General Hospitals

See page 33 for key to abbreviations

1) It should be noted that the Waiting List Date in this report relates to SMR01 only and cannot be applied to other data sources used for measuring performance.

2) Waiting List Date complete accuracy is 76%, an improvement of 3% since the 2000-02 project. The accuracy rate increases to 87% when calculated to within seven days.

3) In some cases assessed a ‘dummy’ Waiting List Date (eg the 1st of the month of admission) was recorded, because the medical records clerk or coder who had entered the date on the PAS or HISS did not have access to the correct information. Correct Waiting List Date information should be supplied or made accessible to those responsible for recording this data.

4) Audit Scotland have produced information on waiting times and this can be viewed at: http://www.audit-scotland.gov.uk

5) ‘New ways’ of measuring waiting times will be introduced by the end of 2007 that will abolish the current system of ASCs and replace them with a system that takes into account CNAs, DNAs and periods of unavailability. Accurate recording of referral dates, date added to waiting list and other items used to measure waiting times will continue to be important.
Recording of Consultant/HCP Responsible for Care

Large General Hospitals

Accuracy of recording consultant/healthcare professional

1) The accuracy rate for Consultant/HCP Responsible for Care was 91%, 3% lower than in the 2000 – 2002 project.

2) This has an impact on clinical governance as the data is essential to the processes of feedback from the national database to consultants, eg via eSCRIPS and the Scottish Arthroplasty Project.

3) ISD should be notified of locum consultants so they can be added to the national consultant reference file in a timely fashion.

Teaching Hospitals

Small General Hospitals

Children’s Hospitals

See page 33 for key to abbreviations
Recording of Ethnic Group

1) The Race Relations Amendment Act 2000 (RRAA) and Fair For All (FFA) policy initiatives place a duty upon NHS organisations to promote racial equality and to develop strategies to reduce ethnic inequalities in health. Specifically NHS organisations have a duty to monitor the effects of health policies on the different ethnic groups.

2) Within ISD, the Equality & Diversity Information Programme is identifying & developing the data items to support the RRAA, FFA and wider diversity agenda. Ethnic Group is but one of these data items. As part of this work DQA investigated, during the pre-assessment process, whether ethnic group was recorded at each hospital.

3) Five of the hospitals assessed stated that they recorded the ethnic group of the patient during the admission process, although one of these hospitals did not follow best practice when collecting this data. Three other hospitals stated that ethnic group might sometimes be collected, although this would not necessarily be at the point of admission. The remaining 30 hospitals did not collect data on a patient’s ethnic group. Better discharge summary and better extraction of information could improve accuracy.

4) The patient’s ethnic group should be self-classified by the patient using the current 2001 Scottish Census categories available in the Data Dictionary at http://www.datadictionaryadmin.scot.nhs.uk

5) It is recommended that as part of routine evaluation and review of procedures each Hospital consider ethnic group as a mandatory data item to be captured, in keeping with the local Race Equality, Fair for All action plan and Scottish Health Council Assessment Target to improve ethnic group data capture within SMRs.

6) Further information about this Equality & Diversity Information Programme to support Ethnic Monitoring is available at http://www.isdscotland.org/equalityanddiversity
Clinical coding workforce – experience of coding staff

Years of Experience of SMR01 Coding Staff

1) The workforce data presented here is not a single snapshot. It was accumulated over the course of two years, and represents the coding staff at each hospital who would have worked on SMR01 submissions for the period of the assessment (all figures from hospitals in NHS Argyll and Clyde were prior to the abolition of the health board area on 1 April 2006).

2) The chart above shows the number of years experience the clinical coders in each NHS Board area possess. The experience is broken down into four categories i.e. less than 2 years, 2-5 years, 6-10 years and over 10 years.

3) Most of the sites have a mix of new and experienced clinical coders.

4) 13% of the clinical coding staff have some form of clinical coding qualification (including the national Accredited Clinical Coder (ACC) qualification, coding certificates from the Institute of Health Records Management (previously Association of Medical Records Officers) or are currently studying for the ACC.

5) Across Scotland there are 74 clinical coders (39%) with over 10 years coding experience.

6) In response to a questionnaire completed by hospital Medical Records Managers, it was identified that 22% of staff had only been trained in clinical coding ‘on the job’, 28% of staff were trained specifically by ISD’s Clinical Coding Tutors and a further 37% of staff had a combination of training including ‘on the job’ and by the Clinical Coding Tutors.

7) ISD intend to discuss additional findings with colleagues in the NHS Boards.

see p33 for key to abbreviations
1) The workforce data presented here is not a single snapshot. It was accumulated over the course of two years, and represents the coding staff at each hospital who would have worked on SMR01 submissions for the period of the assessment.

2) This is the first time that we have been able to see clear figures on the SMR01 clinical coding workforce across Scotland broken down by NHS Board areas.

3) The number of discharges (in 000s) for each NHS Board for the 3 month assessment period is given in brackets after the name rounded to the nearest thousand.

4) Full-time clinical coders range from 1 in Shetland to 31 staff in Greater Glasgow (including supervisors).

5) Some NHS Board areas have no part-time clinical coders but for those Boards which do, part-time coders range in number from 1 to 17 staff (including supervisors).

6) In some hospitals the coding staff above perform other duties in addition to SMR01 clinical coding.

7) The total WTE staff, coders and supervisors, across Scotland working on SMR01 (and possibly including other duties) is 165.4.

8) Some of the smaller NHS Board areas do not have clinical coding supervisors whereas the other Boards range from one to five supervisory staff.

9) Whole time equivalent clinical coders across Scotland range from 1.5 in smaller NHS Board areas to 42 in Greater Glasgow.

see p33 for key to abbreviations
Recommendations

1) The following recommendations were made to hospitals as part of the individual hospital reports. ISD acknowledge that some of these recommendations may have already been implemented.

2) A noticeable proportion of coding errors occurred in cases where appropriate information had not reached the coding staff. Clinical staff should be aware of recording rules and guidelines for clinical coding so that they are in a better position to provide the appropriate information to coders.

3) Full use should be made of the Discharge Summary when it is available to clinical coders. The use of only part of the document, such as a predefined header area with abbreviated clinical information, can lead to poor clinical coding accuracy, noticeably for Other Conditions. Better discharge summary and better extraction of information could improve accuracy.

4) All hospitals should consider ethnic group as a data capture item in keeping with the local Race Equality and Fair for All action plan. Staff should also bear in mind that patients should be asked to self-classify their ethnicity using the current 2001 Scottish Census categories available in the Data Dictionary (see page 24).

5) ISD should be notified of locum consultants so they can be added to the national consultant reference file in a timely fashion.

6) Waiting List Date should be recorded as the date a decision is made to place a patient on the waiting list. When recording Waiting List Date, ‘dummy dates’ should be not be used. Correct Waiting List Date information should be supplied or made accessible to the coders or clerks who are responsible for recording this data.

7) When adequate information is available, coders should always ensure that co-morbidities affecting the management of patients are coded.

The overall accuracy rate for Other Conditions was low (72%). The complete set of ISD’s regularly published Coding Guidelines should be available to all Clinical coding staff who should ensure that their ICD10 and OPCS4 books are updated with new and previously published guidelines.

8) ISD published guidance (Coding Guidelines 16, August 2005) encouraging the use of specific codes from F10-F18 when coding mental and behavioural disorders due to multiple identified psychoactive substances. This guidance should be followed. ISD recognise that coders may be prevented from using multiple, specific codes from this block because the individual substances are not identified in the clinical material being coded.

9) Coders should avoid using codes from ICD10 Chapter XVII ‘Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)’ when information is available in the case notes specifying these are manifestations of a named condition, thereby allowing coding of more specific diagnoses.

10) Hospitals should be willing to review working practices and communications to ensure a consistent flow of accurate information to the clinical coders. In particular, the use of incomplete diagnostic information from the admission stage should be avoided by the use of diagnoses on discharge, preferably recorded on a discharge summary.

11) To comply with the Data Protection Act (1998) hospital staff should ensure that all patient data is accurate and up-to-date at all times.

12) Extracts from local databases or ward lists, which are commonly used by coders to code episodes such as Oncology- and Haematology-related day cases, often do not appear to contain sufficient information to allow accurate coding of these episodes according to current coding standards. This needs to be addressed as such lists should convey accurate information on the diagnosis and treatment undergone by the patients listed.
Areas of good practice

NHS Ayrshire and Arran is to be commended on its active development of the clinical coding staff and also its improvement in standard accuracy rates for Other Conditions and Main Operation since the specifically commissioned assessment in 2005.

Coding staff at Victoria Infirmary in Glasgow are to be commended for recording the results of coding queries to the national Coding Advisory Service and local coding instructions from consultants in their ‘Decisions Book’ for future reference.

Special mentions

Dumfries and Galloway Royal Infirmary is to be commended in improving their accuracy of Main Condition by 15% at three digit level and 17% improvement at four digit level since the previous assessment published in 2004.

Dr Gray’s Hospital in Elgin is to be commended for the very noticeable improvement in the coding of both Main Condition and Other Conditions since the previous assessment published in 2004.

Three hospitals achieved 95% and over for coding of Main Condition—a special mention is therefore due for Glasgow Victoria Infirmary, Royal Infirmary Edinburgh and Caithness General Hospital.

Gilbert Bain Hospital in Shetland is to be commended for achieving 100% accuracy for coding of Main Operation. 16 other hospitals achieved 95% and over.
Hospital and Board abbreviations

Teaching Hospitals
RIE Royal Infirmary of Edinburgh
WGH Western General Hospital
ARI Aberdeen Royal Infirmary/Woodend General Hospital
WIG Western Infirmary, Gartnavel General & Beatson Oncology Centre
GRI Glasgow Royal Infirmary

Large General Hospitals
VI Victoria Infirmary
VHK Victoria Hospital, Kirkcaldy
DGRI Dumfries & Galloway Royal Infirmary
QMH Queen Margaret Hospital
PRI Perth Royal Infirmary
GJNH Golden Jubilee National Hospital
IRH Inverclyde Royal Hospital
RAH Royal Alexandra Hospital
FDRI Falkirk & District Royal Infirmary
SRI Stirling Royal Infirmary
SGH Southern General Hospital

Small General Hospitals
VoL Vale of Leven District General Hospital

Children's Hospitals
RACH Royal Aberdeen Children’s Hospital
RHSC Royal Hospital for Sick Children, Edinburgh

Board abbreviations
A&C Argyll & Clyde
A&A Ayrshire & Arran
Bord Borders
D&G Dumfries & Galloway
FV Forth Valley
GJ Golden Jubilee
Gram Grampian
GG Greater Glasgow
High Highland
Lan Lanarkshire
Loth Lothian
Ork Orkney
Shet Shetland
Tay Tayside
WI Western Isles