Data Quality Assurance
Assessment of Maternity Data
(SMR02)
2008-2009

Scotland Report
April 2010
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Executive Summary

This quality assurance project assessed 34 data items from the maternity dataset (SMR02). It was encouraging to find that 18 (53%) of the data items recorded on SMR02 matched the information found in the medical record/Scottish Woman-Held Maternity Record (SWHMR) in 90% or more of the records, with eight data items matching 98% and above. See page 7 for a breakdown of all findings.

Of the remaining 16 (47%) data items that were recorded with less than 90% of the records matching, five of these were very poorly recorded with under 40% matching. Recording these data items is currently optional and it is recommended as a result of this exercise that four of these data items are made mandatory. The data items are:

- Typical Weekly Alcohol Consumption
- Drug Misuse During this Pregnancy
- Ever Injected Illicit Drugs
- Drugs Used

The fifth poorly recorded data item is Ethnic Group and it is strongly recommended that this be completed by hospital staff in SWHMR and then input to the Patient Administration System (PAS) for SMR02 returns, for inclusion in the national database.

Four further data items that were poorly recorded, with between 72-79% of the records matching information in SWHMR were:

- Height
- Weight of Mother at Booking
- Duration of Labour
- Analgesia During Labour and/or Delivery

It seemed surprising that Height and Weight of Mother at Booking in particular should be recorded erroneously. Some hospital PAS are incorrectly rounding weight and Duration of Labour, which accounts for some of the differences. Height is currently an optional data item.

For Analgesia During Labour and/or Delivery, the most frequent unmatched record was where epidural had been recorded when information in medical records/SWHMR showed the analgesia to be spinal. Also, analgesia was frequently recorded as unknown, none or left blank when SWHMR contained a specific analgesia.

Overall, in six of the 17 hospitals assessed, technical issues with the PAS either resulted in wrong information being extracted or data fields not allowing correct values to be entered. The issues were highlighted to the hospitals concerned, with a recommendation that they be communicated to the system suppliers to be resolved.

ISD found that three hospitals in particular, the Princess Royal Maternity Unit Glasgow, The Royal Infirmary of Edinburgh and St John’s Hospital at Howden brought the Scotland figure down for several data items. The Princess Royal Maternity Unit did not complete 10 of the 34 data items assessed (six of which are required in a delivery episode) and local senior management need to review why this is and why some others are poorly recorded. The Lothian hospitals have recently introduced the Patient Management System TRAK into maternity services and no historical booking information existed for the sample period assessed and this impacted negatively on the Scotland figures. TRAK was introduced at the Royal Infirmary of Edinburgh in December 2008 and St John’s Hospital at Howden in June 2009.
In approximately half of the hospitals assessed (eight hospitals), ISD found a small amount of patient documentation either missing or filed in the wrong patient record and this was raised with each hospital where it occurred.

ISD found SWHMR to be structured and easy to use but completed to varying degrees across Scotland. It was further observed that some minor changes to the layout could improve the recording of Duration of Labour and diabetes/thyroid disorder. ISD will share these observations with NHS Quality Improvement Scotland.

SWHMR is completed by midwives and ISD quite often identified that data items could be found in SWHMR but the information had not been entered into PAS, resulting in an incomplete SMR02 return. ISD recommends that hospital staff responsible for producing the SMR02 returns should ensure that the data items captured on SWHMR are input to PAS in the future.

In addition, the requirement for some guidance has been identified around the terminology used by midwives, and how medical records staff should interpret certain terms contained in SWHMR.

Several definitional and clinical coding issues were identified throughout the assessment and ISD will be addressing these by producing updated Coding Guidelines, revised training material, and offering training sessions to the hospital staff involved in SMR02 clinical coding. Where appropriate, changes will be made to national reference files and national validation, and the Health and Social Care Data Dictionary will be updated.

It has been over 10 years since a quality assurance exercise was last carried out on the maternity dataset, and it is acknowledged that some practices have changed during that time period: for example date of booking and the understanding of presentation of the baby at delivery. ISD suggest that as SWHMR is the acknowledged standard recording tool for maternity data, SMR02 should be produced as a by-product of this and a group within ISD is currently investigating how this could be achieved in the future.

By and large the results of this quality assurance exercise are very encouraging. With improved Coding Guidelines, revised training, improved recording practices and updated hospital patient administration systems, the SMR02 maternity dataset will continue to prove very robust. It is also interesting that the sample of records quality assured by ISD were representative of the national database and this is demonstrated in this report where the findings are in keeping with the published national figures.

An ISD-hosted Maternity Data Development Alignment Working Group with representatives from hospitals (including midwives) has been set up to co-ordinate and carry forward initiatives and recommendations identified in this report.

**Key messages:**

- For just over half of the data items assessed, the data recorded in the SMR02 record matches the information held in the medical record/SWHMR in 90% to 100% of the records.

- Much of the data is generally well recorded by hospitals, but a need has been identified for revision to some data definitions, issue of new Coding Guidelines for maternity data, and provision of training for all hospital SMR02 clinical coding staff.

- Optional data items including Drugs Misuse During this Pregnancy and Typical Weekly Alcohol Consumption are poorly recorded.
Data Quality Assurance
Assessment of Maternity Data (SMR02) 2008-2009
April 2010

Recommendations

• Consideration needs to be given to SMR02 reflecting current practice. As SWHMR is used across Scotland, this seems the obvious source document for maternity information and SMR02 should be a by-product of this. Further consideration might be given to the possibility of future eSWHMR development that enables electronic generation of SMR02 returns. (e-SWHMR systems are already used in Lothian and Ayrshire and Arran).

• Where midwives record information in SWHMR that corresponds to an SMR02 data item, this data should be input to the hospital PAS for inclusion in SMR02 extraction.

• Where there are known PAS technical issues that result in wrong information being extracted to SMR02 files, hospitals should inform the system supplier to allow these issues to be addressed and rectified. ISD often found conflicting information between SWHMR and the immediate discharge letter and other computer generated documentation. In particular, this applied to data items that were erroneously rounded e.g. Estimated Gestation, Duration of Labour etc. This should also be addressed by the hospitals and PAS suppliers.

• Height and Weight of Mother at Booking should become mandatory data items in SMR02.

• Drug Misuse During this Pregnancy, Drugs Used and Ever Injected Illicit Drugs should become mandatory data items in SMR02.

• Typical Weekly Alcohol Consumption should become a mandatory data item in SMR02.

• ISD strongly recommend that Ethnic Group (self-assessed ethnic identity for ethnic monitoring) is recorded in SWHMR and PAS for SMR02 purposes.

• The Health and Social Care Data Dictionary should be updated with all relevant changes.

• Care should always be taken by hospital staff responsible for filing patient documentation as misfiled information and/or information found to be missing from the medical record was identified during assessment.

• ISD should repeat a similar SMR02 assessment within the next two to three years.

Clinical Coding

• ISD Clinical Coding Tutors should review and issue new and improved Coding Guidelines covering the issues identified by the DQA assessment.

• ISD Clinical Coding Tutors should develop up-to-date training material to include improved definitions and clinical coding advice.

• ISD Clinical Coding Tutors should provide an SMR02 training module. NHS staff responsible for SMR02 clinical coding should attend the new training module regardless of whether or not they have had previous training. It is the responsibility of NHS Boards to ensure that their staff receive this training.

Definitions

• Booking Date should be defined as ‘Date of History Taking Appointment’.

Midwives

• Midwives should identify the fetal head position in a cephalic presentation e.g. Cephalic Occipito-Anterior (OA) when completing the presentation field in SWHMR as this information is required for SMR02.

• Midwives and clinical coders need to liaise over the new Coding Guidelines resulting from this project.

• Lead midwives should cascade this report to midwifery colleagues.
Background and Introduction

The SMR02 obstetric return covers activity in maternity hospitals/units throughout Scotland, with information on discharges for inpatient and day case admissions, including deliveries. ISD Scotland manages a database of SMR02 information on behalf of NHS Scotland.

SMR02 data is used for a wide range of purposes, including clinical governance, epidemiology, performance management, resource allocation and medical research and is published on ISD’s website. It is important for users of all Scottish Morbidity Record (SMR) data to be aware of the level of accuracy in recording when using the information from the database. ISD is involved in retrospective quality assurance work investigating the quality of the data, in order to be able to support the credibility of national patient based data.

The quality assurance exercise reported here looks solely at maternity records, and is limited to records covering hospital deliveries of both singleton and multiple births, across Scotland’s maternity hospitals/units.

Although there have been changes over the years in maternity practices, there have been little or no changes to the SMR02 record or its definitions to reflect these changes. This quality assurance exercise has identified some of the changes required, and the inconsistencies in existing practice across the service. There has been very little formal training or unified documentation in general use to support completion of the SMR02 records, and there are recommendations to address this. Despite this, general findings on quality of data are good.

Since the last SMR02 assessment in 1997 the Scottish Woman-Held Maternity Record (SWHMR) has been introduced across Scotland, with the aim of providing a standardised and accessible maternity record. The SHWMR consists of a series of seven booklets which make up part of the hospital medical record. A Scottish Government Health Department Letter (HDL (2007) 7) was sent to all NHS Boards which mandated that the SWHMR should be fully implemented by 31st December 2007.

The objectives of this quality assurance assessment were to investigate the accuracy of recording SMR02 data items (including Main Condition, Other Conditions, Main Operation/Procedure and Other Operations/Procedures). A further objective was to ensure that SMR02 data items are being recorded consistently to a high standard throughout NHS Scotland.

The focus of this report is to show the percentage accuracy of the data items rather than the completeness of them and will cover the period May 2008 to August 2009.

This report will be of interest to clinical and midwifery staff, medical records managers, clinical coders, information managers and analysts in NHS Scotland, to the Scottish Government and to other users of obstetric and maternity data.

Links to our website are provided to show the data behind specific charts in this report (see Appendix 2 for list of charts and tables). Also, further details on various topics relating to this report may be found at our website http://www.isdscotland.org/data_quality_assurance
Methodology

An SMR02 return is raised on discharge for each inpatient and day case admission for care in any of the Obstetric specialties, and includes non-delivery admissions. It also covers some home births. For this exercise, ISD extracted an SMR02 sample from the national database consisting of only delivery episodes.

The time period of data sampled at each hospital was generally the most up-to-date quarter of SMR02 returns submitted to ISD from May 2008 to August 2009. 2531 records were assessed from 17 maternity hospitals/units in Scotland. The sample was composed of approximately 75 records for small hospitals, 150 records for medium sized hospitals and 175 records for large hospitals. This equates to approximately 4.4% of all delivery episodes on the national database. During the year ending March 2008 there were about 56,800 births, an increase over the previous year.

Prior to each hospital visit, ISD also held face-to-face discussions with key personnel (including midwives, medical records managers and clinical coding staff) regarding hospital practices and procedures.

ISD staff visited each hospital to compare SMR02 data submitted to ISD against information recorded in the medical record/SWHMR. Whenever the term “evidence found by ISD” is used in this report it should be taken to mean:

- evidence that ISD’s Data Quality Assurance team found within the hospital’s medical record in either the Scottish Woman-Held Maternity Record (SWHMR) booklets or other documents such as the discharge summary, the maternity summary form, or the immediate discharge summary.

For each record assessed ISD used the following process:

Where records have been excluded this will account for the total number of records not always being the same for each data item assessed.

ISD sent each maternity hospital/unit a full report of their findings, and any issues identified and recommendations for improvements. After this, ISD offered all NHS Boards a feedback meeting which included a presentation of findings.
Detailed Findings

Conventions

The following symbols and abbreviations have been used:

.. not available
- zero value
x not applicable
p provisional (for national figures)
r revised (for national figures)
for information

For abbreviated hospital names see Appendix 3
Table of SMR02 Data Items
Table 1 below shows the 34 data items assessed, and gives the Scotland percentage where data recorded in SMR02 matched the evidence ISD found.

### Table 1 - Assessed Data Items

<table>
<thead>
<tr>
<th>Priority</th>
<th>Data Item</th>
<th>Matched (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>90-100%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Number of Births this Pregnancy</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>Outcome of Pregnancy</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>Sex (gender)</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>Date of Delivery</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>Birthweight</td>
<td>99</td>
</tr>
<tr>
<td>M</td>
<td>Previous Caesarean Sections</td>
<td>98</td>
</tr>
<tr>
<td>M</td>
<td>Admission Date</td>
<td>98</td>
</tr>
<tr>
<td>M</td>
<td>Discharge Date</td>
<td>98</td>
</tr>
<tr>
<td>M</td>
<td>Previous Therapeutic Abortions</td>
<td>97</td>
</tr>
<tr>
<td>C</td>
<td>Neonatal Indicator</td>
<td>96</td>
</tr>
<tr>
<td>M</td>
<td>Previous Spontaneous Abortions</td>
<td>96</td>
</tr>
<tr>
<td>M</td>
<td>Previous Pregnancies</td>
<td>94</td>
</tr>
<tr>
<td>C</td>
<td>Apgar Score</td>
<td>93</td>
</tr>
<tr>
<td>C</td>
<td>Induction of Labour</td>
<td>93</td>
</tr>
<tr>
<td>C</td>
<td>Estimated Gestation</td>
<td>92</td>
</tr>
<tr>
<td>C</td>
<td>Episiotomy</td>
<td>92</td>
</tr>
<tr>
<td>C</td>
<td>Antenatal Steroids</td>
<td>92</td>
</tr>
<tr>
<td>M</td>
<td>Smoker During Pregnancy</td>
<td>90</td>
</tr>
<tr>
<td><strong>80-89%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Resuscitation</td>
<td>88</td>
</tr>
<tr>
<td>C</td>
<td>Mode of Delivery</td>
<td>87</td>
</tr>
<tr>
<td>C</td>
<td>Tear</td>
<td>87</td>
</tr>
<tr>
<td>C</td>
<td>Diabetes</td>
<td>85</td>
</tr>
<tr>
<td>M</td>
<td>Smoking History at Booking</td>
<td>81</td>
</tr>
<tr>
<td><strong>70-79%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Analgesia During Labour and/or Delivery</td>
<td>79</td>
</tr>
<tr>
<td>C</td>
<td>Weight of Mother at Booking</td>
<td>77</td>
</tr>
<tr>
<td>C</td>
<td>Duration of Labour</td>
<td>74</td>
</tr>
<tr>
<td>O</td>
<td>Height</td>
<td>72</td>
</tr>
<tr>
<td><strong>40-69%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Presentation at Delivery</td>
<td>69</td>
</tr>
<tr>
<td>O</td>
<td>Booking Date</td>
<td>67</td>
</tr>
<tr>
<td><strong>Less than 40%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Typical Weekly Alcohol Consumption</td>
<td>39</td>
</tr>
<tr>
<td>O</td>
<td>Drug Misuse During this Pregnancy</td>
<td>33</td>
</tr>
<tr>
<td>O</td>
<td>Ever Injected Illicit Drugs</td>
<td>29</td>
</tr>
<tr>
<td>O</td>
<td>Drugs Used</td>
<td>25</td>
</tr>
<tr>
<td>O</td>
<td>Ethnic Group</td>
<td>11</td>
</tr>
</tbody>
</table>

**Key:** M – Mandatory, C – Conditional, O - Optional

**Source:** DQA, ISD Scotland, April 2010

See appendix 4 for full breakdown of matching percentages at each hospital.
Detailed Findings

This section examines the detailed findings where an SMR02 specific data item has matched in less than 90% of the records and provides clarification of the evidence found by ISD. Data items which match in between 90% and 100% of records will receive no explanation although some interesting findings are presented (denoted by 🔄).

Baby 2 (in twin births)

There were 39 records in the assessed sample where twins were delivered. The following data items were assessed specifically for baby 2: Presentation at Delivery, Mode of Delivery, Outcome of Pregnancy, Birthweight, Resuscitation, Apgar Score, Sex (gender) and Neonatal Indicator. These data items matched between 84% and 100% with the evidence found by ISD.

90%-100% of Records Matching

For 18 (53%) of the assessed data items, between 90% and 100% of the information found in the medical record/SWHMR matched that held in the SMR02 record (See Table 1 for data items).

Number of Births this Pregnancy matched the information in the medical record/SWHMR in 100% of the records. Chart 1 below shows, for the sample assessed for singleton and twin births, the percentage split across different age groups.

иру Чарт 1 - Number of Births this Pregnancy by Age of Women

The chart illustrates that for the singleton births included in the sample, the largest age group of women was 25-29 year olds (30%). However for twin births included in the sample the largest age group was 30-34 year olds (28%).
Birthweight matched the information found in the medical record/SWHMR in 99% of records. There were 21 unmatched records. Table 2 below is based on the information ISD found evidence for.

Table 2 - Percentage of Live Singletons by Birthweight and Estimated Gestation (weeks)

<table>
<thead>
<tr>
<th>Estimated Gestation – weeks - %</th>
<th>Total</th>
<th>Less than 24</th>
<th>24-27</th>
<th>28-31</th>
<th>32-36</th>
<th>37-41</th>
<th>42+</th>
</tr>
</thead>
<tbody>
<tr>
<td>All weights (grams)</td>
<td>2431</td>
<td>0.1</td>
<td>0.5</td>
<td>5.7</td>
<td>90.7</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Under 1500</td>
<td>12</td>
<td>-</td>
<td>16.7</td>
<td>58.3</td>
<td>16.7</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>1500-2499</td>
<td>103</td>
<td>-</td>
<td>-</td>
<td>5.8</td>
<td>51.5</td>
<td>42.7</td>
<td></td>
</tr>
<tr>
<td>2500+</td>
<td>2315</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3.5</td>
<td>93.3</td>
<td></td>
</tr>
<tr>
<td>Not Known</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100.0</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Previous Pregnancies matched the information found in the medical record/SWHMR in 94% of records. There were 157 unmatched records. Chart 2 below shows the number of previous pregnancies at each hospital where evidence was found by ISD. St John’s at Howden and Royal Infirmary of Edinburgh have been excluded from this chart, as they recently moved to a new electronic method of recording maternity data, and there was no historical booking data available for the sample period assessed.

Chart 2 - Number of Previous Pregnancies
Induction of Labour matched the information found in the medical record/SWHMR in 93% of records. There were 178 unmatched records.

Chart 3 below shows the percentage of women who were induced at each of the assessed hospitals for all delivery episodes and compares what was recorded on SMR02 with the evidence found by ISD.

Perth Royal Infirmary shows a considerably lower percentage of women induced, as the women who are likely to have complex deliveries are referred to Ninewells Hospital.
Smoker During Pregnancy matched the information found in the medical record/SWHMR in 90% of records. There were 240 unmatched records of which 142 (59%) were due to code ‘9’ (Not known) being recorded on SMR02, when ISD found evidence to confirm whether or not the women had smoked during this pregnancy. One hospital (PRMU) accounted for 46% of the 142 unmatched records. If this hospital is excluded from the analysis the percentage of matching records increases to 93%.

Chart 4 shows the percentage of matched records at each of the assessed hospitals and compares each against the Scotland percentage.

The spider charts in this report (charts 4, 5 and 6) plot the percentage match for each hospital along a separate axis that starts in the centre of the chart (0%) and ends on the outer ring (100%). (These should not be viewed in the same way as pie charts where the values are shown as segments).

Chart 4 - Smoker During Pregnancy by Hospital
In many of the data items matching below 90%, one or more hospitals did not complete the data item in PAS when there was evidence found by ISD. Where midwives record information in the medical record/SWHMR, ISD recommends that this data is always entered into the hospital PAS, for inclusion in the SMR02 record.

**80-89% of Records Matching**

**Resuscitation** matched the information found in the medical record/SWHMR in 88% of records. There were 298 unmatched records. However, one hospital (PRMU) recorded code ‘9’ (Not known) in every record therefore accounting for 174 of the unmatched records. If this hospital is excluded from the analysis the percentage of matching records increases to 95%.

Chart 5 shows the percentage of matched records at each of the assessed hospitals and compares each against the Scotland percentage.

**Chart 5 - Resuscitation by Hospital**

ISD noted that the SMR02 terms for Resuscitation did not always correspond to the terms in SWHMR.
**Mode of Delivery** matched the information found in the medical record/SWHMR in 87% of records. There were 316 unmatched records. Presentation at Delivery should be cross-matched with Mode of Delivery, though ISD found evidence that this did not always happen. The main issue identified, which accounted for 76% of the unmatched records, was where evidence was found of an abnormal presentation and Mode of Delivery was recorded as code ‘0’ (Normal, spontaneous vertex vaginal delivery, occipito-anterior) rather than the correct code ‘1’ (Cephalic vaginal delivery with abnormal presentation of the head at delivery).

Table 3 shows the types of Mode of Delivery in the assessed sample for live singleton births where evidence was found by ISD and illustrates how the findings compare with the published Scotland figures for 2007 and 2008.

<table>
<thead>
<tr>
<th></th>
<th>Total No.</th>
<th>Spontaneous</th>
<th>Forceps</th>
<th>Vacuum</th>
<th>Breech</th>
<th>Caesarean - Elective</th>
<th>Caesarean - Emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland 2007 r</td>
<td>52991</td>
<td>62.8</td>
<td>8.5</td>
<td>3.7</td>
<td>0.2</td>
<td>9.7</td>
<td>15.0</td>
</tr>
<tr>
<td>Scotland 2008 p</td>
<td>54790</td>
<td>62.0</td>
<td>9.4</td>
<td>3.6</td>
<td>0.3</td>
<td>10.1</td>
<td>14.7</td>
</tr>
<tr>
<td>Scotland – QA Project</td>
<td>2482</td>
<td>64.5</td>
<td>9.2</td>
<td>3.4</td>
<td>0.5</td>
<td>9.6</td>
<td>12.8</td>
</tr>
</tbody>
</table>

Tear matched the information found in the medical record/SWHMR in 87% of records. There were 323 unmatched records. However, it was identified that one hospital (PRMU) did not record this data item therefore accounting for 175 of the unmatched records. If this hospital is excluded from the analysis the percentage of matching records increases to 94%. ISD also identified a system issue at one NHS Board (Lothian) which affected two hospitals where code ‘2’ (2nd degree tear) was recorded in the PAS but appeared on SMR02 as code ‘0’ (No tear) and this accounted for 66 unmatched records. ISD recommends that any hospital PAS technical issue be addressed by the hospital and rectified by the system supplier. There was no pattern to the remaining 82 unmatched records.

Diabetes matched the information found in the medical record/SWHMR in 85% of records. There were 367 unmatched records. However, it was identified that one hospital (PRMU) did not record this data item therefore accounting for 175 of the unmatched records. If this hospital is excluded from the analysis then the percentage of matching records rises to 92%. It was also identified that one other hospital (Wishaw) often recorded code ‘9’ (Not Known) when ISD found evidence in the medical record/SWHMR that code ‘4’ (No diabetes during this pregnancy) should have been recorded. This accounted for 110 of the unmatched records. There was no pattern to the remaining 82 unmatched records.

ISD observed that SWHMR contained the combined data item ‘diabetes/thyroid disorder’ whereas SMR02 only records diabetes.
Smoking History at Booking matched the information found in the medical record/SWHMR in 81% of the records. Of the 490 unmatched records, 308 (63%) had been recorded as code ‘9’ (Not known) where ISD found evidence for a more specific code.

ISD identified that one hospital (PRMU) was inconsistent in their recording of this data item. In 61 of their 79 unmatched records, code ‘9’ (Not known) had been recorded, however ISD found evidence for a more specific code. Also NHS Lothian (affecting two hospitals) recently moved to a new electronic method of recording maternity data. They recorded almost all their records as code ‘9’ (Not known) for the sample period assessed. These three hospitals accounted for 269 (87%) of the 308 unmatched records that had been recorded as code ‘9’ (Not known). If these three hospitals are excluded from the analysis the percentage of matching records increases to 90%.

Chart 6 shows the percentage of matched records by hospital and demonstrates how they compare to the overall Scotland percentage.
Table 4 shows that there has been a decrease in the percentage of ‘Current’ smokers in SMR02 as published in the 1995, 2007 and 2008 national figures. However, there has also been an increase in the percentage of ‘Not known’. The table also shows figures recorded in the SMR02 sample.

Table 4 – Smoking History at Booking

<table>
<thead>
<tr>
<th>Smoking History at Booking (%)</th>
<th>Scotland 1995</th>
<th>Scotland 2007</th>
<th>Scotland 2008</th>
<th>Scotland QA Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59862</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>29.0</td>
<td>20.8</td>
<td>19.2</td>
<td>19.2</td>
</tr>
<tr>
<td>Not Known</td>
<td>5.0</td>
<td>12.0</td>
<td>14.1</td>
<td>17.7</td>
</tr>
<tr>
<td>Former</td>
<td>7.9</td>
<td>9.4</td>
<td>9.0</td>
<td>9.2</td>
</tr>
<tr>
<td>Never</td>
<td>58.1</td>
<td>57.8</td>
<td>57.7</td>
<td>53.9</td>
</tr>
</tbody>
</table>

\(^r\) – revised  
\(^p\) – provisional

As shown in chart 7, ISD found evidence that there was an under-recording of ‘Never smoked, non-smoker’, ‘Current’ and ‘Former’ smoker in the sample assessed. There was an over-recording of ‘Not known’.

Chart 7 - Smoking History at Booking

The figures shown in the chart above should be treated with caution as a recent article in the British Medical Journal\(^1\) states that “reliance on self reported smoking status is underestimated by 25%”.

Available from: http://www.bmj.com/cgi/content/full/339/oct29_1/b4347 [Accessed 10/03/10]
Analgesia During Labour and/or Delivery matched the information found in the medical record/SWHMR in 79% of records. There were 524 unmatched records. However, it was identified that one hospital (PRMU) did not record this data item. This accounted for 175 of the unmatched records. If this hospital is excluded from the analysis then the percentage of matching records rises to 85%. SMR02 recording rules state that the highest method of analgesia should be coded using the specified hierarchy. ISD found evidence that this rule was not always being adhered to.

Table 5 shows a comparison for the unmatched records between analgesia recorded on SMR02 with the evidence found by ISD and highlights that:

1. In 35 records None had been recorded, however ISD found evidence that the women had received Analgesia During Labour and/or Delivery.

2. In 125 of the unmatched records epidural had been recorded, however ISD found evidence that spinal should have been recorded.

3. In 30 of the unmatched records, gas and air only had been recorded, however ISD found evidence that pethidine/morphine should have been recorded.

4. In 38 of the unmatched records Not known had been recorded, however ISD found evidence of whether or not the women had received analgesia, and where appropriate the type of analgesia.

5. In 175 records which were left blank (at PRMU only) ISD found evidence to confirm whether or not the women had received analgesia.

### Table 5 – Unmatched Records in Analgesia During Labour and/or Delivery

<table>
<thead>
<tr>
<th>Recorded in medical record/SWHMR</th>
<th>Recorded on SMR02</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None 5</td>
</tr>
<tr>
<td>Pethidine/morphine</td>
<td>4</td>
</tr>
<tr>
<td>Epidural</td>
<td>1</td>
</tr>
<tr>
<td>Gas and air only</td>
<td>5</td>
</tr>
<tr>
<td>General anaesthetic</td>
<td>2</td>
</tr>
<tr>
<td>Spinal</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td>Not Known</td>
<td>11</td>
</tr>
<tr>
<td>Blank</td>
<td>24</td>
</tr>
</tbody>
</table>

Total No. of records where ISD found evidence in medical record/SWHMR
The following chart compares types of analgesia recorded in SMR02 with the evidence found by ISD.

**Chart 8 - Analgesia During Labour and/or Delivery**

ISD noted that the SMR02 terms for analgesia did not always correspond to the terms in SWHMR.

**Analgesia During Labour and/or Delivery – Code ‘8’, Other**

Of the 2524 records where Analgesia During Labour and/or Delivery was assessed, there were 58 (2%) records where code ‘8’ (Other) had been recorded. For 22 of these 58 records ISD found evidence to support this code. Four should have been recorded as code ‘0’ (None) and for the remaining 32 records where code ‘8’ (Other) was recorded ISD found evidence for the use of a more specific code. There were an additional 34 records where ISD found evidence to indicate that code ‘8’ (Other) should have been recorded.

For the 56 records where Analgesia During Labour and/or Delivery was correctly recorded, or should have been recorded, as ‘8’ (Other), the following types of analgesia were found in the medical record/SWHMR:

- Birthing pool / water pool
- TENS
- Pudendal Block
- Combined spinal/epidural
- Hypnobirthing
- Other types of drugs
Weight of Mother at Booking matched the information found in the medical record/SWHMR in 77% of records. There were 579 unmatched records. However, it was identified that one hospital (PRMU) did not record this data item. This accounted for 175 of the unmatched records. If this hospital is excluded from the analysis then the percentage of matching records increases to 83%. Weight of Mother at Booking was recorded as one kilogram less than ISD found evidence for in 271 of the unmatched records which is suggestive of a rounding issue. ISD recommends that any hospital PAS technical issue be addressed by the hospital and rectified by the system supplier. The SMR02 recording rules state that Weight of Mother at Booking should be rounded to the nearest kilogram and not truncated. For example 55.5kg should be recorded as 56kg whereas 55.4kg should be recorded as 55kg. Weight of Mother at Booking is currently a conditional data item and ISD recommends that it becomes mandatory.

Duration of Labour
SMR02 recording rules state that Duration of Labour is the length of time the state of labour lasts from its onset to the delivery of the placenta, expressed in the number of completed hours. Duration of Labour matched the information found in the medical record/SWHMR in 74% of records. There were 563 unmatched records where 318 (56%) of these were recorded one hour longer than the actual duration of labour. Also, 37 (7%) elective caesarean section records had been recorded as ‘99’ (Not known) where they should have been recorded as ‘00’.

It was also noted on occasion that the time either the spontaneous or artificial rupture of membranes had taken place was recorded as or included in Duration of Labour in SMR02.

As part of the assessment process, ISD found there is a definitional issue with Duration of Labour and how the time is defined for emergency caesarean sections. For this reason 331 records are not included in the summary findings on page 7 when calculating percentage of matched records for this data item. ISD plan to produce an updated Clinical Coding Guideline in the near future which will clarify the definition of this data item.

Height matched the information found in the medical record/SWHMR in 72% of records. There were 699 unmatched records. However, there was one hospital (PRMU) who recorded code ‘999’ (Unknown) for the majority of their records, which equated to 146 of the unmatched records despite the information being available in the medical record/SWHMR. Also one NHS Board (Lothian affecting two hospitals) recently moved to a new electronic method of recording maternity data and there was no historical booking data available for the sample period assessed. If the two hospitals which did not record Height are excluded from the analysis the percentage of matching records increases to 83%. Height is currently an optional data item and ISD recommends that it becomes mandatory.

Presentation at Delivery matched the information found in the medical record/SWHMR in 69% of records. There were 777 unmatched records. In 81% of the unmatched records, code ‘1’ (Occipito-Anterior) had been recorded. However in 393 of these records ISD could find no evidence and recorded these records as code ‘9’ (Not known). It was identified that often only the term “cephalic” was recorded in the medical record/SWHMR. With this presentation what the person completing the SMR02 actually needs to know is the fetal head position. Some midwives did not know this additional information was required. For further information on this issue please see page 25.
Booking Date matched the information found in the medical record/SWHMR in 67% of records. There were 828 unmatched records. However, it was identified that one hospital (PRMU) did not record this data item therefore accounting for 172 of the unmatched records. Another hospital (Forth Park) had a system issue affecting this data item and this accounted for another 174 of the unmatched records. If these two hospitals are excluded from the analysis then the percentage of matching records increases to 78%.

It has been identified during this project that the Data Dictionary definition for Booking Date does not necessarily reflect current hospital practice, for instance a woman may have their first antenatal appointment in their own home and not attend a ‘booking clinic’. As a result of this ISD assessment it has been agreed by the ISD Maternity Data Development Alignment Working Group that Booking Date in future will be defined as Date of History Taking Appointment as found in SWHMR.

Table 6 shows four of the five data items that matched in under 40% of cases. The collection of these data items is currently optional and not all of the 17 hospitals assessed enter these data items into PAS, though they are frequently recorded in the medical record/SWHMR. ISD recommend that these four data items become mandatory in the future. The ‘Adjusted Matched %’ column shows the percentage of matched records for the hospitals who record these data items, for at least 10% of the records assessed.

<table>
<thead>
<tr>
<th>Data Item</th>
<th>Matched %</th>
<th>Adjusted Matched %</th>
<th>Number of Hospitals in adjusted %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Weekly Alcohol Consumption</td>
<td>39</td>
<td>70</td>
<td>9</td>
</tr>
<tr>
<td>Drug Misuse During this Pregnancy</td>
<td>33</td>
<td>78</td>
<td>7</td>
</tr>
<tr>
<td>Drugs Used</td>
<td>25</td>
<td>76</td>
<td>5</td>
</tr>
<tr>
<td>Ever Injected Illicit Drugs</td>
<td>29</td>
<td>67</td>
<td>7</td>
</tr>
</tbody>
</table>
Typical Weekly Alcohol Consumption was recorded at nine of the hospitals assessed. It was identified that in a number of cases, two hospitals (AMH and Borders) recorded the previous alcohol consumption rather than the current alcohol consumption. Both questions are asked in SWHMR however only the current alcohol consumption should be recorded in SMR02. A number of hospitals did not record Typical Weekly Alcohol Consumption consistently, and completed this data item in some records but not in others. One hospital (Forth Park) also completed the majority of their records with code '99' (Not known) where ISD found evidence for the number of units currently being consumed.

There were 952 women recorded in SMR02 with no weekly alcohol consumed, 1459 women where it was not known or the data item was not completed and 117 women who consumed one or more units of alcohol per week. In comparison ISD found evidence that 83 women consumed one or more units of alcohol and this is shown in the chart below.

Chart 9 - Typical Weekly Alcohol Consumption

The chart also illustrates when compared to the medical record/SWHMR the SMR02 shows an under-recording of those who consume only one unit, and an over-recording of the women who consume more than one unit of alcohol.
Drug Misuse and Drugs Used
The recording of Drug Misuse During this Pregnancy and Drugs Used is not currently mandatory on SMR02 and consequently not all the hospitals assessed completed these two data items. Where Drug Misuse During this Pregnancy was recorded, the assessed sample showed that 14 women (0.6% of sample) had drug misuse during this pregnancy, however there were five instances with no evidence of drug misuse. ISD did identify an additional two women who were not recorded as drugs users in SMR02 when there was evidence that they were. At the hospitals who did not record this data item on SMR02 there were a further 20 women (0.8% of sample) who had Drug Misuse During this Pregnancy recorded in the medical record/SWHMR.

Looking further at the records where Drug Misuse During this Pregnancy was recorded or should have been recorded, many only showed that there was one drug used. Up to four drugs can be recorded in SMR02. Table 7 shows the breakdown of the number of recorded drugs in the assessed SMR02 sample and for these records how many were recorded in the medical record/SWHMR.

**Table 7 - Number of Drugs Recorded**

<table>
<thead>
<tr>
<th></th>
<th>SMR02</th>
<th>Medical record/SWHMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>One drug</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Two drugs</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Three drugs</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Four drugs</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Not a drug user</td>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>Drug not known</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

There were 51 Drugs Used recorded or which should have been as shown in chart 10.

**Chart 10 - Drugs Used**

![Chart showing percentage of total drugs used by category](chart10.png)
Data Quality Assurance
Assessment of Maternity Data (SMR02) 2008-2009
April 2010

Ever Injected Illicit Drugs

Ever Injected Illicit Drugs is currently an optional data item which was not recorded at 10 of the hospitals assessed. In addition one hospital (Forth Park) recorded ‘Not Known’ for 59% of the women whom ‘No’ should have been recorded and another hospital (SRI) only recorded the data item for 15% of their records.

<table>
<thead>
<tr>
<th>Table 8 – Ever Injected Illicit Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR02</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes *</td>
</tr>
<tr>
<td>Not Known</td>
</tr>
<tr>
<td>Left Blank</td>
</tr>
</tbody>
</table>

* Yes = during or prior to current pregnancy, or yes but not known when

Table 8 shows the breakdown of the number of records in the assessed SMR02 sample with each value, and compares this with what was found in the medical record/SWHMR.

There were eight women in the sample where it was recorded that they had at some point injected illicit drugs, however ISD found evidence that two of these women had not. ISD also found evidence that a further three women who had been recorded as ‘No’ had at some time injected illicit drugs.

Overall in the 2530 records assessed for this data item there were 17 (0.7%) women where evidence was found they had at some time injected illicit drugs. These findings should however be treated with caution since small numbers are involved.

Ethnic Group

The Race Relations Amendment Act 2000 and Fair For All policy initiatives place a duty upon the NHS to promote racial equality and to develop strategies to reduce ethnic inequalities in health.

In most hospitals assessed the midwives record the patient’s ethnic group (patient-assessed ethnic identity for ethnic monitoring) in the medical record/SWHMR but it is often not entered into the hospital PAS. Both ethnic origin and Ethnic Group are recorded in SWHMR. However for the purposes of this project only Ethnic Group was assessed. It should be noted that ethnic origin is a different concept from patient-assessed ethnic group. Ethnic origin or family origin should guide which antenatal screening to offer.

Ethnic Group matched the information in the medical record/SWHMR in 11% of records. There were 2084 unmatched records. See Chart 11 on page 23.

ISD strongly recommend that Ethnic Group (patient-assessed ethnic identity for ethnic monitoring) is recorded in medical records/SWHMR/PAS for SMR02 purposes. This will support the Board Action Plan as per letter from the Scottish Government Health Department to all Chief Executives seeking improvement in equalities data monitoring, particularly in the recording of ethnicity via SMRs.

A DVD Training Resource & collection of equality data can be found at: http://www.isdscotland.org/equalityhappytoaskdvd
Chart 11 - Ethnic Group

Total No of Records in Sample (N=2531)

Ethnic Group Assessed (N=2349)

Matched (N=265)

Unmatched (N=2084)

Ethnic Group could not be assessed (N=182)*

Not recorded on SMR02 (N=1536)

Evidence within the Medical record/SWHMR (N=1102)

Evidence which corresponds to SMR02 codes (N=795)

Evidence which does not correspond to SMR02 codes (N=307)

No Evidence in Medical record/SWHMR (N=434)

Evidence within the Medical record/SWHMR (N=419)

Evidence which corresponds to SMR02 codes (N=308)

Evidence which does not correspond to SMR02 codes (N=111)

Unmatched on SMR02 (N=548)

No Evidence in Medical record/SWHMR (N=129)

*includes 175 records at SRI, which was the pilot site.
Recording in the Delivery Room
Recording in the Delivery Room

The ISD assessment highlighted a number of difficulties in completing SMR02 data items due to some of the terminology recorded within the SWHMR. It is hoped by bringing this to the attention of midwives and clinicians they could make small adjustments to the phrases and terminology used which would help those who complete SMR02 to improve the quality of the data being submitted to ISD.

Presentation at Delivery
The ISD assessment has highlighted an issue with the definition and codes for the SMR02 data item Presentation at Delivery.

The SMR02 recording rules define Presentation at Delivery as ‘the part of the fetus which is lowest in relation to the position within the maternal pelvis’, with the following available codes:

- 1. Occipito-Anterior (OA)
- 2. Occipito-Posterior (OP)
- 3. Occipito-Lateral (OL)
- 4. Breech
- 5. Face/brow
- 6. Shoulder
- 7. Cord
- 8. Other
- 9. Not Known

The confusion arises as the first three codes above are ‘positions’ of the fetal head in a ‘cephalic vertex’ presentation. A cephalic vertex presentation cannot be recorded in the SMR02 data item Presentation at Delivery. When a baby delivers with a cephalic vertex presentation it is the fetal head position at delivery that is required and this is where the problem lies.

When midwives complete the presentation field on the Labour and Birth Summary – baby page 1 of the SWHMR - if the presentation (at delivery) is recorded as ‘cephalic’ or ‘cephalic vertex’ what the person completing the SMR02 actually needs to know is the fetal head position. The quality of the data recorded for this SMR02 data item could be vastly improved where the presentation was cephalic vertex if midwives could also record the position of the fetal head at the time of delivery e.g. Cephalic vertex OA. If the fetal head position is not noted in a cephalic vertex delivery, it can be assumed to be OA.

Group B Streptococcus
The ISD assessment has highlighted that there are problems for clinical coders with the terms used when a woman has tested positive for group B Streptococcus (GBS).

Unless it is clearly stated, it is difficult for the clinical coders to determine from the terms recorded in medical record/SWHMR, if a patient is colonised with GBS or has a current infection. Examples of the kinds of terms found are:

- GBS
- GBS +ve
- Group B Strep
- Group Strep B
- Strep B +ve
- GBS for ABX
- GBS for ABX

In the absence of the (lead) term ‘infection’ clinical coders should default to ‘carrier’.
**Fetal Heart Rate (FHR) Tracings**

The ISD assessment highlighted that there are problems for clinical coders with the terminology used to define FHR tracings. The terms Non-reassuring CTG (cardiotocography), Pathological CTG, Suboptimal CTG, Suspicious CTG and Abnormal CTG have no ICD-10 index trail.

These terms present the clinical coder with further problems when the situation is of such a severity that action is necessary and these terms are recorded as the reason for an assisted delivery. The reason for an assisted delivery is recorded in the SMR02 data item *Indication for Operative Delivery* with an ICD-10 code but as already mentioned, the above terms do not have an ICD-10 index trail.

The terms above are shown in chart 12 and occur in 8% of the total number of reasons recorded for an assisted delivery in the assessed sample, where evidence was found by ISD.

**Chart 12 - FHR Tracings**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-reassuring CTG</td>
<td>41%</td>
</tr>
<tr>
<td>Pathological CTG</td>
<td>7%</td>
</tr>
<tr>
<td>Suboptimal CTG</td>
<td>35%</td>
</tr>
<tr>
<td>Suspicious CTG</td>
<td>6%</td>
</tr>
<tr>
<td>Abnormal CTG</td>
<td>11%</td>
</tr>
</tbody>
</table>

The correct ICD-10 coding of the terms Non-reassuring CTG, Pathological CTG, Suboptimal CTG, Suspicious CTG and Abnormal CTG for SMR02 episodes will be issued in a Coding Guideline in due course.

**‘BP’ versus Hypertension**

An issue was raised with regard to the abbreviation ‘BP’ and hypertension.

Raised blood pressure (BP) in pregnancy is very common and the abbreviation ‘BP’ is frequently recorded in the medical record/SWHMR. It is difficult for the clinical coder to know if this abbreviation is referring to an episode of raised blood pressure or if it is referring to a formal diagnosis of hypertension.

If the abbreviation ‘BP’ is referring to an episode of elevated blood pressure in a patient with no formal diagnosis of hypertension it should be recorded as **R03.0 Elevated blood-pressure reading, without diagnosis of hypertension**. However, the abbreviation ‘BP’ could also be recorded as hypertension if the arrow is taken to represent the word ‘raised’ or ‘elevated’ or ‘high’ as all three (lead) terms have ICD-10 index trails to ‘hypertension’.

The correct coding of ‘BP’ in SMR02 delivery episodes will be issued in a Coding Guideline in due course.
Clinical Coding Findings
Clinical Coding Findings

This section examines the clinical coding findings for the assessed sample of delivery episodes. Only conditions which affect the management of the patient during the delivery episode should be coded. Conditions relating to previous antenatal episodes, which do not affect patient care during the delivery episode, should not be recorded (with the exception of Anti-D – see page 29). Any change to this, or any other accepted practice will be included in the forthcoming updated Coding Guidelines.

The current SMR02 recording rules state that hard codes are used for:

- Type of Abortion
- Sterilisation after Delivery
- Mode of Delivery
- Management of Abortion
- Episiotomy
- Induction of Labour
- Tear

These hard coded items (i.e. assigned special non-ICD-10/OPCS-4 codes) are required by ISD. However, these codes have ICD-10 or OPCS-4 equivalents which may be more specific than the hard codes. Where these data items are hard coded there is no need to duplicate the information by coding again in the diagnostic section unless the ICD-10/OPCS-4 code gives more specific information (the exceptions to this rule are when a code from O80.- to O84.- is used in the mandatory Main Condition when there are no other obstetric conditions to record and Sterilisation After Delivery).

ICD-10 Coding

Frequency of ICD-10 Codes

Chart 13 compares the 10 most frequent ICD-10 codes where evidence was found by ISD in the medical record/SWHMR with the corresponding number of codes submitted on the SMR02 record.

Chart 13 - Ten Most Frequent ICD-10 Codes
The next two pages detail the codes and issues found by ISD as shown in chart 13.

**O80.0 Spontaneous vertex delivery.** O80.0 is the most frequently used ICD-10 code in the sample assessed and should only be recorded when there has been a normal delivery and there are no other obstetric conditions to record (a Main Condition is mandatory on an SMR02 record). O80.0 Spontaneous vertex delivery was over-recorded in the sample assessed. In 152 (20%) of the 776 delivery episodes where O80.0 was recorded as the Main Condition, another obstetric condition should have been recorded.

**O72.1 Other immediate postpartum haemorrhage.** ISD found evidence that postpartum haemorrhage was under-recorded in 187 (32%) of the 577 delivery episodes where it should have been recorded. SMR02 recording rules state that ‘During labour and delivery a haemorrhage is regarded as such when blood loss is 500mls or more’.

**O68.1 Labour and delivery complicated by meconium in amniotic fluid.** ISD identified that meconium was under-recorded in 124 (43%) of the 291 delivery episodes where it should have been recorded. SMR02 recording rules state that the presence of meconium should always be coded if it is mentioned in the notes, even if no complications have resulted from it.

**D64.9 Anaemia, unspecified** (and **O99.0 Anaemia complicating pregnancy, childbirth and the puerperium**). The ISD assessment highlighted two issues with the recording of anaemia in the assessed sample. Firstly, a number of hospitals did not know that O99.0 Anaemia complicating pregnancy, childbirth and the puerperium can only be recorded in Main Condition. If the clinical coder needs to record the clinical text “anaemia” or a haemoglobin level below 10g/dl when coding SMR02 in Other Conditions, a code from Chapter III (blocks D50-D64) should be recorded. Secondly, anaemia (or a haemoglobin level below 10g/dl when coding SMR02) was not recorded (with either O99.0 or D64.9) in 177 (59%) of the 302 delivery episodes where ISD found evidence that it should have been.

**Z29.1 Prophylactic Immunotherapy (Anti D).** ISD found evidence that Z29.1 Prophylactic Immunotherapy (Anti D) was under-recorded in 102 (50%) of the 202 delivery episodes where it should have been recorded. Anti-D can be given to a Rhesus negative mother in the antenatal or postnatal period. If it is known that an injection of Anti-D has been given during the pregnancy, this information needs to be recorded on the SMR02 delivery episode.

**Z22.3 Carrier of other specified bacterial diseases** (Group B Streptococcus – GBS). GBS is a common type of the Streptococcus bacterium and can cause life-threatening infections in newborns, and should be coded in the SMR02 delivery episode if documented in the medical record/SWHMR. ISD identified two related issues with regard to the recording of GBS in the assessed sample. Firstly, the terms used in the medical record/SWHMR to document the presence of GBS did not make it clear if the GBS status was colonisation or current infection, which made it difficult for the clinical coders to determine the correct code. See terms on page 25. In the absence of the (lead) term ‘infection’ clinical coders should default to ‘carrier’.

The second issue identified was the under-recording of GBS carrier status (Z22.3 Carrier of other specified bacterial diseases). It was not recorded in 132 (84%) of the 157 delivery episodes where there was evidence that it should have been. This figure includes 57 episodes where GBS was
recorded on the SMR02 as a current infection but without the lead term of ‘infection’ ISD recorded these as carrier status.

**Z29.2 Other prophylactic chemotherapy.** Prophylactic antibiotic administration during labour and delivery was under-recorded in 73 (54%) of the 136 delivery episodes where there was evidence that it should have been recorded. In the majority of cases (81%), the under-recorded prophylactic antibiotic administration was for GBS cover during delivery.

**O70.1 Second degree perineal laceration during delivery.** Currently, only tears with a severity greater than second degree require to be coded in the clinical section of an SMR02, however, three hospitals did routinely record second degree tears with an ICD-10 code.

New Coding Guidelines are going to be produced with regard to the recording of tears in the future but until then the current rules apply.

**O42.1 Premature rupture of membranes, onset of labour after 24 hours.** The ISD assessment highlighted an issue with regard to a loss of information in the recording of a premature rupture of membranes (PROM). The assessment raised the question of whether a PROM, which occurred before the admission to hospital for the delivery, should be recorded on the delivery episode. Clarification of this issue will be included in the forthcoming Clinical Coding Guidelines.

**O60.X Preterm delivery.** It should be noted that currently O60.X Preterm delivery should only be used in the Main Condition of a preterm delivery when there are no other obstetric conditions to record.
The SMR02 data item **Indication for Operative Delivery** records the reason given for an assisted delivery, which clinical coders convert to ICD-10 code. The assessment highlighted the following issues with regard to the completion of this data item.

There were 909 records where either an **Indication for Operative Delivery** had been recorded on SMR02 or should have been recorded (including records where a code had been recorded when it was not appropriate to do so). Of these records, 551 (61%) had an ICD-10 code recorded which matched the information found in the medical record/SWHMR. There were an additional 97 (11%) records where the first three digits of the ICD-10 code matched, however ISD found evidence that the fourth digit should have been different.

One hospital (PRMU) did not complete this data item. ISD found evidence that out of 175 records assessed, there was evidence that an assisted delivery had been performed on 70 occasions, and therefore an **Indication for Operative Delivery** should have been recorded. This accounted for 20% of the 358 overall unmatched records.

In another 21% of unmatched records, an assisted delivery had been required and a code describing the type of delivery (ICD-10 blocks O81.- to O84.-) had been recorded as the **Indication for Operative Delivery** rather than the reason for requiring the assisted delivery. Of these, 74 unmatched records, 59 were associated with one hospital (Borders).

SMR02 recording rules state that **Indication for Operative Delivery** should **not** be repeated in the clinical coding section of SMR02. ISD found that five hospitals (AMH, Borders, DGRI, Dr Gray’s and Forth Park) repeated the **Indication for Operative Delivery** ICD-10 code in the clinical coding section in all but a few records. In addition there were a further five hospitals (Caithness, QMMH, RAH, St John’s and RIE) that repeated the code for between 16-58% of records.

At Aberdeen Maternity Hospital, there were a number of records where a Main Condition code was repeated in **Indication for Operative Delivery** when there had been no assisted delivery. ISD understand that this issue was addressed after the sample period and this should no longer be of concern.

Chart 14 on page 32 shows for **Indication for Operative Delivery**, the 10 most frequent ICD-10 codes where evidence was found by ISD, with the corresponding number of codes submitted on the SMR02 record.
Chart 14 - Ten Most Frequent ICD-10 Codes (Indication for Operative Delivery)

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
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<tr>
<td>O61.0</td>
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Key:

- **O63.1** Prolonged second stage (of labour)
- **O34.2** Maternal care due to uterine scar from previous surgery
- **O68.8** Labour and delivery complicated by other evidence of fetal stress
- **O68.0** Labour and delivery complicated by fetal heart rate anomaly
- **O63.0** Prolonged first stage (of labour)
- **O32.1** Maternal care for breech presentation
- **O68.2** Labour and delivery complicated by fetal heart rate anomaly with meconium in amniotic fluid
- **O68.9** Labour and delivery complicated by fetal stress, unspecified
- **O64.0** Obstructed labour due to incomplete rotation of fetal head
- **O61.0** Failed medical induction of labour

The differences in recording of the codes in the chart above can be explained largely by three issues:

- *Indication for Operative Delivery* not being recorded on SMR02 when evidence of an assisted delivery was found in the medical record/SWHMR
- The type of assisted delivery being recorded rather than the reason for operative delivery
- Evidence was found in the medical record/SWHMR that a different reason for operative delivery should have been recorded.
In addition, for the group codes **O68. - Labour and delivery complicated by fetal stress**, there were a number of records where the code recorded on the SMR02 matched the evidence found in the medical record/SWHMR in the first three digits only. Part of this issue is linked to the terms used to record Fetal Heart Rate (FHR) tracings, further information regarding this can be found on page 26.

There were 889 records where ISD found evidence in the medical record/SWHMR that an Indication for Operative Delivery code was or should have been recorded. 31% of the reasons were due to ‘Long Labour’ (ICD-10 Code Group **O63.**), 25% due to ‘Labour and delivery complicated by fetal stress’ (**O68.**) and 18% due to ‘Maternal care due to a uterine scar from previous surgery’ (**O34.2**).

### Definitions and Reference Changes

During the Data Quality Assurance assessment of SMR02 data, various issues were raised with regard to definitions and to reference data. After review and ratification by the NHSScotland Clinical Coding Review Group, changes will be made which will have an impact on those working in the service and some changes will affect Patient Administration Systems.

Where there has been a change to a reference file this will be updated during the routine monthly process. Sites will be notified by ISD when the reference files have been updated via email from the Definitions and Reference team. Hospitals will be notified of validation and Data Dictionary changes via the change control process and the Clinical Coding Guidelines, which will be published as a special edition in the coming months.

It is important to note that these changes will influence working practices. Updated training will be available from ISD and all those involved in the completion of SMR02 returns are recommended to take advantage of this.

The changes have been summarised in table 9 on the next page:
Table 9 - Definition and Reference Changes

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Useful Information and Appendices
Useful Information
The ISD Data Quality Assurance (DQA) Web pages give an overview of the components of data quality and a brief description of the working methods adopted by the DQA team during this and other projects. The website will also be updated with additional SMR02 findings and information.

Web Links

- **Data Quality Assurance**  

- **DQA Methodology**  

- **DQA Abbreviations**  

- **ISD Health and Social Care Data Dictionary**  

- **Coding Guidelines**  

- **SMR02 recording rules**  
  [http://www.datadictionaryadmin.scot.nhs.uk/isddd/9066.html](http://www.datadictionaryadmin.scot.nhs.uk/isddd/9066.html)

- **ISD Births and Babies**  

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  EH12 9EB

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  Email: NSS.terminologyhelp@nhs.net
## Appendix 1 – Data Items Assessed

### Patient Identification
- Ethnic Group

### Episode Management
- Admission Date
- Discharge Date

### Previous Pregnancies
- Previous Pregnancies
- Previous Spontaneous Abortions
- Previous Therapeutic Abortions
- Previous Caesarean Sections

### Proposal for Delivery
- Booking Date

### Drugs and Alcohol Misuse
- Drug Misuse During this Pregnancy
- Drugs Used
- Ever Injected Illicit Drugs
- Typical Weekly Alcohol Consumption

### Current Pregnancy
- Estimated Gestation
- Height of Mother
- Weight of Mother at Booking
- Ante-natal Steroids
- Diabetes
- Smoking History at Booking
- Smoker During Pregnancy

### Record of Labour
- Induction of Labour
- Analgesia During Labour and/or Delivery
- Number of Births this Pregnancy
- Episiotomy
- Tear
- Indication for Operative Delivery
- Date of Delivery
- Duration of Labour

### Baby Record
- Presentation at Delivery
- Mode of Delivery
- Outcome of Pregnancy
- Birthweight
- Resuscitation
- Apgar Score
- Sex (gender)
- Neonatal Indicator

### ICD-10/OPCS-4 Coding
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## Appendix 3 – Hospital Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Small Hospitals</th>
<th>Medium Hospitals</th>
<th>Large Hospitals</th>
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<td>Caithnesss General Hospital</td>
<td>Borders General Hospital</td>
<td>Aberdeen Maternity Hospital</td>
</tr>
<tr>
<td>PRI</td>
<td>Perth Royal Infirmary</td>
<td>DGRI</td>
<td>Crosshouse Hospital</td>
</tr>
<tr>
<td>Dr Gray's</td>
<td>Dr Gray's Hospital</td>
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<td>Forth Park Maternity Hospital</td>
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- **Medium Hospitals**
  - Borders General Hospital
  - Dumfries and Galloway Royal Infirmary
  - Raigmore Hospital
  - St John's Hospital at Howden

- **Large Hospitals**
  - Aberdeen Maternity Hospital
  - Crosshouse Hospital
  - Forth Park Maternity Hospital
  - Ninewells Hospital
  - Princess Royal Maternity Unit
  - Queen Mother’s Maternity Hospital
  - Royal Alexandra Hospital
  - Royal Infirmary of Edinburgh
  - Stirling Royal Infirmary
  - Wishaw General Hospital
Appendix 4 – Matching Percentages by Hospital

The figure in the Scotland column shows the overall matching percentage. The figure in the Adjusted Scotland column excludes the hospitals shaded grey when none or less than 10% of the records had the data item completed. For figures under 90% please refer to the appropriate section in the report.

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Key: *: Ethnic Group not assessed at SRI which was the pilot site