Hip Fracture Patient Outcomes in Scotland

120 Day Follow-up

A Report from the Musculoskeletal Audit on behalf of the Scottish Government

The information in this report is intended to be used for improvement purposes. The information has been collected by local MSK Audit co-ordinators based in each hospital. These statistics have not been through ISD’s official statistics quality assurance and formal publication process but have been subject to the MSK Audit's own quality assurance process.

We report on post-fracture outcomes of hip fracture patients in Scotland following a four-month 'snapshot' audit ‘Audit of Care Pathways for Hip Fracture Patients in Scotland (December 2012 to March 2013)” commissioned by the Scottish Orthopaedic Service Development Group (SOSDG) on behalf of the Scottish Government. The snapshot audit collected data on the management of hip fracture patients from all Scottish operating hospitals from 1st December 2012 to 21st March 2013. See Hip Fracture Care Pathway Weblink

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Introduction and Recommendations

Following on from the report ‘Audit of Care Pathways for Hip Fracture Patients in Scotland, December 2012 to March 2013’ circulated to hospitals, clinicians and managers in August 2013, the current report gives 120-day outcomes for the same group of patients.

Both reports can be found at the link given on page 1.

We hope that the main audit report and this 120-Day Outcomes report will be used by multi-disciplinary teams at each hospital to identify areas for improvement focus.

The Hip Fracture Care Pathway is one of the five high impact workstrands included as part of the overall MSK and Orthopaedic Quality Drive See MSK and Orthopaedic Quality Drive weblink

What is the aim of the Hip Fracture Care Pathway workstrand?

- By 31st March 2015, the care for all hip fracture patients in Scotland to follow the ‘Scottish Standard of Care for Hip Fracture Patients’ (to be distributed shortly). This pathway of evidence based/best practice clinical interventions will support patients’ early recovery and optimise their ability to retain their independence.
- Patient Focus - ‘If I break my hip I want to recover quickly so I can go back to where I live and maintain as much independence as possible.’

What will success look like?

- A consistent best-practice pathway is the norm for all patients in Scotland. Local implementation of the standards such that all patients: receive timely assessments and interventions in ED; are transferred promptly to Orthopaedics; and, for those patients medically fit, surgery takes place within 48 hours of admission. Where variation is clinically appropriate, that the degree of variation is agreed and followed by all.
- Each hospital has: a multi-disciplinary team approach to care and optimising recovery; patients are able to leave hospital without delay as early discharge planning has ensured any potential delays have already been addressed; and, all patient services are working towards plans for 7 day working to ensure day of admission does not affect recovery.
- No outlier hospitals for: % Mortality (at 30 days), % Readmissions (where patient readmitted to any NHS care provider within 15 days due to a ‘failed discharge’) and % Patients admitted from home not returned home at 120 days.
- All professionals involved in this pathway have a continuous improvement process including testing small cycles of change and measurement of key indicators.

What is the potential impact?

- Consistent implementation of a standardised set of interventions with a clinical evidence/best practice base will lead to improved patient care and reduced variation – Good quality care costs less than sub-optimal care.
- A reduction in mortality, ‘failed discharges’ and more patients maintaining independence by returning back home is achievable by reducing the variation between hospitals.
- Patients more likely to reach discharge criteria sooner, with fewer complications, and thus a reduced length of stay. If the lower three quartiles of hospitals (MSK Audit – Dec 2012 to Jan 2013) were to reduce LOS to the same level as the current top quartile, this could reduce hip fracture bed days (acute, rehab and continuing care) by 35-40,000 (13-15%) per annum.
What should we do now and what support is available?

- Optimise the success and sustainability of your local implementation by – ensuring organisational commitment and buy-in from all stakeholders, determining the structure of your improvement methodology, assessing your current position and potential benefits for this workstrand and prioritising and phasing improvements.

National support available:

- Overall Quality Drive Improvement Lead – Kate James (kate.james@scotland.gsi.gov.uk) and Hip Fracture Care Pathway Improvement Advisor – Jane Campbell (jane.campbell7@nhs.net).

- We have formed a Multidisciplinary Steering Group to provide advice for all hospitals looking to making improvements along the pathway.

- ‘Driver Diagram’ - This articulates in summary form the Steering Group’s view of the key areas of clinical intervention along the care pathway and the standards that we should all expect for all patients across Scotland. See Hip Fracture Care Pathway Weblink

- Scottish Standard of Care for Hip Fracture Patients is being drafted. It will dovetail with Health Improvement Scotland standards for Older People in Acute Care also being drafted at the moment.

- This document will define the standards we should expect for all patients across Scotland. We are happy to share the draft with anyone interested to see it prior to its completion and release on the weblink above.

- The MSK Audit will measure the key indicators for this workstrand (most items in end column of the ‘driver diagram’) for one week out of every four. Results will be available within a few weeks to allow implementation of improvement cycles ‘closing the loop on action’.

- The Steering Group are working to pull together best practice examples and a mechanism to share these to benefit all hospitals. There are a number of ED and Orthopaedic Admission Forms being worked on at the moment to ensure that all interventions along the pathway are implemented as standard for all patients. These will be available on the weblink above. Similarly other documents such as example peri-operative anaesthesia guidelines will be available.

- If you are doing anything interesting at your hospital we would be keen to hear about it.

Use opportunities to learn from other Boards’ experience or innovate yourselves and spread to others!
Summary

The report describes a number of important care management outcomes:

- 91% of hip fracture patients survived to 30 days post-admission, 79% to 120 days (Figs. 3 & 4). This may be a slight underestimate as a small percentage of patients were ‘Lost to Audit’ (uncontactable). However, further checking suggested these patients had not died. Instead, those ‘Lost to Audit’ were younger patients living at home who were consequently harder to contact.
- 44% were still in hospital (or had returned to hospital) on day 30 post-admission, and 9% were in hospital at 120 days (Figs. 1 & 2).
- The median length of total hospital stay (including rehab, further acute care, or continuing NHS care) was 22 days but some patients remained in hospital much longer (mean=36 days; Fig. 5).
- 66% of patients admitted from home were back at home at 120 days (Fig. 6).
- Only 53% of patients admitted from home who walked with no more than one stick prior to fracture had returned to this level of mobility by 120 days (Fig. 7).
- 58% of patients who lived independently prior to fracture were independent again at 120 days (Fig. 8).
- 91% of patients were pain free or had only slight continuing pain at 120 days (Fig. 9).
- 60% of patients were on bone health medications at 120 days, many of these being prescribed after discharge from acute orthopaedic care. However, there was considerable variation in medication rates between hospitals (Figs. 10 & 11).
- 6% of patients discharged from the hospital setting were re-admitted within 14 days (Fig. 12).
- Where comparative data was available, survival and other outcomes remained broadly similar to outcomes from the previous Scottish Hip Fracture Audit in 2007 and 2008. Although sample sizes in the current 2012/13 audit were small and tests low-powered, there were suggestions that hip fracture patients in 2012/13 were less likely to be in hospital at 120 days than those in 2007/08, were less likely to have returned home (but were more likely to be independent at home), and were less likely to be fully mobile.
- A longer-term analysis of routine ISD SMR01 data revealed no difference in overall 30- and 120-day mortality rates between 2008 (when the Scottish Hip Fracture Audit stopped collecting data) and 2013. However, the larger sample size available for the SMR01 analysis indicated that several hospitals had slightly lower survival rates than expected (Figs. 13 & 14). Although this may be in some part due to differences in SMR01 recording methodology in different hospitals, these hospitals are encouraged to review their hip fracture care.
Methodology

We collected data on the management of patients admitted to orthopaedic care with a hip fracture in a Scottish operating hospital on any date between 1st and 21st of the four month period December 2012 to March 2013 (see Care Pathways report for more details on the original acute orthopaedic management of these patients). MSk Audit Local Audit Co-ordinators (LACs) collected data from patient casenotes, patient information systems, results reporting and referral management systems.

Subsequently the Local Audit Co-ordinators gathered outcomes data for these patients principally by telephone to the patient or their carer. This review data was collected on (or soon after) the 120th day after the patient’s original admission to orthopaedic care. Before attempting to contact the patient/carer, LACs checked patient information systems to identify patients who had died within 120 days of admission, and relevant information for these patients was then completed from data available electronically.

Patients younger than 50 years old were not included in the audit. Table 1 provides the number of reviewed patients per unit, and the corresponding number who were ‘Lost to Audit’ (i.e. they could not be contacted). The large majority of hip fracture patients that had surgery in each hospital were audited. Excluding four hospitals where no follow-up was attempted (due to no available LAC resource), 120-day outcome data was available for 92% of originally audited patients (see Table 1).

Patients who fractured both hips simultaneously were only included once in the audit. Those who fractured both hips on separate occasions during the audit period (n=8 patients) were included for both fractures, except when calculating mortality statistics when only the first fracture was used.

Funnel plots and casemix adjustment

Funnel charts show red lines indicating the percentage occurrence of the graphed data across all reported patients (horizontal line) and 95% Confidence Intervals for this percentage (funnel lines). Some hospitals above the upper red funnel line have a statistically higher rate for the graphed data than average, whilst those below the lower line have a significantly lower rate. Data were not overdispersed, so adjustments were unnecessary. It should be noted that the likelihood of detecting significant differences in plotted values between sites is lower than in previous Scottish Hip Fracture Audit annual reports. This is because sample sizes, particularly for the smaller units, are only for 12 weeks data rather than for a full year, and so are insufficient for detecting anything other than large differences from the population average.

Some funnel charts show two rates per hospital, namely the observed percentage rate and the casemix-adjusted rate. Compared to the observed (unadjusted) rates, casemix-adjusted rates allow a more representative national comparison, reflecting differences between hospitals rather than differences in each hospital’s population characteristics. For example, as patient mortality increases with age, hospitals with older populations are likely to have a lower survival rate of hip fracture patients, and this should be taken into account before comparing outcomes to hospitals with younger populations. In practise, however, casemix differences between units are relatively minor and adjustment made little difference to their observed outcomes.

We used the following casemix variables to determine casemix-adjusted rates: age, sex, ASA Grade, pre-fracture residence, mobility, dependence, and type of fracture. We used classification tree methodology (SPSS software) to split the dataset into subgroups (different combinations of the casemix variables) with different probabilities of the outcome variable (e.g. 120-day survival). We then calculated the casemix-adjusted rate for each hospital by comparing their actual rate for a particular outcome with their expected rate, as calculated from the proportions of the casemix subgroups at that hospital.

Comparison versus previous data

Similar types of outcome were measured by the Scottish Hip Fracture Audit (SHFA) until review data collection ceased for patients admitted after August 2008. We compared data from the current 2012/13 audit with the SHFA data, selecting all previous SHFA data from patients admitted between January 2007 and August 2008.
Patients reviewed

Review data were collected from 17 of the 21 acute mainland orthopaedic hospitals across Scotland (Table 1). 1185 (92%) of the 1287 patients originally audited in these hospitals were then reviewed at 120 days post-admission. Forty-one percent of reviews were carried out over the phone to the patient and a further 34% by phone to a carer. Two percent of reviews were face-to-face with the patient/carer (whilst still in a hospital setting). Most of the remaining reviews were compiled electronically by reviewing the histories of patients who had died in acute orthopaedic care or following discharge.

The proportion of patients that could not be reviewed (i.e. were ‘Lost to Audit’) was higher in some units, perhaps principally due to how much time LACs spent on repeated attempts to contact patients. On average, the 102 patients who were Lost to Audit were younger (mean age 77 years old) than those who were alive at 120 days who were contacted (mean age 80 years, p=0.001). Ninety-five percent of those who were Lost to Audit had originally been admitted from their own homes, and the last known post-discharge location of 76 (75%) of the patients was their own home. A further 20 were last known to be in rehab and may well have also been discharged home. Only three were last known to have been in a care home. Checks against ISD’s SMR01 database confirmed that only two (2%) of these patients had died by Day 120, so it appears that patients who were Lost to Audit had better outcomes than average than those who were contacted.

Table 1 – Number of patients included in this report

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Reviewed</th>
<th>% reviewed</th>
<th>Lost to audit</th>
<th>Data not collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayr</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>Crosshouse</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>BGH</td>
<td>27</td>
<td>68%</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>DGRI</td>
<td>56</td>
<td>100%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fife</td>
<td>75</td>
<td>82%</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Forth Valley</td>
<td>93</td>
<td>95%</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Aberdeen</td>
<td>66</td>
<td>99%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Elgin</td>
<td>13</td>
<td>48%</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td>64</td>
<td>83%</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>SGH</td>
<td>34</td>
<td>94%</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>GRI</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>WIG</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>RAH</td>
<td>99</td>
<td>93%</td>
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<td>Inverclyde</td>
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<tr>
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<td>96%</td>
<td>3</td>
<td></td>
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<tr>
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<td>97%</td>
<td>2</td>
<td></td>
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<tr>
<td>Monklands</td>
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<td>98%</td>
<td>1</td>
<td></td>
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<tr>
<td>Wishaw</td>
<td>55</td>
<td>96%</td>
<td>2</td>
<td></td>
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<tr>
<td>RIE</td>
<td>236</td>
<td>100%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ninewells</td>
<td>94</td>
<td>85%</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Perth</td>
<td>45</td>
<td>92%</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1185</td>
<td>92%</td>
<td>102</td>
<td></td>
</tr>
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</table>

The audit included hip fracture patients admitted to orthopaedic care between 1st-21st December 2012, 1st-21st January 2013, 1st-21st February 2013 and 1st-21st March 2013, i.e. a total of 12 weeks unless otherwise specified (see Methodology for more detail).

Patients under 50 years old were excluded.

See the Care Pathways report for detailed data on numbers of patients originally audited. In most hospitals capture rate for hip fracture patients during the audit period was close to 100%. Comparison with SMR01 data suggest small numbers of patients were missed in some sites, but only 3% of hip fractures were missed overall (maximum 16% at one site, all others less than 10%).

Patients from Crosshouse, Ayr, WIG and GRI were not reviewed due to staff absences.
Place of Residence and Survival at 30 and 120 days post-admission

Forty-four percent of all patients remained within a hospital setting (or had returned to a hospital setting) at 30 days after their admission for hip fracture. This compares to 43% in 2007/08. The variation in proportion of patients still in acute orthopaedic care at 30 days (Fig. 1) confirms the findings in the earlier report of a longer length of acute orthopaedic stay in several hospitals. Less than nine percent of patients were in hospital (or had returned to hospital) at 120 days post-admission. This is a small but statistically significant ($p<0.01$) drop from 11% of patients who were in hospital at 120 days in 2007/08.

Fig. 1: Place of residence at 30 days post-admission

Note that some patients who were in acute hospital at 30 days may already have been discharged back home, and required re-admission.

Fig. 2: Place of residence at 120 days post-admission

Note that some patients who were in acute hospital at 120 days may already have been discharged back home, and required re-admission.
Comparative survival is clearly of great importance and best explored in detail using casemix-adjusted data. Overall survival rates varied between 80% and 95% at 30 days post-admission, and 62% and 90% at 120 days post-admission, but none fell below the 95% Confidence Interval for this data. However, the likelihood of detecting significant differences in survival between sites is lower than in previous Scottish Hip Fracture Audit annual reports. This is because sample sizes, particularly for the smaller units, are only for 12 weeks data rather than a full year, and so are insufficient for detecting anything other than large differences from the population average. An alternative 5-year analysis using ISD’s SMR01 database is presented at the end of this report (Figs. 13 & 14).

Survival rates to both 30- and 120-days remained very similar to those in 2007/08.

**Fig. 3: Survival to 30 days post-admission**

![Survival to 30 days post-admission](image)

*Note that to increase clarity, RIE’s data has been shifted left (actual Number of patients=235)*

Key: Ab=Aberdeen; B=BGH; D=DGRI; E=Elgin; Ff=Fife; FV=Forth Valley; H=Hairmyres; I=Inverclyde; M=Monklands; N=Ninewells; P=Perth; RAH=RAH; RIE=RIE; Rg=Raigmore; S=SGH; V=Victoria Inf Glasgow; W=Wishaw

**Fig. 4: Survival to 120 days post-admission**

![Survival to 120 days post-admission](image)

*Note that to increase clarity, RIE’s data has been shifted left (actual Number of patients=235)*

Key: See Fig. 3
**Length of hospital stay and return home**

The median length of hospital stay was 22 days (mean 36 days after capping long staying patients to 120 days). Similar median and mean lengths of stay were recorded in 2007/08.

The median length of total hospital stay for patients originally admitted from their own homes was 24 days, compared to 9 days for patients admitted from a care home.

**Fig. 5: Median length of total hospital stay**

Points represent the median length of stay in the hospital setting in each hospital. Lines extend to show the interquartile range (lower and upper values indicate the number of days within which a quarter and three-quarters of patients were discharged).

The hospital setting includes total length of stay in acute orthopaedic care plus any subsequent rehabilitation, acute hospital or continuing NHS care stays directly afterwards (until the patient left this setting).

Note that the difference between hospitals is not actually statistically significant for this small sample.
In the current audit 66% of patients who lived at home prior to their fracture were living back home again at 120 days post-admission (Fig. 6). This is slightly lower than 69% in 2007/08, but the difference was not statistically significant ($p=0.09$).

**Fig. 6: Percentage of patients admitted from home who were again resident at home at 120 days post-admission**

*Home includes sheltered housing.*

*Patients who died within 120 days are excluded from this analysis.*

*Note that to increase clarity, RIE’s data has been shifted left (actual Number of patients=159)*

*Key: See Fig. 3*
Other outcome measures

As well as the risk of not being able to return home, other common and serious complications of hip fractures in this elderly and often frail patient group are loss (or partial loss) of mobility (Fig. 7), loss of independence at home (Fig. 8), and continuing pain (Fig. 9).

Of those patients from home who were able to walk indoors unaccompanied and unaided or with one stick pre-fracture, only 53% of surviving patients had returned to this level of mobility (although not necessarily returned home) by 120 days (Fig. 7). This is slightly lower than in 2007/08 (57%), but again the difference was not quite statistically significant (p=0.10).

By 120 days post-admission only 58% of patients who lived at home independently (without carers) prior to fracture had returned to living independently (Fig. 8), although this may be a slight improvement compared to 2007/08 (53%, p=0.07).

Although the data on patients’ continuing pain (Fig. 9) may give us some indication of patients’ pain levels, pain is a subjective measurement and will be dependent on individual patient expectations. Nine per cent of patients who were able to answer reported some continuing moderate to severe pain at 120 days, a finding similar to that of 2007/08.

Fig. 7: 120 days post-admission indoor mobility of patients admitted from home who walked unaccompanied with no aids or one aid prior to admission

Excludes patients who died or were lost to audit.
Patients who did not live independently prior to fracture were not included on Fig. 8. Excludes patients who died or were lost to audit.

Fig. 9: Percentage of patients who were pain-free or experiencing only slight hip pain at 120 days post-admission

**Further falls and fractures**

Of the 885 patients who were alive and with known history to 120 days post-admission, 196 (22%) were reported as having sustained at least one fall since their audited hip fracture. Of those patients who had a post-fracture fall, 125 (64%) were reported as having one fall, 58 (30%) had had two to four falls, and 13 (7%) five or more falls.

32 (4%) of patients who survived to 120 days sustained a further fracture. Of those patients sustaining further fractures, 5 (16%) fractured their wrist, 16 (50%) hip, and 11 (34%) sustained other types of fracture.

Patients may be reluctant to admit to further falls, so we must consider that these figures are likely to be an underestimate of subsequent falls and fractures.
**Bone protection medication**

Bone protection medication information at 120 days was obtained from the patient and/or carer, although this may not have always been wholly accurate. This may account for at least some of the 6% of patients who apparently stopped taking bone protection medication post-discharge (Fig. 10). Several units prescribed bone protection medications to up to 30% more patients post-discharge (Fig. 10), but despite this there were still large differences between units in reported use of bone protection medication at 120 days post-admission (Figs. 10 & 11).

**Fig. 10: Change in bone protection medication between discharge and 120 days**

![Bone protection medication chart]

Excludes patients who died or were Lost to Audit, and a small number of patients whose bone medication data was not known at either discharge or at 120 days.

**Fig. 11: Bone protection medication at 120 days post-admission**

![Bone protection medication chart]

Excludes patients who died or were Lost to Audit, and a small number of patients whose bone medication data was not known at either discharge or at 120 days.
Re-admission

Six percent of patients discharged from the hospital setting were re-admitted within 14 days (excluding the 2% of patients who died within 14 days of discharge). There were no significant differences in 14-day re-admission rates for patients discharged straight home from acute orthopaedic care, straight to a care home from acute orthopaedic care, home via rehab or other hospital settings, or to a care home via rehab or other hospital settings.

Fig. 12: Percentage of patients who were re-admitted within 14 days of hospital discharge

Re-admission rates are for patients discharged home or to a care home and re-admitted to any acute hospital, rehab, or NHS Continuing care setting within 14 days. Patients who died within 14 days of discharge home/care home are excluded. Data were not casemix-adjusted as there were no significant relationships between the casemix adjustment variables and the re-admission rate.
**Longer term survival data using SMR01**

The power of the above comparisons of outcomes to detect statistically significant differences between units were limited by the relatively small amount of data available during the 12-week audit period. We therefore also used ISD’s SMR01 database to look at a longer run of data for 30- and 120-day survival. We selected any patient who had been admitted to hospital after sustaining an ICD10 S72.0, S72.1 or S72.2 code ‘hip fracture’. Detailed comparison of the MSk Audit versus SMR01 data for the 12-week period indicated that these SMR01 codes identified 94% of hip fractures identified by our Local Audit Co-ordinators, and that only 4% of patients with these codes would not be considered hip fractures by the MSk Audit (e.g. greater trochanter fractures, periprosthetic fractures, miscoding problems). As non-surgical patients were more frequently managed palliatively with a corresponding markedly higher mortality rate, we further restricted the SMR01 analysis of mortality to patients who had surgery during their admission.

As with the 12-week audit period we were able to casemix adjust the SMR01-based survival analysis. Although ASA score, mobility, dependence and type of fracture were not available on SMR01, we did add several alternative longer-term casemix variables including previous 1- and 5-year co-morbidity scores and number of recent emergency admissions. These casemix variables align to ISD’s HSMR (Hospital Standardised Mortality Ratios) methodology, and were similarly analysed using logistic regression. We selected data from 2008 (the final year of the previous Scottish Hip Fracture Audit) until March 2013 (when the current audit ended). Note that there was no significant time-related trend in overall 30- and 120-day mortality between 2008 and 2013.

The results are shown in Figs. 13 and 14. Several units appear outside the 95% confidence limit funnels on both figures, indicating significantly higher or lower survival than the national average. Note that for a 95% Confidence Interval, it would be expected that one or two units fall outside the funnel areas due to chance alone. There may also be issues with the quality of discharge letters or other SMR01 coding issues in individual units that affect the results. Nevertheless, units that fall below the funnels may wish to review their hip fracture care.

**Fig. 13: Survival at 30 days post-admission, SMR01 data 2008-2013**

Excludes patients who were treated conservatively (as inferred from SMR01, although SMR01 was known to incorrectly classify 4% of operated hip fracture patients as non-surgical). Actual survival rates are not shown, but were similar to the casemix adjusted survival rates. As in previous figures, the degree of adjustment made as a result of differences in casemix was minor. The estimate of 30-day survival rates in reviewed MSk Audit patients (Fig. 3) may be lower because we established that (a) Patients who were Lost to Audit were excluded from Fig. 3 and were known to be less likely to have died, and (b) Fig. 3 includes patients treated conservatively (known to have a lower survival rate).
Fig. 14: Survival at 120 days post-admission, SMR01 data 2008-2013

Excludes patients who were treated conservatively (as inferred from SMR01, although SMR01 was known to incorrectly classify 4% of operated hip fracture patients as non-surgical). Actual survival rates are not shown, but were similar to the casemix adjusted survival rates. As in previous figures, the degree of adjustment made as a result of differences in casemix was minor. The estimate of 120-day survival rates in reviewed MSk Audit patients (Fig. 4) may be lower because (a) Patients who were Lost to Audit were excluded from Fig. 4 and were known to be less likely to have died, and (b) Fig. 4 includes patients treated conservatively (known to have a lower survival rate).