QualityWatch

Focus on hip fracture

Trends in emergency admissions for fractured neck of femur, 2001 to 2011

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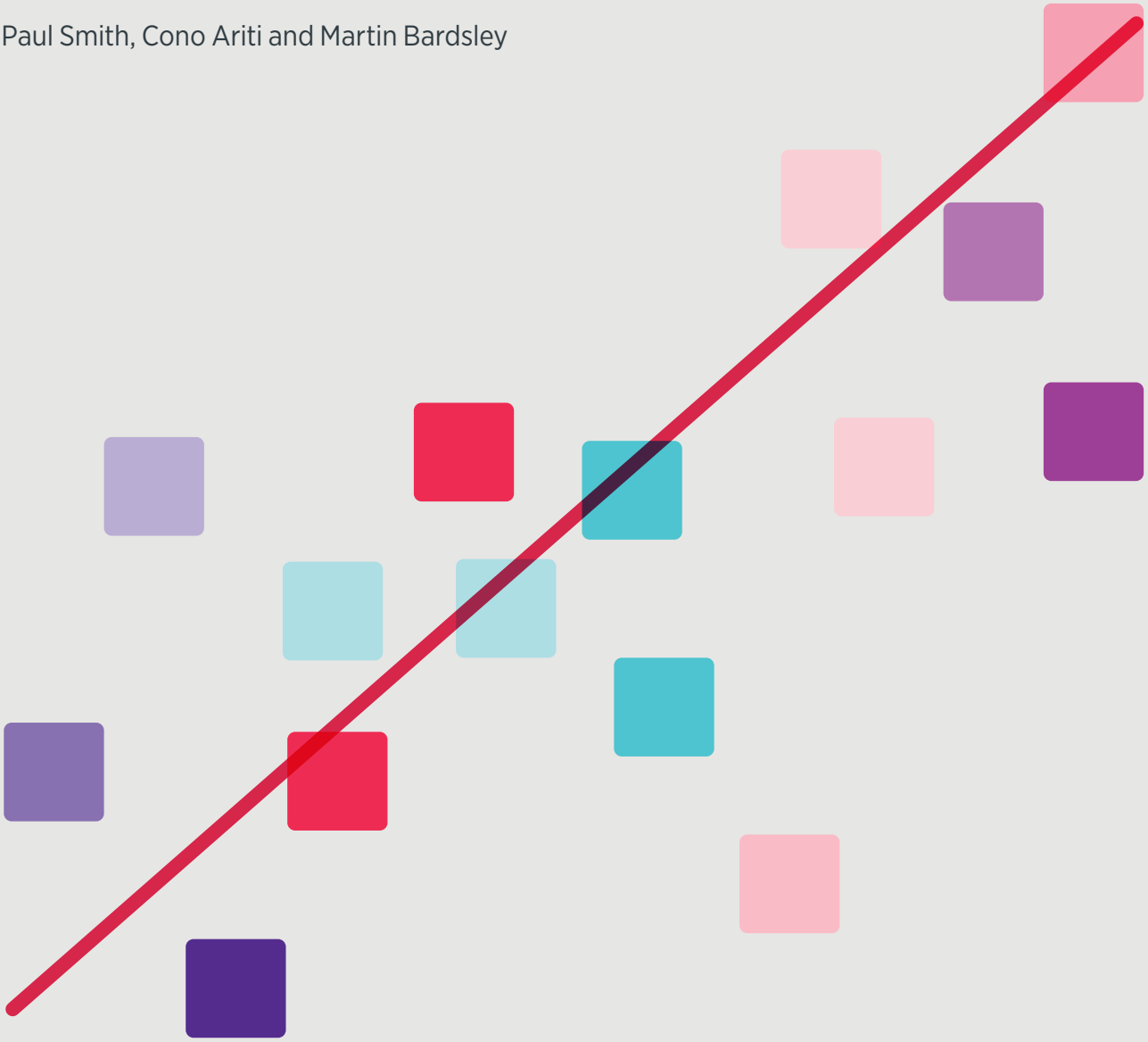

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About this work programme

This QualityWatch Focus On report examines trends in emergency admissions for fractured neck of femur from 2001 to 2011. Focus On reports provide snapshots and longitudinal analyses of aspects of quality in a particular area or areas of care.

QualityWatch is a major research programme providing independent scrutiny into how the quality of health and social care is changing over time. Developed in partnership by the Nuffield Trust and the Health Foundation, the programme provides in-depth analysis of key topics and tracks an extensive range of quality indicators. It aims to provide an independent picture of the quality of care, and is designed to help those working in health and social care to identify priority areas for improvement. The programme is primarily focused on the NHS and social care in England, but will draw on evidence from other UK and international health systems.

The QualityWatch website **www.qualitywatch.org.uk** presents key indicators by area of quality and sector of care, together with analysis of the data. This free online resource also provides research reports, interactive charts and expert commentary.

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Summary

Hip fracture is one of the most common and serious health problems affecting older people, and leads to more than 50,000 hospital admissions a year in England. Providing good-quality care for hip fractures will become of increasing importance due to an ageing population and the corresponding rise in hip fracture incidence. This analysis explores the quality and outcomes of treatment by looking at ten years of hospital inpatient activity data in England.

Key findings

- The number of hip fracture admissions increased by 15.5 per cent, from 46,495 admissions in 2001/02 to 53,694 admissions in 2010/11.
- The increase in admissions appears mainly due to the general ageing of the population, as age- and sex-standardised rates have been more or less stable since 2002/03.
- The proportions of admissions receiving an operation within 24 or 48 hours are common markers of good practice. They have been steadily improving since 2005/06 from values of 51.2 per cent and 69.0 per cent to values of 67.0 per cent and 83.2 per cent, respectively, in 2010/11.
- Total bed days devoted to hip fractures have fallen by 2.9 per cent; age- and sex-standardised lengths of stay fell from 25.7 days to 20.9 days between 2001/02 and 2010/11.
- Standardised 30-day mortality rates decreased by 22.9 per cent, from 97.2 to 74.9 deaths per 1,000 admissions between 2001/02 and 2010/11.
- Emergency readmissions within 28 days rose 41.2 per cent, from 80.3 per 1,000 admissions in 2001/02 to 113.4 per 1,000 admissions in 2010/11.
- People living in the most deprived parts of the country are more likely to have a hip fracture and exhibit worse outcomes than those in the least deprived. These gradients have not reduced over time.

The management of hip fractures in the NHS has changed over this decade, generally for the better, with reductions in 30-day mortality rates and length of hospital stay, and an increase in the proportion of people undergoing surgery within 48 hours of admission. These are indications of improved quality in the acute response to hip fracture, and provide a valuable benchmark to assess changes over the next few years.

This study noted changes in patterns of care for older people, with shorter lengths of stay but higher levels of readmission being observed. These are consistent with patterns of acute care found elsewhere, and are an indication of changes in wider health and social care systems.

‘There is room for improvement in primary and secondary hip fracture prevention services’

These data also point to changes in the population, with a growing community of people surviving hip fracture and with increasing frequency of admission. This group of people are likely to have significant health and social care needs.

There is room for improvement in primary and secondary hip fracture prevention services, as the population level rate of hip fracture has not decreased. It appears that some parts of the country appear to buck the national trend with

improvements in admission rates. The authors suggest that further exploration of the reasons behind this would be worthwhile. The fact that the incidence of hip fractures is not reducing, coupled with variations in outcomes at a regional level, suggest that a possible reconsideration of prevention strategies is needed.

In addition, this study noted that health inequalities in hip fracture incidence and outcomes persist over the study period, and in some cases appear to widen. This suggests that strategies for reducing such inequalities are not achieving success, or at least with regard to this marker.

1 Introduction

Hip fracture is a common and serious condition mainly affecting elderly people, with significant implications for morbidity, mortality and hospital utilisation (Roberts and Goldacre, 2003). Approximately 70,000 hip fractures occur annually in the UK (British Orthopaedic Association, 2007), with the total cost of all fragility fractures estimated at £1.8 billion in 2000. Demographic projections suggest that the incidence of hip fractures will rise from the current number to approximately 91,500 in 2015, and 101,000 in 2020. The total direct costs of fragility fractures are also forecast to rise, reaching £2.2 billion by 2020, with the majority of these costs relating to hip fracture care. Mortality after admission for a hip fracture is high, with estimates of around 10 per cent of patients dying within 30 days of admission for hip fracture, and 30 per cent after one year (Roberts and Goldacre, 2003; Roche and others, 2005). Approximately one-quarter of people with hip fracture are admitted from institutional care, and 10 to 20 per cent of those admitted from home ultimately move to institutional care (National Clinical Guideline Centre, 2011). Improving quality of care for hip fracture will improve patient survival and functional status, and may achieve significant savings in health and social care costs if patients remain healthier and more independent.

£2.2bn

Forecast annual costs of fragility-related fractures by 2020

The key markers of service quality include measures of survival, as well as the frequency of adverse events and complications of treatment. The development of national datasets with common patient identifiers has made it possible to link individual patient events over time. These can be analysed to show, by small areas and hospital of treatment, where fractures occurred and the survival and care history of patients.

The study of hip fractures has two additional benefits. First, overall admission rates provide insight into our ability to prevent falls in the elderly. Second, as the majority of patients admitted are over 80 years old, the treatment of hip fractures can serve as a marker of how well acute care is being delivered for the elderly. Indeed, hip fracture has been proposed as a 'tracer condition' to assess the responsiveness of a health system (Qureshi and Gwyn Seymour, 2003).

The aims of this work were to look at changes in care for hip fracture, and to specifically examine the following questions.

1. Is the incidence of hip fracture falling?
2. Is the quality of care changing, as measured by:
   - reductions in time to surgery
   - a reduction in patients with very long lengths of stay?
3. Have the outcomes for patients with hip fractures improved in terms of:
   - survival
   - emergency readmission?
4. Where is the greatest or least improvement being seen in terms of:
   - area
   - deprivation decile?

2
Method

The study used ten years of hospital episode statistics data for 2001/02 to 2010/11. Hospital episode statistics data cover all day-case and inpatient admissions in NHS hospitals in England, as well as private patients treated in NHS hospitals, patients resident outside England, and care delivered in the independent sector funded by the NHS (Health and Social Care Information Centre, 2013). The records in hospital episode statistics are based on the consultant episode covering the period of time that the patient was under the care of one consultant. In order to capture deaths that occur outside hospital following discharge, hospital episode statistics data were linked with deaths data from the Office for National Statistics. Records of all deaths that occurred during, and up to a year following, the analysis period were obtained from the Office for National Statistics.

Hip fractures were identified by the presence of an International Classification of Diseases (ICD) version 10 code of S72.0, S72.1 or S72.2 in the first episode's primary diagnosis. All analyses were confined to emergency admissions, and admissions for patients under the age of 65 were excluded. Full details of the analysis methodology can be found in the online appendix at www.qualitywatch.org.uk/focus-on.

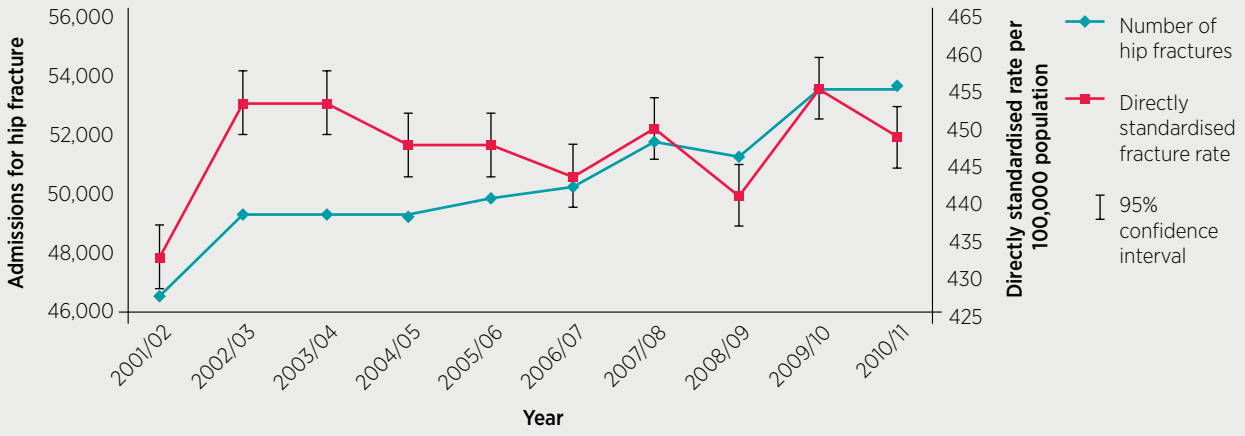
3 Results

A total of 504,351 emergency admissions for hip fracture were recorded for patients over the age of 65 between 1 April 2001 and 31 March 2011. Approximately one per cent of admissions (5,236) were excluded due to invalid gender or invalid Lower layer Super Output Area (LSOA) codes, or were resident outside England. Of the total admissions, 390,311 (77.4 per cent) were women. The mean age of the patients was 83.3 years, with the average age for women being 83.7 years, and 81.6 years for men. The age distribution of the patient cohort changed significantly over the study period, with 20,554 (44.2 per cent) of patients aged 85 or over in 2001/02, compared with 26,204 (48.8 per cent) in 2010/11.

What are the trends in the incidence of hip fracture?

Overall, the absolute number of admissions a year for hip fractures increased by 15.5 per cent during the analysis period, rising from 46,495 admissions in 2001/02 to 53,694 admissions in 2010/11 (Figure 3.1). However, the increase in numbers of older people in the population meant that the change in standardised rates was less dramatic. The age- and sex-standardised hip fracture rates also increased between the beginning and end of the study, from 432.8 to 449 fractures per 100,000 population: an increase of 3.7 per cent. However, the majority of this increase was confined to the period between 2001/02 and 2002/03, rising 4.8 per cent in one year from 432.8 to 453.5 hip fractures per 100,000 population. For the remainder of the period the standardised rates fluctuated, but with the exception of a sharp drop in 2008/09, remained relatively stable. We suspect that the lower rates in 2001/02 are most likely to be an artefact of the data, possibly due to the introduction of new census population data used in the denominators; the more reliable trend is from 2002/03, where there has been little change.

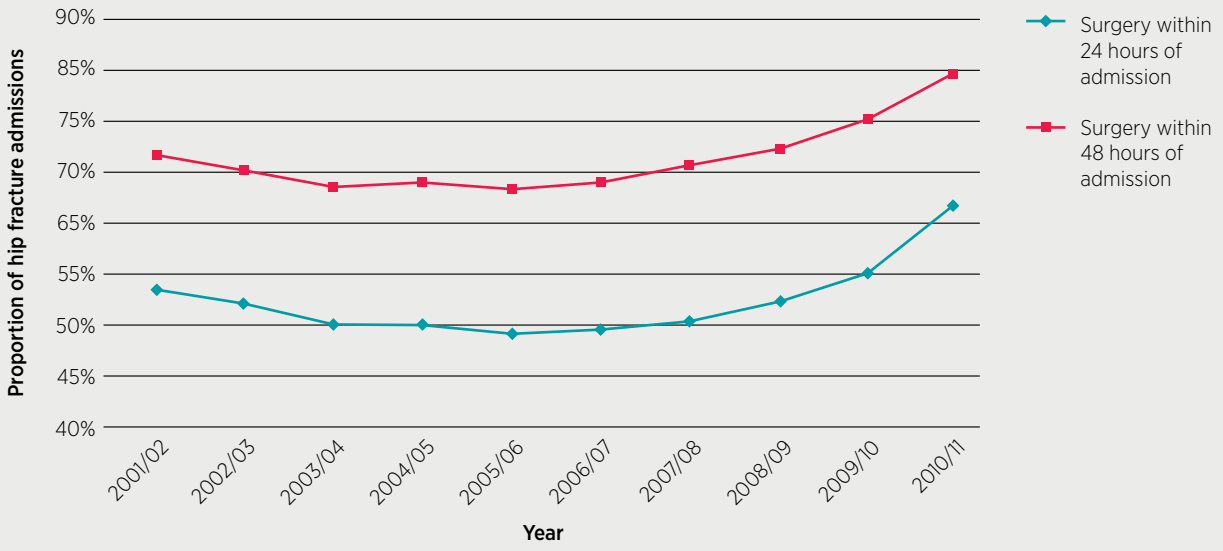
Figure 3.1: Total annual admissions for hip fracture, and age- and sex-standardised hip fracture admission rates per 100,000 population



Are more people getting timely surgery for hip fracture?

Figure 3.2 shows the annual proportions of patients undergoing surgery within 24 and 48 hours, following emergency admission for hip fracture. The trends for both metrics mirror each other closely, declining initially between 2001/02 and 2005/06 from 73.3 per cent to 69.0 per cent of patients operated on within 48 hours, but rising steadily after this and reaching a maximum in 2010/11, with 83.2 per cent of patients operated on within 48 hours of admission. The largest year-on-year increase occurred between 2009/10 and 2010/11 with the proportion of patients operated on within 24 hours rising markedly from 58.7 per cent to 67.0 per cent, with a corresponding increase from 77.7 per cent to 83.2 per cent of patients undergoing surgery within 48 hours.

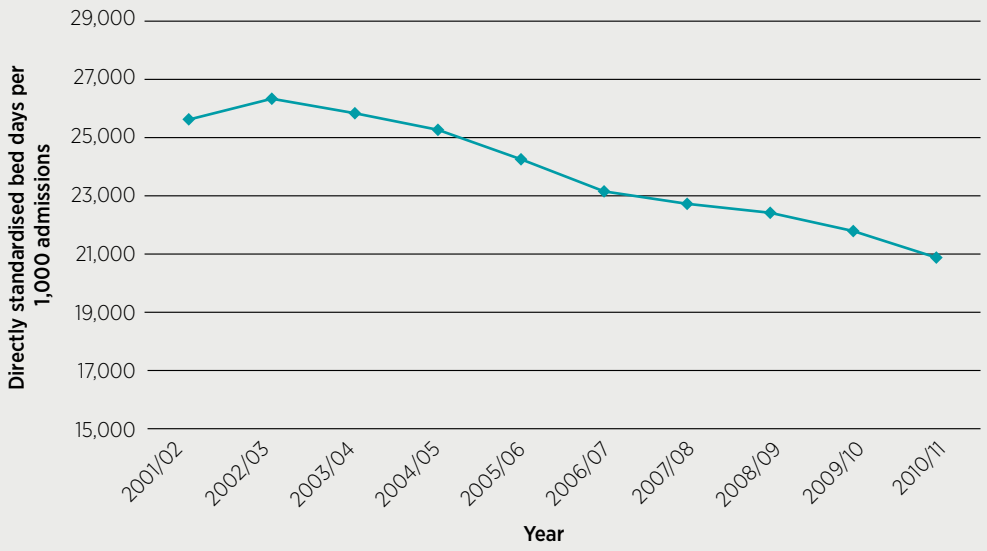
Figure 3.2: Proportion of people admitted for hip fracture operated on within 24 and 48 hours of admission



Are the number of emergency bed days following hip fracture admission falling?

Overall, the number of directly standardised bed days accounted for by hip fracture patients has fallen by 18.7 per cent, from 25,676 days per 1,000 admissions in 2001/02 to 20,864 days per 1,000 admissions in 2010/11. An initial increase in directly standardised bed days between 2001/02 and 2002/03 was followed by a steady year-on-year decline during the study period (Figure 3.3). Without adjusting for age and sex, the crude length of stay fell from 25.4 days per hip fracture admission in 2001/02 to 20.9 days in 2010/11.

Figure 3.3: Directly standarised bed days per 1,000 hip fracture admissions



Are mortality rates declining?

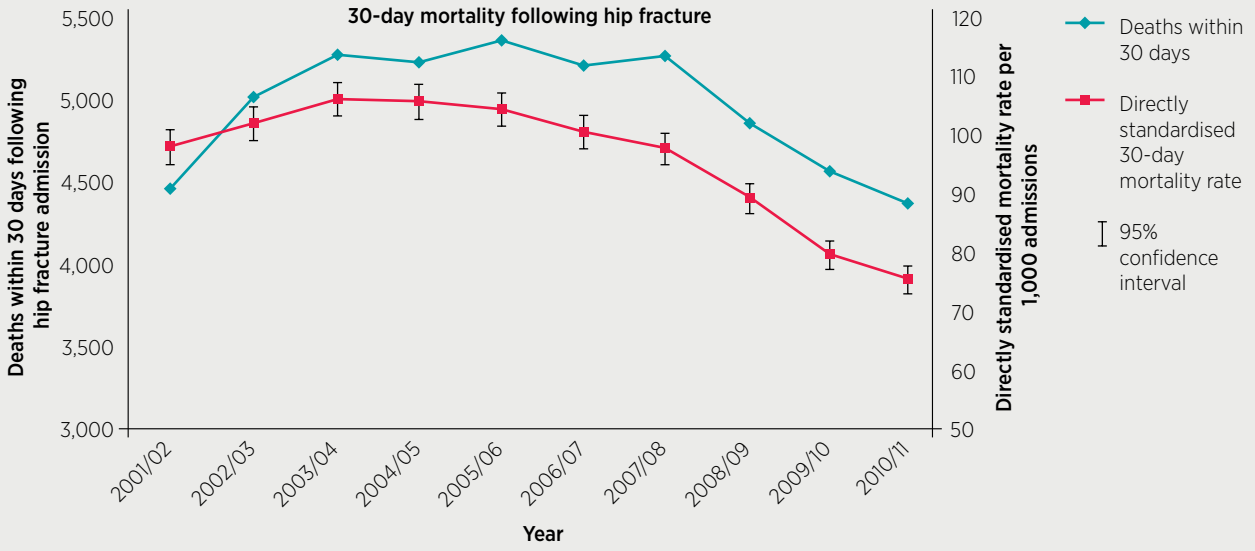
5,154

Rise since 2004 in number of people with hip fractures surviving after 30 days of admission

From 2001/02 to 2010/11 a total of 49,304 patients died within 30 days of being admitted to hospital following hip fracture: an overall crude mortality rate of 9.7 per cent at 30 days. The total number of deaths peaked in 2005/06 (5,328 deaths) and reached a minimum in 2010/11 (4,344 deaths). Over time, age- and sex-standardised 30-day mortality rates decreased markedly (Figure 3.4), starting at 97.3 deaths per 1,000 admissions in 2001/02 and declining to 74.9 deaths per 1,000 admissions in 2010/11, an overall decrease of 23.0 per cent in standardised rate. The largest absolute decrease in death rate occurred between April 2008 and March 2010, falling from 88.5 to 79.1 deaths per 1,000 admissions.

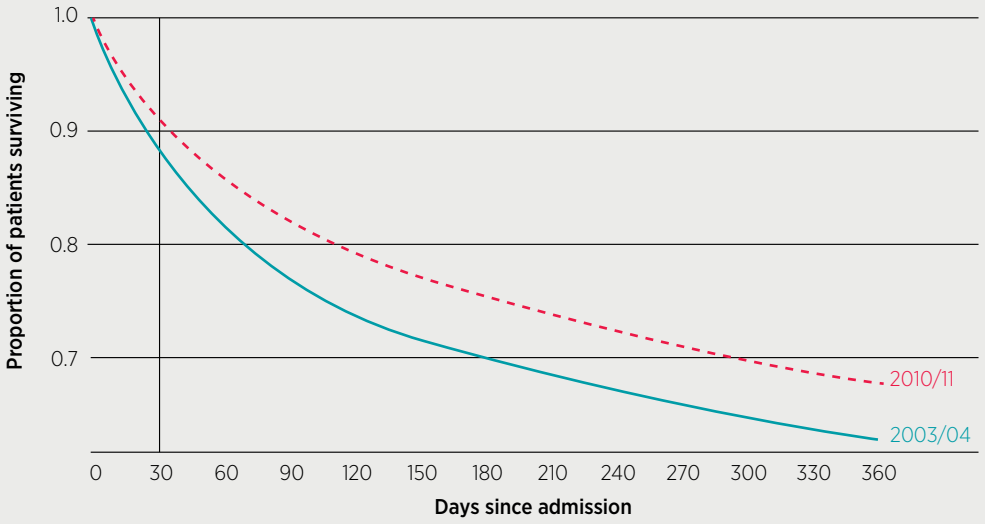
Since April 2004, the improved survival has meant that approximately 5,154 more people who experienced a hip fracture were still alive within 30 days of admission than expected, based on 2003/04 mortality rates.

Figure 3.4: Total annual number of deaths within 30 days following admission for hip fracture, and age- and sex-standardised mortality rate per 1,000 hip fracture admissions



Further analysis was performed to calculate hip fracture mortality rates up to 365 days from the date of admission (Day 0) for the financial years 2003/04 (when mortality rates peaked) and 2010/11 (Figure 3.5). Mortality rates at both 30 days and 365 days following hip fracture admission fell significantly between these time points. Patients in 2003/04 had a 35.3 per cent greater risk of mortality at 30 days following hip fracture, compared to those in 2010/11, and a 20.4 per cent greater risk of mortality at one year following hip fracture in 2003/04 compared to 2010/11.

Figure 3.5: Kaplan-Meier curve[1] showing 30-day and one-year mortality following hip fracture admission for 2003/04 and 2010/11



1. Kaplan-Meier curves are a research tool used to measure the proportion of people living for a certain amount of time after an event.

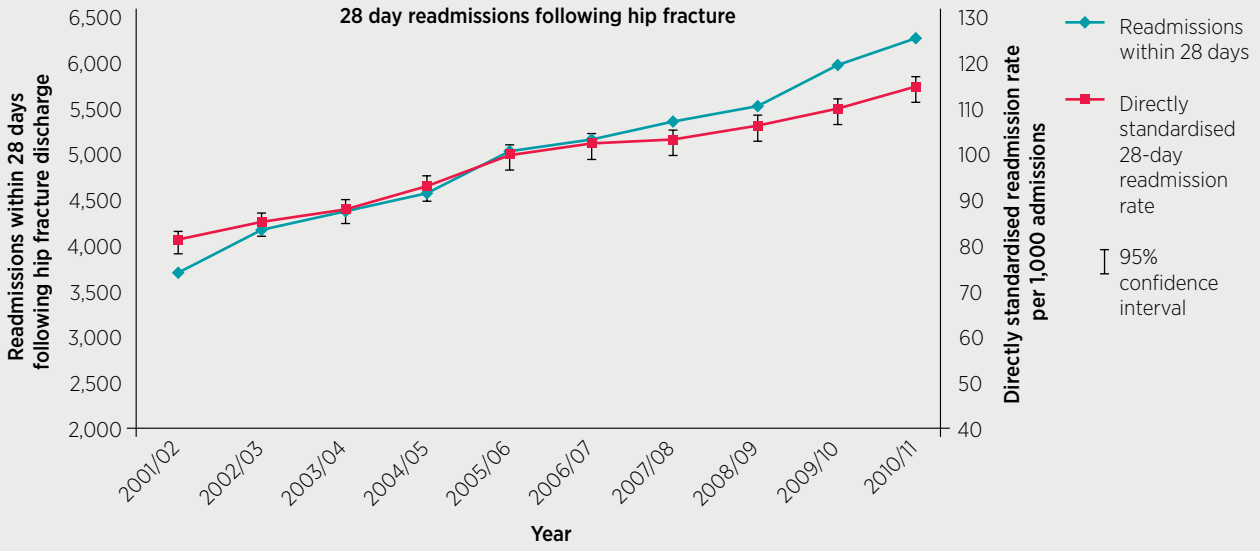
Are emergency readmissions following hip fracture falling?

41.3%

Rise in 28-day readmission rate over ten years

There were a total of 49,469 readmissions within 28 days of discharge from hospital following hip fracture during the study. Overall the number of readmissions increased by 68.9 per cent, rising from 3,658 readmissions in 2001/02 to 6,180 readmissions in 2010/11. The crude readmission rate over the ten-year period was 9.7 per cent. Figure 3.6 summarises the change in age- and sex-standardised readmission rates after hip fracture. In contrast to mortality rates, the 28-day readmission rate increased dramatically, rising from 80.3 readmissions per 1,000 admissions in 2001/02, to 113.4 readmissions per 1,000 admissions in 2010/11, an overall increase of 41.3 per cent over ten years.

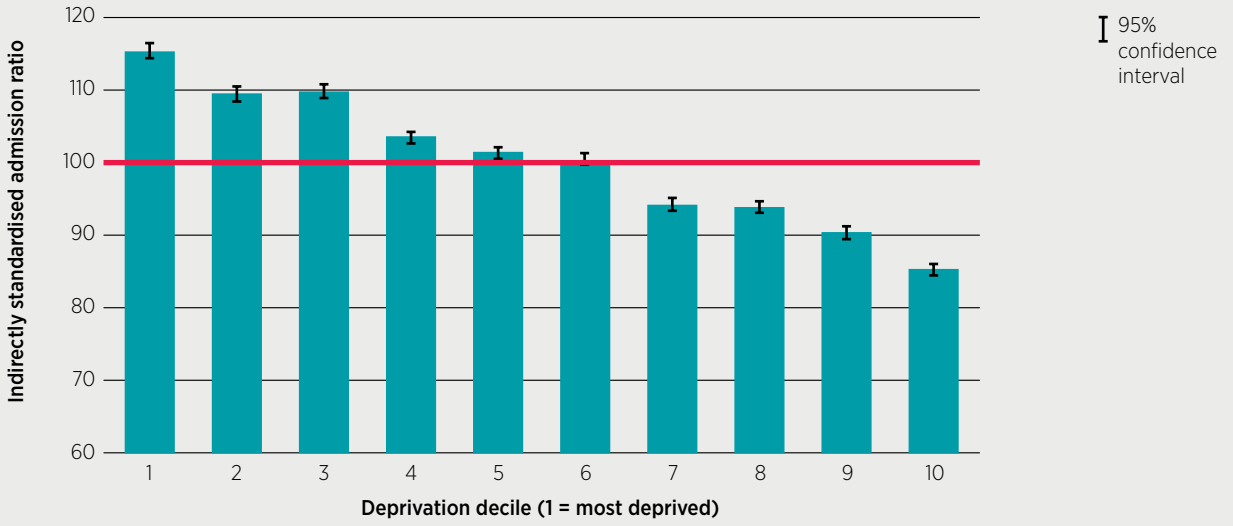
Figure 3.6: Total annual number of readmissions within 28 days following discharge for hip fracture, and age- and sex-standardised readmission rate per 1,000 admissions



Does socioeconomic status influence the outcome measures?

Population-based deprivation deciles using the Indices of Multiple Deprivation were used to calculate indirectly standardised ratios for admissions, deaths within 30 days of admission and emergency readmissions within 28 days for hip fractures in England. All standardisations were adjusted by age and gender. Figure 3.7 shows the ratio of observed-to-expected number of hip fractures by deprivation decile for 2001/02 to 2010/11. The five most deprived groups show significantly more hip fracture admissions than expected compared to the national rate, with the most deprived group experiencing 15.9 per cent more admissions than expected (95 per cent confidence interval: 14.9–17.0 per cent).

Figure 3.7: Ratio of observed-to-expected hip fracture admissions by socioeconomic group, 2001/02–2010/11



Similar socioeconomic gradients are observed for both mortality within 30 days (Figure 3.8) and readmissions within 28 days (Figure 3.9), with the three most deprived deciles experiencing significantly higher numbers of events than expected for both outcome measures. The gaps between the most affluent and least affluent groups observed in the ten years of pooled data were consistent across each individual financial year for each outcome measure.

Figure 3.8: Ratio of observed-to-expected deaths within 30 days following hip fracture admission by socioeconomic group, 2001/02–2010/11

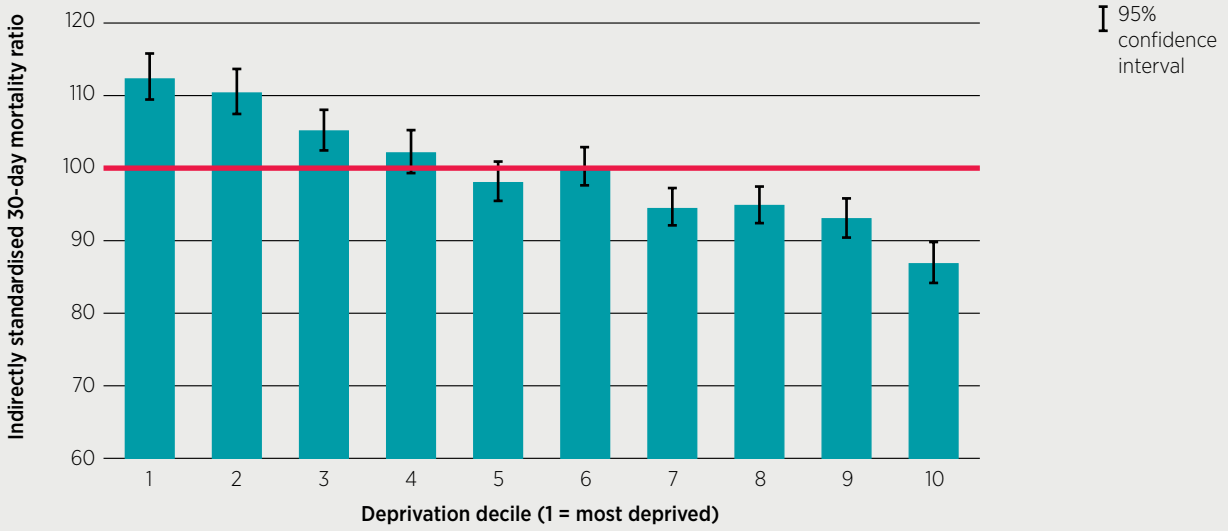
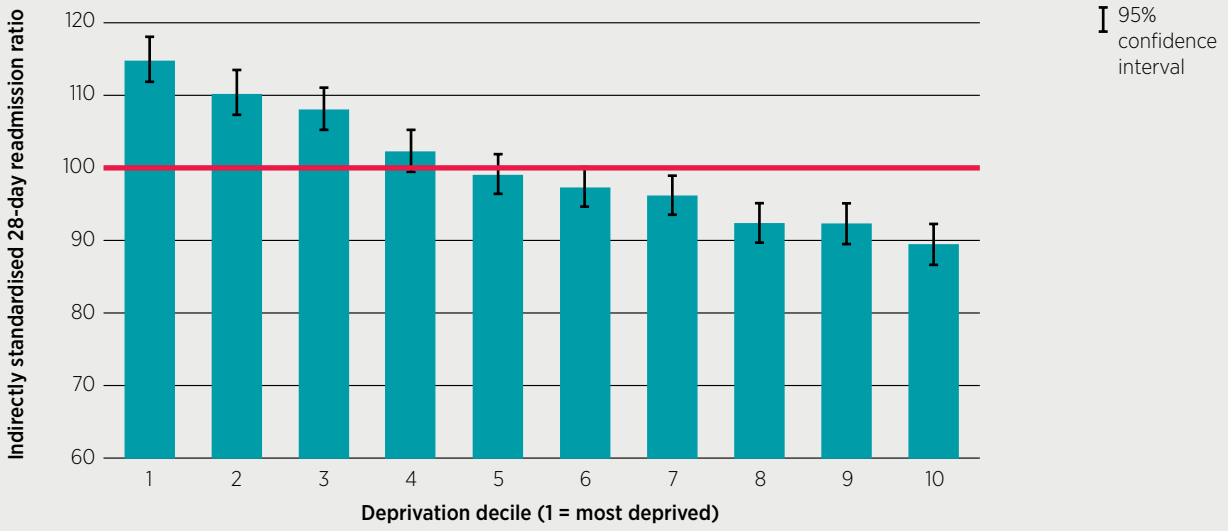


Figure 3.9: Ratio of observed-to-expected emergency readmissions within 28 days following hip fracture discharge by socioeconomic group, 2001/02–2010/11



Further analysis was performed to explore any changes over time in gaps in the outcome measures between socioeconomic groups. For each outcome measure two regression lines were fitted: the first using data between 2001/02 and 2003/04 (the start of the study period), and the second using data between 2008/09 and 2010/11. Three years of data were used in each model to reduce any random fluctuations that might occur in the annual event rates. The slope of each of the lines represents the gap between the most and the least deprived groups, and examining the change in slope between time periods should allow for assessment of whether inequalities have changed over the study period (a fuller description of this analysis can be found in the online appendix at: www.qualitywatch.org.uk/focus-on).

Figure 3.10 shows the regression lines of best fit for the standardised admission ratios by deprivation decile for the two data periods. Figure 3.11 shows the regression lines for mortality ratios, and Figure 3.12 for readmission ratios. All standardised ratios were adjusted for differences in age and sex.

For admissions, mortality and readmissions, the slopes of the regression lines became steeper over the study; in the cases of admissions and mortality these changes were found to be statistically significant (see the online appendix). Due to the small numbers involved, how meaningful these changes are in terms of increasing inequality are open to question; however, these results clearly suggest that the inequalities observed have, at the very least, not improved over the course of the study, and that there are still gaps between the most and least deprived groups.

Figure 3.10: Slope index chart for indirectly age- and sex-standardised hip fracture admission ratios by deprivation decile, 2001–2004 and 2008–2011

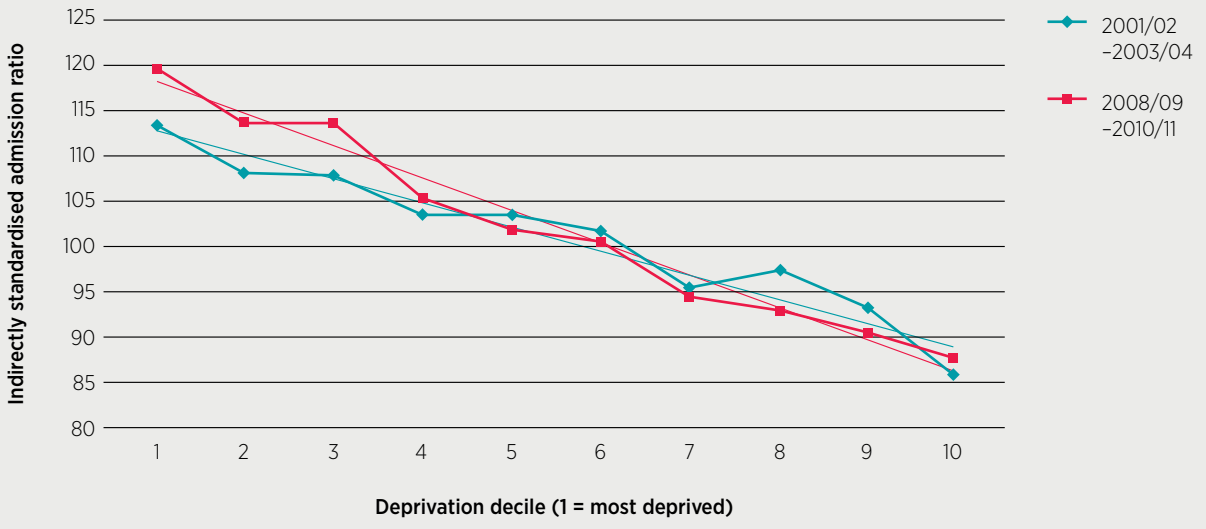


Figure 3.11: Slope index chart for indirectly age- and sex-standardised hip fracture 30-day mortality ratios by deprivation decile, 2001–2004 and 2008–2011

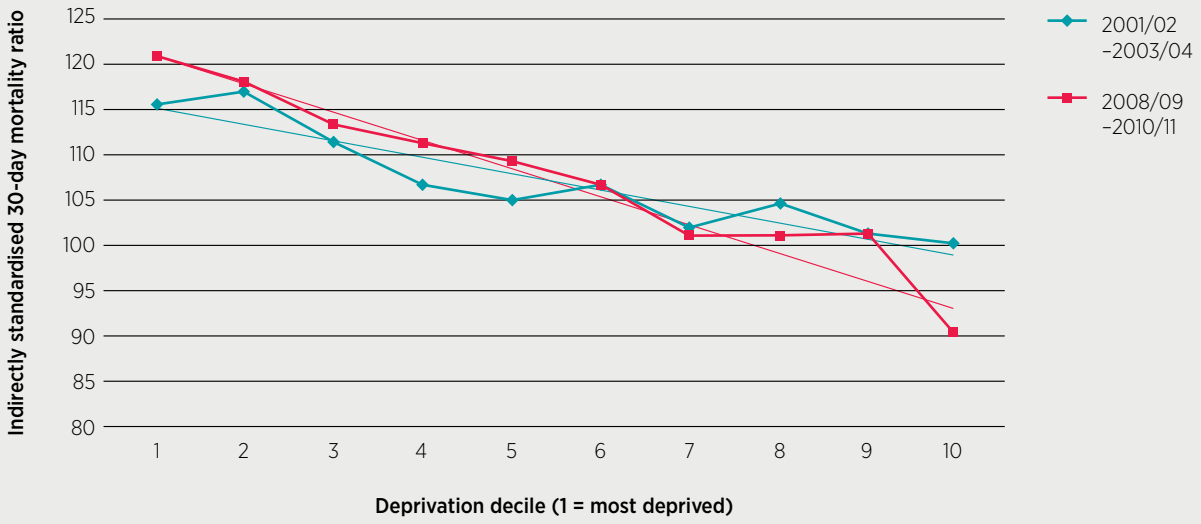
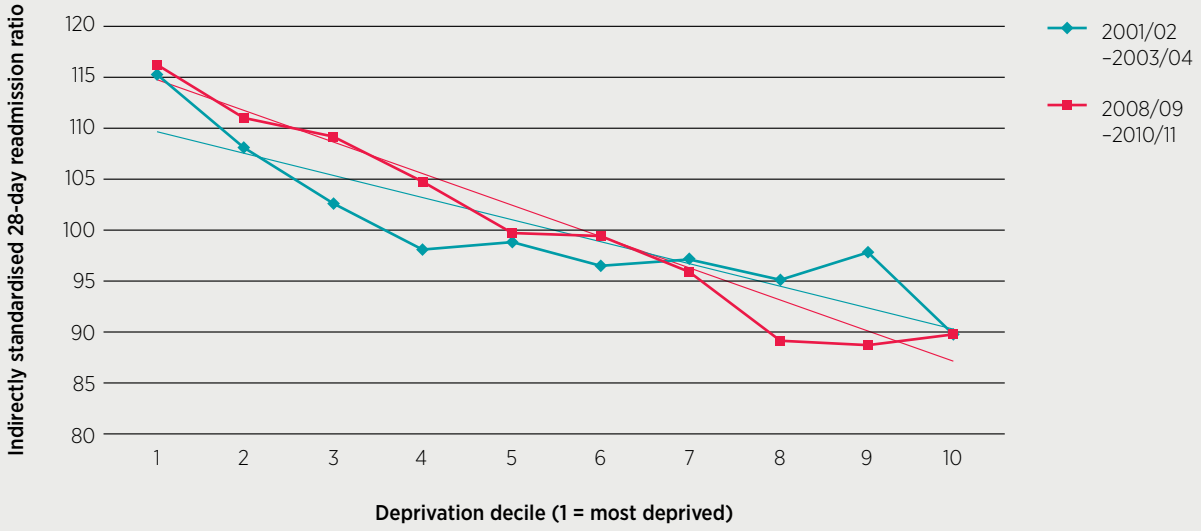


Figure 3.12: Slope index chart for indirectly age- and sex-standardised hip fracture 28-day readmission ratios, 2001–2004 and 2008–2011



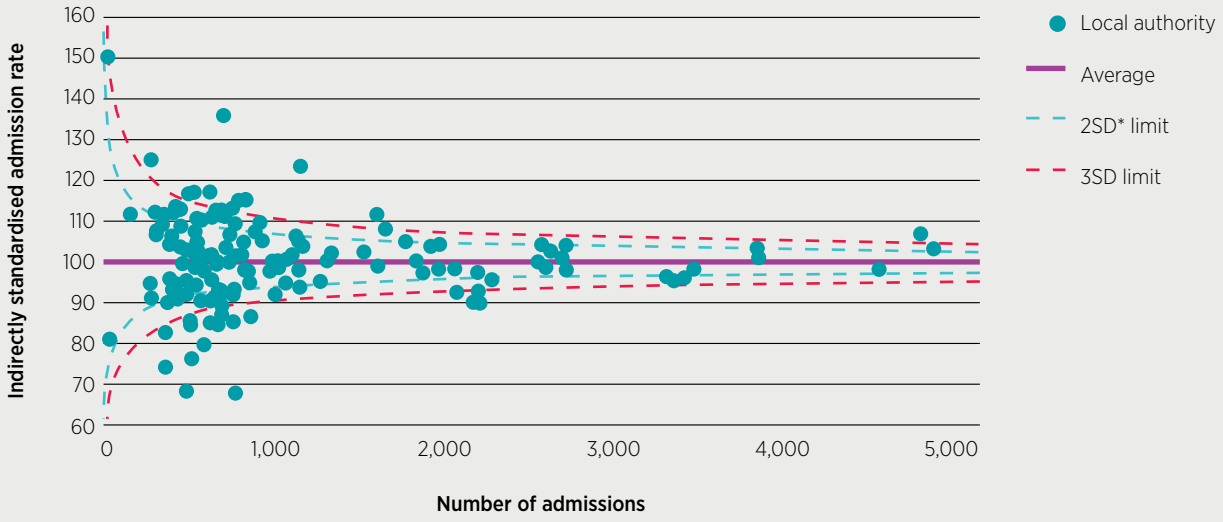
Are there differences between local authority areas?

'Admission ratios showed a two-fold variation between local authority areas'

Indirectly age- and sex-standardised ratios were calculated by local authority for hip fracture admissions, mortality within 30 days and readmissions within 28 days for financial years 2008/09 to 2010/11. Admission ratios showed a two-fold variation between local authority areas (Figure 3.13), with 80 per cent of local authorities falling between 89.6 and 112.7.

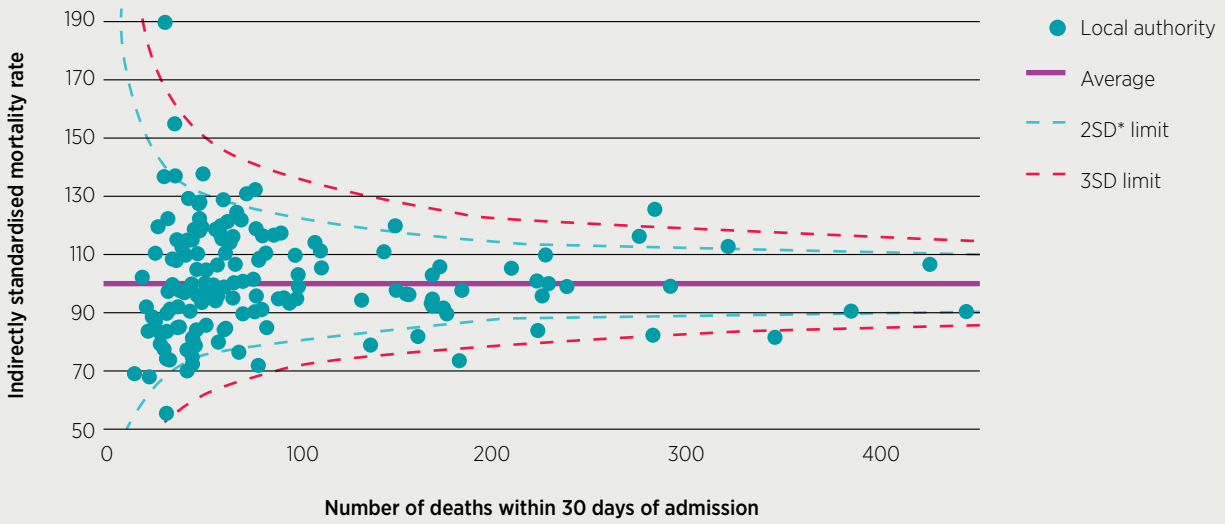
Larger differences were observed for mortality (Figure 3.14), with 80 per cent of local authorities having indirectly standardised ratios between 121.8 and 77.0, with a 3.5-fold variation overall. Readmissions demonstrated even wider variation between local authorities (Figure 3.15), with 80 per cent of organisations having indirectly standardised readmission ratios between 137.2 and 64.5.

Figure 3.13: Indirectly age- and sex-standardised hip fracture admission ratios by local authority, 2008/09–2010/11



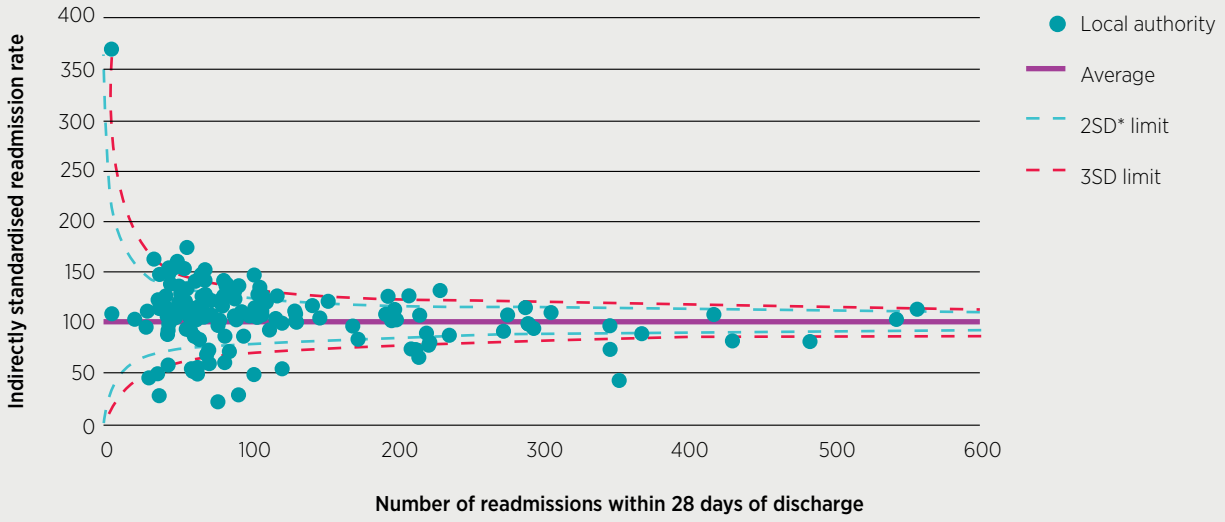
*SD = Standard Deviations

Figure 3.14: Indirectly age- and sex-standardised 30-day hip fracture mortality ratios by local authority, 2008/09–2010/11



*SD = Standard Deviations

Figure 3.15: Indirectly age- and sex-standardised 28-day hip fracture readmission ratios by local authority, 2008/09–2010/11



*SD = Standard Deviations

Further to the above analysis, the expected number of hip fracture admissions, deaths within 30 days and readmissions within 28 days were calculated by using the rates observed between 2001/02 and 2003/04 for each local authority, and applying those rates to the local authority profiles between 2008/09 and 2010/11. Comparing these to the relevant events observed between 2008/09 and 2010/11 yielded a ratio indicating whether each local authority area had changed, and by how much, during the study period. Figure 3.16 shows the observed-to-expected ratio of hip fracture admissions adjusted for changes in age and sex by local authority for 2008/09 to 2010/11, relative to 2001/02 to 2003/04. Accounting for the fact that hip fracture admissions will rise and fall simply due to chance fluctuations, 28 local authorities (18.4 per cent of the total) were found to have significantly higher hip fracture admissions in the last three years of the study period compared to the admission rates observed at the start of the study period, while 32 (21.1 per cent of the total) showed significantly lower numbers of admissions than expected. However, the majority of local authority areas (92; 60.5 per cent of the total) showed no significant change in the number of admissions between 2001 and 2011 when accounting for demographic changes.

Figure 3.16: Change in standardised hip fracture admissions by local authority, comparing 2008–11 observed admissions to 2001–04 rates

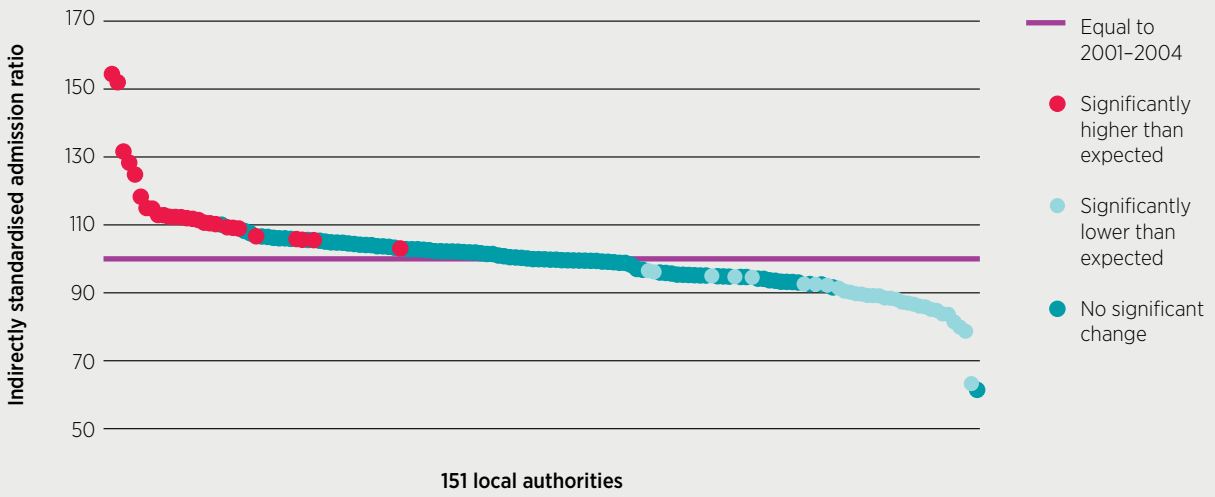
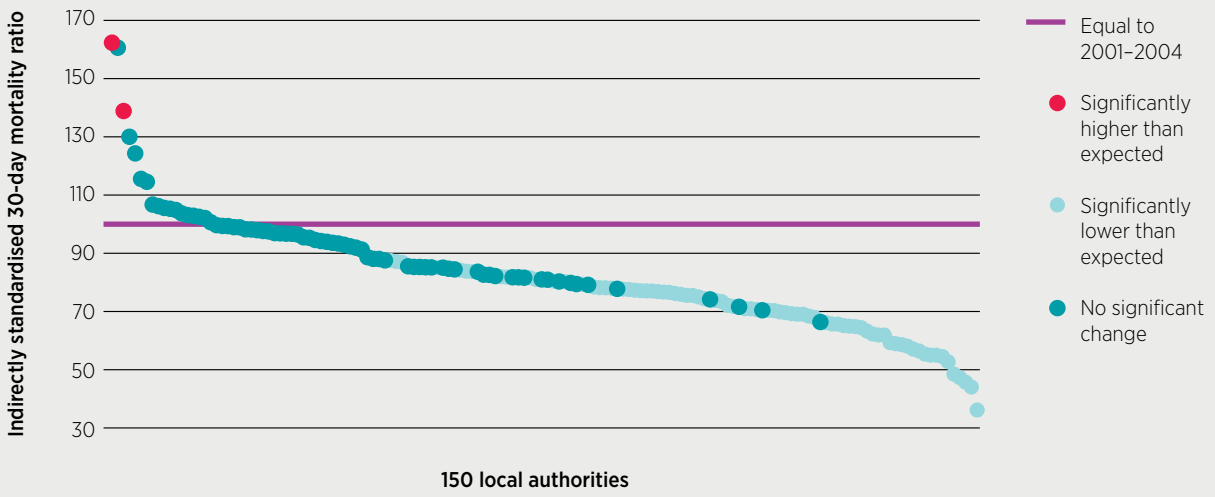


Figure 3.17 shows the observed-to-expected ratio of hip fracture deaths within 30 days of admission, adjusted for changes in age and sex, by local authority for 2008/09 to 2010/11 relative to 2001/02 to 2003/04. In total, two local authorities (1.3 per cent of the total) were found to have a significantly higher number of deaths in the last three years of the study period compared to the rates observed at the start of the study period, while 76 (or 50 per cent of the total) showed significantly lower numbers of deaths than expected. Of the local authority areas, 74 (49 per cent of the total) showed no significant change in the number of deaths between 2001 and 2011, when accounting for demographic changes.

Figure 3.17: Change in standardised hip fracture deaths within 30 days of admission by local authority, comparing 2008–11 observed deaths to 2001–04 rates

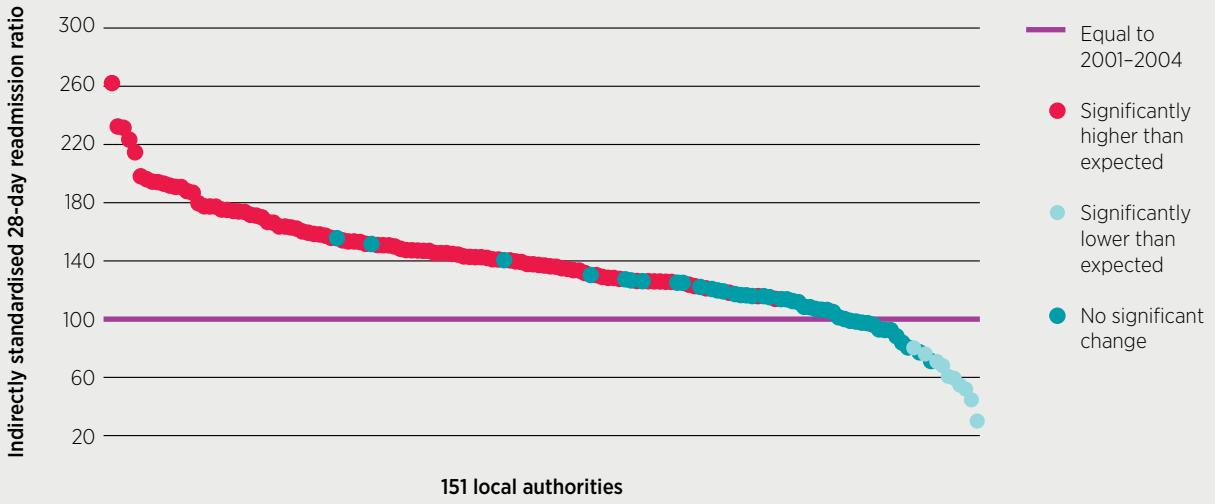


63.8%

Percentage of local authorities with significantly higher readmissions in the last three years of the study period

In contrast with the findings on mortality, there was a marked increase across local authorities in the number of emergency readmissions within 28 days following hip fracture, mirroring the overall national trend. Figure 3.18 shows the observed-to-expected ratio of hip fracture readmissions within 28 days of discharge, adjusted for changes in age and sex, by local authority for 2008/09 to 2010/11 relative to 2001/02 to 2003/04. In total, 97 local authorities (63.8 per cent of the total) were found to have a significantly higher number of readmissions in the last three years of the study period compared to the rates observed at the start of the study, while only 10 (6.6 per cent of the total) showed significantly lower numbers of readmissions than expected. Of the local authority areas, 45 (29.6 per cent of the total) showed no significant change in the number of readmissions between 2001 and 2011 when accounting for demographic changes.

Figure 3.18: Change in standardised readmissions within 28 days of discharge following hip fracture by local authority, comparing 2008–11 observed readmissions to 2001–04 rates



4 Discussion

'The use of hospital beds shows some of the most dramatic changes'

This analysis looks at long-term trends in one key health issue in the care of older people. Its findings provide an illustration of the way that hospital provision has changed over the past decade. There has been a relatively large increase in the absolute number of hip fracture cases, but this is largely due to the higher numbers of older people in the population. The prevalence of hip fractures seems to have remained stable, at least when judged by the stability found in age- or sex-adjusted admission rates, which is comparable with the findings of another study which examined hip fracture admission rates between 1998 and 2009 (Wu and others, 2011). Another study examined age-standardised hip fracture admission rates between 1989 and 1998, and observed an increase in admission rates between 1989/90 and 1991/92, with very little change after this (Balasegaram and others, 2001). These findings may also reflect the general trends in hip fractures reported in western populations, with observed increases in age-adjusted incidence rates through the second half of the last century, followed by rates stabilising in the last two decades (Cooper and others, 2011).

The increase in the numbers of people undergoing surgery within 24 or 48 hours is a positive indicator of improvement in quality of care, with delay in operations associated with higher risk of mortality (Bottle and Aylin, 2006) and other adverse outcomes (Novack and others, 2007) – something that has been noted in other analysis (National Hip Fracture Database, 2012). Time to surgery has been used as a performance indicator for some time now, and is included in the Royal College of Physicians' (1989) guidelines and the National Institute for Health and Care Excellence (NICE) commissioning guidelines (National Clinical Guideline Centre, 2011); surgery within 36 hours also forms one of the standards used in assessing compliance with the Department of Health's Best Practice Tariff (Department of Health, 2013).

Most striking of all is the reduction in 30-day mortality rates seen since 2003/04, despite the population being treated having become older. This is comparable to other observed declining in-hospital mortality rates (Wu and others, 2011), and appears to be a relatively recent phenomenon, with others reporting hip fracture mortality at six and 12 months after injury remaining largely unchanged between 1959 and 1998 (Haleem and others, 2008), and another report observing no appreciable fall in mortality rates during the 1980s and 1990s (Roberts and Goldacre, 2003). This welcome improvement is presumably a product of numerous factors, including reduced time to surgery. Treatment within 48 hours has a similar shape over time and better acute and rehabilitative care, with the particularly sharp decreases observed from 2007/08 onwards potentially attributable in part to the focus on quality of care in hip fracture patients through collaborative ventures such as the 'Blue Book' (British Orthopaedic Association, 2007), and National Hip Fracture Database. The study also observed significantly improved mortality after 365 days following admission for hip fracture, which could be less specific to the fracture treatment itself and a sign of more resilient health in older people.

The use of hospital beds shows some of the most dramatic changes. Although emergency admissions for hip fractures have risen, the total bed days used have fallen as a consequence of much shorter lengths of stay. However, the authors note that emergency readmissions have increased during this period, and they cannot conclude that shorter lengths of stay are leading to greater numbers of readmissions; other studies have suggested that there is no consistent relationship between the two (Clarke and others, 2012). The pattern observed in hip fracture is consonant with wider changes in the use of urgent care (Blunt and others, 2010).

The gradients in terms of deprivation are not a great surprise, and have been observed by others (Roberts and Goldacre, 2003; West and others, 2004; Wu and others, 2011). The experiences of people living in the most deprived areas seem generally worse: they are more likely to experience a hospital admission for hip fracture, more likely to be readmitted, and subsequent survival rates are worse. Moreover, these analyses indicate that these gradients have not decreased over time, and some appear to have increased. It is possible that what we see with hip fracture patients is indicative of more general trends in all-cause mortality (Office for National Statistics, 2013). There is a substantial literature on how lifestyle factors can influence the risks of falls and fractures, and there are a range of public health initiatives that aim to care for key groups. There is also guidance on which interventions can be used: the NICE guidance from 2005 has been recently revised (National Clinical Guideline Centre, 2013). It appears that work on the prevention of falls and public health work to improve bone health will be the key to progress in these areas. There are a range of measures (British Orthopaedic Association, 2007) that can be employed to reduce hip fractures, including routine falls risk assessments, interventions such as bone protection therapy, osteoporotic risk assessments and the introduction of fracture liaison services.

‘The prevention of falls and public health work to improve bone health will be the key to progress’

However, the data in the present study suggest that although these may be effective locally, they are not having an impact at a population level. This raises the question of whether there is a case for better targeting of interventions on the populations most likely to benefit, and whether the programmes are being implemented in the most effective way. The study did note that not all local authorities have shown the same pattern of change, and there may be value in further work to understand what is happening in those areas that have shown the greatest change.

This analysis benefits from generally consistent national datasets on hospital admissions available at the individual patient level. It is one of the largest analyses of hip fracture care undertaken in England, covering a sufficiently large time span to allow investigation of long-term trends, and as there will be very few hip fractures admitted to non-NHS providers, a comprehensive one. This is one of only a few studies to examine both in- and out-of-hospital mortality for hip fractures. However, the datasets used may have problems in the quality of the coded data (Audit Commission, 2004), which itself may have been subject to improvement over time (Audit Commission, 2010). The range of indicators examined in the study are also relatively limited, confined to basic clinical and demographic data, and do not include measures related to a patient’s quality of life or experiences of the care process. The analysis of time-to-operation was limited by the available data, and more precise information about admission times would produce a finer grading in this indicator – in fact, such additional details are used already in calculating standard performance indicators (National Hip Fracture Database, 2012).

Despite the increasing intensity of bed use in acute hospitals, generally the outcomes for people who have had a hip fracture have improved, especially since 2005. The challenge over the next few years will be to ensure that further service changes arising from current financial situations will not inhibit these improvements. In developing expectations of satisfactory future performance, these changes suggest that future standards should be set based on a continuing upward trend, rather than maintaining current levels of performance.

The observation that survival following hip fractures is improving, coupled with the increase in the age of the population, suggest that in future we will see much greater numbers of people who have had a previous fracture. We will also see patterns of care that suggest shorter lengths of stay and more hospital readmissions. Together, these factors imply an increasing demand for health and social care to cope with a particularly frail population of older people.

The improvement in the reduction of delay in time-to-operation is also welcome, and the authors note that this is an area that had been highlighted as a national target for improvement. One challenge for the future is the question of whether there is some upper limit on how many cases can be seen within 24 hours of admission, as there always will be exceptions where the complexity of a person's presenting condition means that immediate surgery may not be advisable. Currently, we are not clear what level this is, although analysis of the distribution at provider level suggests that the best performers reach 75 per cent, and perhaps this might be seen as a realistic target in future. One further issue is whether there is additional benefit in seeking to set a more challenging standard: say, operation within 16 or 12 hours. Such a course would require evidence of patient benefits – something that was not possible to show with this study, but potentially could be addressed with other operational datasets.

'Generally the outcomes for people who have had a hip fracture have improved'

Overall, this study finds that the management of hip fractures in the NHS has changed over this decade, mainly for the better. In the context of changing demographics and increasingly restricted budgets, it is vital that these levels of performance are maintained and, where possible, improved.

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