Length of hospital stay and mortality after hip fracture

A Swedish population cohort study found that staying in hospital for 10 days or less after hip fracture was associated with a small increase in the risk of death within 30 days of discharge among older people.

Overview:

- Staying in hospital for 10 days or less after hip fracture was associated with a small increase in the risk of death within 30 days of discharge among older people, according to a Swedish population cohort study.
- The mortality pattern in the UK differs owing to avoidance of delay in surgery in people with hip fracture and immediate, closely coordinated multidisciplinary assessment, management and rehabilitation.
- The ‘Hip Fracture Programme’ model used in England allows early supported discharge (usually to a person’s home) only under highly selective consideration and strict clinical criteria.

Background: Approximately 81,000 people are admitted to hospital with hip fracture in England each year, around 85% of whom are aged 70 or older (Hospital Episode Statistics 2015). This elderly population experiences high morbidity and mortality from this common fracture. About 10% of people with hip fracture die within 30 days and 33% within a year, with many of the deaths owing to comorbid conditions (Roche et al. 2005).

The amount of time patients spend in hospital for any presentation has been gradually falling in England, from just below 8 days in 2002–3 to just over 5 days in 2011–12 (Nuffield Trust 2013). Reducing length of hospital stay may save money (House of Commons Library 2010), but may also be linked to a higher risk of complications and more readmissions (Dawes et al. 2014).

Current advice: The NICE guideline on hip fracture recommends using the ‘Hip Fracture Programme’ model of multidisciplinary care and rehabilitation. Healthcare professionals should consider early supported discharge for people admitted to hospital with hip fracture if the patient:
• is medically stable and
• has the mental ability to participate in continued rehabilitation and
• is able to transfer and mobilise short distances and
• has not yet achieved their full rehabilitation potential, as discussed with the patient, carer and family.

Intermediate care (continued rehabilitation in a community hospital or residential care unit) should be considered only if intermediate care is included in the patient’s management programme and the programme team retains the clinical and managerial lead.

The NICE pathway on hip fracture brings together all related NICE guidance and associated products on the condition in a set of interactive topic-based diagrams.

New evidence: Nordström et al. (2015) used Swedish population data to investigate how length of hospital stay after hip fracture influenced the risk of death within 30 days of discharge. People aged 50 years or more who had experienced hip fracture between 2006 and 2012 were identified from the Swedish National Patient Register. Date of death and underlying cause were obtained from the National Cause of Death Register.

The study cohort comprised 116,111 people who had a hip fracture at a mean age of 82.2 years. The mean length of hospital stay was 14.2 days (range 0–343 days) in 2006, which decreased to 11.6 days (range 0–137 days) in 2012 (p<0.001). A total of 42,292 people died during follow-up: 5863 (13.9%) during their hospital stay, 6377 (15.1%) within 30 days of discharge, and 30,052 (71.1%) within 1 year of admission.

After adjusting for confounding factors, such as age and comorbidities, and excluding patients who died in hospital, shorter length of hospital stay after hip fracture was associated with a small but significant risk of death within 30 days of discharge. A 1-day reduction in length of stay was associated with death within 30 days in 2006 (odds ratio [OR]=1.007, 95% confidence interval [CI] 1.000 to 1.013) and in every year through to 2012 (OR=1.038 for 2012, 95% CI 1.026 to 1.049).

The association between length of stay and risk of death after discharge was not linear, with a threshold effect at 10 days. For people who spent 10 days or less in hospital, each 1-day reduction in length of stay increased the risk of death within 30 days of discharge by 8% in 2006 (OR=1.076, 95% CI 1.033 to 1.121). In 2012, each 1-day reduction increased the risk by 16% for people who spent 10 days or less in hospital (OR=1.164, 95% CI 1.122 to 1.208). In contrast, people who stayed in hospital for at least 11 days did not appear to be at higher risk of death after discharge.

Strengths of this study include that it used a large, national cohort of people with hip fracture. The study is limited by the lack of information on cause of death and whether people were discharged to their homes or to community services such as care homes.

**Commentary by Professor Cameron Swift, Emeritus Professor of Health Care of the Elderly, School of Medicine, King’s College London:**

“This numerically comprehensive 7-year Swedish national retrospective cohort study is a selective audit of a single clinical outcome – hip fracture mortality – against a single, isolated operational process variable – length of stay in the admitting acute hospital. Data are not provided on other evidence-based audit variables for hip fracture, including those key to UK evaluation. Each of these is associated with improved clinical outcome, but they also contribute to efficient (and cost-efficient) transition through hospital care.

“These audit variables include avoidance of delay in surgery, with surgery on the day of, or the day after, admission. Another variable is immediate, closely coordinated multidisciplinary assessment, management and rehabilitation by the surgeon, orthogeriatrician, anaesthetist and multidisciplinary team, with continuing, shared clinical accountability across the hospital–community divide. This approach is known as the ‘Hip Fracture Programme’ model, where care is centred in the acute
hospital with preferential avoidance of transfer to non-acute rehabilitation settings. Highly selective consideration of early supported discharge (usually to a person’s home) is subject to strict clinical criteria within this given framework of organised clinical practice.

“Elements of these two variables have become features in prospective audits of hip fracture care in England, Wales and Northern Ireland via the National Hip Fracture Database (NHFD). Implementation of this national audit and the linked Best Practice Tariff has been associated with an annual relative reduction in adjusted 30-day mortality of 7.6% per year over 2007–2011 (Neuberger et al. 2015). NHFD data also indicate that mortality in those admitted from, and returned directly to, their homes is lower for those who spent less than 10 days in hospital than for those staying more than 10 days (Johansen et al. 2015). Conversely, for those transferred to other settings or returning to nursing homes, higher mortality is found in people admitted for less than 10 days.

“Nordström et al. lacked information about whether participants were discharged to home or to community-based living facilities. Premature transfer to lower dependency clinical settings could, therefore, account for their results in Sweden and similar findings elsewhere. The NHFD data show a different mortality pattern according to setting and exemplify the specific robust sensitivity of this prospective database as a crucial, continuing, national audit resource.”

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