

EDITORIALS



Length of hospital stay after hip fracture

How low can we go before patients are at risk?

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The modern healthcare system is a victim of its own success. The number of elderly people globally is higher than at any point in history in both relative and absolute terms. As populations age, their care needs increase. Healthcare costs have increased commensurately.

Acute care hospitals play an outsized role in health system economics. They deliver life saving treatments at enormous cost. The inpatient setting has therefore become an obvious target for efforts to improve efficiency and reduce costs.

One way to reduce costs is to reduce bed capacity, moving patients more rapidly through the hospital by reducing length of stay. Different nations have used different strategies to reduce length of hospital stay. Some have used regulation and policy to reduce the number of inpatient beds, restricting supply of beds, and forcing hospitals and healthcare professionals to reduce length of stay to accommodate patient demand. Other nations have used incentives such as diagnosis related group (DRG) based hospital reimbursement, in which hospitals receive a lump sum payment for an admission regardless of length of stay or resources consumed.¹ Under this model, hospitals face strong financial incentives to reduce length of stay. There is evidence that length of stay has been reduced for many conditions in many countries in recent decades, and many studies suggest that reductions in length of stay may not be harmful to patients.¹⁻³

But speedy discharge is not necessarily an unbridled good. Premature discharges are associated with risks, including higher rates of readmission and possibly mortality.⁴ It is far from clear that reductions in length of stay do not cause harm.

In a linked paper (doi:10.1136/bmj.h696) Nordström and colleagues investigate the relation between length of hospital stay and subsequent mortality among patients admitted with hip fractures.⁵ They looked at patients admitted with hip fractures to Swedish hospitals from 2006 to 2012 using a national registry. During that time, average length of hospital stay decreased from 14.2 days to 11.6 days while the population aged 50 years or older increased by 16%.

They found an inflection point at 10 days of admission. Below this point, shorter length of stay was associated with a significantly increased 30 day mortality after discharge. Beyond

10 days, the effect disappeared. The extra risk associated with shorter lengths of stay increased from 2006 to 2012.

A number of patient factors were associated with increased mortality above and beyond shorter length of stay. The highest risk of death occurred in certain subgroups: men, patients with trochanteric fractures, and patients with comorbidities such as chronic obstructive pulmonary disease, renal failure, and cardiovascular disease. But the effect persisted even after adjusting for these potential confounders.

How can we explain the study findings that reduced length of stay was associated with higher mortality? One possible explanation is that reductions in length of stay resulted in more complications occurring after discharge; complications that might have been quickly recognized and treated if the patient had remained in hospital. A short initial admission may merely be the precursor to a longer, potentially deadly readmission to treat a complication that might have been recognized earlier.

These results may serve as further warning to those who seek to discharge patients as quickly as possible. However, the current study should be considered in light of a number of minor limitations.

First, the authors excluded from their analyses patients who died during the index hospital admission, which may have led to survivorship bias. As length of stay was reduced in Sweden over time, patients would have less "opportunity" to die in hospital because they have already been discharged. In a bygone era, such patients would have remained in hospital and died in hospital. Such a bias could inadvertently lead to an overestimation of the impact of reduction in length of stay on mortality.

Second, it is important to think about the differences between patients with shorter and longer lengths of stay. The authors found evidence that patients with extremely short lengths of stay may have had poorer prognosis at baseline. For example, 27.9% of patients hospitalized for 0-5 days had dementia compared with only 11.0% of patients hospitalized for 11-14 days. Dementia itself has been associated with higher mortality after hip fracture.⁶ Moreover, patients in the short length of stay group were more likely to receive intramedullary nails and less likely to receive hip arthroplasty; to the extent that nails are

typically used in patients with poorer functional status while arthroplasty is typically reserved for healthier patients, this finding may again suggest larger differences in comorbidity between patients with shorter and longer lengths of stay.

Third, it is also important to consider how these findings may apply to other healthcare systems seeking to reduce length of hospital stay. Length of stay after hip fracture differs dramatically between countries. As the authors note, the mean postoperative length of stay after hip fracture was five days in the US and 34 days in Japan, suggesting wide variations in factors contributing toward length of stay. Thus it is important to think about how these data do or do not apply to other nations and also other diagnoses and conditions.

What should we do? As clinicians we should be aware that, although hospitals are scarce resources, rapid discharge of patients should be considered carefully. For some patients, early discharge is likely beneficial and for others perhaps not. As policy makers, we should be aware that, while we have the tools to reduce length of stay, the potential for unintended consequences should not be forgotten.

Healthcare systems around the world are constantly urged to do more with less. But Nordstrom et al have suggested that, when it comes to length of stay, up to a point, more is more.

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