In-depth analysis of delays to patient discharge: a metropolitan teaching hospital experience

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Abstract — Delayed patient discharge will likely exacerbate bed shortages. This study prospectively determined the frequency, causes and potential cost implications of delays for 83 consecutive patients, who were inpatients for a total of 888 days. 65% of patients experienced delay whilst awaiting a service. 48% of patients experienced delays that extended their discharge date. Discharge delays accounted for 21% of the cohort’s inpatient stay, at an estimated cost of £565 per patient; 77% of these hold-ups resulted from delays in the provision of social and therapy requirements. Discharge delays are costly for hospitals and depressing for patients. Investment is required to enable health and social-care professionals to work more closely to improve the patient journey.

KEY WORDS: delayed discharge, patient experience, patient journey, Quality, Innovation, Productivity and Prevention (QIPP) agenda

Introduction

The NHS is increasingly criticised for bed shortages, delayed elective admissions and long waiting lists.¹ The number of admissions to secondary care in the UK is growing year-on-year² because of limited out-of-hours services in primary care, a greater number of patients who expect proactive hospital care and, most significantly, an increasing population of older people. Older patients are often frail and have complex social and healthcare needs, resulting in a prolonged inpatient stay.³

At the same time as hospital admissions have increased, there has been a decrease in the number of hospital inpatient beds.⁴ This has been off-set by efficiency directives, with a reduction in the average inpatient stay from 11.7 days in 1980 to 6.8 days in 2000.⁵ One hospital has recently reported a reduction in average inpatient stay to 5.3 days, coincident with the introduction of twice-daily consultant ward rounds.⁶ Nevertheless, demand frequently outstrips supply. Hospitals are often ‘full’, with deleterious effects that include delayed patient flow, failure of specialty ward-based hospital systems and delayed or cancelled elective admissions.

Bed pressures are increased by ‘delayed discharges’, which exacerbate patients’ exposure to hospital-acquired infections, low mood and increasing loss of functional capacity. Remedying such delays would provide both cost savings and better quality of care, in line with the NHS Quality, Innovation, Productivity and Prevention (QIPP) agenda.

The aims of this longitudinal prospective study were to determine the length of inappropriate delay experienced by patients in a general medical ward prior to discharge; to identify common causes of delay and to estimate the financial implications of discharge delays.

Methods

The Chelsea and Westminster Hospital, London, admits both medical and surgical patients to an acute admissions unit (AAU), from which 60% are discharged home within 48 hours. The remainder are transferred to base wards. The majority of these patients require specialist elderly care that cannot be provided by single organ specialists.

For seven weeks beginning 12 October 2010, all of the patients looked after by the gastroenterology general medicine team, both in their base and in designated out-lying wards, were included in this study. Only prospective data were incorporated in the results.

The duration of inpatient stay and the time at which a patient was ‘medically fit for discharge’ were recorded. The latter was prospectively agreed in unison by the consultant and specialist registrar, and confirmed at the next multi-disciplinary team meeting. If a patient became unwell after being declared medically fit, delays associated with all of the periods of being medically fit were summated. The medical records for every patient in the study were reviewed and staff interviews conducted each day to identify any delay. The data were recorded daily during weekdays and on Mondays following each weekend.

A pilot study was used to define the reasons to which delays could be attributed (Table 1). ‘Combined social and therapy delay’ describes hold-ups affecting ‘medically fit’ patients who were awaiting review from more than one service—physiotherapy, occupational therapy or social services—for whom it was not possible to determine which of these three services was/were preventing discharge. A delay was recorded for each day during which these patients were not seen or, in the case of social services, during which no progress was made.

The day was split into two time periods (9.00am–1.00pm and 1.00–5.00pm). If the service occurred in the same or next time period as the request, then no delay was recorded. A half-day delay was attributed for every subsequent time period lag in the
service. Weekend delays were included in this study, thus a service requested on Friday afternoon that occurred on Monday morning would be recorded as a two-day delay.

'Total delay' was defined as the sum of all delays. Delays were summed if services were delayed concurrently. 'Delay to discharge' was defined as the sum of delays that prolonged a patient's hospital stay; none were concurrent. It excluded the provision of services needed to enable a medically fit patient's discharge (eg physiotherapy).

The data were not normally distributed (Kolmogorov-Smirnov test) but had a strong positive skew; hence, median values are provided. Mean values are provided to illustrate the effect of patients whose admissions were prolonged. Percentages are quoted to one decimal place. All calculations were performed using Graphpad InStat for Macintosh v3.1a (Graphpad Software Inc, California, USA).

The costs of each day's delay was calculated using the DOH reference cost of £255. Where 2010 figures were not available, the most recent published data were used and multiplied by the Consumer Price Index (CPI) for each discrepant year.

Results

The complete dataset included information from 83 patients. Their median age was 71 years (range 21–98); 53 were female. Thirteen of the patients included in the study were still inpatients at the time of study closure; of these, nine were ‘medically fit for discharge’. Five patients died whilst enrolled in the study; none of these had been declared ‘medically fit for discharge’.

In total, 54 of the 83 patients (65.1%) experienced a delay while waiting for a service. Forty of the 83 (48.2%) patients experienced a delay that extended their discharge date.

A total of 888 inpatient days were included in the study. The total number of ‘acutely ill’ days was 649 (73.1%). The mean number of ‘acutely ill’ days per patient was 8.3 (median=5). The total number of ‘medically fit’ days was 239 (26.9%). The mean number of ‘medically fit’ days per patient was 3.1 (median=1).

Of the 888 bed days, the number of days affected by a delay (‘total delay’) was 288 (32.4%). The mean ‘total delay’ per patient was 3.5 days (median=0.5).

There was a trend towards an increased number of patients experiencing longer delays with increasing patient age. Nine of the 10 patients whose discharge was delayed by more than five days were over the age of 75 years (Fig 1). The percentage total delay, delay to discharge and associated attributable costs are shown (Table 1).

Thirteen patients suffered a delayed discharge that included one or more weekends, comprising a total of 52 weekend days (5.9%), of which 42 (4.7%) were attributed to reduced weekend services.
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Delays that interfere with a safe discharge from medical wards 
Discussion

Delays that interfere with a safe discharge from medical wards 
are an area that has received relatively little attention because UK 
government targets have focused on admission rather than dis-
charge. Little analysis of these delays has been published recently,
and there is considerable heterogeneity amongst older studies,
many of which have methodological flaws. Therefore, we per-
formed an in-depth prospective study to define the causes and 
financial cost of delays in discharges from the general medical 
wards of a metropolitan teaching hospital. We show that the 
majority of patients experienced delays and that these delays 
interfered with the discharge of half the patients. One-third of 
these delays, accounting for one-fifth of the cohort’s inpatient 
stay, were avoidable. These findings are similar to those of both 
a recent UK study and a large US study, the latter finding that 
13.5% of bed days were inappropriate and that 63% of delays 
had non-medical reasons.10 

We defined a half-day delay as allowable, believing that the 
NHS should aspire to provide very efficient healthcare with standards similar to those of private providers. We recognise that 
arranging socially complicated discharges can take a long time, 
and therefore that discharge planning should start before a 
patient is deemed medically fit. Often, however, social services 
only accept a referral and start discharge planning once a patient 
is deemed medically fit.

The Appropriateness Evaluation Protocol (AEP)11 was 
designed and validated in the US as a technique for evaluating unnecessary days of hospital care. However, utilisation tools 
such as the AEP have a low level of validity when compared to 
expert review12 and do not necessarily add to clinical judgement.13 Therefore, we chose to rely on clinical judgement to determine the point at which a patient was medically fit for dis-
charge, mirroring what actually occurs in clinical practice. In a completely efficient system, this would be the point of discharge 
from the hospital. Subsequent inappropriate delays were sum-
med to determine the ‘delay to discharge’. They accounted for 
21% of the total inpatient stay for this ward-based cohort.

Most delayed discharges resulted from combined social and 
therapy delay, or social worker or downstream bed delays. Similar reasons for discharge delays have been reported previ-
ously.6,14,15 Untimely social worker review was a significant component, accounting for 16.8% of delayed discharge days and 
costing a ward £97,432 annually. The reasons for this need to be 
understood. They probably include both inadequate numbers of 
trained social workers and the added complexity of trying to 
arrange discharges with limited downstream facilities. This issue 
is unlikely to be resolved while secondary and social care budgets 
are subject to competition.

On receiving Section 2 of The Continuing Health Care form, 
notifying of a planned discharge of a medically fit patient, social 
services are allowed 72 hours to assess and arrange care. The 
Community Care (Delayed Discharges) Act of 2003 enabled 
hospital trusts to fine social services (termed ‘reimbursement’) if 
a patient stayed in hospital beyond this time. This disincentive is 
imperfect. The daily reimbursement was set at £120 per day for 
London and the South-East and £100 for other parts of England. 
This levy was more expensive than hospital care in 2003, yet the 
charge has not been increased since inception. As of 2010, it costs 
£99 and £71, respectively, to provide 24 hours’ care in a standard 
nursing and residential home.16 Daily residential intermediate 
care costs £18617 and daily acute medical care £255.7 Two-thirds 
of trusts do not implement the reimbursement levy,18 perhaps as 
cooperation is deemed to be more effective in a resource-poor system.

The NHS Plan,19 and the National Service Framework for Older People,20 identify intermediate care as a key method for 
avoiding unnecessary hospital admissions and delayed dis-
charges. Between 1999 and 2004, £900 million was spent on 
improving the number of available places by 150,000. The gov-
ernment reported that this resulted in a 64% reduction in 
delayed discharge from acute hospitals.21 Despite this, our study 
shows that 18% of delayed discharge days are the result of the 
lack of an appropriate downstream bed (rehabilitation, care 
home or other). The older population is the fastest-growing age 
demographic, with the ‘very old’ (those over 80) being the 
fastest-growing subgroup,22 so investment in intermediate care 
will need to increase, though this seems unlikely in the current financial climate.

In a pre-defined sub-analysis, we reviewed data from patients 
with a delay to discharge greater than the 90th percentile. Their 
median delay to discharge was 11.5 days (mean 14.9), compared to zero days (mean 0.7 days) below the 90th percentile. This high-
lights the importance of identifying potential long-stay patients. A 
Swiss study derived and validated a simple score that can be used 
at 24 h or 72 h to predict general medical patients who should 
receive early discharge planning.23 Similar scoring systems should 
be validated in UK populations so that proactive discharge plan-
ing can be provided to those for whom it is most needed.

A total of 52 delayed discharge days occurred at weekends, 42 
days of them resulting from reduced weekend services. This 
equates to an annual cost of £132,004 for a 30-bed ward. Recently, the RCP recommended that consultants review ward

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**Fig 1.** The relationship between delay to discharge and patient age.
patients at weekends,24 which may help to reduce the excess mortality that occurs at this time.25 However, our study suggests that these weekend ward rounds could not achieve cost neutrality by enabling weekend discharges because many discharges would be prevented by the lack of social service assessment.

Discharge delays are costly for hospitals and depressing for patients. We have shown that these delays are common and have defined their major causes. We counsel caution in appropriating blame, remembering that a slow but safe and well-planned discharge is preferable to a swift sub-optimal one.26 Solutions will be multi-faceted but would seem likely to include closer personalised working relationships between hospital and social service staff and investment to streamline the patient journey. Effective solutions will prevent delays in patient flow through both the acute admissions unit and base wards, will reduce iatrogenic delays, and will probably provide financial savings. They will mean that the patient rather than the organisation is the priority, and the denigrating term 'bed-blocker' will no longer be used.

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