



Improving the quality of vascular surgical discharge planning in a hub centre

C Wariyapola¹, E Littlehales¹, K Abayasekara², D Fall², V Parker², G Hatton²

¹University of Nottingham, UK

²Derby Teaching Hospitals NHS Foundation Trust, UK

ABSTRACT

INTRODUCTION Discharge planning improves patient outcomes, reduces hospital stay and readmission rates, and should involve a multidisciplinary team (MDT) approach. The efficacy of MDT meetings in discharge planning was examined, as well as reasons for delayed discharge among vascular surgical inpatients.

METHODS Dedicated weekly MDT meetings were held on the vascular ward in Royal Derby Hospital for three months. Each patient was presented to the discharge planning meeting and an expected date of discharge was decided prospectively. Patients who were discharged after this date were considered 'delayed' and reasons for delay were explored at the next meeting.

RESULTS Overall, 193 patients were included in the study. Of these, 42 patients (22%) had a delayed discharge while 29 (15%) had an early discharge. The main reasons for delay were awaiting beds (30%), social (14%) and medical (45%). In 64%, the cause for delay was avoidable. Two-thirds (67%) of all delays were >24 hours. This totalled 115 bed days, of which 67 could have been avoided. However, 32 bed days were saved by early discharge. This equates to a net loss of 35 bed days, at a net cost of £2,936 per month or £35,235 per year.

The MDT meetings also improved the quality of discharge planning; the variability between expected and actual discharge dates decreased after the first month.

CONCLUSIONS Discharge planning meetings help prepare for patient discharge and are most effective with multidisciplinary input. The majority of delayed discharges from hospital are preventable. The main causes are awaiting transfers, social services input and medical reasons (eg falls). There is an obvious financial incentive to improve discharge planning. The efficiency of the MDT at discharge planning improves with time and this should therefore be continued for best results.

KEYWORDS

Discharge planning – Multidisciplinary team – Vascular surgery – Hub centre – Spoke centre

Accepted 28 June 2015

CORRESPONDENCE TO

Charindri Wariyapola, E: charindri.wariyapola@nhs.net

Planning the discharge of a patient from hospital aims to increase efficiency of care in hospital as well as improve patient outcomes and quality of care through bridging the gap between hospital and community care.¹ Ideally, discharge planning should start before admission to hospital for elective admissions and as soon as possible for acute admissions.² Effective discharge planning, especially if tailored to individual patients, can reduce readmission rates,³ length of hospital stay and, consequently, pressure on hospital beds.⁴ It has an impact on patients' quality of life and independence as well as provision of care in the community after discharge and it can reduce carer stress.^{1,2} Discharge planning has been shown to improve both patient and carer satisfaction.⁵ Conversely, inadequate discharge planning and communication can cause breakdown in continuity of care and increase adverse events.⁶

Planning for the discharge of a patient should have multidisciplinary and multiagency team involvement to ensure

all aspects of patient care are considered.² Studies have shown a need for nursing discharge planning,⁷ highlighting there is work to be done to improve multidisciplinary discharge planning. The main reasons for delay in discharge have remained constant over the past 20 years despite advances in technology and guidelines.¹ Some of these are highlighted in Table 1. The aims of this audit were to determine the efficacy of a discharge planning meeting with multidisciplinary team (MDT) input (as a variation between expected and actual discharge dates), identify avoidable causes for delayed discharge, recommend measures to overcome these avoidable causes and assess variations in MDT decision making over time.

Methods

The study was conducted through dedicated weekly MDT meetings involving senior surgical, junior doctor,

Table 1 Common reasons for delay in discharge planning ²	
Examples	
Hospital factors	Delayed home assessments Prescription delays Delays in ward rounds Delayed organisation of transport from hospital
Communication	Breakdown in communication between multidisciplinary and multiagency teams both in hospital and in the community
Resources	Availability of care/residential homes and carer issues
Patient factors	Lack of communication between patients or carers and hospital staff regarding discharge planning

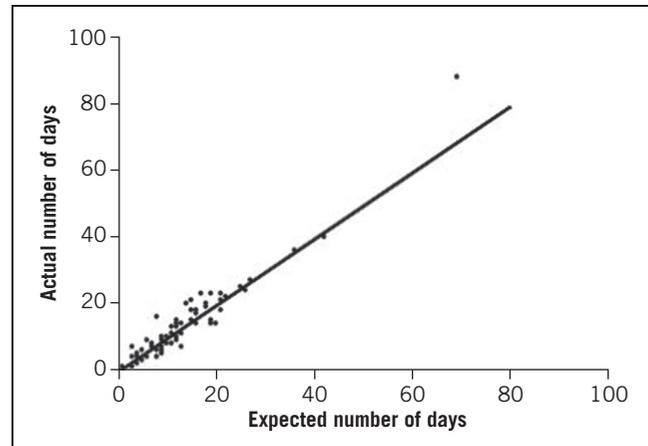


Figure 1 Correlation between expected and actual number of days before discharge for the whole study period

occupational therapy, physiotherapy, nursing and ward administration input on vascular surgery patients on the vascular surgery ward at Royal Derby Hospital, a hub centre for vascular surgery. The study was conducted for a period of three months (24 April – 24 July 2015).

The inclusion criteria for this audit consisted of all vascular surgery inpatients who were present on the vascular ward over the period of the study, who stayed for 24 hours or more and who were discussed at the MDT meeting. Each patient was presented to the discharge planning meeting and an expected date of discharge was decided on. The expected discharge date was a prospective recommendation by the MDT. The actual date of discharge was unknown to the team until the point of discharge. The expected and actual dates of discharge were then compared and any delayed discharges were discussed at the next meeting to explore the reasons for the delay. Patients who were not presented at the MDT meeting were excluded from the study. These were mostly those who were admitted and discharged during the seven days between meetings.

Variability between the expected and actual dates of discharge was categorised as either ‘early’ (patients discharged before the expected discharge date) or ‘delayed’ (those discharged after the expected discharge date). A ‘considerable’ difference was defined as a difference of more than 24 hours between the expected and actual dates of discharge. The reasons for a delay in discharge were subdivided into either unavoidable (those cases where discharge was delayed by factors that were not predictable) or avoidable (those delayed by factors that could have been prevented)

Results

A total of 195 patients were followed up prospectively over 3 months and their actual date of discharge was compared with the expected date, as decided on at the discharge planning meeting (Fig 1). Of these, 42 patients (21.8%) had a delayed discharge while 29 (15.0%) had an early

discharge. The mean difference between the expected and actual dates of discharge in those patients who had a delayed discharge was 3 days. The correlation coefficient for actual versus expected dates of discharge was 1.086 (95% confidence interval [CI]: 1.054–1.119 calculated by linear regression), showing a significant relationship and illustrating the high level of ability of the MDT in predicting discharge dates. There were two failed discharges during this period (defined as an unplanned readmission for the same problem within 30 days of discharge).

The reasons for a delay in discharge were then considered by the MDT and divided into various categories. The

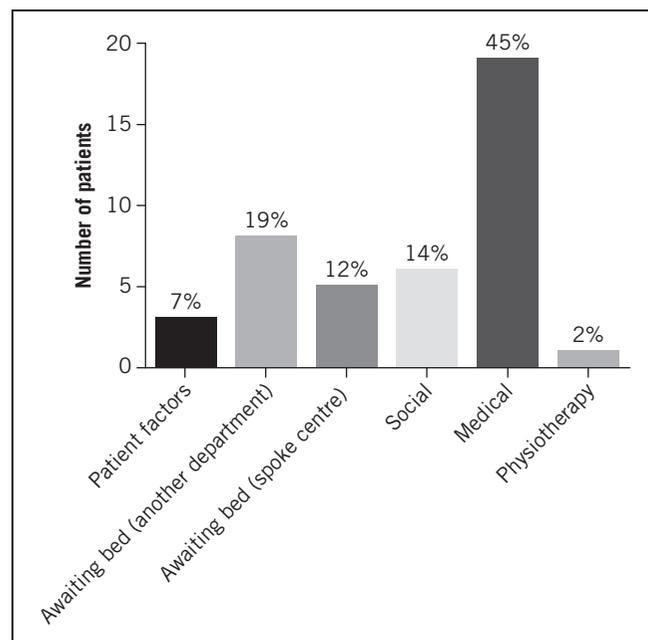


Figure 2 Reasons for delayed discharge

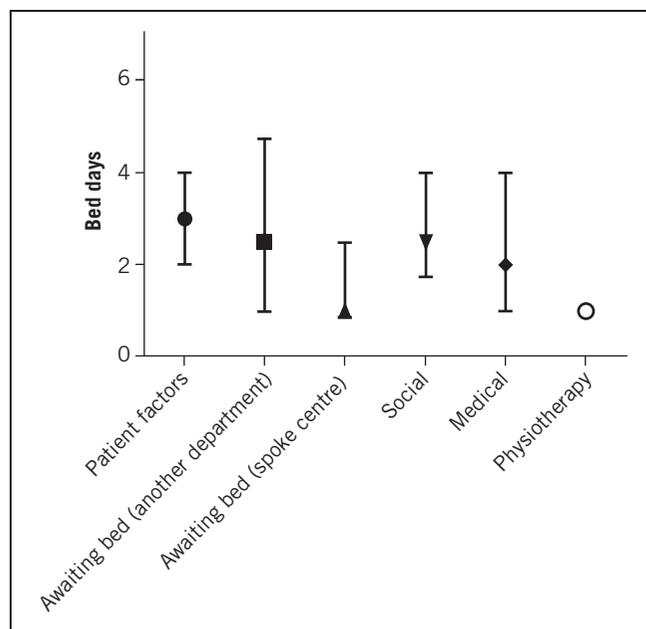


Figure 3 The median and interquartile range of the number of bed days lost by avoidable causes

number of patients affected and the percentage of delays caused by each of these reasons are summarised in Figure 2.

For 26 patients (64%) with a delayed discharge, there was an avoidable cause for that delay. These included waiting for a bed, waiting for a social services care package, a fall or an otherwise preventable medical reason and waiting for medical input that could have been delivered earlier.

Sixty-seven per cent of all delays were considerable (a delay of >24 hours), totalling 115 bed days. Over half of the bed days lost had an avoidable cause for the delay in discharge. The median number of bed days lost for different types of avoidable causes is shown in Figure 3.

Early discharge was not discussed by the MDT but Table 2 shows the reasons revealed after retrospective analysis. Most of these early discharges were caused by factors outside the control of the MDT and ward staff. It should be highlighted that two patients (7.7%) had an actual date of discharge that was earlier than expected owing to inadequate information available at the MDT meeting.

The early discharges resulted in 32 bed days being saved. Combined with the 67 bed days lost that could have been avoided, this meant a net loss of 35 bed days. The cost of housing a patient on the vascular surgery ward for one night was calculated by the finance department as £251.88. The lost bed days therefore cost £8,808.80 over three months. Consequently, a total saving could be made of £35,235.20 per year.

An interesting finding in this study was the emergence of an inherent feedback mechanism or learning curve

Reason	n
Patient factors	4 (13.8%)
Bed available earlier than expected (in another department)	2 (6.9%)
Bed available earlier than expected (at spoke centre)	4 (13.8%)
Input from other specialties was faster than expected	3 (10.3%)
Not discharged to expected place	2 (6.9%)
Inadequate information at multidisciplinary team meeting	2 (6.9%)
Other/unknown	12 (41.4%)
Total	29 (100%)

effect for the MDT over time. The variability between expected and actual dates of discharge decreased after the first month (Fig 4). Statistically, there was no significant difference in the median variability between the expected and actual dates of discharge for each month of the audit ($p=0.51$). However, there was a significant difference in the degree of variation about the median ($p=0.019$, Bartlett's test), showing an improvement over the three months in the MDT's ability to predict the discharge date accurately.

The data for the correlation between patients' expected date of discharge and the actual date (Fig 1) were broken down for each month of the audit (Fig 5) to further investigate this feedback system. As time progressed, the expected and actual discharge dates became more concordant (ie the MDT became more accurate in predicting the date of discharge) as demonstrated by correlation coefficients of 1.174 (95% CI: 1.115–1.233) for month 1, 0.995 (95% CI: 0.955–1.035) for month 2 and 1.047 (95% CI: 0.985–1.108) for month 3 (calculated using linear regression). The latter

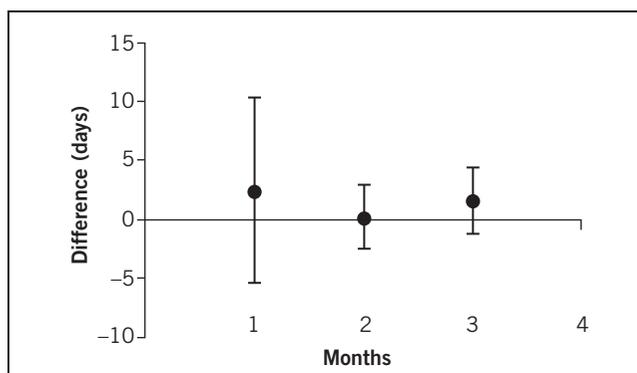
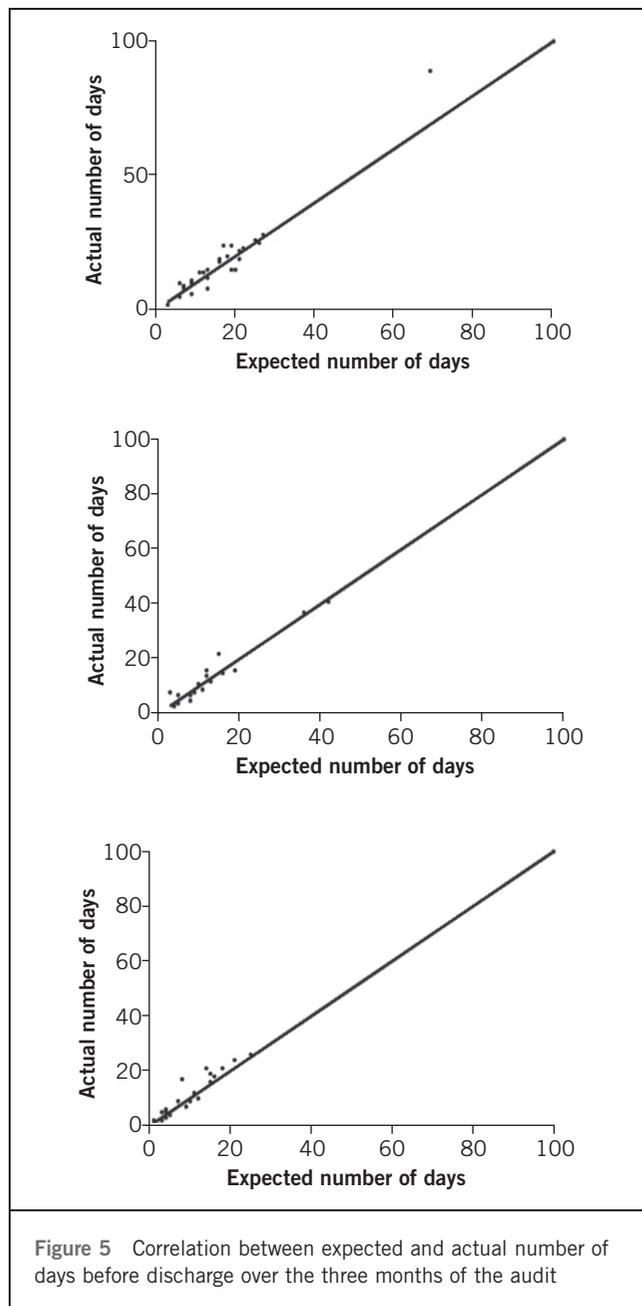


Figure 4 The median variability with inter-quartile range of the number of days between expected and actual dates of discharge over the three months of the audit



two are much closer to total correlation (1.0) than the correlation coefficient for the first month.

Discussion

Studies have shown the need for effective MDT input in discharge planning⁷ and it is suggested in national guidance.² It is important to have the input of each member of the healthcare team in patient management to understand the complex issues that surround a patient’s discharge. This paves the way for better discharge planning and decision making.

This was evident when looking at the decrease in variability between expected and actual discharge dates through the study period. This demonstrates that regular MDT meetings allow for team improvement, with more accurate planning of discharge and more realistic expectations of discharge dates. There was a ‘learning curve’ for the MDT as it took time to understand the roles of each member and how they could contribute. Furthermore, the first month of this audit was the start of a new rotation for the junior doctors. Over time, they were able to bring better information to the meetings, enabling the MDT to make more accurate predictions.

In addition, there was no significant change in the number of early discharges over the three months of the audit, which would have suggested ‘lenient’ planning. This indicates that the MDT did not deliberately choose a later date for expected discharge to improve the accuracy of its predictions.

This study identified a number of avoidable causes of delayed discharge such as problems with community placement and awaiting a bed in another department or hospital. There were also medical causes (both avoidable and unavoidable). These results are similar to those of previous reports of delayed hospital discharge.² These findings can be used to highlight important aspects that need to be improved (eg transfer of care and communication between teams).

The main medical reasons were delays in discussion at MDT meetings and awaiting input from other medical specialties (eg for tissue viability). There were also some delays in reviewing test results, which meant that they were not acted on quickly enough to allow the expected discharge date to be met. Moreover, patient falls delayed discharge in two cases and these could be preventable. Patients at risk of falls should be identified early and any special measures to reduce this risk (eg low beds) should be put into place as soon as possible.

Lack of coordination between hospitals or community care services and patients awaiting beds was also a major reason for delayed discharge. In some cases, the bed shortage was in another ward in our hospital. Nevertheless, many patients who had been referred from a spoke centre were awaiting beds there as there is an arrangement to transfer patients to Royal Derby Hospital for surgery before they go back to their base hospital for continuing care. More can be done to expedite the transfer of these patients back to their original hospital, such as improving communication channels and implementing an agreed pathway to manage the transfer of these patients.

Another cause of delay was awaiting social services input or restarting care packages, which could have been planned earlier. Planning for discharge early or at admission can reduce these delays and hospital staff should be made aware of the need for these discussions. Social services input at MDT meetings would also be helpful.

There are some potential ways of preventing delayed discharge that could be implemented easily. These include only accepting new elective patients from spoke centres if transferred patients are repatriated in a timely fashion and agreeing on approximate repatriation dates at the time of

admission to the hub centre. A weekly list of patients whose discharge has been delayed with named consultants may also help, as well as using cost savings to incentivise discharge coordinators.

When looking at the costings, if every avoidable cause of delayed discharge were dealt with, the ward could save £55,255.20 per year. One way to implement this would be the employment of a static discharge support officer in the hub centre, who could liaise with other departments, the spoke centres and social services. As a full-time, midpoint Band 4 National Health Service (NHS) employee, this would cost the ward £20,658,⁸ which would still result in a substantial saving.

Costing, however, is a complex process. It is also important to consider costs associated with postponement of elective procedures due to bed blocking as well as the resultant costs to the trust (tariffs for procedures lost during that quarter) and patients (inconvenience gauged by quantitative and qualitative estimates of losses, for example costs of transport to hospital, loss of work days for patient and family [if providing care or transport to hospital for patient], ongoing costs of ill health, anxiety and decreased quality of life while waiting for operation). Furthermore, the MDT itself has to be costed.

Conclusions

It is clear that discharge planning meetings help prepare for the discharge of hospital patients. Discharge planning is most effective when multidisciplinary input is available. The majority of delayed discharges from hospital are preventable. The main causes are awaiting transfers, social

services care packages and medical reasons (eg falls). These could have been prevented or planned for in advance and there is an obvious financial incentive to improve discharge planning. The efficiency of the MDT at discharge planning improves with time and this should therefore be continued to see best results. Comparing expected and actual dates of discharge is easy to do, and it can inform the discharge planning process. This model can be applied in health care interventions to compare predicted vs actual outcomes to improve efficiency.

References

1. Shepperd S, Lannin NA, Clemson LM *et al*. Discharge planning from hospital to home. *Cochrane Database Syst Rev* 2013; **1**: CD000313.
2. Department of Health. *Discharge From Hospital: Pathway, Process and Practice*. London: DH; 2003.
3. Phillips CO, Wright SM, Kern DE *et al*. Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure: a meta-analysis. *JAMA* 2004; **291**: 1,358–1,367.
4. Discharge Planning. NHS Institute for Innovation and Improvement. http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/discharge_planning.html (cited January 2016).
5. Laramee AS, Levinsky SK, Sargent J *et al*. Case management in a heterogeneous congestive heart failure population. *Arch Intern Med* 2003; **163**: 809–817.
6. Kripalani S, LeFevre F, Phillips CO *et al*. Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA* 2007; **297**: 831–841.
7. Jesus DF, Marques PF. Nursing assistance at the hospital discharge after cardiac surgery: integrative review. *Rev Bras Cir Cardiovasc* 2013; **28**: 538–544.
8. NHS Employers. *Pay Arrangements for 2014/15*. London: NHS Employers; 2014.