

Reforming the acute phase of the inpatient journey

M Epstein, N Barmania, J Robini and M Harbord

ABSTRACT – The medical admissions unit (MAU) of the Royal Free Hospital, London, should receive all acute accident and emergency (A&E) medical admissions. The unit aims to discharge 60% of patients and to transfer the remainder to a base ward within 48 hours of admission. This study tracked the patient journey from admission to A&E through the MAU during two parallel weeks, one year apart. Key bottlenecks were identified in the first audit and reforms implemented prior to the second. These reforms included improved transfer to base wards, improved weekend work patterns and improved access to investigation, specialist teams and pharmacy. The reforms served to facilitate the patient journey. A greater proportion of acute medical admissions were managed on the MAU and the number of patients exceeding a 48-hour stay fell from 55% to 10%. Both study periods demonstrated a peak in transfer activity from A&E in the 20 minutes before the four-hour target.

KEY WORDS: four-hour target, length of stay, medical admissions unit, medical assessment unit, reforming emergency care, weekend work patterns

Introduction

Since the 2001 publication of *Reforming emergency care: first steps to a new approach*, there has been a drive to ensure rapid access to emergency services and to improve the overall patient experience.¹ This initiative targeted the complete patient journey, including time to consult a general practitioner (GP) and ambulance response times. Most attention, however, has focused on the maximum four-hour wait from accident and emergency (A&E) arrival to admission or discharge. The Department of Health has made specific recommendations on how to achieve this A&E target² but, in addition, hospitals have had to re-engineer the acute patients' onward journey through the hospital. The medical admissions unit (MAU) has developed as a response to the efficiency pressures. These units aim to streamline the onward journey by providing an environment for early investigation, treatment and senior review, therefore improving the time to discharge.³

The MAU of the Royal Free Hospital, London, has

been in operation since 2003. The unit comprises 32 beds, and admits an average of 15–20 patients per day. It should receive all acute general medical admissions from A&E, unless a patient urgently requires a specialist bed. The unit's aim is to discharge at least 60% of patients and to admit the remainder to a base ward within 48 hours of admission. On weekdays between 9 am and 9 pm, the unit is staffed by three house officers, two junior and one senior clinical fellow, and a consultant in acute medicine. Patients aged over 80 with elderly care needs are managed by an elderly care consultant and a specialist team. All patients are reviewed by a consultant during a formal weekday morning ward round and new admissions during ward rounds starting at 2 pm, 4.30 pm and 7 pm. During weekdays, fast tracking for investigations and a daily multidisciplinary meeting of allied health professionals facilitate patient discharge. Weekend staffing levels are reduced, comprising one house officer, one senior clinical fellow or specialist registrar (SpR) and a visiting consultant. A consequence of the complex rota is that on some occasions, the house officer is the only point of continuity between the weekday and weekend shifts.

This study tracked the acute phase of the inpatient journey on two occasions one year apart. After the first audit, apparent weaknesses were identified and changes were instituted to address the problems. The second audit was undertaken to assess the impact of the changes.

Methods

The study tracked the journey of all acute medical admissions aged between 18–80 years from A&E to the MAU during two parallel weeks, one year apart (4–10 April 2005 and 3–9 April 2006). Patients transferred directly to base wards were excluded from the analysis. Official A&E and nursing records were used to verify and record key activity times and dates. Length of stay in the MAU was defined by the time of arrival in the unit until the bed was physically vacated. Timescales recorded in the MAU comprised time to consultant review, time from request for investigation to completion and reporting, time taken to obtain further specialist opinions and the time delay from decision to discharge, or transfer until the patient left the ward. When discharge or transfer was delayed, the

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reasons were sought. Following presentation of the first audit, a series of reforms were implemented which are described in the discussion and an identical analysis of the patient journey was repeated during the same week, a year later.

Results

The journey begins: accident and emergency

Between 4–10 April 2005, 96 medical patients under 80 years of age were admitted as inpatients from A&E. Forty-two (44%) were admitted directly to the MAU while the remaining 54 (56%) were admitted directly to base wards because of lack of capacity on the unit. In addition, during the week, the MAU received 19 patients older than 80 years old. The mean A&E attendance time was 4 h 31 min (range 2 h 37 min–9 h 28 min). Twenty-one of these patients (50%) were transferred from A&E between 3 h 40 min and 3 h 59 min (Fig 1). Eight of the 42 patients (19%) breached the four-hour A&E target.

During the parallel seven-day period in April 2006, 107 medical patients under 80 years of age were admitted from A&E of which 86 (80%) were admitted directly from A&E to the MAU. The elderly care team admitted 29 patients older than 80 years old to the unit. The mean A&E attendance time was 3 h 57 min (range 6 min–11 h 58 min). In the 20 minutes preceding the four-hour target, 48 patients (56%) were transferred from the A&E department (Fig 1). The four-hour A&E target was breached by 12 patients (14%).

The journey continues: medical admissions unit

Of the 42 patients admitted to the MAU during 4–10 April 2005, all were reviewed by the on-call consultant within 12 hours. Nineteen patients (45%) were discharged or transferred from the MAU within 48 hours. The duration of stay for one patient could not be ascertained. Of the 86 patients admitted to the MAU during the sample week in April 2006, all were reviewed by the on-call consultant within 12 hours of admission. Seventy-seven (90%) were transferred or discharged from the department within 48 hours.

In the first audit, 30 reasons were identified for the delay in transferring or discharging 22 patients from the MAU. The delays were potentially avoidable in 14 patients. These included

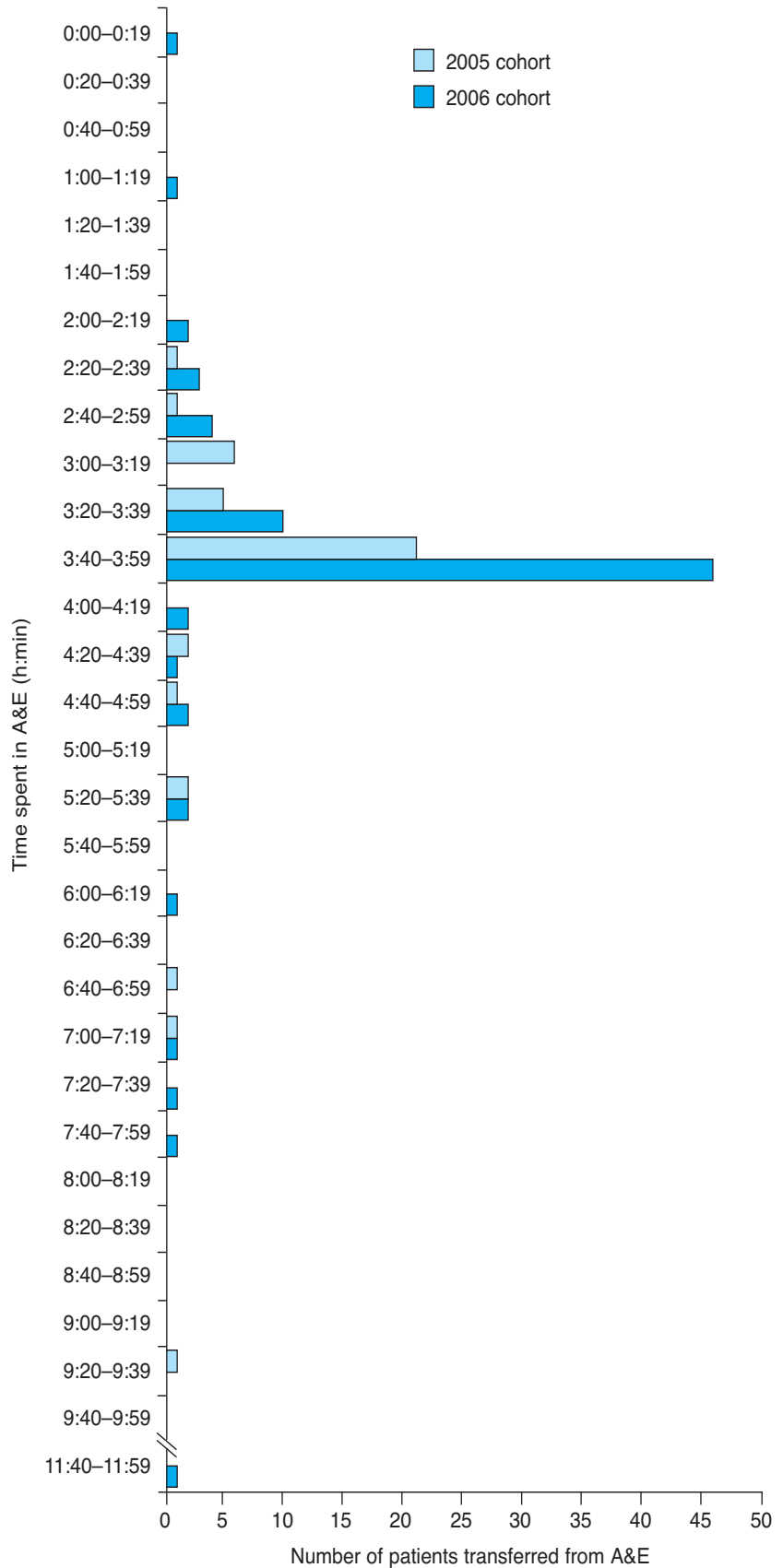


Fig 1. Transfer activity from the accident and emergency (A&E) department by time in the department.

delays in obtaining specialist review, occupational or physiotherapy, and delays in obtaining investigations (computed tomography (CT), ultrasound, laboratory results, endoscopy, and a temporal artery biopsy). Other causes included bed management problems (due to lack of base ward beds or delayed transfer to another hospital). In eight patients there were unavoidable reasons for delayed transfer or discharge from the MAU, such as the emergence of new clinical problems or resistance from patients (and their relatives) to be discharged.

During the second audit there were five avoidable delays (two because of delayed investigation and three due to bed management problems). In a further four patients, unavoidable delays occurred (namely new clinical problems or to facilitate quicker discharge).

In the first audit, delayed discharge beyond the 48-hour target occurred in 32% of patients admitted to the MAU between Monday and Wednesday. This contrasts with 82% delayed discharge of patients admitted between Thursday and Sunday. The changing pattern of discharge is evident by the precipitous decline in weekend discharges with none occurring on Saturday and only two on Sunday. In the second audit, discharge activity was consistent throughout the week and included 10 discharges on Saturday and 17 on Sunday. The relationship between day of admission and likelihood of discharge within 48 hours is illustrated in Fig 2 and the daily discharge activity is illustrated in Fig 3.

The journey concludes

Of the 42 patients admitted during the sample week in 2005, 21 (50%) were discharged directly from the MAU, 17 (40.5%) were transferred to a base ward and the remainder were transferred to other hospitals. In the parallel week in 2006, 46 (53%) patients were discharged home directly from the MAU and 39 (45%) were transferred to a base ward. One patient died in the department.

Discussion

Many hospitals across the UK have established medical assessment/admission units. Despite considerable resource allocation, little published data exists to demonstrate whether or not they substantially advance the patient's hospital journey.^{4,5}

In early 2005 the operation of the MAU at the Royal Free Hospital received special attention because of its central role to cope with a declining hospital bed base and the drive to meet the four-hour A&E discharge target. The initial audit of the patient journey provided the basis for assessing weaknesses in the process and implementing change. The second audit was conducted in exactly the same way and sought to assess whether there had been progress. The study was undertaken in an MAU admitting 15–20 patients per day. There are units in the UK admitting as many as 70

patients daily. Nonetheless, it is likely that the bottlenecks and reforms identified in this study apply to other, busier units throughout the country.

Both audits demonstrated a peak of transfer activity in the 20 minutes preceding the four-hour A&E discharge target. This pattern is similar to that reported in a previous study of 83 A&E departments.⁶ The striking acceleration of movement from the A&E into the hospital in the period immediately prior to the four-hour target suggests that with current resources, a smooth flow through triage, clinical assessment and stabilisation is difficult to achieve. The pattern suggests that in those patients who are to be admitted from A&E, the decision to transfer is heavily influenced by the pressure imposed by the four-hour target.

During the 2006 audit period, a greater proportion of the patients admitted from A&E were transferred directly to the MAU. The audits clearly demonstrated that between 2005 and 2006, there was a substantial improvement in patient flow through the MAU and this is likely to have provided the increased capacity. This is supported by a reduction in the MAU mean length of stay between April 2005 and April 2006 from 2.9 to 1.8 days, with a fall in mortality from 4.4% to 2.7%. Enhanced MAU flow was facilitated by an improvement in organisational function, resulting in a reduction in the Medicine Directorate mean length of stay from 9.3 to 6.6 days, with no significant change in mortality rate. The key MAU bottlenecks and subsequent reforms are outlined below.

Improved transfer to base wards

Plans for transfer to base ward were initiated proactively, as soon as it was predicted that the patient's hospital stay was likely to be longer than 48 hours. Most commonly, delayed transfer was caused by a lack of base ward beds partly caused by the practice of admitting patients directly from A&E to non-MAU beds. Following the initial audit, clinical staff and bed managers were encouraged to expedite base ward discharges and this resulted in

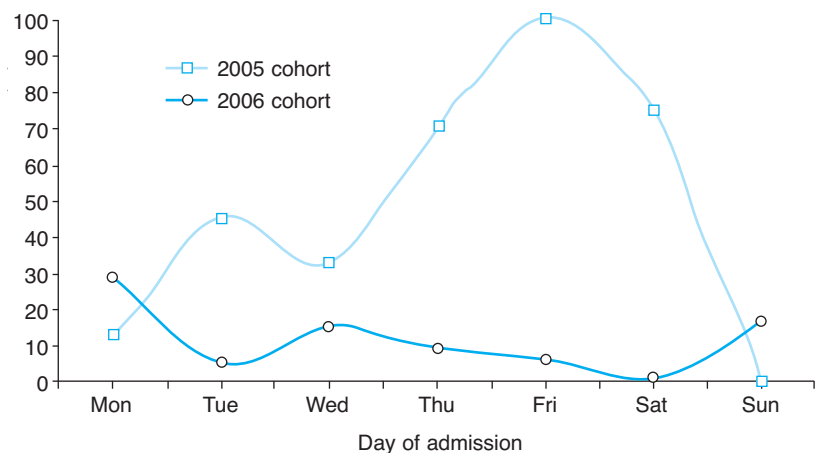


Fig 2. Relationship between day of arrival and likelihood of remaining on the medical admissions unit (MAU) for >48 hours. No patients were admitted to the unit on the Sunday in 2005.

improved flow of patients to and from the MAU. This is illustrated by the reduction in lost MAU ‘bed days’ due to delayed patient transfer from 25 in 2005 to only four in 2006.

Improved weekend work

Data collected in April 2005 revealed a striking increase in the proportion of patients exceeding the 48-hour transfer deadline between Thursday and Sunday. The correlation between day of admission and length of stay has previously been reported.⁷ This observation was attributed to a precipitous fall in weekend discharges, likely due to a reduction in senior medical staffing at weekends and the lack of a dedicated consultant round to expedite weekend discharges. In addition, the hospital was generally less well staffed at weekends and consequently, investigations and specialist support services were prioritised towards emergency services. To address this problem, the acute weekend team was made aware of the importance of actively managing weekend MAU discharges.

During the sample week in April 2006 a dedicated MAU consultant was ‘physician of the week’. It is likely that the continuity and affiliation of the consultant and junior staffing provided proactive weekend care, resulting in the marked improvement in weekend discharge activity. This suggests that continuity of care and familiarity with the unit might be the single most important factor in maintaining patient flow at the weekend.

Improved access to investigations

The initial study highlighted delays in obtaining investigations, which made a substantial contribution to extending the MAU stay in eight patients. One patient remained on the ward for five days pending an ultrasound scan and was promptly discharged thereafter. Improved weekday access to specialist investigations was a key component of the subsequent reform. During the second audit period, priority slots were reserved for MAU

admissions for general X-ray, CT, magnetic resonance imaging, ultrasound and echocardiography. The MAU became the first ward in the hospital to have access to an electronic endoscopy booking system and the efficiency of e-booking allowed best utilisation of protected endoscopy slots. New arrangements were made for the chest pain nurse specialist to perform exercise tolerance tests on the day of request. Consequently, the repeat audit demonstrated that investigational delays only contributed to delayed discharge in two patients from the MAU.

Improved access to specialist teams

Early specialist opinion has been shown to improve clinical outcomes.⁸ The first audit identified delays in access to specialist opinions. Medical specialists were made aware of this weakness and thereafter, specialist opinion was more forthcoming, with most referrals completed on the day of request. In addition, it is possible that the reduction in the specialists’ bed base during 2006, associated with fewer ward commitments, provided a further impetus to expedite specialist review of MAU referrals.

Improved access to pharmacy

While the impact of discharge prescribing was not assessed in the two audits, it is likely that improved access to pharmacy played some role in streamlining the patient’s MAU journey. During the 2006 study, a satellite pharmacy and dedicated pharmacist were incorporated into the MAU, improving access to both urgent and ‘to-take-away’ (TTA) medicines.

Future improvements

In-depth audit of the patient journey is critical for discovering potential bottlenecks and areas for improvement. This two-point audit provides some evidence that addressing weaknesses can make a considerable impact to the functioning of the MAU. The second audit has stressed the value of trying to operate the MAU as a seven-day ward with special attention paid to smoothing out delays caused by skeleton staffing and poor access to facilities and specialist opinions over weekends. Current attention is now firmly focused on meeting weekend needs, especially occupational or physiotherapy, access to exercise tolerance testing and endoscopy. Attention has focused on managing the MAU consultant commitment to supporting the weekend MAU discharge process. Other developments aimed

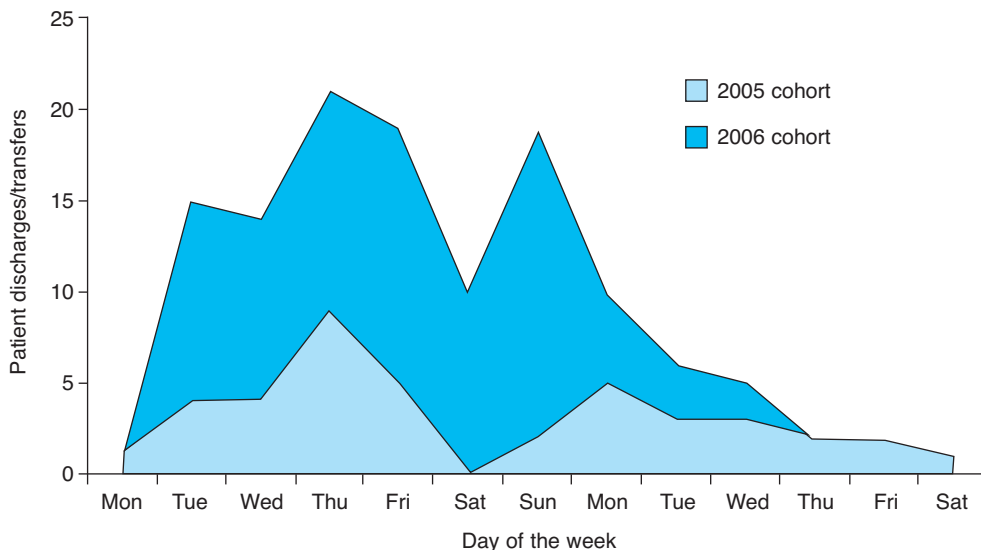


Fig 3. Distribution of discharge activity for each cohort.

at improving access include a direct access assessment bay. The Map of Medicine is now available on the Royal Free intranet and availability of a wide selection of patient pathways should help standardise patient care and provide a template for systematically planning the inpatient journey. Finally, a post-discharge MAU clinic is being developed and, once instituted, would empower physicians to safely discharge patients early.

Conclusion

The philosophy underpinning *Reforming emergency care* has merit. Despite hospital restructuring and substantial bed closures, the reforms implemented following the first audit have helped reduce bottlenecks and facilitated the patient journey. This study highlights the importance of uninterrupted service provision throughout the week, the need for rapid access to investigations and the need to continually re-engineer the process.

Acknowledgments

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