

# Readmission rates of older patients (age >75 years) discharged within 48 hours of admission to the Acute Medical Unit, Norwich: observational study.

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## ABSTRACT

The benefits of specialist geriatric assessment in acute medical units are debated and it is unclear if there is a reduction in readmission rates for older patients with specialist geriatric care compared to general acute medical care. We examined readmission rates for 2414 older patients who had been discharged from the acute medical unit at the Norfolk and Norwich University Hospital, either by acute medicine or older people's medicine (OPM), both of which teams were consultant-led. We found no significant difference in readmission rates between patients discharged by the acute medical team as compared to the OPM team. This finding was robust to a variety of sensitivity analyses, including different lengths of stay, or readmissions at different time intervals. Hence, acute medical teams may be able to achieve similar levels of quality care for older patients to specialist geriatric teams.

**KEYWORDS:** Readmission, geriatric assessment, hospitalisation, elderly care, triage

## Introduction

In the United Kingdom, adult patients presenting with acute medical conditions that require hospital assessment are referred to acute medical units (AMUs). These patients are usually assessed by physicians with acute or general medical training and decisions on further care are made, for example to remain in hospital (under a specialist or a general team) or to be discharged back to the community. It has been argued that older people attending the AMU may benefit from specialist geriatric assessment rather than acute or general medical assessment.<sup>1</sup> The evidence for this stems from a meta-analysis demonstrating that patients who underwent comprehensive geriatric assessment were more likely to be alive and in their own homes at the end of the scheduled follow up.<sup>1</sup>

However, a recent large, randomised controlled trial of specialist geriatric medical management on the outcomes of at-risk older people discharged from acute medical assessment units in Nottingham and Leicester found no benefit from specialist geriatric management on the outcomes measured (including readmission rates).<sup>2</sup> In an earlier observational study, Chu *et al*<sup>3</sup> prospectively analysed the characteristics of 120 consecutive patients admitted over a one month period to a short stay admission unit in a UK teaching hospital. Patients admitted were aged over 16 years, had a predicted length of stay under 72 hours and were managed by medical staff with no specific training in older people's medicine (OPM). The reasons for admission in 68% of patients (all ages) were chest pain, breathlessness or falls and syncope. Chu *et al* argued that differentiation on the basis of age is inappropriate when selecting patients for short stay medical units, and that these patients can safely be discharged by the acute medicine team.

In view of the uncertainties in the evidence base, concerns were raised that the early discharge of elderly patients without assessment by clinicians skilled at the comprehensive geriatric assessment would lead to poor outcomes and increased readmissions. Hence, the Norfolk and Norwich University Hospital implemented a plan to have some differentiation of admissions according to age, rather than continue with the model where acute physicians looked after any patient (regardless of age) whose expected duration of admission was less than 48 hours. This would involve separate assessment and consultant input for acute medicine and OPM. Patients for each of the two specialties were selected on the basis of age, predicted length of stay and careful triage criteria (Table 1).

In this paper, we sought to examine, following the implementation of the above plan, whether the 7 day and 30 day readmission rates of older patients over the age of 75 years under the acute medicine team was significantly different to patients seen by the OPM team.

## Methods

### Setting

The Norfolk and Norwich University Hospital is a teaching hospital with a busy AMU that receives 25,000 patients per annum. Patients are referred to AMU from either primary care or A&E via a nurse triage system. All patients admitted

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**Table 1. Triage criteria for patients presenting to the AMU.**

Acute medicine	Immediate discharge or expected LOS <48 hours; ambulatory care
Cardiology	ACS <85 yrs; heart failure <70 yrs; arrhythmia <70 yrs
Respiratory	COPD; pneumonia; pneumothorax; pleural disease; asthma; empyema; lung cancer; NIV
Gastroenterology	UGI bleeding; abdominal pain; jaundice; ascites; alcohol induced seizures; anaemia; diarrhoea; chronic liver disease
Endocrine	Diabetic related illness; metabolic disorder; acute endocrine problem
Renal	Acute renal failure; uncontrolled hypertension; primary renal disease; renal transplant patients.
Neurology	Age under 75 yrs with suspected SAH; non-alcohol seizures; Guillain-Barre; MS exacerbation; meningitis; encephalitis; stroke <60; myasthenia gravis.
Oncology	Under oncology follow up and presenting with symptoms secondary to cancer or its treatment.
Older people's medicine	Age over 75 yrs with falls, immobility, acute confusion, significant dementia or Parkinson's disease; stroke >60 yrs; ACS >85 yrs.

ACS, acute coronary syndrome; COPD, chronic obstructive pulmonary disease; LOS, length of stay; MS, multiple sclerosis; NIV, non-invasive ventilation; SAH, subarachnoid haemorrhage; UGI, upper gastrointestinal

to the AMU with a predicted length of stay of less than 48 hours remain under the care of acute medicine. Patients can be referred to an appropriate medical specialty (including OPM) if it is felt that they require specialist care (irrespective of anticipated length of stay) or if the patients are thought to require >48 hours of hospitalisation. The patients are allocated to specialty according to their main admission diagnosis and there are specific guidelines about which diagnoses go to which team (see Table 1).

Patients whose care has been transferred to the specialties are seen by specialty consultant ward rounds twice a day. The specialties' ward rounds include cardiology, respiratory, renal medicine, endocrinology, OPM, oncology, neurology and gastroenterology. Patients are either discharged or admitted to a specialty ward. There is a daily consultant-led acute medicine short stay ward round followed by continuous re-assessment of short stay patients throughout the day until discharge.

There were four acute medical consultants with no other clinical responsibilities assisted by three consultant general physicians providing a 12-hours-a-day, seven-days-a-week consultant-led service. The unit has a dedicated team of 1.5 whole time equivalent physiotherapists and 1.5 whole time equivalent occupational therapists. In addition there are two full-time pharmacists providing cover 12 hours a day, five days a week. There is rapid access to an emergency social worker and community nurses via telephone.

### Data source

The Norfolk and Norwich University Hospital AMU currently uses a computer database (Ascribe Symphony) to collect data to measure its performance against the unit's standard operating procedure. This system was used to count the number of patients over 75 years looked after and discharged by acute medicine and OPM teams in the year 2012. We were able to calculate (through record linkage with the PAS database) readmission rates at 7 days and 30 days for those who had been discharged from AMU.

We analysed the readmission data according to whether the patient had been cared for by the acute medical or OPM team during their stay in AMU, and we carried out additional analyses according to length of stay prior to discharge. We used MedCalc software to estimate the relative rate ratio (RR) and

95% confidence intervals (95% CI) for readmission between those two different teams.

### Results

In the year 2012, there were a total of 9051 patients (age 16 years and above) discharged directly from the AMU. Of the 9051 patients who were discharged, we found that 526 (5.8%) were readmitted within 7 days, and 1047 (11.6%) were re-admitted within 30 days.

When we restricted our analysis to patients aged over 75 years, there were a total of 2906 discharged directly from the AMU (2414 discharged by acute medicine and older people's medicine; the remaining 492 patients were discharged by the other medical specialties). Of the 2906 older patients who were discharged, we found that 160 (5.5%) were readmitted within 7 days, and 372 (12.8%) were re-admitted within 30 days.

We have analysed the rates of readmission according to model of care (acute medical team or OPM team) for patients who had been discharged (Table 2). This shows for the full cohort (when considering all lengths of stay) that there is no significant difference between readmission rates for the two teams. This finding is true even when we restricted the analysis to very early discharges (those who were discharged within 24 hours) or later discharges (within 48 hours of admission). Similarly, readmission rates for the two different teams did not differ significantly whether we considered readmission after seven days or after 30 days.

Although there are relatively fewer ( $n=492$  in the year 2012) older patients discharged directly from AMU by other non-OPM specialty teams, we found that the 30 day readmission rates for patients discharged within 48 hours of admission (51/404, 12.6%) was comparable to those cared for by acute medicine (12.3%) or OPM (12.8%) teams.

### Discussion

We analysed 2414 older patients who had been discharged from AMU at the Norfolk and Norwich University Hospital. We found no significant difference in readmission rates between patients discharged by the acute medical team as compared to the OPM team. This finding was robust to a variety of sensitivity analyses, including subgroups of patients with different lengths

**Table 2. Comparison of readmission rates for patients aged over 75 years according to model of care.**

	Number of patients discharged	Number of patients requiring readmission within 7 days	Number of patients requiring readmission within 30 days	Rate ratio for 7-day readmission AMU vs OPM	Rate ratio for 30-day readmission AMU vs OPM
Full cohort, irrespective of length of stay (n=2414)					
AMU consultants	1699	94 (5.5 %)	213 (12.5 %)	0.88 (0.61–1.28, <i>p</i> =0.48)	0.95 (0.74–1.23, <i>p</i> =0.7)
OPM consultants	715	45 (6.0 %)	94 (13.1 %)		
Length of stay <24 hours (n=1759)					
AMU consultants	1361	73 (5.4 %)	167 (12.3 %)	1.02 (0.62–1.74, <i>p</i> =0.95)	1.09 (0.78–1.54, <i>p</i> =0.63)
OPM consultants	398	21 (5.3 %)	45 (11.3 %)		
Length of stay <48 hours (n=2244)					
AMU consultants	1636	88 (5.4 %)	202 (12.3 %)	0.91 (0.61–1.38, <i>p</i> =0.63)	0.96 (0.74–1.27, <i>p</i> =0.77)
OPM consultants	608	36 (5.9 %)	78 (12.8 %)		
AMU, acute medical unit; OPM, older peoples' medicine					

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of stay, or readmissions at two different time intervals. We believe in the validity of our results as the all the patients had been cared for and discharged from the single AMU setting, utilising the same nursing and other healthcare support staff.

Our findings mirror the recently reported randomised controlled trial in the UK where older patients on the AMU were seen by a geriatric specialist prior to discharge.<sup>2</sup> This trial found no demonstrable benefit in terms of readmission rate – indeed, the authors reported an increased rate of hospital presentations in the intervention arm (relative risk 1.32 [1.01 to 1.74]);  $p=0.05$ ). The comprehensive geriatric assessment may only be useful in the older patient who has multiple complex problems. These patients are likely to be moved to an OPM ward and so the benefit of such an assessment is not seen on the AMU. Patients over 75 years with a predicted length of stay less than 48 hours who have either single organ pathology or adequate social care can be treated like general medical patients age less than 75 years.

Our study has a number of limitations. We do not have detailed data on demographics or underlying diagnosis/disease severity. Some will argue that this study is biased because the patients who are selected by acute medicine are the uncomplicated patients; therefore, comparing the readmission rates with the more complicated patients who are admitted to OPM is unjust. However, we have attempted to reduce this bias by restricting the analysis to patients who were discharged within 24 or 48 hours by either team. In other words, many of the patients evaluated in this study had been considered suitable for discharge early on after admission, and matching the patients on timing of discharge helps to make the comparison more similar.

This study adds to the body of evidence that patients over 75 years can be assessed and safely discharged from AMU by acute physicians. This is in accordance with the recommendations of *The Silver Book: Quality care for older people with urgent and emergency needs*<sup>4</sup> that there should be no discrimination of the basis of an individual's age when decisions are made about access to acute medical services. The Royal College of Physicians (RCP) rejected models based on age as this was deemed to be ageist. The RCP recommended that AMUs should be adapted to accommodate comprehensive geriatric assessment. The AMU team should include occupational therapists, physiotherapists,

social workers and psychiatric liaison. The interface with OPM should be via an Older Persons Assessment Liaison (OPAL) team with a geriatrician embedded in the AMU.

This study also demonstrates that a significant number of patients age over 75 years are seen on the AMU and discharged within 48 hours by specialty teams such as those in cardiology, gastroenterology, neurology, endocrinology and renal medicine. This valuable specialty input is lost on an elderly specific unit with no routine medical specialty triage rounds. Specialty team review on the OPM unit is by consultant to consultant referral; there are no regular specialty team ward rounds on this unit.

## Conclusion

By design, our service selects a different casemix of patients for acute medicine and for OPM, with many patients over 75 being retained in acute medicine if they do not meet the referral criteria and are likely to be discharged within 48 hours. These results show that this system results in similar readmission rates being experienced by older patients, regardless of the medical discharging team, ie there is no apparent clinical disadvantage in restricting the role of the specialist older peoples medical team to a subgroup of selected older patients. ■

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