

# Geriatric Medicine in the Emergency Department

## Abstract:

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## Abstract

Studies suggest older adults attending emergency departments (ED) benefit from specialist geriatric medicine evaluation. Findings from a pilot ED Geriatric Medicine (GM) liaison service in our 480-bed university hospital are presented. This is not a randomized controlled trial. Service comprised consultant geriatrician and senior trainee-led sessions during daytime working hours. Senior ED personnel selected appropriate patients. GM service also took over ED medical admissions aged  $\geq 80$ , 1 in 9 days from General Internal Medicine (GIM). 49% of 284 patients (83.5–6.8 years) referred, were discharged from ED with appropriate follow-up. Inpatient analysis comprised 51% admitted to GIM, GM and specialist services as per on-call rota and 268 patients taken over from GIM. Patients under GM had shorter length of stay ( $p < 0.001$ ). The findings suggest specialist geriatric medicine management of the older adult presenting to ED can improve service and patient outcomes.

## Introduction

The number of older adults attending the emergency department (ED) is rising with the ageing population. <sup>3,4</sup> Frequently the patients are currently not well equipped for comprehensive assessment of the frail older adult. <sup>1,2</sup> Many EDs are circumstances and supports have to be taken into consideration on presentation to ED together with their medical illness. Frail older adults with acute illness presenting to ED can pose challenges because of atypical, non-specific symptoms, with delayed evaluation due to lack of classical symptoms found in younger persons. <sup>6,7</sup> There are proposals of geriatric medicine (GM) EDs designed with the older adult in mind with optimal surroundings, equipment and senior specialist personnel. Our 480-bed university hospital has an estimated catchment population of 350,000 with approximately 10,000 persons aged  $\geq 80$  years. In 2009, there were 38,164 attendances to our ED, 38% aged  $\geq 65$  years and 11% aged  $\geq 80$  years. In the same year, there were 9,278 admissions, 48% aged  $\geq 65$  years and 21% aged  $\geq 80$  years.

Studies have suggested that frail older adults presenting to the ED may benefit from a specialist GM evaluation with a discharge and follow-up plan to reduce functional decline and ED repeat attendances. <sup>0,1</sup> A pilot emergency department geriatric medicine (EDGM) liaison service was developed with existing resources in our hospital serving an urban and suburban area with the aim of optimising assessment, treatment and follow-up of older adults attending the ED. This paper presents the findings and data from the pilot service developed with existing resources in a descriptive manner. This is not a randomized controlled trial (RCT) or matched case-controlled series.

## Methods

The EDGM liaison service commenced on a pilot basis in 2008 with two consultant geriatrician-led sessions per week, expanding to three consultant-led and two senior trainee-led sessions per week subsequently during normal daytime working hours. Data was collected from this pilot service over a period of 2 years and 9 months. Appropriate referral of patients was by senior ED personnel if they were felt to benefit from GM input including patients with multiple medical diagnoses, frailty, dementia, delirium, falls, syncope and other common presentations in older adults. Patients were assessed in the ED. Physiotherapy, medical social work and occupational therapy input were available where required. The allied health professionals were from existing personnel with no new allocation of resources.

The general internal medicine (GIM) service in our hospital consists of specialist physicians (gastroenterology, respiratory, nephrology, endocrinology, geriatric medicine and rheumatology) and a general internal physician partaking in the acute GIM on-call rota admitting patients via the ED. As part of the pilot programme, the GM service also took over care of medical admissions aged  $\geq 80$  years, every 1 of 9 days from one of the GIM services. Limited manpower did not allow take over care of all older patients by the GM department. This paper also compared the outcome of patients seen by the EDGM liaison team and subsequently admitted under GIM care versus patients who were admitted under the GM team. This compared GM input on a consultation basis at the point of admission versus GM care throughout the course of admission. Collection of data was prospective and descriptive statistics were used to present findings with statistical analysis with JMP v8 where appropriate.

Figure 1: Pathway of derivation of the two main groups of inpatients for comparison (Geriatric Medicine vs. General Internal Medicine (GIM) care)

## Results

The ED referred 285 patients (mean age 83.5  $\pm$  6.8 years) to the EDGM liaison service. Sixty-eight percent were female and 21% were nursing home (NH) residents. One hundred and thirty-nine (49%) patients were discharged from the ED with appropriate follow-up including day hospital, rapid access GM outpatients, general practitioner, community services including physiotherapy and occupational therapy or specialist follow-up. The one month representation rate to the ED after discharge was 22% with 8% admitted to hospital on subsequent presentation.

The remainder one hundred and forty-six (51%) patients were admitted under the GIM team on call of the day (including the GM service which participates in the GIM on-call rota) or other specialist services including cardiology, stroke, general surgery, orthopaedics and urology. Two hundred and sixty-eight patients  $\geq 80$  years were taken over from the GIM service every 1 of 9 days. This gave a total of 414 inpatients (mean age 84.6  $\pm$  5.5 years) for analysis. Of these patients, 300 (73%) were admitted under GM, 71 (17%) under GIM and 43 (10%) under other specialist services. Figure 1 illustrates the pathway of derivation of the two main groups of inpatients for comparison.

Overall 54 (13%) inpatients died during their admission period. Mean LOS of the patients who died was 20.4  $\pm$  25.6 days. Sixty-seven (16%) of the admissions were NH residents and of these 14 (21%) died during the admission period. Of 347 patients admitted from home, 12% died and 14% were discharged to a NH. In total 26% of patients admitted from home did not return to their own home after admission to hospital. Comparison of LOS was done for 323 patients discharged alive from the GIM and GM service. Patients discharged from other specialist services were excluded from LOS analysis

as the factors affecting specialist LOS may be different from the GIM and GM service. Mean LOS of 62 patients discharged from GIM care was 33.5 +/- 27.7 days compared to 20.3 +/- 25.0 days ( $p < 0.001$ ) of 261 patients under GM care. When LOS analysis excluded patients discharged to a NH, mean LOS was 25.0 +/- 18.6 days for the GIM and 15.2 +/- 16.3 ( $p < 0.0001$ ) days for GM. Mean LOS of a patient admitted from home and discharged to a NH was 62.9 +/- 35.9 days. Twenty-three percent of patients admitted from home under GIM care were discharged to NH care in comparison to 14% of patients under GM care ( $p = 0.11$ ).

For 320 patients discharged alive from hospital with 1 month follow-up data, the one month ED repeat attendance rate was 14.7% (GM) vs. 19.4% for GIM ( $p = 0.37$ ). The readmission rate one month after discharge from hospital was 10.5% (GM) vs. 9.7% for GIM ( $p =$  not significant). Two patients had not reached the one month follow-up date at time of analysis. For 310 patients discharged alive from hospital with 3 month follow-up data, four patients had died and the 3 months readmission rate to hospital after discharge was 17.4% (GM) and 20.3% for GIM ( $p = 0.59$ ). Of the remaining 12 patients, 7 had not reached the 3 month follow-up point and 5 patients were recorded as dead on the hospital computer system, but the date of death was not recorded, whether it was before or after the 3 month follow-up point. These findings are summarised in Table 1.

## Discussion

It is known that older adults presenting to the ED are more likely to be frail, with a higher level of urgency in their visits, more likely to be admitted or have repeat ED visits and have a higher rate of adverse outcomes than younger adults. Our results show that 49% of complex, frail elderly adults presenting to our ED could be discharged after a GM review and treatment with appropriate follow-up plan. Although there was a hospital admission rate of 8% of patients within one month of discharge from ED, this compared favourably to a 7.5% to 17.1% one month hospitalisation rate of older patients discharged from ED, keeping in mind that there are differences in community follow-up services. No local data on ED repeat attendance is currently captured for comparison.

Our findings also showed positive outcomes in patients under GM, with shorter LOS ( $p < 0.001$ ). The shorter LOS in the GM group may be related to various factors including regular consultant or specialist GM input with a comprehensive geriatric assessment (CGA) with the multidisciplinary team (MDT) and weekly MDT meetings discussing the progress and discharge planning process of each patient. Previous reviews had shown that CGA and acute geriatric units can reduce functional decline and increase likelihood of living at home post hospital discharge. A previous RCT had also shown that specialist GM care can reduce hospital costs for older adults in terms of LOS, diagnostic tests and medication prescription. We are conscious of the large standard deviations of LOS in both groups indicative of varied case-mix. A shorter LOS with MDT input could reduce the number of potential inpatient complications including hospital associated infections, delirium, medication error etc. GM care is likely more effective than a consultation service to the GIM team, as the GM team had direct responsibility for the patient, ensuring compliance with and implementation of diagnostic, treatment, rehabilitation and discharge plan.

The findings also illustrate the frequency of adverse outcomes in this frail, vulnerable group. The overall higher inpatient mortality rate of patients admitted from a NH of 21%, was likely in keeping with the higher frailty profile of this patient group. However, it is known that severity of acute illness is more important than medical co-morbidities in predicting outcomes in older patients admitted with a medical emergency. readmission rates, regardless of whether the patient was under the care of the GM or GIM team, is likely indicative of an inherently frail and at risk cohort. The weaknesses of this paper include the fact that this was not a RCT with subjects comprising of a highly selected patient population, deemed in need of specialist GM input. However, the patients are representative of typical acutely unwell older adults presenting to the EDs and hospital admission systems across our country. The two groups of inpatients compared had reasonably well matched age profiles. LOS can be affected by services that are available in the community to support the discharge of the older adult. It is beyond the remit of this report to comment on the impact of service availability in the community.

The numbers analysed were small, leading to reduced statistical strength of analysis. The reasons for attendance to ED was also not recorded as we had decided to concentrate on collection of basic demographic data and readmissions rates and ED repeat attendances as outlined above. The future developments for the GM service in our department include formalisation of the EDGM liaison service with GM clinical nurse specialist support; an inpatient NH liaison service and an outreach NH liaison service where patients will be reviewed in their place of residence in the NH. The Identification of Seniors at Risk (ISAR) screening tool which has good predictive validity for clinical outcomes and health services utilisation in the older adult will be used to select patients suitable for assessment with the EDGM liaison team.

In summary, direct admission of the older, frail adult under the GM service has the potential to reduce LOS without adversely affecting other quality markers including the rate of ED repeat attendances and readmission to hospital. A substantial proportion of older adults could also be discharged from the ED with a tailored treatment and follow-up plan. The argument of the relevance and appropriateness of current quality or outcome markers remain to be debated. Finding the best quality markers of care for the frail, elderly adult admitted unwell to the acute hospital remains a challenge.

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