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Research paper

Early geriatric follow-up after discharge reduces readmissions – A quasi-randomised controlled trial

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ABSTRACT

Objectives: To reduce the frequency of readmissions in a population of geriatric patients (≥75 years) admitted to an emergency department.
Methods: The study was quasi-RCT. Consecutive admission days were randomised to intervention or control. Admitted eligible patients belonged to the assigned day's strategy. Intervention comprised a geriatrician and nurse home visit on the day following hospital discharge. Control patients underwent our standard procedure, including follow-home by a carer or a telephone call the next day.
Results: 1330 patients were included. Intervention group readmissions were significantly reduced compared to controls (12% vs. 23%; $P < 0.001$). The intervention group adjusted hazard ratio was 0.50 (95% CI: 0.38–0.65; $P < 0.001$). Total hospitalisation was shorter for the intervention group: median (IQR): 2 (1–7) vs. 3 (1–8) days; $P = 0.03$. No group mortality difference was statistically significant (intervention 12% vs. 14%; $P = 0.25$).
Conclusions: A geriatrician and specialised nurse home-visit during the first days following hospital discharge reduces the readmission rate for acute medical patients by almost 50%, compared to patients accompanied home or subsequently telephoned. Hospitalisation was reduced, but 30-day mortality did not differ significantly between groups.

1. Introduction

Unnecessary geriatric hospital readmissions impose burdens on society, patients and their relatives. Several attempts have been made to reduce readmissions. In a review, published in the year of 2000, the authors identified readmission rates of 5–35%, highest for the geriatric patients [1]. According to the Danish Health Authorities, readmission rates for patients older than 67 years with one of ten medical diagnoses is approximately 20% [2], with 13% occurring on the day after discharge and 40% within five days [3].

Patient transfer from hospital to home carries a very high risk of adverse outcomes during the first days after discharge [4]. Collaboration between hospitals, patients, and primary health carers is essential for successful transfers [5], plus follow-up interventions identified by telephone calls [6,7], home visits [8–14], and hospital-at-home needs [15,16]. A meta-analysis by Parker et al. concluded that interventions performed in hospitals and subsequently in patients' homes were the most successful [17]. A more recent review [18] concluded that comprehensive geriatric assessment (CGA) plus follow-up after discharge were most likely to reduce readmissions [18]. A follow-up programme in Denmark, including a home visit by the patient's general practitioner and community nurse one week after discharge, was examined by two studies [19,20], but only one showed a positive readmission effect [19]. The study reduced 26-week readmissions from 52% to 40% and its programme is now mandatory in Denmark.

As most readmissions occur within the first few days [3] a follow-up visit at one week may be too late. In a previous observational study we compared acutely admitted geriatric patients (≥75 y) followed up on the first weekday after discharge, with similar patients admitted the previous year without early follow-up. Both groups received comprehensive geriatric care (CGC) in the emergency department (ED) and confirmed readmission rate reduction after early follow-up [21]. In the present controlled study we examined if the result could be reproduced by a quasi-randomised design.

Abbreviations: CGA, comprehensive geriatric assessment; CGC, comprehensive geriatric care; ED, emergency department; G-ED-team, geriatric emergency department team; GP, general practitioner.

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2. Materials and methods

2.1. Design

The study was quasi-randomised according to days. It was originally part of the 'Triple Aim' quality development project designed to improve care quality, reduce health costs, and increase patient satisfaction [22].

The design did not allocate patients to treatments by computer. Instead, an independent research assistant prepared packs of ten sealed envelopes, each containing a note stating 'intervention' or 'control'. The packs were handed over to the ED secretary. After the patients were allocated to CGC, the secretary drew an envelope to determine the organisation of the day: This happened every morning, weekend and holidays included. 'Intervention' meant that all ED patients requiring CGC on that day were assigned to the intervention group. If stating 'control' all patients were allocated to the control group.

2.2. Inclusion and exclusion criteria

The patients included in the study were 75 years of age or older. They were all admitted acutely to the ED with one of the diagnoses listed in Fig. 1.

They were all assigned to CGC before inclusion. The excluded patients were terminal at admission, already in a geriatric follow-up programme or living outside the municipality.

Patients could be included in the study more than once, if 30 days had passed after completion of follow-up.

2.3. Settings

Within 24 h of ED hospitalisation patients were assessed by the G-ED team, comprising a geriatrician and a therapist or nurse specialised in geriatrics. Patients were subsequently discharged to their homes, or transferred to the geriatric ward. All geriatric ward patients and when necessary the ED patients were escorted home by a carer with a check-list for home safety.

The possibilities for home services are specified in Table 1.

2.3.1. Intervention group

Patients were visited on the next working day (Mondays to Fridays) after discharge by an outgoing geriatric team, comprising a geriatrician and a nurse trained in geriatric homecare. An experienced geriatrician was available whenever a junior doctor performed the assessment. Intervention was tailored to a patient's needs. At hospital discharge patients were given the telephone number of the team for contact during at least one week.

2.3.2. Control group

At discharge, patients were screened by a nurse to determine the need for follow-up visits by a community nurse or general practitioner. When necessary, the results were sent electronically to the community nurse for a general practitioner visit one week later. General practitioners decided whether or not a visit was required. All control patients discharged directly from the ED were telephoned the next day by the G-ED team. Examination and test results were sent to the patients and GPs. The geriatric department remained responsible for discharged control patients receiving

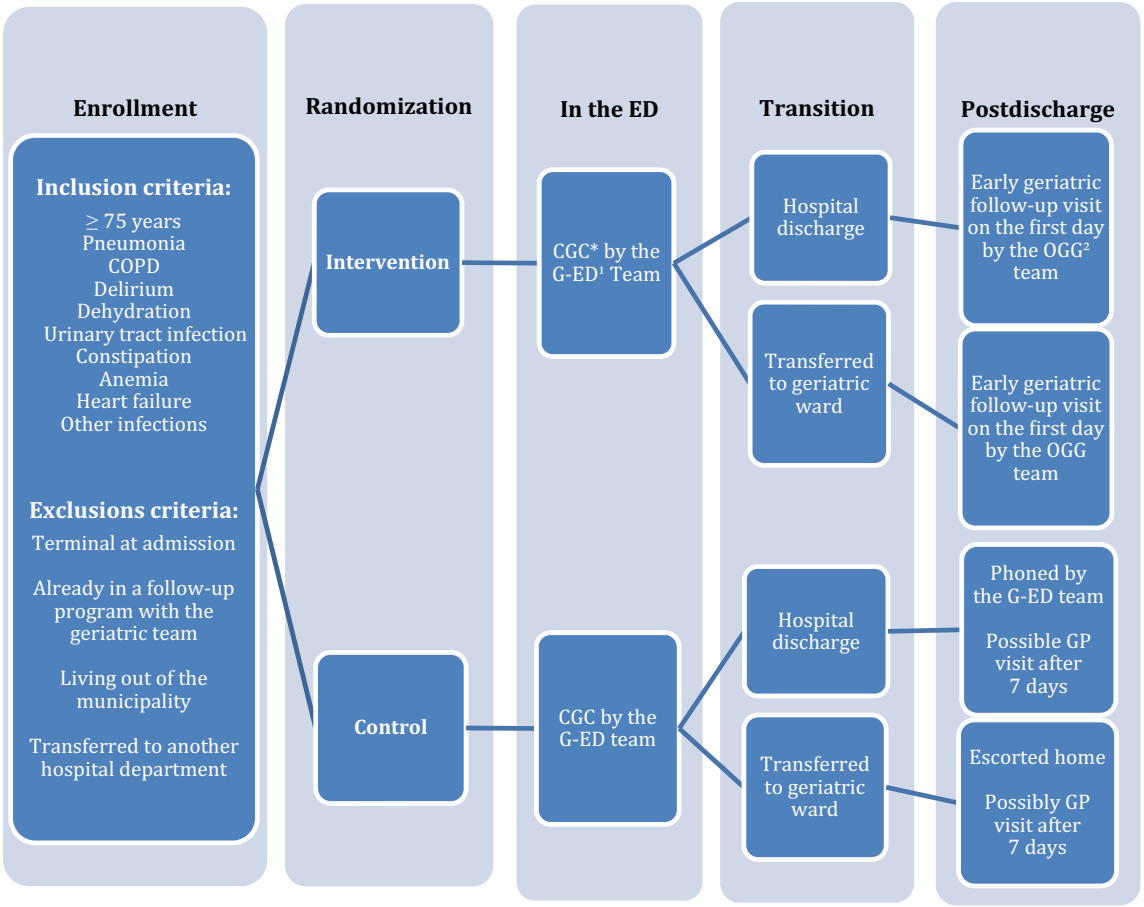

Fig. 1. Flow of the study. *CGC – comprehensive geriatric care (assessment + treatment). [1]G-ED Team: geriatric emergency department team consisting of a doctor and a nurse or therapist from the Geriatric department. [2]OGG team: out-going geriatric team consisting of a doctor and a nurse.