



BMJ Open Early supported discharge for older adults admitted to hospital with medical complaints: a protocol for a systematic review

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ABSTRACT

Introduction Early supported discharge (ESD) aims to link acute and community care, allowing hospital inpatients to return home and continue to receive the necessary input from healthcare professionals that they would otherwise receive in hospital. The concept has been researched extensively in the stroke population, showing reduced length of stay for patients and improved functional outcomes. This systematic review aims to explore the totality of evidence for the use of ESD in an older adult population who have been hospitalised with medical complaints.

Methods A systematic review of randomised controlled trials and quasi randomised controlled trials will be carried out in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Studies will be included if they provide an ESD intervention to older adults admitted to hospital for medical complaints compared with continuing inpatient care. MEDLINE, CINAHL, CENTRAL and EMBASE databases will be searched. The primary outcome measure will be length of hospital stay, secondary outcomes will include functional abilities, falls, quality of life, carer and patient satisfaction, unplanned emergency department re-presentation, unscheduled hospital readmission, nursing home admission or mortality. Titles and abstracts of studies will be screened independently by two authors. The Cochrane Risk of Bias Tool will be used independently by two reviewers to assess the methodological quality of the included studies. GRADE will be used to assess the quality of the body of evidence. A pooled meta-analysis will be conducted using RevMan software V.5.4.1, depending on the uniformity of the data.

Ethics and dissemination The authors will present the findings of the review to a patient and public involvement stakeholder panel of older people that has been established at the Ageing Research Centre in the University of Limerick. Formal ethical approval is not required for the review as all data collected will be secondary data and will be analysed anonymously.

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INTRODUCTION

Globally, it is anticipated that the number of adults aged ≥ 65 years will increase from one

Strengths and limitations of this study

- This is the first systematic review to synthesise the totality of evidence in relation to the effectiveness of early supported discharge (ESD) on clinical and process outcomes in older adults with an acute medical admission.
- Reporting is in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement.
- ESD interventions for stroke, surgical and elective hospital admissions will not be included.
- Robust and transparent methods used to identify, select, appraise and synthesise findings.
- The Cochrane Risk of Bias Tool and the GRADE Framework used to assess methodological quality.

billion in 2019, to 1.4 billion by 2030 and further increase to 2.1 billion by 2050.¹ With an ageing population globally, the number and frequency of older adults presenting to acute hospitals is increasing. These older adults are more likely to have multiple comorbidities and as a result require more complex management. It is known that older adults are the largest consumers of healthcare resources, so as our global population ages, health services must adapt to support older adults in the hospital and community settings and across transitions of care.²

Up to 60% of older adults who present to the emergency department (ED) are admitted for inpatient care as demonstrated in a retrospective cohort study of 550 older adults by Kennelly *et al.*³ Of those who were discharged home from the ED, 46.5% reattended the ED within 1 year. Older adults functional ability is negatively correlated with older age and an increasing number of comorbidities.⁴ In the 2 weeks prior to a hospital admission, half of older adults will



have experienced a functional decline at home, most commonly assessed by their ability to carry out their activities of daily living.⁵ Furthermore, a longer hospital length of stay (LoS) is associated with a greater likelihood of functional decline and reduced chances of recovering from the same. Loyd *et al*⁶ reported that up to 30% (95% CI 24% to 33%) of older adults experience hospital associated disability in their meta-analysis of 15 longitudinal studies of older adults hospitalised in acute care. By reducing hospital LoS for older adults, their functional abilities can be preserved and in turn reduce their risk of adverse outcomes such as falls or hospital readmission.

Early supported discharge (ESD) is an acute hospital discharge intervention aimed at linking inpatient care and community services to allow patients to return home more than would be otherwise possible with community care, by receiving additional input from healthcare professionals.⁷ ESD for people with acute stroke has been widely researched. A Cochrane review of 17 randomised controlled trials (RCTs) examining ESD in acute stroke care found it to decrease LoS by an average of 6 days, and also decrease admissions to long-term care.⁷ Those with mild-moderate disability (broadly defined as a Barthel Index score >9 on initial assessment) made the greatest improvements. ESD has also been explored in surgical populations. Kapur *et al*⁸ demonstrated a significant reduction in LoS among patients undergoing hip replacement in their controlled before–after study.

More recently, the impact of ESD has been examined on patient and process outcomes among older adults admitted to hospital with medical complaints. Parsons *et al*⁹ conducted an RCT where an ESD intervention was provided to 97 older adults who were able to stand/transfer with maximum assistance of one for a maximum of 6 weeks when compared with routine care (n=86). The intervention resulted in an average reduction in LoS by 6 days vs the control group (mean difference=5.9 days; 95% CI 0.6 to 11.3). Significant improvements were also observed in functional independence in patients.

The National Institute for Health and Care Excellence (NICE) published guidelines in 2015 focusing on the transition between acute and community care for older adults with social care needs.¹⁰ The guidelines highlight that families and carers can play an important role in the discharge process in terms of providing supplemental information about the patient's needs, which may decrease the risk of readmission to hospital. While carer outcomes (subjective health status, mood status and carer satisfaction) were analysed in the systematic review of ESD interventions for acute stroke care by Langhorne and Baylan,⁷ the role of carers in assisting with an ESD intervention was not explicitly noted. However, research demonstrates that involving caregivers in the discharge process can reduce the risk of readmissions in older adults by 25% 90 days postdischarge and 24% 180 days postdischarge.¹¹ As per these NICE guidelines, ESD is a discharge intervention model that would potentially

reduce the risk of readmission, while inevitably involving families/caregivers in a shared decision-making process.

From the literature discussed, it is evident that ESD is well established in the stroke population. The totality of evidence regarding the use of ESD in older adults hospitalised for medical reasons has not yet been reviewed. Therefore, the overall aim of this systematic review is to synthesise the evidence in relation to the effectiveness of ESD on clinical and process outcomes in hospitalised older adults with medical complaints.

METHODS

Study design

This protocol for a systematic review will be conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Protocol guidelines.¹² The systematic review will be reported following the PRISMA guidelines.¹³ The Cochrane Handbook for Systematic Reviews of Interventions will be adhered to as appropriate.¹⁴

Study identification

Searches will be carried out in various databases including CINAHL in EBSCO, Cochrane Central Register of Controlled Trials in the Cochrane Library (CENTRAL), EMBASE and MEDLINE in EBSCO. MeSH terms and associated keywords will be used, covering broadly the topics of ESD (eg, 'ESD' and 'home rehabilitation'), older adults (eg, 'aged' and 'ageing') and acute care (eg, 'hospital' and 'hospitalisation') and will be based off the search strategies used in Cochrane reviews carried out by Langhorne and Baylan⁷ and Butterworth *et al*.¹⁵ Sample search strategies can be seen in online supplemental appendices 1–4. Studies will be limited from the year 1997 onwards, as this was when the concept of ESD was introduced as an intervention in RCTs for stroke care.^{16,17} The reference lists of studies meeting the inclusion criteria will be hand reviewed for further relevant studies.

Studies will be included that meet the following eligibility criteria

Population

Older adults (≥65 years) admitted to the acute care setting for an acute medical admission.

Studies will be excluded if their population has been admitted to hospital for non-medical reasons such as surgical/trauma, stroke care or elective admissions. Studies whose participants only presented to the ED and did not have a subsequent hospital admission will also be excluded.

Intervention

ESD intervention, described as interventions aimed to accelerate patient discharge from hospital once medically stable, and providing patients with the necessary input in the community at the same level of intensity and resources they would receive while in the inpatient setting.⁷

Interventions which are not multi-disciplinary team (MDT) led or are carried out in step-down facilities will be excluded.

Control

Usual care as described by study authors, other non-ESD interventions such as transfer to rehabilitation facilities or continuing MDT input in the inpatient setting, or an absence of ESD interventions.

Outcome

The primary outcome measure will be length of hospital stay. Secondary outcomes will include functional abilities (including Barthel Index), quality of life (including the Short Form-36), falls, injuries including fractures, carer and patient satisfaction, unplanned ED re-presentation, unscheduled hospital readmission, nursing home admission or mortality (the latter four outcomes measured by the number and frequency of each outcome as appropriate). Studies measuring any one or more of the primary or secondary outcomes will be included.

RCTs (including cluster trials) and quasi-RCTs published from the year 1997 onwards will be included in this systematic review. Non-English articles will be included.

Study selection

Studies will be downloaded in to Rayyan software and be screened against the eligibility criteria.¹⁸

Two authors (SW and CO'R) will independently screen relevant studies by title and abstract. Studies that are selected by the reviewers as possibly meeting the inclusion criteria will undergo a full-text review. If a disagreement occurs, both authors will meet to come to a consensus. In the event that an agreement cannot be reached, a third author will be consulted (A-MM).

Study synthesis

Data will be independently extracted from the relevant studies by two reviewers (SW and A-MM). The information compiled will include study authors, year of publication, study population, interventions provided, controls provided, outcomes measured and duration of follow-up. Data describing the components of the ESD programmes will also be compiled in terms of resources allocated and service model used including inreach, outreach and discreet ESD models.¹⁹ Data will be gathered into a preprepared Microsoft Excel document.

A pooled meta-analysis will be carried out where the data are homogeneous, which will be determined by the outcomes measured and the time points accessed across the included studies. The effect size will be determined where the outcomes measured in the included studies measure the same construct. To do so, the mean and SD from the appropriate outcomes will be extracted from both intervention and control groups in all relevant studies. The median and IQR will be used in the event that the mean and SD is not available.²⁰ For continuous data, we will calculate the treatment effect using

standardised mean differences (MD) and 95% CI where different studies used different scales for the assessment of the same outcome, and using MD and 95% CI where studies have all used the same method of measuring outcome. For dichotomous variables, we will calculate the treatment effect using a fixed-effect/random-effect model and report it as risk ratios with 95% CIs. Authors will be contacted in the event data is not available. Data for the meta-analysis will be analysed using RevMan V.5.4.1 Software.²¹

Quality assessment

Studies that meet the inclusion criteria will be assessed for risk of bias using the Cochrane Risk of Bias Tool.²² Two independent reviewers (SW and RG) will assess the included studies for selection bias, performance bias, detection bias, attrition bias, reporting bias, other bias and the overall risk of bias.

The GRADE framework will be used to assess the quality of evidence for each outcome measured.¹⁴ Two independent reviewers (SW and RG) will assess the quality of each outcome across risk of bias, imprecision, inconsistency, indirectness and publication bias. Outcomes will be graded at one of four levels of evidence—very low, low, moderate and high. Although it may be considered a subjective measure in assessing quality of evidence, GRADE is a transparent and reproducible framework.

Patient and public involvement

The authors will present the findings of the review to a patient and public involvement (PPI) stakeholder panel of older people that has been established at the Ageing Research Centre in the University of Limerick. The focus of this session will be to discuss the findings with this group so that the discussion section of the paper can integrate the views and opinions of older people. The PPI group was not involved in the protocol development due to challenges arising from the COVID-19 pandemic.

Ethics and dissemination

Subsequently, the review will be published in a relevant peer-reviewed journal, following the PRISMA standardised reporting guidelines and through relevant conferences.¹³ Formal ethical approval is not required for the review as all data collected will be secondary data and will be analysed anonymously.

Study status

Database searches have been completed.

DISCUSSION

This review will synthesise the evidence relating to the effectiveness of ESD for older adults who are admitted to hospital with medical complaints. It is proposed that the ESD interventions included in this review will identify the necessary components of an ESD programme in terms of staffing and resources. This will enable recommendations

to be made in terms of current and future ESD programmes following evidence-based practice.

Strengths of this systematic review will include the stringent methods used in accordance with the PRISMA guidelines. The use of multiple authors in the article screening and selection further strengthens this review. Limitations may include high levels of heterogeneity in the included studies which may affect the ability to carry out a meta-analysis. In the event of additional relevant search terms being identified during the search, all search strategies will be rerun to include the newly identified terms.

By synthesising the evidence surrounding ESD in older adults and determining best practice, clinical and economic outcomes can be determined. There is potential for patient's LoS to be reduced as is the case in stroke care. Reducing LoS could potentially reduce the risk of functional decline among older adults and further reduce their risk of readmission to hospital, the need for nursing home care or death.²³ Determining the impact of ESD on hospital bed days and overall hospital costs will inform policy-makers. Establishing the impact on patient clinical outcomes will inform guideline development relating to processes which enable older adults to live in their community safely for longer.

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Contributors SW and RG were major contributors in writing the manuscript. SW, RG, A-MM and CO'R designed the overall study. SW developed the search strategy. SW, RG, A-MM, CO'R, MO'C, CP, ES, AL and FS participated in critically appraising and editing the manuscript. RG is the guarantor of the review. SW, RG, A-MM, CO'R, MO'C, CP, ES, AL and FS read and approved the final manuscript. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

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