




BMJ Open Paramedic supportive discharge programmes to improve health system efficiency and patient outcomes: a scoping review protocol

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ABSTRACT

Introduction Discharging older adults with frailty home from the emergency department (ED) poses unique challenges due to multiple interacting physical and social problems. Paramedic supportive discharge services help overcome these challenges by adding in-home assessment and/or interventions. Our objective is to describe existing paramedic programmes designed to support discharge from the ED or hospital to avoid unnecessary hospital admissions. A comprehensive description of paramedic supportive discharge services will be conducted by mapping the literature to describe: (1) why such programmes are needed; (2) who is being targeted, making referrals and delivering the services and (3) what assessments and interventions are offered.

Methods and analysis We will include studies that focus on expanded paramedic roles (community paramedicine) and extended scope postdischarge from the ED or hospital. All study designs will be included with no limit by language. We will include peer-reviewed articles and preprints and a targeted search of grey literature from January 2000 to June 2022. The proposed scoping review will be conducted in accordance with the Joanna Briggs Institute methodology. We will use a search strategy designed by a health science librarian to search MEDLINE All (Ovid), CINAHL Full Text (EBSCO), Embase (Elsevier) and Scopus (Elsevier) for eligible studies from 2000 to present. Two independent reviewers will conduct screening and full-text review. Data extraction will be conducted by one reviewer and verified by another. We will report our findings descriptively by charting trends in the research.

Ethics and dissemination Research ethics review is not required as this is a scoping review comprised published studies. The results of this research will be published in a manuscript and presented at national and international geriatric and emergency medicine conferences. This research will inform future implementation studies on community paramedic supportive discharge services.

Registration This scoping review protocol was registered in Open Science Framework and can be found here: <https://doi.org/10.17605/OSF.IO/X52P7>.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study will be completed using a robust search strategy, peer-reviewed by a second health science librarian, and will include both published and grey literature.
- ⇒ Article selection and data extraction will be conducted in duplicate with discrepancies resolved by consensus with a third reviewer.
- ⇒ Four comprehensive databases will be searched using Joanna Briggs Institute methodology, a rigorous and transparent approach to scoping review conduct.
- ⇒ This protocol uses the 2018 Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews.
- ⇒ A formal quality review of included studies will not be performed as is common practice among scoping reviews.

INTRODUCTION

Healthcare system capacity is challenged due to population ageing, the recent COVID-19 pandemic, reductions in hospital-based and long-term care services, and staffing shortages.¹⁻³ When an acute healthcare crisis arises for an older adult, it is often paradoxically easier to admit them to the hospital rather than organise the required services to facilitate discharge home, particularly in the context of frailty.⁴ Older adults account for up to 50% of emergency department (ED) admissions,⁵ some of which may be avoidable. Innovative solutions that facilitate care at home are needed to improve system efficiencies and patient outcomes. Older adults prioritise maintaining independence as their top healthcare priority and may prefer to receive care in the community when possible.^{6,7} Further, research priorities demonstrate the need to focus on health-related quality of life



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outcomes and the implementation of novel, scalable integrated health services.⁸

ED visits related to medication adjustment, illness management and palliation are common.⁸ These ED visits often lead to admission, which puts older adults at increased risk of complications (eg, delirium, deconditioning).⁹ ‘Delayed discharge’¹⁰ is another recently described complication of admission and refers to when patients are clinically ready to go home but needed support/care is not available in the community. Delayed discharge can result in mental and physical decline (due to the limitations of the hospital environment, social isolation, lack of engagement opportunities, etc) as well as family/caregiver distress.¹¹

Promising interventions involve integrated, multidisciplinary team-based care spanning transitions from acute care to home.^{12–14} One novel solution to navigating difficult ED and hospital discharges is via the use of paramedics (often referred to as community paramedicine in North America/Australia and (Advanced) paramedic practitioners in the UK) to facilitate supportive discharge. Community paramedicine is an innovative approach to bridge care and support patients in the community.^{15 16} Community paramedics can visit discharged patients in their home to monitor, conduct diagnostic tests and treat (eg, intravenous therapy, wound care) patients. While different models and programmes exist within the umbrella of ‘community paramedicine’, all tend to have a similar goal of improving health system and patient outcomes.¹⁶ Even so, there is little known about their role in the post-ED or hospital context.

A preliminary search of MEDLINE (Ovid) and PROSPERO was conducted and no systematic reviews specifically on our topic were identified. Two systematic reviews on community paramedicine were published in the past year: (1) one systematic review (n=13 publications), van Vuuren *et al.*¹⁵ focused on community paramedic services for older adults in general, but it was not registered in PROSPERO and did not examine supportive discharge. Articles that would help to inform our current review were excluded, (2) a recent rapid review (n=98 publications) registered on the Open Science Framework identified knowledge gaps in education and the scope and role of community paramedics¹⁶ but did not explore supportive discharge programmes in depth. Both of these reviews identified the role paramedics can have in supportive discharge, but did not report on the core components of providing care.^{15 16} We are proposing to conduct a scoping review to map the evidence, identify main concepts, theories and knowledge gaps in relation to this type of service.¹⁷ This scoping review is part of a programme of research on the scope and role of community paramedics in supportive discharge services of older adults. The results will inform grant submissions, future research and implementation of services.

OBJECTIVE

Our research question is what paramedicine programmes have been implemented to support discharge of older

adults from that ED or hospital? The specific objectives of this scoping review are to map the literature to describe (1) why such programmes are needed; (2) who is being targeted, making referrals and delivering the services and (3) what assessments and interventions are offered. Finally, knowledge gaps will be identified to inform future research.

METHODS AND ANALYSIS

Protocol design and registration

The proposed scoping review will be guided by the Joanna Briggs Institute (JBI) scoping review methodology,¹⁷ and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR).¹⁸ The protocol was registered with Open Science Framework.

Eligibility criteria

Study characteristics

This review will include studies that focus on paramedics in expanded roles (eg, community paramedicine) that address supportive discharge from the ED or hospital. We will exclude studies focused on the traditional paramedic response model of attending to emergency calls with transport to hospital.

Types of participants

Studies focused on paramedic care for older adults (65 years and older, including those with frailty) post-ED or hospital discharge will be included. We will not exclude studies that focus on younger cohorts or other vulnerable populations but will describe these separately.

Concept: phenomena of interest

This review will consider studies that explore the process of patient discharge from the ED or hospital to home where a paramedic is involved in facilitating this care. (1) *Community paramedicine* is defined as a service that includes a community paramedic who completes a formal and recognised education programme and has demonstrated competence in the provision of health education, clinical assessment and monitoring, point of care diagnostics and treatment modalities within or beyond the role of traditional emergency care and transport.¹⁹ (2) *Supportive discharge* exists when community paramedic programmes partner with hospitals to ensure timely discharge with community paramedic follow-up.¹⁶ ‘Supportive discharge’ may also be known as bridging services or transitional care from the ED (or hospital) to home where the goal is to provide care until patient handover to the usual care provider occurs. Studies involving paramedics who provide patient follow-up postdischarge, and work alone or as part of a team to provide goal oriented care in the home will be considered.

Context

We will focus on paramedic integration into supportive discharge services where the emphasis is on frailty-centred

in-home care rather than disease-specific ED based care.²⁰ Programmes, where paramedics support service integration and patient navigation through the healthcare system as they transition from hospital to home, will be considered.

Types of evidence sources

This review will consider (1) experimental and quasi-experimental study designs including randomised controlled trials, non-randomised controlled trials, before/after studies and interrupted time-series studies, (2) analytical observational studies including prospective and retrospective cohort studies, case-control studies and cross-sectional studies, (3) descriptive observational study designs including case series, (4) programme descriptions, preprints and evaluations from grey literature and (5) interpretive studies that draw on the experiences of paramedics, patients and their caregivers, but not limited to, designs such as phenomenology, grounded theory, ethnography, action research and feminist research. A targeted search of grey literature will be conducted. The included studies will report on outcomes from the patient, caregiver, provider or system perspective. We will exclude case reports, review articles and conference abstracts, or presentations where no full text is available.

Information sources

The databases to be searched include MEDLINE All (Ovid), CINAHL Full Text (EBSCO), Embase (Elsevier) and Scopus (Elsevier). Unpublished studies and grey literature will be sourced by conducting advanced Google searches focused on organisations (International Roundtable on Community Paramedicine; National Association of EMS Physicians; Paramedic Chiefs of Canada, Paramedic Association of Canada); and preidentified websites (<https://www.ruralhealthinfo.org/toolkits/community-paramedicine/2/post-discharge-follow-up-care>, <https://www.communityparamedic.ca/pages/home/resources.php>, <https://www.ontariocpsecretariat.ca/resources>, <https://nasemso.org>, <https://naemsp.org/>, etc, Pre-Hospital Emergency Care Council, <https://collegeof-paramedics.co.uk/>, <https://paramedics.org/>).

Search strategy

A three-step search strategy will be used. First, an initial limited search of MEDLINE (Ovid) was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy (see online supplemental appendix A). The search strategy, including all identified keywords and index terms, were translated for each included database and information source. The reference list of all included sources of evidence will be screened for additional studies and Scopus (Elsevier) will be used to identify any cited references for the included studies. Studies published in any language will be included. Studies published since January 2000 will be included as community paramedicine

as a concept was only recognised in the early 2000s. Paramedic participation in supportive discharge emerged following the growth of community paramedicine, and in response to challenges associated with ambulance offload delay, and an ageing demographic.

Selection process

Following the search, all identified citations will be uploaded into Covidence (Veritas Health Innovation, Melbourne, Australia) and duplicates removed. We will conduct a pilot test, where titles and abstracts will be screened by two or more independent reviewers for assessment against the review inclusion criteria. Potentially relevant studies will be retrieved in full and their citation details included in the reference list. The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers. Reasons for exclusion of papers at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, or with an additional reviewer/s. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a PRISMA-ScR flow diagram. A formal quality review of selected studies will not be performed, however, the methods of included studies will be described. This scoping review will provide an overview of the existing evidence regardless of study quality in accordance with scoping review recommendations.¹⁸

Data collection

Data will be extracted from studies included in the review by two independent reviewers using the Covidence data extraction tool. The data extracted will include specific details about the populations, context, geographical location, study methods, outcomes and details about the community paramedic supportive discharge service. Any disagreements that arise between the reviewers will be resolved through discussion with a third reviewer. Authors of papers will be contacted to request missing or additional data, where required. A draft data extraction form is provided (see online supplemental appendix B). The draft data extraction tool will be modified and revised following pilot testing.

Data mapping/presentation

For this scoping review, we will chart the data to create a descriptive summary of the results in relation to our proposed questions. Data will be presented tabularly when appropriate. We are proposing to conduct a scoping review to map the evidence, identify main concepts, theories and knowledge gaps in relation to this type of service. We will map the literature on (1) why such programmes are needed; (2) who is being targeted, making referrals and delivering the services and (3) what assessments and interventions are offered. Knowledge gaps will be identified and categorised.



Ethics and dissemination

As this is a scoping review, formal ethics review is not required. The results of this scoping review are intended to be presented pragmatically so that paramedic service organisations, government decision-makers, clinician partners in primary, emergency and internal medicine can use the findings when contemplating designing such programmes. The results of this scoping review will be submitted for publication in a peer-reviewed journal. The results will also be presented at national and international conference. A summary report will be disseminated to paramedic services and professional organisations such as the Paramedic Association of Canada and Paramedic Chiefs of Canada. Opportunities to share this work internationally will be sought.

Patient and public involvement

None.

DISCUSSION AND IMPLICATIONS

Our scoping review explores the role of paramedics in ED to home supportive discharge services. Discharge from the ED is complex in the context of frailty and when there is little time for case management. Paramedics may offer the opportunity to bridge the gap between the acute care system and community-based care. They offer the potential to facilitate care at home, which is often the preference of the patient. A strength of this scoping review is that we will focus on the specific contexts encompassing discharge from the ED or hospital to home when facilitated by a paramedic. This extends our knowledge from other systematic and scoping reviews on community paramedicine. Another strength is the breadth of our search that includes multiple databases, both peer-reviewed and grey literature, and without language restrictions. Finally, our review will be pragmatic. We will describe the clinicians involved in these services, the types of care provided and populations served, processes involved, and assessments and treatments provided. This work will inform future research and programme planning. The main limitation of our approach is that we will not combine or synthesise data. A second limitation is that a risk of bias assessment or exclusion based on quality of evidence will not be used as the goal is to capture all studies that could inform mapping the literature.¹⁷ This review will address a critical need in the literature by providing insight on how paramedic supportive discharge programmes currently function and where knowledge gaps exist.

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