Geriatric Emergency Medicine Fellowship Journal Club – Community Paramedicine

Priyank Bhatnagar MD, Don Melady, MSc, MD

INTRODUCTION

Community paramedicine is a model of healthcare that utilizes paramedic services to deliver non-urgent healthcare services to patients.¹ The intended goal is to improve patient care by identifying community dwelling patients who may benefit from additional services, such as home care services or mobile health teams, to prevent progression to more serious illness.¹ The use of community paramedicine programs has expanded in multiple jurisdictions in the last decade and offers numerous advantages.²,³ Paramedics are medical professionals who can efficiently be trained to gain expanded roles and skills to provide care beyond acute care management and transportation. Focused role-specific training can include recognizing geriatric syndromes, performing procedures, providing point-of-care testing and interventions, assessing and managing chronic diseases, coordinating care with primary care teams, making referrals, providing health education, and following up with patients post-discharge.²,³

Older adults represent an increasing proportion of patients utilizing emergency services.⁴ The ability to provide ambulatory care is particularly advantageous to vulnerable older adults with mobility or cognitive impairments, social isolation, or multiple comorbidities. A proactive approach that addresses chronic disease management and geriatric syndromes may also help reduce healthcare costs associated with acute adverse events in older adults.⁵ From the emergency department perspective, community paramedicine programs offer the option of a robust resource to facilitate safe discharge plans and health promotion for older adults.¹

In this article, we summarize the Journal Club on Community Paramedicine held on February 1st, 2024, which reviewed two articles examining the health system impacts of community paramedicine programs for older adults and their intersection with the care of older adults in the emergency department.

CASE

A 75-year-old woman is transported to the hospital by ambulance after sustaining a fall at home. The paramedics report that they have attended to this patient multiple times in the past few months for similar falls. Usually, the patient requires assistance to get up and then declines transport to the hospital. On this instance, the patient was unable to ambulate even with assistance and there is an obvious deformity of the right hip noted. The paramedic tells you, “Every time I see this patient’s address pop-up on my shift, I worry that this time will be a more serious fall.” The patient’s pain is managed, she is diagnosed with a hip fracture, and consulted to orthopedics.

Given the numerous interactions of the emergency medical services (EMS) and paramedics with the patient prior to today’s ED visit, you wonder about community interventions to support vulnerable older adults and help prevent adverse health outcomes.

What Question Did this Investigation Aim to Answer?
What impact can a community paramedicine clinic, targeting primary care health and chronic disease management, have on the number of monthly 9-1-1 calls and individual patient health outcomes?

What Study Design Did the Authors Choose?
The study was conducted as an open label, cluster randomized control trial (RCT) from 2015 to 2016. Mid- to high-rise public housing buildings across five communities in Ontario, Canada were randomized to receive a community paramedicine intervention called CP@Clinic versus no intervention. Inclusion criteria for residence buildings was 1) at least 60% of residents aged over 55 years and 2) at least one similarly comparable building in terms of population, number of residents and number of units within the same community. There were no exclusion criteria. The CP@Clinic intervention was provided to any residents within an assigned building, but data was only collected from patients > 55 years old. The primary outcome was mean number of 9-1-1 calls per month per 100 resident units collected from paramedic service central database. The secondary outcomes included blood pressure, lifestyle risk factors, body-mass index (BMI), health-related quality of life (HRQoL) and quality-adjusted life years (QALYs) of patients collected via pre/post intervention surveys.

The CP@Clinic model focused on health risk assessment and targeting modifiable risk factors for acute health events (e.g. Falls, polypharmacy, malnutrition). It was delivered by two trained community paramedics and ran weekly in building common areas on a patient drop-in basis. Paramedics used a centralized decision support system for patients based on chronic disease risk scores gathered using standardized scoring tools. Interventions performed by paramedics included diet and lifestyle advice, facilitating access to community resources (cooking class, smoking cessation, etc.), communication with patients’ primary care team, and determination of need for emergent/urgent/family clinic assessment. Prior to the start of the study, paramedics in each jurisdiction were trained using online modules and clinic session observations with oversight from Paramedic Research Program.

How did the Authors Interpret the Results?
Thirty buildings met inclusion criteria creating 15 pairs for randomization and comparison. The intention-to-treat analysis showed no showed no significant difference in EMS calls. However, a sensitivity analysis that excluded data from 2 buildings with eligibility changes after intervention initiation revealed a statistically significant reduction of 0.9 calls per month per 100 resident units in the buildings that received CP@Clinic compared to the control group. Regarding secondary outcomes, there was a significant improvement in BMI and QALY among residents who attended the CP@Clinic. Improvements were noted in all HRQoL measures except for mobility, but these did not meet the significance threshold. Additionally, there was a reduction in blood pressure to target levels for 67.9% of hypertensive patients by their second visit to CP@Clinic.

Discussion / How Might this Study Affect your Clinical Practice in the Emergency Department?
This was a high quality RCT with randomization at the level of residence buildings in order to measure health systems outcomes. When contextualized the CP@Clinic intervention showed a large reduction in monthly 9-1-1 calls with positive implications on reducing acute health system strain and costs (0.9 calls per 100 units; average 250 units per building; average 200 buildings in a large municipality; approximates to 5400 EMS calls per year). There was no direct measure of ED visits during the study period and thus, the translation of reduced 9-1-1 calls to reduced ED utilization can be inferred but remains unclear.

The paramedics offered low-barrier interventions to patients (health promotion and education) that can be easily trained. The administration, delivery and management of such a model is dependent on individual jurisdiction factors and paramedic service capacities. This could make reproducibility challenging, but still offers a well-outlined model that can be adapted.

The intervention showed versatility as it was delivered in multiple settings including urban, rural, and remote communities. Additionally, there were clearly outlined methods by the authors to handle unreliable and missing data in the analysis.
Article 2

Presenters
Priyank Bhatnagar MD, FRCPC

What Question Did this Investigation Aim to Answer?
What impact can an ED-to-home transitional care intervention have on return visits to the ED and other post-discharge care measures for older adults?

What Study Design Did the Authors Choose?
This study was conducted as a single-blinded RCT from January 2016-2019 across three large urban EDs in the United States. Older adults (age > 60) being discharged from the ED were randomized to receive a community paramedicine program called Care Transition Intervention (CTI) versus usual care. Inclusion criteria were having a primary care physician, a working telephone and being discharged to a community residence within 24 hours of arrival. Exclusion criteria included non-English speaking, vision/hearing impairment, ED visit primarily for a behavioral or psychiatric reason, emergency severity index (ESI) of 1, or being a previous participant in the study. Research assistants collected baseline demographic and health status data from all enrolled patients prior to randomization. Patient in both study arms then received follow-up phone calls at day 4 and 30 post ED visit by research assistants. The primary outcome was a return ED visit within 30 days, regardless of reason. This was collected through chart review and data abstractors were blinded to patient randomization status. Secondary outcomes included patient attendance at arranged follow-up from the ED also collected from chart review, and knowledge of red flag symptoms as well as medication adherence collected from follow-up phone calls. Data analysis included intention-to-treat (ITT) and per-protocol analyses.

The CTI intervention was a healthcare coaching model delivered via home visits by paramedics within 24-72 hours post-discharge from the ED and up to 3 coaching phone calls within 28 days at discretion of paramedic. Interactions focused on reminders for the arranged outpatient follow-up, medication management, understanding “red flag” symptoms (symptoms for the patient to monitor as an indicator of need for possible reassessment), creation of a personal health record, and health-related goal setting. Paramedics were trained in motivational interviewing skills and aging related topics through Readings, video podcasts, shadowing of other CTI coaches, emergency physician/geriatrician shadowing, simulation, mentored coaching, and in-person CTI training by an already established hospital-to-home CTI program.

How did the Authors Interpret the Results?
In total, 1756 participants were enrolled in the study (893 control arm, 863 intervention arm). The intervention group was noted to have significantly more comorbidities and deficiencies in the activities of daily living (ADLs). There was a protocol deviation in 15.8% of participants in the treatment arm as they did not receive the intended intervention due to patient schedule conflicts or illness. Overall, there was no significant difference in ED revisit rates between the two groups at 30 days. Regarding secondary outcomes, there was a significant increase in attendance at arranged follow-up appointments within 30 days, and the per-protocol analysis revealed a significant increase in “red flag” symptom knowledge.

Discussion/How Might this Study Affect your Clinical Practice in the Emergency Department?
This RCT assessed the impacts of a community paramedicine program initiated from the ED on return ED visits and patient attendance at arranged follow-up. There was no difference found between the intervention and control groups regarding return visits to the ED. The reasons hypothesized for this null result include 1. Patients were recruited in a high resource setting, thus possibly diluting the intervention impact and 2. Patient selection was too broad and may have shown more effectiveness among selected older adult subgroups such as those with cognitive impairment, multiple comorbidities, or non-English speakers. The study authors also questioned the value of using ED-revisit as a single indicator for success of a community intervention. The CTI intervention delivered health promotion and motivational interviewing services that may not be appropriately captured by measuring ED revisit rates. Other outcomes such as functional status, quality of life, patient experience, or use of other health-related services in the community may be more applicable to such an intervention.

The rate of follow-up visits and knowledge of “red flag” symptoms were increased among the intervention group displaying the value of healthcare coaching, however the overall impact on reducing health system strain from these secondary measures is unclear.
CASE CONCLUSION

After learning about community paramedicine programs, you wonder if there is an opportunity to implement a paramedics led falls-prevention initiative in your jurisdiction. You reach out to your local EMS medical director to share your thoughts on how expanded paramedic roles and how such a program could help address ED visits and EMS costs. Together you explore whether a community paramedics program exists locally and if there is interest in one. You brainstorm ideas on how paramedics could be trained to conduct fall assessments, how protocols could be developed to facilitate community care and fall prevention program referrals by paramedics, and if similar programs in other jurisdictions could be adapted locally. You begin the conversation about expanded roles for paramedics in the health system to provide care for older adults in your community.

KEYWORDS
Community Paramedicine, Post-Discharge, Vulnerable Older Adult, ED Avoidance

AUTHOR AFFILIATIONS

<table>
<thead>
<tr>
<th>Author</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priyank Bhatnagar, MD</td>
<td>Department of Medicine (Division of Emergency Medicine), University of Toronto</td>
</tr>
<tr>
<td>Don Melady, MD</td>
<td>Schwartz-Reisman Emergency Medicine Institute, Mount Sinai Hospital, Toronto, Ontario</td>
</tr>
</tbody>
</table>

ACKNOWLEDGEMENTS

We thank Dr. Gina Agarwal MD, MBBS, PhD, for attending the journal club held on Feb 1st, 2024 as a special guest and invited expert.

CORRESPONDING AUTHOR

Priyank Bhatnagar, MD
Priyank.bhatnagar@mail.utoronto.ca

AUTHOR CONTRIBUTIONS

Priyank Bhatnagar is the principal author and conceptualized, wrote and revised this article. Don Melady, the senior author, provided oversight for the project.

Sponsor Role: There were no sponsors of this work.

Funding: There was no funding for this work.

CONFLICTS OF INTEREST

Authors have no conflicts to report.

REFERENCES