ORIGINAL RESEARCH

Evaluating a Paramedic-Led Fall-Referral Program in Nova Scotia: a Mixed-Methods Study

Luke Duignan, MSc[1], Izabelle Opra, BSc[2], Alix JE Carter, MPh, MD[3], Florence Grenapin,MSc[4], Scott McCulloch, BSc, PT[4], Andrew Travers, MD, MSc[3,6,8], Jan Jensen, MAHSR[6,9], Pan Andreou, PhD[7], Suzanne Baker, BSc, MA[5], Judah Goldstein, MSc, PhD[3,6,8]

[1]Department of Medicine, Dalhousie University; [2]Nova Scotia Heath Trauma Program; [3]Emergency Health Services Nova Scotia, Halifax, NS; [4]Ottawa Paramedic Service, Ottawa, ON; [5]Nova Scotia Health, Rehabilitation Services, Western Zone; [6]Department of Emergency Medicine, Division of Emergency Medical Services, Dalhousie University; [7]Maritime SPOR Support Unit; [8]Nova Scotia Health, Department of Emergency Medicine; [9]Department of Health and Wellness, Government of Nova Scotia, Halifax, NS

https://doi.org/10.5770/cgj.28.886

ABSTRACT

Background

Falls in older adults are a worldwide health issue, and lead to high morbidity, mortality, and health-care costs. Paramedics play a unique and important role in post-fall management. The objectives of this study were to measure the frequency with which paramedics made referrals to fall-prevention programs, understand the factors influencing these decisions, and compare outcomes between those who received a referral with those who did not.

Methods

This mixed-methods study evaluated a paramedic fall-referral program in Nova Scotia for older adults with non-transport dispositions after a 911 response. Patient demographics and outcomes were analyzd using a matched cohort approach, while paramedic beliefs regarding the program were explored using *The Theory of Planned Behavior*.

Results

From 2014 to 2019, a total of 289 referrals were made, and a matched cohort analysis (1:2) found no significant difference in the mean number of fall-related 911 calls in the following 12 months between those who were referred (m=0.31, SD=0.94) and those who were not (m=0.30, SD=1.28). Paramedics acknowledged the importance of fall prevention, but felt a lack of education, loop closure-feedback to the referring paramedic, and patient reluctance to consider the program, were all significant barriers to referral.

Discussion

This study assessed Nova Scotia's paramedic fall-prevention referral program, revealing low referral frequency despite high numbers of fall-related 911 calls, and no significant reduction in relapse 911 calls. Barriers to referral included patient reluctance, poor systematization, and lack of education and feedback.

Conclusion

The study highlights opportunities for improving referral systems, as paramedics play a bigger role in the prevention of age-related health issues such as falls.

Key words: pre-hospital care, fall prevention, paramedicine, geriatric care, community-based intervention

INTRODUCTION

Falls in older adults are a worldwide health concern. Each year, 37.3 million falls require medical assistance, and are a leading cause of injury and unintentional death worldwide.(1) Older adults are among the most impacted and, in Canada, up to 30% report falling each year.(2) Falls precipitate increases in morbidity and mortality,(3) increasing hospital and long-term care admissions. As Canada's population ages, fall-related hospitalizations have increased 47% from 2009 to 2020, at an annual health-care cost of more than $5.6 billion.(2) As a result, fall-prevention efforts for older adults are an essential research focus in Canada. This is of particular interest to those who often respond first: Emergency Medical Services (EMS).

Paramedics play an important role in post-fall management. By nature of their role, paramedics receive disproportionate exposure to the at-risk-for-falls population and hold unique potential to assess factors that can predispose an individual to a fall. Falls in older adults are a leading cause of 911 calls, and data suggests that one quarter of callers are not transported to hospital and remain at home.(4) Non-transport fall-related calls are usually lower acuity, but

may be an indicator of underlying frailty and vulnerability. Some non-transport calls, however, may also be the result of patients declining transport regardless of acuity. These calls are an important risk indicator of more serious illness,[5] and 50% of non-transport fall-related calls result in a relapse 911 call within 30 days, with half of these requiring hospital transport.[5,6] Any fall-related call, therefore, represents an opportunity for paramedics to initiate further evaluation and prevention strategies to potentially prevent further morbidity and mortality.

Paramedic referrals to fall-prevention programs are one such intervention that could be of benefit following a fall-related call. Fall-prevention programs vary considerably but often include interventions focusing on strength and balance exercises, home hazard and vision assessments, and medication reviews.[7] Fall-prevention exercise programs reduce rates of falls,[8,9] rates of fall-related injury,[10] and health services utilization.[9] EMS-led fall-referral services have been evaluated with mixed results. In Australia, one program showed out of 638 eligible patients, only 17 referrals were made by EMS in two years.[11] A similar program in Massachusetts, United States, referred 23 patients to a fall-prevention program, with a subsequent physician review referring 47 more, in an eight-month period.[12] A randomized control trial in the United Kingdom obtained a referral rate of 8% in a group of paramedics who had received significant training, compared with 1% in those who had not.[13] Furthermore, once patients are referred, program acceptance rates are as low as 34%,[12] and program adherence rates no greater than 50%.[14,15] If successfully completed, however, fall-prevention interventions have been shown to reduce all-cause and fall-related emergency department visits.[16]

Nova Scotia operates a provincial ambulance service, which responded to 4,878 calls related to falls in those 65 and older in 2010 (7.7% of total emergency responses).[4] Fall-prevention programs are not new to Nova Scotia, but clients are typically referred by family physicians or upon discharge from hospital. In 2014, a novel paramedic-led fall-referral program was established whereby Emergency Health Services (EHS), the provincial EMS, could refer patients to such programs during a fall-related 911 call. In offering this intervention, a preventative measure is initiated during the patient encounter with the goal of reducing the chances of a future fall, subsequent injury, and relapse 911 calls.

The variance in success of EMS fall-referral programs across the world outlines the importance of understanding the processes and attitudes that influence their implementation. Therefore, the goal of this study was to examine the Nova Scotia paramedic fall-referral program and its system outcomes. The objectives of this study were to measure the frequency of referrals to fall-prevention programs, assess the rate of relapse fall-related EMS calls, and to understand the factors influencing paramedics decisions to refer or not. Together, these results may provide a better understanding of the effectiveness of such a program, and could lead to improvements in the health of older Canadians.

METHODS

To address these objectives, we conducted both a mixed-methods study that included a quantitative retrospective matched cohort and qualitative semi-structured paramedic interviews.

Setting & Program

Our study focused on the Western and Northern Zones, where a fall-referral program was established in 2014. This program integrated a novel referral process to existing community-based fall-prevention programs and encouraged paramedics on fall-related calls to approach patients about enrolment. If patients verbally consented, paramedics contacted the clinical support paramedic based within the medical communications centre, who initiated a referral to a local fall-prevention program. The paramedic electronic patient care record and program referral form (that includes the paramedic report, including injuries, comorbidities, frailty, and any possible environmental or physiological risk factors for fall) are sent to the program, and a community-based multi-disciplinary team then facilitated in-home assessment within five days. Specific interventions or further referrals are then provided by the team, and recommendations are shared with the patient's family physician. Paramedic training about the fall-referral program occurred during onboarding, training sessions, and online modules; however, conversations with patients and decisions to refer were largely left to paramedic gestalt.

Matched Cohort Study

Study Design: The retrospective matched cohort study targeted patients in two Nova Scotian zones who experienced a ground-level fall with a non-transport outcome after paramedic response and assessment. Patients who were referred to the falls-prevention program were compared to those who were not referred, and the primary outcome was relapse fall-related EMS call. Data regarding program acceptance or adherence were not collected and were expected to be low, an established limitation of programs and studies such as this.[14,15]

Participants: Inclusion criteria was those aged 65 and older who had experienced a ground-level fall or were identified by paramedics as being at risk for falls, had a non-transport disposition, did not live in long-term care, and consented to a referral between February 1, 2014 (program inception), and December 31, 2019. Patients were followed until December 31, 2020. This study period was the first six years of this program, and while older, represents useful baseline data for assessing the early stages of program implementation. To detect a 35% reduction in fall-related EMS calls with 5% significance and 80% power, we required a study population of at least 144.

Data Collection: Two primary data sources were queried for the cohort study: EHS electronic patient care reporting (ePCR) database and fall-prevention referral forms completed by the paramedic(s), whose level of training was recorded. Paramedics complete an ePCR for every patient interaction

and the following were abstracted: patient demographics, chief complaints (i.e., the medical issue for which they are requesting assistance), past medical history, fall location, treatment received, and dispositions (i.e., transport vs. non-transport).

Analysis: Descriptive statistics were used to describe the cohort characteristics and referral program data for patients referred versus those who were not. Patients were matched (1:2) by age and region to account for variations in paramedic practice. Mean difference in 12-month fall-related EMS calls of the groups were analyzed using the *t*-test. The zero-hurdle model was used to identify predictors of repeat 911 calls for a fall-related complaint. Following this matching process, the final sample size was 857, with five participants not matched due to missing data.

Qualitative Theory of Planned Behaviour Study

Study Design: Semi-structured interviews were conducted with paramedics to explore the barriers and facilitators to making a referral to a fall-prevention program and to understand their decision-making processes, following the methodology of Ajzen's The *Theory of Planned Behavior*.[17]

Participants: We invited all ground ambulance paramedics who worked in Western and Northern zones during the study timeframe and had the means to refer to fall-prevention programs. Clinical support paramedics, who work in the medical communications centre and assist with the fall-referral process, were also eligible (n=1225). Paramedic recruitment took place via email invitations distributed by the College of Paramedics of Nova Scotia. Twelve paramedics were interviewed, all of whom were field paramedics who had responded to at least one fall-related 911 call with a non-transport disposition following paramedic assessment. Two of these paramedics were also employed as clinical support paramedics in the MCC.

Data Collection: Semi-structured interviews with paramedics were conducted using a framework based on *The Theory of Planned Behavior*.[17] Interviews explored paramedics' decision-making processes and facilitators/barriers to referral. Interviews were recorded, transcribed, and analyzed using content analysis. Interviews were conducted until data saturation was reached.

Analysis: An inductive grounded approach and constant comparative analysis identified recurring themes in interviews regarding referral. Themes were iteratively grouped together to arrive at the three main categories: behavioural beliefs (i.e., attitudes towards referring to a falls-prevention program), subjective normative beliefs (i.e., perceived attitudes of others towards the falls-prevention program), and control beliefs (i.e., attitudes about factors that may help or hinder referral to a falls-prevention program).

Ethics and Consent

REB approval was received from Nova Scotia Health (REB number 1026256) for both phases. A waiver of consent addendum was approved for the matched cohort study. Data was de-identified and stored in secure, password-protected network folders. Written informed consent for participation was obtained from interviewed paramedics. Interviews were transcribed verbatim, with no identifying information kept in the files, and stored in a secure network folder.

RESULTS

Matched Cohort Study Findings

A total of 289 referrals were made to the fall-prevention program over the six-year study period, representing an average of 48 referrals per year. Based on EHS data, this represents approximately 9.1% of all fall-related calls with non-transport dispositions over the study period.[4] The majority of falls occurred at home (60%), and more females received referrals than males (53.6% vs. 46.4%). Almost eighty per cent (79.8%) of participants lived within the Western Nova Scotia jurisdiction, and 20.2% in the Northern Nova Scotia jurisdiction. Responding paramedics were mostly advanced care paramedics (66.3%). No significant difference was found in the mean number of subsequent fall-related EMS calls within the next 12 months between those who were referred to a fall-prevention program (m=0.31, SD=0.94) and those who were not (m=0.30, SD=0.128). This means that, regardless of referral status, most did not experience a repeat fall requiring a 911 call within a year. A summary of patient characteristics, demographics, and paramedic training level can be found in Table 1.

Qualitative Theory of Planned Behaviour Study Findings

Behavioural Beliefs

All paramedics expressed concern about future fall risks and emphasized the importance of a thorough patient assessment. Seven paramedics first assessed for injuries or underlying medical conditions, while five also investigated potential causes such as environmental hazards or frailty. Their goal was to prevent future injury through addressing fall risk factors, educating the patient and family, or referring to a fall-prevention program. The paramedics unanimously agreed that fall-prevention programs are beneficial, helping patients avoid future falls and maintain their independence at home. Nine paramedics agreed that paramedics are uniquely qualified to refer patients to these programs, given the increased accessibility of paramedics compared to doctors or nurses.

Subjective Normative Beliefs

Five paramedics interviewed noted that many paramedics feel comfortable leaving patients at home after fall-related calls. However, concern was expressed about the risks associated with this attitude, suggesting that such views may not fully reflect the broader paramedic population's stance on fall-related calls and referrals. Despite this, there did not seem to be strong pressure to refer or not, and most paramedics agreed that more visible cues, educational initiatives, and

improved communication (i.e., receiving status updates on referrals they have made) would encourage greater referral to these programs.

Control Beliefs

Six paramedics noted the hardest aspect of these calls to navigate was the patient's fear of admitting they require help, often due to the perceived risk of losing their independence. Patient access to social resources was also felt to play a significant role in providing effective care. Additionally, five paramedics emphasized the importance of their own resources in delivering better care during calls, including years of experience, additional education, and clinical decision tools. Several barriers to referring patients to fall-prevention programs were also identified. The largest challenge was patients' unwillingness to engage with such programs, especially when it involved allowing strangers into their home. From the paramedic perspective, lack of feedback and minimal loop closure was also identified as a barrier to making additional referrals. Lack of education about the programs and ongoing patient outcome information meant paramedics felt less inclined to refer.

A summary of the paramedic participant characteristics, and exemplary quotes corresponding to each theme, can be found in Table 2 and Table 3.

TABLE 1.
Demographics and characteristics of study population

	Overall (n=857)	*Not Referred (n=568)*	*Referred (n=289)*
Age (m, SD)	80.8 (7.95)	80.8 (7.93)	80.8 (8.00)
Gender (n, %)			
Male	405 (47.3%)	271 (47.7%)	134 (46.4%)
Female	452 (52.7%)	297 (52.3%)	155 (53.6%)
Highest Paramedic Level (n, %)			
PCP	230 (27%)	155 (27%)	75 (26%)
ICP	57 (6.6%)	42 (7.4%)	15 (5.1%)
ACP	569 (66%)	370 (65%)	199 (69%)
CCP	1 (0.1%)	1 (0.2%)	0 (0%)
Location of Fall			
Home Residence	508 (59%)	335 (59%)	173 (60%)
Other	349 (41%)	233 (41%)	116 (40%)
Past Medical History (n, %)			
Dementia	94 (11%)	66 (12%)	28 (9.7%)
Diabetes	258 (30%)	165 (29%)	93 (32%)
Relapse 911 Calls in 12 Months (m, SD)	0.31 (1.17)	0.30 (1.28)	0.31 (0.94)

m=mean; SD=standard deviation; PCP=Primary Care Paramedic: basic life support, oxygen, vitals, limited meds; ICP=Intermediate Care Paramedic (since phased out): IVs, cardiac monitoring, more meds; ACP=Advanced Care Paramedic: advanced airway, ECG, defibrillation, intubation; CCP=Critical Care Paramedic: ventilators, ICU transfers, critical care support.

DISCUSSION

Falls are a common reason for 911 calls in Canada, and the EMS response to fall-related calls represents a unique potential opportunity to prevent future illness or injury and repeat EMS calls. This study was the first to examine the Nova Scotia EHS fall-referral program, in both a quantitative and qualitative manner.

There was no significant difference in average number of 911 calls for a fall-related complaint in the 12 months following a fall-related call in those who were referred compared with those who were not. While some previous studies have shown similar results,[13] most EMS-delivered fall-referral programs have shown effectiveness at reducing subsequent falls and 911 calls.[16] Our findings could be due to several possibilities. It is possible that many individuals referred to a fall-prevention program did not accept it when contacted and thus continued the same as patients who were not referred. Data regarding program adherence was not obtained in this study, but evidence suggests adherence rates are less than 50%.[14,15] Therefore, any reductions in 911 calls by those who participated in a fall-prevention program could be masked by higher rates in those who did not. Given the lack of systematic patient selection, it is possible that the two groups were inherently different and those referred had greater fall-related risk factors (i.e., more frail). If this were the case, no significant difference between groups could be clinically significant, given this group would be expected to do much worse had no intervention been provided. However, without program acceptance and adherence data, no such conclusions can be drawn.

Referrals were low, in line with similar studies from around the world.[9,11,12] A total of 289 referrals were made in five years, a referral rate of approximately 9.1%. Paramedic interviews offered insight into barriers to referral, a significant one being patient's lack of willingness to engage with such programs. This is an established hurdle for older adults to sign up for such programs, as they often deny requiring

TABLE 2.
Characteristics of paramedics interviewed

	Overall (n=12)
Years of Paramedicine Experience (n, %)	
<6 years	9 (75%)
6+ years	3 (25%)
Fall-Related Calls per Rotation[a]	
1-3 calls	3 (25%)
4-6 calls	7 (58%)
7+ calls	2 (17%)
Comfort Level in Making Fall Referral	
Very or somewhat	5 (42%)
Other	7 (58%)
Previous Training on Fall Referrals	
Yes	4 (33%)
No	8 (67%)

[a]A typical paramedic work rotation consists of four 12-hour shifts.

TABLE 3.
Identified themes with exemplary quotes

Theme	*Quote*
Paramedic attitude towards fall prevention:	*"I'm always concerned about continued risk for future calls. I mean we have a good conversation about it, so let's step back and figure out why you fell."*
	"I find I do a little bit of sleuthing …when I do these assessments, I try to mitigate risk first for future falls and find out why the original fall occurred."
	"I'm a paramedic, my job is to ensure that the people I see are okay, and if they require transport, they go to hospital where they get more care… the goal is to make sure they don't get future injury."
	"We're the ones that see them [the patient] on the floor, we can easily see the risks for them falling again, and I think we are probably uniquely qualified to see what's going on in the house and have that ability to refer them."
	"When there is one, there's many. Like a spark, when there's a spark there's fire typically - people don't have a one-off fall especially as you increase in age and frailty."
	"[Our role is to consider] safety and ongoing safety right so just because I'm there to pick them up uh it helps right then to pick them up but obviously the next thing is so how can we minimize the chance of this happening to you again that's just for the simple fact of not just calling us back but kind of eliminates or decreases risk to the patient.'
Lack of patient education on the program goals:	*"What I see is a lot of people saying "jeez oh I didn't know that this was available and sure I would be happy to take a consult from somebody that wants to talk about making my life better for me."*
	"A lot of the times they're like "I don't want anyone in the home."
	"I think many seniors feel if we take them from home they're not going to come back. This is their last time they fear they'll die in hospital …but other times it's because they don't want to admit things are failing or they need help."
Lack of paramedic education and feedback:	*"The lack of clear process on my end, … I didn't have anything to leave behind to say this is what the fall referral program is and I've set you up, I had to write it on a scrap of paper."*
	"It would be great to get a notification to say thank you for the referral, we (Nova Scotia Health) did an assessment and there were some issues we've corrected."
	"It's a great program, its just that what would be ideal is that any sort of feedback on past falls we've done so you know if I've gone ahead and done a fall referral on somebody I thought really needed it and then if I could find out even some sort of feedback, if they've accepted it…so at least I can figure out okay what can I change in my description for them or anything like that."
Lack of interest in engaging with the program	*"They just want to be picked up and put back on a chair or back to bed they don't want to do the rest they don't want you to do an assessment on them. I always try to make sure that they understand that I'm not comfortable just picking them up and putting them in the chair and walking out the door."*
	"They don't want people knowing they're stuck, therefore having to invite someone in to help them its uh obviously not what they want to do. Cause they don't want people to either judge them you know or so I'm sure there's all kinds of reasons."

such services.[18] Additionally, paramedics heavily rely on their personal education on fall-related calls, and lacking education surrounding the referral program was a considerable barrier to its deployment. One possible solution to this could be standardized protocols and automated referral systems, both of which increase the number of referrals made by paramedics.[19,20] Given the low number of subsequent falls regardless of referral or not, standardized patient risk screening and on-scene decision-making may ensure paramedics correctly identify patients who could benefit most from intervention. This could also provide useful loop closure to paramedics and positive reinforcement for further future referrals.

Paramedics acknowledged their unique and important role in assessing and preventing falls in the community. The unanimous agreement in the benefit of fall-prevention programs, and near-unanimous agreement that paramedics are best suited to refer these patients, is very reassuring for these programs' future. However, concerns were still raised regarding attitudes towards paramedics leaving non-transport fall victims in their home without further workup. It is possible that social or cultural factors within EMS prevent this, and other, referral programs from being truly successful, and that continued reminders, education, and avenues for feedback could encourage more participation.

Strengths and Limitations

A strength of this study is the use of multiple methods. This approach enabled integration of both quantitative and qualitative methods in our findings to identify how referral rates aligned with paramedic decision-making and behaviours.

Additionally, it highlighted some important shortcomings and barriers to Nova Scotia's EHS fall-referral program, which can and will be used for program improvement. This study also had several limitations.

We lacked data on patients who were not referred, and the reasons for not being referred. Referral rates could be underestimated if a patient already had home care services, or if the fall took place outside their home. Similarly, 911 call relapse data may underestimate the success of referrals due to program non-acceptors or non-adherers remaining in the referred group. Future studies should obtain data regarding those who were not successfully referred, along with follow-up data on those who were. Our older dataset is another limitation but still felt worthy of publication as an initial step in identifying areas for improvement. The small number of paramedics interviewed puts this study at risk of response bias, and future studies should attempt to include more paramedics. Additionally, only specific regions of Northern and Western Nova Scotia were included in this study, with potentially differing paramedic and patient attitudes when compared with more urban centers. This may limit the study's generalizability across the province.

Clinical and Research Implications

This study highlights opportunities for program improvement and optimization. Evidence from around the world has shown the benefits of fall-prevention programs, but implementing referral processes is challenging. This study provides baseline data which should be utilized by EMS services to address inadequacies in current referral systems and improve program utilization. Future research should include more patient-level data and outcome measures, to better understand contextual reasons for why patients may accept or decline referral, and to assess adherence rates of those who accept.

CONCLUSION

This study is the first to examine Nova Scotia's EHS fall referral program, focusing on referrals, relapse 911 calls, and paramedic perspectives. Referrals were low, and no significant difference in relapse calls was found between referred and non-referred patients. However, paramedics remain positive about their role in fall prevention and the referral program. With improved patient-level data and ongoing education, there remains the potential for ongoing improvements in patient outcomes as paramedics continue to play an important role in the prevention of age-related health-care issues such as falls.

ACKNOWLEDGEMENTS

We would like to acknowledge the contributions of Mr. Thomas Dobson (former Manager, EHS Integrated Health Programs) who passed away suddenly on March 28th, 2020. Tom drafted the initial version of this protocol. He was a strong advocate and supporter for integrated EMS health services, and patient and family-centred community-based care.

CONFLICT OF INTEREST DISCLOSURES

We have read and understood the *Canadian Geriatrics Journal*'s policy on disclosing conflicts of interest and declare that we have none.

FUNDING

This research was supported by the inaugural 2020 Lerner's-Trauma Association of Canada Research Grant. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

REFERENCES

1. World Health Organization [Internet]. 2021 Apr 26 [cited 2024 Nov 18]. Falls. Available from: https://www.who.int/news-room/fact-sheets/detail/falls
2. Public Health Agency of Canada. Surveillance report on falls among older adults in Canada [Internet]. Ottawa; 2022 Mar [cited 2024 Nov 18]. Available from: https://www.canada.ca/en/public-health/services/publications/healthy-living/surveillance-report-falls-older-adults-canada.html#a2.1
3. James SL, Lucchesi LR, Bisignano C, Castle CD, Dingels Z V, Fox JT, *et al*. The global burden of falls: global, regional and national estimates of morbidity and mortality from the Global Burden of Disease Study 2017. *Injury Prevention*. 2020 Oct;26(Suppl 1):3–11.
4. Goldstein J, Jensen JL, Carter AJE, Travers AH, Rockwood K. The epidemiology of prehospital emergency responses for older adults in a provincial EMS system. *CJEM*. 2015 Sep 20; 17(5):491–96.
5. Cone DC, Ahern J, Lee CH, Baker D, Murphy T, Bogucki S. A descriptive study of the "lift-assist" call. *Prehospital Emerg Care*. 2013 Jan 1;17(1):51–56.
6. Snooks HA, Halter M, Close JCT, Cheung WY, Moore F, Roberts SE. Emergency care of older people who fall: a missed opportunity. *BMJ Qual Safety*. 2006 Dec 1;15(6):390–92.
7. Hopewell S, Copsey B, Nicolson P, Adedire B, Boniface G, Lamb S. Multifactorial interventions for preventing falls in older people living in the community: a systematic review and meta-analysis of 41 trials and almost 20,000 participants. *Br J Sports Med*. 2020 Nov;54(22):1340–50.
8. Sherrington C, Fairhall NJ, Wallbank GK, Tiedemann A, Michaleff ZA, Howard K, *et al*. Exercise for preventing falls in older people living in the community. *Cochrane Database System Rev*. 2019 Jan 31;2019(1).
9. Mikolaizak AS, Lord SR, Tiedemann A, Simpson P, Caplan G, Bendall JC, *et al*. Adherence to a multifactorial fall prevention program following paramedic care: Predictors and impact on falls and health service use. Results from an RCT a priori subgroup analysis. *Australas J Ageing*. 2018 Mar 15;37(1):54–61.
10. El-Khoury F, Cassou B, Charles MA, Dargent-Molina P. The effect of fall prevention exercise programmes on fall induced injuries in community dwelling older adults. *Br J Sports Med*. 2015 Oct 1;49(20):1348.
11. Comans TA, Currin ML, Quinn J, Tippett V, Rogers A, Haines TP. Problems with a great idea: referral by prehospital emergency services to a community-based falls-prevention service. *Injury Prevent*. 2013 Apr 1;19(2):134–38.

12. Kue R, Ramstrom E, Weisberg S, Restuccia M. Evaluation of an emergency medical services–based social services referral program for elderly patients. *Prehospital Emerg Care*. 2009 Jan 1;13(3):273–79.
13. Snooks HA, Anthony R, Chatters R, Dale J, Fothergill R, Gaze S, *et al*. Support and Assessment for Fall Emergency Referrals (SAFER) 2: a cluster randomised trial and systematic review of clinical effectiveness and cost-effectiveness of new protocols for emergency ambulance paramedics to assess older people following a fall with referral to community-based care when appropriate. *Health Technol Assess*. 2017 Mar;21(13):1–218.
14. Singh S, Kwon A, Whitehurst DGT, Friesen K, Scott V, Hejazi S, *et al*. Fall prevention mobile clinic: a novel fall prevention program for community-dwelling older adults. *Can J Aging* [Internet]. 2018 Dec 1 [cited 2025 Jul 25];37(4):482–95. Available from: https://pubmed.ncbi.nlm.nih.gov/30176953/
15. Mikolaizak AS, Lord SR, Tiedemann A, Simpson P, Caplan GA, Bendall J, *et al*. A multidisciplinary intervention to prevent subsequent falls and health service use following fall-related paramedic care: A randomised controlled trial. *Age Ageing* [Internet]. 2017 [cited 2025 Jul 25];46(2):200–08. Available from: https://pubmed.ncbi.nlm.nih.gov/28399219/
16. Friend TH, Thomas HM, Ordoobadi AJ, Bain PA, Jarman MP. Community emergency medical services approaches to fall prevention: a systematic review. *Injury Prevent*. 2024 Dec; 30(6):446–53.
17. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. 1991 Dec 1;50(2):179–211.
18. Shandro JR, Spain DA, Dicker RA. Recruitment strategies for a fall prevention program: if we build it, will they really come? *J Trauma Acute Care Strategy*. 2007 Jul;63(1):142–46.
19. Quatman CE, Wiseman JM, Sheridan E, Caterino JM, Weade M, Wisner D, *et al*. Automated referral to community paramedicine during 9-1-1 fall calls for resource activation. *J Am Geriatr Soc* [Internet]. 2022 Aug 30 [cited 2024 Dec 8]; 70(12):3578–84. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC9771950/
20. Hutchinson P, Nadeau A, Mercier E, Bouchard J, Beaulieu S, Brousseau AA, et al. An emergency medical technician administered falls-assessment protocol to safely identify elderly adults with non-urgent conditions that may avoid transport to Emergency Department. CGJ [Internet]. 2024 Jun [cited 2024 Dec 8]. Available from: https://cgjonline.ca/index.php/cgj/article/view/732/1049

Correspondence to: Judah Goldstien, MSc, PhD, Department of Emergency Medicine, Division of Emergency Medical Services, Dalhousie University, 1796 Summer St. Halifax Infirmary, 4th Floor ED Admin., Halifax, NS B3H 3A7
E-mail: Judah.goldstein@dal.ca