

# KEEPING THEM ON THEIR FEET: NOVEL SOLUTIONS TO THE EMERGING LIFT ASSIST TREND

Authors: C. William Johnston BA(Hons.)<sup>1,2</sup>, Dustin Carter CMM-II  
EMS Professional<sup>1,3</sup>, Alan M. Batt MSc PhD(c)<sup>1,4,5</sup>

1. Paramedic Programs, Fanshawe College, Ontario, Canada
2. Ottawa Paramedic Service, Ontario, Canada
3. Middlesex-London Paramedic Service, Ontario, Canada
4. Paramedic Science, CQUniversity, Queensland, Australia

5. Centre for Paramedic Education and Research, Hamilton Health Sciences, Ontario, Canada
6. Department of Community Emergency Health and Paramedic Practice, Monash University, Queensland, Australia

## Introduction

Originally designed to transport the most critically ill and injured patients to the hospital, paramedic services across the country are evolving to address the nature of the ever-changing healthcare landscape. Frequently paramedics attend low-acuity, non-emergency calls. As the number of non-emergency calls increases, the burden on paramedic services will continue to increase as well. This strain on the system is compounded by increased times to offload patients to emergency room beds at the hospital. Many paramedic services in Ontario are struggling to meet these challenges with “no paramedics available” occurrences on the rise throughout the province.<sup>(1,2,3,4)</sup>

Older adults, individuals over 65 years of age, account for a large portion of paramedic service use.<sup>(5)</sup> In 2013, older adults accounted for 17% of the Canadian population. Census data estimates an increase to almost 24-28% by 2030.<sup>(6,7)</sup> With an increasing number of older adults, the pressure on the health care system will increase consequently placing added demand on paramedic services — especially through the growing number of non-emergent calls.

Forty percent of older adults are expected to fall at least once annually, and 21% of fallers attended to by paramedics visit the emergency

room within two weeks of their fall.<sup>(8)</sup> The risk of falls presents a serious cause of complications, mortality, and increased demand on the healthcare system. However, some of these falls result in a growing non-emergent call type referred to as a “Lift Assist.”. A Lift Assist (LA) is defined as an event whereby a patient calls paramedic services and requests assistance to get up or mobilize, receives no treatment on scene, and refuses transport to the emergency department for further medical attention.<sup>(9,10)</sup> Data from Middlesex-London Paramedic service (MLPS), a medium-sized urban paramedic service in Ontario demonstrated that lift-assists were the second highest source of repeat 9-1-1 callers. These calls accounted for 62 days’ worth of service usage at an operational cost of approximately \$300,000.<sup>(8)</sup> Similar data exists for moderate size paramedic services internationally and it can be inferred that this trend continues throughout Canada.<sup>(11)</sup> As the number of LA calls increases, the impact both financially and operationally on paramedic services will continue to cause significant stresses. We suggest a system change approach to the care we provide for older adults who fall, to help decrease the impact on services, and improve the safety and health of our patients.

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the authors are unaware of any unique response modalities for LA calls in Canada. When an individual calls for a fall, and it is deemed non-emergent, it is generally flagged as a low priority in the response cue. Occasionally, these calls may be held for up to one hour if the minimal level of ambulance coverage is not available. This can potentially lead to “long-lays”, where patients remain on the ground for greater than 60 minutes.(5) As the number of calls for service increases, there is a risk that the frequency of long-lays will increase. When paramedics arrive at these calls, they will reposition or lift the patient, have the patient sign a refusal of service, and leave the patient at home. Falls can be benign, but can also be indicative of frailty and a decline in the health of the older adult.

Without adequate assessment there is a significant risk of missing warning signs of frailty in patients. (12) Leggatt et al. found a 14-day mortality of 1.1% in a LA population from an urban Paramedic service in Ontario. (10) These LA calls also had a higher reported rate of missed vital signs or refused vital signs from these patients compared to typical ambulance call report (ACR) documentation. (9) Cone et al. found that the average time out of service for LA calls was 21.5 minute, although data from MLPS suggests that this number could be closer to 45 minutes per lift assist call. (8, 13) They also found that two-thirds of these LA calls were for repeat callers, and 55% of repeat calls resulted in a transport to the hospital within 30 days. These data suggest that the current response model is ineffective at reducing subsequent calls for service, or at identifying functional decline in older adults. A paradigm shift is required to better serve these patients. We suggest that this paradigm shift could be accomplished through the use of Community Paramedicine (CP) interventions including remote patient monitoring.

## Community Paramedicine Falls Programs

Community Paramedicine (CP) has become a growing trend in Paramedic care throughout North America. O’Meara et al. suggest that CP models are effective if they are able to address alternate care pathways appropriate to local needs, and work with and integrate with health, social, and community resources.(14) Falls are multifactorial in nature and often require interventions from a multi-disciplinary team including occupational therapy, physiotherapy, physicians, and community nursing. For an individual patient, a multi-factorial intervention is effective in reducing falls in older adults. (15) These interventions need to be targeted at the appropriate patients and these patients need to be identified. Community Paramedics are

well positioned to integrate into these health care teams to assist in identifying, referring, referring and intervening to reduce patient falls.

One approach is to empower paramedics to make community referrals to connect patients to additional health care resources. Similar programs have been successful in working with chronic conditions such as diabetes, cardiovascular disease, and congestive heart failure.(16) Kue et al. found that paramedic referrals were more likely to be accepted by patients, but that paramedics were not likely to make a referral for older adults who have had falls.(17) A randomized control trial of additional education in falls and the development of a falls referral pathway was conducted in the UK. The authors found a significant reduction in ED visits and calls for paramedic services at six months for patients who were not transported to the hospital between groups.(18) The cost of the intervention was an average of \$23 per patient that was seen. Importantly, the falls referral pathway was introduced with no evidence of harm to patients and only a small increase in cost and paramedic workload.(18) By connecting with a multi-disciplinary team, paramedics can possibly make referrals for patients who fall but are not transported to the hospital. These referrals can allow for the team to create individualized fall prevention recommendations for these patients.

Community Paramedics can also be tasked with a chart review of all refusal of service lift assist calls to identify patients that may be eligible for falls referrals. Kue et al. saw that a chart review by an EMS physician increased falls referrals by approximately 20%.(17) It is entirely possible that CP-led chart review could have similar results. CP chart reviews could also ensure that patients who are not initially referred to a falls service by front-line paramedics are still captured and potentially referred. Sach and colleagues referred non-transported patients in the UK to a falls prevention team.(19) The patients then had in home interventions from physiotherapists, nurses, and occupational therapists. The program resulted in significant reduction in falls, paramedic service use, ED visits, and health care costs compared to a control group.(19) Mikolaizak and colleagues demonstrated similar results from a multi-disciplinary falls prevention strategy.(20) They found no significant difference between fall team home visits and written patient advice.(21) CPs are positioned to not only perform these referrals but complete additional patient follow-up as well. Patient adherence to recommendations is the largest predictor of fall decrease and injury reduction.(21) The additional follow-up from a CP can ensure that patients are empowered to adhere to the recommendations and ensure that additional questions and concerns that arise are dealt with.

By leveraging the expertise of a multi-disciplinary falls team with the expertise and mobility of a strong CP program, paramedic services can have a significant impact on the operational and financial impact associated with responding to older adults who fall.

## Remote Patient Monitoring


A new potential adjunct to CP falls prevention teams is the growing field of remote patient monitoring. Remote patient monitoring (RPM) uses the increased availability of wearable biometric sensors to facilitate the sharing of real time health data trends between patients and their health care provider.(22) As RPM has become more prevalent novel sensors have been developed specifically for remote patient monitoring. Trials are currently ongoing combining the principles of RPM with CP. Community Paramedic Remote Patient Monitoring (CPRPM) programs add Paramedics to the patient’s circle of care by connecting the GP, the patient and the paramedic with the RPM data. CPs are able to work with a rostered list of clients and track daily changes in biometric data and intervene early when deviations occur.

CPRPM is currently being used to address chronic conditions such as diabetes (DM), congestive heart failure (CHF), and chronic obstructive pulmonary disease (COPD). These programs allow CP to connect patients to education, early assistance, and coordination with their GP.(8) These programs could easily be expanded to include falls. In addition to assisting with the referral processes discussed above, CPRPM could help provide early assessment of risk in patients who fall. CPRPM patients are visited by the Paramedics that they work with regularly for follow-up. Less than half of older adults who fall seek medical attention or report falls to their GP.(23) The increased contact and potential patient-paramedic relationship that CPRPM patients have with the paramedics they work with can potentially increase reporting of these falls by either the paramedic or by the patient. As stated, falls are generally multi-factorial in nature; if CPRPM paramedics have access to patient biometric data trends, they likely able to identify when patients may require additional assessment either from the GP or in the emergency department.

RPM is an emerging trend in healthcare. CPRPM is a new use of these tools to help ensure that patients are closely monitored and remained well connected with the health-care team. By combining CPRPM with CP falls prevention screening and referrals, it is possible to reduce the number and the impact of falls on patients in the community.



## Conclusion

Falls in older adults can be an early indicator of frailty and health decline. Unfortunately, these can often go unreported to patient's health care teams. Paramedics interact with these patient's through non-emergency lift assists. In often overstretched paramedic services, these lift assist calls can have significant impacts, both operationally and financially. By evolving the current model incorporating falls referrals, community paramedicine, and remote patient monitoring principles, paramedic services can help to reduce the number of falls and impact on the healthcare system paramedic services, and ultimately, on patients. 

## Take Home Points

- Lift assist calls can have significant impact on paramedic services financially and operationally, an impact which will become even larger as the Canadian population continues to age.
- The current model of addressing lift assist calls in the community does not allow for adequate assessment of frailty and health decline with in older adults. Approximately 1% of these patients die within 14-days.
- Creating paramedic referral pathways to community fall prevention teams through Community Paramedic programs and remote patient monitoring can potentially decrease falls and the impact that frequent fallers have on paramedic services

## References:

1. Carter A. 'Patients will literally die': Times when no ambulances available on the rise [Internet]. CBC News - Hamilton. 2017 [cited 1 May 2018]. Available from: <http://www.cbc.ca/news/canada/hamilton/code-zero-1.4231984>
2. Carter A. Code zero ambulance events in Hamilton hit highest level in 5 years | CBC News [Internet]. CBCNews. CBC/Radio Canada; 2018 [cited 2018May15]. Available from: <http://www.cbc.ca/news/canada/hamilton/hamilton-code-zero-ambulance-1.4510655>
3. Carter A. Almost twice a day, Brant County doesn't have any ambulances available | CBC News [Internet]. CBCNews. CBC/Radio Canada; 2017 [cited 2018May15]. Available from: <http://www.cbc.ca/news/canada/hamilton/code-zero-brant-1.4342188>
4. Sher J. Can't track ambulances we lack, say paramedics [Internet]. The London Free Press. 2018 [cited 2018May15]. Available from: <http://lfpres.com/2018/01/18/cant-track-ambulances-we-lack-say-paramedics/wcm/69946c5f-ff1c-f8b8-5dc4-bb50c754c55e>
5. Goldstein J, Jensen JL, Carter AJ, Travers AH, Rockwood K. The epidemiology of prehospital emergency responses for older adults in a provincial EMS system. Canadian Journal of Emergency Medicine. 2015 Sep;17(5):491-6.
6. Statistics Canada. Canada at a Glance 2017 [Internet]. 2017 [cited 2018 Mar 22]. Available from: <https://www.statcan.gc.ca/pub/12-581-x/2017000/pop-eng.htm>
7. Statistics Canada. Age structure of the Canadian population [Internet]. Population Projections for Canada, Provinces and Territories. 2015 [cited 2018 Mar 22]. Available from: <https://www.statcan.gc.ca/pub/91-520-x/2010001/aftertocaprestdm1-eng.htm>
8. Carter, D. (2018). The Lift Assist Phenomena: An Innovative Solution - Ontario Association of Paramedic Chiefs. [online] Ontario Association of Paramedic Chiefs. Available at: <https://www.oapc.ca/lift-assist-phenomena-innovative-solution/> [Accessed 1 May 2018].
9. Leggett L, Van Aarsen K, Columbus M, Dukelow A, Lewell M, Davis M, McLeod S. Morbidity and mortality associated with prehospital "lift-assist" calls. Prehospital Emergency Care. 2017 Sep 3;21(5):556-62.
10. Leggett L, Davis M, Columbus M, McGuire J, Spadafora A. P079: Comparison of vital sign documentation for pre-hospital "lift-assist" calls and non "lift-assist" calls. Canadian Journal of Emergency Medicine. 2016 May;18(S1):S105-.
11. Simpson PM, Bendall JC, Tiedemann A, Lord SR, Close JC. Epidemiology of emergency medical service responses to older people who have fallen: a prospective cohort study. Prehospital emergency care. 2014 Apr 3;18(2):185-94.
12. Chang JT, Morton SC, Rubenstein LZ, Mojica WA, Maglione M, Suttorp MJ, Roth EA, Shekelle PG. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials. Bmj. 2004 Mar 18;328(7441):680.
13. Cone DC, Ahern J, Lee CH, Baker D, Murphy T, Bogucki S. A descriptive study of the "lift-assist" call. Prehospital Emergency Care. 2013 Jan 1;17(1):51-6.
14. O'Meara P, Stirling C, Ruest M, Martin A. Community paramedicine model of care: an observational, ethnographic case study. BMC health services research. 2015 Dec;16(1):39.
15. Campbell AJ, Robertson MC. Rethinking individual and community fall prevention strategies: a meta-regression comparing single and multifactorial interventions. Age and ageing. 2007 Nov 1;36(6):656-62.
16. Choi BY, Blumberg C, Williams K. Mobile integrated health care and community paramedicine: an emerging emergency medical services concept. Annals of emergency medicine. 2016 Mar 1;67(3):361-6.
17. Kue R, Ramstrom E, Weisberg S, Restuccia M. Evaluation of an emergency medical services-based social services referral program for elderly patients. Prehospital Emergency Care. 2009 Jan 1;13(3):273-9.
18. Snooks HA, Anthony R, Chatters R, Dale J, Fothergill RT, Gaze S, Halter M, Humphreys I, Konioutou M, Logan P, Lyons RA. Paramedic assessment of older adults after falls, including community care referral pathway: cluster randomized trial. Annals of emergency medicine. 2017 Oct 1;70(4):495-505.
19. Sach TH, Logan PA, Coupland CA, Gladman JR, Sahota O, Stoner-Hobbs V, Robertson K, Tomlinson V, Ward M, Avery AJ. Community falls prevention for people who call an emergency ambulance after a fall: an economic evaluation alongside a randomised controlled trial. Age and ageing. 2012 Jun 13;41(5):635-41.
20. Mikolaizak AS, Simpson PM, Tiedemann A, Lord SR, Caplan GA, Bendall JC, Howard K, Close JC. Intervention to prevent further falls in older people who call an ambulance as a result of a fall: a protocol for the iPREFER randomised controlled trial. BMC health services research. 2013 Dec;13(1):360.
21. Mikolaizak AS, Lord SR, Tiedemann A, Simpson P, Caplan GA, Bendall J, Howard K, Webster L, Payne N, Hamilton S, Lo J. A multidisciplinary intervention to prevent subsequent falls and health service use following fall-related paramedic care: a randomised controlled trial. Age and ageing. 2017 Mar 1;46(2):200-7.
22. Noah B, Keller MS, Mosadeghi S, Stein L, Johl S, Delshad S, Tashjian VC, Lew D, Kwan JT, Jusufagic A, Spiegel BM. Impact of remote patient monitoring on clinical outcomes: an updated meta-analysis of randomized controlled trials. npj Digital Medicine. 2018 Jan 15;1(1):2.
23. Hill K, Schwarz J. Assessment and management of falls in older people. Internal medicine journal. 2004 Sep 1;34(9-10):557-64.

## ABOUT THE AUTHORS



Alan Batt is a faculty member in the Primary and Advanced Care Paramedic Programs in Fanshawe College, London, ON, Canada.

Email: [abatt@fanshawec.ca](mailto:abatt@fanshawec.ca)

Twitter: @alan\_batt



Dustin Carter is Superintendent, Community Paramedicine with Middlesex London Paramedic Service in Ontario.

Email: [dcarter@mls.ca](mailto:dcarter@mls.ca)

Twitter: @dcartermls



William Johnston is a paramedic with Ottawa Paramedic Service and is faculty in the Primary Care Paramedic Program in Fanshawe College, Ontario, Canada.

Email: [johnstcw@gmail.com](mailto:johnstcw@gmail.com)

Twitter: @seewillyj



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