



Essex-Windsor Impact Report

In partnership with:

Essex-Windsor Paramedic Service

McMaster University, Department of Family Medicine



REPORT SUMMARY



INTRODUCTION

PG 3 - 5

- CP@clinic program history and objectives.
- Factors to be considered when interpreting this program evaluation.



RISK FACTOR PROFILES

PG 6

- On average, CP@clinic participants with an elevated systolic blood pressure experienced a decline from an elevated range (140 mmHg) to a normal range on their 6th visit, according to the Hypertension Canada Guidelines.
- 94 percent of CP@clinic participants were able to improve in their CANRISK category or remained in the same category.
- 47 percent of CP@clinic participants were able to improve their quality of life score.
- CP@clinic participants had reduced pain and discomfort, along with anxiety and depression symptoms, when compared to baseline. Participants also reported an improvement in their health state when compared to baseline.



EMS CALLS

PG 7

EMS call increase was 40.82% less in buildings with CP@clinic compared to buildings without this program.



COST EFFECTIVENESS

PG 8

The cost-effectiveness of CP@clinic in Essex-Windsor is estimated to be \$11,581 per QALY gained per person during the 6-month randomized control trial (RCT) phase of the program.



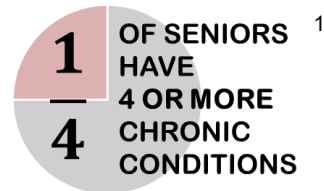
HEALTH ASSESSMENTS DELIVERED

PG 9 - 10

- 40 percent of participants were assessed for diabetes risk using the Fasting Capillary Blood Glucose Test.
- 46 percent of participants had elevated blood pressure on their first visit. Participants with high blood pressure are connected to their family physician or emergency service in accordance with CP@clinic protocols.
- 15 percent of participants had at least one risk factor discussion with a paramedic.
- 100 percent of participants were assessed for their risk of falls using the Timed Up and Go Test.

The Problem

THE PROPORTION OF
ADULTS 65 YEARS
AND OLDER WILL  **25%**¹
by 2036



Older age increases the likelihood of chronic disease. Leading chronic conditions in seniors include: hypertension (53%), arthritis (43%), back problems (29%), cardiovascular disease (23%), and diabetes (17%).²

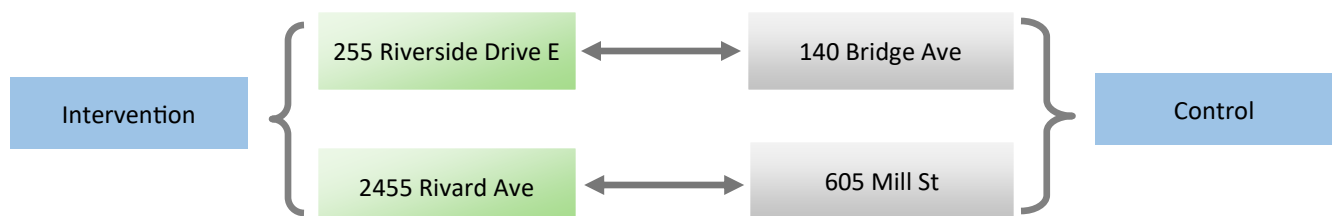
These conditions diminish an individual's quality of life and increase an individual's risk of becoming high-needs and/or frequent users of emergency care resources. This poses a challenge to our resource strained healthcare system.

The Program

CP@clinic is a health promotion program where seniors living in subsidized housing can attend weekly drop-in sessions with community paramedics. Paramedics provide health assessments, make referrals to community-based resources, and engage participants in healthy lifestyle conversations. CP@clinic targets leading chronic conditions in senior populations by providing health assessments for cardiovascular disease, diabetes, and risk of falls. In addition, this program better connects participants to the primary care system by faxing participant's repeat blood pressure measures to their family physician. CP@clinic seeks to improve participants health, better connect them to existing healthcare resources in their community, and reduce their economic burden on the emergency care system.

CP@clinic began as a pilot program in 2011 in Hamilton, Ontario.³ After determining the feasibility of the program and its potential to impact senior health, the program transitioned into the randomized control trial (RCT) phase⁴ and full program phase. This project was funded by CIHR from 2014 to 2017.

In Essex-Windsor, the CP@clinic program was implemented in two buildings (255 Riverside and 2455 Rivard) during the 6-month evaluation period and matched to two control buildings, which received care as usual. The program began in February 2017.







Indicators of Program Success

The goals and objectives of CP@clinic are multi-faceted. Measures of program success include:

1. A reduction in EMS calls.
2. A reduction in participants' CANRISK score (a measure used to identify an individual's risk for pre-diabetes or type 2 diabetes) and blood pressure levels.
3. An improvement in participants' quality of life and sense of well-being.
4. Ongoing and consistent delivery of health assessments, community referrals, and one-on-one risk factor discussions using a patient centered approach.

The CP@clinic program goals are in alignment with the four objectives of the Ministry of Health and Long Term Care's *Patient's First Action Plan: Protect, Connect, Inform, and Access*.⁵

 <p>PROTECT</p> <p><i>Make evidence based decisions on value and quality to sustain the health care system for generations to come.</i></p>	 <p>CONNECT</p> <p><i>Connect services by delivering better coordinated and integrated care in the community and close to home.</i></p>
<p>CP@clinic:</p> <ul style="list-style-type: none"> • Provides a platform for ongoing continuous Quality Improvement • Reduces EMS call volume, which in turn generates cost savings and ensures sustainability of the emergency care system • Supports and encourages proper resource use • Addresses current healthcare gaps, protecting the emergency care system from over-utilization. 	<p>CP@clinic:</p> <ul style="list-style-type: none"> • Brings together public health, housing, emergency care, and primary care to provide a multi-sectorial approach to improving senior health and wellbeing. • Builds a foundation for integrated care by sharing health assessment results with participants' family physician.
 <p>INFORM</p> <p><i>Support people and patients by providing the education, information and transparency needed to make the right decisions about their health.</i></p>	 <p>ACCESS</p> <p><i>Provide faster access to the right care.</i></p>
<p>CP@clinic:</p> <ul style="list-style-type: none"> • Empowers, educates, and informs participants to make healthy lifestyle changes using a patient centered approach. • Provides a more convenient and comfortable environment for vulnerable senior populations to engage in health discussions with healthcare professionals. 	<p>CP@clinic:</p> <ul style="list-style-type: none"> • Assesses participants' risk factors for cardiovascular disease, diabetes, and falls, and subsequently directs them to appropriate care close to home and within the community, meeting their personal needs and goals.

Measuring success

The CP@clinic program is standardized in terms of training and delivery. However, the program's ability to achieve all of its goals may vary depending on the context of the intervention site. Certain factors need to be considered when measuring changes in participants' risk factor profiles or EMS call volume.

	Factors affecting participants' risk factor profiles:	Factors affecting EMS call volume:
1) External factors	♦ Availability and accessibility of community resources	♦ Seasonality ♦ Community composition ♦ Neighbourhood safety
2) Building-level factors	♦ The number of new or existing wellness programs within a particular building	♦ Demographics of building residents (mixed or senior-only buildings)
3) Participant-level factors	♦ Participant attitudes and willingness to change lifestyle behaviors or engage with family physicians	♦ Participant attitudes and willingness to change calling behaviours
4) Program-level factors	♦ Participation and engagement in CP@clinc sessions ♦ Length of program delivery	♦ Participation and engagement in CP@clinic sessions ♦ Length of program delivery

The factors listed above may interact to lessen the impact of the CP@clinic intervention at any particular point in time. External and building-level factors can be more difficult to control than participant or program related factors. However, it is predicted that when CP@clinic is delivered consistently with adequate participation from building tenants, the overall impact on senior health and wellbeing will be positive.

Report Overview

This report uses available data to examine:

- Changes in participants' risk factor profiles, including changes in blood pressure levels, lifestyle factors, and self-rated quality of life
- EMS call volume
- Cost-effectiveness of the program
- Process evaluation measures, such as the number of health assessments delivered since the onset of the program

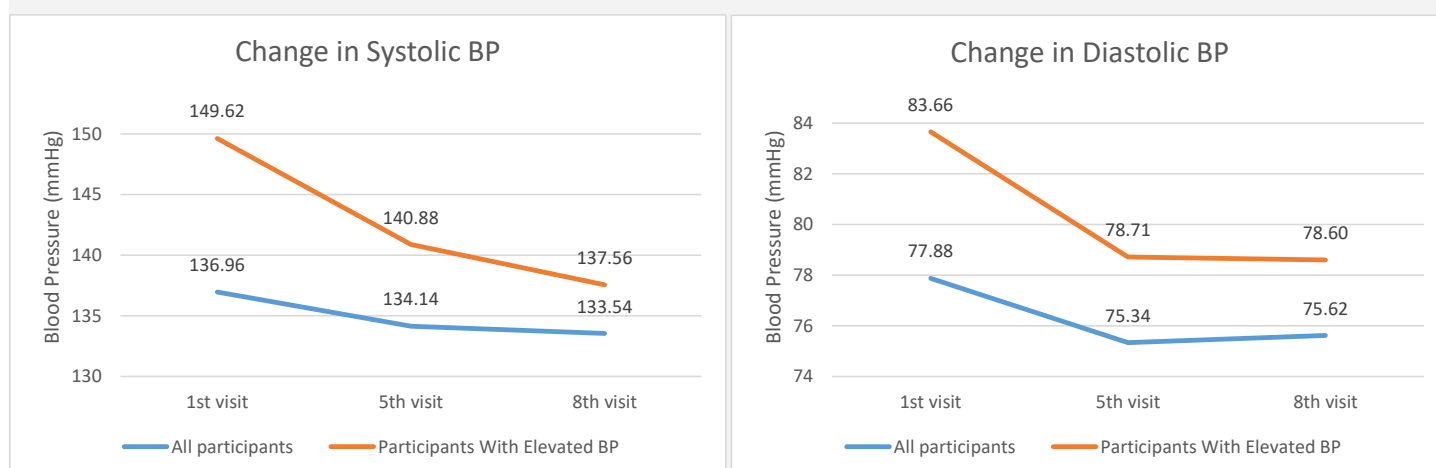


Risk Factor Profiles

Blood Pressure

Using an automated validated blood pressure device, participant blood pressures were measured by paramedics. A referral algorithm was developed based on the Hypertension Canada Guidelines with the goal of referring participants with blood pressure greater than 140/90 mmHg (systolic/diastolic) for re-assessment and proper management. ⁶

The graphs below display mean blood pressure levels for all participants and participants with elevated blood pressure at baseline during their 1st, 5th, and 8th visit to CP@clinic sessions. Systolic and diastolic blood pressure decreased significantly in these two groups during the intervention period. For both groups, participants' blood pressure went from an elevated range (140-159/90-99 mmHg) to a normal range.



Lifestyle factors: CANRISK Score

- On average, the risk of having pre-diabetes or type 2 diabetes remained the same from baseline to follow up.

Quality of Life and EQ5D Outcomes

- 47 percent of the participants had an improvement in quality of life.
- Participants showed they had reduced pain and discomfort after the CP@clinic intervention.
- For the majority of participants, EQ5D outcomes pertaining to self-care, mobility and usual care remained the same from initial screening to follow up.
- On average, participants rated their health state as higher when compared to baseline.

*Data based on the start of the CP@clinic program to April 2018.

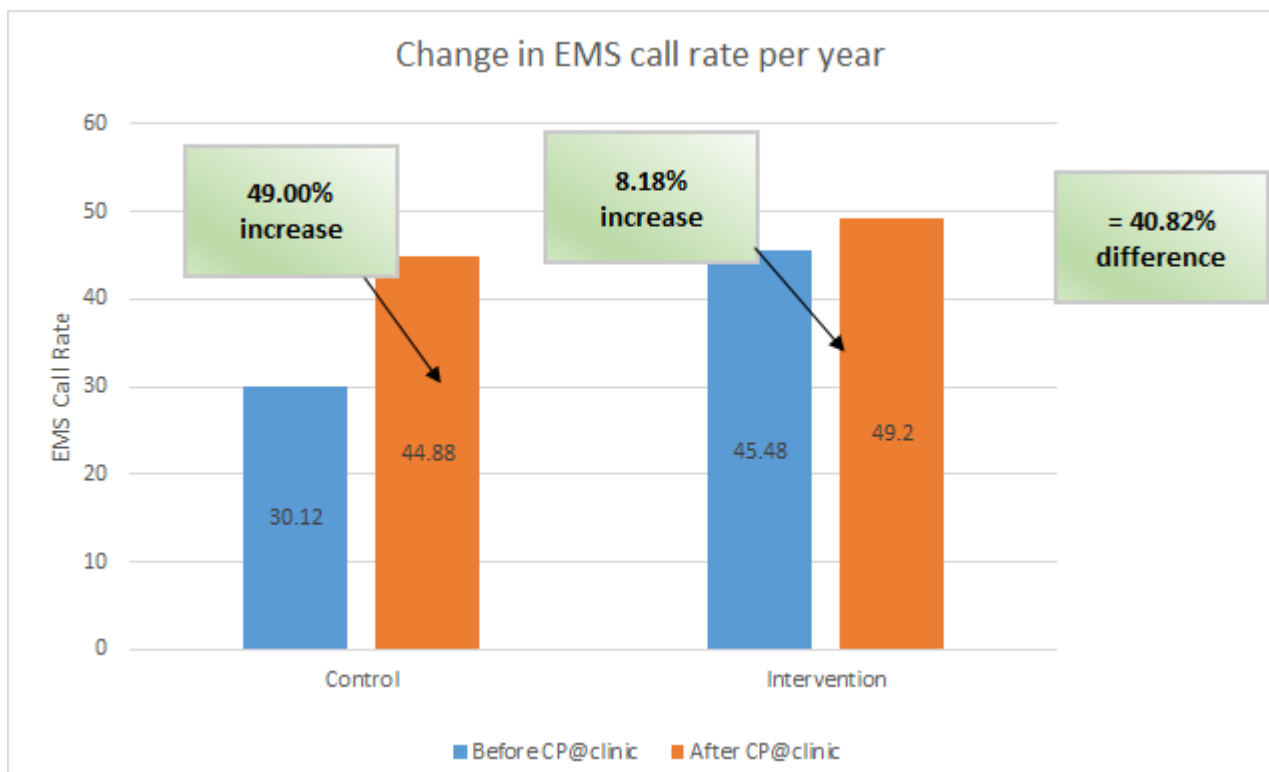
EMS Calls

Key terms for understanding this report:

- EMS calls are being assessed as a rate based on the number of units in each building. Note that not all units in a building may be occupied at any particular time.
- 'Before CP@clinic' is defined as one year prior to the implementation the CP@clinic program.

*EMS data is Feb 2017 to July 2017

The graph below displays the trend in EMS calls per 100 building units between control and intervention buildings before and after the implementation of CP@clinic. The percentage difference in EMS call rates refers to the degree to which the CP@clinic intervention was able to impact baseline trends in EMS calls.



- Control buildings saw a **49.00 percent increase** in EMS calls between 2017 and 2018.
- Intervention buildings experienced a **8.18 percent increase** in EMS calls after the implementation of the CP@clinic program.
- This difference in trend between control and intervention buildings suggests that the CP@clinic intervention **avoided an EMS call increase of 40.82 percent.**



Cost-Effectiveness

QALY stands for Quality Adjusted Life Years. It is a measure that examines the quantity of life lived (i.e. years, months) against health-related quality of life (where 1.0 represents perfect health and 0 represents death).⁷ Health-related quality of life can be measured through validated tools, such as EQ5D.

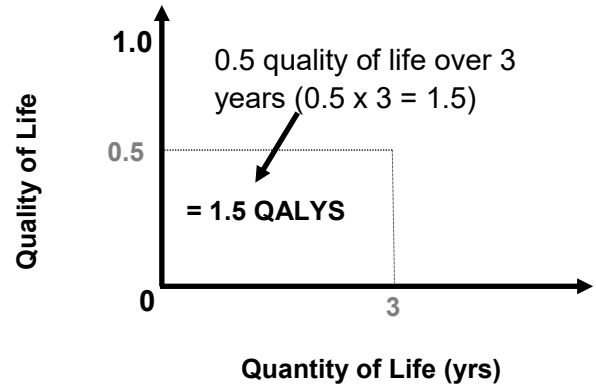
1.0 Quality of Life equals perfect health.

1 QALY is defined as one year of life lived in perfect health.

QALYs are a common measure used to assess whether a drug, intervention, or program can increase or decrease the number of years in good health lived by participants.⁷

The graph to the right provides a visual explanation of how to interpret QALY.

EXAMPLE:



Cost per QALY is a measure used in economic evaluation to determine the cost-effectiveness of an intervention. Decision-makers use cost per QALY thresholds to determine whether a program is worth implementing or can be considered an efficient use of limited resources.⁷

EXAMPLE:

Researchers assessed the cost-effectiveness of Ontario's **universal influenza vaccination program** before and after its implementation.⁸ The additional cost of delivering the program in the province of Ontario was compared to the number of QALYs gained after its implementation, using other provinces as controls. Researchers determined the cost-effectiveness ratio to be \$10,797 per QALY gained.⁸ This figure was deemed to be economically attractive.⁸ Currently there are no Canadian standards for cost-effectiveness thresholds because it is a value judgement that varies depending on the decision-maker.⁷



Preliminary Cost-Effectiveness Analysis of CP@clinic

In Essex-Windsor, 2 intervention buildings and their pairs were surveyed using the EQ5D tool to assess change in QALY during the 6-month intervention period. Control buildings are assumed to represent the baseline trend for buildings that did not receive the CP@clinic intervention.

During the 6-month RCT phase of the program, the cost-effectiveness of CP@clinic is estimated to be \$11,581 per QALY gained.



Health Assessments Delivered

The statistics below represent process measures. The purpose of these process measures is to:

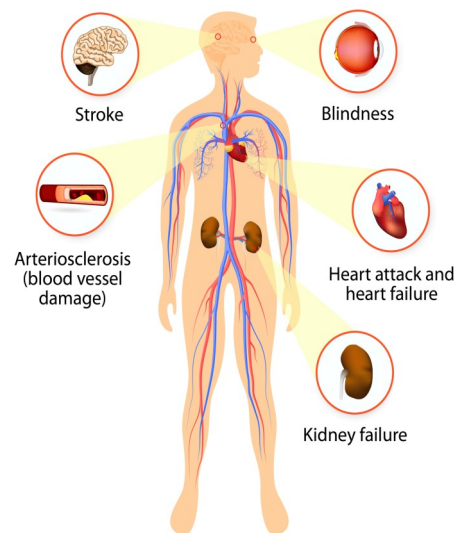
1. Understand the health needs of building participants, and
2. Determine whether paramedics and participants are actively engaged in meeting the program goals and objectives through completion of health assessments (cardiovascular disease, diabetes, fall risk, risk factor discussion)

Cardiovascular Disease Risk

46%

of participants had elevated blood pressure on first visit.

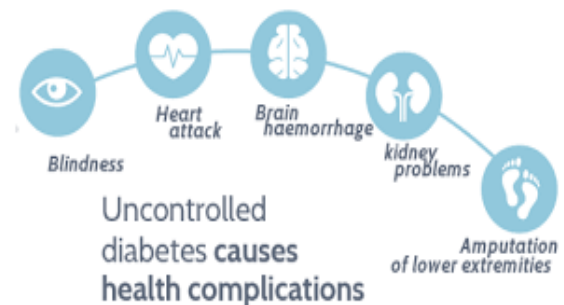
Hypertension



Diabetes Risk

40%

of participants with moderate to high diabetes risk completed Fasting Capillary Blood Glucose tests.

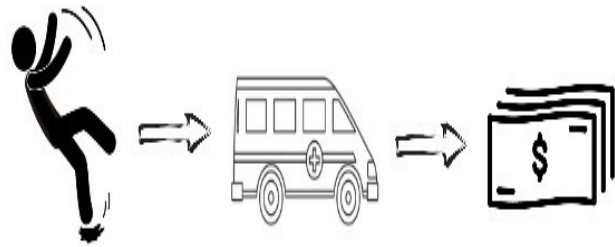


*Data based on the start of the CP@clinic program to March 2018.

Fall Risk

100%

of participants identified as high fall risk were given the Timed Up and Go (TUG) test.



Falls by elderly people in Ontario account for approximately **1 billion dollars** a year in direct and indirect costs.⁹

Falls in seniors over 80 years old were the single **highest contributor of hospitalizations**.⁹

Risk Factor Discussion

15%

of participants had at least one risk factor discussion with a paramedic.

Paramedics can connect participants with primary care physicians, and necessary community programs and services by having risk factor discussions with them. This **reduces barriers to lifestyle behavior modification**.



Next Steps

Essex-Windsor Paramedic Service continues to look at ways to expand the innovative CP@clinic program in partnership with McMaster University, Department of Family Medicine.

References

1. Statistics Canada. 2011. "Seniors." *Canada Year Book, 2011*. Last updated October 7, 2016. <http://www.statcan.gc.ca/pub/11-402-x/2011000/chap/seniors-aines/seniors-aines-eng.htm> (accessed August 21, 2017).
2. Claudia Sanmartin. Statistics Canada. 2015. "Research Highlights on Health and Aging." *A Presentation Series from Statistics Canada About the Economy, Environment, and Society*. July 28. 2016. <http://www.statcan.gc.ca/pub/11-631-x/11-631-x2016001-eng.htm> (accessed August 21, 2017).
3. Agarwal, G., Angeles, R. N., McDonough, B., McLeod, B., Marzanek, F., Pirrie, M., & Dolovich, L. (2015). Development of a community health and wellness pilot in a subsidised seniors' apartment building in Hamilton, Ontario: Community Health Awareness Program delivered by Emergency Medical Services (CHAP-EMS). *BMC Research Notes*, 8(1), 113.
4. Agarwal, G., Angeles, R., Pirrie, M., Marzanek, F., McLeod, B., Parascandalo, J., & Dolovich, L. (2017). Effectiveness of a community paramedic-led health assessment and education initiative in a seniors' residence building: the Community Health Assessment Program through Emergency Medical Services (CHAP-EMS). *BMC Emergency Medicine*, 17(1), 8.
5. Ministry of Health and Long Term Care. (2015, February). Patient's First: Action Plan for Healthcare. Retrieved from http://www.health.gov.on.ca/en/ms/ecfa/healthy_change/docs/rep_patientsfirst.pdf.
6. Leung, A. A., Daskalopoulou, S. S., Dasgupta, K., McBrien, K., Butalia, S., Zarnke, K. B., ... Rabi, D. M. (2017). Hypertension Canada's 2017 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults. *Canadian Journal of Cardiology*, 33(5), 557–576. <https://doi.org/10.1016/j.cjca.2017.03.005>
7. Cape, J.D., Beca, J.M., and Hoch, J.S. (2013). Introduction to Cost-Effectiveness Analysis for Clinicians. *University of Toronto Medical Journal*, 90(3). Accessed from <http://healtheconomics.utoronto.ca/wp-content/uploads/1493-2720-2-PB3.pdf>
8. Sander, B., Kwong, J. C., Bauch, C. T., Maetzel, A., McGeer, A., Raboud, J. M., & Krahn, M. (2010). Economic appraisal of Ontario's universal influenza immunization program: A cost-utility analysis. *PLoS Medicine*, 7(4), e1000256. <https://doi.org/10.1371/journal.pmed.1000256>
9. Parachute.(2018). Ontario Injury Data Report 2018. Parachute: Toronto, ON.



Community
Paramedicine

This data was produced by the McMaster Community Paramedicine Research Team, under the direction of Dr. Gina Agarwal (Principal Investigator).