

Paramedic CAT (Critically Appraised Topic)

02/27/2020

Title: Effectiveness of the Community Paramedicine Program for frequent users of medical services

Report by: Daniel Doummar

2nd Party Appraiser: Alan Batt

Clinical Scenario:

Paramedics are called to a residence for 10th time this year for John Doe who is a type 1 diabetic. John consistently is not maintaining his insulin injections causing him to have tissue damage in his feet and has fallen unconscious from diabetic ketoacidosis several times. His wife Jane consistently has to call 911 for EMS services because he consistently forgets to take his insulin. If John were to be enrolled in a Community Paramedic Program would the services provided allow him to receive care promptly and aid in maintaining his chronic condition without the utilization EMS transportation to hospital, ultimately reducing call volume?

PICO:

With the implementation of Community paramedicine Programs, are they effective in reducing 911 calls from patients by providing education on how to manage their chronic illnesses?

Search Strategy:

- Google Scholar and CINAHL data bases were utilized for obtaining research for this CAT.
- (Community Paramedicine) AND (911 Call Reduction) AND (Mobile Integrated Health)

Search Outcome: 117 titles

Relevant Papers:

3 papers were chosen for the use of this Critically Appraised Topic.

<u>Author, Population, Date</u>	<u>Design (LOE)</u>	<u>Outcomes</u>	<u>Results</u>	<u>Strengths/Weaknesses</u>	
Martin et al (2016)	The study took place in a county (rural Ontario) with a resident population of approximately 100 000 people. However, of that there were only 14 participants enrolled in the study that met specific criteria in addition to the study design	An observational ethnographic approach combined with discussions, semi-structured interviews and direct observation to gather qualitative data from the participants.	- Essentially participants acknowledged Community Paramedicine as a viable solution for providing service to an increasingly aging population or persons with chronic illness with a high degree of	- There were 3 main themes with the responses given by the participants. - The first being a recognition or improved health monitoring and primary health care access close to home. - Participants also	Strengths: - The study utilized participants meeting specific criteria that would help yield more accurate results pertaining to the satisfaction of a Community Paramedicine Program. - The study

specific criteria in addition to the study being voluntary in nature.

illness with a high degree of satisfaction.

to home.
- Participants also described an increased feeling of security and support for vulnerable residents in the community.
- In addition, participants stated they had an improved education and sense of empowerment for better maintaining their health.

- The study identified common themes based on responsive from the participants that allowed ease of distinguishing positive and negative outcomes of the study.

Weaknesses:

- The number of participants was fairly limited given the original population size of the area where the study was conducted.
- A better determination of effectiveness would have been achieved if the study followed up with the participants in the future to see if their original statements faltered over time.

Dainty et al (2018)

The study was conducted in Ontario Canada consisting of 30 patients and 10 family members of various participants combined with 60 hours of observation while in the EPIC community paramedicine program.

The study method was introduced as part of an ongoing clinical trial where an evaluation using constructionist grounded theory methodology to collect qualitative data.

- Outcomes of this study typically pertain to overall satisfaction with the EPIC program.
- Either participants recognized and acknowledged the benefits of such programs or felt that the efficiency of said programs were

- 40 Epic participants were interviewed with ages varying from 42-95 years old who were diagnosed with conditions such as Diabetes Miletus, COPD, Congestive Heart failure or had more than one of these

Strengths:

- The Study had a greater number of participants and even introduced the family members of various participants for additional data.
- The study included a vast range of ages of participants in their study which provided a dynamic for multiple

efficiency of said programs were lackluster-

or had more than one of these conditions.

which provided a dynamic for multiple different opinions of middle aged to geriatric patients.

- This study had a vast amount of positive feedback that was narrowed down to patients describing the Epic program provided a "safety net" during their times of vulnerability.
- Another common theme consisted of an appreciation for the knowledge that the program provided participants for living with their chronic conditions.
- Lastly, participants stated a sense of comfort as they formed foundational relationships with medics that served them.

Weaknesses:

- Only a few (3) defining chronic conditions were utilized in this study but was directly correlated to the conditions that the participants were diagnosed with ultimately, being a limitation of the study.
- Only 60 hours of observation was utilized where a prolonged follow up over time could have yielded better outcomes due to longer exposure to the program.

Agarwal et al (2019) The study conducted in Ontario Canada specifically covering a low-income housing where the CP@clinic Community Paramedicine Program was implemented. Specifically, only data from residents 55 years and older

Statistically, the study compared the number of EMS calls per low-income building before and after the implementation of the CP@Clinic Program. Furthermore, an open-label, parallel, pragmatic,

- The outcomes were numbered by 100 EMS calls per 100 apartment units per month which allowed for analysis for differences in building size.

- Eligibility was met by a total of 85 buildings. Of that, 30 were matched into 15 intervention-control pairs dependent on demographics, geography, existing services provided, and EMS call

Strengths:

- The study took an interesting approach by comparing ambulance call volume per building instead of individual calls.
- Multiple environments consisting from rural, sub-rural and urban areas were utilized to

residents 55 years and older was utilized. parallel, pragmatic, cluster-RCT was conducted in 5 Ontario community sites consisting of Hamilton, Guelph, Yourk Simcoe, and Sudbury for one year.

provided, and EMS call numbers. - It was discovered that the program when compared with the CP@Clinic weakly drop ins vs. Usual care resulted in a 0.9 EMS calls per 100 apartment units per month or 19% relative reduction.

and urban areas were utilized to minimize geographical influence. - Several different criteria including age, lifestyle, diet, whether participants had chronic diseases were utilized for comparison between the intervention buildings where the program was utilized and the control buildings.

Weaknesses:

- The study mentioned that possibility for calculation errors in which could alter the results pertaining to call volume

-Further research is warranted to determine if the CP@clinic Program will continue to reduce call volume in the future since reduction was only calculated in a timeframe of 1 year.

Comments:

The articles in this study provided strong evidence in favour of Community paramedicine effectiveness. However, the studies in Agarwal et al (2019) and Dainty et al (2018) had a relatively small participation making results relevant but not significant. In addition, the studies conducted in all three papers could benefit from a more significant time frame determine overall effectiveness and satisfaction of participants in these programs. Ultimately, it has been proven that Community Paramedicine provides patients with a sense of security during time of vulnerability and equips them with the necessary skills and resources to manage their chronic illnesses. Furthermore, this has relieved strain on EMS services through reduction of call volume and allowed for a better focus on patients in greater need of Emergency services.

Clinical Bottom Line:

Although the data presented warrants further investigation as the utilization of Community Paramedicine is rather new, evidence suggests that Community Paramedicine is beneficial to patients and has the ability to reduce to call volume from Chronically ill patients. As Canada has an increasingly aging population the use of these programs can be enlisted to ensure that the healthcare is delivered optimally to all while working in conjunction with conventional EMS services.

References:

- Agarwal, G., Angeles, R., Pirrie, M., Mcleod, B., Marzanek, F., Parascandalo, J., & Thabane, L. (2019). Reducing 9-1-1 Emergency Medical Service Calls By Implementing A community Paramedicine Program For Vulnerable Older Adults In Public Housing In Canada: A Multi-Site Cluster Randomized Controlled Trial. *Prehospital Emergency Care*, 23(5), 718-729. <https://doiorg.ezpxy.fanshawec.ca/10.1080/10903127.2019.1566421>
- Dainty, K.N., Seaton, M.B., Drennan, I. R., & Morrison, L. J. (2018). Home Visit-Based Community Paramedicine and Its Potential Role in Improving Patient-Centered Primary Care: A grounded Theory Study and Framework. *Health Services Research*, 53(5), 3455-3470. <https://doi-org.ezpxy.fanshawec.ca/10.1111/1475-6773.12855>
- Martin, A, O'Meara, P., & Farmer, J. (2016). Consumer perspectives of a community paramedicine program in rural Ontario. *Australian Journal of Rural Health*, 24(4), 278-283. <https://doi-org.ezpxy.fanshawe.ca/10.1111/ajr.12259>