Emergency Department Diversion by Community Paramedics Using the interRAI Community Health Assessment

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BACKGROUND

- Winnipeg, Manitoba, like other cities across Canada, faces increasing demands on both its Emergency Departments (EDs) and 911 service.
- The Emergency Paramedics In the Community (EPIC) program run by the Winnipeg Fire Paramedic Service (WFPS) identifies frequent users of emergency resources and those at risk of becoming frequent users. This program began in 2013 with implementation of EPIC 1.
- This community paramedicine program aims to identify clients' unmet needs and arrange appropriate treatments and services. To do so, EPIC works closely with Home Care and other allied health agencies.
- In late 2017, the EPIC program adopted and implemented an internationally validated, evidence-based assessment tool in EPIC 2: the interRAI Community Health Assessment (CHA). The EPIC program also integrated the results of its CHA with selected Home Care offices, allowing seamless information-sharing with its most common service partner.

PURPOSE

- The purpose of this study is to evaluate the impact of the CHA used by EPIC 2 on client-centered outcome measures.
- We hypothesize that among adult clients who are identified as common 911 callers (or at risk of becoming common callers), assessment and referral under the EPIC 2 program will result in reduced use of emergency resources and improved service delivery, as compared to prior assessment methods used by EPIC 1.

METHODS

- This is a retrospective before-and-after review of patients assessed by an interRAI-trained community paramedic using the CHA in 2017.
- Quantitative variables were extracted from the electronic medical record and electronic patient-care databases.
- Outcomes include rates of emergency resource use (911 calls and ED visits), referrals for new services, and time to service implementation. Emergency resource use will be assessed six months after assessment; preliminary results presented here are analyzed by a comparison of two rates.
- Number of calls to 911 were also analyzed further by patient type:
  1. Common Callers: those who frequently call 911;
  2. At-Risk Referrals: those who were identified as being at risk by responding paramedic and fire crews.

Figure 1: Total 911 Calls, ED Visits, by Month

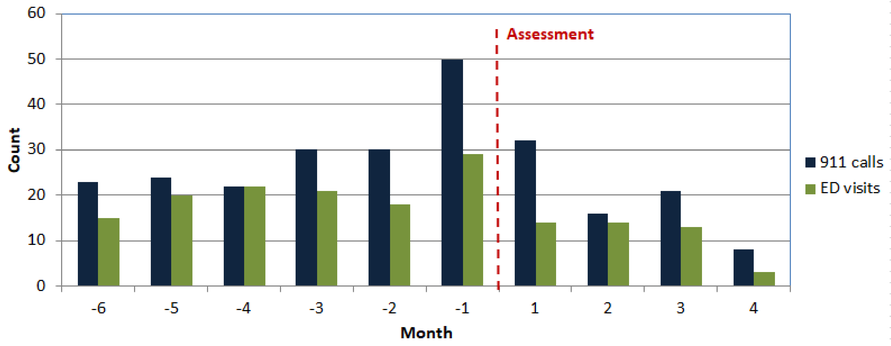


Table 1: Before and After Rates of 911 Calls and ED Visits

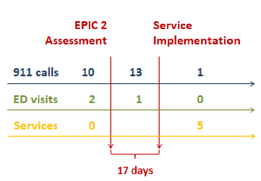
	Rate[1] Before (95% CI)	Rate[1] After (95% CI)	Difference (95% CI)	% Reduction	*p*
Before, After Assessment					
911 calls(all clients)	1.49 (1.28, 1.73)	0.99 (0.78, 1.24)	0.50 (0.18, 0.83)	34	0.0024
911 calls (by Common Callers)	*2.08 (1.74, 2.45)*	*1.30 (0.98, 1.70)*	*0.78 (0.26, 1.27)*	*37*	*0.0033*
911 calls (by At-Risk Referrals)	*0.78 (0.56, 1.05)*	*0.62 (0.39, 0.93)*	*0.16 (-0.19, 0.52)*	*21*	*0.3734*
ED visits	1.04 (0.87, 1.24)	0.58 (0.42, 0.77)	0.46 (0.20, 0.73)	45	0.0006
Before, After New Services[2]					
911 calls	1.72 (1.44, 2.03)	0.75 (0.52, 1.05)	0.97 (0.54, 1.40)	56	< 0.0001
ED visits	1.18 (0.95, 1.45)	0.45 (0.28, 0.70)	0.73 (0.37, 1.08)	62	0.0001

1. Rates expressed as events per client per month
2. Shown for the 13 patients who received new services

Figure 2: Case Illustrations

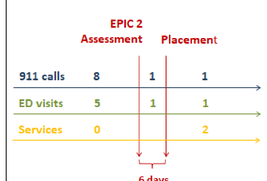
Timelines showing six months before, four months after intervention by a community paramedic

Case A, 60s male, Common Caller



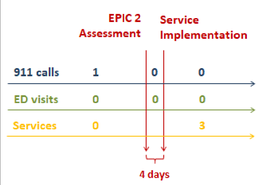
Services arranged:
1. *RN visits daily*
2. *Health Care Aid 4 times daily*
3. *Laundry assistance bi-weekly*
4. *Sponge bathing weekly*
5. *Mobility Assist (Hoyer lift, hospital bed, assistive bars within suite)*

Case B, 80s male, At-Risk Referral



Services arranged:
1. *GPAT assessment*
2. *Placement in geriatric rehabilitation*

Case C, 70s male, At-Risk Referral



Services arranged:
1. *Health Care Aid twice daily*
2. *Bath assist twice weekly*
3. *Respite for spouse twice weekly*

RESULTS

- 20 clients were assessed in the study period: 12 females, 8 males. The overall mean age was 67.0 (SD 10.7, median 65.7).
- Figure 1 shows the monthly total of emergency resources used by this group of clients. It illustrates decreasing 911 calls and ED visits after assessment by a community paramedic.
- Table 1 shows the rates of calls to 911 and ED visits before and after EPIC 2's involvement. Among all clients, there was a significant decrease in 911 calls and ED visits after assessment by a community paramedic. Among those who received new services, there were large and significant drops in 911 calls (56%) and ED visits (62%) after service implementation.
- Figure 2 illustrates the sequence of events for three selected cases, highlighting the various resources provided to the clients and the time between assessment and implementation of these new services.
- 13 of 20 clients received additional services. In these cases, the time from referral to service implementation averaged 11 business days (SD 12, median 7, range 1-47).
- In the six months prior to assessment, patients in the group averaged 8.95 calls to 911 (1-20) and 6.25 ED visits (0-20). After assessment, 7 patients had no 911 calls and 6 had no ED visits.

LIMITATIONS

- This study faces the limitations inherent in a retrospective design with a small number of included subjects and within group-comparison.
- These results are preliminary. Future research will include an equivalent (six-month) post-assessment period and additional outcomes related to hospital admissions among the included group.

CONCLUSIONS

Preliminary results show a reduction in 911 calls and ED visits among frequent users of emergency resources. These reductions are associated with the use of the interRAI Community Health Assessment used by community paramedics in EPIC 2.

ACKNOWLEDGEMENTS

We acknowledge the support of the Centre for Aging + Brain Health Innovation, powered by Baycrest.

The authors would like to thank:

- Helen Clark and the Winnipeg Regional Health Authority (WRHA) for their continued support of the Community Paramedicine program.
- WRHA Home Care and other allied service providers for their cooperation and professionalism.
- WFPS leadership for its support and WFPS Community Paramedics who work hard to improve health outcomes for their clients.