



An alternative care model for low-acuity 911 calls

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Background

Emergency medical services (EMS) and emergency departments (EDs) across the country devote significant resources to non-urgent care.^{1,2} Redirecting non-urgent ED use to appropriate care settings can improve care quality and reduce cost.³⁻⁵

Mobile integrated health community paramedicine (MIH-CP) programs aim to reduce non-urgent use of EMS and EDs.⁴ EMS protocols are altered to allow a physician or nurse practitioner to treat qualified patients on-scene or arrange transport to an alternative health care facility (such as urgent or primary care).

Many MIH-CP programs report large effects on ED use using poorly matched control groups or assume ED transport in the absence of the program. Studies using statistically matched controls report more modest reductions in ED use.⁵⁻⁷

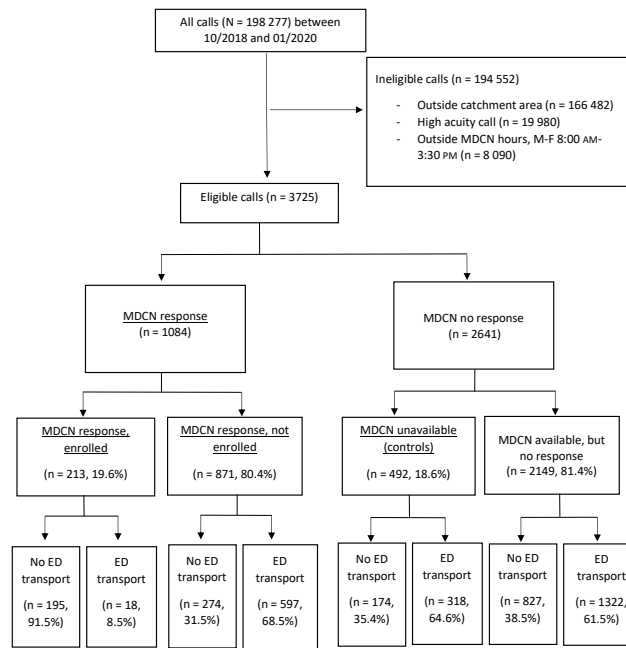
Aims

- Provide a valid measure of the impact of a treat-in-place and alternative destination program on EMS transports to the ED
- Determine enrollment required to achieve a positive return on investment (ROI)

Methods

- West Baltimore: high prevalence of health disparities, concentrated poverty, and limited primary care access
- Observational cohort study with natural experiment technique
- Compared 911 calls receiving intervention to a control group that were eligible for the intervention but occurred when the team was unavailable
- Method limits selection bias by using using controls that best represent outcomes in the absence of the program.
- Minor Definitive Care Now (MDCN) team monitors 911 dispatch, responds to low-acuity (IAED "Alpha/Bravo/Omega") calls in parallel to standard EMS response⁸
- Faced with multiple eligible calls, the team may choose calls based on location, complaint, age, or other dispatch information.
- Once emergent hospital transport is deemed unnecessary, EMS vehicles are released back into service
- If clinically appropriate and the patient consents, the team provides on-scene care or arranges transport to an urgent care center, primary care office, or other alternative destination.

Results



Underline indicates grouping for statistical analysis.

	# ED visits	% ED visits	Relative Reduction	RR	RR 95% CI	P value	Absolute reduction needed to treat	Number
Unadjusted Results								
Responded N = 1084	615	56.7%	12%	0.88	[0.81 - 0.95]	0.002	7.8%	12.9
Enrolled N = 213	18	8.5%	87%	0.13	[0.08 - 0.2]	<0.001	56.2%	1.8
Control N = 492	318	64.6%	ref	ref	ref	ref	ref	ref
Adjusted results								
Responded N = 1084	615	56.7%	23%	0.77	[0.73 - 0.83]	<0.001	14.9%	6.7
Enrolled N = 213	18	8.5%	90%	0.1	[0.06 - 0.15]	<0.001	58.1%	1.7
Control N = 492	318	64.6%	ref	ref	ref	ref	ref	ref

- Enrolled patients: 55.9% female, ages 18-34 28%, > 65 years 22%
- Commonly enrolled dispatch complaints: "sick", fall, trauma, MVC
- Adjusted results showed EMS spent **23.4 minutes** less responding to and transporting enrolled calls vs controls (95% CI = [-30.4, -16.5] P < 0.001)
- The program can achieve a positive return on investment by enrolling **2.9 patients/day** based on direct variable cost of ED visits avoided

Conclusions

- Our single-site observational natural experiment study showed a modest (-12%) effect on ED transports for calls responded to and screened by a MIH-CP prehospital ED diversion program
- Larger effects on ED visits (-87%) and EMS response time were seen for enrolled patients that actually received the intervention
- Increasing the percentage of patients screened that are enrolled would improve the ROI of the program

Next Steps

- Allow EMS responders to request MIH-CP response regardless of initial 911 dispatch acuity to improve enrollment efficiency
- Engage operational research professionals to model the impacts of adding a catchment area and hours expansion
- Future research should quantify treat-in-place impact on patient-reported care quality, ED crowding, and 911 usage patterns
- CMMI developed ET3 payment model that reimburses for alternative destination transport and treatment-in-place.⁹ Billing may improve the sustainability of MIH-CP programs
- Participants in ET3 developing programs should refer to rigorous evaluations using reliable control groups to design interventions with the highest likelihood of savings

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Acknowledgements

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