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Repeat Users of Emergency Medical Services — Idaho, 2013–2016

Background: Localities have saved up to \$5,000/patient in annual healthcare costs by enrolling repeat emergency medical services (EMS) users in community paramedicine programs. We characterized EMS use in rural Idaho as a preliminary step in allocating medicosocial support resources.

Methods: Among 83 EMS agencies using Idaho's prehospital electronic record collection system, 8 rural agencies were selected by stratified sampling. LinkPlus software matched individuals by name and birthdate. Repeat users were persons with >1 ground ambulance response during January 2013–December 2016. Holm-Bonferroni-adjusted logistic regression compared demographic characteristics and EMS responders' primary clinical impression (primary impression) across repeat versus singleton users. Among frequent users (≥ 5 responses), we summarized within-patient primary impression similarity by Simpson's Diversity Index (diversity), a 0 (none) to 1 (infinite) observation heterogeneity and relative abundance metric. Linear regression estimated associations between diversity and demographic characteristics.

Results: Approximately 15% (738/4,906) of users initiated 36.3% (2,378/6,546) of EMS responses. Repeat users had a median of 2 (interquartile range [IQR]: 2–3; maximum 102) responses, 15.8 (IQR: 2.8–44.4) weeks apart. Repeat users were median 68 years (IQR: 44–80 years) of age and 51.2% female; whereas, median age of singleton users was 47 years (IQR: 23–67 years) ($P < .001$) and 44.0% were female ($P < .001$). Repeat users were more likely than singleton users to have responses associated with primary impressions of chronic obstructive pulmonary disease, patient assistance (e.g., falls), seizures, or weakness ($P < .001$ for each association). Among frequent users ($n = 91$), median primary impression diversity was .68 (IQR: .61–.79). Diversity was positively associated with increasing age ($\beta_{5\text{-year}} = .015$; 95% confidence interval: .007–.023).

Conclusions: In rural Idaho, we identified patients who might benefit from preventive medicosocial support. EMS agencies statewide could characterize their response data to assess suitability of community paramedicine programs for their communities.

Word Count: 300/300; edited 300