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084. Geographic Variation in Pre-EMS Naloxone Administration in the United States

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Background: Naloxone administration given prior to EMS arrival (pre-EMS) has become increasingly common in the United States (US) since the FDA's approval of over-the-counter naloxone in 2023. Pre-EMS naloxone is typically administered by bystanders (family/friends/strangers) or non-medical first responders (fire/police personnel). Limited research has investigated regional variation in patterns of naloxone administration prior to EMS arrival, which is critically needed to focus mitigation efforts in the US.

Hypothesis or Research Question: Do patterns of pre-EMS naloxone administration for suspected opioid overdose differ across the US?

Methods: The RENDOR project is an ongoing, prospectively collected, observational study of patients who had EMS encounters between June 2024 and September 2025 and received pre-hospital naloxone for a suspected opioid overdose. RENDOR collects naloxone doses, routes of administration, administrations, and clinical responses from EMS personnel on patients who received naloxone prior to EMS arrival, which is not routinely or systematically collected in EMS's clinical documentation. Study sites include Pittsburgh, PA, Detroit, MI, Denver, CO, Portland, OR, and San Francisco, CA. Chi-square tests and Fisher's exact tests were used to determine statistically significant differences between five geographical sites. All analyses were computed in R v.4.5.5.

Results: Among all RENDOR overdose cases with complete data (n = 2,986), 1,623 patients (54.4%) received pre-EMS naloxone. The proportion of cases receiving first naloxone dose from pre-EMS responders ranged from 34.4% in Detroit to 66.0% in San Francisco ($p<0.01$). Overall, half of the patients who received pre-EMS naloxone received only one pre-EMS dose. Naloxone was administered by bystanders in 32.3% of cases in Detroit, 44.4% in Pittsburgh, 53.1% in Denver, 55.9% in Portland, and 86.3% in San Francisco ($p<0.05$). Naloxone was administered by police in 13.5% of cases overall, ranging from 3.8% in San Francisco ($p<0.05$) to 21.4% in Denver.

Conclusion: Pre-EMS naloxone administration patterns and practices differed markedly across sites, reflecting local differences in community overdose response and first responder roles. These variations underscore the need for expanded training and bystander naloxone

access to ensure equitable overdose responses nationwide.

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