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Naloxone Administration and Relationship to Opioid Overdose Outcomes

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PICO

In adults ages 18-35, does the administration of naloxone in the non-healthcare setting show improved patient outcomes through lower death and readmission rates in opioid overdose patients when compared to patients who did not receive naloxone?

Why do We Care?

Opioid Overdose Epidemic - Opioid Crisis (Papp et al., 2019)

- Since 2000 - United States has seen 137% increase in rate of overdose related deaths
 - 200% increase in opioid related overdose death rate

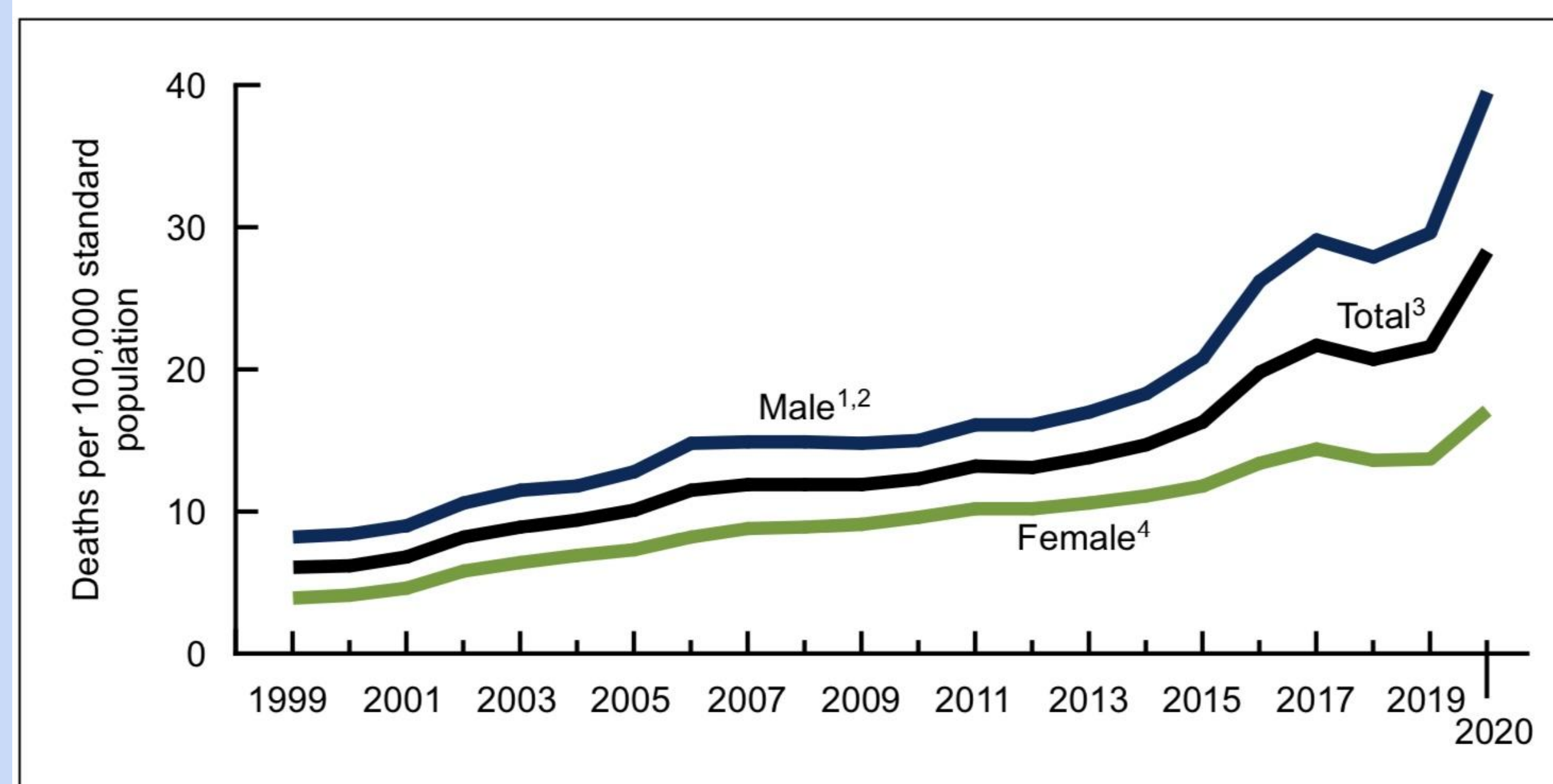
Preventing repeat overdose (Zozula et al., 2022)

- 1999 to 2018 opioid overdoses in the United States increased six-fold.
- 2012 to 2016 EMS encounters involving the administration of naloxone increased 75%.
- Naloxone is now administered in over 1% of all EMS encounters nationwide.
- An identified issue is that the Emergency Department (ED) is the main source of recovery resources.
 - When patients refuse transport, they do not receive the same resources.
 - Non-transport leads to subsequent overdose in patients who receive treatment by emergency medical services (EMS) and higher risk for repeat overdose..
- 57.9% of encounters result in transport to an ED

High Risk Populations (Grzebinski et al., 2021)

- There is a high readmission rate following opioid overdose or dependence and a greater likelihood of readmission among young males with psychiatric comorbidities in metropolitan areas.

Figure 1. Age-adjusted drug overdose death rates, by sex: United States, 1999–2020



Hedegaard, H., Miniño, A., Spencer, M., & Warner, M. 2021. Drug Overdose Deaths in the United States, 1999-2020. National Center for Health Statistics. doi: <https://dx.doi.org/10.15620/cdc:112340>.

Methods

- Databases: Umaine One Search, Nursing Reference Center Plus, and Cinahl Full Text Search.
- Search terms and phrases: “naloxone availability,” “narcan,” “naloxone,” “opioid overdose and patient outcomes,” “readmission or rehospitalization,” “Opioid related deaths”.
- Peer reviewed articles published between 2017-2022 were used.
- Articles that did not discuss naloxone and patient outcomes were omitted.
- Ten articles were chosen that fell within the search criteria for our literature review.
- 1 source was used for this poster presentation.

Our Findings

Reducing Repeat Overdose (Zozula et al., 2022)

- Look at providing EMS with rehabilitation resources that are available from the ED should the patient refuse transport.
- Improve access/ advertisement of resources.
- Give treatment while transporting to local ED to increase number of overdose patients that received ED care and resources.

Identify and Focus Treatment on the High Risk Populations (Grzebinski et al., 2021)

- Interventions to address psychiatric comorbidities and transitions of care may be needed for the high-risk opioid dependence and overdose population .

Pill Mill Regulations and Distribution (Anarsi et al., 2020)

- States that have mandated some form of prescription drug monitoring program (PDMP's) have seen a decline in inappropriate prescribing practices, improving opioid related outcomes.
- Increased penalties for overprescribing opioids
- Further study on Naloxone distribution needed due to it being understudied

Reduction of subsequent hospitalizations (Farkas et al., 2021)

- EMS responders should assess whether a dose of naloxone has already been given by bystanders or first responders prior to administration.
- Lack of response to a dose of naloxone should prompt EMS to consider other causes of CNS depression (e.g. non-opioid CNS depressants, anoxic brain injury, sepsis, seizures).
- Multiple doses of naloxone are associated with a higher admission rate due to refractory CNS depression and aspiration-related pulmonary complications. (53%)
- Further education of EMS responders may be required regarding the appropriate outcomes of naloxone administration.

The Changing Landscape of Naloxone Availability in the United States (Freeman et al., 2018)

- The cost of naloxone remains a big concern as cost is a significant barrier to widespread distribution
- Pharmacy-based naloxone access laws in certain states such as Utah and Massachusetts have allowed naloxone to be more readily available to the public. Both states are in the top five for highest rates of naloxone dispensing.
- There is a relative mismatch between naloxone dispensing and overdose deaths, suggesting that improved processes for dispensing naloxone can aid in lowering overdose deaths.

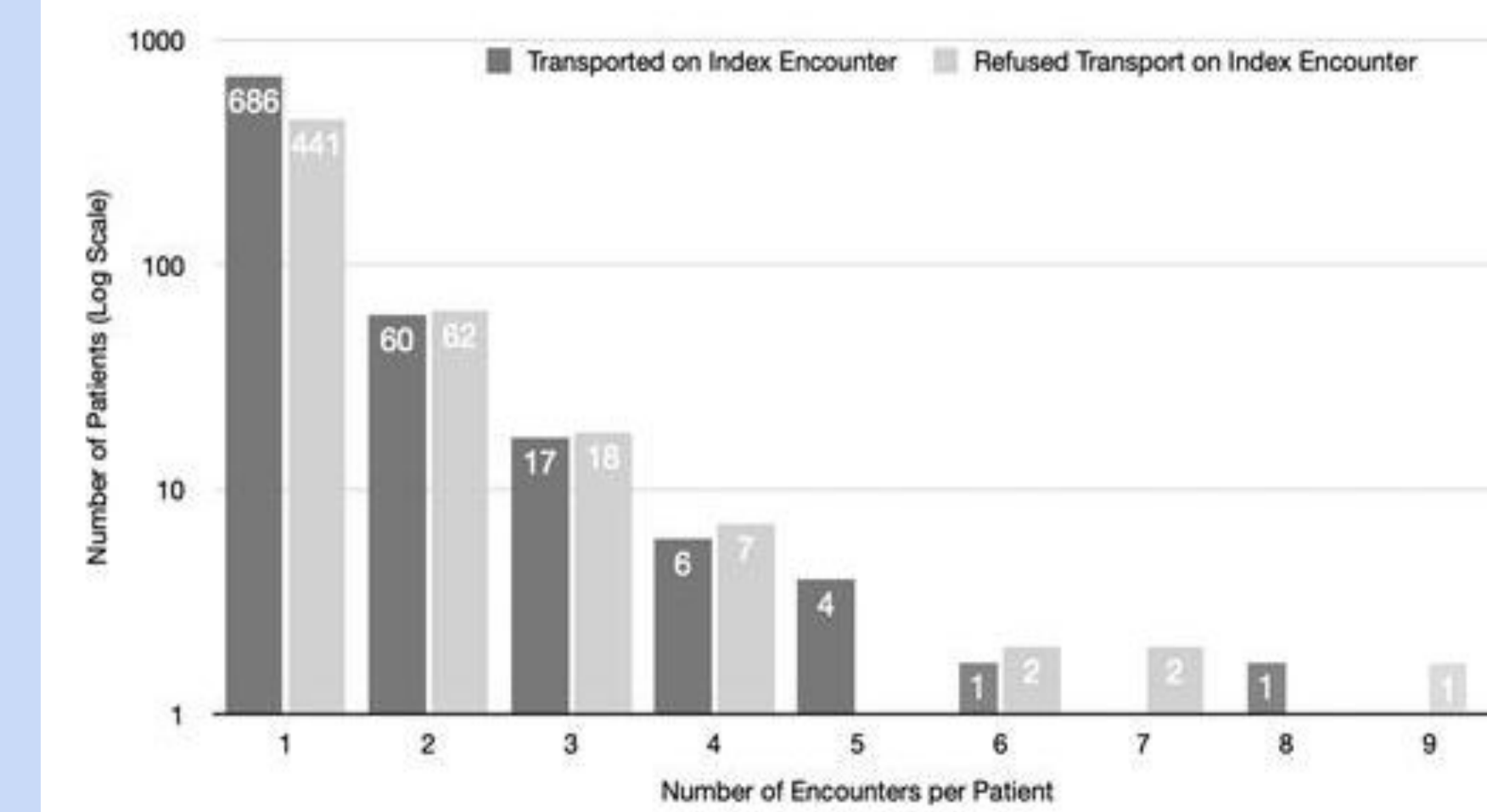
Association Between State Laws Facilitating Pharmacy Distribution of Naloxone and Risk of Fatal Overdoses (Abouk et al., 2019)

- Naloxone laws allowing direct authority to pharmacists are associated with lower opioid overdose deaths.
- ED visits for nonfatal overdoses increased with these laws
- Improvements in naloxone access laws can lead to a more supportive environment for opioid users to access medical help for addiction, education on opioid overdoses, and promote seeking medical help after near overdoses

Opioid Overdose Education (Papp et al., 2019)

- Take home naloxone rescue kits to at-risk patients reduces opioid overdose death rates in communities
- Opioid education and naloxone distribution programs should be implemented

Figure 2. Distribution of number of EMS encounters with naloxone administration per patient (note log scale).



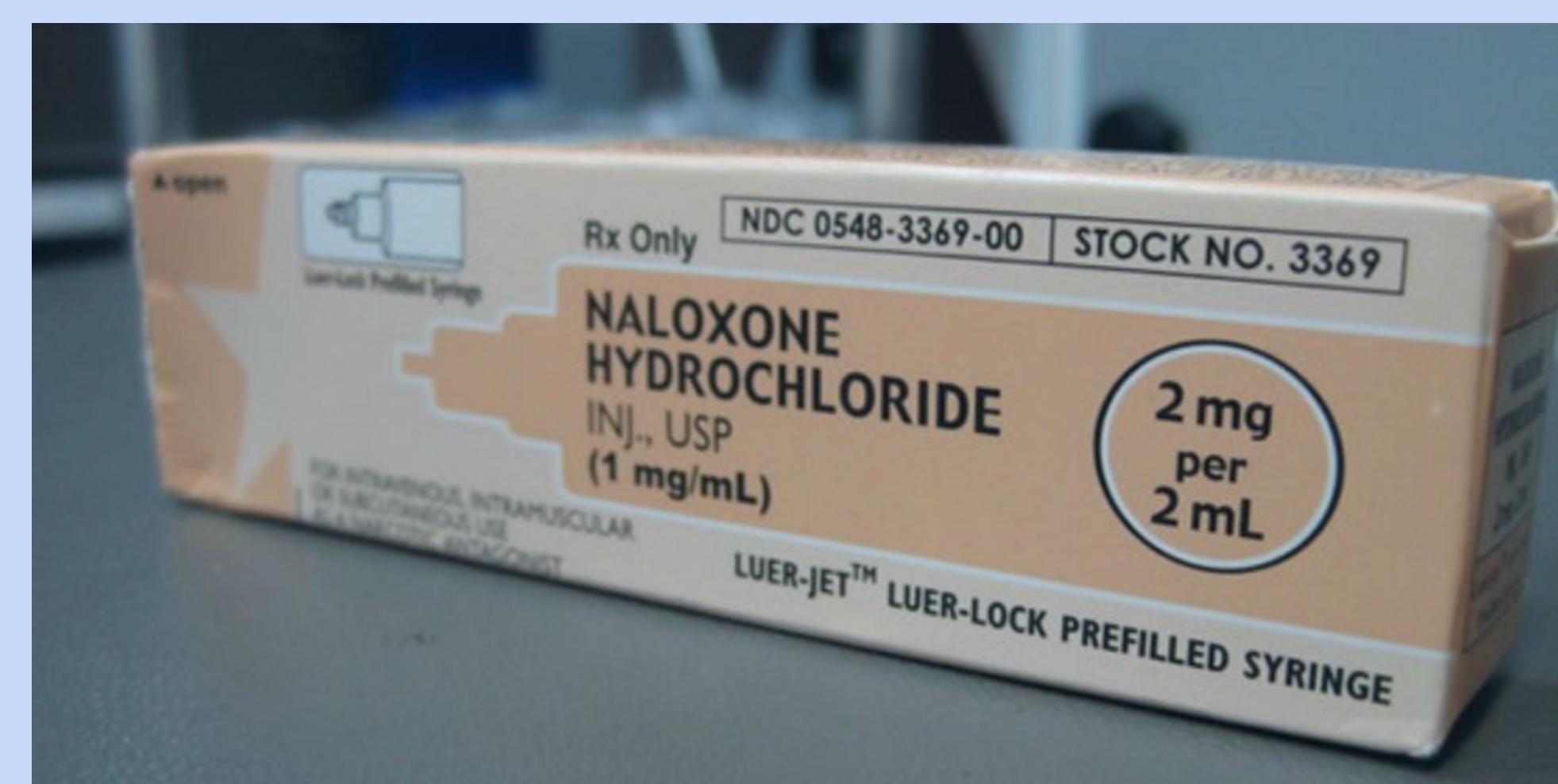
Freeman, P., Hankosky, E., Lofwall, M., Talbert, J. (2018) The Changing Landscape of Naloxone Availability in the United States. *Drug and Alcohol Dependence*, 191, 361-364. <https://doi.org/10.1016/j.drugalcdep.2018.07.017>.

Conclusions

Our findings suggest that widespread naloxone distribution is associated with lowered rates of opioid overdose deaths, yet may contribute to an increase in hospital admissions for non-fatal overdoses. It is unclear whether naloxone promotes riskier drug habits resulting in repeated overdoses, or if the increase in admissions is a result of naloxone use effectively preventing overdose deaths. Therefore, allowing patients time to seek further interventions at the hospital. In cases where naloxone is used and the individual refuses transport to the hospital, EMS should be educated and prepared to provide information on rehabilitation resources. Increased efforts should be made on lowering costs and implementing strategies for widespread distribution of naloxone. Naloxone access laws should allow for easier distribution, in addition to: promoting a more supportive atmosphere for opioid users to seek medical help after an overdose, providing education on opioid overdose, and providing resources for opioid addiction. Overall, naloxone use alone contributes to lowered opioid overdose deaths rates, but does not have a significant impact on readmission rates. Naloxone use/distribution must be coupled with follow up care, education, and addiction resources to be the most effective.

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