Modeling the impact of naloxone distribution for overdose prevention through community programs, prescriptions, and pharmacy-facilitated channels in the US:

Results from a 10-state analysis

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Background

- The opioid crisis claimed the lives of >47,000 Americans in 2017.
- Equipping people with the opioid overdose antidote naloxone can reduce the rate of fatal overdose.
- Naloxone is available as take-home kits (THN) from community programs, by prescription (RX), and through pharmacy standing orders.

Objective

- This study aimed to estimate the number of naloxone kits needed to reduce overdose risk in a sample of 10 US states across a range of access points.

Methods

- We constructed a Bayesian model of people at risk of opioid overdose and fitted to prescription, heroin, and fentanyl-dominant state-specific epidemic types using 2017 data.
- We performed a literature review and modified-Delphi panel to estimate parameters linked to naloxone need.
- Overdose death, paramedic-attended overdose, and at-risk population data were used to calibrate the model for 10 states: **Massachusetts, Rhode Island, North Carolina, South Carolina, Oklahoma, Arizona, California, Idaho, Oregon,** and **Washington**.
- We measured naloxone saturation using the outcomes of potentially fatal overdose deaths averted and probability of witnessed overdose reversed.
- We explored the impact on mortality if naloxone kits were distributed across 9 states at the same rate as Massachusetts.
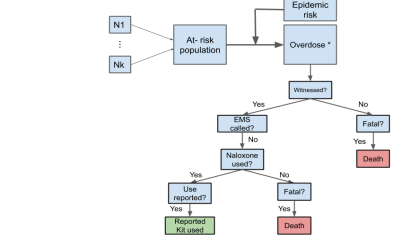

Probability of naloxone use in the event of a witnessed overdose and deaths averted with respect to amount of naloxone distributed, **by type of opioid epidemic**
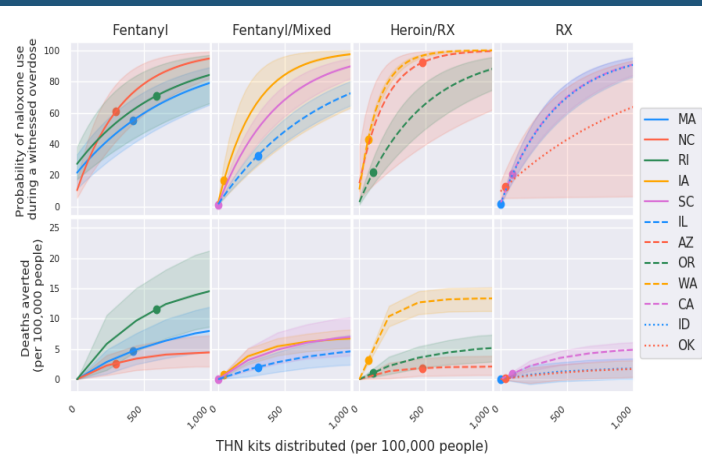
RX=prescription opioid; THN kits=community take-home naloxone kits

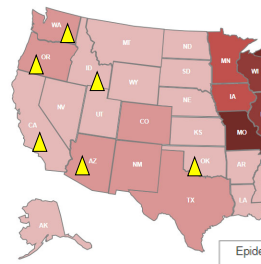## Probability of naloxone use in the event of a witnessed overdose with respect to amount of naloxone distributed, **per naloxone distribution source**
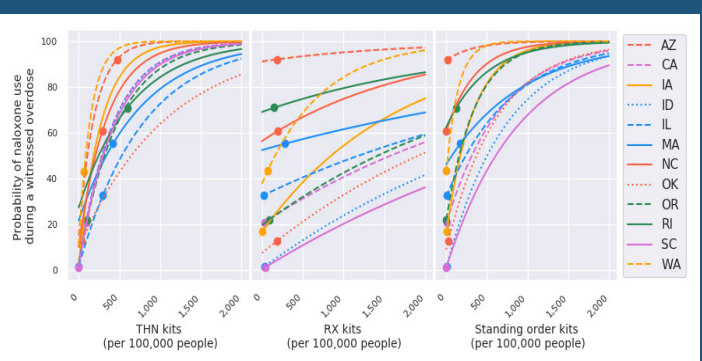
Rx kits=prescription naloxone kit; THN kits=community take-home naloxone kits

Results

- In 2017, there were 12,086 ove... deaths across the 10 states.
- We estimated 27,199 overdose... by naloxone, resulting in 3,350...
- Community program and pharm... distribution were more availabl... dispensed prescription, howeve... attained saturation.
- The highest probability of nalo... witnessed overdose was in Rho... (60.3%; 95% CI 43.2% - 85.1%...
- If Massachusetts community pr... distribution had been applied a... 12,958 deaths could have been...
- Within Massachusetts, naloxon... attributed to community progra... pharmacy-facilitation (22.7%) a... prescriptions (9.3%).

Conclusion

- Naloxone distribution efforts in ... far from attaining maximum rea...
- Community program and pharm... can avert more overdose death... greater likelihood that naloxone... during a witnessed overdose.