

Reducing Opioid Overdoses:

Literature review for best practices in distributing naloxone

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BACKGROUND

Opioids are a class of drug that derives from, or mimics the natural substances found in the opioid poppy plant. In small, managed doses they can provide pain relief for those in acute or chronic pain, but in large doses they suppress an individual's breathing and result in a fatal overdose.

Opioid overdose is the leading cause of accidental death in the United States and has been dramatically increasing over the last 25 years. In 1999, 3,442 individuals died from an opioid overdose; in 2021, there were over 80,000 fatal drug overdoses involving opioids. Kentucky sits in the heart of this epidemic. Since 2002, our state's rate of fatal opioid overdoses has surpassed the national average and was further exacerbated by the COVID-19 pandemic.

To combat this epidemic, The Centers for Disease Control and Prevention (CDC) and the American Medical Association (AMA) promote the widespread use and distribution of Naloxone, an opioid-receptor antagonist, as the best public health approach to reducing fatal opioid overdoses.

Eastern State Hospital is one of four state psychiatric facilities that provide acute psychiatric care for individuals experiencing mental health issues. We serve 60 of the 120 counties in Kentucky, four of which have the highest numbers of fatal opioid overdoses. In order to do our part to combat the opioid epidemic, a literature review was conducted to determine the most effective way to distribute Naloxone responsibly.

RESEARCH QUESTIONS

What is best practice for responsibly distributing naloxone to laypersons?

METHODS AND MATERIALS

Utilizing the UK Library database, a literature review was conducted to identify and review Naloxone distribution programs.

Studies were included if they met the following criteria:

- From Peer-reviewed journals
- Published within the last five years (2019-2023)
- Discussed components and outcomes of a Naloxone distribution program
- Discussed the effectiveness of Naloxone in reversal of an opioid overdose

5 studies were identified (3 systematic literature reviews and 2 program outcome studies)

RESULTS

1. The Need for Multiple Naloxone Administrations for Opioid Overdose Reversals: A Review of Literature

• **Methods:** Literature review of 174 studies

• **Results:**

- In 36% of cases, opioid overdose occurred within seconds to minutes after drug use; 90% were without a pulse upon EMS arrival.
- Due to more potent synthetic opioids having a rapid onset effect, bystanders should have training and access to enough Naloxone to administer during the critical time interval before EMS services arrive to increase the likelihood of survival.

• **Limitations of Study:** Was unable to exclude weaker studies due to the lack of available research.

2. The Effects of Overdose Education and Naloxone Distribution: An Umbrella Review of Systematic Reviews

• **Methods:** Reviewed 6 literature reviews of Overdose Education and Naloxone distribution (OEND) programs to determine their effectiveness within the opioid epidemic.

• **Results:**

- OEND programs are effective at ...
 - Producing long-term knowledge about overdose symptoms, prevention, and care.
 - Improving bystanders' use of recommended response strategies (sternal rub, CPR, and use of the recovery position).
 - Increasing public support for Naloxone
- Bystanders engaged in overdose management after the training.
 - 67% of participants who witnessed an overdose administered naloxone.
 - Bystander naloxone administration was highly effective (>95.5% survival rate)
- Communities with OENDs program experienced greater reductions in overdose mortality than communities without OEND programs.
- OEND programs are cost-effective even under markedly conservative circumstances (when price of naloxone rises and rates of opioid overdose decrease).

• **Limitations of Study:** There was overlap between the systematic reviews and that could have placed undue emphasis on the conclusions of commonly cited articles.

3. Reducing Opioid Overdose Deaths by Expanding Naloxone Distribution and Address Structural Barriers to Care

• **Method:** Reviewed above systematic review and considered what needed to change in OEND programs

• **Results:**

- OEND programs and their effectiveness are shaped by the participants' behaviors and the "risk environment" in which they exist.
- Stigma and criminalization of substance use are barriers to knowing the true effectiveness of OEND programs.

• **Limitations of Study:** Review of the above article

4. Preliminary effectiveness of online opioid overdose and naloxone administration training & impact of naloxone possession on opioid use

• **Methods:** OE was provided in online video format. The participants were randomly split into two groups: one was provided Naloxone after training was complete; second group was informed where to get Naloxone in their community.

• **Results:**

- OE is effective in online video format.
- 58% of the group that was not provided Naloxone did not obtain any after the initial training.
- 16 of the 69 participants reported their naloxone kits being utilized. All naloxone kits used resulted in a life reportedly being saved.
- Having Naloxone did not have a statistically significant impact on frequency of opioid use.

• **Limitations of Study:** Pilot study; Information related to overdose incidents, ability to obtain a naloxone kit, and frequency of opioid use were self-reported without secondary validation.

5. Multi-informant Implementation and Intervention Outcomes of Opioid Overdose Education and Naloxone Distribution in New York City

• **Method:** Evaluation of 16 OEND trainings in NYC that used the same method of measuring outcomes

• **Results:**

- OEND trainings increased participants' knowledge about and confidence in overdose management.
- Brief trainings (less than 20 min) have shown to be sufficient to impart basic overdose knowledge whereas longer trainings (70+ minutes) showed to be less effective.
- Training mixed groups of community members likely to witness an overdose event and opioid users at risk of experiencing an overdose is feasible and reasonable.

• **Limitations of Study:** Small group of OEND programs were evaluated. Only OEND programs of NYC and no rural data

CONCLUSION

- Naloxone distribution within a comprehensive Overdose Education and Naloxone Distribution program is an effective public health approach to reduce the amount of fatal opioid overdoses in a community.
- Bystanders who are trained and have access to Naloxone can increase the likelihood of survival. In the two studies that analyzed Naloxone use after OE, participants were able to manage an overdose and produced high survival rates.
- Overdose Education (OE) was reported to be effective in increasing participants' knowledge of overdose symptoms, prevention, and recommended response strategies. OE is also effective in increasing participants' confidence in their ability to intervene. Trainings can be effectively delivered in an in-person or online format within a 20- minute time frame.
- Naloxone distribution (ND) is economically feasible to provide to patients and is safe to administer by a trained layperson.
- Each OEND program is inherently shaped by their participants and the environment in which they exist.



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