mhc MENTAL HEALTH CLINICIAN

CASE REPORT Open Access

Successful bystander-administered intranasal naloxone reversal of opioid overdose between two veterans: A case report

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How to cite: Ouyang S, Moore T. Successful bystander-administered intranasal naloxone reversal of opioid overdose between two veterans: A case report. Ment Health Clin [Internet]. 2017;7(6):287-9. DOI: 10.9740/mhc.2017.11.287.

Abstract

Opioid overdose–related morbidity and mortality remain one of the most pressing public health crises. Overdose education and naloxone distribution have emerged as an effective initiative for mitigating overdose deaths. This case highlights areas of patient education essential to optimizing treatment outcome when using a naloxone reversal kit. The patient is a 46-year-old white male with a past medical history significant for opioid use disorder, alcohol use disorder, stimulant use disorder, sedative-hypnotic use disorder, and posttraumatic stress disorder. The patient received an intranasal naloxone kit during residential substance abuse treatment. Five months later, the patient requested a new kit and was asked about the disposition of his previous kit. The patient recounted how he was telephoned to pick up an unconscious friend (and fellow veteran) from a nonresidential location. Upon arrival, the patient recognized opioid products near his friend and took steps to reverse the suspected opioid overdose with his 2 mg/2 mL naloxone intranasal kit. The reversal was successful, but many critical rescue response steps were omitted. This case report may guide future changes to educating patients on appropriate responses to opioid overdoses with naloxone. A PubMed search located one other case report of successful naloxone reversal of opioid overdose in the veteran population, which involved fentanyl sold as heroin. In our case report, a veteran successfully used his naloxone kit to reverse a suspected opioid overdose in another veteran, but he incompletely provided the rescue response. This experience may influence content changes for future overdose education and naloxone distribution training.

Keywords: naloxone, opioid overdose, opioid use disorder, opioid reversal

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Disclosures: S.O. has nothing to disclose. T.M. is currently serving as an *MHC* editor.

Introduction

Opioid overdose–related morbidity and mortality remain one of the most pressing public health crises in the United States. Approximately 4 of every 5 overdose deaths were attributed to opioids in 2013 (16 235 from prescription opioid analgesics and 8257 from heroin).[1] Overdose education and naloxone distribution (OEND), which follows harm reduction principles, has emerged as an effective initiative for mitigating overdose deaths. Harm reduction is "...a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use" and "does not attempt to minimize or ignore the real and tragic harm and danger associated with licit and illicit drug use."[2] By 2014 there were 140 Harm Reduction Coalition programs across 30 states that had trained 152 283 individuals in OEND, with 26 463 reported reversals.[3] This represented a 2- to 3-fold increase relative to 2010 figures, when there were 50 known programs across 15 states with 53 032 individuals trained and 10 171 reported reversals.[4] The Department of Veterans Affairs (VA) formally implemented OEND in May 2014, and to date there has only been 1 published case report[5] of an opioid overdose reversal via

naloxone kit within the veteran population. Most published literature for naloxone reversal of opioid overdoses describes naloxone use by emergency medical services, either in the field or at the hospital. The Maryland OEND program catalogued a case series of 78 bystander-administered naloxone reversals of suspected opioid overdose in a 16-month span after incorporating the services of the poison center.[6] Notably, only 11% of the bystander calls came from non–law enforcement personnel, which was expected, because of law enforcement representing half of the OEND-trained personnel in Maryland. In addition, the OEND protocol was updated to always contact the poison control center. We report on a case of veteran-to-veteran bystander-administered naloxone reversal of opioid overdose, which highlights areas of patient education essential to optimizing treatment outcomes.

Case

A 46-year-old white male, John Doe (JD), requested a new prescription of the opioid overdose reversal drug naloxone. The patient was known to the dispensing clinic and had a past medical history significant for substance use disorders (opioid, alcohol, stimulant, and sedative-hypnotic) and posttraumatic stress disorder. He previously received an intranasal naloxone kit after OEND training during his admission to the residential substance abuse treatment program (DOM-SA) from April to May. The kit consisted of two 2 mg/2 mL naloxone vials with Luer-Lok syringes, 2 intranasal atomizers, a face shield, and instruction pamphlets sealed in a zippered bank pouch. The request for naloxone was made 5 months after DOM-SA discharge, which prompted an inquiry into the previous kit's disposition. During the follow-up visit for the replacement naloxone kit, the patient recounted the events surrounding his last use of the intranasal naloxone kit.

In July of the same year, JD was telephoned by a mutual acquaintance to pick up his unconscious friend (a fellow veteran) from a nonresidential location. Upon arrival at that location, JD found his friend unconscious with recognizable opioid (morphine and hydrocodone) products nearby. JD immediately performed a sternal rub to ascertain response for an unknown period of time, but estimated it was longer than 1 minute. After no response, JD then assembled the VA-issued intranasal naloxone and administered 1 dose. JD denied performing rescue breathing on his friend after administering the intranasal dose because he felt that the environment felt unsafe/hostile and he needed to "watch the room." JD compensated for the rescue breathing by keeping track of his friend's pulse and respirations. After JD's friend regained consciousness, JD discussed aftercare options with him, including aftercare at a medical facility. However, the friend convinced JD to let him return home. When reviewing his actions with providers, JD acknowledged forgetting naloxone's short duration of action and the risk of reoverdose. He then volunteered that he should have forcibly taken his friend for medical aftercare. He further stated that this was an especially pertinent observation given that his friend typically has extra supplies of opioids and sedative/hypnotics at home. JD and the provider reviewed the discrepancies and rationale between JD's actions during the reversal and the expected actions taught via OEND training materials organized by the VA Academic Detailing service. This included not performing rescue breathing, not providing medical aftercare, and inefficiency when checking for a response. The accompanying Table outlines these differences and the future changes to the local OEND training as a result of this encounter.

Discussion

This case lends further support to the importance of the OEND initiative's mission to reduce opioid overdose deaths. Published literature[7] suggests that correct intranasal naloxone administration occurs in less than three fifths of attempts (mostly incorrect assembly and not correctly administering into both nostrils), yet the patient reported no difficulties. However, improper assembly and administration may diminish because of the availability of the intramuscular autoinjector and the 2015 Food and Drug Administration approval of an enclosed, single-dose intranasal delivery device. Despite this case's favorable outcome, the incomplete aftercare steps and the victim's ease of access to additional sources of opioids and benzodiazepines could have produced a fatal alternative. The victim's request to forgo proper medical aftercare mirrors the 9 individuals from the Maryland OEND case series who also refused to be transported to an emergency room. A total of 26 total individuals immediately discontinued care after a successful reversal, with 13 individuals fleeing the scene and 4 leaving an emergency room against medical advice, in addition to the aforementioned 9 people. This case highlights potential obstacles to successfully following each step of the expected response to a suspected opioid overdose. This includes the physical circumstances of a reversal event, such as a hostile use environment, where most participants demonstrate more concern with avoiding detection than rescuing the overdosed individual. Additional obstacles include, but are not limited to, impact of the responder's preexisting health diagnoses on the rescue response and negotiating the wishes of the overdosed individual versus recommended medical advice regarding proper medical follow-up. To address such discrepancies, pertinent modifications and emphasis have been made to the local OEND training content.

TABLE: Comparison of opioid overdose reversal steps between standardized training, responder's actions, and areas to be modified for future education

Original Education From VA Academic Detailing	Responder's Actions During Reversal	Modifications and Emphasis Points for Future Education
Step 1: Check for a response	Sternal rub for >1 min	Check a response for no longer than 30 s and highlight that this step is to ascertain response and will not treat the overdose
Step 2: Give naloxone and call 911	Gave 1 dose of intranasal naloxone and did NOT call 911	Heavier emphasis on the necessity of aftercare, especially given the unknown source of the patient's unconsciousness and naloxone's short duration of action; also worthwhile to check if the responder lives in a state with a Good Samaritan Law for calling 911
Step 3: Airway support with rescue breathing	Did NOT perform rescue breathing, but repeatedly checked pulse and respirations	Emphasis on keeping the airway clear if unable to perform rescue breathing
Step 4: Consider more naloxone if no response in 3-5 min	Did not give second dose, unknown elapsed time until response	Consider timing the encounter so the patient can receive a second dose if needed
Step 5: Place patient in recovery position after breathing is reestablished	Recovery position NOT used	Connect the role of recovery positioning to maintaining an open airway
Step 6: Handoff to medical professionals	Considered going to medical facility, but took patient home	Reemphasize unknown nature of reason why patient was unconscious and the danger of slipping back into overdose

VA = Department of Veterans Affairs.

Conclusion

Maximizing the success of OEND in reducing opioid overdose deaths will require periodic reappraisals of the training content to address shortcomings and obstacles observed during clinical practice. Adapting training material to account for a patient's co-occurring medical conditions and/or potentially dangerous or hostile environmental circumstances during rescue response will require clinical judgment. Furthermore, clinicians should remain open to patients' suggestions of alternative treatment actions given potentially unforeseeable circumstances.

Acknowledgments

The authors thank Elizabeth Oliva, PhD, of Palo Alto VA; and Julia Quinlan, DO, of STVHCS. The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the US government.

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