

## Paramedic CAT (Critically Appraised Topic) Worksheet

**Title:** Intranasal Naloxone versus Intravenous Naloxone in patients who have been exposed to higher potency opioids

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**Clinical Scenario:** you are called code 4 to an unconscious male patient with a known history of substance abuse and mental illness. Once on scene you find the patient unconscious on the bathroom floor with miosis and a respiratory rate of 6 and slight epistaxis was noted in the patients left nostril. Needles are found on the ground next to the patient as well as some morphine pills. There is also an unknown powdered substance on the kitchen counter. With these conditions you and your partner administer intranasal Naloxone with no response.

**PICO (Population – Intervention – Comparison – Outcome) Question:** In patients who are known substance abusers and have a suspected opioid overdose involving a strong substance, such as fentanyl or morphine, will intranasal administration of Narcan still be considered adequate first-line route of administration in prehospital settings?

**Search Strategy:** ( intranasal or intravenous naloxone or Narcan ) AND ( prehospital or ems or paramedic ) AND ( substance abuse or overdose )

**Search Outcome:** 13

**Relevant Papers:** 4

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN	OUTCOME	RESULTS	STRENGTHS AND LIMITATIONS
McDermott and Collins, 2012	18 Advanced Paramedic trainees (15 male and 3 females in the age range of 32 to 57 years)	Randomized control trial	Time taken by the trainees to complete the task in group A (IN) and group B (IV)	89% of Advanced Paramedic trainees reported IN route was easier and	(-) Small sample size (-) May not have sufficient experience in IV

				considered safer than IV.	administration so that may have increased the amount of time taken to gain IV access  (-) Classroom based study, does not reflect in field use accurately  (+) At time of the study there was no other study done of its kind
M. Zuckerman 2014	A case with one patient was analyzed. Majority of this article was review of previous articles.	Retrospective	The choice of using IN naloxone administration when IV naloxone is readily available to EMS providers may have delayed definitive therapy  Encouragement of health providers to be aware of the drawbacks in using IN naloxone in the setting of high potency opioid overdose.	IN naloxone failed to resolve respiratory distress in fentanyl patch exposure.	(-) Not statistically significant  (+) Brings better awareness of IN drawbacks such as IN ineffectiveness when patient is experiencing epistaxis or when patient has been exposed to a high potency opioid
S. Weiner 2017	Patients transported by inner-city municipal ambulance services to one of	Retrospective review	1. If patient who received 2-mg dose of nasal	724 of the 793 patients who received IN naloxone	(-) 97.1% reported overdose on heroin and only 2.9% used other

	<p>three medical centers. Data collected from patients above 18 years of age and older between January 1<sup>st</sup> 2006 to December 12<sup>th</sup> 2012 who received IN naloxone by BLS providers. Mean age was 36 years and majority were male.</p>		<p>naloxone administration by BLS required repeat dosing in ED</p> <p>2. Disposition of the patients</p>	<p>were matched to ED charts</p> <p>689 patients had use of prehospital Naloxone administration while 64 patients required an additional dose in ED</p>	<p>opioids. This study does not strongly represent a possible requirement for initial use of IV administration of Naloxone in high potency opioids.</p> <p>(+) Statistically significant, large sample numbers were found.</p>
<p>T. Robertson 2009</p>	<p>Patients with suspected overdose in prehospital setting over 17 months between 2003 and 2004 before and after the new protocol for administration of IN naloxone in California</p>	<p>Retrospective review</p>	<p>Compare prehospital time intervals from patient contact and medicine administration to clinical response for IN versus IV naloxone in suspected narcotic overdose</p>	<p>Mean time between naloxone administered and clinical response was longer in IN group</p> <p>IN group tended to receive two doses</p> <p>3 patients of 154 required an additional IV and IM administration of naloxone</p> <p>IN naloxone</p>	<p>(+) Large sample population</p> <p>(+) Listed variables that effected the study</p> <p>(+) Provided statistics that enhanced the importance of using alternative method for naloxone administration (in comparison to IV)</p> <p>(-) No mention of patients suspected to</p>

				useful and potentially safer	have been in contact with high potency opioids in their study  (-) Patients in rural setting were disproportionately underrepresented
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**Comments:**

- In patients who inject narcotics regularly it is potentially dangerous to the attending paramedic’s health if a needlestick were to occur. With that in mind these articles do not provide sufficient evidence of a requirement for IV administration as the first line defense in high potency opioid overdose.
- The majority of these articles state IN administration of naloxone is a better choice however they do not have a strong evidence base when dealing with patients who have been exposed to strong opioids.
- Not a strong toxicology evidence base in retrospective studies.

**Consider:** *Why would you NOT change practice based on this article?*

Based on the relevant articles a change in practice is not recommended due to lack of information specifically dealing with strong opioids, most overdoses noted in these articles are not named or are majority based off heroin overdose. Risk of contact with blood borne viruses to those administering naloxone is considered too high. IN naloxone is a good alternative and according to the articles is effective.

**Clinical Bottom Line:**

Be aware of situations in which IN administration of symptom relief medications may be ineffective or undereffective. Ensure proper personal protective equipment and safe practice when working in environments that are high risk.

**References:**

- Mcdermott, C., & Collins, N. C. (2012). Prehospital Medication Administration: A Randomised Study Comparing Intranasal and Intravenous Routes. *Emergency Medicine International*, 2012, 1-5. doi:10.1155/2012/476161
- Robertson, T. M., Hendey, G. W., Stroh, G., & Shalit, M. (2009). Intranasal Naloxone Is a Viable Alternative to Intravenous Naloxone for Prehospital Narcotic Overdose. *Prehospital Emergency Care*, 13(4), 512-515. doi:10.1080/10903120903144866
- Weiner, S., Mitchell, P., Temin, E., Langlois, B., & Dyer, K. (2014). 144 Use of Intranasal Naloxone by Basic Life Support Providers. *Annals of Emergency Medicine*, 64(4). doi:10.1016/j.annemergmed.2014.07.170
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