

Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic)

Title: Naloxone administration in opiate overdose

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Clinical Scenario: Paramedics arrive on scene to a 42-year-old male, only responsive to painful stimuli. The patient is not maintaining adequate tidal volume due to a decreased respiratory drive, his pupils are constricted and fixed, and family states he is battling with a heroin addiction. Due to this patient’s poor veins from previous drug use, paramedics choose to administer intranasal Naloxone. After 2mg IN, the patient’s GCS increases from 3 to 6 and spontaneous respirations increase to 6 breaths/min.

PICO (Population – Intervention – Comparison – Outcome) Question:

In patients with opiate overdose does intranasal Naloxone compared to intravenous or intramuscular Naloxone result in better patient outcomes.

Search Strategy:

(((((prehospital) OR "pre hospital") OR "in field") OR ambulance) OR paramedic) OR "emergency medical service") AND (((("IM naloxone") OR "intramuscular naloxone") OR "IM Narcan") OR "intramuscular Narcan") AND (((("IN naloxone") OR "intranasal naloxone") OR "IN Narcan") OR "intranasal Narcan"))

Search Outcome: 25 results

Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/WEAKNESSES
Kerr Debra, 2009	172 patients with suspected opiate overdose in prehospital setting	Prospective Randomized Control Trial LOE 1	1* Time required to reverse overdose 1* Need for supplemental Naloxone administration	5.2% more IM doses acted within 10 minutes 13% more IN required supplemental administration	+ Randomized control trial + Well matched control groups - Could have used larger pop. - Only compared results for heroin overdose

Robertson Tania, 2009	154 opiate overdose patients treated with intravenous or intranasal Naloxone	Retrospective review LOE 2	1* Time between drug administration and clinical response 1* Time between patient contact and clinical response 2* Number of doses administered	Time from administration to response longer in IN (12.9 vs 8.1) Time from patient contact to clinical response roughly the same (20.3 vs 20.7) More supplemental doses needed IN	+ Reviewed evidence over 17 months + Generalized review of different narcotic overdose + Compares their old protocol with new, to quantify change - No randomization
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Comments:

- Significant importance has been put on the reduction of needle stick injuries using IN rather than IM or IV
- There was no differentiating what drugs (or dosages of) may have required supplemental Naloxone
- While there were differences in clinical response, typically patients improved in the same timeframe

Consider:

In response to patient outcomes in intranasal versus intramuscular or intravenous Naloxone administration, they are roughly the same regardless of the route administered. There is increased response time and increased need for repeat IN administration, but overall patient-contact-to-clinical-response times are similar.

It is important to note the ease and safety of administering IN medications versus establishing an IV or preparing an altered patient for IM injection (risk of needle stick injury).

Given that HCP's are typically quite savvy to needle stick prevention, the route which results in fastest improvement of GCS and respirations with minimal repeat doses is best practice and therefore I support that IN administration should only be initiated when IM or IV are contraindicated.

Clinical Bottom Line:

Ultimately IN Naloxone administration yields similar patient outcomes to IM or IV and is neutral in benefit. There is not enough evidence to support that the risk of needle stick injury is adequate to support dismissing IM or IV.

References:

Debra Kerr, Anne-Maree Kelly, Paul Dietze, Damien Jolley, Bill Barger. (2009) Randomized controlled trial comparing the effectiveness and safety of intranasal and intramuscular naloxone for the treatment of suspected heroin overdose, *Addiction*, DOI: 10.1111/j.1360-0443.2009.02724.x

Tania Mieke Robertson, Gregory W. Hendey, Geoff Stroh, Marc Shalit. (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