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FASTS FACTS AND CONCEPTS #39

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Background Naloxone (Narcan®), a semisynthetic opioid antagonist, is indicated for the complete or partial reversal of life-threatening CNS/respiratory depression induced by opioids. Naloxone is often inappropriately used in the hospital setting, administered as a full ampule (0.4 mg) in response to physiologically normal opioid-induced decrease in respiratory rate or mild sedation. This probably comes from application of principles of use in the Emergency Department to other settings. Of note, it is normal to have a lower respiratory rate during sleep, especially on opioids. Mild bradypnea, which is not associated with physiologic consequences like hypoxemia, should be closely monitored.

Depending on the dose administered, naloxone administration to a patient physically dependent on opioids will cause the abrupt return of pain and can precipitate an abstinence (withdrawal) syndrome, with symptoms ranging from mild anxiety, irritability and muscle aches to life-threatening tachycardia and hypertension. Once thought to be devoid of side effects, naloxone can cause cardiovascular collapse and pulmonary edema, probably through abrupt increase in sympathetic nervous system activity associated with opioid reversal.

Key Teaching Points

1. Review treatment goals; naloxone administration is not indicated for patients on opioids who are dying (see Fast Fact #3), as all dying patients will at some point have an altered mentation and respiratory changes. It may be necessary to write specific orders not to administer naloxone.
2. Patients should meet all of the following criteria before naloxone is administered:
 - a. Depressed mental status: difficult to arouse or unarousable (If the patient wakes to voice or light shake, the diagnosis is sleeping, not opioid overdose).
 - b. Shallow respirations or rate less than 8/minute, associated with evidence of inadequate ventilation (e.g. low oxygen saturation, hypotension). Note: some people breathe at 6-8 per minute when they sleep yet are well ventilated.
3. Stop opioid administration.
4. Dilute 0.4 mg naloxone (one ampule) with normal saline to a total volume of 10 ml (1 ml = 0.04 mg naloxone).
5. Remind the patient to breathe; though narcotized, patients report hearing concerned staff and being unable to open their eyes or respond. Reminders to "take a deep breath" are often followed.
6. Administer 1 ml IV (0.04 mg) q1min until the patient is responsive. A typical response is noted after 2-4 ml with deeper breathing and greater level of arousal. Gradual naloxone administration should prevent acute opioid withdrawal.
7. If the patient does not respond to a total of 0.8 mg naloxone (2 amps), consider other causes of sedation and respiratory depression (e.g. benzodiazepines, stroke).
8. The duration of action of naloxone is considerably shorter than the duration of action of most short-acting opioids. A repeat dose of naloxone, or even a continuous naloxone infusion, may be needed.
9. Wait until there is sustained improvement in consciousness before restarting opioids at a lower dose.

Final notes: After the patient is stable, review events leading up to the patient requiring naloxone and address oversights and errors which lead to this complication of opioid therapy. Review your institution's policy on

naloxone administration. Is it appropriate? If not, write one; see (2) for a recommended nursing protocol.

References

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