

Naloxone (Narcan®) Administration, Reversal of Opioid Induced Respiratory Depression

- I. **Responsibility:** Director of Critical Care
- II. **Scope:** All RNs, Pharmacy
- III. **Purpose:** To provide guidelines for the administration of Naloxone (Narcan®) for treatment of opioid-induced respiratory depression in adults
- IV. **Equipment:**
 - A. 10cc syringe
 - B. 0.4mg Naloxone (one ampule)
- V. **Procedure:**
 - A. Identify early warning signs and risk factors associated with opioid- induced respiratory depression: (Pasero & McCaffery, 2011)
 1. Opioid Naivety (patients who have not been taking regular daily doses of opioids for several days)
 2. Older age (e.g., 65 or over)
 3. Obesity (e.g., BMI 35 kg/m² or more)
 4. Obstructive sleep apnea
 5. History of snoring or witnessed apnea
 6. Excessive daytime sleepiness
 7. Preexisting pulmonary disease or dysfunction, e.g., COPD
 8. Major organ failure
 9. One or more co-morbidities
 10. Smoker
 11. Increased opioid requirement
 12. Opioid-naive patients who require a high dose of opioid in a short period (e.g., 10mg of IV morphine or equivalent in the PACU)
 13. Opioid-tolerant patient who are given a significant amount of opioid in addition to their usual amount, such as the patient who takes an opioid analgesic preoperatively for persistent pain and receives several IV opioid bolus doses in the PACU followed by high dose IV for ongoing acute postoperative pain
 14. First 24 hours of opioid therapy (e.g., first 24 hours following surgery is high risk period for surgical patients)
 15. Pain is controlled after a period of poor control
 16. Prolonged surgery
 17. Thoracic and other large incisions that may interfere with ventilation
 18. Concomitant administration of sedating agents such as benzodiazepines, anxiolytics, Antihistamines
 19. Large single-bolus techniques (e.g., single injection neuraxial morphine)

20. Continuous opioid infusion in opioid-naive patients
 21. Narcan administration: patients who are given Narcan for respiratory depression are at risk for repeated respiratory depression; another dose of Narcan may be needed as early as 30 minutes after the first dose because the duration of Narcan is shorter than the duration of most opioids.
- B. Patients should meet all of the following criteria before Naloxone (Narcan) is administered:
1. Somnolent, difficult to arouse, or no response to physical stimulation. (If the patient wakes to voice or light shake, the diagnosis is sleeping, not opioid overdose)
 2. Shallow respirations or rate < 8 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. (Documented exceptions to these criteria may be accepted based on physician assessment and clinical judgment).
 3. Pinpoint pupils
- C. Patient assessment: If hypoventilation and depressed mental status (as outlined above) are suspected:
1. Attempt to arouse the patient
 2. Count respiratory rate for 1 full minute for accuracy and determine quality of respirations
 3. If respiratory rate drops below 7 per minute or becomes shallow with poor quality and patient is difficult to arouse, reversal with Naloxone is indicated.
 4. Stop the opioid /benzodiazepine immediately (if applicable)
 5. Maintain or secure IV access
 6. Provide supplemental oxygen via face mask STAT
 7. Stay with the patient. Continue to attempt to arouse the patient and request help from a coworker, primary physician, and/or call RRT and request the need to immediately evaluate the patient.
 8. If Naloxone is indicated, administer based on clinical condition. Consider that reversal should not cause pain to return or precipitate opioid withdrawal, especially in chronic pain patients.
 9. Obtain a physician's order for Naloxone administration:
 - a. Naloxone administration for partial reversal in adults: Dilute 0.4mg Naloxone (one ampule) with NS to a total volume of 10mL (1 ml = 0.04mg) in a 10 mL syringe.
 10. Partial "Titrate to Effect" administration:
 - a. Administer dilute Naloxone 0.04mg (one 1mL vial) IV very slowly over 30 seconds while observing the patient's response (titrate to effect). The purpose is to reverse the side effects, not the analgesic effect of the narcotic.
 - b. The patient should open his or her eyes and talk to you within 1 to 2 minutes. May repeat every 30 seconds up to a total of 0.4 mg or 10mL dilute Naloxone. Notify physician STAT.

- c. If no response, begin looking for alternate sources of sedation and respiratory depression.
 - d. Discontinue the Naloxone administration as soon as the patient is responsive to physical stimulation and able to take deep breaths when told to do so.
11. Full “Emergent” reversal: If the patient is in acute respiratory distress or apneic and unarousable and requires a full reversal, administer 0.4 mg UNDILUTED (entire 1 mL vial) IV push over 15 seconds. May repeat every 2 to 3 minutes as necessary. Maximum dose is 10mg.
- D. Patient Monitoring following Naloxone administration:
- 1. Assign a staff member to monitor sedation and respiratory status and to remind the patient to deep breathe every 1 to 2 minutes.
 - 2. Keep the Naloxone readily available. Naloxone has a rapid onset of action (2 minutes) with a peak concentration in 10 minutes, and half-life of 30 to 81 minutes
 - 3. The duration of action of Naloxone is considerably shorter than the duration of action of most narcotics. A second dose of Naloxone may be needed in as early as 30 minutes.
 - 4. EtCO₂ monitoring to assess for adequate ventilation (See Mission Hospital Capnography EtCO₂ monitoring policy)
 - 5. Monitor vital signs (RR, BP, HR), pulse-oximetry, and pain score in accordance with the pharmacokinetics of the opioid administered.
 - 6. Any patient with respiratory arrest reversed by Naloxone is very high risk and needs to be transferred to the ICU for close and careful monitoring.
- E. Other considerations:
- 1. Patients receiving long-acting opioid products (i.e., OxyContin, MSContin, Fentanyl patch, or Methadone), epidural morphine analgesia, higher than expected opioid doses and/or concomitant benzodiazepine therapy may require additional monitoring and repeat doses of Naloxone.
 - 2. If sedation and respiratory depression occur during use of transdermal fentanyl, remove the patch. Patients must be closely monitored for at least 24 hours after discontinuation of transdermal fentanyl.
 - 3. Re-evaluate the events leading to the need for Naloxone administration. In cases where the prescribed opioid dosing was high, reassess the therapeutic plan for pain management. Consider decreasing the opioid dose by 50% and resuming opioid administration when the patient is easily aroused and RR is greater than 9 breaths per minute.
 - 4. Giving too much Naloxone or administering it too quickly can precipitate severe pain that is extremely difficult to control and increase sympathetic activity leading to hypertension, tachycardia, ventricular dysrhythmias, pulmonary edema, and cardiac arrest. (O’Malley-Dafner, Davies 2000)
 - 5. If the IV route is unavailable, undiluted Naloxone 0.4mg may be administered subcutaneously or intramuscularly. The patient should respond in 5 minutes. Intranasal Naloxone (2mg) has been shown to be as safe and effective with a favorable response within 10 minutes.

- F. Documentation:
 - 1. Document on the Pain Assessment, Medication Administration Record (MAR) and shift event relative to the presenting symptoms, interventions, side effects and patient outcome.

- G. Patient Teaching:
 - 1. Advise the patient of the frequency of assessments
 - 2. Review with the patient the goal of the pain management therapy relative to their progressive recovery.
 - 3. Instruct patient and family to notify nurse if experiencing side effects including, increased difficulty with breathing or increased sedation, itching, rash, nausea, and/or increased pain.

VI. Committee Review: Critical Care Committee, Emergency Medical Services, Cardiac Subsection, Department of Medicine Executive, Pharmacy and Therapeutics, Advanced Practice Nurse Council, Collaborative Practice Committee

VII. References

- A. Hagle M., Lehr, V., et al, Respiratory Depression in Adult Patients With Intravenous Patient – Controlled Analgesia, Orthopedic Nursing, January/February, 2004 (23) 1
- B. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Adult Cancer Guidelines (Version 2.2011). Accessed January 23, 2012.
- C. O'Malley-Dafner, L., Davies, P. (2000) Naloxone-Induced Pulmonary Edema. AJN, 100(11), pp.24AA-JJ.
- D. Pasero, C., McCaffery, M (2011). Pain assessment and pharmacologic management, p 516, St Louis, Mosby.