Naloxone: How Well Do You Know This Drug?

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The use of opioids in the treatment of cancer-related pain is a common occurrence. Nurses in a variety of oncology settings see patients with pain daily. Although most oncology nurses have a basic understanding of the different types of opioids and their general side effects, few have a full understanding of the pharmacokinetics of these agents and often are fearful that adverse reactions will occur. This fear, in turn, may lead to the undertreatment of patients’ pain. Probably the most feared adverse reaction to opioids is respiratory depression. The American Pain Society (1999) stated that “no patient has succumbed to opioid-induced respiratory depression while awake” (p. 30).

In fact, respiratory depression is rare in patients receiving long-term opioid treatment. Concern should be focused on opioid-naïve patients who experience severe pain and are in need of increased or high-dose opioids. Assessment of pain and close monitoring of the patients’ sedation level and respiratory status are critical in the prevention and early intervention of this potentially serious side effect.

This article provides an overview of naloxone (Narcan®, Endo Pharmaceuticals, Chadds Ford, PA) and its possible side effects. Proper naloxone administration techniques also are described should respiratory depression occur.

Naloxone’s primary indication is as an antagonist for opioid-induced respiratory depression. The drug also has been shown to be effective in treating opioid-induced pruritis (Kjellberg & Tramer, 2001). Research currently is being conducted to evaluate its effectiveness in substance abuse treatment and as an adjunctive agent in septicaemia shock (Napolitano, 2000; Rawson, McCann, Hasson, & Ling, 2000). Naltrexone, an oral opioid antagonist related to naloxone, is used to treat alcohol abuse (Ciraulo, Alpert, & Franko, 1997).

Naloxone’s mechanism of action remains unknown; however, it is thought to displace narcotic analgesics from their receptors (acting as a competitive antagonist) in the central nervous system. This drug, therefore, reverses the narcotic’s effects (e.g., analgesia, sedation, respiratory depression, pruritus, hypotension). Naloxone can reverse the psychotomimetic and dysphoric effects of pentazocine (Talwin®, Sanofi Pharmaceuticals, New York, NY) or nalbuphine (Nubain®, Endo Pharmaceuticals), two agonist-antagonist opioids. Naloxone has been shown to have no pharmacologic effect of its own in the absence of opioids (American Society of Health Pharmacists, 2000).

Prior to the administration of naloxone, patients should meet all of the following criteria.

- Unresponsiveness to physical stimulation
- Shallow respirations or a respiratory rate of less than eight breaths per minute
- Pinpoint pupils (Pasero, Portenoy, & McCaffery, 1999)

Once respiratory depression or sedation has been determined, naloxone should be administered via IV, intramuscular (IM), or subcutaneous (SQ) routes. Onset of action occurs within one to two minutes when administered through an IV and two to five minutes when administered IM or SQ. The peak effect is unknown, and the duration of action is dose and route dependent. The proper technique for the administration of naloxone is outlined in Figure 1.

The inappropriate administration of naloxone (e.g., rapid infusion) can lead to acute withdrawal syndrome and the return of severe pain. Symptoms associated with abrupt reversal may include tachycardia, hyper- or hypotension, agitation, ventricular fibrillation, pulmonary edema, nausea and vomiting, tremors, abdominal cramps, and hyperactive reflexes. These symptoms, in turn, may lead to seizures, cardiac arrest, and even death (American Society of Health Pharmacists, 2000; O’Malley-Dafner & Davies, 2000).

Pulmonary edema as an adverse reaction to naloxone administration may happen when an abrupt reversal of analgesia occurs, which causes an immediate increase in sympathetic...