Procedural Sedation Practice: A Review of Current Nursing Standards

Nancy Crego, PhD, RN, CCRN

Although the administration of agents to induce procedural sedation is common practice among nurses, a unified consensus statement on registered nurse (RN) sedation core competencies and scope of RN sedation practice in the United States is lacking. In this article, the topic of RN sedation is discussed along with an examination of current sedation standards by the American Society of Anesthesiologists and the Joint Commission. Current approaches of professional nursing organizations and state boards of nursing to sedation practice are also discussed. Three areas for improving existing RN sedation practice are identified: focused research on RN sedation practice, development of a standard for RN sedation practice, and development of a reliable source of up-to-date information on RN professional and clinical sedation practice standards and regulations. Recommendations for addressing each of these areas are provided to inform clinicians, researchers, regulators, and educators about current standards and knowledge gaps in sedation practice. Strategies to improve sedation research to advance practice areas are also discussed.

Over the last 3 decades, the administration of sedatives for diagnostic and therapeutic procedures has increased dramatically. At the same time, these procedures have been recognized as areas fraught with potential risk for patients. Sedatives are often used to provide analgesia, allay anxiety, and increase comfort in patients requiring procedures such as endoscopy and magnetic resonance imaging (MRI). Sedation is used in different patient populations and various settings, such as radiology, ambulatory care, and the emergency department (ED). Anesthesia providers, such as anesthesiologists and certified registered nurse anesthetists, usually induce sedation, but others without specialty training in anesthesia, including physicians who are not anesthesiologists, nurse practitioners, and registered nurses (RNs), also perform the procedure.

The demand for RNs to provide sedation has increased in recent years. A 2006 survey of United States gastroenterologists found the number of endoscopic procedures in adults increased 200% to 400% over the 15 years before the study, and RNs are often called on to provide sedation during these procedures (Cohen et al., 2006). RNs also provide sedation for patients in critical care units to maintain treatments, provide analgesia, and minimize discomfort from therapies such as endotracheal intubation (Mason, 2012).

Sedation care protocols are often derived from standards of anesthesia care developed by physician specialty organizations such as the American Society of Anesthesiologists (ASA). These guidelines have become the basis for sedation standards by accrediting agencies, specialty organizations, and regulating agencies that influence sedation practice in the United States.

Although the administration of procedural sedation, sometimes referred to as conscious or moderate sedation, is a common RN practice, there is no single consensus statement on RN sedation core competencies or a consistent way in which RN sedation practice is regulated in the United States. Several subspecialty nursing organizations, such as the American Society of Perianesthesia Nurses and the Society of Gastroenterology Nurses and Associates (SGNA), have developed their own sedation-related standards and have published jointly with medical subspecialty groups.

The purpose of this article is to describe the current state of RN sedation standards in the United States and to identify areas for improvement in RN sedation practice. The topic of RN sedation will be explored, focusing on three major components:

- A definition of sedation practice and a description of the qualifications of sedation providers and the risks associated with sedation
- Sedation standards and guidelines by accreditors, professional organizations, and boards of nursing (BONs) that impact RN sedation care
- Areas for improvement in RN sedation practice and recommendations.

Current Sedation Practice

The American College of Emergency Physicians defines procedural sedation as:

> a technique of administering sedative or dissociative agents with or without analgesics to induce a state that allows the patient to tolerate unpleasant procedures while maintain-

ing cardiorespiratory function. Procedural sedation and analgesia (PSA) is intended to result in a depressed level of consciousness that allows the patient to maintain oxygenation and airway control independently. (American College of Emergency Physicians, 2005, p. 178)

The ASA defines four levels of sedation based on the patient's responses to verbal commands, actual or potential impairment of the patient's ability to maintain his or her own airway, spontaneous ventilation, and cardiovascular function (American Society of Anesthesiologists [ASA] Taskforce on Sedation and Analgesia by Non-Anesthesiologists, 2002). (See Table 1.)

Sedation Levels

The beginning of the sedation-analgesia continuum is minimal sedation, also called anxiolysis. General anesthesia, the endpoint, occurs when patients cannot be aroused with painful stimulation. The two levels of sedation between minimal sedation and anesthesia—moderate sedation and deep sedation—are the focus of this article. Distinguishing between the two is difficult, but important because regulations and standards of care differ depending on the patient's sedation level.

The level of sedation patients achieve is not solely predictable based on the medication administered or the dose (ASA Task Force, 2002). The assessed level of sedation may change throughout a procedure (Green & Mason, 2010).

Sedation Provider Qualifications

Sedation provider qualifications for each sedation level are set by the Joint Commission and are presented in Table 2 (Joint Commission International, 2011). Qualifications range from no specific qualifications for minimal sedation to the ability to manage and rescue patients from whatever level of sedation or anesthesia is achieved when moderate and deep sedation levels are planned (Joint Commission International, 2011). The ability of RN sedation providers to manage and rescue patients from a deep sedation level or anesthesia is widely debated.

Some patients who receive sedatives are exempt from meeting sedation monitoring requirements. Examples include patients receiving sedatives for insomnia, anxiety, or pain control. Patients who are not undergoing a diagnostic or therapeutic procedure, such as intubated and ventilated patients receiving continuous infusions of sedatives and patients at the minimal sedation level, are also exempted from meeting sedation monitoring and provider guidelines (ASA Task Force, 2002).

Risks Associated With Sedation

In the United States, no national surveillance system exists to monitor sedation mortality or complications (Li, Warner, Lang, Huang, & Sun, 2009). Rather, studies simply report patient-level data on sedation adverse events in an institution based on the medications used, the health care setting, or the patient population being treated. Mortality and morbidity for moderate and deep sedation are unknown. Theoretically, sedation mortality should be lower than anesthesia mortality, which was 1.1 per million population and 8.2 per million of hospital surgical discharges between 1999 and 2005 (Li et al., 2009).

Adverse Events

Sedation adverse event rates vary depending on the population, the medication, and the definition of a sedation adverse event. Most studies report on either adult or pediatric populations; thus, determining the overall adverse event rate is difficult. A determination is further complicated by the fact that adverse event results are often not comparable because sedation adverse events are defined differently. For example, the absence of a consistent definition for oxygen desaturation, a common sedation adverse event, results in a range of reported rates depending on the population or circumstance (Cravero et al., 2006). Pino (2007) reported 31 episodes (0.12%) of oxygen saturation of less than 90% as an adverse event in a sample of 25,774 sedation cases including adults and children. Cravero et al. (2006) defined desaturation adverse events as an oxygen saturation of less than 90% for more than 30 seconds and reported 470 episodes (1.6%) in a pediatric sample of 30,037 sedation cases. Miner, Gray, Stephens, and Biros (2009) reported on 150 adult patients undergoing sedation with propofol for painful procedures in the ED. In this study, 74 patients received propofol alone, and 71 patients received propofol and alfentanil, an opioid analgesic. Miner et al. (2009) reported oxygen saturation of less than 92% at any time during the procedure as an adverse event, which occurred in 9.5% of the propofol cases and 15.5% of the propofol and alfentanil cases. None of these studies presented any data related to RN sedative administration, although Cravero et al. (2006) noted that sedation is sometimes performed by nurses, and Pino, Bryan, and Alfille (2005) indicated that both physicians and RNs are formally credentialed to provide sedation.

Adverse events for RN-administered sedation have generally been reported in cases with small sample sizes and specific patient populations. For example, a study of RN-administered sedation analyzed the results of 1,293 procedural sedations for wound care on 328 patients in a 12-month period (Thompson, Andrews, & Christ-Libertin, 2012). RNs administered fentanyl and midazolam, using a procedural sedation order set without direct physician supervision during the wound care procedure (Thompson et al., 2012). Ten adverse events, consisting of oxygen saturation of less than 90% in eight patients, were reported, yielding an adverse event rate of 0.77% (Thompson et al., 2012).

Sedation Standards and Guidelines

Accrediting agencies such as the Joint Commission have implemented sedation standards, and professional organizations such as the ASA have implemented practice standards that guide the