Monitoring for Opioid Induced Advancing Sedation and Respiratory Depression in Hospitalized Adults: Report from Workgroup on ASPMN® Monitoring Guideline Revisions

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Conflict of Interest Disclosure

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Agenda
1. Review the process for revision of guidelines
2. Present revisions with rationale
3. Discussion

Reasons for Revisions
• Adverse events continue to occur at around 1%
• Healthcare providers, administrators, and industry are asking for more specific recommendations
• There has been significant growth in the evidence over the past 10 years
• Some hospitals have initiated continuous electronic monitoring that has resulted in alarm fatigue
• Assessing risk and instituting higher level of monitoring and opioid sparing pain management has been found effective to decrease adverse events

Process
• Workgroup members are reviewing the literature for the past 10 years since last guidelines were written using the previously published sections and topics
• Additional topics were added to the search reflecting the current problems seen in practice
• Subgroups summarize the literature and recommend revisions
• Present proposed revisions to ASPMN® membership
• Edit and revisit the literature as needed
• Write final recommendations for revisions
• Send out for external review (early 2018)
Population

- Hospitalized
- Adults
- General Care Units

General Principle

Pain management strategies should be individualized and reflect published evidence based guidelines and the newly revised Joint Commission standards.

General Principle

- The timing, nature, frequency/intensity of monitoring for advancing sedation should be informed by the ongoing comprehensive assessment of:
  - Patient's risk
  - Type of opioid
  - Presence of respiratory interventions (e.g. PAP therapy, supplemental oxygen)
  - Clinical care
Individual Patient Risk

- All hospitalized patients receiving IV or neuraxial opioids for acute pain management are at risk of opioid induced advancing sedation and respiratory depression.
- Some patients are at higher risk

Risk Stratification Recommendations

1. Comprehensive assessment of level of individual risk at preadmission, admission, and pre-opioid therapy should be performed to identify existing conditions, disease states, and other factors that may place patients in the higher risk category.
2. Ongoing reassessment of level of risk should occur over the continuum of care.

3. Interdisciplinary individualized plans of care that reflect the patient’s level of risk should be developed or adjusted at the time of assessment.
4. Both electronic medical record and verbal communication of level of risk and increased requirement for monitoring should occur over the continuum of care especially at hand-off and during transitions of care.
## Risk -- Categories

### Not Modifiable by the healthcare team
- Individual Risks

### Modifiable by the healthcare team
- Clinical surgery
- Clinical Setting Risks
- Pharmacologic

### NON-MODIFIABLE RISK FACTORS

#### Individual Risk Factors (if present indicate patient meets criteria for being at HIGHER Risk)
- Obesity
- Obesity Hypoventilation Syndrome
  - BMI > 30 kg/m²
  - ABG PaCO₂ > 45 mmHg (normal 35-45) OR
  - Serum HCO₃ > 27 mmol/L [without other cause of metabolic alkalosis]
- Known or suspected sleep-disordered breathing
  - STOP-BANG total score > 3
- Diagnosis of obstructive or central sleep apnea
- Pre-existing pulmonary or cardiac disease (should we consider using Charleston Co-morbidity Index)
- Medical necessity for supplemental oxygen
- Renal or hepatic impairment (albumin level < 30 g/L and/or blood urea nitrogen > 30 mg/dL)
- ASA Class > 2
- Substance Use Disorder (tobacco, ETOH, opioid, illicit substances)
- Physical Function (limited mobility)
- ASA Physical Status Classifications and Examples

<table>
<thead>
<tr>
<th>ASA Physical Status Classifications and Examples</th>
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<tr>
<td>ASA I A normal, healthy patient Healthy, nonsmoking, no or minimal alcohol use</td>
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<tr>
<td>ASA II A patient with mild systemic disease Mild diseases only without substantial functional limitations. Examples include (but not limited to): current smoker, social alcohol drinker, pregnancy, obesity (BMI &gt; 30), DM/HTN, mild lung disease</td>
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<td>ASA III A patient with severe systemic disease Substantial functional limitations, one or more moderate to severe diseases. Examples include (but not limited to): poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥ 40), active hepato, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD, undergoing regularly scheduled dialysis, premature (&lt; 60 wk) or ASA-60 wk, history of MI, CVVH, TIA or CAD events</td>
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<td>ASA IV A patient with severe systemic disease that is a constant threat to life Examples include (but not limited to): recent (&lt; 3 mo) MI, CVVH, TIA or CAD events, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, septic, DIC, ARF, or ESRD not undergoing regularly scheduled dialysis</td>
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<td>ASA V A moribund patient who is not expected to survive without the operation Examples include: (but not limited to) respiratory failure, shock, tumor, macroscopic trauma, intracranial bleed, or hepatic failure or significant cardiac pathology or multiple organ/system dysfunction</td>
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<td>ASA VI A declared brain-dead patient whose organs are being removed for donor purposes</td>
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ASA, American Society of Anesthesiologists; BMI, body mass index; DM, diabetes mellitus; HTN, hypertension; MI, myocardial infarction; PCA, postconceptual age; PS, physical status; TIA, transient ischemic attack; CVVH, continuous veno-venous hemofiltration; ARF, acute renal failure; DIC, disseminated intravascular coagulation; CAD, coronary artery disease; ESRD, end-stage renal disease.
Type of opioid
Recommendations

1. All patients (opioid naive or tolerant) receiving continuous or intermittent intravenous or neuraxial opioid medications for the treatment of acute pain should be considered at risk for advancing sedation and respiratory depression.

Type of opioid
Recommendations

2. All patients on any formulation of opioid medications should be assessed for opioid induced advancing sedation and respiratory depression at peak effect and every 2.5 hours for the first 24 hours after surgery or the initiation of opioid therapy.
Type of opioid

Recommendations

3. Pain management should incorporate opioid dose sparing strategies such as multimodal pain management. Strategies should be initiated and adjusted early in the course of treatment as well as throughout the continuum of care.

Type of opioid

Recommendations

4. Increased vigilance (assess at peak effect and within 2.5 hours of each dose) and re-addressing plan for monitoring should occur when administering agents that have the potential for additive or synergistic sedating effects when combined with opioids (e.g., gabanoids, antihistamines, hypnotics, antiemetics, and benzodiazepines).

Presence of respiratory intervention

Recommendations

1. In patients with medically necessary supplemental oxygen can obscure pulse oximetry readings and as a result the use of capnography or minute ventilation should be considered.

2. The use of supplemental oxygen therapy should be evidence based, patient specific and not routine.
Presence of respiratory intervention
Recommendations

3. The interface used with positive airway pressure (PAP) devices interferes with accurate and comfortable application of capnography cannulas. The use of continuous pulse oximetry or minute ventilation monitoring is recommended for patients using PAP therapies.

Clinical care
Recommendations

1. Safe staffing practices should be determined by state boards of nursing regulations and/or mandates, acuity classification systems or criteria, evidence-based staffing guidelines, and staffing guidelines promulgated by professional nursing organizations to adhere to defined standards of care
2. Consideration of patient acuity and nurse competencies should determine patient assignment and staffing practices.

Determining Timing, Nature and Frequency of Monitoring

- The process of assessing best monitoring practices involves ongoing assessment for increased risk and increasing intensity and nature of monitoring according to patients' responses to clinical care.
Timing of Monitoring Recommendations

1. All patients receiving IV or neuraxial opioids for acute pain management should be assessed signs and symptoms of advancing sedation and respiratory depression at peak effect and every 2.5 hours for 24 hours after surgery or initiation/increasing dose of opioid therapy.

Timing of Monitoring Recommendations

2. Patients found to be at higher risk should receive continuous electronic monitoring with alarms thresholds set at individual criteria while on IV or neuraxial opioids for acute pain.

3. Additionally, patients should be assessed using a sedation scale and respiratory rate and quality at peak affect and every 2.5 hours for the first 24 hours of IV or neural axial opioid therapy for acute pain.

Nature of Monitoring
- Intermittent
  - Pulse oximetry
  - Respiratory rate and quality (rate, pattern, & sound)
  - Level of sedation
- Continuous
  - Pulse oximetry
  - Capnography
  - Minute Ventilation
  - Respiratory Rate Monitors
Nature of Monitoring Recommendation

1. The selection of the nature of monitoring should be chosen according to patient risk and in synergy with clinical care (e.g., if found at higher risk and uses PAP therapy, continuous pulse oximetry would be recommended, if patient is resistant to wearing capnography cannula, minute ventilation or pulse oximetry could be substituted).

Duration of Monitoring Recommendation

1. After the first 24 hours after surgery or initiation or increasing opioid therapy, the duration of monitoring should be individualized and reflect the patient's status and response to clinical care, and need for IV or neuraxial opioid therapy.

Education Recommendations

The education recommendations will reflect the current publication with revisions as needed.
Implementation Strategies
Revisions that will be added

1. Procedure for managing the sedating patient
2. Procedure for appropriate use of naloxone
3. Quality improvement with using tracking naloxone, RR teams, and/or adding sedation scale score (POSS)
4. TJC recommendations
5. How nurses can screen for OIRD using STOP-BANG and electronic monitoring in PACU
6. The use of technology does not replace the need for systematic nursing assessment and should not diminish staffing levels.