# Identifying and Managing Critical Situations in the PACU

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## Case Study

- 52 year old female having laparoscopic vaginal hysterectomy as outpatient surgery procedure:
- PACU admission… ongoing hourly assessments…
  - Unresponsive
  - Vital signs: T 37.3;HR 128; RR 8, B/P 82/48
  - Oxygenation – unable to obtain
  - Fentanyl 50 mcg given in the OR at the end of the case

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## Case Study

- 10 month old male having outpatient surgery excision and drain abscess of the neck:
- PACU admission… ongoing hourly assessments…
  - Unresponsive
  - Heart rate 132 beats per minute
  - Inspiratory stridor with chest retractions
  - Oxygenation 88% on 6 liters face mask
  - Fentanyl 10 mcg given in the OR at the end of the case

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## Case Study

- 38 year old male having outpatient thyroidectomy procedure
- History: Ht 5ft 9in Wt 118 Kg; Snores;
- PACU admission… ongoing hourly assessments…
  - Unresponsive
  - Vital signs stable
  - Oxygenation 90% on 6 liters face mask
  - Fentanyl 50 mcg given in the OR at the end of the case

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## Case Study

- PACU RN is called in at 0300 for a 28 yr old obese male who had an emergency lap cholecystectomy arrives in PACU with Anesthesia Provider who proceeds to give report to the nurse and tells nurse patient has low tolerance for pain.
- Patient complains of severe abdominal pain; medicated with 25 mcg Fentanyl q 5 minutes x 4… then Dilaudid 2 mg q 5 minutes x 5…
- PACU nurse calls report to inpatient at 0335
- Transfers patient to inpatient unit at 0349

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## Objectives

- Describe three patient risk factors related to respiratory emergency case studies.
- Discuss the management of surgical emergency case studies
- Analyze two neurologic case studies where patients decompensated in the PACU.

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## What Happened When It All Goes Wrong?

What are the most vulnerable times and Why?

*What are the most vulnerable high risk days? Why?

*What does the "Evidence" reveal when the most vulnerable times are for children… adults??

First 15 minutes during emergence

Weekends, nights, holidays – resources are limited… Evidence Based Outcomes

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## Critical Assessment Strategies

*Be Prepared for the <u>Unexpected!</u>*

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## Can You Identify Critical Patient Assessments?

A, B, C, D

Initial or Primary Assessment

- A Airway
- B Breathing
- C Circulation
- D Disability (neurologic)

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## Critical Thinking

- When using critical thinking, the nurse is expected to assess, identify, problem solve, develop ideas, and acquire knowledge and experience.
- Primary critical thinking is a method of problem-solving requiring reflective thinking. It is built on the nurse's ideas and value system and is purposeful, goal- directed with the intention of making decisions.

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## Critical Thinking

- Organized and prioritized
- Assesses systematically and purposefully and draws valid conclusions based up on presented evidence.

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## Thinking in Action: Clinical Grasp

- Older adult admitted to the Same Day Surgery PACU with Shivering at 0900.
- Anesthesiologist orders Demerol 25 mg IV
- T, B/P, Pulse and Respirations within normal
- Oxygen Saturation 95% with Face Mask 15 liters
- Patient denies having pain
- PACU RN charts "continues to shiver" 0915.
- Initial concerns??

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## Three Goals of Managing Respiratory Emergencies

- Respiratory Assessment:
  - Rise and fall of the chest
  - Bilateral breath sounds/24/min respiratory rate
  - Work of breathing/Labored/Stridor/Wheeze
- Intervention:
  - Oxygenation/Ventilation
- Management:
  - Airway patency/Effective respirations

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## Critical Thinking Skills

PeriAnesthesia Core Clinical Knowledge

- Synthesize assessment data.
- Understand mechanism of injury – surgical insult to body.
- Understand the effects of anesthesia.
- Understand pathophysiology patient's condition.
- Identify questionable presenting symptoms
- Apply to critical condition of the patient.

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## Critical Thinking Skills

Recognition and Management of Emergencies

- Airway patency (Anesthesia emergence)
- Respiratory distress (Risk factors/anesthesia)
- Circulatory compromise (Risk factors/bleeding)
- Cardiac failure (Risk factors, Current symptoms, functional reserve)
- Neuro deficits (Risk factors/Surgery/Anesthesia/ Opioids/Stroke)

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## Critical Assessments

### Anesthesia Considerations

- Type of Anesthesia
- Co-morbidities?
- Crash intubation?
- Length of Anesthesia
- EBL
- Fluid volume replacement/resuscitation
- Irrigations
- Urinary output (Very important –End Organ Perfusion!)

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## American Society of Anesthesiology ASA Physical Status Classification System

Important Assessment Criteria

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## History of ASA Physical Status Classification System.

The American Society of Anesthesiologists (ASA) chartered special committee in 1940-1941 "to examine, experiment, and devise statistic data in anesthesia to classify and grade patients"

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**History of ASA Physical Status Classification System.**

•Recognized as the first medical specialty to stratify risk.
•Mission to determine predictors for operative risk.

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**History of ASA Physical Status Classification System.**

- Committee members investigated:
- Recommended to standardize the classification system
- Define the physical status only.

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## Definitions of ASA Physical Classification Systems

ASA – I (Patients are considered normal and healthy)

ASA – II (Patients have mild to moderate systemic disease)

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## Definitions of ASA Physical Classification Systems

- ASA – III (Patients have severe systemic disease that limits activity, but not incapacity)
- ASA – IV (Patients have severe systemic disease that limits activity and is a constant threat to life) **PreOp nurses identify and manage care during/before transfer to OR)

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## Definitions of ASA Physical Classification Systems

- ASA – V (Patients are moribund and are not expected to survive more than 24 hours with or without surgery)
- ASA – VI (Patients are clinically dead and kept alive for organ harvesting)
- ASA – E (Emergency operation of any variety; used to modify one of the above classifications)

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| ASA Classification | | Examples: |
|---|---|---|
| ASA I | A normal healthy patient | Healthy; no smoking, no or very minimal drinking. |
| ASA II | A patient with mild systemic disease | Smoker; more than minimal drinking; pregnancy; obesity; well controlled diabetes, well controlled hypertension; mild lung disease. |
| ASA III | A patient with severe systemic disease, not incapacitating | Diabetes, poorly controlled hypertension; distant history of MI, CVA, TIA, cardiac stent; COPD, ESRD; dialysis; active hepatitis; implanted pacemaker; ejection fraction below 40%; congenital metabolic abnormalities. |
| ASA IV | A patient with severe systemic disease that is a constant threat to life | Recent history of MI, CVA, TIA, cardiac stent; Ongoing cardiac ischemia or severe valve dysfunction; implanted ICD; ejection fraction below 25%. |
| ASA V | A moribund patient who is not expected to survive without the operation | Ruptured abdominal or thoracic aneurism; intracranial bleed with mass effect; ischemic bowel in the face of significant cardiac pathology.. |
| ASA VI | A patient who has already been declared brain-dead and whose organs are being removed for transplant. | |
| The addition of an 'E' indicates emergency surgery. | | |

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## Critical Assessments

### Surgery Performed

- Major systems
  - Brain, Heart, Lung, Spine, Abdominal, Liver, Kidneys, Spleen
- Minor systems
  - Orthopedic
  - Soft tissue
  - Plastics

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## Medical History

- Allergies
- Medications
- Previous tetanus shot?
- Medical Illnesses - comorbidities
- Hospitalizations
- Sensory deficits
- NPO status

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## Malpractice Risk

- PACU nurses are at higher risk for malpractice suits than other nursing specialties
- Provide specialized nursing care to diverse patient populations in an environment of constant activity, high volume, rapid turnover, and intense pressure
- Nursing practice requires quick, effective life-saving interventions when emergencies occur

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## Science of Safety

### Culture of safety

- Agency for Healthcare Research and Quality: "Improving the *culture of safety* within health care is an essential component of preventing or reducing errors and improving overall health care quality." Studies have documented considerable variation in perceptions of ***safety culture***
- **Human factors:**scientific discipline concerned with the understanding of interactions among ***humans*** and other elements of a system, and the profession that applies theory, **principles**, data and methods to design in order to optimize **human** well-being and overall system performance
- ***Reporting Systems:*** A management *reporting* system is essentially a mechanism for monitoring the organizational structure, goals, and desired outcomes

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## Mitigating Malpractice Risk

- Knowing and practicing ASPAN's Standards & Recommended Guidelines
- Ensuring effective "Hand-Off" Reports
- Recognition of deteriorating physiologic conditions
  - Documenting factual assessments, interventions, and outcomes to interventions
- Adoption of well-designed policies for opioid administration (knowing peak action of medications)
- Advocating the use of the chain of command
- Objective and comprehensive documentation

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## What is you Perianesthesia Culture

### Nurses Under Time Constraint Pressures

- "Expedient Care?"
- Benchmarking length of stay
- Do you have supportive leadership… or are they about the metrics for performance
- Do you find yourself cutting corners… fudging assessments… putting fraudulent documentation (vital signs, times of med administration, patient responses….)

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## What is you Perianesthesia Culture

Nurses Who Experience Burnout

- Become apathetic
- Lose their passion for nursing
- Come to work for the money
- Leave unsafe work environment – high turnover of staff
- Experienced an ethical nursing practice encounter – dismissed as a "complainer" when reported to nursing leadership

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## Legal Implications

Important for the PACU Nurse to know:

- Standards of Care
  - Hospital & PACU Policies, Procedures, Protocols
  - ASPAN Standards & Recommended Guidelines
  - Regulatory Standards
- Basic "Elements of Negligence"
- Legal implications of practice

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## Standard of Care in Emergencies

- The PACU nurse is held to the same standard of care as any reasonably prudent PACU nurse would act in similar life-threatening emergent situations.

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## Elements of Negligence

- Duty
- Breach of Duty
- Causation
- Harm

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## Legal Implications

Important for the PACU Nurse to know:

- Demonstrating competent perianesthesia nursing practice
- Specialty PACUs who recover ICU patients
- Specialty Hospitals held to higher standard of nursing practice
  - Children's hospitals
  - Trauma hospitals
  - Orthopedic hospitals
  - Burn centers
  - Cancer centers

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## Legal Implications

Demonstrating competent perianesthesia nursing practice

- PreAdmission Testing Nurses at risk
  - Establishing baseline assessment data as well as communicating to the next level of care
- Preoperative/Prep nurses at risk
  - Establishing baseline assessment data as well as communicating to the next level of care
- Ambulatory surgery center nurses at risk

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## Does your PACU recover interventional procedures?

Competent in managing emergencies?

- Insertions of Central Lines
- Perfusion Complications
  - Orthopaedic, Orthospine, Vascular Procedures
- Cardiac Cath/Interventional Radiology Procedures
  - Bleeding from groin site
  - Recognition of serious dysrhythmias
  - Recognition of stroke/bleed

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## Neurological Changes

- Assessing level of consciousness is imperative!
- Most sensitive indicator Compare to baseline
- Assessing pupils
- Assessing sensor/motor
- Neuro surgery specific assessments and timely documentation
- Neurovascular surgery specific assessments and timely documentation

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## Knowing and Practicing ASPAN's Standards & Guidelines

PACU Phase I Assessment Criteria

- Respiratory (stability)
- Circulatory (stability)
- Neurological (LOC, Pupils, Sensory/Motor)
- Pain and Comfort
- Emotional comfort
- *Surgical/Procedural site and continued procedural site
  - End Organ Perfusion – transport/perfusion
- Documentation of nursing action/intervention with outcome

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## Why Improve Handoffs?

- High risk periods for miscommunication
- Associated with increased risk for patient adverse events.
- In a recent analysis of 240 malpractice cases involving medical errors, >66% involved teamwork breakdowns
  - errors due to hand offs were twice as prevalent among physician trainees.

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## Why improve postoperative hand offs?

Few examples from PACU events:

- Isolation status not reported to PACU so isolation precautions were not observed and other PACU patients were put at risk (multiple instances)
- Multiple reports of missing information issues prior to patient arrival, and after admission to unit.
- Missing information issues regarding future care plan

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## Risky Pratices

Culture of Anesthesia Handoffs

- Noisy
- Overlapping conversations
- Side conversations
- Completely unstructured
- Silos of care
- Lack of Teamwork

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# Creating the Culture of Safety: Safe Handoffs of Care

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# Are You At Risk: Chain of Command

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# Activating PACU Chain of Command

- Hospital/Facility Organizational Chart
- Hierarchical Reporting for Nursing Leadership and Medical Leadership
- Defining Roles and Responsibilities
- Identify respective nursing and physician pager numbers/ telephone numbers

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# Activating PACU Chain of Command

- Negotiating reasonable communication time-limits for response
  - Urgent (Deteriorating Conditions)
  - Emergent (Life-threatening Emergencies)
- Reviewing importance of the Activation of the Chain of Command with all stakeholders

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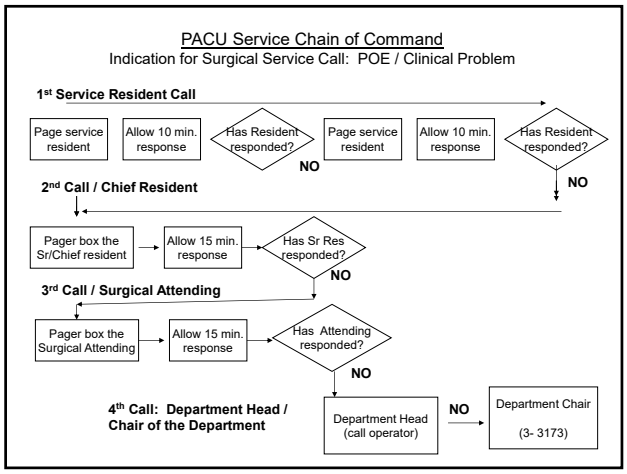


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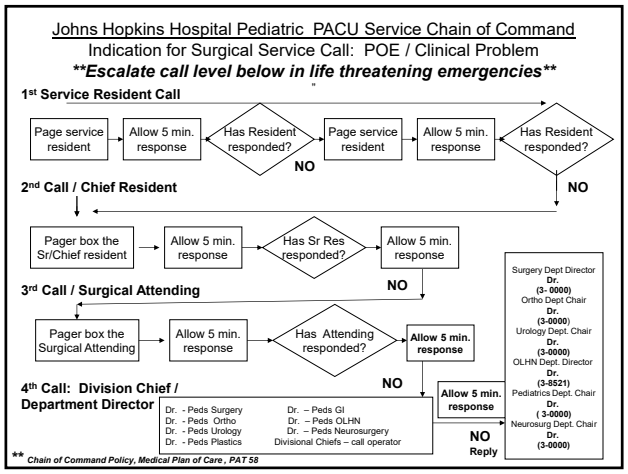


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## Critical Thinking Skills

- PeriAnesthesia Core Clinical Knowledge
  - Understanding the anesthesia agents and neurophysiology
  - Understanding the total surgical procedure
  - Understanding estimate blood loss, especially when irrigating surgical site.
  - Understanding patient's chief complains

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## Case Studies

- Deteriorating respiratory conditions
  - Patients with low oxygenation
  - Patients with stridor
  - Patients with apnea
- Deteriorating cardiac conditions
  - Hypotension
  - Signs and Symptoms of Shock
  - Symptomatic dysrhythmias
  - Life Threatening Emergencies
- Deteriorating neurologic conditions

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## Case Studies

- Deteriorating circulatory conditions
  - Patients with fast heart rate
  - Patients with considerable bleeding
  - Patients with no palpable pulses
  - Patients with obstructive shock
  - Patients with developing hematomas
- Deteriorating neurologic conditions
  - Change in Level of Consciousness
  - Change in motor or sensory conditions
  - Change in pupil size or responses

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## Case Studies

- Patients who have been administered frequent multiple doses of different opioids
- Patients who have downward trending oxygen saturations and hypotensive events
- Patients with low urinary output
- Patients who are discharged from the PACU with or without an anesthesia provider evaluation.

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## Importance of Documentation

- Understand the importance of documentation:
  - Descriptive words
  - Objective facts
  - Electronic documentation
  - Timing of events
  - Late PACU nursing entries
  - Experts at the bedside

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## Importance of Documentation

- Understand the importance of the timing of documentation:
  - Chronologic flow charts
  - Chronologic narratives
  - Emergency situations…. No time to document ?
  - Reconstructing time intervals
  - Be Ware of conflicting documentation, e.g. Flow charts/automatic self-populating data versus Narratives

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## Failure to Rescue

Creating a PACU Culture of Risk

- Lack of PACU nurse's attentiveness or ability to recognize early signs and symptoms of deterioration in the patient's condition.
- Failure to monitor – "Vulnerable Patient" Case
- Failure of the PACU nurse to do timely assessments/interventions.

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## Failure to Rescue

- Failure of the PACU nurse to activate the PACU Chain of Command.
- Only consulting the patient's anesthesia provider
- Acting to late to prevent harm or injury
  - Acting too late to prevent:
  - Respiratory Arrest
  - Cardiac Arrest
  - Neuro – Hypoxic Encephalopathy.

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## Case Study

- 47 year old female having outpatient surgery sinus endoscopy with antral window procedure:
- PACU admission… ongoing hourly assessments…
  - Unresponsive
  - Vital signs stable
  - Oxygenation 99% on 6 liters face mask
  - Fentanyl 50 mcg given in the OR at the end of the case

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## Case Study

- PACU RN is called in at 0300 for a 28 yr old obese male who had an emergency lap cholecystectomy arrives in PACU with Anesthesia Provider who proceeds to give report to the nurse and tells nurse patient has low tolerance for pain.
- Patient complains of severe abdominal pain; medicated with 25 mcg Fentanyl q 5 minutes x 4… then Dilaudid 2 mg q 5 minutes x 5…
- PACU nurse calls report to inpatient at 0335
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## Let's examine some important key safety concerns!

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## PACU Nurse's Ethical Responsibility

- Ensure patients meet discharge criteria when they are transferred to the next level of care!
- Elements of Negligence
  - Duty to the patient
  - Breach the duty to the patient
  - Causation
  - Harm

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## 2021-2022 ASPAN Standards

- "Sedation can occur at any time during opioid administration, however it can be more pronounced at the beginning and with subsequent increases in opioid dosing"
- "Level of opioid-induced sedation varies among patients, and influenced by doses, route of administration, patient's age, opioid tolerance, current medical condition and comorbidities"

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## 2021-2022 ASPAN Standards

- "It takes less opioid to produce sedation than to produce respiratory depression, which explains why increased sedation is commonly seen before the development of life-threatening respiratory depression."
- The opioids that are mainly used in the postanesthesia care unit (PACU) are morphine, hydromorphone (Dilaudid) and fentanyl

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## 2021-2022 ASPAN Standards

Background

- In 2001, the Joint Commission established assessment standards for pain management.
- There was a clinical emphasis for nurses to be aggressive in managing pain.
- Today, there is a new knowledge of the consequences of opioid use in the postanesthesia patient and the prevention of unwanted sedation.

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## 2001 The Joint Commission Established Standard

- Pain Management is a patient right
- Aggressive pain treatment suing opioids for post operative pain
- However over this past 10 years opioid only interventions have contributed to increased adverse events (excessive sedation and life-threatening respiratory depression
- Opioid adverse effects: dose-related
- Emphasis today is on multimodal analgesia

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## Are you practicing still practicing aggressive pain management in 2022?

Why timing is critical!

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## Purpose of PR11

- Promote identification of patients at high risk for opioid-induced sedation and respiratory depression before administration of opioid analgesics
- Enhance the assessment of sedation during opioid administration as a means of preventing life-threatening respiratory depression

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## Recommendations for Assessing and Screening Patients

### Individual patient risk factors

- Pre-existing pulmonary disease
- Known or suspected sleep-disordered breathing
- Anatomic or airway abnormalities
- Comorbidities
- ASA status greater than 2
- Obese or morbidly obese

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## Individual Patient Risk Factors

- Aged older than 55 years of age
- Preexisting pulmonary disease
  - Chronic obstructive pulmonary disease (COPD)
- Known or suspected sleep-disordered breathing
  - Obstructive sleep apnea; predictors for OSA
  - Central sleep apnea (medical conditions affect lung and heart; Medications depress CNS; >65 yrs of age

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## Individual Patient Risk Factors

- Anatomic airway abnormalities
- Comorbidities
  - Systemic disease
  - Renal or hepatic impairment
  - Preexisting cardiopulmonary disease
  - Dysrhythmias
  - Diabetes mellitus
  - Coronary artery disease
  - Hypertension

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## Individual Patient Risk Factors

- ASA Status greater than ASA II
- Obese or morbidly obese
- Obstructive Sleep Apnea

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## Type of Anesthesia

- General anesthesia increases risk for postoperative pulmonary complications
- Especially true for infants and Toddlers

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## Opioid-Induced Depression

- Pathophysiology of postoperative opioid-induced respiratory depression/respiratory failure
  1. Inadequate gas exchange
  2. Demand for oxygen exceeds supply
  3. failure of lungs to remove carbon dioxide

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## Opioid Sedation

Pharmacodynamics of specific opioids

1. Morphine
2. Fentanyl
3. Hydromophone

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## Additive Effect of Opioids + Sedatives + Anti-Emetics

- Morphine – End metabolites
- Fentanyl – 80-100 times more potent than morphine; No end metabolites
- Hydromophone (Dilaudid) 5-7 times more potent than morphine; No end metabolites
- Benzodiazapines
- Phenergan

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## *"The Best Evidence"*

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"Serial sedation and respiratory assessments ***are recommended*** to evaluate patient response during opioid therapy by any route of administration." [1] [Level 1]

- Regular sedation and respiratory assessments during wakefulness and sleep [1] [Level 1]
- Sedation scales with acceptable reliability & validity should be used. [1] [Level 1]
- Unwanted or advancing sedation from opioids is often a sign that the patient may be at higher risk for respiratory depression, suggesting the need for increased frequency of assessment of sedation levels and respiratory status. [1] [Level 1]
- "Respirations should be counted for a full minute and qualified according to rhythm and depth of chest excursion while the patient is in a restful/sleep state in a quiet unstimulated environment." [1] [Level 1]

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"Serial sedation and respiratory assessments ***are recommended*** to evaluate patient response during opioid therapy by any route of administration." [1] [Level 1]

- F. More vigilant monitoring of sedation and respiratory status should be performed when patients may be a greatest risk for adverse events:
  - i. Peak of medication effect [1] [Level 1]
  - ii. During the first 24 hours after surgery [1, 8] [Level 1; Level 3-c]
  - iii. After an increase in the dose of an opioid [1] [Level 1]
  - iv. Coinciding with aggressive titration of opioids [1] [Level 1]
  - v. Recent or rapid change in end-organ function (specifically hepatic, renal, and/or pulmonary) [1]
  - vi. When moving from one opioid to another or one route administration to another [1] [Level 1]
  - vii. Within the first 6 hours after anesthesia [8] [Level 3-c]
  - viii. During the hours of midnight to 6AM [8] [Level 3-c]

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## Determine Appropriate Patient Monitoring during Opioid Administration

- Hospital policies and procedures
- Use valid and reliable sedation scale to assess unwanted sedation
- Determine frequency, nature, duration, and intensity of monitoring based on individual and iatrogenic risks and response to opioid therapy
- Assess sedation during wakefulness and sleep

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## More Vigilant Monitoring When at Risk for Adverse Events

- Peak of medication effect
- During first 24 hours after surgery
- After increase in dose of opioid
- Coinciding with aggressive titration of opioids
- Recent or rapid change in end-organ function
- When switching from one opioid to another or one route of administration to another
- Within first 6 hours after anesthesia
- During the hours of 11pm to 7 am

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## Perform Individualized Discharge Assessment of the Postoperative Inpatient

- **Do not transfer PACU Patients** between levels of care near the peak effect of the opioid administration
  - What are the implications for your practice?
- Handoff communication
  - Communicate all pertinent patient individual and iatrogenic risk factors across all transitions of care from prehospital to discharge
  - Inform the receiving nurse of the patient's tolerance of opioid administration by reporting assessment findings

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## Case Study

- Priority of nursing interventions A –B – C - D
  - Airway -
  - Breathing –
  - Circulation –
  - Disability/Neuro
  - Request physician to stay and evaluate patient at bed bedside until critical elements are stable
  - Activate the Nursing and Medical Chain of Command
  - Document comprehensive assessments, interventions, responses, and outcomes

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## Case Studies

- Cervical Orthospine procedures with and without neck drains
- Thyroid procedures
- T&A Procedures
- Esophageal Dilatation Procedures

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## Summary

- Practice according to:
  - ASPAN Standards and Recommended Guidelines
  - Hospital/Unit Policies/Regulatory Standards*
- Advocate for effective communication during handoffs
- Remember not to be afraid to activate your nursing and medical chain of command
- Documentation should be factual, timely, and thorough according to ASPAN and Hospital Standards

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Be an Advocate:
Take Action Today
Be Prepared to Identify and Manage Critical Events!

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*Questions?*

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All but the following times place the perioperative patient at greatest risk for critical events?

- A. Nights
- B. Weekends
- C. Holidays
- D. Lunch times

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When is the most critical PACU time period for critical events?

- A. Discharge time
- B. Transfer from Phase I to Phase II
- C. During the emergence from anesthesia
- D. After administration of the first opioid

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What are examples of individual patient risk factors?

- A. Anatomic airway abnormalities
- B. Comorbidities
- C. ASA III – Physical Status Classification
- D. All of the above

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