Anesthetic Agents and Techniques

Objective
- Describe major anesthetic agents and techniques used in the perianesthesia setting

General Anesthesia
- Definition
  - controlled loss of consciousness
  - protective reflexes lost
  - sedation and analgesia
  - muscle relaxation
  - intravenous agents, inhalation agents, narcotics

ASA Classifications
- ASA 1
- ASA 2
- ASA 3
- ASA 4
- ASA 5
- ASA 6

Schedule
- 8:00 – 9:30am Anesthetic Agents and Techniques
- 9:30 – 9:45am Break
- 9:45 – 10:45am Moderate Sedation
- 10:45 – 12:00pm Legal Concepts and Potential Challenges in Perianesthesia Nursing
- 12:00 – 1:15pm Lunch
- 1:15 – 2:15pm Ethical Concepts and Potential Challenges in Perianesthesia Nursing
- 2:15 – 2:30pm Break
- 2:30 – 4:30pm ASPAN Standards and Implications for Perianesthesia Nursing
- 4:30 – 4:45pm Evaluations
General Anesthesia

- Stages
  - Stage I - Stage of Amnesia and Analgesia
  - Stage II - Stage of Delirium
  - Stage III - Stage of Surgical Anesthesia
  - Stage IV - Stage of Medullary Depression

Stage I - Stage of Amnesia and Analgesia

- Begins with initiation of anesthesia and ends with loss of consciousness
- Perception of pain is altered
- Can follow simple commands
- Cognition and memory not completely functional

Stage II - Stage of Delirium

- Begins with loss of consciousness / ends beginning of surgical anesthesia
- Ideally the duration and intensity of this stage is minimal
- Gag, swallow, blink reflexes present

Stage III - Stage of Surgical Anesthesia

- Extends from end of delirium to occurrence of apnea
- Further divided into four substages based on respiratory patterns, reflexes, and pupillary changes
- Most surgical procedures performed in this stage

Stage IV - Stage of Medullary Depression

- Begins with apnea and ends with circulatory collapse

Recovery and Emergence

- Occurs in the reverse order of induction
- Varies with type and duration of anesthesia, types of drugs administered, age of the patient, history of the patient, etc.
**Extubation Criteria**

- **Uncomplicated**
  - Intact gag or swallow reflexes
  - Adequate respirations
  - Sustains strong hand grasps
  - Eye opening
  - Sustained head lift
  - Temperature > normothermia

- **Complicated**
  - Tidal volume $\geq 7-10$ ml/kg
  - Vital Capacity $\geq 15$ ml/kg
  - Inspiratory force -25 to -50 cm H2O
  - Respiratory rate 12 - 24
  - Must also meet criteria for uncomplicated extubation

**Induction / Intravenous Agents**

- Barbiturates
- Nonbarbiturate Hypnotics
- Dissociative Agent
- Narcotics

**Induction / Intravenous Agents**

- Narcotic Antagonists
- Benzodiazepines
- Flumazenil (Romazicon)
- NSAIDS

**Barbiturates**

- Thiopental (Sodium Penothal)
  - Acts on Reticular Activating System
  - Elimination Hepatic
  - Maximum Dose 1 gram
  - No analgesic effect, Possible shivering
  - Possible histamine release, laryngospasm, bronchospasm, apnea

**Barbiturates**

- Methohexital (Brevital)
  - Ultra short acting
  - 2-3 times more potent than Thiopental
  - Dose - 1mg/kg IV
  - Onset - 20-40 seconds IV
  - Duration - 5-10 minutes IV
  - Elimination - Hepatic
Nonbarbiturate Hypnotics

- **Etomidate (Amidate)**
  - Quick onset, short acting
  - 6 times more potent than Thiopental
  - **Dose** - .2-.4 mg/kg
  - **Elimination** - Hepatic
  - Cardiovascular effects minimal
  - Decreases ICP, Venous Irritation

- **Propofol (Diprivan)**
  - Rapid distribution and elimination
  - **Dose** - varies with use
  - **Elimination** - Hepatic
  - Twice as potent as Thiopental
  - Stable only for 6 hours

Dissociative Agent

- **Ketamine (Ketalar)**
  - Rapid acting potent agent
  - May be used alone
  - Can be given IM or IV
  - **Dose** - .5-1mg/kg IV, 2.5-5mg IM
  - **Elimination** - Hepatic
  - Analgesia, anesthesia, amnesia

Opioids

- **Morphine**
  - Analgesia, euphoria
  - Histamine release
  - Emetic effect due to stimulation of crtz
  - **Dose** - 2-10 mg IV
  - **Elimination** - Hepatic
  - **Duration** - 2-7 hours

- **Fentanyl (Sublimaze)**
  - 80-100 times more potent than MS
  - Quick onset and short duration
  - **Dose** - 25-100 mcg IV
  - **Elimination** - Hepatic
  - Respiratory depressant; dose related

- **Sufentanil (Sufenta)**
  - 5-7 times more potent than Fentanyl
  - **Dose** - 10-30 mcg IV
  - **Elimination** - Hepatic
  - Respiratory depression
  - Increases effects of other CNS depressants
Opioids

- Alfentanil (Alfenta)
  - One third as potent as Fentanyl
  - Onset three times faster than Fentanyl
  - Dose - 250-500 mcg IV
  - Elimination - Hepatic
  - Rapid Recovery
  - Emetic effect

- Remifentanil (Ultiva)
  - Only used by anesthesia
  - Potential for severe respiratory depression

- Meperidine (Demerol)
  - 1/10 as potent as Morphine
  - Post operative shivering
  - Dose - 25-100 mg IV
  - Elimination - Hepatic
  - Duration - 2-4 hours

Opioids Antagonists

- Naloxone (Narcan)
  - Reverses narcotic depression
  - Dose - .1-2 mg
  - Elimination - Hepatic
  - Onset - 1-2 minutes
  - Peak - 5-15 minutes
  - Duration - 1-4 hours

- Nalmefene (Revex, Revia)
  - Opioid antagonist
  - Dose - 1 mg
  - Elimination - Hepatic and Renal
  - Nausea and Vomiting
  - Cardiovascular risks

Benzodiazepines

- Midazolam (Versed)
  - Amnesic
  - Commonly used for Conscious Sedation
  - Dose - .5-5mg IV
  - Elimination - Renal
  - Duration - 15-80 minutes
Benzodiazepines

- Diazepam (Valium)
  - Induces calming effects
  - Dose - 2-10 mg IV
  - Elimination - Hepatic
  - Duration - 15 minutes to 1 hour
  - Potentiated by opioids
  - Elimination reduced by Cimetidine

- Lorazepam (Ativan)
  - Relief of anxiety
  - Dose - 1-4 mg IV
  - Elimination - Hepatic / Renal
  - Duration - 6-10 hours
  - Possible hysteria, psychosis
  - Respiratory depression

Benzodiazepine Antagonist

- Flumazenil (Romazicon)
  - Reversal of benzodiazepines
  - Dose - 0.2-1 mg IV
  - Elimination - Hepatic
  - Onset - 1-2 minutes
  - Peak - 2-10 minutes
  - Duration - 45-90 minutes

NSAIDS

- Ketorolac (Toradol)
  - Analgesic, anti-inflammatory, and antipyretic effects
  - 30 mg IM = 9 mg Morphine in analgesic effects
  - Dose - 30 mg IV
  - Elimination - Hepatic / Renal

Inhalation Agents

- Nitrous Oxide
- Halothane (Fluothane)
- Enflurane (Ethrane)
- Isoflurane (Forane)
- Sevoflurane (Ultane)
- Desflurane (Suprane)
Minimum Alveolar Concentration (MAC)

- Inhaled anesthetic at 1 atmosphere that prevents movement in 50% of subjects in response to painful stimulus

Nitrous Oxide

- Onset - few minutes
- Peak - Dose dependent
- Elimination - Pulmonary, Renal
- Must be administered with oxygen
- Carrier for other inhalation agents
- Amnesia

Halothane (Fluothane)

- Onset - Dose dependent
- Elimination - Pulmonary, Hepatic, Renal
- Myocardial depression
- Increased ICP
- Bronchodilation
- Shivering

Enflurane (Ethrane)

- Onset - loss of eyelid reflex
- Elimination - Pulmonary, Renal, Hepatic
- CV stability
- Less nausea / vomiting
- May cause seizure activity

Isoflurane (Forane)

- Onset - few minutes
- Elimination - Pulmonary, Hepatic, Renal
- Little myocardial effect
- Shivering
- Pungent ether like odor

Sevoflurane (Ultane)

- Onset - loss of eyelid reflex
- Elimination - Pulmonary, Hepatic, Renal
- Rapid onset and recovery
- Minimal airway irritation…good anesthesia initiation with mask
Desflurane (Suprane)
● Onset - loss of eyelid reflex
● Elimination - Pulmonary, Hepatic, Renal
● Requires expensive vaporizer
● Respiratory irritant….coughing, breath holding, laryngospasm…..not recommended for use with pediatrics

Antiemetics

Antiemetics
● Ondansetron (Zofran)
● Prochlorperazine (Compazine)
● Droperidol (Inapsine)
● Metoclopramide (Reglan)
● Promethazine (Phenergan)

Ondansetron (Zofran)
● Onset - less than 30 minutes
● Peak - varies
● Duration - 12 to 24 hours
● Elimination - Hepatic

Prochlorperazine (Compazine)
● Onset - few minutes
● Peak - 15 to 30 minutes
● Duration - 3 to 4 hours
● Elimination - Hepatic

Droperidol (Inapsine)
● Onset - 3 to 10 minutes
● Peak - 30 minutes
● Duration - 2 to 4 hours
● Elimination - Hepatic, Renal
Metoclopramide (Reglan)
● Onset - 1 to 3 minutes
● Duration - less than 1 hour
● Elimination - Renal

Promethazine (Phenergan)
● Onset - 2 to 5 minutes
● Peak - less than 2 minutes
● Duration - 2 to 8 hours
● Elimination - Hepatic

Additional Antiemetics
● Dolasetron mesylate (Anzemet)
● Isopropyl Alcohol
● Other

Histamine H2 Blockers
● Cimetidine (Tagamet)
● Ranitidine (Zantac)
● Famotidine (Pepcid)
  – Neutralizes gastric pH

Muscle Relaxants and Reversal Agents

Physiology of Neuromuscular Junction
● Nerve impulse - acetylcholine released - crosses synaptic cleft - binds to nicotinic receptors on motor endplate - depolarizes muscle
**Physiology of Neuromuscular Junction**

- Acetylcholine dissociates from receptors - hydrolyzed by acetylcholinesterase - repolarization of muscle

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**Muscle Relaxants**

- Depolarizing
- Nondepolarizing

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**Depolarizing Muscle Relaxants**

- Mimics acetylcholine - attaches to receptor - depolarizes muscle
- Hydrolysis by the enzyme cholinesterase

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**Depolarizing Muscle Relaxants**

- Cholinesterase deficiency - acetylcholine not destroyed....continued block
- Not reversible by any agent.....only time

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**Depolarizing Muscle Relaxants**

- Succinylcholine (Anectine, Quelicin)
  - Mimic action of acetylcholine
  - Rapid induction within one minute
  - Rapid recovery 4 - 6 minutes

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**Depolarizing Muscle Relaxants**

- Disadvantages
  - MH Trigger
  - No Antagonist
  - Muscle Pain
Nondepolarizing Muscle Relaxants

- Compete with acetylcholine at myoneural junction
- Reversal Agents available

Nondepolarizing Agents

- Long Acting
  - Pipercuronium Bromide (Arduan)
  - Pancuronium (Pavulon)
  - Metocurine (Metubine)
  - Tubocurarine (Curare, dTC)
  - Gallamine (Flaxedil)
  - Doxacurium (Nuromax)

Nondepolarizing Agents

- Long Acting
  - Onset - 3 to 5 minutes
  - Duration - 60 to 100 minutes
  - Intermittent Dosing

Nondepolarizing Agents

- Intermediate Acting
  - Vecuronium (Norcuron)
  - Atracurium (Tracrium)
  - Rocuronium (Zemuron)
  - Cistatracurium (Nimbex)

Nondepolarizing Agents

- Intermediate Acting
  - Onset - 2 to 3 minutes
  - Duration - 20 to 45 minutes
  - Intermittent dosing
  - Intraoperative infusion
  - Reversible

Nondepolarizing Muscle Relaxants

- Reversal
  - Pharmacologic
  - Spontaneous
  - Faster in children
NDMR Reversal Agents

Anticholinesterases
- Edrophonium Chloride (Tensilon)
- Neostigmine Bromide (Prostigmine)

Anticholinergics

Edrophonium Chloride (Tensilon)
- Onset - 30 to 60 seconds
- Peak - 1 to 5 minutes
- Duration - 5 to 20 minutes
- Elimination - Hepatic, Renal

Neostigmine Bromide (Prostigmine)
- Onset - less than 3 minutes
- Peak - 3 to 14 minutes
- Duration - 40 to 60 minutes
- Elimination - Hepatic, plasma esterases
  - Usually drug of choice
  - Long duration and reliability

Anticholinergic Agents

Glycopyrrolate (Robinul)
- Onset - less than 1 minute
- Peak - 5 minutes
- Duration - 2 to 3 hours
- Elimination - Renal, Hepatic
- Anticholinergic of choice
- Less tachycardia

Atropine

*** Counteract adverse effects of anticholinesterases

Glycopyrrolate (Robinul)
Atropine

- Onset - 45 to 60 seconds
- Peak - 2 minutes
- Duration - 1 to 2 hours
- Elimination - Hepatic, Renal

Regional Anesthetic Agents and Techniques

Local Anesthetic Agents

- Esthers
- Amides
- With Epinephrine

Local Anesthetic Agents

- Esthers
  - Metabolized by plasma cholinesterase

Local Anesthetic Agents

- Amides
  - Metabolized by liver enzymes

Local Anesthetic Agents

- Epinephrine added
  - Increased duration of action
**Local Anesthetic Agents**

**Esters**
- Cocaine
- Procaine (Novocain)
- Tetracaine (Pontocaine)
- Chloroprocaine (Mesacaine)

**Amides**
- Lidocaine (Xylocaine)
- Bupivicaine (Marclaine, Sensorcaine)
- Mepivacaine (Carbocaine)
- Etidocaine (Duranest)
- Ropivacaine
- Prilocaine (Citanest)

**Eutectic Mixture of Local Anesthetics (EMLA)**
- Developed in 1984
- Topical
- Venipuncture, IV's
- Must be applied a minimum of 1 hour before

**Regional Anesthesia**
- Local Anesthesia
- Surgical Anesthesia
- Postop Analgesia
- Acute / Chronic Pain Management

**Regional Anesthesia Techniques**
- Spinal, Epidural, Caudal
  - Spinal cord ends at L2
  - Interspace between L3 - L4, L4 - L5, most commonly used

**Eutectic Mixture of Local Anesthetics (EMLA)**
- Local Anesthesia
- Surgical Anesthesia
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**Regional Anesthesia Techniques**
- Spinal, Epidural, Caudal
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  - Interspace between L3 - L4, L4 - L5, most commonly used
Epidural Anesthesia

- Can be injected into lumbar or thoracic epidural space

Loss of Function

- Autonomic or sympathetic functions first (vasomotor, bladder control)
- Sense of temperature
- Pain
- Touch
- Movement
- Proprioception (sense of body location)

Dermatomes

- Used to determine level of block
- Access level using a sharp, dull, or cold test items

Dermatomes

- Reference points
  - Nipples T4
  - Xyphoid T6
  - Navel T10
  - Groin L1
  - Knees L4

Spinal / Epidural

- Contraindications
  - Patient refusal
  - Coagulation defect
  - Infection at site of block
  - Neurological Disease
  - History of back pain or surgery

Spinal / Epidural

- Complications (Immediate)
  - Hypotension
    - Treat with fluids
    - Ephedrine
  - High spinal anesthesia with ventilatory inadequacy
  - Nausea
**Spinal / Epidural**
- Complications (Delayed)
  - Post dural puncture headache
  - Back Pain, Urinary retention
  - Neurologic Injury
    - Spinal cord ischemia
    - Needle trauma

- Complications (severe)
  - Hematoma
  - Infection / Abscess
  - Cardiac arrest

**Peripheral Nerve Block**
- Minimal physiologic changes
- Used alone
- Supplement to general anesthesia
- Postop analgesia

**Peripheral Nerve Block**
- Commonly used for surgery of head, neck, upper extremities
- Difficult and time consuming
- Sedation makes more tolerable

**Peripheral Nerve Block**
- Peribulbar / Retrobulbar
  - Brachial Plexus
  - Cervical Plexus
  - Digital
  - Intercostal
  - Ilioinguinal & Iliohypogastric
  - Femoral

**Peribulbar / Retrobulbar**
- Immobilizes eye
- Eliminates sensation
- Corneal, anterior chamber, and lens procedures
Brachial Plexus
- Procedures of upper extremities
- Shoulder and hand
- Approaches
  - Interscalene
  - Supraclavicular
  - Axillary

Brachial Plexus
- Complications
  - Interscalene: Horner’s Syndrome
  - Supraclavicular: Pneumothorax
  - Axillary: Hematoma, Intravascular Injection

Cervical Plexus
- Commonly used for neck procedures
- Commonly used for supraclavicular procedures

Cervical Plexus
- Complications
  - Vertebral artery injection
  - Phrenic nerve block
  - Laryngeal nerve block

Digital
- Commonly used for repair of lacerations
- Postop analgesia

Intercostal
- Pain Relief
  - Rib fracture
  - Subcostal incisions
  - Intercostal incisions
- Complications
  - Intravascular injection
  - Pneumothorax
### Ilioinguinal & Iliohypogastric
- Commonly used for
  - Herniorrhaphy
  - Postop pain control
  - Supplement general anesthesia

### Femoral
- Commonly used for lower extremity procedures, below the knee
- Postop pain control

### Transversus Abdominis Plane (TAP) Block
- Single entry point
  - Triangle of Petit
- Access a number of abdominal wall nerves
  - Providing more widespread analgesia
- Ultrasound guided TAP block
  - Better localization and deposition of the local anaesthetic with improved accuracy

### Local Anesthetic Blocks
- Intravenous (Bier Block)
- Infiltration
- Field Block
- Topical

### Intravenous (Bier Block)
- Venous exsanguination of limb...tourniquet placement...large volume of dilute local anesthetic
- Procedures of forearm, hand
- Complication
  - Premature deflation of tourniquet

### Local Anesthetic Blocks
- Local Infiltration
  - Direct into tissue
- Field Block
  - Into surrounding tissues
- Topical
  - Direct into skin, mucous membranes, urethra, nose, pharynx
Complications
Malignant Hyperthermia

Management of MH Crisis
- Dantrolene (Dantrium)
  - Supplied in 20mg Vials
  - Reconstitute with 60cc Sterile water
  - Shake Vigorously
  - Approximately $65 per vial
- Recommended Dose 2.5 mg / kg
  - Total Dose 10 mg / kg

Management of MH Crisis
- Revonto (dantrolene sodium for injection)
  - 20 mg per vial
  - 60 ml sterile water

Management of MH Crisis
- Ryanodex (dantrolene sodium for injection)
  - Faster reconstitution
  - Each vial 250 mg of dantrolene sodium and requires 5 ml of sterile water for reconstitution
  - Approximately $2300 per vial

Objective
- Discuss nursing priorities during of moderate sedation

Moderate Sedation
MAC Anesthesia

- MAC
  - Monitored Anesthesia Care
  - Administered by anesthesia provider
  - All IV anesthesia
  - Patient able to maintain own airway
  - Many types of agents available

Moderate Sedation

- Moderate Sedation
  - Definition
    - Minimally depressed level of consciousness in which the patient retains the ability to maintain a patent airway independently and continuously, and is able to respond appropriately to verbal commands
  - Administered by a non-anesthesia provider who has received special training
  - Patient able to maintain own airway
  - Limited agents available for use
  - State laws can vary

Goals of Moderate Sedation

- Minimal physical discomfort and pain
- Minimal psychological response to treatment and potential for amnesia
- Patient Safety
  - maintain adequate sedation with minimal risk and a rapid return to a state of consciousness in which safe discharge is possible

Continuum of Sedation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Minimal Sedation</th>
<th>Moderate Sedation</th>
<th>Deep Sedation</th>
<th>General Anesthesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsiveness</td>
<td>Normal response</td>
<td>Purposeful response to verbal or tactile stimulus</td>
<td>Purposeful response following repeated or painful stimulus</td>
<td>Unarousable even with painful stimulus intervention often required</td>
</tr>
<tr>
<td>Airway</td>
<td>Unaffected</td>
<td>No intervention required</td>
<td>Intervention may be required</td>
<td>Frequently inadequate</td>
</tr>
<tr>
<td>Spontaneous</td>
<td>Unaffected</td>
<td>Unaffected</td>
<td>May be inadequate</td>
<td>Inadequate</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Unaffected</td>
<td>Usually maintained</td>
<td>Usually maintained</td>
<td>May be impaired</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Unaffected</td>
<td>Usually maintained</td>
<td>Usually maintained</td>
<td>May be impaired</td>
</tr>
</tbody>
</table>

Joint Commission Standards

- The standards for sedation and anesthesia care apply when patients in any setting receive, for any purpose, by any route

Presedation Assessment

- Identifies factors that may alter drug dosage or increase risk of aspiration, such as airway malformations or underlying cardiac, pulmonary or neurologic conditions
- Provides baseline vital signs
- Used to select and plan sedation care
### ASA Physical Status Classification
- **Class 1** – normal healthy
- **Class 2** – patient with well-controlled systemic illness but without functional restrictions
- **Class 3** – patient with significant degree of systemic effects that limits activity
- **Class 4** – patient with severe systemic illness associated with significant dysfunction and a constant potential threat to life
- **Class 5** – patient in critical condition, who is at substantial risk of death within 24 hours with or without operative procedure

### NPO Status
- Fasting is necessary prior to sedating patients to reduce the risk of aspiration of stomach contents
- Pulmonary aspiration is not limited to patients who are deeply sedated or anesthetized
- It can occur in any patient whose underlying medical condition or administered drug results in loss of consciousness and/or protective reflexes

### Pharmacologic Profile
- **Benzodiazepines**
  - **Opoids**
  - Administration Techniques
    - Titration to Clinical Effect Technique
    - Bolus Technique
- **Benzodiazepine Receptor Antagonist**
- **Opioid Receptor Antagonist**

### Benzodiazepines
- Bind to specific receptor sites (GABA) in the cerebral cortex which inhibits excitatory impulses
- Hepatic metabolism/ Renal Excretion
- Excellent sedative
- Skeletal muscle relaxation
- Anxiolysis
- Anterograde amnesia
- Minimal hemodynamic effects
- Depresses ventilatory response to CO2

### Midazolam (Versed®)
- Initial dose: 1-2.5 mg IV over 5 minutes.
- Incremental dose: 0.5 – 1 mg IV
  - Allow at least 2 minutes between doses to assess patient effect.
- Maximum dose: 0.1 mg/kg
- Onset of action: 1-5 min
- Peak: immediate
- Duration of action: typically 30-40 minutes but may be up to 6 hours in elderly and obese patients

### Diazepam (Valium®)
- Initial dose: 1.5-2.5 mg IV over 1 minute
  - Repeat dosages 5 minutes apart
- Incremental dose: 1-2 mg IV
- Maximum dose: 0.1-0.2 mg/kg
- Onset of action: 1-2 min
- Peak: 3 – 5 minutes
- Duration of action: 4-5 hours
- Half-Life: Equal to patient’s age in hours
**Opioids**
- Elevate pain threshold
- Produce sedative effect
- Have no amnestic properties
- Decrease respiratory rate and volume
- Increase CO2

**Morphine Sulphate**
- Initial dose: 1-2 mg IV
  - Repeat dosages 5 minutes apart
- Incremental dose: 1-2 mg IV
- Maximum dose: 0.1-0.15 mg/kg
- Onset of action: 5 - 10 min
- Peak: 20 minutes
- Duration of action: 4 hrs
- Can cause histamine release in some patients

**Fentanyl**
- Initial dose: 1 – 1.5 mcg/kg IV
  - Repeat dosages 3 minutes apart
- Incremental dose: 1 mcg/kg IV
- Maximum dose: 2 mcg/kg IV
- Onset of action: 1 – 2 minutes
- Peak: 3 – 5 minutes
- Duration of action: 30 – 60 minutes
- 100 times more potent than morphine

**Meperidine (Demerol®)**
- Initial dose: 12.5 - 25 mg IV over 1 min
  - Repeat dosages 5 minutes apart
- Incremental dose: 5 - 10 mg IV
- Maximum dose: 1 mg/kg
- Onset of action: 1 - 5 min
- Peak: 5 – 7 minutes
- Duration of action: 2-4 hrs
- 1/10th as potent as Morphine

**Propofol**
- Controversies surrounding non-anesthesiologist administered propofol
- The use of propofol by non-anesthesiologists is off-label
- Practitioners administering propofol need to be prepared to manage adverse events
- Sedation-related complications appear to decrease with advanced experience-level (≥ 100 NAPS procedures)

**ASA Statement on Safe Use of Propofol (2009)**
- Non-anesthesia personnel who administer propofol should be qualified to rescue patients whose level of sedation becomes deeper than initially intended
Benzodiazepine Receptor Antagonist - Flumazenil

- 0.2 mg (2ml) IVP over 15 seconds. Wait 45 seconds (total time-frame = one minute). If desired level of consciousness not obtained, may be repeated up to four times at 60 second intervals with a maximum dose of 1 mg.
- Onset: 1-2 minutes
- Peak: 6-10 minutes
- Duration: 45-90 minutes
- Should not be given to patients on chronic benzodiazepine therapy

Opioid Receptor Antagonist - Naloxone

- 0.1-0.2 mg IVP
  - Repeat dose every 2-3 minutes to the desired degree of reversal
- Onset: 2 minutes
- Peak: 5-15 minutes
- Duration: 30-45 minutes
- Naloxone can also eliminate the analgesic effects of the opioid

Procedural Patient Monitoring

- Sedation Scale
- Pulse Oximetry
- Capnography
- Non-Invasive Blood Pressure
- Electrocardiogram
- Bispectral Index

Sedation Scales

- Ramsay Scale
- Modified Observer’s Assessment of Alertness and Sedation (MOAA/S)
- UMSS (University of Michigan Sedation Scale)
- RASS (Richmond Agitation Sedation Scale)
- POSS (Pasero Opioid Induced Sedation Scale)
**Pulse Oximetry**
- Provides estimation of arterial oxyhemoglobin saturation
- A saturation of 90% is equivalent to arterial oxygen blood gas of 60 torr
- Doesn't provide information on patient's ventilatory status

**Capnography**
- Carbon dioxide
- Reflects ventilation
- Hypoventilation & apnea detected immediately
- Reflects change in ventilation within 10 seconds
- Should be used with pulse oximetry

**Non-Invasive Blood Pressure**
- Moderate Sedation
  - Monitor and record blood pressure presedation and every 15 minutes during procedure
- Deep Sedation
  - Monitor and record blood pressure presedation and every 5 minutes during procedure

**Electrocardiogram**
- Deep Sedation
  - Continuous EKG monitoring
- Moderate Sedation
  - Patients with significant cardiovascular disease
  - During procedures in which dysrhythmias are anticipated
  - If the observer cannot directly see the patient (e.g., some radiological procedures)

**Bispectral Index**
- Directly assesses a patient's level of consciousness by measuring the effects of anesthesia on the brain
- BIS index ranges from 0 to 100, with 70 to 90 indicating moderate sedation, and 60 to 69 indicating deep sedation.

**Differential Diagnosis and Treatment of Complications**
- Restlessness
- Hypotension
- Hypertension
- Dysrhythmias
- Respiratory Depression
Restlessness
- Hypoxemia
- Pain
- Hypotension
- Bladder distension
- Hypothermia
- Hypercarbia
- Psychotropic effects of sedative medications

Hypotension
- Decreased preload
  - Hypovolemia from prolonged fasting or inadequate fluid replacement
  - Excessive urinary losses, bleeding
  - Peripheral vasodilation
- Effects of sedatives and opioids
- Decreased myocardial contractility
- Orthostatic effects of progressive ambulation

Hypertension
- Pain, surgical stimulation
- Hypoxemia
- Bladder distension
- Vasoconstriction, shivering due to hypothermia
- Preexisting disease
- Hypercarbia
- Retching or vomiting
- Fluid overload

Dysrhythmias
- Pain
- Hypoxemia
- Procedural myocardial infarction
- Catecholamine release
- Metabolic changes
- Preexisting disease
- Hypercarbia
- Electrolyte imbalance

Respiratory Depression
- Obstructed airway
- Splinting secondary to pain
- Pulmonary congestion
- Positioning, especially the obese
- Mechanical failure of the equipment
- Preexisting disease

Airway Management
- Management of Airway Obstruction
- Oxygen Delivery Devices
  - Cannulas
  - Face Masks
- Emergency Management
  - Bag-Mask Devices
  - Intubation Preparation
  - Suction
Postsedation Patient Care

- Patient Assessment / Management
- Teaching and Follow-up
- Discharge Criteria

Patient Assessment & Monitoring

- Ensures the return of physiologic function before discharge or return to the inpatient setting
- Mechanisms must be in place to assess home readiness
- Monitoring continues at least every 15 minutes for 30 minutes following the last dose of medication
- If a reversal agent was given, monitoring continues for at least 2 hours to ensure that resedation doesn’t occur

Teaching & Follow-Up

- Should be done in the presence of the responsible adult assuming the care of the patient on discharge
- Written instruction should include information about the procedure, medications, homecare instructions and follow-up care
- Emergency contact information should be included for family member
- Follow-Up gives the nurse the ability to receive direct feedback on complications and return to function

Discharge Criteria

- Specific criteria must be met prior to the patient being returned to a nursing unit or sent home with a family member
- If patient does not achieve that score, the physician must be notified for further orders. Assesses return to presedation levels of consciousness
- Intact airway reflexes
- Return to baseline vital signs
- Return to baseline movement or ambulation

South Carolina BON

Administer agents intravenously for sedation

- May not administer agents used primarily as anesthetics or induction agents
  - Ketamine, Propofol, Etomidate, Sodium Thiopental, Methohexital, Fentanyl*, all extrapotent opiates, nitrous oxide, or inhalation agents
  - For situations requiring the immediate facilitation of airway management (intubation), the RN may administer IV agents if a qualified provider is immediately present and available if needed to secure the airway
- *RN may administer Fentanyl by bolus if s/he has successfully completed a course in ACLS, PALS, or NRP - which establishes competency in airway management and resuscitation appropriate to the age of the patient. Certification has to be current.

South Carolina BON

Administer agents intravenously for sedation

- May not be authorized to manage deep sedation or anesthesia for short-term diagnostic, therapeutic, or surgical procedures
  - The Board recommends an educational credentialing mechanism which includes a process for evaluation and documenting the individual RN's competency relative to the management of the patient receiving intravenous sedation
  - Competency includes: BLS, monitoring parameters, dysrhythmias, airway management, oxygen delivery, and pharmacological actions of drugs and emergency drugs administered
  - This evaluation and documentation shall occur on a periodic basis
South Carolina BON

Office based surgery

- Sedation/analgesia or anesthesia must be administered or supervised only by a duly licensed, qualified and competent physician. CRNAs, AAs, or other qualified practitioners.
- A registered nurse or other licensed health care personnel practicing within the scope of their practice who is currently certified in advanced resuscitative techniques must monitor the patient postoperatively and have the capability of administering medications as required for analgesia, nausea/vomiting, or other indications.

Can a Registered Nurse (RN) administer propofol for moderate (conscious) sedation when used with FDA-approved technologies, across all practice settings, when under the prescriptive order of a licensed South Carolina Physician.

- The administration of propofol for the purpose of minimal to moderate (conscious) sedation when using a FDA-approved computer assisted personalized sedation system (CAPS) by a South Carolina professionally licensed RN under the direct supervision of a licensed SC MD, in a clinical or hospital setting, does not violate the SC Code of Laws even though the SCBON's Advisory Opinion and ASC Rule currently restricts the use of propofol administration by an RN.

Propofol continued

- Under SC law, there is no express prohibition against a RN administering propofol under the direction and supervision of a physician.
- Such practice is permitted under current state law; however, because of the dangerous and rapid potential effects of propofol, one must exercise extreme caution when administering the drug.
- Propofol is best administered in a clinical or hospital setting because close monitoring is imperative as a patient’s condition can change in a matter of seconds.
- Nurse’s administration of the drug and the patient’s response to it must be closely monitored by one trained in administering anesthetics, such as a physician, anesthesiologist, or nurse anesthetist.

Questions?

Legal Concepts and Potential Challenges in Perianesthesia Nursing

Objectives

- Review potential legal challenges of perianesthesia nursing.
Negligence Law

- Negligence
  Deviation from the standard of care that a reasonable person would use in a certain set of circumstances

- Malpractice
  (Professional Negligence)
  A type of negligence that involves a standard of care that can be reasonable expected from professionals, e.g. attorneys, nurses, physicians

Tort Law

- Includes negligence and professional negligence
- A tort is a wrongful act committed by one person against another person or against a property
- The purpose of tort law is to make the injured person whole again primarily through monetary compensation or damages
- Intentional Torts
- Quasi-intentional Torts

Torts

- Intentional
  - Intent is necessary and there must be a willful action against the injured person
  - Assault
  - Battery
  - False imprisonment

- Quasi-intentional
  - Intent is not as clear but voluntary act takes place and causes an interference with an individual's interest
  - Defamation
  - Breach of Confidentiality
  - Invasion of Privacy

Medical Malpractice

- Professional relationship
- Damages
  - Breach of duty
  - Causation

Professional Relationship

- Professional
- Implied
- Contractual
- Written

Damages

- Physical
- Financial
- Emotional
Breach of Duty
- Commission
- Omission

Causation
- Damage must be direct and proximate result of negligence

Legal Terminology
- Res Judicata
- Stare Decisis
- Respondeat Superior
- Charitable Immunity
- Res Ipsa Loquitor

Res Judicata
The thing has been decided

Stare Decisis
To stand by that which is decided

Respondeat Superior
Let the Master Speak
- Vicarious liability
- Borrowed servant doctrine
- Captain of the ship rule
Charitable Immunity
- Protection of charitable (non-profit) hospitals
- Immunity is never absolute
  - Negligent conduct can nullify the doctrine
    - Willful, gross, or reckless behaviors

Res Ipsa Loquitor
- The thing speaks for Itself

Common Nursing Allegations

Failure to Ensure Patient Safety
- Monitor in timely manner
- Provide assistance if ambulatory
- Safety rails / transport strap
- Use restraints appropriately

Failure to Ensure Patient Safety
- Maintain adequate staffing levels
- Clearly defined Policies and procedures
- Provide education on patient safety

Treatment
- Question treatments
- Proper technique
- Follow hospital policies and procedures
- Seek consultation
- Update skills through continuing education
**Failure to Monitor and Report**
- Follow orders regarding monitoring
- Report requested information or significant changes
- Appropriate and timely assessment
- Document

**Medication Errors and Reactions**
- Verify questionable orders
- Verify patient’s name before administration
- Listen to any patient objections
- Refer to resources (PDR, Pharmacist) for questions on dosage, side effects and reactions

**Medication Errors and Reactions**
- Clear policy on verbal, telephone and written orders
- Current references
- Education on new medications and their administration

**Failure to Follow Hospital Policy and Procedure**
- Know hospital’s procedures
- Discuss appropriate action with supervisor when deviating
- Advise appropriate persons of any necessary revisions

**Documentation**
- Document objectively / factually
- Time specific about performance, observations, assessments
- Document legibly, spell correctly
- Use approved abbreviations
- Corrections
- Transfer of care
- Discharge

**Equipment Use**
- Learn how to operate safely and appropriately
- Follow predetermined procedure in patient teaching
- Provide emergency back up for home care patients
- Have patients give return demonstrations
**Adverse Incidents**
- Complete appropriate documentation and notify appropriate individuals
- Do not assume, voice or record any blame for the incident
- Objective and factual

**Legal Issues**
- Informed consent
  - Surgery
  - Anesthesia
  - Blood
- Adult consent
- Minors consent
- Emancipated minors
- Witness to consent
- Emergency situations

**Advance Directives**
- Durable power of attorney
- Living will

**South Carolina BON**
**Pain Management 2009**
- SC licensed nurses and pharmacists as health care providers to work cooperatively and effectively to address the dimensions of pain and to assist with providing maximum pain relief measures with the least possible side effects

**South Carolina BON**
**Pain Management 2014**
- Describes regulations for chronic pain, acute pain and ER pain
- Acute pain
  - Clear policies
  - History
  - Assessment
  - Educate patient
  - Accurate records
  - Opioid and nonopioid medications
  - Instruct patient to take as prescribed

**South Carolina BON**
- RN to advance the endoscope while assisting the physician during an endoscopy procedures
- The Board of Nursing for South Carolina has determined that it is NOT within the role and scope of responsibilities of the RN to advance the endoscope during endoscopy procedures
<table>
<thead>
<tr>
<th>South Carolina BON</th>
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</thead>
<tbody>
<tr>
<td>RN to perform endotracheal intubation and/or insertion of a LMA in an emergency situation</td>
<td>RN - epidural, intrathecal or peripheral nerve</td>
</tr>
<tr>
<td>- BON SC - emergency endotracheal intubation and/or insertion of a laryngeal mask airway is within the role and scope of responsibilities of the RN and requires special education and training</td>
<td>- Administer medication (opiates, local anesthetics, steroids, alpha-agonist, or combinations thereof) to the epidural and intrathecal space and peripheral nerve with the use of an electronic pump, infusion reservoir or by direct re-bolus exclusive of the administration of the test dose or initial dose of medication to determine correct catheter or infusion device placement which is administered by the physician, certified registered nurse anesthetist or anesthesiologist</td>
</tr>
<tr>
<td>- responsibilities are an expanded role for the RN</td>
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<tr>
<td>- Written policies, procedures, and protocols should be developed which specify required special education and training</td>
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<tr>
<td>- Special education and training should include documented safety practices and other didactic material as well as clinical skill competency components</td>
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<tr>
<td>- Should specify patient situations whereby the RN is authorized to perform endotracheal intubation and/or insertion of a laryngeal mask airway</td>
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<thead>
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<tr>
<td>RN - epidural, intrathecal or peripheral nerve</td>
<td>RN with training and competency may assist the Anesthesiologist/ Certified Registered Nurse Anesthetist (CRNA) with the administration of a peripheral nerve block with the Anesthesiologist/ CRNA present and managing the needle placement</td>
</tr>
<tr>
<td>- RN with training and competency may assist the Anesthesiologist/ Certified Registered Nurse Anesthetist (CRNA) with the administration of a peripheral nerve block with the Anesthesiologist/ CRNA present and managing the needle placement</td>
<td>- Monitor, maintain, regulate, and/or terminate a continuous epidural, intrathecal or peripheral nerve infusion of medications (opiates, local anesthetics, steroids, alpha-agonist, or combinations thereof) as ordered by a physician, and within the established guidelines, policies, and procedures formulated with input and approval of licensed physicians, anesthesiologists, and/or certified registered nurse anesthetists</td>
</tr>
<tr>
<td>- RN may push the medication at the direction of the Anesthesiologist/ CRNA while the Anesthesiologist/ CRNA is holding and managing the needle placement</td>
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<thead>
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<tr>
<td>RN - epidural, intrathecal or peripheral nerve</td>
<td>Management and monitoring intrapartum epidural</td>
</tr>
<tr>
<td>- Attach infusion tubing and devices to epidural, intrathecal or peripheral nerve catheters in place (and placement verified), as ordered by physician and under the supervision of a licensed physician or certified registered nurse anesthetist</td>
<td>- Monitor the intrapartum patient receiving epidural anesthesia/analgesia provided a licensed physician, anesthesiologist and/or certified registered nurse anesthetist is present and responsible (IMMEDIATELY AVAILABLE ON SITE)</td>
</tr>
<tr>
<td></td>
<td>- Terminate an epidural infusion with immediate notification of the attending physician, certified registered nurse anesthetist or certified nurse midwife. This monitored care is only to be done following stabilization of vital signs after either bolus injection or establishment of continuous pump infusion by physician, anesthesiologist or certified registered nurse anesthetist</td>
</tr>
</tbody>
</table>
Management and monitoring intrapartum epidural
- The RN may replace empty infusion syringes or bags with prepared solutions provided that the solution is verified by a second licensed nurse
- RN MAY NOT
  - prepare solutions for infusion
  - alter the rate (increase or decrease)
  - inject the anesthetic/analgesic infusion
  - bolus the anesthetic/analgesic infusion
  - re-bolus the anesthetic/analgesic infusion
  - RN may not insert the catheter, position or reposition, or flush to maintain patency

RN to administer fentanyl IV for pain management
- RN who is not a qualified anesthesia provider CRNA, may give extra potent narcotics via IV PCA PUMP or patches to patients for pain control
  - Extra potent narcotics include but are not limited to fentanyl, sufentanyl, and others
- If critical care setting, these extra potent narcotics may be given by bolus injection
  - RN must have completed & have current ACLS, PALS, NRP
- In the hospital setting L & D unit, RN may administer fentanyl by IV bolus injection or IV PCA PUMP
  - must have completed & have current ACLS, PALS, NRP
- Monitoring Pulse Oximetry (SpO2) and Continuous Fetal Heart Rate when receiving fentanyl

Questions?

Ethical Concepts and Potential Challenges in Perianesthesia Nursing
Objective
● Describe potential ethical situations in perianesthesia practice

Ethics
● Study of standards of right & wrong
● System of conduct or behavior
● Moral principles

Ethics Definition
● Ethics is a discipline in which one attempts to identify, organize, analyze, and justify human acts by applying certain principles to determine the right thing to do in a given situation

ANA Ethical Premise for Nursing
● Help Regain Health
● Help Maintain Health
● Help Attain a Maximum Potential
● Help the Dying

Ethical Theories
● Act Utilitarianism (Teleological)
  – Focus on consequence of actions
  – Approach is to do good…
  – Provide the greatest amount of happiness for the greatest number of people
  – Least amount of harm to the greatest number of people.

Ethical Theories
● Libertarianism (Egoism)
  – Maintains focus on the individual person
  – Seeks a solution that is best for that person
  – Rights of each member of society are paramount
Ethical Theories

● Formalism (Deontological or Egalitarianism)
  – Focus centered on the **rules** that govern a situation
  – Democratic principles emphasized
  – Concepts of quality and comparable worth are most important
  – Universality is the major theme guiding the decision-making process

Ethical Theories

● Deontology
  – Ethical principles guide a nurse’s action not the consequences of the actions
  – Greek for duty
  – Ethical decisions based on duty of the nurse
  – Actions are based on moral beliefs or values
  – Actions result from the situation at hand
  – Actions are based on a duty to the patient
  – Actions are based on rules and standards
  – Rules and standards are fixed and inflexible
  – Actions are based on nursing standards of care and rules of law

Ethical Theories

● Humanitarianism (Fairness)
  – Focus of theory is concerned with the distribution of benefits and burden to society
  – Concepts of fair opportunity, basic needs, and individual needs are emphasized
  – Fairness may not be the same as equality

Ethical Theories

● Rawlsian
  – John Rawls
    – philosopher at Harvard University (1921-2002)
    – *A Theory of Justice*, Rawls describes his position on social justice and that the least advantage should not be excluded or harmed
    – Focus - least advantaged should not be hurt
    – Overriding principle is justice

Ethical Theories

● Naturalistic
  – Focus is “it is what it ought to be”
  – If you have a terminal illness you are meant to die
  – Major principle is utmost rationality

Ethical Theories

● Consequential
  – Focus is scientism
    – scientific and objective data guide the decision making process
    – No feelings enter into the equation
    – Basis is rationality
**Ethical Action**
- Controlling the means so they will serve human ends
- Involves conflict, choice, and conscience
- Choose between conflicting alternatives

**7 Essential Values**
- Altruism
- Equality
- Esthetics
- Freedom
- Human Dignity
- Justice
- Truth

**Ethical Actions in Nursing**
- International Council of Nurses
  - Code for Nurses
    - Fourfold Responsibility
      - To promote health
      - To prevent illness
      - To restore health
      - To alleviate suffering

**Ethical Principles**
- Beneficence
- Non-malificence
- Justice
- Integrity
- Autonomy
- Respect
- Double Effect
- Utility
- Loyalty
- Veracity

**Ethics Committee**
- Who can contact?
- Members of the committee
- Purpose of the committee

**Ethical Decision Making**
- Identify the Problem
- Examine the Ethical Problem
- Gather Objective and Subjective Data
- Look at Alternatives
- Study the Consequences of Alternatives
- Select the most appropriate alternative
- Compare selected alternative with your own values
SC BON

- ANA Code of Ethics
- 2015 Year of Ethics

Ethical Issues

- Advance Directives
- Organ Donation
- HIV/AIDS
- Surrogate Motherhood
- Abortion
- Pain Management
- Right to Life

Ethical Issues

- Genetics and Genomics
- Force feeding
- End of life
- Assisted Suicide
- Others?

Questions?

ASPN Standards
2015-2017

Objective

- Review the 2015-2017 ASPAN standards
Standards

● What are standards?
  – The ideal
  – What we strive for
  – The best possible situation

Scope of Practice

● Perianesthesia
  – Preadmission
  – Day of surgery
● Postanesthesia
  – Phase I
  – Phase II
  – Extended Observation
● Other locations

ASPAN
6
Standards of Practice

Patient Rights

● Perianesthesia nursing practice is based on philosophic and ethical concepts that recognize and maintain autonomy, confidentiality, dignity and worth of individuals

Environment of Care

● Promotes and maintains a safe, comfortable, and therapeutic environment

Staffing & Personnel Management

● Appropriate number of professional nursing staff with demonstrated competence are available to meet the individual needs of patients and families in each phase of perianesthesia care based on patient acuity, census, and physical facility
<table>
<thead>
<tr>
<th>Staffing &amp; Personnel Management</th>
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<tbody>
<tr>
<td>● Two registered nurses are in the same unit as the patient receiving Phase I level of care at all times</td>
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<thead>
<tr>
<th>Staffing &amp; Personnel Management</th>
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<tbody>
<tr>
<td>● Two competent personnel, one of whom is a RN competent in Phase II postanesthesia nursing, are in the same unit where the patient is receiving Phase II level of care</td>
</tr>
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<thead>
<tr>
<th>Quality Improvement</th>
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<tbody>
<tr>
<td>● The perianesthesia nurse monitors and evaluates perianesthesia care on an ongoing basis. Identified problems are resolved through a collaborative multidisciplinary approach in order to assure the quality and appropriateness of patient care</td>
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<tr>
<th>Research</th>
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<tbody>
<tr>
<td>● Perianesthesia nurses participate in research by reviewing literature, designing studies, conducting studies, weighing the evidence, analyzing results, and/or incorporating findings into evidence-based practice</td>
</tr>
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<thead>
<tr>
<th>Nursing Process</th>
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</thead>
<tbody>
<tr>
<td>● The perianesthesia registered nurse applies the nursing process to each patient</td>
</tr>
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</table>

| ASPAN 3 Clinical Practice Guidelines |
Clinical Practice Guidelines
- Clinical Guideline for the Promotion of Perioperative Normothermia
- Clinical Guideline for Pain and Comfort
- Evidence-Based Clinical Practice Guideline for the Prevention and/or Management of PONV/PDNV

ASPAN 11 Practice Recommendations

PR 1
- Patient Classification / Recommended Staffing Guidelines

PR 2
- Components of Initial, Ongoing, and Discharge Assessment and Management
  - Postanesthesia scoring scale if used

PR 3
- Equipment for Preanesthesia / Day of Surgery Phase, PACU Phase I, PACU Phase II, and Extended Observation
  - Means to safely transport patient
    - Portable oxygen, suction, cardiac monitoring, pulse oximetry, capnography
    - Bladder scanner

PR 4
- Recommended Competencies for the Perianesthesia Nurse
**PR 5**

- Competencies of Perianesthesia Support Staff

**PR 6**

- Safe Transfer of Care: Handoff and Transportation
  - Standardized handoff
  - Transported with a perianesthesia RN
    - Require evaluation, treatment or who are at risk of cardiopulmonary compromise during transport
    - Require a higher level of care

**PR 7**

- The Role of the Registered Nurse in the Management of Patients Undergoing Sedation for Short-Term Therapeutic, Diagnostic or Surgical Procedures
  - ACLS / PALS
  - Physician orders medications
  - RN managing patient shall have no other responsibilities
  - Monitor HR, BP, O₂ sat, end-tidal CO₂, Cardiac rhythm, LOC, Level of sedation
  - IV access, emergency equipment
  - Backup personnel emergency intubation, etc.

**PR 8**

- Fast Tracking the Ambulatory Surgery Patient
  - Planned process
  - Patient selection
  - Patient and family education
  - Collaborative approach
  - Selected anesthetics
  - Objective assessment in OR
  - Ongoing monitoring of process

**PR 9**

- Perianesthesia Care Unit Visitation Guideline for Adult Patients

**PR 10**

- Obstructive Sleep Apnea in the Adult Patient
  - Assess and screen for risk factors of OSA
  - Assess and screen undiagnosed patients for signs and symptoms of OSA
    - Stop Bang Tool
    - ASA OSA Checklist
**PR 10 - OSA**

- Postanesthesia management
  - May require extended monitoring
  - Avoid supine position
  - Provide non-invasive positive pressure ventilation
  - Multimodal approach
  - Careful titration of opioids
  - If PCA – basal not recommended

- Phase I PACU
  - Very little empirical evidence
  - Patient should not have signs of desaturation when left undisturbed
  - Anticipate extended PACU stay

**PR 10 - OSA**

- Phase II PACU – Discharge plan
  - Room air oxygen saturation return to baseline
  - No evidence of hypoxia/obstruction when left undisturbed for 30 minutes
  - Minimum observation 2 to 6 hours
  - Outpatients observed 3 hours longer than non-OSA
  - With each hypoxemic/obstructive event – monitor for 7 hours after last episode
  - If no requirement for high dose oral opioids may be discharged to home

**PR 11**

- The Prevention of Unwanted Sedation in the Adult Patient
  - Assess for risk factors
    - OSA, medications, pulmonary disease, obese, type of anesthesia, PCA
    - First 24 hours after surgery
    - Staffing
      - Ratios, Non-BSN nurses, less experienced

**PR 11 - Unwanted Sedation**

- Assess for unwanted sedation
  - Sedation scale
    - Pasero Opioid Induced Sedation Scale
    - Richmond Agitation and Sedation Scale
    - Inova Sedation Scale
    - Moline Roberts Pharmacologic Sedation Scale
    - Aldrete Scoring System
    - Ramsay / Modified Ramsay
    - Sedation Agitation Scale

- Monitoring
  - Individualized
  - Vigilant monitoring of those at risk
  - Determine need for technology supported monitoring
    - End tidal carbon dioxide monitoring
    - Pulse oximetry
    - Capnography
  - Policies and procedures for opioid administration
PR 11 - Unwanted Sedation

- Individualized discharge assessment
  - Do not transfer near peak effect of opioid
  - Handoff communication
    - Risk factors
    - Patient tolerance of opioids

ASPN 13
Position Statements

Position Statements

- The Perianesthesia Patient with a Do-Not-Resuscitate Advance Directive

Position Statements

- Registered Nurse Utilization of Unlicensed Assistive Personnel
  - On Call / Work Schedule
    - Fatigue Evaluation Checklist

Position Statements

- Joint Position Statement on ICU Overflow Patients developed by ASPAN, AACN and ASA's Anesthesia Care Team Committee and Committee on Critical Care Medicine and Trauma Medicine

Position Statements

- Medical-Surgical Overflow Patients in the Postanesthesia Care Unit (PACU) and Ambulatory Surgery Unit (ASU)
- Safe Medication Administration
- Older Adult
- Pediatric Patient
<table>
<thead>
<tr>
<th>Position Statements</th>
<th>Resource 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Workplace Violence in the Perianesthesia Settings</td>
<td>● American Society of Anesthesiologists (ASA) Standards for perianesthesia care</td>
</tr>
<tr>
<td>● Substance Abuse</td>
<td>- Statement on Routine Preoperative Laboratory and Diagnostic Screening</td>
</tr>
<tr>
<td></td>
<td>- ASA Basic Standards for Preanesthesia Care</td>
</tr>
<tr>
<td></td>
<td>- ASA Standards for Postanesthesia Care</td>
</tr>
<tr>
<td></td>
<td>- Basic Anesthetic Monitoring</td>
</tr>
<tr>
<td></td>
<td>- Nonoperating Room Anesthetizing Locations</td>
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<thead>
<tr>
<th>Position Statements</th>
<th>Resource 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Social media</td>
<td>● Association for Radiologic &amp; Imaging Nursing (ARIN) Clinical Practice Guideline: Handoff Communication Concerning Patients Undergoing a Radiological Procedure with General Anesthesia</td>
</tr>
<tr>
<td>● Perinatal patient</td>
<td>- SBAR</td>
</tr>
<tr>
<td>● Nurse of the future: Minimum BSN</td>
<td>----------------------------------------------------------------------------</td>
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</tbody>
</table>

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<tr>
<th>Resource 3</th>
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<tbody>
<tr>
<td>● Introduction to Joanna Briggs Institute</td>
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</tbody>
</table>
Questions?

Thank you!

Lbw25@drexel.edu

References