

Moderate Sedation and Analgesia For the Non-anesthesiologist

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Educational Objectives

- ❖ Define moderate sedation and analgesia.
- ❖ Describe patient assessment and selection.
- ❖ Review the pharmacology and administration of commonly used sedatives.
- ❖ Describe airway management and potential respiratory complications.
- ❖ Implement appropriate strategies to safely manage moderate sedation by the non-anesthesiologist/anesthetist practitioner.

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Definition of Conscious Sedation



What is Conscious Sedation?


(Approved by House of Delegates on October 13, 1999)

	Minimal Sedation (Anxiolysis)	Moderate Sedation/ Analgesia ("Conscious Sedation")	Deep Sedation/ Analgesia	General Anesthesia
Responsiveness	Normal response to verbal stimulation	Purposeful** response to verbal or tactile stimulation	Purposeful** response following repeated or painful stimulation	Unarousable even with painful stimulus
Airway	Unaffected	no intervention required	Intervention may be required	Intervention often required
Spontaneous Ventilation	Unaffected	Adequate	May be inadequate	Frequently inadequate
Cardiovascular Function	Unaffected	Usually maintained	Usually maintained	May be impaired

Who Needs to Know About Moderate Sedation?

and

Who Should Administer It?



Who Administers Moderate Sedation?

- GI Suites
- Pulmonary Suites
- Emergency Room
- Radiology, IVR
- ICU
- Cardiac Cath Lab

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How Do You Assess a Patient?

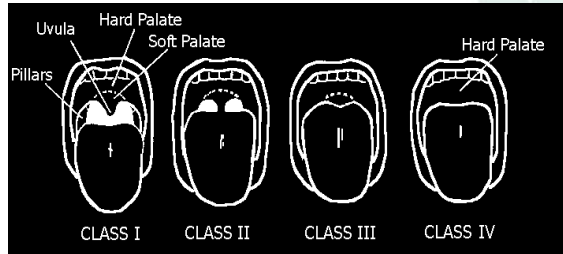
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Pre-procedure Assessment & Patient Selection

- ✓ Medical history
 - Organ system assessment
 - Pregnancy?
- ✓ Anesthesia and surgery history
- ✓ Medications and allergies
- ✓ NPO Status
 - Clear liquids >2 hrs
 - Milk/ Solids >6 hrs
- ✓ Airway assessment

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Airway Assessment Mallampatti Airway Scale



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Airway Assessment

What Is Mallampatti Airway Assessment Scale?

- Method to communicate the expected ease or difficulty of intubation based on the ease of visualization of pharyngeal structures:
 - Malampati 1 – easily view epiglottis
 - Malampati 4 – obstructed view

The screenshot shows a form titled 'PRE-PROCEDURE EVALUATION' with a section for 'Mallampatti Airway Assessment Scale'. It includes checkboxes for Class I (uvula, soft palate, pillars), Class II (uvula, soft palate), Class III (uvula), and Class IV (hard palate). The form also has fields for 'Physician Signature', 'Date', and 'Time'.

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Airway Assessment

Significance of Mallampatti Airway Assessment Scale?

- Pt.'s with suspected "difficult airway" (Mallampatti 4) often have other airway issues which may contribute to difficult airway management:
 - Sleep Apnea
 - Morbid Obesity
- More important, these are patients you don't want to oversedate and run risk of losing an airway that may be difficult to manage.
- You may want help (anesthesiologist) to provide sedation and monitor the pt.

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Airway Assessment Mallampatti Airway Scale



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Airway Assessment Mallampatti Scale 4 Unable to See Past the Tongue



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Airway Assessment Precautions

Use caution with following conditions:

- COPD
- Sleep Apnea
- Extremes of age
- Alcohol intoxication
- Morbid Obesity
- Difficult airways
- Debilitated patients

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Obstructive Sleep Apnea


DEFINITION
 Periodic partial or complete obstruction of upper airway structures during sleep

SIGNIFICANCE

- Airway obstruction during sleep
- O₂ Desaturation, hypercarbia
- CV dysfunction
- Relieved by waking up
- May not awaken from obstruction if heavily sedated

MANAGEMENT


- Monitor carefully (with capnography if feasible)
- Anesthesiology assistance
- Give less sedation, not more!
- It may be safer to provide GA with a secured airway rather than moderate or deep sedation in procedures involving the upper airway (i.e. bronchoscopy, upper endoscopy, ERCP)
- CPAP

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Obstructive Sleep Apnea

(Continued)

- Many OSA patients use CPAP/BIPAP at home;
- "CPAP or NIPPV ... should be administered ... unless contraindicated by the ... procedure. Compliance may be improved if patients bring their own equipment..." (based on ASA Practice Guidelines for OSA)
- Consider use of CPAP during procedure as well as after procedure until patient back to baseline;
- Patients should be monitored longer than their non-OSA counterparts (guidelines suggest 3 hrs. longer)

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Summary of the Most Commonly Used Sedatives

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WHAT DRUGS CAN YOU USE?

- ✓ Just about any sedative or narcotic you want
- ✓ Shorter acting drugs usually preferable
- ✓ Know the side effects/potential complications of the drugs you use

ARE THERE ANY DRUGS YOU CAN'T USE?

- ✓ Inhalation anesthetics
- ✓ Induction agents i.e. propofol, barbiturates (pentathol), ketamine

HOW MUCH?

- ✓ "Enough"
- ✓ Titrate to effect

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Pharmacology

Benzodiazepines

- Midazolam (0.5-1.0 mg)
- Diazepam (1-2 mg)

Narcotics or opioid analgesics

- Morphine (1-2 mg)
- Fentanyl (1.2 mcg/kg)
- Meperidine (12.5-25 mg)

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Pharmacology

Benzodiazepines


Pharmacological effects: sedation to GA

Desired effects:

- Anxiolysis
- Sedation
- Hypnosis
- Anticonvulsant
- Skeletal muscle relaxation

Routes of administration

Oral, IM, IV

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Pharmacology

Opioids


Pharmacological effects: Analgesia, sedation to GA

Desired effects:

- Analgesia
- Sedation
- Euphoria

Routes of administration:


Oral, IM, IV

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Pharmacology

Propofol

- Anesthetic agent
- Nonopioid, nonbarbiturate sedative hypnotic
- Rapid onset < 1 min
- Rapid recovery 5-15 min
- Very Potent- Deep Sedation – GA
- No reversal agent
- Potent Respiratory depressant
- Hemodynamics-
 - Hypotension (30% decrease in BP)
 - No change in HR or CO
- Controversy with use outside Anesthesiology
To be used **ONLY** by anesthesiologist or CRNAs!

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Pharmacology


Statement on the use of Propofol

Approved by ASA House of Delegates on October 27, 2004

"...non-anesthesia personnel who administer propofol should be qualified to rescue* patients whose level of sedation becomes deeper than ... intended and who enter ... a state of general anesthesia."

*Rescue:


- proficient in airway management
- proficient in advanced life support
- understand pharmacology of the drugs used

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Who Should Provide Sedation*

*From the ASA Monograph on Practice Guidelines for Sedation and Analgesia by Non-Anesthesiologists (last amended 2001)

- "A designated individual, other than the practitioner performing the procedure, should be present ...throughout procedures performed with sedation/analgesia." (Including moderate sedation.) This person may assist the practitioner "with minor, interruptible tasks..."
- "During deep sedation, this individual should have no other responsibilities."(But to monitor the patient.)

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After You Administer the Sedation, What Else Should Be Done?

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Patient Monitoring

- ✓ Continuous Observation and vigilance
- ✓ Blood pressure monitoring
- ✓ Saturation (Pulse oximetry)
- ✓ EKG: recommended, not required
- ✓ Pain assessment
- ✓ Consider capnography

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Respiratory Complications

- Airway Obstruction
- Respiratory insufficiency
- Aspiration
- Laryngospasm

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Airway Assessment Upper Airway Obstruction Intervention

- Auditory and Tactile Stimulation
- Head tilt
- Chin Lift
- Jaw Thrust
- Nasal/oral airway

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Respiratory Complications Respiratory Insufficiency

- Respiratory depression leading to inadequate ventilation
- Most common complications pre-Pulse Oxymetry
- Unrecognized until respiratory arrest, dysrhythmias or cardiac arrest
- ETCO₂

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Respiratory Complications Laryngospasm

- Protective airway reflex
- Muscular spasm of all laryngeal muscles
- Mechanical or chemical stimuli
- Mediated by vagus nerve
- Results in upper airway obstruction
- Severe cases-NPPE
- Treatment – Mask ventilation/Muscle relaxants (succinylcholine)

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Respiratory Complications Respiratory Insufficiency

- Drugs-potent respiratory depressants
- Decrease respiratory drive to hypoxia and hypercarbia
- Reduced muscle tone-weaker ventilatory effort
- Hypoventilation>Apnea>Death

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Respiratory Complications Aspiration


Patients at risk of Aspiration:

- o Obesity
- o Hiatal Hernia
- o GERD
- o Ileus or bowel obstruction
- o Emergency care
- o Pregnancy
- o DM

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Post-procedure Monitoring

- Purpose is to assure return of physiologic function
- Treatment area vs. recovery area
- Vital signs, pain, activity, and consciousness are documented

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Discharge Criteria

- ✓ Required by JCAHO
- ✓ Aldrete scoring system
 - ▶ Activity, Respiration, Circulation, Consciousness, Oxygenation
- ✓ Modified Post-anesthesia Discharge Scoring System: MPADS
 - ▶ VS, pain, N&V, surgical bleeding, ambulation

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Discharge Criteria

Modified Post-Anesthesia Discharge Score (MPADS) for Outpatient D/C from Facility


PARAMETER	SCORING SYSTEM	MPADS SCORE
VITAL SIGNS	0: ≥ 40% Baseline 1: 20-40% Baseline 2: Within 20% Baseline	
PAIN	0: Severe (8-10) 1: Moderate (4-7) 2: Minimal/None ((0-3)	
NAUSEA & VOMITING	0: Severe 1: Moderate 2: Minimal to None	
SURGICAL BLEEDING	0: Severe 1: Moderate 2: Minimal to None	
AMBULATION	0: Unable/Dizziness 1: With Assistance 2: Steady Gait/No Dizziness	
TOTAL DISCHARGE SCORE		

May be discharged with a score of 8-10 or back to baseline (pre-sedation)

Discharge Criteria

Satisfy the “ATES”

- ✓ ARTICULATE
- ✓ AMBULATE
- ✓ URINATE
- ✓ “GUSTATE”

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References

- Practice Guidelines for Sedation & Analgesia by Non-anesthesiologists (Anesthesiology 96: 1004-1017, 2002)
- Guidelines for Non-operating Room Anesthetizing Locations (Last amended 10/15/2003)
- Statement on Safe use of Propofol (ASA approved 10/27/2004)
- Practice Guidelines for the Perioperative Mgmt of Pts. With Sleep Apnea (Anesthesiology V104, No.5 May '06)
- Statement on Granting Privileges for Admin. of Moderate Sedation to Practitioners Who Are Not Anesthesia Professionals (Approved by ASA 10/25/05, amended 10/18/06)
- Practice Guidelines for Pre-operative Fasting... (Anesthesiology V90 No. 3, March 1999)
