

ANESTHESIA

- less is more -

QUESTIONS

- 1) Preoperative assessment of their risk profile with respect to postoperative complications,
- 2) Optimal preoperative management to reduce postoperative complications,
- 3) Perioperative and intraoperative considerations, including the type and management of anesthesia and respiratory support and ventilation strategies, and
- 4) Postoperative care.

REVIEW ARTICLE

MECHANISMS OF DISEASE

Robert S. Schwartz, M.D., *Editor*

General Anesthesia, Sleep, and Coma

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Continuum of Depth of Sedation:

Definition of General Anesthesia and Levels of Sedation/Analgesia*

Committee of Origin: Quality Management and Departmental Administration



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Wolters Kluwer

Anesthesia for patients with interstitial lung disease or other restrictive disorders

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All topics are updated as new evidence becomes available and our [peer review process](#) is complete.

Literature review current through: Sep 2022. | **This topic last updated:** Nov 18, 2021.

Anesthesia

General Anesthesia (*Brown E., NEJM 2010*)

General anesthesia is a drug-induced, reversible condition that includes specific behavioral and physiological traits — unconsciousness, amnesia, analgesia, and akinesia — with concomitant stability of the autonomic, cardiovascular, respiratory, and thermoregulatory systems.

Sedation (*American Society of Anesthesiologists. Position on Monitored Anesthesia Care. October 17, 2018*)

Minimal sedation (Anxiolysis): Nurse / NP. This is a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and physical coordination may be impaired, airway reflexes, and ventilatory and cardiovascular functions are unaffected.

Deep sedation (Conscious Sedation) or Monitored Anesthesia Care (“MAC”): Anesthesiologist. It describes “a specific anesthesia service performed by a qualified anesthesia provider, for a diagnostic or therapeutic procedure.” Indications for monitored anesthesia care include “the need for deeper levels of analgesia and sedation than can be provided by moderate sedation (including potential conversion to a general or regional anesthetic.”

Regional anesthesia: Spinal blocks and epidural: usually for childbirth, but also used for analgesia post-op.

Local anesthesia: Peripheral nerve block e.g., tooth anesthesia, or peripheral nails/fingers or similar.

Spectrum of sedation & consciousness

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

1. Responsiveness

Brain function under anesthesia



Brain function under anesthesia

Awake with eyes open (minimally conscious state)



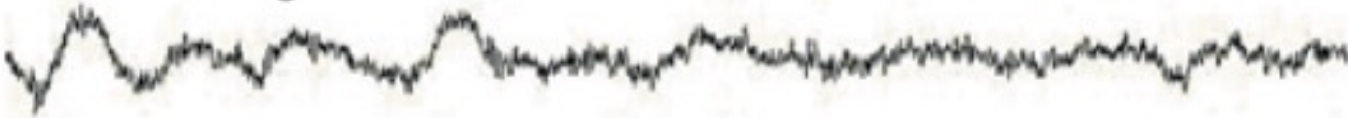
Awake with eyes closed (minimally conscious state)



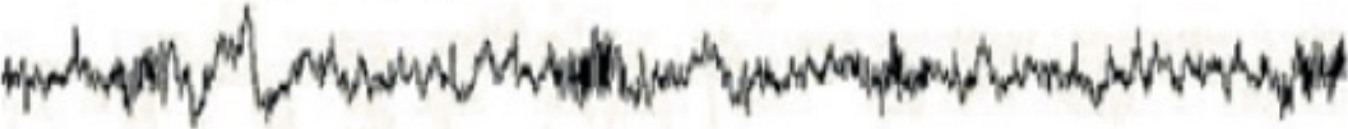
REM



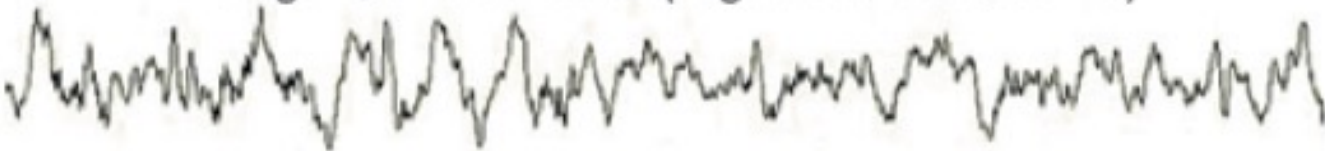
Non-REM stage 1



Non-REM stage 2 (vegetative state)



Non-REM stage 3, or slow-wave (vegetative state, coma)



Paradoxical excitation (minimally conscious state)



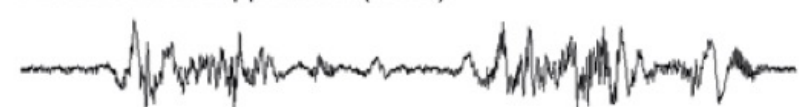
Phase 1



Phase 2 (vegetative state, coma)



Phase 3: Burst suppression (coma)



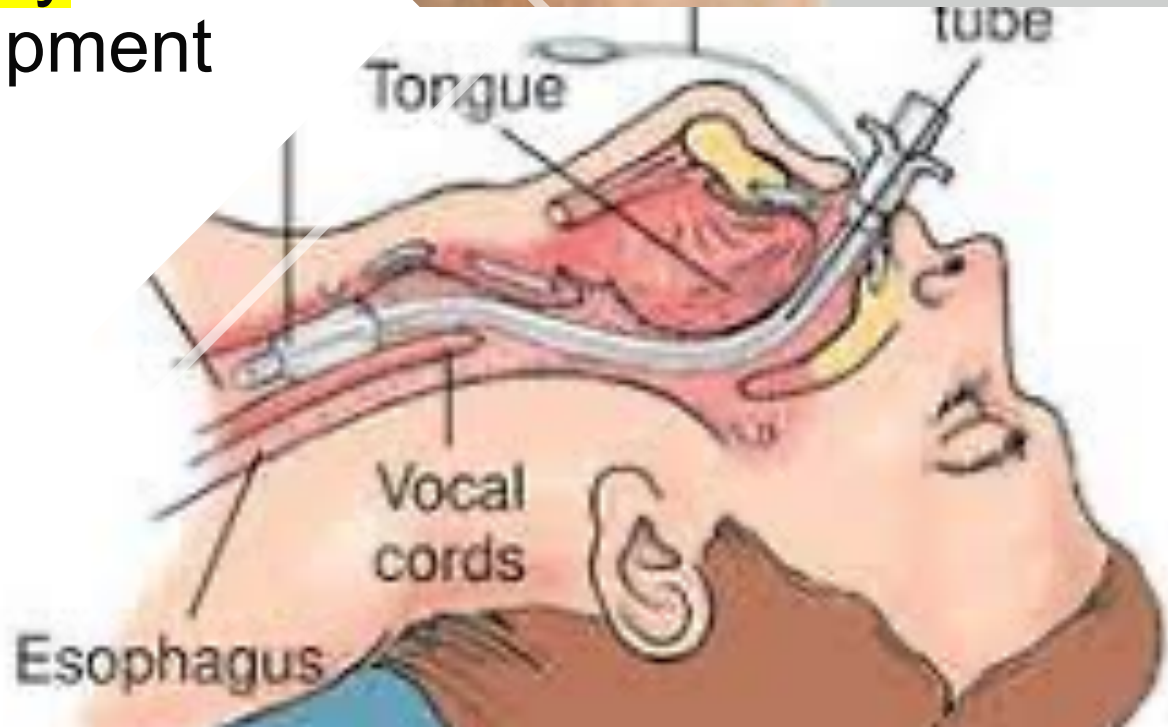
Phase 4: Isoelectric (coma, brain death)





2. Airway

airway equipment



3. Ventilation

4. Cardiovascular monitoring

Monitoring and titration requires a personalized plan built with your caring physicians and specialized expertise