Sedation & Paralytics: From Pharmacy to Registry

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Financial Disclosures

- None to report

Objectives

- Define sedation
- Identify potential indications for sedation/neuromuscular blocking agents (NMBAs)
- Review commonly used sedatives
- Review commonly used NMBAs
- Relate sedative/NMBA to data fields

Sedation

"The administering of a sedative drug to produce a state of calm or sleep"

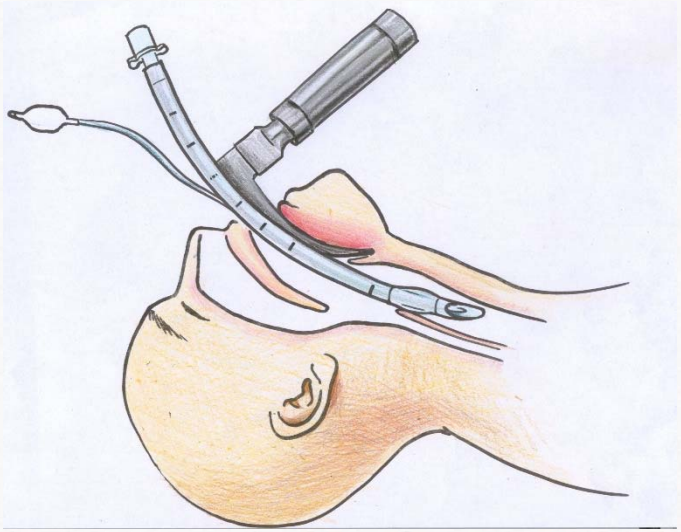
"Reduction in irritability"

Procedural Sedation

- Critically-ill patients who cannot leave treatment area
- Examples:
  - Intubation
  - Tracheostomy
  - Percutaneous gastrostomy tube placement
  - Bronchoscopy

Bedside Procedures

- Not all procedures will require NMBAs
- Commonly:
  - Intubation
  - Tracheostomy



Agitation & Discomfort

- 50% of adult ICU patients w/ LOS > 24 hours
- Some causes:
  - Unrelieved pain
  - Delirium
  - Anxiety
  - Sleep deprivation

Sedatives

AGENT	ONSET	DURATION
Midazolam (Versed)	1.5-5 minutes	20-60 minutes
Lorazepam (Ativan)	1-3 minutes	Up to 8 hours
Propofol (Diprivan)	40 seconds	Approx 5-10 minutes
Dexmedetomidine (Precedex)	30 minutes * Typically used for long-term, IV sedation	4 hours
Ketamine (Ketalar)	15 seconds	5-10 minutes

Benzodiazepines

- Commonly: lorazepam & midazolam
- Benefits:
  - Anxiolytic
  - Amnestic
  - Sedating
- Risks:
  - Delirium
  - NO analgesia
  - Excessive sedation
  - Withdrawal

Propofol

- Benefits:
  - Rapid onset
  - Easily titrated
  - Hypnotic
  - Antiemetic
  - Indicated for:
    - Seizures
    - ↑ ICP
- Risks:
  - Not reliably amnestic
  - NO analgesia
  - Hypotension
  - Hypertriglyceridemia
  - Respiratory depression
  - Propofol infusion syndrome

Dexmedetomidine

- Benefits:
  - NO respiratory depression
  - Short-acting
- Risks:
  - NO amnesia
  - Bradycardia
  - Hypotension

Ketamine

- Benefits:
  - Induces fugue state/trance
  - Amnestic
  - NO airway compromise
- Risks:
  - NO schizophrenics

Etomidate

- IV anesthetic commonly used during intubation
- Causes sedation/hypnosis
- Benefits:
  - Rapid onset
  - ↓ ICP
- Risks:
  - Adrenal suppression

AGENT	ONSET (seconds)	DURATION (minutes)
Etomidate	30-60	3-5

Neuromuscular Blocking Agents

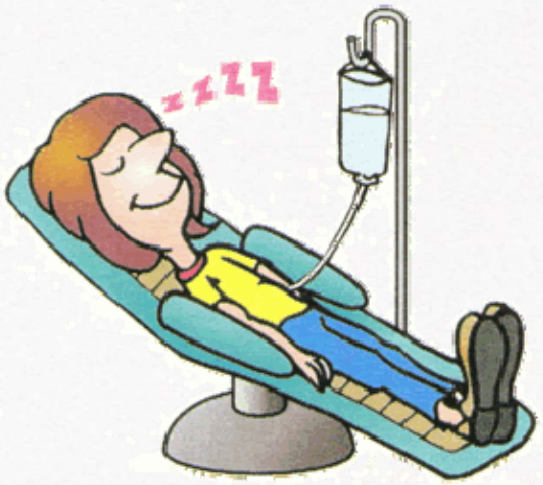
AGENT	ONSET (seconds)	DURATION (minutes)
Cisatracurium (Nimbex)	90	60-80
Vecuronium (Norcuron)	60	30-40
Rocuronium (Zemuron)	75	45-70
Pancuronium (Pavulon)	90	180+
Succinylcholine (Anectine or Sux)	30	3-10

Neuromuscular Blocking Agents

- Generally used to facilitate intubation or some bedside procedures
- Challenges:
  - NO analgesia OR sedation
  - MUST use with sedation
  - MUST be able to ventilate patient

Neuromuscular Blocking Agents

- Depolarizing agent
  - Succinylcholine
- Non-depolarizing agents
  - Cisatracurium
  - Vecuronium
  - Rocuronium
  - Pancuronium



Neuromuscular Blocking Agents

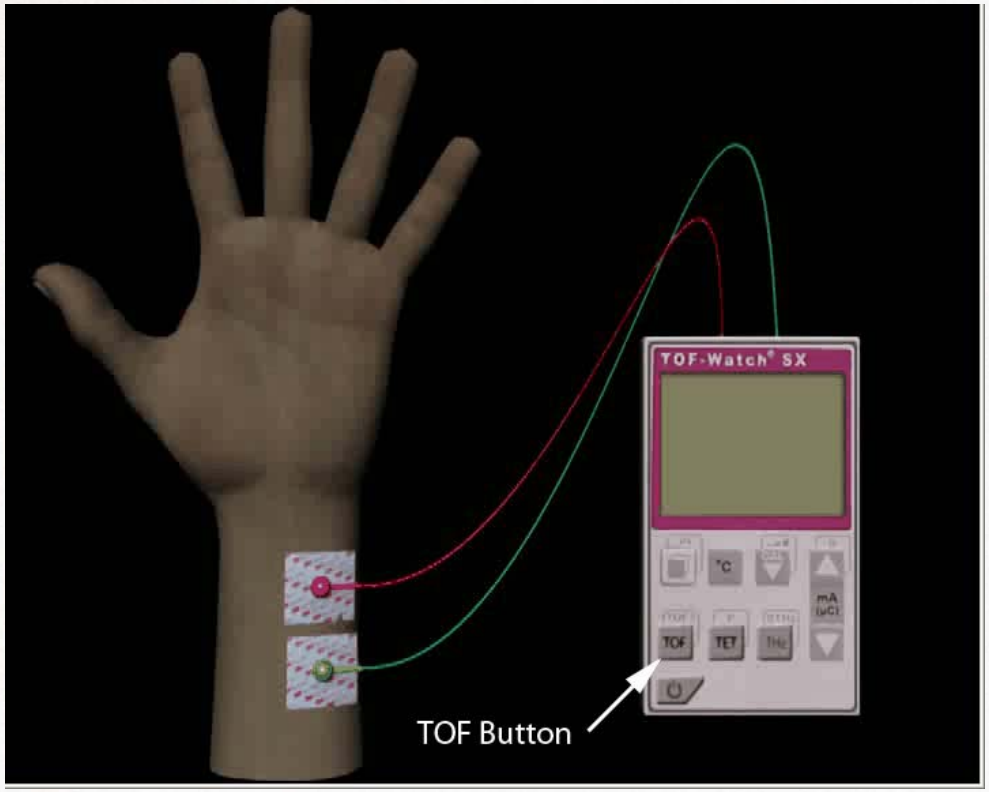
- Can cause prolonged weakness with excessive administration
- Monitoring:
  - Daily reduction/cessation
  - Clinical evaluation
  - Train-of-four (peripheral nerve stimulation)

Train-of-four

Nerve Stimulation in Relationship to Percent Blockage

Number of Twitches	Percent Blockage
4	0-50
3	60-70
2	70-80
1	80-90
None	> 90

Baird, M. S., Keen, J. H., & Swearingen, P. L. (2005). *Manual of critical care nursing : nursing interventions and collaborative management*. St. Louis, Mo.: Elsevier Mosby.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GCS ASSESSMENT QUALIFIER COMPONENT OF HIGHEST GCS TOTAL

Collection Criterion: Collect on patients with at least one injury in AIS head region

Definition

Documentation of factors potentially affecting the highest GCS within 24 hours of ED/hospital arrival.

Field Values

1. Patient chemically sedated or paralyzed
2. Obstruction to the patient's eye
3. Patient intubated
4. Valid GCS: patient was not sedated, not intubated, and did not have obstruction to the eye

Additional Information

- Refers to highest GCS assessment qualifier score after arrival to index hospital, where index hospital is the hospital abstracting the data.
- The null value "Not Applicable" is used for patients that do not meet the collection criterion.
- Requires review of all data sources to obtain the highest GCS motor score which might occur after the ED phase of care.
- Identifies medical treatments given to the patient that may affect the best assessment of GCS. This field does not apply to self-medication the patient may have administered (i.e. ETOH, prescriptions, etc.).
- Must be the assessment qualifier for the Highest GCS Total.
- If an intubated patient has recently received an agent that results in neuromuscular blockade such that a motor or eye response is not possible, then the patient should be considered to have an exam that is not reflective of their neurologic status and the chemical sedation modifier should be selected.
- Neuromuscular blockade is typically induced following the administration of agent like succinylcholine, mivacurium, rocuronium, (cis)atracurium, vecuronium, or pancuronium. While these are the most common agents, please review what might be typically used in your center so it can be identified in the medical record.
- Each of these agents has a slightly different duration of action, so their effect on the GCS depends on when they were given. For example, succinylcholine's effects last for only 5-10minutes.
- Check all that apply.

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INITIAL ED/HOSPITAL GCS ASSESSMENT QUALIFIERS

Definition

Documentation of factors potentially affecting the first assessment of GCS within 30 minutes or less of ED/hospital arrival.

Field Values

1. Patient Chemically Sedated or Paralyzed
2. Obstruction to the Patient's Eye
3. Patient Intubated
4. Valid GCS: Patient was not sedated, not intubated, and did not have obstruction to the eye

Additional Information

- Identifies treatments given to the patient that may affect the first assessment of GCS. This field does not apply to self-medications the patient may administer (i.e., ETOH, prescriptions, etc.).
- If an intubated patient has recently received an agent that results in neuromuscular blockade such that a motor or eye response is not possible, then the patient should be considered to have an exam that is not reflective of their neurologic status and the chemical sedation modifier should be selected.
- Neuromuscular blockade is typically induced following the administration of agent like succinylcholine, mivacurium, rocuronium, (cis)atracurium, vecuronium, or pancuronium. While these are the most common agents, please review what might be typically used in your center so it can be identified in the medical record.
- Each of these agents has a slightly different duration of action, so their effect on the GCS depends on when they were given. For example, succinylcholine's effects last for only 5-10 minutes.
- Please note that first recorded/hospital vitals do not need to be from the same assessment.
- Check all that apply.

NTDB

Thank You

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