

Delayed Recovery from General Anaesthesia

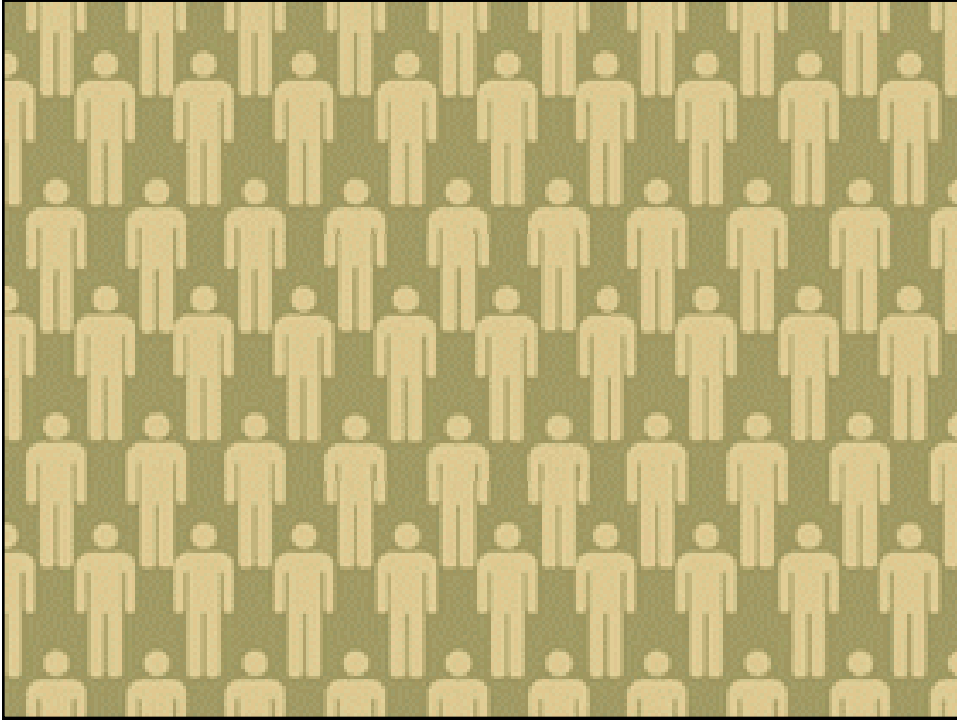


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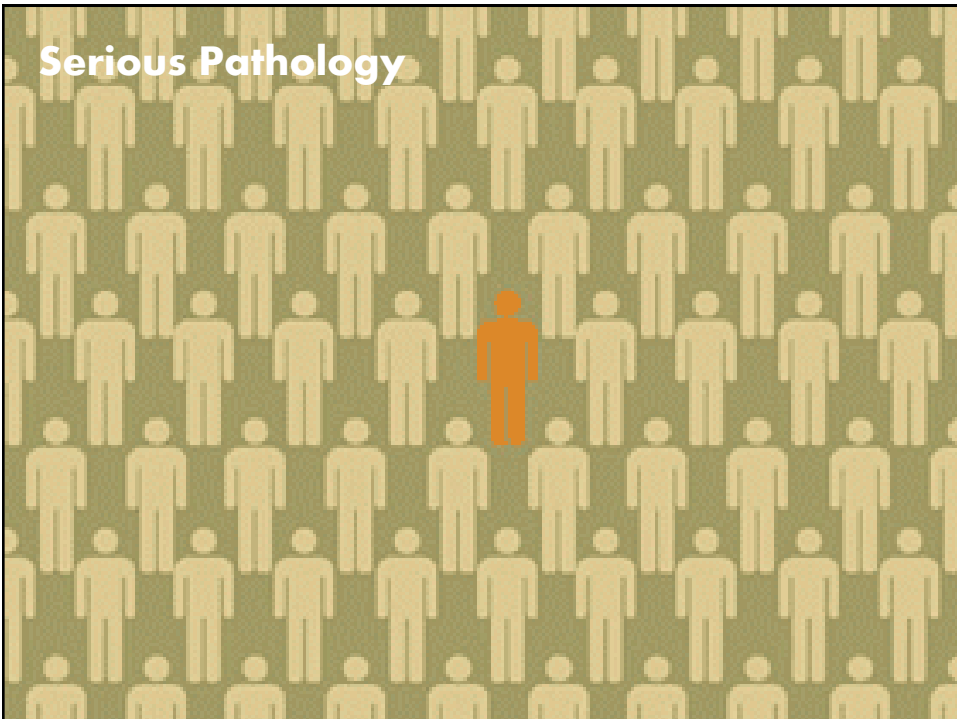
Adequate Recovery from GA

- A state of consciousness of an individual when they awaken or become rousable and aware of their surroundings and identity

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Delayed Recovery

- Delayed recovery often presents a diagnostic challenge
- It may rarely reflect serious pathology
- It is more frequently related to individual variation in response to the cessation of volatile agents
- Research is scarce
- There is no set time threshold for the expected return of consciousness

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Delayed recovery of consciousness after general anaesthesia

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“we would suggest that most patients would normally be rousable without the need for an artificial airway within 60 min of sedative medications being stopped”

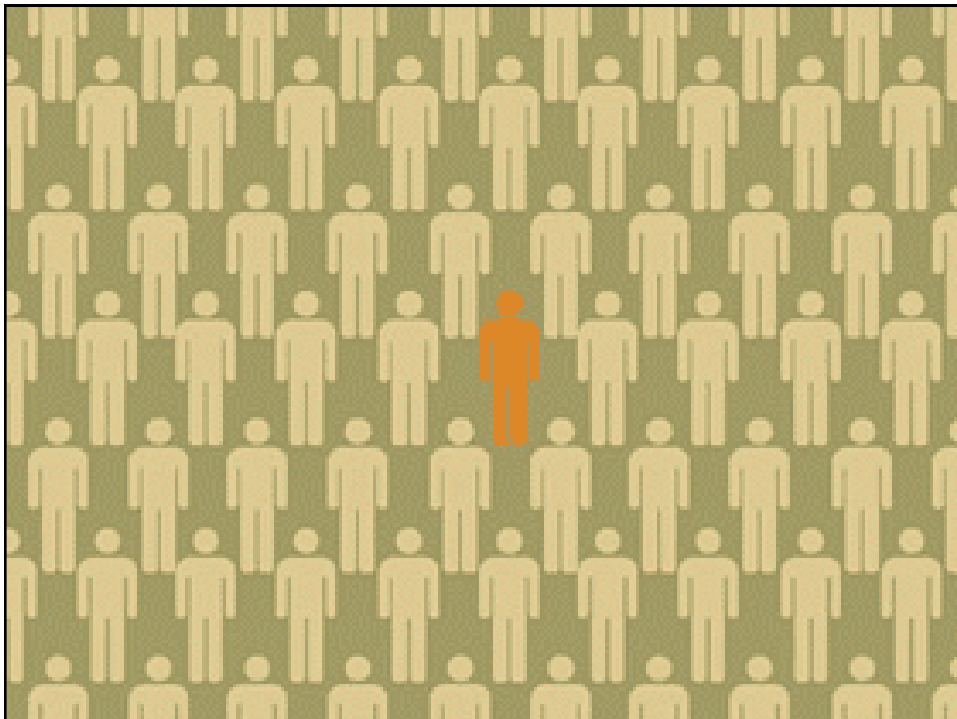
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Case Scenario

- A 75-yr-old man with well-controlled hypertension and mild COPD has undergone a robotic total prostatectomy.
- The procedure was long and technically difficult, with a total operating time of 5 h.
- The patient received a TIVA general anaesthetic with an atracurium infusion and was given 10mg IV morphine 30 minutes before the end of the procedure.
- Sixty minutes after the end of anaesthesia, the patient breathing spontaneously through a tracheal tube but not rousable.
- His observations are stable, he has no apparent focal neurology, but he is not regaining consciousness.
- An arterial blood gas shows a PaCO₂ of 6.3 kPa but all other values are within normal reference ranges.

Thoughts?

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Risk Factors

Patient Factors

- Extremes of Age
- Genetic Variation
- Body habitus
- Comorbidities

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Risk Factors - Comorbidities

Table 2 Comorbidities predisposing to increased risk of delayed return of consciousness

Respiratory	Hepatic	Renal	Endocrine
Reduced central drive: <ul style="list-style-type: none"> • Obesity hypoventilation syndrome • COPD • Intracranial pathology • Obstructive sleep apnoea 	Acute hepatic failure	Acute kidney injury	Hypothyroidism
Neuromuscular disorder: <ul style="list-style-type: none"> • Myasthenia gravis • Motor neurone disease • Guillain-Barré syndrome • Muscular dystrophy 	Chronic hepatic failure	Chronic renal failure	
Pulmonary pathology: <ul style="list-style-type: none"> • V/Q mismatch 			

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Risk Factors - Comorbidities

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Respiratory
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Pulmonary pathology: <ul style="list-style-type: none"> • V/Q mismatch

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Risk Factors - Comorbidities

Increased risk of delayed return of consciousness

Hepatic	Renal
Acute hepatic failure	Acute kidney injury
Chronic hepatic failure	Chronic renal failure

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Risk Factors - Comorbidities

Increased risk of consciousness

Renal	Endocrine
Acute kidney injury	Hypothyroidism
Chronic renal failure	

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Risk Factors - Comorbidities

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Risk Factors

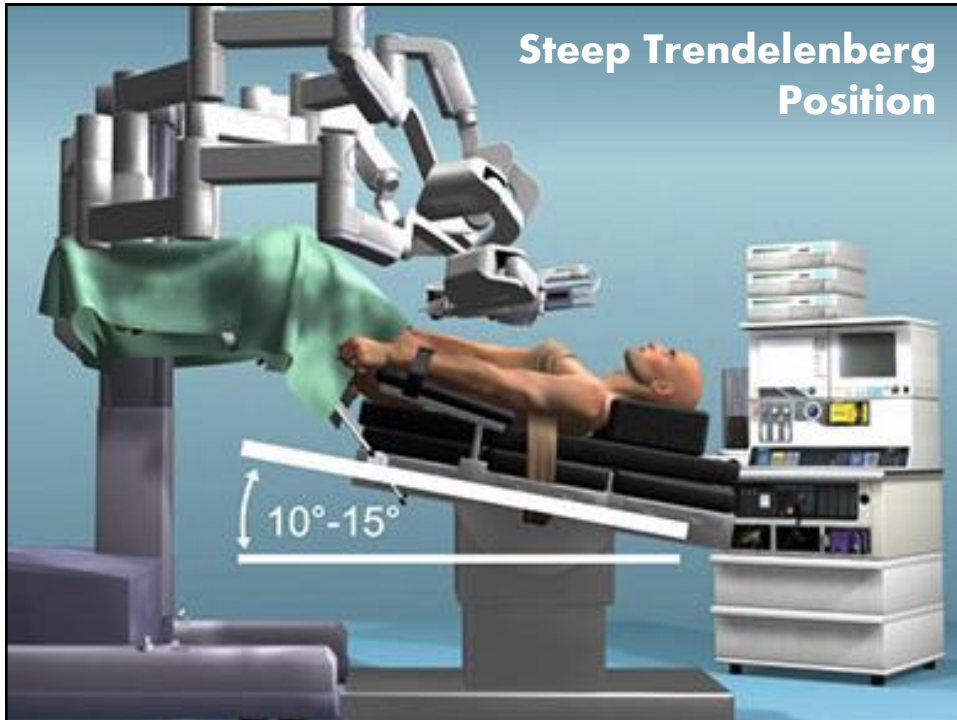
Patient Factors

- Extremes of Age
- Genetic Variation
- Body habitus
- Comorbidities

Anaesthetic / Surgical Factors

- CNS Surgery
- Cardiac Surgery
- Long duration of surgery or anaesthesia

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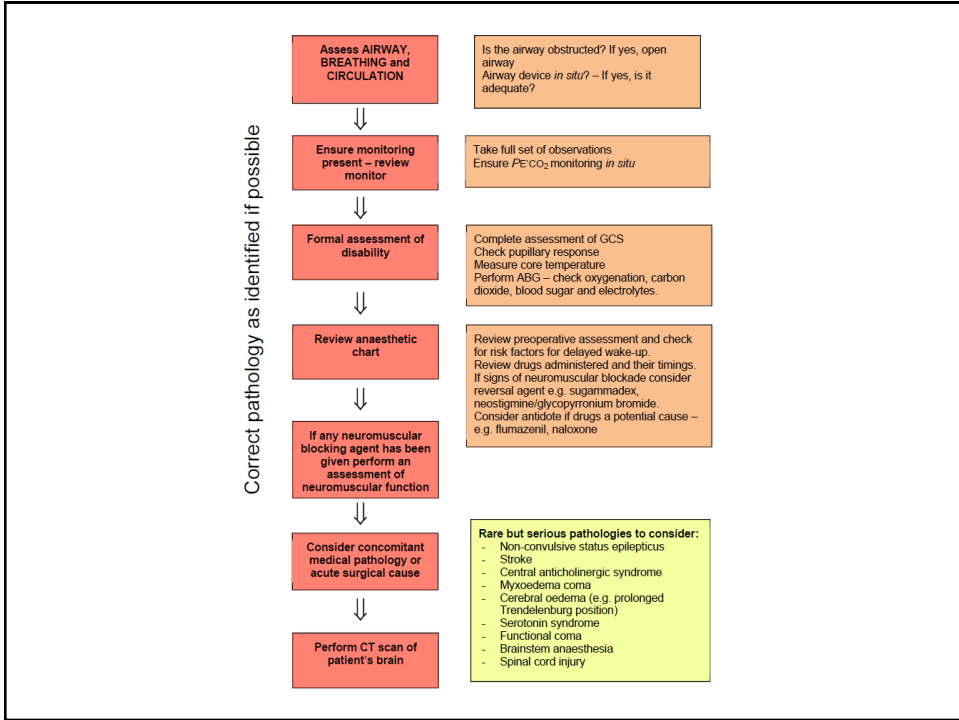


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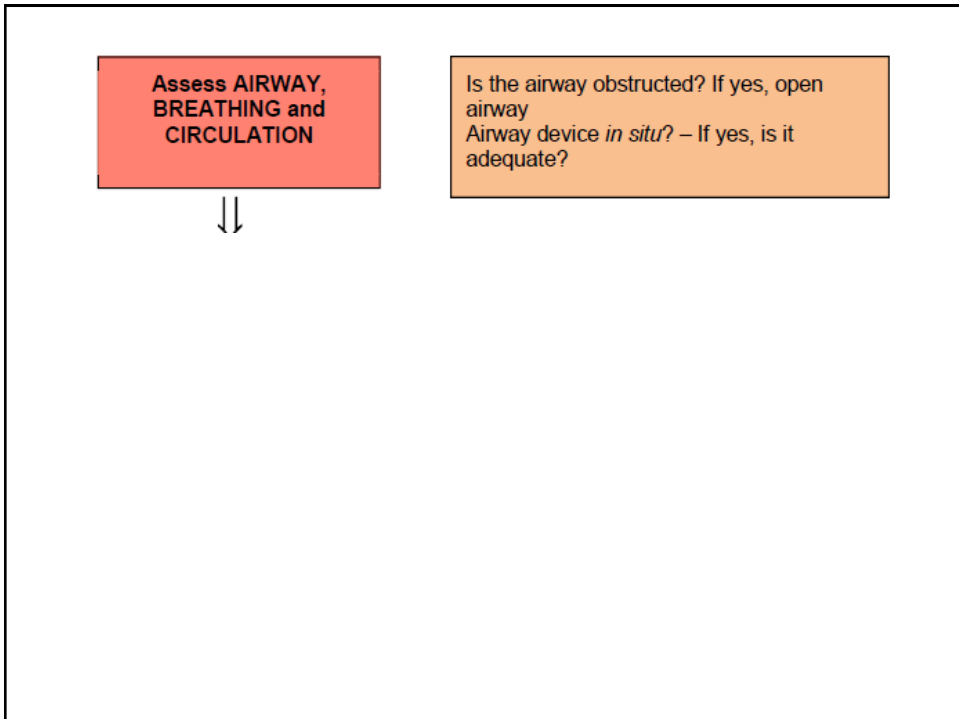
Causes of Delayed Return of Consciousness

Pharmacological	Metabolic	Rare causes
Serotonin syndrome	Hypoglycaemia/ hyperglycaemia	Seizures (including non-convulsive status epilepticus)
Opioids	Hypo/ hypernatraemia	Myxoedema coma
Neuromuscular blockers	Hypothermia	Functional coma
I.V. anaesthetic agents		Brainstem stroke
Volatile anaesthetic agents		
Central anticholinergic syndrome		

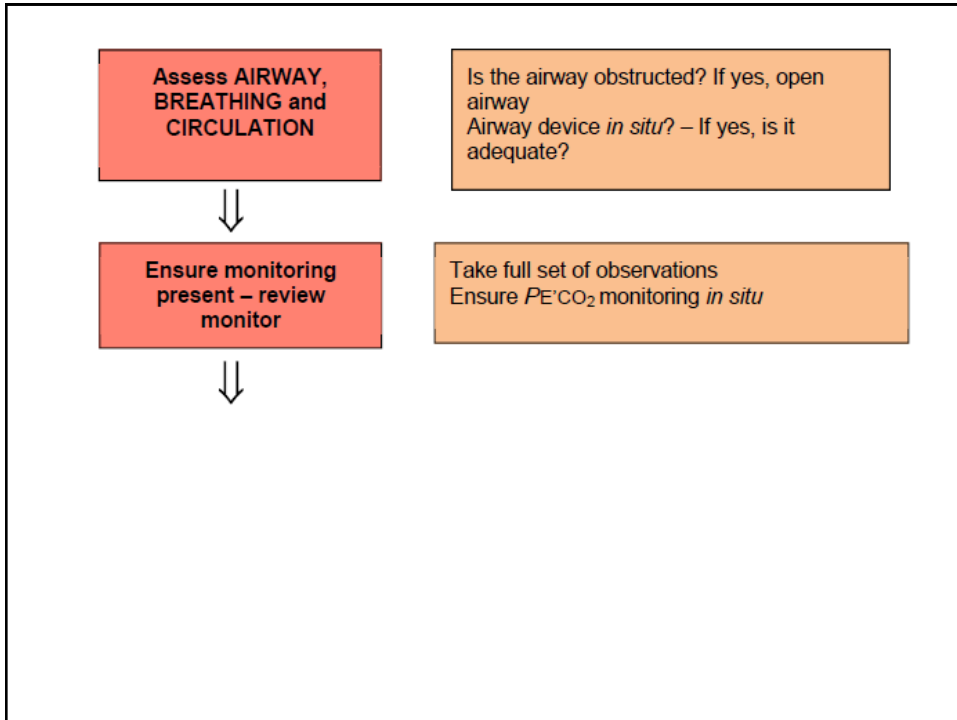
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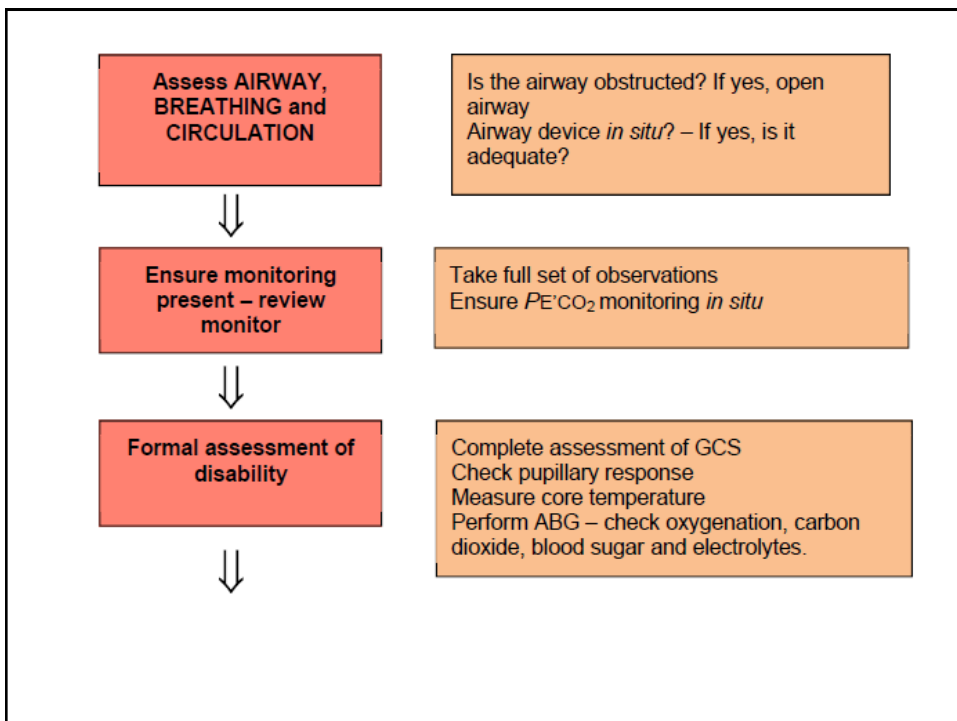
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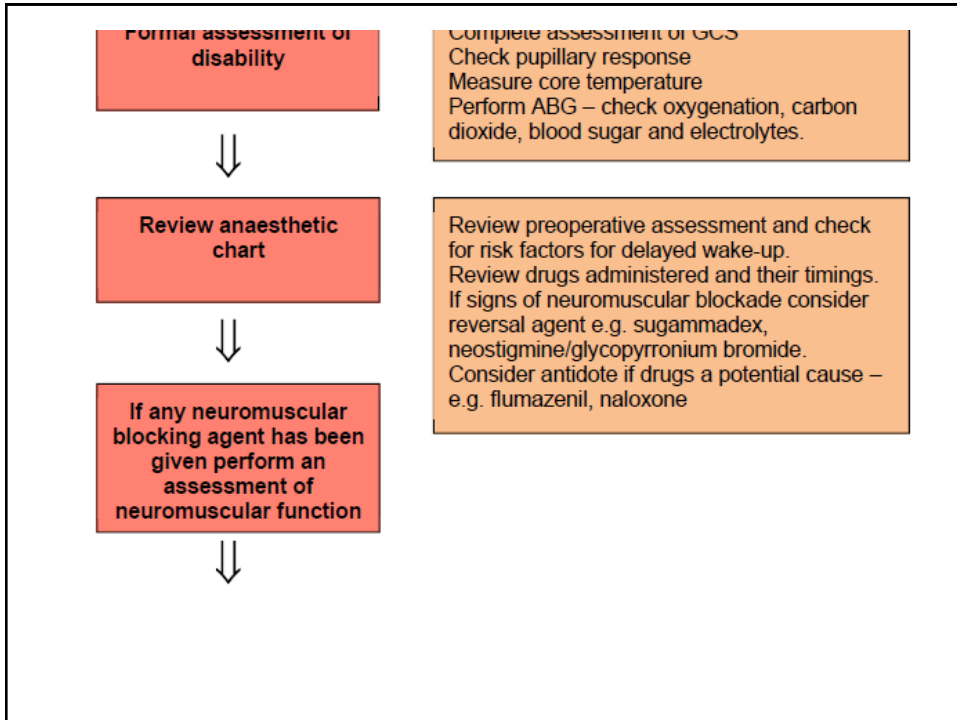
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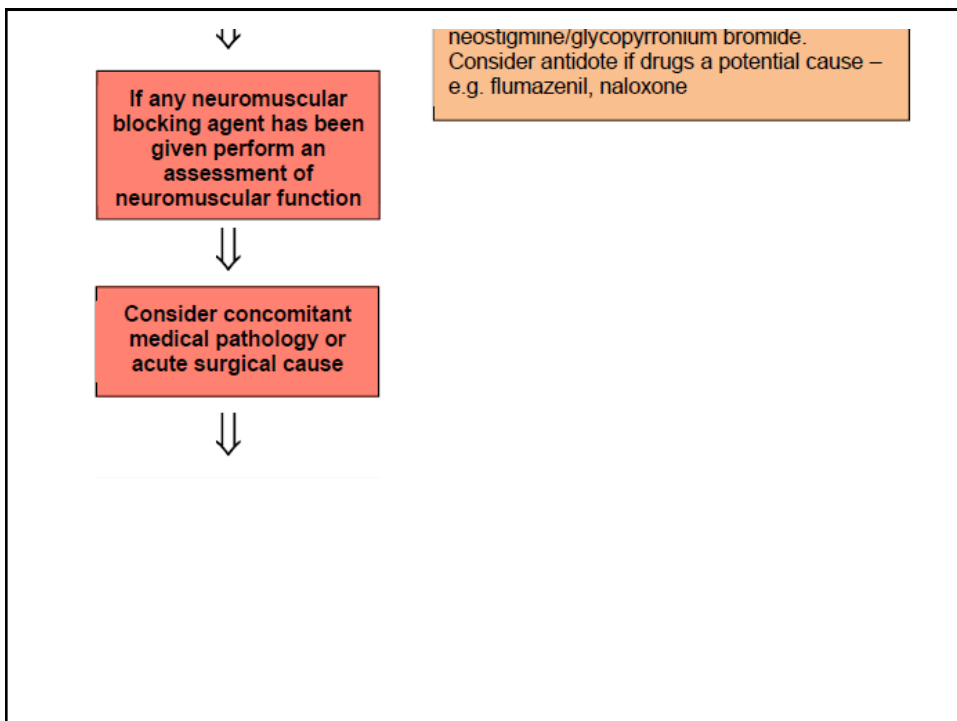
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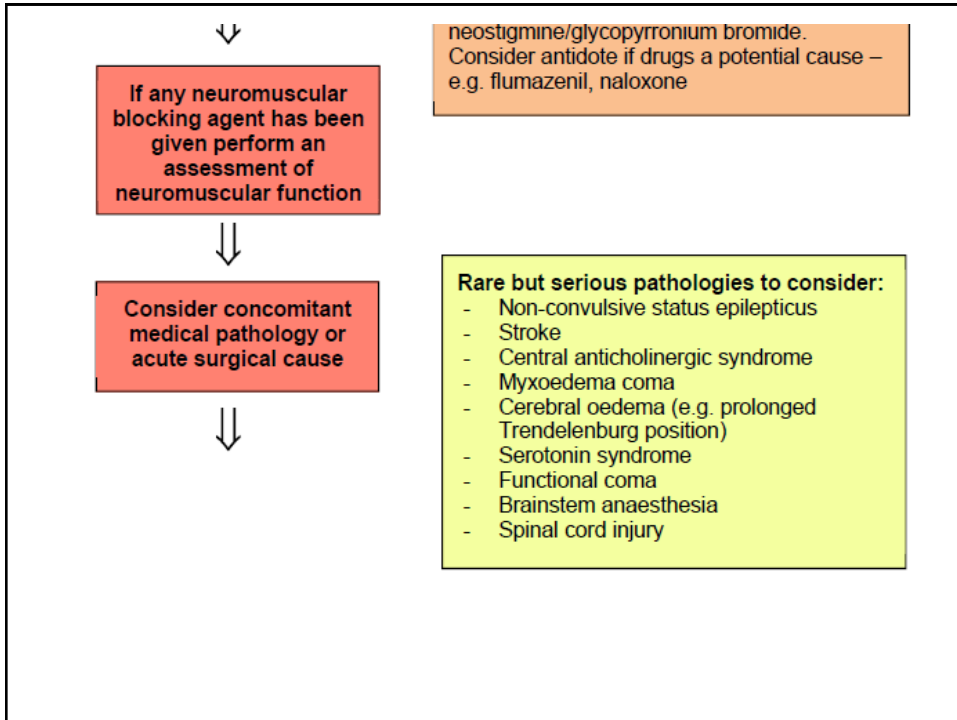
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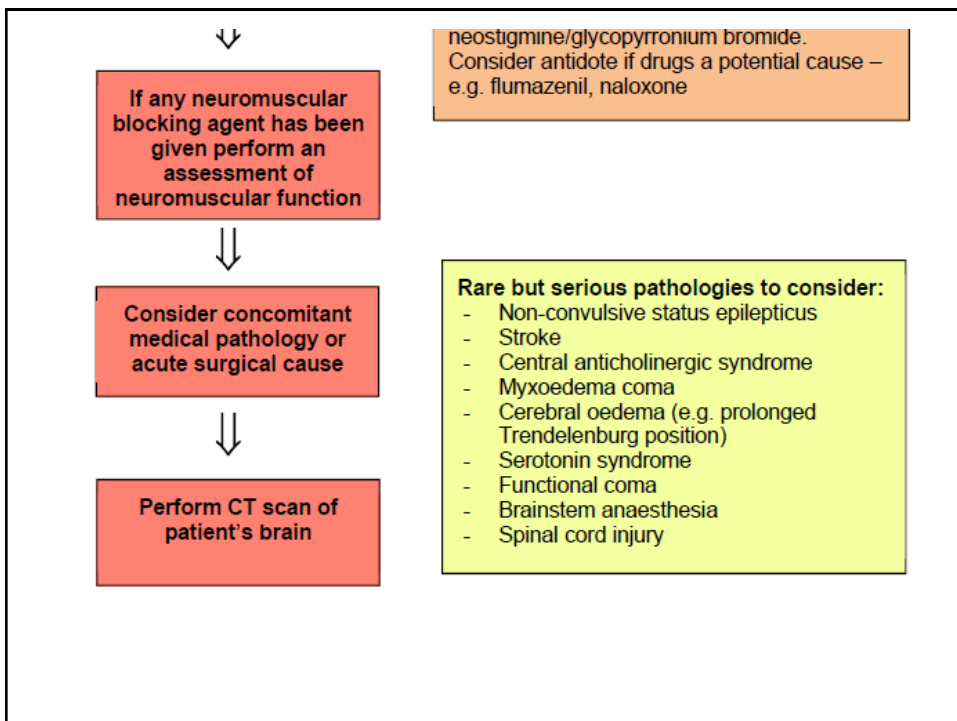
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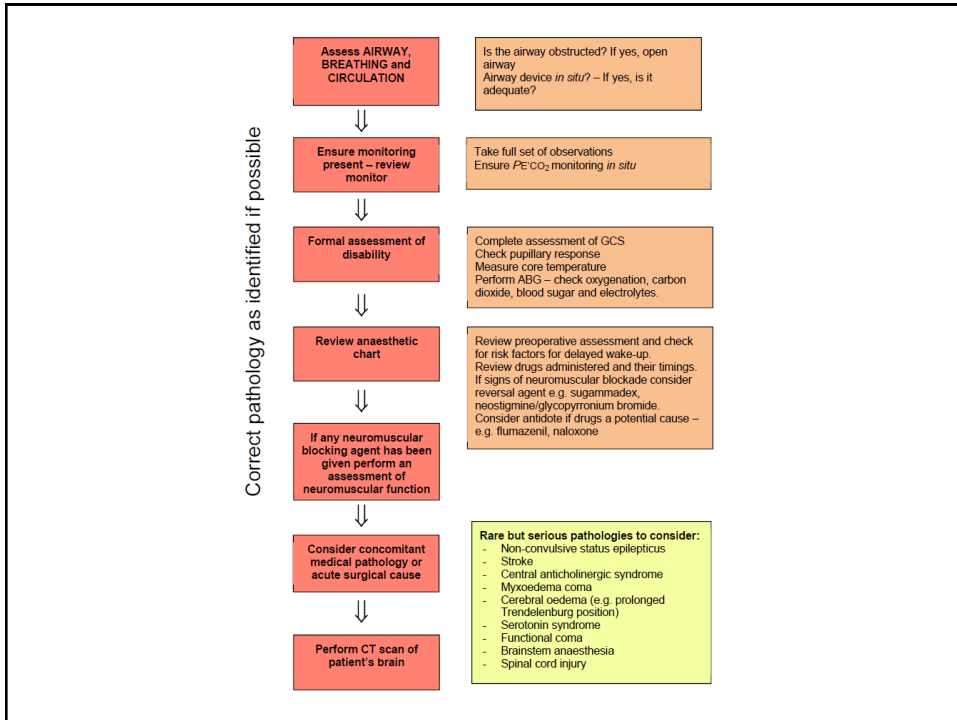
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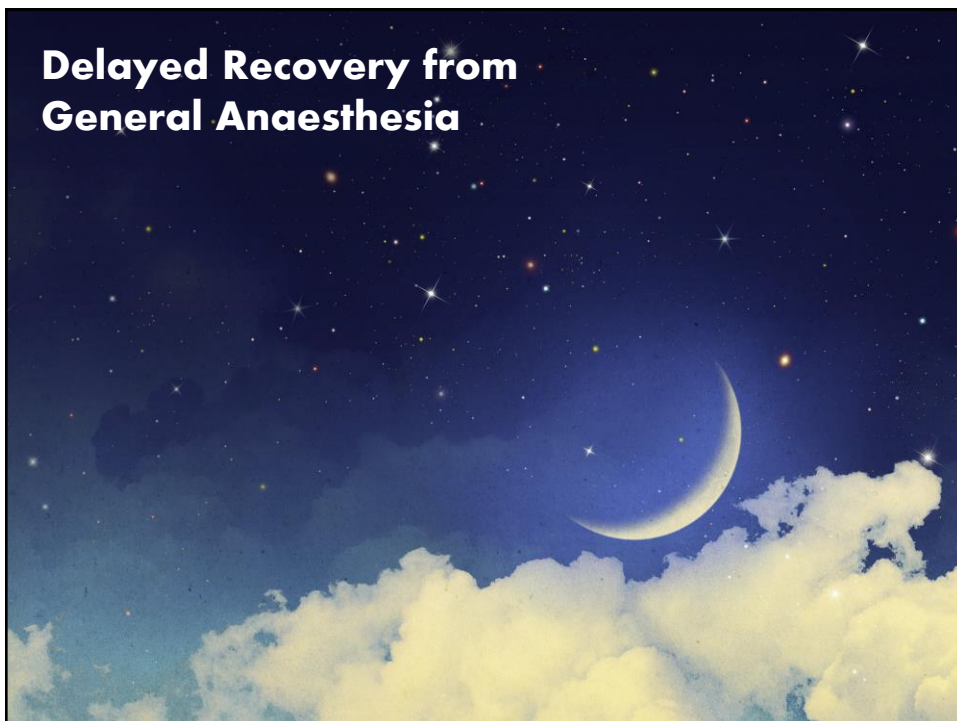
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