Hydrogen Peroxide (H_2O_2)

H_2O_2 may cause rapid and life-threatening corrosive injury to both airway and GI tract as well as gas embolism.

Toxicity / Risk Assessment

- *Hydrogen peroxide is both corrosive and can generate gas via oxygen production (1 mL of 3% produces 10 mL of oxygen when ingested)*
- *Large ingestions may lead to gas embolism*
- *Ingestion of <30ml of 3% H_2O_2: mild GI irritation only*
- *Larger volumes of 3% H_2O_2: More significant GI effects in addition to risk of gas embolism*
- *Smaller volumes of concentrated solutions (>10%) can cause corrosive injury to both airway and GI tract as well as gas embolism*

Clinical features:

- *Ingestion:*

  Corrosive injury, nausea, vomiting, excess salivation

  In severe cases, mouth blistering and stridor

  Manifestation of gas embolism: ↑ HR, confusion, coma seizures, sudden death
- *Inhalation: Coughing and transient dyspnea only*
- *Dermal: Chemical burns (with concentrated solutions)*
- *Ocular: Any solution can cause corneal injury*

Management:

Decontamination:

Dermal: Wash with soap and water. **Ocular**: immediate & thorough irrigation.

Ingestion: there is no role for Activated Charcoal following ingestion

- Aggressive airway management with early intubation for large oral ingestions with laryngeal oedema
- Hyperbaric oxygen therapy may be of value in treating gas embolism (discuss with clinical toxicologist)
- Patients at risk of gas embolism should be nursed in the Trendelenburg position
- Insertion of a NGT may relieve pain from gaseous gastric distention
- Corticosteroids for laryngeal oedema can be considered however there is no evidence of benefit

Investigations:

- Any patient with suspicion of perforation or gas embolism should undergo CT imaging as first modality
- Upper GI endoscopy should be considered if signs or symptoms suggestive of corrosive injury
- Patients with CNS manifestations of gas embolism and a negative CT brain should be considered for MRI

Disposition:

- Patients who are asymptomatic one hour post-ingestion of a small volume (< 15 mL of 6% or < 30 mL of 3%) can be discharged pending mental health assessment
- Patients who are symptomatic should be admitted for further observation and management
- Patients who are symptomatic following ingestion or inhalation of >10% H_2O_2 require at least 24 hours observation due to the possibility of delayed toxicity
- All eye exposures should be referred for evaluation by an ophthalmologist