Alert	Intubation, suction and ventilation equipment MUST be ready prior to administration of suxamethonium. A medical officer/nurse practitioner (preferably two personnel) experienced in advanced neonatal airway management techniques should be present when the medication is being administered. Risk of cardiac arrest from hyperkalemic rhabdomyolysis. There are two preparations. Chloride anhydrous salt (SAS product) equates to 110mg in 2 mL of suxamethonium chloride which is 10% more suxamethonium than suxamethonium chloride dihydrate salt (Australian TGA registered product)
Indication	Elective endotracheal intubation.
Action	Short-acting, depolarising neuromuscular blocker. It acts as an acetylcholine antagonist at nicotinic acetylcholine receptors at neuromuscular junctions, resulting in persistent depolarisation of the motor end plate.
Drug Type	Neuromuscular blocking agent (depolarising)
Trade Name	Suxamethonium Chloride (dihydrate) Injection BP, Succinolin Chloride (anhydrous) Injection, MercuryPharma Suxamethonium Chloride (dihydrate) Injection
Presentation	100 mg/2 ml ampoule. *See "Alert" section above to account for brand difference.
Dosage/Interval	IV (preferred): 2 mg/kg (up to 3 mg/kg) IM (only if IV is not accessible): 3–4 mg/kg[9] (onset of action can be delayed up to 3 minutes and duration of action is up to 15 minutes)
Dose adjustments	Therapeutic hypothermia: No information on the dose adjustment, but has been used. ECMO: Not applicable. Renal impairment: use with caution as use associated with hyperkalaemia. Hepatic impairment: may prolong duration of action. Avoid repeated doses.
Route	IV, IM
Maximum Dose	IV: 3 mg/kg/dose; IM: 4 mg/kg/dose
Preparation	IV: Dihydrate salt: Draw up 1 mL (50 mg of suxamethonium) and add 9 mL sodium chloride 0.9% to make final volume 10 mL with a concentration of 5 mg/mL. Anhydrous salt: Draw up 0.9 mL (50 mg of suxamethonium) and add 9.1 mL sodium chloride 0.9% to make a final volume of 10 mL with concentration of 5 mg/mL. IM: Administer undiluted.
Administration	IV: Rapid injection at proximal cannula site. IM: Administer in anterior thigh muscle.
Monitoring	Continuous cardiorespiratory monitoring. Monitor temperature, blood pressure, oxygenation and assisted ventilator status.
Contraindications	Hyperkalaemia Family history of malignant hyperthermia Skeletal muscle myopathy Hypersensitivity to suxamethonium
Precautions	Anaphylaxis: Severe anaphylactic reactions (some life-threatening and fatal) have been reported. Cross-sensitivity with other neuromuscular-blocking agents may occur; use extreme caution in patients with previous anaphylactic reactions. Bradycardia: May increase vagal tone. Risk of bradycardia may be increased with second dose and may occur more often in children. Occurrence may be reduced by pre-treating with anticholinergic agents (e.g. atropine). May Increase intraocular pressure. May cause a transient increase in intracranial pressure. May increase intragastric pressure, which could result in regurgitation and possible aspiration of stomach contents. Malignant hyperthermia: Use may be associated with acute onset of malignant hyperthermia; risk may be increased with concomitant administration of volatile anaesthetics.

Drug Interactions	May enhance the effect of other agents with neuromuscular-blocking properties: acetylcholinesterase inhibitors; magnesium, quinidine, quinine, vancomycin, cyclophosphamide monohydrate, ciclosporin, esmolol, lincosamide, loop diuretics. Aminoglycosides: May enhance the respiratory depressant effect of aminoglycosides. Opioid analgesics: Suxamethonium may enhance the bradycardic effect of opioid analgesics. Cardiac glycosides: May enhance the arrhythmogenic effect of cardiac glycosides
Adverse Reactions	Bradycardia is common in neonates and children, especially after a second dose of suxamethonium. May be prevented by administration of atropine prior to administration of suxamethonium. Hyperkalaemia Prolonged paralysis in infants with deficiency of pseudocholinesterase. Hypersensitivity reactions Malignant hyperthermia Management of suxamethonium overdose and/or toxicity is supportive.
Compatibility	Dextrose 5%, dextrose 10%, sodium chloride 0.9%, dextrose 5% in sodium chloride 0.9%, dextrose 5% in sodium chloride 0.45%, sodium chloride 0.45%. Y-site administration: potassium chloride, propofol, vitamin B complex with C.
Incompatibility	Y site administration: Amino acid solution, lipid emulsion, heparin, alkaline solutions with pH > 8.5.
Stability	Suxamethonium Chloride (dihydrate) Injection BP brand: once removed from fridge, is stable below 25 °C for 1 month only. Discard any unused product after that time, do not return to the fridge. Infusion solution: use within 24 hours
Storage	Refrigeration at 2°C to 8°C. DO NOT FREEZE. For Succinolin and MercuryPharma brands: protect from light.
Special Comments	Poorly absorbed from gastrointestinal tract – must be given IM or IV. Rapidly and completely hydrolysed by hepatic and plasma pseudocholinesterase. Very rapid onset (30–60 seconds) and short duration of action (3–5 minutes) with IV administration. Continuous administration over a prolonged period of time may result in irreversible blockade (phase II block). Should not be used without additional sedation.
Evidence summary	**Efficacy** Suxamethonium in combination with other drugs (analgesics and vagolytic agents) resulted in superior intubation conditions and a shorter procedure duration[1-6]. (Level II, Grade A) For laparoscopic pyloromyotomy in term infants using propofol, sevoflurane and no intraoperative opioid, succinylcholine may be the neuromuscular blocking drug of choice, provided no contraindication is present[4]. (Level III-3, Grade B) **Safety** Suxamethonium has been very widely used, but has several rare side effects and causes an increase in blood pressure, simultaneously with depolarisation.[1,2] (Level II Grade B) Hyperkalaemia may occur, but major elevations are uncommon. It may trigger malignant hyperkalaemia, a rare autosomal dominant disorder of skeletal muscles that remain asymptomatic unless triggering substances are given. It should not be used in infants with hyperkalaemia or family history of malignant hyperthermia.[1] (Level IV Grade D) It can cause prolonged neuromuscular blockade requiring ventilation until spontaneous resolution occurs in infants with pseudocholinesterase deficiency.[7] (Level IV Grade D) **Pharmacokinetics** Suxamethonium has a rapid onset of action (30 seconds) and a short duration of action (3 to 6 minutes) with IV administration. The increased dose (2–3 mg/kg vs. 1 mg/kg in adults) requirement of succinylcholine in younger patients is thought to be due to its rapid distribution into an enlarged volume of extracellular fluid rather than an altered response to the action of the drug at neuromuscular junction nicotinic acetylcholine receptors.[8] (Level III Grade C)

Practice points	Suxamethonium in combination with other drugs (analgesics and vagolytic agents) resulted in superior intubation conditions and a shorter procedure duration.[1-6](Level II, Grade A) Chloride anhydrous salt equates to 110mg in 2 mL of suxamethonium chloride which is 10% more suxamethonium than suxamethonium chloride dihydrate salt.
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