Salbutamol

Newborn use only

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Alert	Use with caution; safety data in newborn infants are limited.
	Evidence in the treatment of respiratory disease and bronchospasm in neonates is poor.
Indication	Hyperkalaemia
A -4:	Bronchospasm (evidence for efficacy is lacking)
Action	Stimulates liver and muscle cyclic AMP production causing potassium flow into cells.
Drug type	Sympathomimetic. β ₂ -agonist.
Trade name	IV: Ventolin Injection
	Inhalation: APO-Salbutamol 2.5, Asmol uni-dose 2.5, Butamol 2.5, Chemmart Salbutamol 2.5, Pharmacor Salbutamol 2.5, Salbutamol Actavis 2.5, Salbutamol 2.5, Salbutamol Sandoz 2.5, Salbutamol
	Sterinebs 2.5, Salbutamol-GA 2.5, Salbutamol-GA 2.5, Ventolin Nebules 2.5
Presentation	IV: 500 micrograms/mL ampoule
rresentation	Inhalation: 1 mg/mL (2.5 mg in 2.5 mL) and 2 mg/mL (5 mg in 2.5 mL) inhalation solution ampoules.
Dose	Intravenous:
2000	4–5 microgram/kg over 20 minutes.
	Monitor serum potassium and heart rate (tachycardia) closely. If potassium critical or continues to rise,
	consider repeating dose every 4 hours or use of other strategy (insulin/glucose; addition of rectal
	cation-resin).
	Inhalation:
	400 microgram via nebulisation. Repeat two-hourly as required and titrated to response [serum
	potassium or respiratory status] and heart rate [tachycardia].
Dose adjustment	
Maximum dose	
Total cumulative	
dose	
Route	IV, inhalation
Preparation	IV:
	Draw up 0.4 mL (200 microgram of salbutamol) and add 19.6 mL of water for injection to make a 10
	microgram/mL solution.
	Inhalation:
	Draw up 0.4 mL (400 micrograms of salbutamol) from the 1 mg/mL inhalation ampoule and add 1.6 mL sodium chloride 0.9% to make a final volume of 2 mL with a final concentration of 0.2mg/mL.
	OR.
	Draw up 0.2 mL (400 micrograms of salbutamol) from the 2 mg/mL inhalation ampoule and add 1.8 mL
	sodium chloride 0.9% to make a final volume of 2 mL with a final concentration of 0.2mg/mL.
Administration	IV: Over 15–20 minutes via syringe driver.
	Inhalation: Via nebuliser over 10 minutes and discard remainder
Monitoring	Cardiac rate and rhythm,
	Serum potassium, blood glucose
Contraindications	
Precautions	Infants with tachycardia
Drug interactions	Non-selective beta-blockers may increase serum potassium.
	Diuretics (hydrochlorothiazide, furosemide) increase risk of hypokalaemia and ECG changes.
	Salbutamol decreases digoxin concentrations.
Adverse reactions	Tachycardia, tremor, hypokalaemia. There is some concern that a transient increase in serum
	potassium may occur in the first few minutes of treatment.8
Overdose	AUSTRALIA
	Contact the Poisons Information Centre on 13 11 26 for information on the management of overdose.
	NEW ZEALAND
Compatibility	Contact the National Poisons Centre on 0800 764 766 for information on the management of overdose.
Compatibility	Fluids: Glucose 5%, sodium chloride 0.9%, glucose 5% in sodium chloride 0.9%,, lactated Ringer's injection
	PN at Y-site: Compatible with 2 in 1 solution (Amino acid-glucose-trace element mixture). No
	information on lipid emulsion. Y-site: Meropenem, metronidazole, naloxone
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Salbutamol

Newborn use only

Diluted solution stable for 24 hours below 25°C. Inhalation: Ampoules should be used immediately after opening. Any unused solution should be discarded. IV ampoule: Store at room temperature below 30°C. Protect from light. Inhalation ampoule: Store at room temperature below 25°C. Protect from light. Excipients Special comments Cross-check the correct strength of salbutamol intravenous and inhalation ampoules. Efficacy and safety Treatment of hyperkalaemia: A systematic review identified one study (Singh et al., 2002) of 19 infants which compared inhaled salbutamol [albuterol] versus placebo for non-oliguric hyperkalaemia (serum K° 5–7.5 mmol/L) in premature newborns.¹ Inhaled salbutamol 400 microgram, repeated 2-hourly as required, reduced serum K' from baseline at 4 hours (mean difference 6.69 mmol/L) and 8 hours (mean difference ol.59 mmol/L).¹ All-cause mortality was not reduced and cardiac arrhythmia did not occur in either study group. There was no significant difference in severe IVH, tremor, hyperglycaemia or pulmonary haemorrhage.¹ A number of case reports and case series have been published gocumenting the efficacy of salbutamol by infusion for treatment of hyperkalaemia in the newborn. Greenhough et al reported the use of IV salbutamol and A microgram/kg over 20 minutes in 10 consecutive neonates with hyperkalaemia² The potassium fell in 7 of the 10 infants (range 0.7–1.8 mmol/L) but continued to rise in 3 infants, all of whom had a persistent metabolic acidosis.² Murdoch et al reported on the use of IV salbutamol 4 microgram/kg over 20 minutes in 13 children (ages 0.01–16.7 years) with hyperkalaemia.³ The mean reduction in plasma potassium concentration was 1.48 mmol/L at 40 minutes and 1.69 mmol/L at 120 minutes.¹ Kemper et al reported on the use of IV salbutamol at 5 microgram/kg over 20 minutes in 15 children (ages 0.1–16 years) with hyperkalaemia.* The mean reduction in plasma potassium concentration was 0.87 minol/L at 30 minutes and 1.69 mmol/L at 120 minutes. Transient tachycardia w		Inhalation: Sodium chloride 0.9%
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newborn infants with respiratory disease. (LOE I GOR C)		

Salbutamol

Newborn use only

Di	haumanakinatina		
Ri lir pr TI di	harmacokinetics eports describing the pharmacokinetics of intravenous salbutamol in neonates and children are mited. Kirpalani et al studied the pharmacokinetics of a single dose of intravenous salbutamol in six reterm infants (GA 24 to 28 weeks), postnatal age 54 to 105 days, with bronchopulmonary dysplasia. he elimination half-life of salbutamol was 118 minutes (range 69 to 162 minutes), volume of istribution was 1291 mL/kg (range 246 to 2997) and clearance 7.5 mL/kg/min (range 2.46 to 20.1).		
	The authors noted that the elimination half-life in their neonates was slightly shorter than that of healthy adults. ⁷		
Practice points			
References 1. 2. 3. 4. 5. 6. 7.	hyperkalemia in premature neonates. <i>The Journal of Pediatrics</i> , 141(1), pp.16-20. Greenough A, Emery E, Brooker R and Gamsu H (1992). Salbutamol infusion to treat neonatal hyperkalaemia. <i>Journal of Perinatal Medicine</i> , 20(6), pp.437-441. Murdoch I, Dos Anjos R and Haycock G. (1991). Treatment of hyperkalaemia with intravenous salbutamol. <i>Archives of Disease in Childhood</i> , 66(4), pp.527-528. Kemper M, Harps E, Hellwege H and Müller-Wiefel D. (1996). Effective treatment of acute hyperkalaemia in childhood by short-term infusion of salbutamol. <i>European Journal of Pediatrics</i> , 155(6), pp.495-497. Moresco L, Bruschettini M, Cohen A, Gaiero A, Calevo MG. Salbutamol for transient tachypnea of the newborn. Cochrane Database Syst Rev. 2016. Ng G, da Silva O, Ohlsson A. Bronchodilators for the prevention and treatment of chronic lung disease in preterm infants. Cochrane Database Syst Rev. 2016. Kirpalani H, Doren G, Schmidt B, Tan Y, Santos R, Soldin S. (1990). Respiratory response and pharmacokinetics of intravenous salbutamol in infants with bronchopulmonary dysplasia. <i>Critical Care Medicine</i> , 18(12), pp. 1374-1377. Mandelberg A, Krupnik Z, Houri S, Smetana S, Gilad E, Matas Z, Priel IE. Salbutamol metered-dose inhaler with spacer for hyperkalemia: how fast? How safe?. CHEST Journal. 1999 Mar 1;115(3):617-22.		

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This standard concentration formulary has been developed by the ANMF standard concentration working group.

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