HYDROCORTISONE

Trade Name	Solu-Cortef (Pfizer)
Class	Adrenal corticosteroid
Mechanism of Action	Mainly glucocorticoid effects Increases the expression of adrenergic receptors in the vascular wall, enhancing vascular reactivity Stimulates the liver to form glucose from amino acids and glycerol, and the deposition of glycogen. Decreases peripheral glucose utilisation, increases protein breakdown and activates lipolysis Increases renal calcium excretion.
Indications	**Indication 1:** Hypotension refractory to fluid resuscitation, requiring inotrope **Indication 2:** To prevent bronchopulmonary dysplasia *SMO review at 12-24 hrs of age* and consider if: • < 26 weeks • 26-27^{6} weeks - if incomplete antenatal steroids*, or - remains intubated at 12-24 hours of age, or - FiO_2 consistently >30% after surfactant **Indication 3:** Respiratory failure from bronchopulmonary dysplasia **Indication 4:** Hypoglycaemia from suspected adrenal insufficiency **Indication 5:** Physiological replacement therapy **Indication 6:** Stress dosing in confirmed adrenal insufficiency
Contraindications	Untreated systemic infection.
Supplied As	**Oral:** 1mg/mL solution prepared by Pharmacy **IV/IM:** Hydrocortisone sodium succinate 100mg in actovial with 2 mL of diluent (contains benzyl alcohol)
Dilution ***TWO dilution steps required for IV use ***	**Oral:** Nil required if using Pharmacy solution (see comments) **IM:** The 50mg/mL solution can be used to minimise volume

***TWO dilution steps required for IV use ***

IV: 2 step dilution process

Step 1. Reconstitute the vial

Drug	Add Diluent supplied	Total Volume	Concentration
100mg (dry powder)	2 mL	2 mL	50 mg/mL

Step 2. Further dilute the 50 mg/mL solution in step 1

Drug	Add Diluent	Total Volume	FINAL CONCENTRATION
	Water for injection		
50 mg = 1mL	4 mL	5mL	**10 mg/mL**

Dosage and Interval

Indication 1: Hypotension

1 mg/kg/dose 6 hourly, when stable wean to
0.5mg/kg/dose 6 hourly for 48 hrs then
0.5mg/kg/dose 12 hourly for 48 hrs then stop

If critically unwell can start at 2mg/kg/dose 6 hrly

Indication 2: BPD Prevention

0.5 mg/kg/dose 12 hourly for 7 days, then
0.5 mg/kg/dose daily for 3 days

Indication 3: BPD Treatment

1mg/kg/dose 8 hourly for 4 days, then
1mg/kg/dose 12 hourly for 2 days, then
1mg/kg/dose 24 hours later then stop

Indication 4: Hypoglycaemia (suspected adrenal insufficiency)

2 mg/kg/dose	6 hourly for 48 hours	then,
1 mg/kg/dose	6 hourly for 48 hours	then,
0.5 mg/kg/dose	6 hourly for 48 hours	then stop

If critically unwell consider 4 hourly dosing or a continuous infusion of 2mg/m^2/hour. See Infusion sheet

Indication 5: Physiological replacement

2-3 mg/m^2/dose 6 hourly, or on the advice of Endocrine

Indication 6: Stress dosing for confirmed adrenal insufficiency

Dose on the advice of Endocrine.
A continuous infusion may be needed of 2mg/m^2/hr.
See infusion sheet

NOTE: m^2 = (0.05 x kg) + 0.05

Administration	**IV**: Slow push or continuous infusion **IM:** Inject dose into a large muscle (buttock, thigh) IM dose volume should be kept between 0.5-1mL if possible to decrease the pain for the baby See IM drug guideline in Drugs folder and Handbook **Oral:** Request 1mg/mL oral solution prepared by pharmacy After hours IV solution can be used for oral administration (see comments section)
Compatible With …	**Solution:** 0.9% sodium chloride, 5% dextrose, 10% dextrose, lactated Ringer's solution, TPN, lipids **Y-site:** Acyclovir, adrenaline, aminophylline, amphotericin B, ampicillin, atropine, calcium chloride*, calcium gluconate*, chloramphenicol, clindamycin, dexamethasone, dexmedetomidine, digoxin, dopamine, enalapril, erythromycin lactobionate, fentanyl, furosemide, heparin, hydralazine, insulin, isoproterenol, lignocaine, lorazepam, meropenem, methicillin, metoclopramide, metronidazole, morphine, netilmicin, noradrenaline, oxacillin, pancuronium, paracetamol, penicillin G, phenobarbital, phytonadione, piperacillin, potassium chloride, propofol, propranolol, sodium bicarbonate tobramycin*, vancomycin* and vecuronium. *results for compatibility with calcium , tobramycin and vancomycin are variable give separately if possible and if not monitor for signs of precipitation in the line.
Incompatible With	Diazepam, diazoxide, dobutamine, ganciclovir, magnesium sulphate, midazolam, nafcillin, pentamidine, phenytoin, sulphamethoxazole/trimethoprim,
Monitoring	Blood pressure and blood glucose monitoring
Stability	**IV:** Discard opened vial immediately after use Discard unused reconstituted 10mg/mL solution immediately Use a new vial to draw up each dose **Oral:** 1mg/mL oral solution prepared by pharmacy is stable for 30 days
Storage	Unopened vials are stored at room temperature, protect from light Store oral solutions in the fridge.
Adverse Reactions	Hyperglycaemia, hypertension, sodium and water retention, immunosuppression, gastrointestinal ulceration, pancreatitis, osteoporosis, growth suppression.
Comments….	* Incomplete antenatal steroids means - one dose only, or less than 24 hrs after the second dose or rescue dose. Note that different iv compatibilities and side effects may be listed for hydrocortisone preparations other than hydrocortisone sodium

… Comments	succinate. Compatibility information in this document is specific for hydrocortisone sodium succinate only. If oral hydrocortisone is prescribed outside of usual pharmacy hours the injection solution (10mg/mL) can be administered orally. Use a new vial to make up each dose and get pharmacy to make up the 1mg/mL solution as soon as possible In a critically unwell baby reduce interval to 4 hourly dosing or consider a continuous iv infusion
References	1. Neofax 2000, 2. 1999 Medicines for Children RCPCH, 3. Arch Dis Child 1997;76:F174-8, 4. Pediatrics 1993;92:715-7 5. Trissel LA, Handbook on Injectable Drugs, 10h Ed. 6. Frank Shann Drug Doses 13th Edition 7. Arch Dis Child 2019;104:F30-5. 8. Uptodate.com 9. J Peds 2013: 162;4,685-690. Parikh
Updated By	A Lynn, B Robertshawe December 2008 A Lynn, B Robertshawe October 2012 (re-order profile, 2 dilutions) N Austin, M Wallenstein, K McKenzie, B Robertshawe May 2019 (indication and dose update) A Lynn, M Wallenstein. B Robertshawe with SMO consensus June 2020 for BPD prevention A Lynn, B Robertshawe, N Austin. K MacKenzie Feb 2022 (BPD management, clarification around hypoglycaemia indication and consistency of dosing) A Lynn, B Robertshawe March 2023 (update of dilution instructions) A Lynn, K Mackenzie (reduce physiological steroid dosing)