

# HYDROCORTISONE

<b>Trade Name</b>	Solu-Cortef (Pfizer)										
<b>Class</b>	Adrenal corticosteroid										
<b>Mechanism of Action</b>	<p>Mainly glucocorticoid effects</p> <p>Increases the expression of adrenergic receptors in the vascular wall, enhancing vascular reactivity</p> <p>Stimulates the liver to form glucose from amino acids and glycerol, and the deposition of glycogen.</p> <p>Decreases peripheral glucose utilisation, increases protein breakdown and activates lipolysis</p> <p>Increases renal calcium excretion.</p>										
<b>Indications</b>	<p><b>Indication 1:</b> Hypotension refractory to fluid resuscitation, requiring inotrope</p> <p><b>Indication 2:</b> To prevent bronchopulmonary dysplasia *SMO review at 12-24 hrs of age* and consider if:</p> <ul style="list-style-type: none"> <li>• &lt; 26 weeks</li> <li>• 26-27<sup>6</sup> weeks                             <ul style="list-style-type: none"> <li>- if incomplete antenatal steroids*, or</li> <li>- remains intubated at 12-24 hours of age, or</li> <li>- FiO<sub>2</sub> consistently &gt;30% after surfactant</li> </ul> </li> </ul> <p><b>Indication 3:</b> Respiratory failure from bronchopulmonary dysplasia</p> <p><b>Indication 4:</b> Hypoglycaemia from suspected adrenal insufficiency</p> <p><b>Indication 5:</b> Replacement therapy in confirmed adrenal insufficiency</p> <p><b>Indication 6:</b> Stress dosing in confirmed adrenal insufficiency</p>										
<b>Contraindications</b>	Untreated systemic infection.										
<b>Supplied As</b>	<p><b>Oral:</b> 1mg/mL solution prepared by Pharmacy</p> <p><b>IV/IM:</b> Hydrocortisone sodium succinate 100mg in actovial with 2 mL of diluent (contains benzyl alcohol)</p>										
<b>Dilution</b> <b>*Two dilution steps required*</b>	<p><b>Oral:</b> Nil required if using Pharmacy solution (see comments)</p> <p><b>IV:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Vial</th> <th style="width: 25%;">Diluent Added</th> <th style="width: 25%;">Total Volume</th> <th style="width: 25%;">Concentration</th> </tr> </thead> <tbody> <tr> <td>100mg</td> <td>2mL</td> <td>2mL</td> <td><b>50mg/mL</b></td> </tr> </tbody> </table> <p><b>Then further dilute</b> by taking 1mL (50mg) and add 4mL of sterile water for injection for a <b>final concentration of 10mg/mL</b></p> <p><b>IM:</b> The 50mg/mL solution can be used to minimise volume</p>			Vial	Diluent Added	Total Volume	Concentration	100mg	2mL	2mL	<b>50mg/mL</b>
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100mg	2mL	2mL	<b>50mg/mL</b>								

<p><b>Dosage and Interval</b></p>	<p><b>Indication 1: Hypotension</b>                  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</p> <p><b>Indication 2: BPD Prevention</b>                  0.5 mg/kg/dose 12 hourly for 7 days, then                  0.5 mg/kg/dose daily for 3 days</p> <p><b>Indication 3: BPD Treatment</b>                  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</p> <p><b>Indication 4: Hypoglycaemia, suspected adrenal insufficiency</b>                  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<sup>2</sup>/hour. See Infusion sheet</p> <p><b>Indication 5: Replacement for confirmed adrenal insufficiency</b>                  3-4 mg/m<sup>2</sup>/dose 6 hourly, or on the advice of Endocrine</p> <p><b>Indication 6: Stress dosing for confirmed adrenal insufficiency</b>                  Dose on the advice of Endocrine.                  A continuous infusion may be needed of 2mg/m<sup>2</sup>/hr.                  See infusion sheet</p> <p><b>NOTE: m<sup>2</sup> = (0.05 x kg) + 0.05</b></p>
<p><b>Administration</b></p>	<p><b>IV:</b> Slow push or continuous infusion  <b>Oral:</b> IV solution is used for oral administration  <b>IM:</b> 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</p>
<p><b>Compatible With ...</b></p>	<p><b>Solution:</b>                  0.9% sodium chloride, 5% dextrose, 10% dextrose, lactated                  Ringer’s solution, TPN, lipids  <b>Y-site:</b>                  Acyclovir, adrenaline, aminophylline, amphotericin B, ampicillin,                  atropine, calcium chloride*, calcium gluconate*, chloramphenicol,                  clindamycin, dexamethasone, dexmedetomidine, digoxin,                  dopamine, enalapril, erythromycin lactobionate, fentanyl,</p>

<b>...Compatible With</b>	frusemide, 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.
<b>Incompatible With</b>	Diazepam, diazoxide, dobutamine, ganciclovir, magnesium sulphate, midazolam, nafcillin, pentamidine, phenytoin, sulphamethoxazole/trimethoprim,
<b>Monitoring</b>	Blood pressure and blood glucose monitoring
<b>Stability</b>	<b>IV:</b> Discard opened vial immediately after use Discard unused reconstituted 10mg/mL solution immediately Use a new vial to draw up each dose <b>Oral:</b> 1mg/mL oral solution prepared by pharmacy is stable for 30 days
<b>Storage</b>	Unopened vials are stored at room temperature, protect from light Store oral solutions in the fridge.
<b>Adverse Reactions</b>	Hyperglycaemia, hypertension, sodium and water retention, immunosuppression, gastrointestinal ulceration, pancreatitis, osteoporosis, growth suppression.
<b>Comments</b>	* Incomplete antenatal steroids means - one dose only, or less than 24 hrs after the second dose or rescue dose.  Note that different compatibilities and side effects may be listed for hydrocortisone preparations other than hydrocortisone sodium succinate. Information in this document is specific for hydrocortisone sodium succinate only.  If oral hydrocortisone is prescribed outside of usual pharmacy hours the injection (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
<b>References</b>	<ol style="list-style-type: none"> <li>1. Neofax 2000,</li> <li>2. 1999 Medicines for Children RCPCH,</li> <li>3. Arch Dis Child 1997;76:F174-8,</li> <li>4. Pediatrics 1993;92:715-7</li> <li>5. Trissel LA, Handbook on Injectable Drugs, 10<sup>h</sup> Ed.</li> <li>6. Frank Shann Drug Doses 13<sup>th</sup> Edition</li> <li>7. Arch Dis Child 2019;104:F30-5.</li> <li>8. Uptodate.com</li> <li>9. J Peds 2013: 162;4,685-690. Parikh</li> </ol>

<b>Updated By</b>	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)