




# DEXAMETHASONE

<b>Indication</b>	<ul style="list-style-type: none"> <li>Prevention and treatment of chronic neonatal lung disease (oxygen dependency, ventilator dependency)</li> <li>May be considered for suspected airway oedema prior to extubation<sup>1</sup></li> <li>Ophthalmic: steroid responsive inflammatory and allergic conditions of the eye<sup>1</sup></li> </ul>	
<b>ORAL</b>	<b>Presentation</b> <ul style="list-style-type: none"> <li>Compounded oral solution 1 mg in 1 mL <ul style="list-style-type: none"> <li>Available: Central Pharmacy QH</li> </ul> </li> <li>Ampoule 4 mg in 1 mL</li> </ul>	
	<b>Dosage (lung disease)</b> <ul style="list-style-type: none"> <li>Refer to desired protocol below</li> </ul>	
	<b>Dosage (airway oedema)</b> <ul style="list-style-type: none"> <li>0.25 mg/kg every 8 hours for 3 doses</li> <li>Give last dose 1 hour before extubation<sup>2</sup></li> </ul>	
	<b>Preparation (using oral solution)</b> <ul style="list-style-type: none"> <li>Shake well</li> <li>Draw up 1 mg (1 mL) and make up to 5 mL total volume with water for injection <ul style="list-style-type: none"> <li>Concentration now equal to 0.2 mg/mL</li> </ul> </li> </ul>	
	<b>Preparation (using IV ampoule)</b> <ul style="list-style-type: none"> <li>Draw up 4 mg (1 mL) and make up to 4 mL total volume with water for injection <ul style="list-style-type: none"> <li>Concentration now equal to 1 mg/mL</li> </ul> </li> <li>For small dose/volume <ul style="list-style-type: none"> <li>Draw up 1 mg (1 mL) from the 1 mg/mL solution and make up to 5 mL total volume with water for injection</li> <li>Concentration now equal to 0.2 mg/mL</li> </ul> </li> </ul>	
	<b>Administration</b> <ul style="list-style-type: none"> <li>Draw up prescribed dose into oral/enteral syringe</li> <li>Oral/OGT/NGT with feeds<sup>3</sup></li> </ul>	
<b>INTRAVENOUS</b>	<b>Presentation</b> <ul style="list-style-type: none"> <li>Ampoule: 4 mg in 1 mL</li> </ul>	
	<b>Dosage</b> <ul style="list-style-type: none"> <li>Refer to desired protocol below</li> </ul>	
	<b>Preparation</b> <ul style="list-style-type: none"> <li>Draw up 4 mg (1 mL) and make up to 4 mL total volume with water for injection <ul style="list-style-type: none"> <li>Concentration now equal to 1 mg/mL</li> </ul> </li> <li>For small dose/volume <ul style="list-style-type: none"> <li>Draw up 1 mg (1 mL) from the 1 mg/mL solution and make up to 5 mL total volume with water for injection</li> <li>Concentration now equal to 0.2 mg/mL</li> </ul> </li> </ul>	
	<b>Administration</b> <ul style="list-style-type: none"> <li>Draw up prescribed dose</li> <li>IV injection over 1–3 minutes<sup>4</sup></li> </ul>	
<b>OPHTHALMIC</b>	<b>Presentation</b> <ul style="list-style-type: none"> <li>Drops: 0.1% in 5 mL</li> </ul>	
	<b>Dosage</b> <ul style="list-style-type: none"> <li>1 drop in each eye every 3 to 8 hours<sup>5</sup></li> </ul>	
	<b>Preparation</b> <ul style="list-style-type: none"> <li>Shake bottle before use<sup>6</sup></li> </ul>	
	<b>Administration</b> <ul style="list-style-type: none"> <li>Hold eye lids apart and apply directly onto eye</li> <li>Nasolacrimal occlusion or gently closing the eyelid after administration may reduce the systemic absorption and result in a decrease in systemic adverse reactions<sup>6</sup></li> </ul>	
<b>Special considerations</b>	<ul style="list-style-type: none"> <li>Perianal itching may occur when large doses are administered IV<sup>4</sup></li> <li>Do not cease abruptly. Wean slowly</li> <li>Oral and IV may be further diluted for small dose/volume administration</li> </ul>	
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>BGL daily. If hyperglycaemia, increase frequency</li> <li>BP daily. If hypertension, increase frequency</li> <li>Signs of infection</li> </ul>	

<b>Compatibility</b>	<ul style="list-style-type: none"> <li>• Fluids <ul style="list-style-type: none"> <li>○ 5% glucose<sup>4</sup>, 0.9% sodium chloride<sup>4</sup></li> </ul> </li> <li>• Y-site <ul style="list-style-type: none"> <li>○ Aciclovir<sup>4</sup>, amikacin<sup>4</sup>, atracurium<sup>4</sup>, aztreonam<sup>4</sup>, cefalotin<sup>4</sup>, cefazolin<sup>4</sup>, cefotaxime<sup>4</sup>, cefoxitin<sup>4</sup>, ceftazidime<sup>4</sup>, ceftriaxone<sup>4</sup>, cisatracurium<sup>4</sup>, dexmedetomidine<sup>4</sup>, dopamine<sup>4</sup>, fentanyl<sup>4</sup>, filgrastim<sup>4</sup>, fluconazole<sup>4</sup>, foscarnet<sup>4</sup>, furosemide<sup>4</sup>, glyceryl trinitrate<sup>4</sup>, granisetron<sup>4</sup>, heparin sodium<sup>4</sup>, hydrocortisone sodium succinate<sup>4</sup>, hydromorphone<sup>4</sup>, linezolid<sup>4</sup>, morphine sulfate<sup>4</sup>, paracetamol<sup>4</sup>, pethidine<sup>4</sup>, piperacillin-tazobactam (EDTA-free)<sup>4</sup>, potassium chloride<sup>4</sup>, ranitidine<sup>4</sup>, sodium bicarbonate<sup>4</sup>, sodium nitroprusside<sup>4</sup>, suxamethonium<sup>4</sup>, vancomycin<sup>4</sup>, zidovudine<sup>4</sup></li> </ul> </li> </ul>
<b>Incompatibility</b>	<ul style="list-style-type: none"> <li>• Fluids <ul style="list-style-type: none"> <li>○ No information<sup>4</sup></li> </ul> </li> <li>• Drugs <ul style="list-style-type: none"> <li>○ Amiodarone<sup>4</sup>, calcium chloride<sup>4</sup>, calcium gluconate<sup>4</sup>, caspofungin<sup>4</sup>, ciprofloxacin<sup>4</sup>, dobutamine<sup>4</sup>, erythromycin<sup>4</sup>, esmolol<sup>4</sup>, gentamicin<sup>4</sup>, haloperidol lactate<sup>4</sup>, magnesium sulfate<sup>4</sup>, midazolam<sup>4</sup>, mycophenolate mofetil<sup>4</sup>, protamine<sup>4</sup>, rocuronium<sup>4</sup>, tobramycin<sup>4</sup></li> </ul> </li> </ul>
<b>Interactions</b>	<ul style="list-style-type: none"> <li>• Barbiturates and phenytoin may increase the metabolism of dexamethasone<sup>7</sup></li> <li>• Antithyroid agents may decrease the metabolism of dexamethasone<sup>7</sup></li> <li>• Caution with NSAIDs (ibuprofen, indomethacin)</li> </ul>
<b>Stability</b>	<ul style="list-style-type: none"> <li>• Ampoule <ul style="list-style-type: none"> <li>○ Store below 25 °C. Protect from light<sup>7</sup></li> </ul> </li> <li>• Oral solution <ul style="list-style-type: none"> <li>○ Store below 25 °C. Stable until expiry date</li> <li>○ Discard 4 weeks after opening or as per local infection control policy (limited evidence)</li> </ul> </li> <li>• Drops <ul style="list-style-type: none"> <li>○ Store below 25 °C<sup>6</sup></li> <li>○ Discard 4 weeks after opening<sup>6</sup></li> </ul> </li> </ul>
<b>Side effects</b>	<ul style="list-style-type: none"> <li>• Blood pathology: hyperglycaemia<sup>1</sup>, hypokalemia<sup>1</sup>, hypertriglyceridemia<sup>1</sup></li> <li>• Circulatory: myocardial hypertrophy and outflow obstruction may occur with higher doses and prolonged courses<sup>1</sup></li> <li>• Endocrine: adrenal insufficiency associated with higher doses (initial more than 0.2 mg/kg/day) and longer courses (more than 14 days)</li> <li>• Immune: increased risk of infection<sup>1</sup></li> <li>• Eye: Raised intraocular pressure<sup>6</sup>, corneal perforation<sup>6</sup>, secondary ocular herpes simplex<sup>6</sup>, periorbital oedema<sup>6</sup></li> <li>• Early administration (less than 8 days of age) higher blood pressure, bleeding from the stomach or bowel, perforation of the bowel, excessive glucose in the bloodstream, and increased risk of cerebral palsy at follow-up<sup>8</sup></li> <li>• Late administration (after seven days of age) short-term side effects such as bleeding from the stomach or bowel, higher blood pressure, and difficulty tolerating glucose<sup>9</sup></li> </ul>
<b>Actions</b>	<ul style="list-style-type: none"> <li>• Synthetic adrenocorticosteroid with glucocorticoid activity<sup>7</sup></li> <li>• Anti-inflammatory and immunosuppressant activity<sup>7</sup></li> <li>• Principal metabolic actions are on gluconeogenesis, glycogen deposition and protein and calcium metabolism<sup>7</sup></li> </ul>
<b>Abbreviations</b>	BGL: blood glucose level, BP: blood pressure, IV: intravenous, OGT: orogastric tube, NGT: nasogastric tube, QH: Queensland Health
<b>Keywords</b>	Chronic neonatal lung disease, postnatal corticosteroids, bronchopulmonary dysplasia, BPD, dexamethasone eye drops

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## Protocols for neonatal lung disease treatment (oral or IV)

Base dosage on weight at Day 1 of treatment or birthweight (whichever is the greater). Do not alter dosage for weight changes during course.

### DART Protocol<sup>1</sup>

DART Protocol	Dose	Frequency	Duration (days)
	0.075 mg/kg	every 12 hours	for 3 days
	0.05 mg/kg	every 12 hours	for 3 days
	0.025 mg/kg	every 12 hours	for 2 days
	0.01 mg/kg	every 12 hours	for 2 days then cease

### 12 day course<sup>2</sup>

14 day course	Dose	Frequency	Duration (days)
	0.25 mg/kg	every 12 hours	for 3 days
	0.15 mg/kg	every 12 hours	for 3 days
	0.1 mg/kg	every 12 hours	for 3 days
	0.05 mg/kg	every 12 hours	for 3 days then cease

### 30 day course

30 day course	Dose	Frequency	Duration (days)
	0.15 mg/kg	every 12 hours	for 3 days
	0.135 mg/kg	every 12 hours	for 3 days
	0.12 mg/kg	every 12 hours	for 3 days
	0.11 mg/kg	every 12 hours	for 3 days
	0.1 mg/kg	every 12 hours	for 3 days
	0.09 mg/kg	every 12 hours	for 3 days
	0.08 mg/kg	every 12 hours	for 3 days
	0.07 mg/kg	every 12 hours	for 3 days
	0.065 mg/kg	every 12 hours	for 3 days
0.05 mg/kg	every 12 hours	for 3 days then cease	

### 6 week course<sup>10</sup>

6 week course	Dose	Frequency	Duration (days)
	0.25 mg/kg	every 12 hours	for 3 days
	0.15 mg/kg	every 12 hours	for 3 days
	Then reduce dose by 10% every 3rd day until 0.05 mg/kg	every 12 hours	every 3rd day
	0.05 mg/kg	every 12 hours	every <i>other</i> day for 6 days then cease

## References

1. IBM Micromedex®Neofax®. Dexamethasone. In: IBM Micromedex® NeoFax®/Pediatrics (electronic version). IBM Watson Health, Greenwood Village, Colorado, USA. 2020 [cited 2020 October 08]. Available from: <http://neofax.micromedexsolutions.com/neofax>.
2. Davies M, Cartwright D, Inglis G. Pocket Notes on Neonatology. 2nd ed. NSW: Elsevier; 2008.
3. Australian Medicines Handbook Children's Dosing Companion. Dexamethasone. [Internet]. Adelaide: Australian Medicines Handbook Pty Ltd; January 2021 [cited 2021 May 11]. Available from: <https://amhonline.amh.net.au>.
4. Australian Injectable Drugs Handbook. Nicolette Burrigge, Keli Symons, editors. Dexamethasone. 7th ed. [Internet]. New South Wales: Society of Hospital Pharmacists of Australia (SHPA); 2020 Sept [cited 2020 October 06]. Available from: <https://aidh.hcn.com.au>.
5. Shann F. Drug Doses. 17th ed: Collective Pty Ltd; 2017.
6. MIMS Online. Dexamethasone eye drops. [Internet]: MIMS Australia; October 2018 [cited 2019 March 11]. Available from: <https://www.mimsonline.com.au>.
7. Therapeutic Goods Administration (TGA). Dexamethasone [Internet]. Canberra: Australian Government; April 2019 [cited 2020 October 06]. Available from: <https://www.tga.gov.au>.
8. Doyle L, Cheong J, Ehrenkranz R, Halliday H. Early (< 8 days) systemic postnatal corticosteroids for prevention of bronchopulmonary dysplasia in preterm infants. The Cochrane Database of Systematic Reviews. 2017; Issue 10. Art. No.: CD001146.pub5 DOI:10.1002/14651858.CD001146.pub5.
9. Doyle LW, Cheong JL, Ehrenkranz RA, Halliday HL. Late (> 7 days) systemic postnatal corticosteroids for prevention of bronchopulmonary dysplasia in preterm infants. Cochrane Database Syst Rev 2017;10:CD001145.
10. Avery GB, Fletcher AB, Kaplan M, Brudno DS. Controlled Trial of Dexamethasone in Respirator-Dependent Infants with Bronchopulmonary Dysplasia. Pediatrics 1985;75(1):106.

## Document history

ID number	Effective	Review	Summary of updates
NMedQ21.061-V1-R26	20/07/2021	20/07/2026	Endorsed by Queensland Neonatal Services Advisory Group (QNSAG)
NMedQ21.061-V2-R26	10/09/2021	20/07/2026	Amended title of protocol '14 day course' to '12 day course'. No change to dosages

## QR code

