HYDROCORTISONE

Indication	• Replacement therapy in acute and chronic adrenocortical insufficiency[1] • Treatment of refractory hypotension not responsive to volume and inotropic support[2,3] • Adjunct treatment for persistent hypoglycaemia[2]

ORAL

Presentation	• Tablets: 4 mg | 20 mg • Mater Hospital Brisbane Pharmacy: Oral solution 1 mg/mL • Contact local compounding pharmacy to obtain a suspension
Dosage (treatment)	• Hypoglycaemia o 1–2 mg/kg every 6–8 hours[2,3]
Dosage (physiological)	• Physiological replacement o 0.2–0.3 mg/kg every 8 hours[2]
Preparation (if no oral solution)	• Tablet poorly soluble and does not disperse easily in water (takes about 5 minutes) • Use tablet strength closest to prescribed dose • To minimise dosing errors, cut tablet in half or quarter (closest to prescribed dose) as required • Mix with 5 mL water for injection • Agitate gently until powder is evenly distributed
Administration	• Draw up prescribed dose • Oral/OGT/NGT with feeds

INTRAVENOUS

Presentation	• Vial: 100 mg | Act-O vial 100 mg/2 mL
Dosage (treatment)	• Adrenal insufficiency, hypoglycaemia, hypotension o 1–2 mg/kg every 6–8 hours[2,3]
Dosage (physiological)	• Physiological replacement o 0.2–0.3 mg/kg every 8 hours[2]
Preparation	• Act-O vial 100 mg/2 mL o Follow manufactures instructions for activation o *Concentration equal to 50 mg/mL*
	• Vial 100mg o Add 2 mL of 0.9% sodium chloride or water for injection[4] o *Concentration now equal to 50 mg/mL* o Then follow instructions for *either* 10 mg/mL *or* 1 mg/mL preparation below according to prescribed dose and weight
	• To obtain <u>10 mg/mL</u> solution o Draw-up entire solution (100 mg in 2 mL) and make up to 10 mL total volume with 0.9% sodium chloride or 5% glucose o *Concentration now equal to 10 mg/mL*
	• To obtain <u>1 mg/mL</u> solution o Prepare a 10 mg/mL solution as per above instructions o Then, withdraw 1 mL of the 10 mg/mL solution and make up to 10 mL total volume with 0.9% sodium chloride or 5% glucose[2] o *Concentration now equal to 1 mg/mL*
Administration	• Draw up prescribed dose • IV injection over 2 minutes

Special considerations	• Dosage regimens vary.[5] Most common 1 mg/kg every 8–12 hours for 3 to 5 days (range 0.5 to 3 mg/kg/day) o Use lowest effective dose to manage symptoms • If indicated for: o Hypoglycaemia, refer to Queensland Clinical Guideline: *Newborn hypoglycaemia*[6] o Endocrine disorder, consult paediatric endocrinologist • Caution o If renal impairment, hypothyroidism or cardiac disease[1] o May exacerbate untreated systemic bacterial infections and mask signs of infection[2] • Prolonged use of corticosteroids (more than 14 days) may cause prolonged adrenal suppression requiring a tapering of hydrocortisone[1]
Monitoring	• Renal function, electrolytes • BP[2] • BGL[2]
Compatibility	• Fluids o 5% glucose[4], 10% glucose[7], 0.9% sodium chloride[4] • Y-site o Atropine[4], benzylpenicillin[7], cefepime[4], clindamycin[7], dexamethasone[4], digoxin[4], dopamine[4], fluconazole[7], furosemide (frusemide)[7], heparin[7], insulin (regular)[7], metronidazole[7], morphine[7], noradrenaline (norepinephrine)[4], paracetamol[4], potassium chloride[7], propofol[7], sodium bicarbonate[7] • At 1 mg/mL concentration[4] o Aciclovir, piperacillin-tazobactam, vecuronium
Incompatibility	• Known drugs o Amiodarone[4], ampicillin[7], amphotericin B[7], ciprofloxacin[4], diazepam[7], dobutamine[4], midazolam[4], phenobarbital (phenobarbitone)[4], phenytoin[7], pyridoxine[4], rocuronium[4]
Interactions	• Rotavirus vaccine: increased risk of infection by the live vaccine[8] • NSAIDS: increased risk of gastrointestinal ulcers or bleeding[8] • Pancuronium, vecuronium, rocuronium: risk of decreased effectiveness, prolonged muscle weakness and myopathy[8] • Phenytoin: risk of decreased hydrocortisone effectiveness[8] • Phenobarbital (phenobarbitone): risk of decreased hydrocortisone effectiveness[8] • Amphotericin B: increased risk of hypokalaemia[8] • Hydrochlorothiazide: risk of hypokalaemia and subsequent cardiac arrhythmias[8] • Furosemide (frusemide) risk of hypokalaemia[8]
Stability	• Vial[4] o Store below 25 °C. Protect from light[4]
Side effects[1]	• Blood pathology: sodium and potassium imbalance[2], hyperglycaemia[2] dyslipidaemia[9] • Circulatory: hypertension[2] • Digestive: peptic ulcer, use in preterm in first week associated with intestinal perforation[10] • Endocrine: adrenal suppression[9], oedema[9], diabetes mellitus[9] • Integumentary: skin atrophy[9], bruising[9], fat redistribution (producing cushingoid appearance)[9], impaired wound healing[11], masking of signs of infection[1] • Musculoskeletal: osteoporosis, fractures[11] muscle weakness[9], loss of muscle mass[9], myopathy[9] weight gain[11], suppression of growth[9] • Nervous system: convulsions[1], increased intracranial pressure[1], ocular hypertension[9], glaucoma[9] • Other: Preserved with benzyl alcohol. IV administration of this preservative may cause 'gasping syndrome' in neonates. Symptoms include striking onset of gasping syndrome, hypotension, bradycardia and cardiovascular collapse[1]
Actions	• Main adrenal corticosteroid, with primarily glucocorticoid effects[2] • Reduces peripheral glucose utilisation and increases gluconeogenesis • Enhances vascular reactivity to other vasoactive substances, such as noradrenaline (norepinephrine) and angiotensin II[2]
Abbreviations	BGL: blood glucose level, BP: blood pressure, IV: intravenous, OGT: orogastric tube, NGT: nasogastric tube, NSAID: non-steroidal anti-inflammatory drug

Keywords	Hydrocortisone, adrenocortical insufficiency, cortisol, hypoglycaemia, blood glucose

The Queensland Clinical Guideline *Neonatal Medicines* is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

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Document history

ID number	Effective	Review	Summary of updates
NMedQ19.023-V1-R24	25/08/2019	25/08/2024	Endorsed by Queensland Neonatal Services Advisory Group (QNSAG)
NMedQ19.023-V2-R24	03/03/2021	25/08/2024	• Amended preparation instructions • Deleted stability information for infusion and reconstituted solution • Added QR code

QR scan