Waikato District Health Board	Type: **Drug Guideline**	Document reference: **0625**	Manual Classification: **Waikato DHB Drug Guidelines**	
Title: **Dexamethasone for neonates**			Effective date: **27 May 2019**	
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BRIEF ADMINISTRATION GUIDE

(For more detailed guideline information please see the following pages)

Indications:
- To facilitate extubation and improve lung function in ventilated neonates at risk of chronic lung disease[1-3]
- Treatment of post extubation laryngeal oedema[1-3]

Route: Intravenous or oral[1-3]

Dose:

Chronic lung disease[1-4,12]
- 0.075 mg/kg/dose (= 75 microgram/kg/dose) every 12 hours for 3 days, then
- 0.05 mg/kg/dose (= 50 microgram/kg/dose)every 12 hours for 4 days
- Review clinical response and wean every 2 to 3 days if appropriate

Laryngeal oedema post extubation[1,3,4]
- 0.25 mg/kg/dose given at least 4 hours prior to scheduled extubation, then every 8 hours for a total of 3 doses

Supplied as:
- Dexamethasone phosphate 4 mg/ml ampoule[5]
- Dexamethasone 1 mg/ml oral suspension[5]

Preparation and administration:

Direct IV Injection[3,4,6]
- Prepare immediately before use
- May be administered undiluted, or for doses less than 0.1 ml, dilute 0.25 ml dexamethasone with 0.75 ml compatible fluid (sodium chloride 0.9% or glucose 5%) to make a 1 mg/ml solution
- Visually inspect for cloudiness or particulate matter, do not use if present
- Draw up the prescribed dose and administer over 1 - 4 minutes
- Discard any remaining solution immediately after use

Oral[3,7]
- Shake well before use
- When the dose is less than 0.1 ml, a further dilution may be carried out to ensure accuracy of the dose. Dilute 1 ml dexamethasone with 4 ml water for injection to make a 0.2 mg/ml solution and mix well
- Draw up the prescribed dose and administer after feeds to minimise adverse effects
- Discard any remaining solution immediately after use

Monitoring:

- Monitor blood pressure at least daily[2,3,7]
- Monitor glucose levels at least daily[2,3,7]
- Monitor electrolytes periodically during treatment[3]
- Observe closely for signs of infection[7]
- Monitor for hypersensitivity reactions and adverse effects[7,8]

1. Purpose and scope

To facilitate the safe and effective use of dexamethasone in the Neonatal Intensive Care Unit (NICU).

2. Drug

Drug	Dexamethasone, dexamethasone sodium phosphate, dexamethasone phosphate
Drug action	Dexamethasone is a synthetic glucocorticoid corticosteroid with potent anti-inflammatory and immunological actions, with minimal sodium-retaining potential[2,3,9]. There are a number of pharmacological actions of dexamethasone which primarily relate to metabolism including glucose homeostasis, increased protein catabolism, suppression of the hypothalamus-pituitary-adrenal axis, and suppression of growth. Its effect on respiratory function is through a reduction in pulmonary oedema, bronchospasm, and inflammation, and increased surfactant production[2,7].
Indications	• To facilitate extubation and improve lung function in ventilated neonates at risk of chronic lung disease[1-3] • Treatment of post extubation laryngeal oedema[1-3]
Presentation	• Dexamethasone phosphate 4 mg/ml ampoule[5] Clear colourless solution. Excipients include propylene glycol, disodium edetate, sodium hydroxide, water for injection[8] • Dexamethasone 1 mg/ml oral suspension[5] Preservative free
Route	Intravenous or oral[1-3]
Dose	**Chronic lung disease**[1-4,12] • 0.075 mg/kg/dose (= 75 microgram/kg/dose) every 12 hours for 3 days, then • 0.05 mg/kg/dose (= 50 microgram/kg/dose)every 12 hours for 4 days • Review clinical response and wean every 2 to 3 days if appropriate **Laryngeal oedema post extubation**[1,3,4] • 0.25 mg/kg/dose given at least 4 hours prior to scheduled extubation, then every 8 hours for a total of 3 doses
Contraindications	• Untreated systemic fungal or viral infections[2-5,9] • Hypersensitivity to dexamethasone or any component of the formulation[3,4,9]
Precautions	• Gastric ulceration[3,5] • Concurrent use of non-steroidal anti-inflammatories e.g. indomethacin or ibuprofen[5] • Renal or hepatic impairment[3,5] • Cardiac disease[3,5]
Incompatibilities	• **Compatible** with sodium chloride 0.9%, glucose 5%[2,4,6,8] • **Incompatible** with calcium chloride, calcium gluconate, caspofungin, ciprofloxacin, co-trimoxazole, dobutamine, doxapram, gentamicin, magnesium, midazolam, phenytoin, tobramycin, and vancomycin[9,10] • Consult a pharmacist for specific compatibility information

Adverse effects	• Gastrointestinal ulceration, perforation and haemorrhage[2,3,5] • Masking signs of infection and increased risk of sepsis[2,3] • Mineralocorticoid effects including hypertension, sodium and water retention, potassium and calcium loss[2,3,5] • Adrenal suppression[2,3] • Growth suppression[2,5] • Hyperglycaemia, glycosuria[2,5] • Hypertension, hypertrophic cardiomyopathy (premature infants)[2,3] • Severe retinopathy of prematurity[2,5] • Skin atrophy, impaired wound healing[3]

3. Administration

Competency for administration	This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Waikato DHB Generic Medicine Management and IV certification as well as Neonatal specific competency NCV/NAC.
Preparation & Administration	**Direct IV Injection**[3,4,6] • Prepare immediately before use • May be administered undiluted, or for doses less than 0.1 ml, dilute 0.25 ml dexamethasone with 0.75 ml compatible fluid (sodium chloride 0.9% or glucose 5%) to make a 1 mg/ml solution • Visually inspect for cloudiness or particulate matter, do not use if present • Draw up the prescribed dose and administer over 1 - 4 minutes • Discard any remaining solution immediately after use **Oral**[3,7] • Shake well before use • When the dose is less than 0.1 ml, a further dilution may be carried out to ensure accuracy of the dose. Dilute 1 ml dexamethasone with 4 ml water for injection to make a 0.2 mg/ml solution and mix well • Draw up the prescribed dose and administer after feeds to minimise adverse effects • Discard any remaining solution immediately after use
Observations and management	• Monitor blood pressure at least daily[2,3,7] • Monitor glucose levels at least daily[2,3,7] • Monitor electrolytes periodically during treatment[3] • Observe closely for signs of infection[7] • Monitor for hypersensitivity reactions and adverse effects[7,8]
Special considerations (audit, funding, storage)	• Dexamethasone oral liquid is an unregistered medicine available under section 29 of the Medicines Act. Names of the patient and prescriber must be sent to Pharmacy when ordering • The pH of dexamethasone is 7 to 9[8] • Store dexamethasone ampoules at room temperature (below 25°C) and protect from light[8] • Store dexamethasone oral liquid in the refrigerator (2 to 8°C) and discard 7 days from opening[7]
Rescue medication	Discontinue immediately and seek urgent medical assistance if anaphylaxis or severe adverse reactions occur. Administer adrenaline and maintain airway as appropriate. Treatment of accidental overdose is symptomatic[9]

4. Guardrails

Dexamethasone is NOT Guardrails profiled on the CC syringe driver[11].

5. References

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