OBSTETRICS AND GYNAECOLOGY CLINICAL PRACTICE GUIDELINE	
# Corticosteroids: Antenatal	
Scope (Staff):	Clinical staff
Scope (Area):	Maternity
This document should be read in conjunction with the Disclaimer.	

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1. Aim

To provide clinical staff with evidence-based guidance for the safe management of women at risk of preterm birth, including the appropriate consideration of corticosteroid therapy during pregnancy.

2. Scope

This guideline does not apply to women with pre-existing diabetes (Type 1 or Type 2) who are at risk of late preterm birth (34–36^{+}6 weeks). Evidence for benefit in this subgroup is limited or absent, while substantial risks to the mother, fetus, and newborn have been documented. This applies to all other pregnant women.

3. Background

Antenatal corticosteroid therapy is recommended to enhance fetal maturation in the setting of anticipated preterm birth. Evidence demonstrates that a single course of antenatal corticosteroids reduce the incidence of respiratory distress syndrome (RDS), intraventricular haemorrhage and neonatal mortality.[6-8] This treatment is also associated with a reduction in other neonatal complications, including cerebroventricular haemorrhage and necrotising enterocolitis. The greatest benefit is when birth occurs 24 hours to 7 days after the second dose [2, 8]. No significant maternal adverse effects of corticosteroid use have been identified.; and long-term outcomes for both the baby and the mother are favourable.[8]

4. Key points

Key Point	Recommendation	Key Considerations
General use	Offer corticosteroids to all women 24–35+6 weeks gestation at risk of preterm birth including PPROM.	<24 weeks whenever active management is planned after discussion with neonatologist.
Accelerated dosing	Should not be given	No strong evidence of benefit and evidence of harm [1.2]
Preterm rupture of membranes (PROM)	Offer corticosteroids as above	Caution advised if systemic infection suspected. [1, 3]
Systemic infection	Contraindicated	Includes active tuberculosis; consult the team consultant before proceeding.

Use of tocolysis	Consider tocolysis to allow completion of steroid course. Applies to gestations <34 weeks. [1] Refer to Preterm Labour guideline	Only if no contraindications (e.g., antepartum haemorrhage, chorioamnionitis).
Multiple pregnancies	Evidence inconclusive for dosage and benefit. Management as per singleton pregnancy	Late preterm multiples require consultant discussion before prescribing.
Repeat doses	Considered on a case-by-case basis after discussion obstetric consultant if high risk of risk of PTB <34 weeks gestation [22]	Repeat course must be greater than 7 Days since last dose [22]
Gestational diabetes	Senior-level decision required for women at risk of late preterm birth (34–36+6).	• Limited evidence of benefit; • Ensure strict dietary control and blood glucose monitoring; • Refer to GDM guideline for requirements.
• Clinicians should be aware of transient fetal effects following administration, including fetal heart rate variability, altered body movements patterns, and breathing activity, typically resolving within 2–3 days[12].		

5. Dosage and Administration of antenatal corticosteroids

Administer 11.4 mg of Betamethasone (Celestone Chronodose) by intramuscular injection. Repeat the same dose once 24 hours after the initial dose.

Note:

- 1 dose = 11.4 mg intramuscular injection (equivalent to 2 ampoules of Betamethasone [Celestone Chronodose]

- 1 course = a total of 2 doses given 24 hours apart

6. Glycaemic management during corticosteroid therapy

- **Timing of administration**
  - Where possible, administer corticosteroids after 11:00. Avoid giving doses between 05:00 and 11:00, as this timing may be associated with a higher risk of neonatal hypoglycaemia.

- **Baseline assessment**
  - All women prescribed antenatal corticosteroids must have a random baseline blood glucose level (RBGL) prior to the first dose.
  - If BGL is > 7.0 mmol/L, notify the diabetes physician or educator and consider hospital admission.
  - **Note:** Timing of RBGL relative to the last intake of food or drink should be considered.

- **Risk awareness**
  - Maternal corticosteroid use is associated with an increased risk of neonatal hypoglycaemia[14]

- **Dietary management**
  - Provide dietary guidance to reduce carbohydrate intake for 3 days following corticosteroid administration. Refer to the WNHS dietetics and nutrition page.

- **Monitoring requirements:**
  - For inpatient glycaemic management following antenatal corticosteroid administration, refer to Section 7 for monitoring requirements according to diabetes status.

- **Risk of diabetic ketoacidosis:**

Corticosteroid administration can precipitate diabetic ketoacidosis (DKA) in women with Type 1 or Type 2 diabetes and GDM[17,18]. The risk is highest in women with poorly controlled T1DM.

- **Important considerations**
  - **Maternal hyperglycaemia:** Corticosteroid therapy frequently causes maternal side effects, the most clinically significant being hyperglycaemia due to increased insulin resistance[15,16]. This can occur in women with:
    - Pre-existing Type 1 or Type 2 diabetes,
    - Gestational diabetes (GDM), or
    - Previously normoglycemic pregnancies.

Hyperglycaemia near the time of delivery increases the risk of neonatal hypoglycaemia[14] and hyperbilirubinaemia[17]. Strict maternal glycaemic control during corticosteroid therapy can reduce these risks.

- Avoid beta-sympathomimetic agents (e.g., terbutaline) during corticosteroid therapy where possible, as they may worsen steroid-induced hyperglycaemia[19].
- Women with pre-existing diabetes should ideally be managed as inpatients during steroid administration.
- In high-risk cases, an insulin/dextrose infusion may be initiated at the discretion of the diabetes physician/team.
- Maintain a low threshold for suspecting DKA and initiate appropriate interventions promptly.

7. Glycaemic management by diabetes status during corticosteroid therapy – *Refer to appendix 1 for flow chart*

7.1 Gestational Diabetes Mellitus (GDM)

7.1.1 Screening for Gestational Diabetes Mellitus (GDM)

Risk Factors for GDM

- Previous GDM
- High-risk Ethnicity: Asian (including Indian), Aboriginal, Pacific Islander, Māori, Middle Eastern, non-white African
- Maternal age > 40 yrs
- First-degree family history of diabetes, including a sister with GDM
- Obesity, especially BMI > 35kg/m²
- Hypertension diagnosed before 20 weeks gestation
- Previous macrosomia infant (> 4000g)
- Unexplained stillbirth
- Congenital anomaly associated with poorly controlled diabetes
- Polyendocrine Metabolic Ovarian Syndrome (formally Polycystic Ovarian Syndrome)
- Use of certain medications: corticosteroids, antipsychotics

7.1.2 Management by GDM Risk Status

a) Women without GDM risk factors or who have had a normal OGTT

- Obtain a baseline blood glucose level prior to each corticosteroid dose.
- If BGL < 6 mmol/L:
  - Provide written dietary advice only.
  - Inpatient monitoring for BGL control is not required.

- **Note:** Timing of RBGL relative to the last intake of food or drink should be considered.
- If BGL >6 mmol/L treat as necessary and inform diabetes team

b) Women with GDM risk factor

- Monitor blood glucose following corticosteroid administration for 48 hours after the second dose
- Implement carbohydrate restriction and/or insulin therapy if required based on BGLs.

7.1.4 Diet controlled GDM

- Restrict carbohydrate intake for 72 hours following the first corticosteroid dose as per dietician information sheet.
- Initiate insulin therapy if indicated by BGL monitoring.
- Assess ketone level prior to second corticosteroid dose.

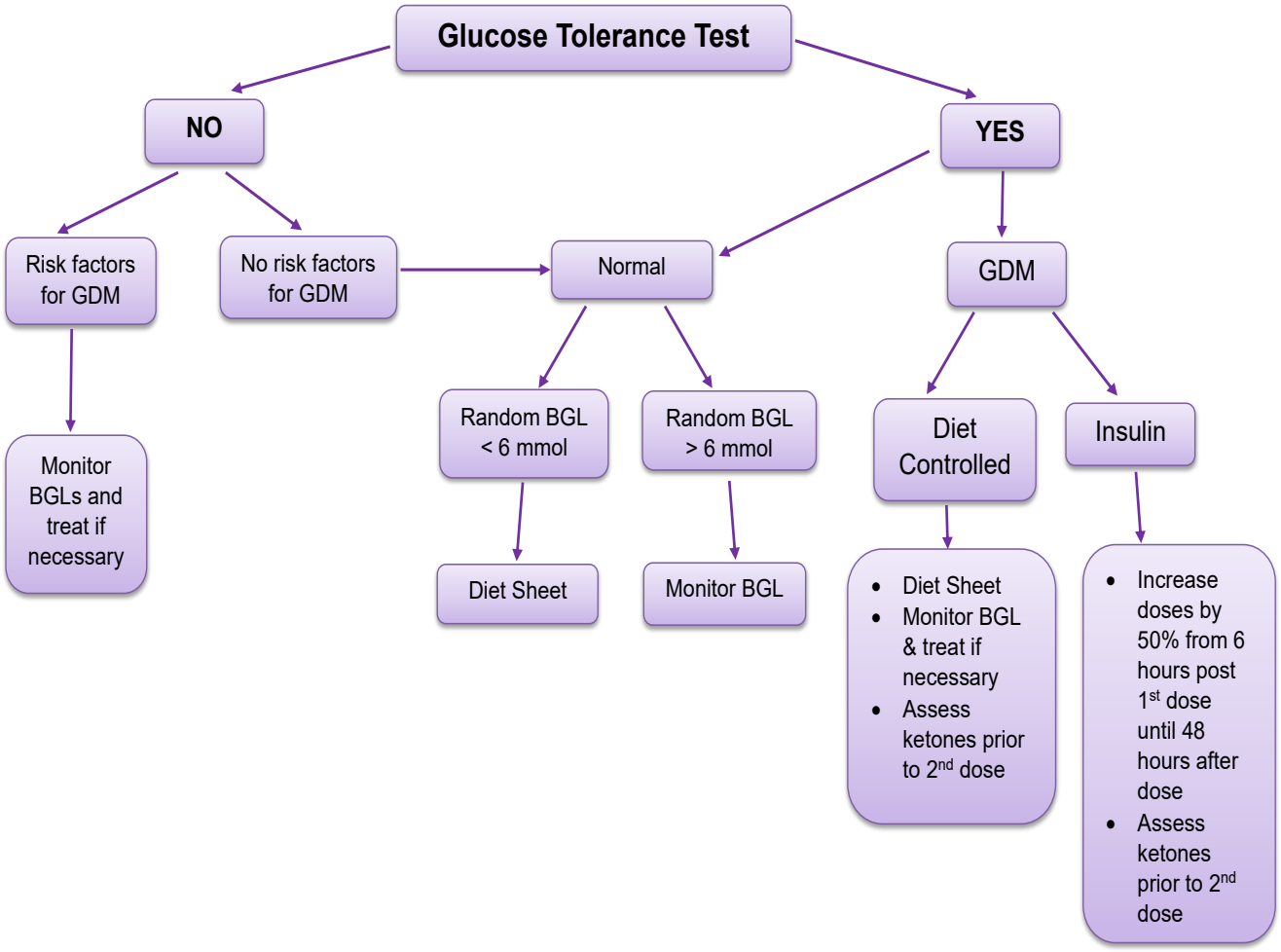
7.1.5 Insulin-treated GDM

- Increase insulin doses by ≥50% over baseline starting 4 hours after the first corticosteroid dose until 48 hours after the second dose.
- Assess ketone level prior to second corticosteroid dose.
- Dose adjustments may require doubling or more depending on BGL trends.

7.2 Women with pre-existing Type 1 or Type 2 Diabetes

- Notify the diabetes physician or medical registrar prior to corticosteroid administration
- Monitor:
  - Pre- and postprandial BGLs
  - 02:00 (2 a.m.) BGL
- Adjust insulin doses; consider insulin infusion if necessary[20]
- Women on insulin pumps:
  - Increase basal rates and insulin to carbohydrate ratios
  - Do not discontinue pump therapy
- Typical insulin dose increase: 30–50%, preferably initiated before BGL rise[21]
- For Type 1 DM:
  - Measure baseline blood ketone level prior to corticosteroids
  - Recheck ketones daily, or more frequently if BGL > 10.1 mmol/L or if unwell
  - Check ketones before the second corticosteroid dose
  - Notify diabetes team immediately if ketones > 0.6 mmol/L

Appendix 1: Glycaemic management of patient administered with corticosteroids



References

1. Miracle X, De Renzo GC, Strark A, et al. Guidelines for the use of antenatal corticosteroids for fetal maturation. Journal of Perinatal Medicine. 2008;36:191-96.
2. Royal College of Obstetricians and Gynaecologists. Antenatal Corticosteroids to Reduce Neonatal Morbidity and Mortality. Green-Top Guideline No 74. BJOG;2022.
3. Vidaeff AC, Ramin SM. Antenatal Corticosteroids After Preterm Premature Rupture of Membranes. Clinical Obstetrics and Gynecology. 2011;54(2):337-43.
4. Eventov-Friedman S, Shinwell ES. Current controversies in perinatal steroid therapy. Acta Paediatrica. 2008;97:1492-501.
5. Crowther C, McKinlay C, Middleton P, Harding J. Repeat doses of prenatal corticosteroids for women at risk of preterm birth for preventing respiratory distress. Cochrane Database of Systematic Reviews. 2015.
6. Liggins GC, Howie RN. A controlled trial of antepartum glucocorticoid treatment for prevention of the respiratory distress syndrome in premature infants. Pediatrics. 1972;50(4):515-25.
7. Newnham JP, Jobe AH. Should we be prescribing repeated courses of antenatal corticosteroids? Seminars in Fetal & Neonatal Medicine. 2009;14:157-63.
8. McGoldrick E, Stewart F, Parker R, Dalziel SR. Antenatal corticosteroids for accelerating fetal lung maturation for women at risk of preterm birth. Cochrane Database of Systematic Reviews. 2020 Dec 25;2021(2).
9. Stutchfield P, Whitaker R, Russel I, et al. Antenatal betamethasone and incidence of neonatal respiratory distress after caesarean section: pragmatic randomised trial. BMJ. 2005;331:662-4.
10. Royal Australian and New Zealand College of Obstetrics and Gynaecology. Timing of Elective Caesarean Section at Term. College Statement C-Obs 23. 2012.
11. Peltoniemi OM, Kari MA, Hallman M. Repeated antenatal corticosteroid treatment: a systematic review and meta-analysis. Acta Obstetricia et Gynecologica Scandinavica. 2011;90:719-27.
12. Surbek D, Drack G, Irion O, et al. Antenatal corticosteroids for fetal lung maturation in threatened preterm delivery: indications and administration. Archive of Gynecology and Obstetrics. 2012;286:277-81.
13. Garite TJ, Kurtzman J, Maurel K, et al. Impact of a 'rescue course' of antenatal corticosteroids: a multicenter randomized placebo-controlled trial. American Journal of Obstetrics and Gynecology. 2009;200(3):248.e1-e9.
14. Gyamfi-Bannerman C, Thom EA, Blackwell SC, Tita ATN, Reddy UM, Saade GR, et al. Antenatal betamethasone for women at risk for late preterm delivery. New England Journal of Medicine. 2016 Feb 4;374(14):1311–20.
15. Star J et al. Glucocorticoid-associated maternal hyperglycemia: a randomized trial of insulin prophylaxis. J Matern Fetal Med. 2000;9:273-7.
16. Refuerzo JS et al. Continuous glucose monitoring in diabetic women following antenatal corticosteroid therapy: a pilot study. Am J Perinatol. 2012:29:335-8.
17. Zhang Y, Li X, Zhang Z, Wu H. Maternal glycemic profiles during pregnancy and predelivery correlate with neonatal glucose homeostasis and jaundice risk: a prospective cohort study. Translational Pediatrics. 2024 Nov 1;13(11):2012–25.
18. Madaan et al. Diabetic ketoacidosis occurring with lower blood glucose levels in pregnancy: a report of two cases. J Reprod Med. 2012;57 (9-10), 452-5.
19. Adam K et al. Combined effect of terbutaline and betamethasone on glucose homeostasis in preterm labor. Fetal Diagn Ther. 1993;8 (3), 187-94.
20. Itoh A et al. Time-dependent changes in insulin requirement for maternal glycemic control during antenatal corticosteroid therapy in women with gestational diabetes: a retrospective study. Endocr J. 2016;63 (1): 101-4.
21. Mathiesen et al. Insulin dose during glucocorticoid treatment for fetal lung maturation in diabetic pregnancy: test of an algorithm. Acta Obstet Gynecol Scand. 2002;81 (9): 835-839.

22. NICE. Preterm Labour and Birth NG 25 [Internet]. 2022. Available from: https://www.nice.org.uk/guidance/ng25
23. The Cochrane Collaboration. Featured review: Antenatal corticosteroids for accelerating fetal lung maturation in women at risk of preterm birth. The Cochrane Collaboration. 2020. Available from: https://www.cochrane.org/about-us/news/featured-review-antenatal-corticosteroids-accelerating-fetal-lung-maturation-women-risk-preterm

Related WNHS policies, procedures and guidelines

- Obstetrics and Gynaecology Clinical Practice Guideline - Preterm Birth Prevention
- Obstetrics and Gynaecology Clinical Practice Guideline - Rupture of Membranes – Spontaneous (Previable, Preterm and Term)
- Obstetrics and Gynaecology Clinical Practice Guideline – Preterm Labour

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Version History

Version Number	Date	Summary
1.0	September 2001	First version
	January 2017	Revised version
	February 2018	Revised version
	August 2024	Clinical decision by Executive to extend review date by 12 months
2.0	July 2026	Reformatted to improve usability, with updated evidence and expanded guidance for glycaemic management during antenatal corticosteroid therapy

The health impact upon Aboriginal people has been considered, and where relevant incorporated and appropriately addressed in the development of this policy.

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