Summary of recommendations for practice

a. Wording of Recommendations

Recommendations in this Guideline are worded according to the guidance provided in the GRADE handbook (1). These can be summarised as:

Strong recommendation: The panel is very confident that the desirable consequences of the proposed course of action clearly outweigh the undesirable consequences or vice versa;

Conditional recommendation: There is

- a close balance between benefits and down sides (including adverse effects and burden of treatment), *or*

- uncertainty regarding magnitude of benefits and down sides, *or*

- uncertainty or important variability in the value consumers place on the treatment outcomes, *or*

- the cost or burden of the proposed intervention may not be justified;

Conditional recommendation for either option: The panel feels strongly that

- the pros and cons of the intervention and the comparison are very closely balanced, *or*

- there is so much uncertainty that a recommendation for or against the intervention would be speculative

Wording of conditional recommendations:

Conditional recommendations are usually worded as “suggest” or “consider” or similar rather than “should” or “recommend”. However, in consultation with the methodologists, the panel considered the stronger wording was appropriate for some conditional recommendations in situations where:

- The recommendation is aligned with established national guidelines or guidance, *or*
- The recommendation is grounded in widely accepted principles, norms, and standards of practice, *or*

- Variability in practice would be undesirable, particularly in areas where specific thresholds, targets, or screening criteria are outlined. Although some uncertainty may exist regarding the precise details of the recommendation, it is clear that adherence is crucial for effective and consistent clinical practice *or*
- While the overarching recommendation could have been framed as 'strong,' a conditional recommendation was chosen to provide greater specificity and practicality.

b. Antenatal

Recommendation 1. Expression of breastmilk may be considered after 36 weeks' gestation in pregnant women whose baby is likely to be at risk of neonatal hypoglycaemia and who have no contraindications. [Conditional recommendation]

Recommendation 2. Tighter glycaemic control during pregnancy is suggested for women with diabetes. Follow recommendations of the national guideline – "Testing for, diagnosing and managing gestational diabetes (diabetes of pregnancy) Te whakamātau, te tautohu me te whakahaere i te mate huka hapūtanga". [Conditional recommendation]

Recommendation 3. For intrapartum glycaemic control, follow recommendations of the national guideline "Testing for, diagnosing and managing gestational diabetes (diabetes of pregnancy) Te whakamātau, te tautohu me te whakahaere i te mate huka hapūtanga". [Conditional recommendation for either option]

c. Prevention

Recommendation 4. Umbilical cord clamping should occur not earlier than 1 minute after birth if the baby's condition allows. [Conditional recommendation]

Recommendation 5. Encourage skin-to-skin contact between mother and baby as early as possible after birth. [Conditional recommendation]

Recommendation 6. Keep the baby dry and warm after birth. Prioritise skin-to-skin contact with the mother. [Conditional recommendation]

Recommendation 7. Feeding should be initiated in the first hour after birth. [Conditional recommendation]

Recommendation 8. Prioritise breastfeeding where possible rather than expression of breastmilk for preventing or treating neonatal hypoglycaemia in the first 48 hours after birth. [Conditional recommendation]

Recommendation 9. Oral dextrose gel should not be given *routinely* to at-risk babies to prevent neonatal hypoglycaemia. [Conditional recommendation]

Recommendation 10. Formula should not be given to at-risk babies to prevent neonatal hypoglycaemia. [Conditional recommendation]

d. Diagnosis

Recommendation 11. Blood glucose measurements should be offered for babies with identified risk factors for neonatal hypoglycaemia (see recommendation 12). [Conditional recommendation]

Recommendation 12. Screening is recommended for babies with the following risk factors:

- Maternal diabetes (any type);
- Preterm birth (<37 weeks' gestation);
- Small for gestational age (<10th percentile using customised or population growth charts);
- Large for gestational age (>90th percentile using customised or population growth charts);
- If gestation unknown: low birthweight (<2500 g) or macrosomia (>4500 g);
- Unwell (e.g. respiratory distress, history of fetal distress or asphyxia, hypothermia, delayed or poor feeding);
- Maternal use of antidepressant medications, alpha or beta blocker medications, amphetamines (both prescribed and not prescribed), anti-psychotic medications.

Screening is also recommended for babies with any clinical signs potentially related to hypoglycaemia including: jitteriness, seizures, poor feeding, lethargy, irritability, cyanosis, hypotonia, apnoea, tachypnoea, hypothermia, respiratory distress, asphyxia, abnormal cry, pallor, and vomiting. [Conditional recommendation]

Recommendation 13. Test the blood glucose concentration of babies at risk of neonatal hypoglycaemia at 1-2 hours after birth, (preferably after the first feed but before 2 hours) then at intervals of 3-4 hours, independent of feeding schedule.

Stop testing after glucose concentrations have remained ≥2.6 mmol/L for 12 hours from birth or from the first normal test (≥2.6 mmol/L) after any low glucose concentrations (<2.6 mmol/L) provided the baby is feeding adequately. [Conditional recommendation]

Recommendation 14. Pain management strategies should be used during blood sampling for neonatal hypoglycaemia. Effective pain management strategies include skin-to-skin contact, breastfeeding, and oral sucrose. [Conditional recommendation]

Recommendation 15. Testing should use a validated and reliable point-of-care device using a glucose oxidase, glucose dehydrogenase or hexokinase method with electrochemical or amperometric detection. [Strong recommendation]

Recommendation 16. A blood glucose concentration of <2.6 mmol/L should be used as the definition (operational threshold) for neonatal hypoglycaemia. [Conditional recommendation]

Recommendation 17. Clinical observations are recommended for monitoring all babies at risk of or with neonatal hypoglycaemia. Any signs that are associated with neonatal hypoglycaemia should result in prompt measurement of blood glucose concentrations (see recommendation 11). [Conditional recommendation]

Recommendation 18. Continuous glucose monitoring should not be used *routinely* for the diagnosis and monitoring of neonatal hypoglycaemia. [Conditional recommendation]

Recommendation 19. Ketones, lactate, and insulin concentrations should not be measured *routinely* in addition to glucose for the diagnosis and monitoring of neonatal hypoglycaemia in the first 72 hours. Consider measuring glucose, beta-hydroxybutyrate, and insulin concentrations in babies with hypoglycaemia that persists beyond 72 hours to help distinguish between those with congenital hyperinsulinemia and those with other causes. [Conditional recommendation]

Recommendation 20. Neurological monitoring and brain imaging should not be used *routinely* for monitoring babies with neonatal hypoglycaemia. Consider using early MRI (within 6 days of onset of hypoglycaemia) for babies with severe (<1.0 mmol/L) or persistent hypoglycaemia to assist with counselling and prognosis. [Conditional recommendation]

e. Treatment

Recommendation 21. A target blood glucose of ≥2.6 mmol/L should be used for treating neonatal hypoglycaemia within the first 72 hours after birth. A target blood glucose of ≥3.4 mmol/L should be used for treating neonatal hypoglycaemia after the first 72 hours after birth. [Conditional recommendation]

Recommendation 22. Babies diagnosed with neonatal hypoglycaemia should be treated with 40% oral dextrose gel. [Conditional recommendation]

Recommendation 23. Formula may be considered as a treatment option for babies diagnosed with neonatal hypoglycaemia. [Conditional recommendation]

Recommendation 24. Intravenous (IV) dextrose should be given if blood glucose concentration remains <2.6 mmol/L despite treatment with increased feeding and buccal dextrose gel. Do not give an initial bolus of IV dextrose *routinely*. [Conditional recommendation]

Recommendation 25. Consider use of diazoxide if hypoglycaemia persists despite treatment with intravenous dextrose and is severe (<1.5 mmol/L) or unstable. [Conditional recommendation]

Recommendation 26. Consider use of intramuscular glucagon for short-term management of neonatal hypoglycaemia until IV access can be established. [Conditional recommendation]

Recommendation 27. Consider caring for babies who require monitoring for neonatal hypoglycaemia at a primary care setting if timely and accurate blood glucose monitoring is possible, treatment can be initiated if required, e.g. with buccal dextrose gel, and the baby can be transferred promptly to a secondary/ tertiary facility if necessary. [Conditional recommendation for either option]

f. Subsequent Care

Recommendation 28. No recommendations have been made about which babies are at a higher risk of experiencing adverse long-term outcomes because of neonatal hypoglycaemia.

Recommendation 29. Whānau of all babies born at risk, whether or not they develop neonatal hypoglycaemia, should be well informed before discharge about clinical signs that may indicate hypoglycaemia and how to seek help if these occur. Healthcare practitioners should be made aware of a history of neonatal hypoglycaemia and its relevance for later developmental surveillance. [Conditional recommendation]