Summary of recommendations for research

Evidence gaps were identified indicating the need for further research on:

Question 1: Antenatal expression of breastmilk for preventing neonatal hypoglycaemia

- The effects of expressing milk on maternal well-being, including factors such as stress related to the inability to express colostrum.

Question 2: Tight glycaemic control during pregrancy for preventing neonatal hypoglycaemia

- The effect of tight maternal glycaemic control on neonatal hypoglycaemia and long-term childhood outcomes.
- Factors influencing adherence to tight glycaemic control targets in pregnancy, and how whānau can be supported to achieve these, particularly in specific populations.
- Patient values and preferences regarding tight glycaemic control in pregnancy.
- The cost-effectiveness of tight glycaemic control in pregnancy.

Question 3: Tight glycaemic control during labour for preventing neonatal hypoglycaemia

- The effects of tight glycaemic control during labour in women with Type I diabetes, Type II diabetes, and gestational diabetes mellitus (GDM), including short-term and long-term maternal and neonatal/childhood outcomes. Given potential iatrogenic harms, separate recommendations may be needed for each group.

Question 4: Delayed cord clamping for preventing neonatal hypoglycaemia

Nil identified.

Question 5: Skin-to-skin contact for preventing neonatal hypoglycaemia

- The effect of skin-to-skin contact with adults other than the mother on neonatal hypoglycaemia.

Question 6: Thermal care for preventing neonatal hypoglycaemia

- The most effective strategies to prevent hypothermia and consequent hypoglycaemia, particularly in term infants and those at risk of hypoglycaemia, when skin-to-skin contact is not feasible.

Question 7: Early feeding for preventing neonatal hypoglycaemia

Nil identified.

Question 8: Expressed breastmilk for preventing neonatal hypoglycaemia

- The effectiveness of donor human milk in preventing and treating neonatal hypoglycaemia.
- The effectiveness of expressed breastmilk (mother's or donor milk) in treating neonatal hypoglycaemia.

Question 9: Oral dextrose gel for preventing neonatal hypoglycaemia

- The effect of prophylactic oral dextrose gel for neonatal hypoglycaemia on later neurological disability.
- The effectiveness of prophylactic oral dextrose gel compared to other preventive interventions such as harvested colostrum, donor milk, or infant formula.

Question 10: Formula for preventing neonatal hypoglycaemia

The effectiveness of formula feeding in preventing neonatal hypoglycaemia.

Question 11: Benefits and risks of testing

- Outcomes in children whose whānau declined screening for neonatal hypoglycaemia and the reasons for declining.

Question 12: Who to test

- The outcomes of screening versus not screening large-for-gestational-age infants.

Question 13: When to test

- Whether extending screening beyond 12 hours improves outcomes.
- The frequency and clinical significance of glucose concentrations <2.6 mmol/L after 12 hours in babies who previously had glucose concentrations ≥2.6 mmol/L.

Question 14: Best care for babies while testing

Nil identified.

Question 15: Which type of device should be used for testing

Nil identified.

Question 16: Operation threshold for neonatal hypoglycaemia

- Benefits and harm of changing to a lower or higher glucose threshold, particularly on later neurodevelopmental outcomes at least through school age.

Question 17: What clinical observations are needed

- The optimal protocols for clinical observations in babies at risk of hypoglycaemia, including the best predictors of hypoglycaemia and duration of monitoring.

Question 18: Role of interstitial or transcutaneous glucose measurement

- The potential utility of continuous glucose monitoring (CGM) when a baby is transitioning from intravenous dextrose to breastfeeding.
- The utility of CGM in late preterm and term babies at risk of hypoglycaemia.
- The clinical significance of low glucose episodes that would not have been detected without CGM, including their association with neurodevelopmental outcomes and the effect of treatment on these outcomes.
- The cost-effectiveness of using CGM in babies whose glucose concentrations are unstable.
- Whānau perspectives on using CGM in babies.

Question 19: Should metabolites other than glucose be measured?
Nil identified.

Question 20: What neurological monitoring/ imaging is needed?
Nil identified.

Question 21: Target blood glucose threshold

- Outcomes of using a target of ≥2.6 mmol/L compared to lower or higher targets.

Question 22: Buccal dextrose gel for treating neonatal hypoglycaemia

- The effect of buccal dextrose gel for treating neonatal hypoglycaemia on long-term neurodevelopmental outcomes.
- The effect of buccal dextrose gel for treatment of babies born <34 weeks' gestation.
- The most effective dose, frequency, and mode of administration of buccal dextrose gel.

Question 23: Formula for treating neonatal hypoglycaemia

- The effect of formula compared to intravenous dextrose or donor human milk in correcting neonatal hypoglycaemia, NICU admission rates, and breastfeeding at hospital discharge.
- The cultural acceptability to whānau of using formula for the treatment of neonatal hypoglycaemia.

- The optimal amount of formula to be given for the treatment of neonatal hypoglycaemia.
- The long-term neurological effects on infants treated with formula for neonatal hypoglycaemia.

Question 24: IV dextrose for treating neonatal hypoglycaemia

- The effect of intravenous dextrose bolus administration on short and long term comes.
- The optimal dosage and methods for administering intravenous dextrose.
- The optimal strategies for weaning babies off intravenous dextrose and onto full oral feeds.

Question 25: Diazoxide for treating neonatal hypoglycaemia

- The long-term effects of diazoxide.
- The optimal dosage of diazoxide to minimise the risk of side effects.

Question 26: Glucagon for treating neonatal hypoglycaemia

- The benefits, adverse effects, and long-term outcomes of glucagon use in babies, including the optimal dose and route of administration.

Question 27: What care settings are appropriate?

Nil identified.

Question 28: Which babies are at increased risk of adverse long-term outcomes as a result of neonatal hypoglycaemia?

- The long-term outcomes of neonatal hypoglycaemia for individual risk groups, and the effects of treatments of neonatal hypoglycaemia on these.

Question 29: What care should be provided after the hypoglycaemia is resolved?

- The most acceptable and practical educational resources that parents should receive at discharge that are acceptable and practical for whānau.
- The effectiveness of community-based interventions for high-risk groups, including the impact of long-term surveillance programs, the best methods and ages for follow-up, and which outcomes are most relevant.

The most acceptable and feasible community-based follow-up approaches that are not overly interventionalist.