Recommendations- Prevention

Question 4. Are babies who had delayed cord clamping less likely to develop neonatal hypoglycaemia?

PICO: Should delayed cord clamping vs. early cord clamping be used for the prevention of neonatal hypoglycaemia?

Recommendation 4:

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

Justification: Low certainty evidence shows that delayed cord clamping may result in small reduction in neonatal hypoglycaemia, moderate reduction in neurodevelopmental impairment at 12 to 24 months, moderate reduction in neonatal mortality, and small increase in fully breastfeeding at hospital discharge.

The New Zealand College of Midwives (2024) guidelines suggest delaying cord clamping for 3 minutes or until the umbilical cord stops pulsating (whichever occurs later) for term and pre-term babies who do not require resuscitation at birth, as this is associated with improved neonatal outcomes (1). WHO (2023) also recommends delayed umbilical cord clamping (not earlier than 1 minute after birth) for improving maternal and infant health and nutrition outcomes (2).

Implementation considerations: If the baby becomes hypothermic, this could increase the chances of hypoglycaemia. Place the baby directly on the mother's chest immediately after birth and cover both with a warm blanket.

Monitoring and evaluation: If the baby is unwell and needs resuscitation, cord clamping before one minute after birth might be required.(3).

Research priorities: Nil.

Health Equity: Refer to health equity summary on Page 32.

Evidence to decision table: refer to Appendix G

Question 5. Does skin-to-skin contact reduce the risk of neonatal hypoglycaemia?

PICO: Should skin-to-skin contact vs. no skin-to-skin contact be used for the prevention of neonatal hypoglycaemia?

Recommendation 5:

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

Justification: Low certainty of evidence shows skin-to-skin contact may result in a large reduction in neonatal hypoglycaemia and duration of hospital stay, a small reduction in admission to NICU, less separation from the mother for treatment of hypoglycaemia before discharge home and a large increase in breastfeeding.

Skin-to-skin is largely acceptable and feasible as it is already standard practice in Aotearoa New Zealand. Cost is negligible.

WHO also recommends that early and uninterrupted skin-to-skin contact between mothers and babies should be facilitated and encouraged as soon as possible after birth (4).

Implementation considerations: Place the baby directly on the mother’s chest immediately after birth and cover both with a warm blanket. United Nations International Children's Emergency Fund (UNICEF) recommends that babies should have skin-to-skin contact at least until after their first feed (5).

Skin-to-skin contact might not be appropriate for all babies, depending on the clinical condition of the mother and baby.

Monitoring and evaluation: All babies should be routinely monitored whilst in skin-to-skin contact. Observations should include checking of airway and breathing, colour, tone and temperature (6).

If there are any concerns about the baby's oxygen saturation, it should be monitored closely.

Research priorities:

Studies are needed on:

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

Health Equity: Refer to health equity summary on Page 32.

Evidence to decision table: refer to Appendix G

Question 6. Are babies given thermal care (measures to reduce heat loss) less likely to develop neonatal hypoglycaemia?

PICO: Should thermal care vs. routine care be used for prevention of neonatal hypoglycaemia?

Recommendation 6:

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

Justification: Low to very low certainty evidence shows skin-to-skin contact may result in a large reduction in hypothermia and neonatal hypoglycaemia and is recommended for all well mother/baby dyads. For very low birthweight (VLBW) babies, low-certainty evidence shows that plastic wrap or a plastic bag can result in a moderate reduction in hypoglycaemia, a large reduction in the duration of the initial hospital stay, and a large reduction in hypothermia upon admission to the NICU, although it may lead to a small increase in hyperthermia on admission. Plastic wrap is readily available and commonly used for keeping VLBW babies warm.

Very low certainty of evidence shows use of a thermal mattress or thermal blanket had little to no effect on hypoglycaemia, and a large reduction in moderate hypothermia on admission to NICU. Thermal mattresses are expensive and lack of evidence of effectiveness means they are not a routine option.

A study on delayed bathing was considered by the Panel to not be relevant to this recommendation.

Implementation considerations: Consider use of plastic wraps to keep the baby warm when skin-to-skin is not practicable. If a specific neonatal plastic wrap is not available, clingfilm can be used.

Monitoring and evaluation: Monitor baby's temperature to avoid hyperthermia.

Research priorities:

Studies are needed on:

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

Health Equity: Refer to health equity summary on Page 32.

Evidence to decision table: refer to Appendix G

Question 7. Does early feeding reduce the risk of neonatal hypoglycaemia?

PICO: Should early feeding vs. delayed feeding be used for the prevention of neonatal hypoglycaemia?

Recommendation 7:

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

Justification: Low certainty of evidence shows early feeding may be associated with a large reduction in hypoglycaemia, a small to moderate reduction in neonatal mortality, and a large increase in fully breastfeeding at hospital discharge.

Early feeding is widely acceptable and feasible in Aotearoa New Zealand.

Early breastfeeding is associated with higher rates of exclusive breastfeeding, with the associated benefits.

WHO also recommends all mothers should be supported to initiate breastfeeding as soon as possible after birth, within the first hour (4).

Implementation considerations: If the mother wants to breastfeed but is unable to in the first hour, consider expression of breastmilk at this time to support establishment of lactation and encourage breastfeeding.

It is important to ensure that the baby whose mother plans not to breastfeed is fed a formula that is safe, suitable and properly prepared (7, 8).

Monitoring and evaluation: Nil.

Research priorities: Nil.

Health Equity: Ensure whānau are fully informed and supported about the benefits of pēpi's first feed being from the breast. Discuss with whānau if they have cultural practices that are important to carry out following the birth, and support this to be woven into care together with clinician activities. Harm occurs when health professionals do not engage with whānau about their cultural preferences.

Evidence to decision table: refer to Appendix G

Question 8. Are babies given expressed breast milk (mother's own or donor human milk) less likely to develop neonatal hypoglycaemia?

PICO: Should expressed breastmilk vs. other or no intervention be used for preventing or treating neonatal hypoglycaemia?

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**]

Justification: Very low certainty evidence from one randomised controlled trial (RCT) suggests that supplementation of breastfeeding with donor breastmilk or formula, but not mother's own breastmilk, may increase blood glucose concentrations in hypoglycaemic babies in the first 48 hours after birth.

However, breastfeeding hypoglycaemic babies in the first 48 hours reduced the likelihood of hypoglycaemia recurring. Thus, mothers should be encouraged to breastfeed rather than to express breastmilk to feed to their baby.

Implementation considerations: Mothers should be well supported to breastfeed in preference to breastmilk expression. The increase in blood glucose concentration after breastfeeding is greater after longer feeds (>30 minutes) and after feeding from both breasts, so encouraging these practices may be helpful for babies at risk of or experiencing neonatal hypoglycaemia.

Expression of breastmilk may help support lactation if effective breastfeeding is not possible, although there is no evidence the expressed breastmilk will help prevent hypoglycaemia. If a baby is already hypoglycaemic, give oral dextrose gel and offer a feed, which could include expressed breastmilk if breastfeeding is not appropriate.

Many mothers face challenges and negative experiences when trying to express breastmilk, but some mothers of unwell or preterm babies may find it empowering to contribute to their baby's well-being through expressing milk.

Monitoring and evaluation: Nil.

Research priorities:

Studies are needed on:

1. The effectiveness of donor milk for preventing and treating hypoglycaemia.

2. The effectiveness of expressed breastmilk (mother’s or donor milk) for treating neonatal hypoglycaemia.

Health Equity: The acceptability of donor milk is individual for whānau Māori, so each whānau group should be asked what their preference is, including acceptability of donor milk before giving to pēpi. Harm occurs when health professionals do not engage with whānau about their cultural preferences.

Accessibility of donor milk is a concern, especially outside major centres where NICUs and milk banks are scarce. In Aotearoa New Zealand, systemic inequities impact access to lactation consultants and the establishment of donor milk banks.

Evidence to decision table: refer to Appendix G

Question 9. Are babies given prophylactic oral dextrose gel less likely to develop neonatal hypoglycaemia?

PICO: Should oral dextrose gel vs. placebo be used for preventing neonatal hypoglycaemia?

Recommendation 9:

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

Justification: Prophylactic oral dextrose gel reduces the risk of neonatal hypoglycaemia in at-risk babies but does not reduce NICU admission or need for intravenous treatment. It may make little to no difference to the risk of neurodevelopmental impairment at two years, but the confidence intervals include the possibility of substantial benefit or harm. Evidence at six to seven years is limited to a single small study.

In view of its limited short-term benefits, and potential applicability to a very large proportion of all newborn babies (approximately 30%), prophylactic oral dextrose gel should not be incorporated into routine practice until additional information is available about the balance of risks and harms for later neurological disability.

Implementation considerations: Consider offering prophylactic dextrose if risk of hypoglycaemia is considered to be high by practitioner or family and they are well-informed about available evidence, including benefits and risks.

Draw up the prescribed dose (0.5ml/kg or 200 mg/kg 40% dextrose gel) into an enteral syringe and administer at 1 hour of age, using the procedures as for dextrose gel treatment (see recommendation 22).

Prophylactic dextrose gel can be given to a baby while having skin-to-skin care.

Monitoring and evaluation: All babies at risk of hypoglycaemia require clinical monitoring and testing for hypoglycaemia, whether or not they have received prophylactic dextrose gel.

Research priorities:

Studies are needed on:

1. Effect of prophylactic oral dextrose gel for neonatal hypoglycaemia on later neurological disability.

2. The effectiveness of prophylactic oral dextrose gel compared to other preventative interventions such as harvested colostrum, donor milk or infant formula.

Health Equity: Māori, Pacific, and Asian whānau are likely to accept oral dextrose gel treatment, especially if the mother has experienced diabetes. Discuss with whānau if they have cultural practices that are important to carry out following the birth, and support this to be woven into care together with clinician activities. Harm occurs when health professionals do not engage with whānau about their cultural preferences.

Evidence to decision table: refer to Appendix G

Question 10. Are babies given formula less likely to develop neonatal hypoglycaemia?

PICO: Should formula vs. control be used for preventing neonatal hypoglycaemia?

Recommendation 10:

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

Justification: Very low certainty of evidence shows uncertain effect on of formula on the prevention of neonatal hypoglycaemia, fully breastfeeding at hospital discharge or length of hospital stay, and uncertain effects on blood glucose concentrations.

Implementation considerations: Whānau should be provided with breastfeeding support, particularly for at-risk babies, ensuring that breastfeeding is promoted as the first line of prevention for neonatal hypoglycaemia. Implementation should account for cultural preferences and the importance of breastfeeding in different communities.

Monitoring and evaluation: Nil.

Research priorities:

Studies are needed on:

Effectiveness of formula feeding in preventing neonatal hypoglycaemia.

Health Equity: Refer to health equity summary on Page 32.

Evidence to decision table: refer to Appendix G

References

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