



Newborn Clinical Network

**Practice Recommendation for the treatment
of hypoglycaemia with dextrose gel,
within the first 48 hours after birth
in late pre-term and term infants**

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Date: 12/05/15
Review date: 12/05/17

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Glossary

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| Hypoglycaemia | Blood glucose concentration <2.6 mmol/l |
| Small | Birth weight < 2.5kg or below 10 th centile |
| Large | Birth weight > 4.5 kg; |
| Preterm | Gestational age < 37 weeks |
| Late preterm | Gestational age 35 or 36 weeks |

Introduction

Neonatal hypoglycaemia is associated with cerebral injury and neurodevelopmental delay¹⁻³. Dextrose gel has been shown to be better than feeding alone for reversing neonatal hypoglycaemia. Furthermore, treatment with dextrose gel reduces admission to the neonatal nursery for the treatment of hypoglycaemia, reduces maternal infant separation and encourages the establishment of breast feeding⁴.

Background

Neonatal hypoglycaemia is common with as many as half those identified as being at risk becoming hypoglycaemic.^{5,6}

Babies at risk from time of birth for hypoglycaemia include

- Infants born preterm (< 37 weeks)
- Infants of diabetic mothers
- Small (<2.5 kg or <10th centile)*
- Large (>4.5 kg)

Babies at risk after birth for hypoglycaemia are

- Hypothermic babies
- Babies not feeding well
- Babies unwell for any reason

Clinical signs commonly associated with hypoglycaemia (including jitteriness, sweating, excessive sleepiness, apnoea and seizures) are not useful predictors of hypoglycaemia and are frequently associated with other clinical conditions.

It is therefore important to screen at-risk babies for hypoglycaemia. Screening is most commonly done by capillary heel prick lancing. Blood samples should be measured using an analyser designed for neonatal blood samples. However in clinical practice neonatal blood samples are frequently measured using point-of-care analysers which are designed for measuring adult blood samples and are known to be less reliable in babies⁷.

*The centile determination of “small” and “large” needs necessarily to be pragmatic. For growth charts that show the 9th and 91st centiles (such as in the well child book), these are appropriate thresholds to use.

Purpose of these guidelines

To describe a standardised use of dextrose gel for the purpose of treatment of hypoglycaemia.

Assessment

Screening for at risk babies ([refer to flow diagram](#))

When to start screening

- Babies at risk from time of birth should have a blood glucose measurement within one hour of birth regardless of feeding, followed by three to four hourly pre-feed measurements.
- Babies at risk after birth should have a blood glucose measurement as soon as the problem is recognised.

When to stop screening

- Babies at risk from time of birth can discontinue blood glucose measurements when they are feeding well without dextrose gel and have three pre-feed blood glucose concentrations ≥ 2.6 mmol/l, three to four hours apart.
- Babies at risk after birth should continue to have blood glucose screening until hypoglycaemia is no longer considered to be a risk

Criteria for providing treatment

Blood glucose concentration < 2.6 mmol/l.

Treatment models

Treatment in the home

Not applicable, as access to blood glucose analysers are required.

Treatment in the health sector

- a. Into a syringe draw up 40% dextrose gel, 0.5 ml/kg.dose
- b. Dry the inside of the cheek (buccal membrane) with a gauze swab
- c. Massage the dextrose gel into the buccal membrane using a gloved forefinger
- d. Feed the baby as per mother's wishes
- e. Recheck the blood glucose 30 mins after the gel is given
- f. If blood glucose concentration ≥ 2.6 mmol/l then normal cares
- g. If blood glucose concentration < 2.6 mmol/l then repeat steps a to d.
 - i. Recheck the blood glucose after 30 mins or after the feeding event
 - ii. If blood glucose concentration ≥ 2.6 mmol/l then normal cares
 - iii. If blood glucose concentration < 2.6 mmol/l (for a second time) then escalate care to paediatrics.

Referrals

Refer for paediatric assessment in any of the following circumstances:

- Blood glucose concentration < 2.0 at any time
- Blood glucose concentration remains < 2.6 mmol/l after 2 doses of gel
- If more than 6 doses of 40% dextrose gel have been required in the first 48 hours
- Any clinical signs of hypoglycaemia (jittery, excessively sleepy, seizures, coma)
- Any concern that symptoms associated with possible hypoglycaemia (poor feeding, hypothermia, other unwell) are part of an illness that merits further investigation

Refer to lactation consultant if the mother requires assistance with breast feeding.

Outcomes

The desired outcome from this treatment is that the blood glucose concentration is restored quickly to the normal range without disruption to the establishment of breast feeding and maternal-infant bonding.

References

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2. Koh TH, Aynsley-Green A, Tarbit M, Eyre JA. *Neural dysfunction during hypoglycaemia*. Archives of disease in childhood 1988;63:1353-8.
3. Lucas A, Morley R, Cole TJ. *Adverse neurodevelopmental outcome of moderate neonatal hypoglycaemia*. British medical journal 1988;297:1304-8.
4. Harris DL, Weston PJ, Signal M, Chase JG, Harding JE. *Dextrose gel for neonatal hypoglycaemia (the Sugar Babies Study): a randomised, double-blind, placebo-controlled trial*. The Lancet 2013;382:2077-83.
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6. Rozance PJ. *Update on neonatal hypoglycemia*. Current opinion in endocrinology, diabetes, and obesity 2014;21:45-50.
7. Beardsall K. *Measurement of glucose levels in the newborn*. Early Human Development 2010;86:263-7.

Note on supply of dextrose gel

40% dextrose gel can be supplied in single use syringes, which is expensive. An alternative option, used in many centers is the purchase a 100 ml pot. Each dose of dextrose gel can be drawn up from the pot using a sterile syringe. The shelf life of each pot is 6 months from date of production and is indicated on the label. Until further information is available, it is recommended that each pot is removed from use 1 month after opening.

Appendix 1: Treatment flowchart

Screening and initial treatment for babies at risk of hypoglycaemia

