

What is Hypoglycaemia?

Hypoglycemia (a low blood sugar level) is very common in newborn and neonatal babies. A low blood sugar level (BSL) is a level of less than 2.6mmol/L.

Sugar is the body's primary energy source. It is important for many body functions. It is also a vital nutrient for the brain. Prolonged abnormally low levels of sugar in the bloodstream can cause brain damage.

What causes Hypoglycaemia?

There are a number of potential causes of low blood sugars in infants. These include:

Hyperinsulinism (high levels of insulin in the blood); insulin counter-acts high blood sugar levels by stimulating the liver and muscle cells to remove glucose from the blood. Insulin is made naturally by the body to help regulate blood sugar levels. Diabetics are unable to produce enough insulin on their own, and are given additional insulin as a medication.

Decreased glycogen stores (the way the body stores sugar); this can occur in premature babies, growth restricted babies or when glycogen stores have already been used due to starvation or in times of stress (e.g. a traumatic delivery or birth asphyxia). When this happens, the body uses more of the sugar in the bloodstream.

Increased sugar use; e.g. - when a baby is stressed, fighting an infection, or when using energy to regulate temperature.

Some babies have problems storing sugar or breaking down glycogen stores due to congenital **metabolic conditions**.

Who is at risk of Hypoglycaemia?

- Preterm babies
- Growth restricted babies or those who are small for their gestational age
- Babies who are large for their gestational age
- Babies born to diabetic mothers
- Sick babies, including those with :
 - perinatal asphyxia (low oxygen supply during birth)
 - traumatic delivery
 - respiratory distress
 - sepsis (infection)
- Babies who have congenital errors of metabolism (metabolic conditions).

What do we do about it?

Regular breast feeding (where possible) is the best way to prevent low blood sugar levels. Babies at risk of hypoglycaemia will need to have regular heel prick blood tests to check their sugar levels.

Your baby may be prescribed a strict feeding regime to maintain their blood sugar levels. If baby is unable to feed from the breast or bottle, the milk may be given through a small tube inserted into baby's mouth or nose.

If blood sugar levels are low and there is insufficient breastmilk available, it may be necessary to give the baby formula milk or to give baby fluid using a drip (intravenous infusion).

What does 'Thermoregulation' mean?

Thermoregulation is the process of keeping the body's temperature within certain limits, even when temperatures outside the body may be very different. Babies (especially those who are small and/or premature) often have difficulty with thermoregulation. In NICU we try to maintain

[continued]

baby's temperature between 36.5 and 37.0 degrees.

A thinner layer of subcutaneous (fatty) tissue in newborns and particularly premature babies means they can lose heat easily from evaporation of water from the skin, or lose heat to cooler surroundings. Babies are also unable to prevent their body from over heating and they can become too hot when they are in an environment that is too warm. (It is also important to remember that a persistently high temperature can also be a sign of infection).

What is the link between hypoglycaemia and thermoregulation?

Thermoregulation requires energy. This is how it can be linked to hypoglycaemia. If a baby is struggling to keep warm, they will be using available blood sugar. This causes a drop in baby's blood sugar levels.

Alternatively if a baby's blood sugar levels are low (e.g. due to the energy needed to fight an infection, or not feeding enough) they may have difficulty stabilising their body temperature.

It is very important for newborns and premature babies to have stable temperatures and blood sugars. We need ensure they are getting enough milk or sugar rich fluids, that they are adequately dressed and wrapped (if in a cot), or are placed in an incubator that is warm enough for them. When carrying out procedures, cares and weighing we must also try to reduce heat loss.

Remember – when babies have stable blood sugar levels, they are more able to control their temperatures. The less energy that is used to keep warm, the more that can be used to heal and grow!