

[Hypoglycaemia of the Newborn \(Low blood sugar\)](#)**Introduction**

The fear of low blood sugar of the newborn has become the new “acceptable” reason to separate mothers and babies and give babies supplements of formula in the immediate hours and days after the baby’s birth. The reason paediatricians and neonatologists are worried about low blood sugar is that it can cause brain damage, so there truly is a concern. However, there has developed a sort of ‘hyper’-concern about low blood sugar that is simply not warranted. As a matter of fact, most of the babies who are tested for low blood sugar do not need to be tested and most of those who receive formula do not need formula. By giving the formula, especially as it almost always is given by bottle, we interfere with breastfeeding and give the impression that formula is good medicine.

Some truths about hypoglycaemia of the newborn

1. **The best way to prevent low blood sugar is to feed the baby with milk.** However, formula and breastmilk (specifically colostrum in these early days) are not equivalent and colostrum is far better to prevent and treat low blood sugar than formula (See point #5 below). A little bit of colostrum maintains the blood sugar better than a lot of formula.^{1,2,3}
2. **Having the baby skin to skin with the mother immediately after birth maintains the baby’s blood sugar higher than if the baby is separated from her.** (See the information sheet *The Importance of Skin to Skin Contact*).
3. **There is no lowest level of blood sugar that is universally accepted as meaning the baby has low blood sugar.** Because of this atmosphere of hyper-concern about low blood sugar, the level of sugar keeps being raised to absurd levels. In many hospitals now, 3.4 mmol/L (60 mg %) is now considered the lowest acceptable blood sugar. This is patently aberrant and there is no evidence to back up such a level as the lowest acceptable blood sugar concentration.
4. **There is no reliable method of measuring the blood sugar outside the laboratory.** The use of paper strips to measure the blood sugar is not reliable. Paper strips tend to underestimate the true value. Only the laboratory gives a reliable measure of plasma glucose or sugar (plasma is the part of the blood which does not contain red blood cells and which is what we are really interested in, but we’ll leave this aside).
5. **If the baby’s blood sugar is low, it does not mean he will be brain damaged.** This is due to the fact that other constituents released by the baby’s body will protect his brain. These include compounds called ketone bodies, as well as lactic acid and free fatty acids. In fact, babies who are receiving colostrum or breastmilk have much higher levels of ketone bodies, for example, than formula fed babies or even breastfed babies with supplements of formula.¹
6. **Babies born of a normal pregnancy and normal birth and who are at term and of a good weight do not need to be tested for low blood sugar.** Yet, so pervasive is the anxiety about low blood sugar that more and more postpartum units are testing every baby at birth for low blood sugar. This is painful for the baby, anxiety producing for the staff and parents, costly, useless and contrary to evidence.²
7. **It is normal for the blood sugar to drop in the first hour or two after birth.** Yet many babies are tested first at birth then an hour later and given formula because the blood sugar has dropped. Babies are being tested without reason, then given formula for a normal situation!

Incidentally, even if the baby is not fed, the blood sugar will rise after the initial (normal) drop.^{1,3}

8. **A baby is not at risk of low blood sugar just because he weighs a lot at birth, if his mother is not diabetic.** Yet many hospitals have protocols that call for automatic testing of a baby, and some even automatic feeding of formula (unbelievable) if the baby weighs more than 4 kg (8lb 12oz); others use 4.5 kg (10 lb). This approach seems to have been started because infants of diabetic mothers tend to be born very large. In fact, large babies whose mothers are not diabetics are not at increased risk of low blood sugar². In fact, they are at less risk because their livers are full of glycogen (glucose molecules connected together in long chains) ready to be called into action by the need for more sugar, and they also have lots of fat ready to be called into action to produce ketone bodies, lactic acid and free fatty acids.
9. **A baby who is born small for the length of the pregnancy** (under 2.5 kg or 5lb 8oz if born at term is one definition) maintains his blood sugar just as well if breastfed or formula fed². Of course, it's important the baby is breastfeeding. Also see the video clips of young babies breastfeeding.

How should we prevent low blood sugar?

1. **Diabetes in the mother, particularly type 1 (insulin dependent, juvenile), is a high risk situation for the baby.** This is due to the fact that at birth high insulin levels in the baby (as a result of the baby's being exposed to high sugars during the pregnancy) not only drop the blood sugar but also prevent his body's formation of ketone bodies, lactic acid, and free fatty acids. Therefore the baby needs to be watched and may require an intravenous to maintain the blood sugar.
 - o Good control of diabetes during the pregnancy can help prevent low blood sugar.
 - o Good control of diabetes during the labour and birth also is important.
 - o We, and postpartum departments all over the world (particularly in New Zealand and Australia), have suggested to our prenatal patients whose babies are at high risk to express their colostrum before the baby is born, starting at about 35 or 36 weeks gestation. Most can get a few millilitres a day by hand expression and a mother can often get 30 or 40 millilitres saved before the baby is born. If the baby needs to be supplemented to control the blood sugar, the baby is given colostrum, not formula.
2. **Intravenous fluids containing glucose (it is usual) given rapidly to the mother should be avoided.** If the mother's glucose tolerance (her ability to handle glucose) is impaired, a lot of glucose given her may increase her blood sugar and provoke a similar response in the baby with a corresponding rise in the baby's insulin secretion.
3. **It is best to put the baby skin to skin with the mother immediately after birth.** As mentioned above and in the information sheet The Importance of Skin to Skin Contact, the baby maintains his blood sugar better when skin to skin with the mother. The baby should be dried off but not bathed before he is put skin to skin with the mother. It is possible and desirable to put the baby skin to skin with the mother even if she's had a caesarean section.
4. **The baby should be encouraged to breastfeed as soon as possible after the birth.** Having

the baby skin to skin with the mother helps a lot as the baby may latch on all by himself. A good latch also helps, so the baby gets the colostrum. Compression while breastfeeding gets more colostrum into the baby. Also see the video clips.

Treating low blood sugar

If there is a concern about the baby's blood sugar dropping too rapidly or being too low and good breastfeeding doesn't seem to be correcting the problem, the baby should get *an intravenous infusion* of glucose rather than formula. Babies often spit up formula in the first few days because they get so much. If there is a real concern, taking formula by mouth does not guarantee the blood sugar will be raised.

Every postpartum unit should have banked breastmilk available on site. Banked breastmilk is preferable to formula as a supplement whenever the supplement is truly necessary. Even if the baby needs treatment for low blood sugar, there is rarely a reason for the baby not to breastfeed as well. A baby can be at the breast even if he has an intravenous. A baby can get supplements (preferably pre-expressed colostrum or banked breastmilk) even while being breastfed.

References:

1. De Rooy L, Howden J. Nutritional factors that affect the postnatal metabolic adaptation of full-term small and large for gestational age infants: *Pediatrics* Vol. 109 No. 3 March 2002, pp. e42
2. Cornblath M, Hawdon JM, Williams AF Aynsley-Green A, Ward-Platt MP, Schwartz R, Kalhan SC. Controversies regarding definition of neonatal hypoglycemia: suggested operational thresholds. *Pediatrics* 2000;105:1141-5
3. Hoseth E, Joergensen A, Ebbesen F, Moeller M. Blood glucose levels in a population of healthy, breastfed, term infants of appropriate size for gestational age. *Arch Dis Child Fetal Neonatal Ed* 2000;83:F117-9

See also the WHO document on hypoglycaemia at http://www.who.int/child_adolescent_health/documents/chd_97_1/en/index.html

Questions? First look at the website [nbc.ca](http://www.nbc.ca) or drjacknewman.com. If the information you need is not there, go to *Contact Us* and give us the information listed there in your email. Information is also available in **Dr. Jack Newman's Guide to Breastfeeding** (called **The Ultimate Breastfeeding Book of Answers** in the USA); and/or our DVD, **Dr. Jack Newman's Visual Guide to Breastfeeding** (available in French or with subtitles in Spanish, Portuguese and Italian); and/or **The Latch Book and Other Keys to Breastfeeding Success**; and/or **L-eat Latch and Transfer Tool**; and/or the **GamePlan for Protecting and Supporting Breastfeeding in the First 24 Hours of Life and Beyond**.

To make an appointment online with our clinic please visit www.nbc.ca. If you do not have easy access to email or internet, you may phone (416) 498-0002.

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