

Breastfeeding and diabetes – benefits and special needs

Alison Stuebe



Breastfeeding has numerous advantages for mothers with diabetes and their babies. Nursing mothers have lower insulin requirements and better control of their blood glucose; breastfed babies may have a lower risk of developing diabetes themselves. Alison Stuebe describes these potential benefits and highlights the special needs of breastfeeding mothers with diabetes.

When I met Sarah, who had been diagnosed with type 1 diabetes when she was 9 years old, she was 32 weeks pregnant, using an insulin pump, and had very well-controlled blood glucose. Sarah made it clear that she wanted to breastfeed her baby. As she neared the end of her pregnancy,

her blood pressure crept up, and she developed pre-eclampsia. Her labour was induced, and 30 hours later her daughter, Sophie, was born by caesarean section. Like many infants of mothers with diabetes, her blood glucose was low immediately after birth. She therefore needed extra feedings with

infant formula (an artificial substitute for human milk).

Diabetes, pregnancy and breastfeeding

Diabetes appears to slow milk production; it took several days before Sarah's supply was sufficient to feed her baby. Insulin plays a central role in starting and maintaining breastfeeding. This may explain, in part, why mothers with diabetes are usually slower to produce milk in the early days after delivery.

In one study, mothers with diabetes produced substantially less milk in the first week after delivery than mothers without diabetes; and significantly fewer



mothers with the condition were feeding their babies only breast milk at one month of age.¹ Overweight mothers are more than twice as likely to be unsuccessful with breastfeeding as women of normal weight.² Thus, mothers with obesity-related type 2 diabetes may have trouble with early nursing.

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Some of these differences might reflect diabetes-related problems during pregnancy. Women with diabetes are more likely to develop pre-eclampsia, to have their labour induced, and to deliver by caesarean section. The babies of moth-

ers with diabetes are more likely to be very large (macrosomia) and delivered early. These factors all potentially contribute to breastfeeding problems.³

Stresses of all kinds interfere with the hormone, oxytocin, which is essential for breastfeeding. Oxytocin moves milk from the milk-producing regions of the breast to the areola and the nipple, where the infant can extract and swallow it. Mothers who are anxious or in pain secrete very small amounts of oxytocin. As a result, they produce less milk.

Medical problems may also keep mothers and babies apart in the first days after birth. One study found that moth-

Mothers need guidance about potential changes in diabetes management during breastfeeding.

ers with diabetes had fewer chances to breastfeed while in hospital, and their babies received more formula. By 2 weeks after birth, a third of mothers with diabetes felt their babies were having trouble feeding, compared to a fifth of mothers without the condition.⁴

Support for mothers

These differences highlight the importance of helping mothers with diabetes to establish breastfeeding. The World Health Organization drew up guide-



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lines for supporting breastfeeding in *Ten Steps to Successful Breastfeeding*.⁵ These simple interventions can have a profound effect on the long-term success of breastfeeding. For example, according to a systematic review of the literature published in the Cochrane Library, when a newborn baby is placed directly on her mother's chest in the first hour of life, the baby will breastfeed an average of 42 days longer than if the infant is swaddled and placed in a crib.⁶

Mothers also need guidance about the potential need for changes in their diabetes management during breastfeeding. Producing milk requires substantial amounts of energy, and, in type 1 diabetes, the mother's blood glucose levels may drop precipitously. Sarah's blood glucose levels crashed with almost every feed for the first few months of breastfeeding. With time, however, her body adjusted; she currently uses about 30% less insulin than she did before becoming pregnant

Breastfeeding appears to lower the risk of both type 1 diabetes and type 2 diabetes in babies.

– thus improving her glycaemic control while she is nourishing her baby.

Support for babies

Babies born to mothers with diabetes may also have uncontrolled blood glucose. Before delivery, fetal blood glucose levels parallel those of the mother. If her glucose levels are high, the growing baby's body will compensate by producing extra insulin. After birth, the baby continues to produce extra insulin but no longer receives a steady supply of glucose from the mother. This causes the infant's blood glucose to fall. Careful monitoring of the baby's blood glucose and frequent breastfeeding are very important.

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Sophie's blood glucose levels dropped dramatically immediately after delivery, and she was admitted to the intensive care nursery. Sarah pumped milk for her and later used a special nipple shield to help Sophie latch onto her breast. With the support of her nurses and lactation consultants, mother and baby were able to make the best of a difficult start.

Formula and diabetes risk

The US Academy of Breastfeeding Medicine has developed a guideline to manage low blood glucose in breastfed newborn children. Some studies suggest that the milk protein used in infant formula may increase the child's risk of developing type 1 diabetes.⁷

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The link between infant formula and type 1 diabetes is one of many research findings which suggest that breastfeeding may have a role in delaying or preventing the development of diabetes – in both infants and mothers. Several studies have linked type 1 diabetes with the early use of infant formula. Researchers believe that protein found in cow's milk might sensitize the immune system in vulnerable babies, leading to an increased risk of type 1 diabetes.

The TRIGR study is currently testing that theory in an investigation involving more than 2000 at-risk babies in three continents. Mothers in the study are encouraged to breastfeed. If they need to supplement with formula, they are randomized to either standard infant formula or a special formula that has been pre-treated to break down cow's-milk proteins. Researchers are following the children to determine whether standard formula causes children to develop antibodies linked with type 1 diabetes. The results of the study are expected in 2009.

Type 2 diabetes

Other data suggest that breastfeeding protects children from obesity and type 2 diabetes. Native American teenagers and young adults from the Pima community who were fed only formula were more likely to be overweight, and were more likely to develop type 2 diabetes, than those who received only breast milk.⁸ A recent systematic review found that being breastfed was linked with a 40% decrease in the risk of type 2 diabetes later in life.⁹

Teenagers who were fed only formula were more likely to develop type 2 diabetes.

Breastfeeding may also protect mothers from type 2 diabetes. In a study of more than 150 000 nurses in the USA, each year of lifetime breastfeeding lowered a woman's risk of diabetes by 15%, adjusting for multiple factors, including diet, exercise, and body mass index. This protection lasted for 15 years after the woman's last birth.¹⁰

Conclusions

These findings suggest that encouraging and supporting breastfeeding for all mothers and babies may have a substantial impact on both type 1 diabetes and type 2 diabetes. Mothers without diabetes might reduce their risk of diabetes later in life; mothers with the condition can reduce their requirement for insulin and improve glycaemic control. For babies, breastfeeding appears to lower the risk of both type 1 diabetes and type 2 diabetes, potentially preventing a lifetime of medical problems.

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