The soy-based formula-fed infants admitted with symptoms indicating thiamine deficiency experienced a rapid improvement when treated with thiamine.

Fattal-Valevski A, Kesler A, Seal B, Nitzan-Kaluski D, Rotstein M, Mestermen R, Tolendano-Alhadef H, Stolovitch C, Hoffman C. Globus O, Eshel G. Outbreak of Life-Threatening Thiamine Deficiency in Infants in Israel Caused by a Defective Soy-Based Formula. Pediatrics 115: 223-238, 2005

8 INCREASED RISK OF CHILDHOOD CANCERS

Lack of breastfeeding is known to increase the risk of cancer. This novel study found a significant level of genetic damage in infants aged 9 to 12 months who were not breastfed. The authors speculate that the genetic damage may play a role in the development of cancer in childhood or later life.

Dundaroz R, Aydin HA, Ulucan H, Baltac V, Denli M, Gokcay E. Preliminary study on DNA in non-breastfed infants. Ped Internat 44: 127-130, 2002

The UK Childhood Cancer Study analysed 3500 childhood cancer cases and the relationship to breastfeeding. Results showed a small reduction for leukemia and for all cancers combined when infants had “ever been breastfed”.

UK Childhood Cancer Investigators. Breastfeeding and Childhood Cancer. Br J Cancer 85: 1685-1694, 2001

A case controlled study, in the United Arab Emirates looked at 117 cases of acute lymphocytic leukemia and 117 controls. They found that the breastfeeding duration of those with leukemia was significantly shorter than the breastfeeding duration of the controls. They concluded that breastfeeding duration of six months or longer may protect against childhood acute leukaemia and lymphomas.

Bener A, Denic S, Galadari S. Longer breast-feeding and protection against childhood leukaemia and lymphomas. Eur J Cancer 37: 234-238, 2001

This systematic review to look at the evidence for the effect of breastfeeding on the risk of developing childhood leukemia examined 111 studies from which they identified 32 eligible articles. Of these they reviewed 10 and found that four had quality evidence regarding the association between breastfeeding and leukemia. In the two largest and highest-quality studies breastfeeding was associated with a significant risk reduction and in one of these studies, longer durations reflected greater protection. They note that in the US approximately 1.4 billion dollars are spent annually to treat childhood leukemia.

Guise JM et al. Review of case-controlled studies related to breastfeeding and reduced risk of childhood leukemia. Pediatrics 116: 724-731, 2005

9 INCREASED RISK OF CHRONIC DISEASES

A review of infant feeding practices and childhood chronic diseases shows increased risk for Type I diabetes, celiac disease, some childhood cancers, and inflammatory bowel disease associated with artificial infant feeding.

Davis MK Breastfeeding and chronic diseases in childhood and adolescence. Pediatr Clin North Amer 48: 125-141, 2001

Celiac disease may be triggered by an autoimmune response when an infant is exposed to a food containing gluten proteins. Ivarsson and her team of researchers looked at the breastfeeding patterns of 627 children with celiac disease and at 1254 healthy children to determine the effect of breastfeeding during the time of introduction of gluten-containing foods on the outcome of the development of celiac disease.

An astounding 40 per cent risk reduction was reported for the development of celiac disease in children at two years of age or younger for those who were breastfed when dietary gluten was introduced. The effect was even more pronounced in infants who continued to be breastfed after dietary gluten was introduced, the authors noted.

Ivarsson, A. et al. Breast-Feeding May Protect Against Celiac Disease Am J Clin Nutr 75:914-21, 2002

To determine the effect of early infant feeding practices (i.e. the impact of breastfeeding versus no breastfeeding; the duration of breastfeeding; and the effect of breastfeeding while introducing gluten-containing foods) on the development of celiac disease (CD), the authors reviewed the literature available on breastfeeding and CD.

They found that children with CD were breastfed for a significantly shorter period of time. Children being breastfed at the time of gluten reduction had a 52 per cent reduction of risk for developing CD compared with children who were not breastfeeding at the time of introduction.

The authors pose two potential mechanisms for the protective effect. Firstly, that continued breastfeeding limits the actual amounts of gluten received. Secondly that breastfeeding protects against intestinal infections. Infections can increase the permeability of the infant’s gut and therefore allow the passage of gluten into the lamina propria.

Others have suggested that breastmilk IgA may reduce the immune response to ingested gluten or immune modulation may occur through specific T-cell suppressive effects.

Akobeng A K et al. Effects of breast feeding on risk of coeliac disease: a systematic review and meta-analysis of observational studies. Arch Dis Child 91: 39-43, 2006

Inflammatory bowel disease and Crohn’s disease are chronic gastrointestinal conditions that are more frequent for those who are formula-fed. A meta-analysis on 17 relevant studies supports the hypothesis that breastfeeding is associated with lower risks of Crohn’s disease and ulcerative colitis.

Klement E, Cohen RV, Boxman V, Joseph A, Reif s. Breastfeeding and risk of inflammatory bowel disease: a systematic review with meta-analyis. Am J Clin Nutr 80: 1342-1352, 2004

10 INCREASED RISK OF DIABETES

To determine the link between cow’s milk (and cow’s milk based infant formula) consumption and the development of antibody response to cow’s milk protein, Italian researchers measured the antibody response of 16 breastfed and 12 cow’s milk-fed infants under four months of age. Cow’s milk fed infants had elevated levels of beta-casein antibodies when compared to breastfed infants. They concluded that breastfeeding for the first four months prevented the production of antibodies and could have a preventive effect on the development of Type 1 diabetes.

Monetini L, Cavallo MG, Stefanini L, Ferrazzoli F, Bizzarri C, Marietti G, Curro V, Cervoni M, Pozzilli P, IMDIAB Group. Bovine beta-casein antibodies in breast-and bottle-fed infants: their relevance in Type 1 diabetes. Hormone Metab Res 34: 455-459, 2002

In this case-controlled study, 46 native Canadian Type II diabetes patients were matched with 92 controls. Pre- and postnatal risk factors were compared. Breastfeeding was found to reduce the risk of Type II diabetes.

Young TK, Martens PJ, Taback SP, Sellers EA, Dean HJ, Cheang M, Flett B. Type 2 diabetes mellitus in children: prenatal and early infancy risk factors among native Canadians. Arch Pediatr Adolesc Med 156: 651-655, 2002

Early introduction of infant formula, solids and cow’s milk are factors shown to increase the incidence of Type I diabetes later in life. Swedish (517) and Lithuanian (286) children aged 0 to 15 years who were diagnosed with Type I diabetes were compared to non-diabetic controls. The results showed that exclusive breastfeeding for five months and total breastfeeding for longer than seven or nine months are protective against diabetes.

Sadauskaite-Kuehne V, Ludvigsson J, Padaiga Z, Jasinskiene E, Samuel U. Longer breastfeeding is an independent protective factor against development of type I diabetes mellitus in childhood. Diabet Metab Res Rev 20: 150-157, 2004

Data was collected via questionnaires in this case-controlled study consisting of 868 diabetic Czech children and 1,466 controls. This study too confirms that the risk for type I diabetes decreases with increased duration of breastfeeding. Not breastfeeding was associated with an increased risk – OR of 1.93. Breastfeeding for 12 months or longer reduced the risk significantly – OR of 0.42.

Malcove H et al. Absence of breast-feeding is associated with the risk of type 1 diabetes: a case-control study in a population with rapidly increasing incidence. Eur J Pediatr 165: 114-119, 2005