

This important study from Ghana was designed to evaluate whether the timing of breastfeeding initiation and the type of breastfeeding practised are associated with risk of neonatal mortality. The study included 10,947 infants who survived day 2 and whose mothers were visited during the neonatal period.

Breastfeeding was initiated during the first day in 71% of infants and in 98.7% by day 3. Breastfeeding was exclusive for 70% during the neonatal period. The risk of neonatal death was fourfold higher in infants given milk-based fluids or solids in addition to breastmilk. There was a marked dose-response of increasing risk of neonatal mortality with delayed breastfeeding initiation from hour 1 to day 7. Initiation after day 1 was associated with a 2.4 fold increase in mortality risk. The authors conclude that 16% of neonatal deaths can be prevented if all infants are breastfed from day 1 and 22% can be prevented if breastfeeding is initiated during the first hour.

Edmond KM, Zandoh C, Quigley MA, Amenga-Etego S, Owusu-Agyei S, Kirkwood BR. Delayed breastfeeding initiation increases risk of neonatal mortality. *Pediatrics* 117: 380-386, 2006

More than 10 million children die every year in low- and middle-income countries before they reach the age of five. It is estimated that 2/3 of these deaths are related to inadequate nutrition and are preventable. Each of these numbers represents an infant or a child, with a mother and father full of hope and expectation, yet ending in tragedy. This is a global crisis of obscene proportions in a world where trillions of dollars are spent on war and destruction, while the causes of poverty and disparity are not addressed.

The 5-part Lancet Child Survival Series: The Lancet 361: 2003 documents the need to make child health an international health priority and to fight for the resources needed to give all children the right to food, health and life itself.

In the context of extreme poverty for so many, the promotion and support of breastfeeding not only prevents illness, but also is vital to the protection of life itself.

Preventive intervention	Estimated deaths prevented (thousands)	(per cent of all deaths)
Breastfeeding	1,301	13
Insecticide-treated materials	691	7
Complementary feeding	587	6
Clean delivery (efforts to ensure that childbirth is free of unnecessary contamination)	411	4
H. influenzae type b vaccination	403	4
Zinc supplementation	351	4
Clean water, sanitation, hygiene	326	3
Vitamin A supplementation	176	2
Tetanus toxoid vaccination	161	2

The Lancet Child Survival Series: The Lancet 361: 2003

## 1 INCREASED RISK OF OTITIS MEDIA AND EAR INFECTIONS

The number of episodes of acute otitis media increased significantly with decreased duration and exclusivity of breastfeeding. US infants who were exclusively breastfed for four months or more had a 50 per cent reduction of episodes compared to infants who were not breastfed. A 40 per cent reduction of episodes was reported for breastfeeding infants who were supplemented before four months of age.

Duncan B, Ey J, Holberg CJ, Wright AL, Martinez F, Taussig LM. Exclusive breastfeeding for at least 4 months protects against otitis media. *Pediatrics* 91: 867-872, 1993

Between six and 12 months of age the incidence of first episodes of otitis media increased from 25 per cent to 51 per cent in infants exclusively breastfed. In infants that were exclusively formula fed the incidence rose from 54 per cent to 76 per cent during the second half of the first year. The authors

concluded that breastfeeding even for a short period (three months) would significantly reduce the episodes of otitis media during infancy.

Duffy LC, Faden H, Wasielewski R, Wolf J, Krystofik D. Exclusive breastfeeding protects against bacterial colonization and day care exposure to otitis media. *Pediatrics* 100: E7, 1997

## INCREASED RISK OF SIDE EFFECTS OF ENVIRONMENTAL CONTAMINANTS

A Dutch study showed that at six years of age, cognitive development is affected by prenatal exposure to polychlorinated biphenyls (PCBs) and dioxins. An adverse effect of prenatal exposure on neurological outcome was also demonstrated in the formula-fed group but not in the breastfed group. Despite higher PCB exposures from breast milk, the study found at 18 months, 42 months of age, and at six years of age a beneficial effect of breastfeeding on the quality of movements, in terms of fluency, and in cognitive development tests.

The data gives evidence that prenatal exposure to PCBs does have subtle negative effects on neurological and cognitive development of the child up to school age. The study also gives evidence that breastfeeding counteracts the adverse developmental effects of PCBs and dioxins.

Boersma ER, Lanting CI. Environmental exposure to polychlorinated biphenyls (PCBs) and dioxins. Consequences for longterm neurological and cognitive development of the child. *Adv Exp Med Biol* 478:271-87, 2000

Another Dutch study to determine the perinatal effects of exposure to polychlorinated biphenyls (PCBs), assessed breastfed and formula-fed infants at nine years of age. By measuring auditory P300 latencies (the reaction time to incoming stimuli, which are known to be negatively impacted by PCBs) they found that those who were formula-fed or breastfed for less than 6 to 16 weeks, experienced greater latency and delayed mechanisms in the central nervous system that evaluate and process relevant stimuli. On the other hand breastfeeding accelerates these mechanisms.

Vreugedenhill HJI, Van Zanten GA, Brocaar MP, Mulder PGH, Weisglas-Kuperus, N. Prenatal exposure to polychlorinated biphenols and breastfeeding: opposing effects on auditory P300 latencies in 9-year old Dutch children. *Develop Med & Child Neurol* 46: 398-405, 2004

## Risks of Formula Feeding FOR MOTHERS

### 1 INCREASED RISK OF BREAST CANCER

Researchers from England evaluated a possible association between cancer incidence and breastfeeding during infancy. This study included nearly 4,000 adults who were originally surveyed from 1937-1939. The data included on meta-analysis showed that rates of breast cancer diagnosed in premenopausal women were approximately 12% lower among women who had been breast-fed as infants.

Martin R, Middleton N, Gunnell D, Owen C, Smith G. Breast-Feeding and Cancer: The Boyd Orr Cohort and a Systematic Review With Meta-Analysis. *Journal of the National Cancer Institute*. 97: 1446-1457, 2005

Breast-feeding decreases the risk of breast cancer in mothers and infection, allergy, and autoimmunity in infants. The presence of mediators of the innate immune system in human milk, including defensins, cathelicidins, and toll-like receptors (TLRs), were extracted and analysed from the whey fractions of colostrum and transitional and mature milk (n = 40) from normal mothers (n = 18) and from mothers with autoimmune or allergic diseases.

The authors suggest that the innate immune system in breastmilk is complex and likely provides protection for