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# **THE OPTIMAL DURATION OF EXCLUSIVE BREASTFEEDING**

## **REPORT OF AN EXPERT CONSULTATION**

**GENEVA, SWITZERLAND  
28–30 MARCH 2001**



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## 1. Objectives of the Consultation

The objectives of the expert consultation were:

- To review the scientific evidence on the optimal duration of exclusive breastfeeding;
- To formulate recommendations for practice on the optimal duration of exclusive breastfeeding;
- To formulate recommendations for research needs in this area.

The Agenda and List of Participants are presented as Annexes 1 and 2.

## 2. Summary of the findings

A systematic review of current scientific evidence on the optimal duration of exclusive breastfeeding identified and summarized studies comparing exclusive breastfeeding\* for 4 to 6 months, versus 6 months, in terms of growth, infant iron status, morbidity, atopic disease, motor development, postpartum weight loss, and amenorrhea. It should be noted that the review was based on two small controlled trials and 17 observational studies that varied in both quality and geographic provenance.

The evidence does not suggest an adverse effect of exclusive breastfeeding for 6 months on infant growth on an overall population basis, i.e. on average. The sample sizes were insufficient, however, to rule out an increased risk of growth faltering in some infants who are exclusively breastfed for 6 months, particularly in populations with severe maternal malnutrition and a high prevalence of intrauterine growth retardation.

The evidence from one trial in Honduras demonstrates poorer iron status in infants exclusively breastfed for 6 months, versus 4 months followed by partial breastfeeding to 6 months, and this evidence is likely to apply to populations in which maternal iron status and infant endogenous stores are not optimal. The available evidence is grossly inadequate to assess risks of deficiency in other micronutrients.

The available data suggest exclusive breastfeeding for 6 months has protective effects against gastrointestinal infection. These data were derived from a setting

(Belarus) where hygienically prepared complementary foods were used.

The evidence does not demonstrate a protective effect against respiratory tract infection (including otitis media) or atopic disease, in infants exclusively breastfed for 6 months compared to infants exclusive breastfed for 4–6 months.

Because the data from the Honduran trials reporting more rapid motor development are inconsistent and susceptible to observer bias, they are insufficient to draw any inferences concerning neuromotor development.

The results of two controlled trials in Honduras indicate that exclusive breastfeeding for 6 months (versus 4 months) confers an advantage in prolonging the duration of lactational amenorrhea in mothers who breastfeed frequently (mean 10–14 feedings/day).

The same Honduran trials demonstrated higher postpartum weight loss in mothers who exclusively breastfed for 6 months compared with mothers who exclusively breastfed for 4 months.

In developing-country settings, the most important potential advantage of exclusive breastfeeding for 6 months—versus exclusive breastfeeding for 4 months followed by partial breastfeeding to 6 months—relates to infectious disease morbidity and mortality, especially that due to gastrointestinal infection (diarrhoeal disease). Because the evidence bearing directly on this issue was inadequate, however, the Expert Consultation also considered other published studies that did not meet the selection criteria for the systematic review. In particular, no mortality data were available that directly compared exclusive breastfeeding for 4–6 months versus 6 months. Moreover, the morbidity data from developing countries were limited to the two Honduran trials, which had insufficient statistical power to detect any advantage of exclusive breastfeeding to 6 months, and which used hygienically prepared complementary foods. However, the strong protective effect against gastrointestinal infection observed in Belarus, coupled with the high incidence of and mortality from gastrointestinal infection in many developing-country settings, leads us to infer that exclusive breastfeeding for 6 months would protect against diarrhoeal morbidity and mortality in such settings. This inference is further strengthened by morbidity data relating to reduced risk of gastrointestinal infection and of all-cause mortality for exclusively breastfed children compared with partially breastfed infants from 4 to 6 months, regardless of when the latter stopped exclusive breastfeeding.

\* Because the definition of “exclusive breastfeeding” in studies in the systematic review often included infants who were predominantly breastfed, the term is used here to include both true exclusive breastfeeding and predominant breastfeeding, as defined by WHO.

In summary, the Expert Consultation concludes that exclusive breastfeeding to 6 months confers several benefits on the infant and the mother. However, exclusive breastfeeding to 6 months can lead to iron deficiency in susceptible infants. In addition, the available data are insufficient to exclude several other potential risks with exclusive breastfeeding for 6 months, including growth faltering and other micronutrient deficiencies, in some infants. In all circumstances, these risks must be weighed against the benefits provided by exclusive breastfeeding, especially the potential reduction in morbidity and mortality.

### 3. Recommendations for practice

The Expert Consultation recommends exclusive breastfeeding for 6 months, with introduction of complementary foods and continued breastfeeding thereafter. This recommendation applies to populations. The Expert Consultation recognizes that some mothers will be unable to, or chose not to, follow this recommendation. These mothers should also be supported to optimize their infants' nutrition.

The proportion of infants exclusive breastfed at 6 months can be maximized if potential problems are addressed:

- The nutritional status of pregnant and lactating mothers.
- Micronutrient status of infants living in areas with high prevalence of deficiencies such as iron, zinc, and vitamin A.
- The routine primary health care of individual infants, including assessment of growth and of clinical signs of micronutrient deficiencies.

The Expert Consultation also recognizes the need for complementary feeding at 6 months of age and recommends the introduction of nutritionally adequate, safe and appropriate complementary foods, in conjunction with continued breastfeeding.

The Expert Consultation recognizes that exclusive breastfeeding to 6 months is still infrequent. However, it also notes that there have been substantial increases over time in several countries, particularly where lactation support is available. A prerequisite to the implementation of these recommendations is the provision of adequate social and nutritional support to lactating women.

### 4. Recommendations for research

There are a number of issues that are important for policy-making with regard to defining the optimal duration of exclusive breastfeeding and maximizing its benefits.

The Expert Consultation recommends the following priority research areas:

- A comparison of exclusive breastfeeding/predominant breastfeeding and partial breastfeeding for 4–6 months on the following outcomes, to improve precision of estimates and their general applicability:
  - proportion with growth faltering and malnutrition at six and twelve months,
  - micronutrient status,
  - diarrhoeal morbidity,
  - neuromotor development,
  - changes in maternal weight,
  - lactational amenorrhoea.

Priority must be given to investigating these outcomes in infants born small-for-gestational-age or, alternatively, to those born with low weight-for-age at four months.

- Assess breast milk production and composition from mothers with a body mass index < 18.5 and the adequacy of breast milk for meeting infant requirements to six months.
- It is recognized that the rates of exclusive breastfeeding decline substantially after four months. Identify biological and social constraints to exclusive breastfeeding to six months in different geographical and cultural settings, and develop appropriate and effective interventions to deal with these barriers and their consequences.
- Use available opportunities to gain greater insight into the impact on mortality of exclusive breastfeeding to six months. Example: incorporate additional variables in the Demographic and Health Surveys.
- Develop and evaluate interventions for micronutrient supplementation and for complementary foods in different areas of the world. This would include formative studies to identify processing and preparation methods, and local ingredients required to prepare nutritionally adequate, safe and appropriate complementary foods.
- Assess the role of care during pregnancy in relation to the adequacy of lactation in the first six months.

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ANNEX 1  
**Agenda**

■ **WEDNESDAY 28 MARCH**

- 09h00 **Welcoming Remarks**  
Dr Tomris Türmen, Executive Director,  
Family and Community Health  
**Background and Meeting Objectives**  
Dr Graeme A. Clugston, Director  
Department of Nutrition for Health and Development  
**Introduction of Participants**  
**Nomination of Chairperson and Rapporteur**  
Dr Hans Troedsson, Director  
Department of Child and Adolescent Health and Development
- 09h30–09h45 COFFEE  
**Systematic Review: background**  
Professor Jim Neilson, Cochrane Collaboration  
**Systematic Review on the Optimal Duration of Exclusive Breastfeeding**  
Professor Michael Kramer, McGill University, Canada
- 12h30–14h00 LUNCH
- 14h00–18h00 **Plenary discussion on the Systematic Review**  
— Methods  
— Findings  
— Implications for practice  
— Implications for research

■ **THURSDAY 29 MARCH**

- 09h00 **Nutrient Adequacy of Exclusive Breastfeeding during the First Year of Life**  
Professor Nancy Butte, Baylor College of Medicine, USA  
**Plenary discussion on Nutrient Adequacy paper**  
**Formulation of recommendations for practice**  
Professor Cesar Victora, University of Pelotas, Brazil  
**Formulation of recommendations for research**  
Professor M.K. Bhan, AIIMS, India
- 12h30–14h00 LUNCH
- 14h00–18h00 **Drafting groups**  
(two groups: one for practice and one for research)

■ **FRIDAY 30 MARCH**

- 09h00 **Report from drafting groups in Plenary**  
**Final formulation and approval of recommendations for practice**
- 12h30–14h00 LUNCH
- 14h00–18h00 **Final formulation and approval of recommendations for research**
- 18h00 CLOSURE

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## ANNEX 2

### List of Participants

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