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Mary Fewtrell is Professor of Paediatric Nutrition and Honorary Consultant Paediatrician at UCL Great Ormond Street Institute of Child Health, London, UK. Following her training in Medicine and Paediatrics, she has worked in Infant & Child Nutrition research for 23 years. Her research interests include the programming of health outcomes by early nutrition and growth, investigated in randomised nutritional intervention trials in both term and preterm infants, with long-term follow-up; and practical aspects of infant nutrition, with studies on

breastfeeding, breast milk expression and complementary feeding. She is the Clinical Lead for Nutrition at the Royal College of Paediatrics & Child Health, Chairs the Committee on Nutrition of the European Society of Paediatric Gastroenterology, Hepatology & Nutrition (ESPGHAN) and co-Chairs the Nutrition Group of the European Foundation for the Care of Newborn Infants (EFCNI), which is currently developing European Standards for nutrition in neonatal care.

The application of physiology for optimising collection and expression of breastmilk

Human milk is the optimum diet for all infants but may have particular benefits for high risk groups such as those born preterm. Since preterm and sick infants are often unable to breast-feed effectively, the provision of maternal breast milk relies on milk expression. Mothers who deliver a preterm infant may need to express milk for prolonged periods, and they require support and advice on how to maximise their milk production. Available evidence suggests that the most successful strategies result from the application of physiological principles derived from an understanding of the processes involved in normal lactation; including the mechanism by which infants obtain milk from the breast as well as hormones and psychological factors.

Successful strategies thus focus broadly on (1) hormones (prolactin, oxytocin, cortisol); (2) psychological factors such as counselling and relaxation therapies which may act via these hormones; and (3) physical factors which include how milk is expressed (frequency and style of expression including breast massage) and the design of breast pumps which more closely mimic how an infant breastfeeds, incorporating elements of compression as well as suction. Whilst these strategies have particular significance for mothers of preterm infants who may rely on milk expression for long periods, they can also be applied to mothers who wish to express milk for their term infant.