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Emma has been a Registered Dietitian for almost 10 years. For eight and half years she worked in the NHS, gaining experience of both adult and paediatric patient care. She is currently a company dietitian/ brand manager for Dr Schär UK and has recently joined *NHD Magazine* as Editor.

INFANT WEANING: GETTING THE BEST START

Weaning (or complementary feeding*) is that wonderful stage in an infant's development where solid foods (often referred to as complementary foods) are introduced into the diet alongside breast milk or infant formula. Here, NHD Editor Emma Coates looks at the guidelines, recommendations and key research surrounding infant weaning.

A time often eagerly anticipated by many parents, weaning is important for developing social and physical skills, such as learning to interact with others at mealtimes, hand-to-eye coordination and the development of speech through the use of key facial muscles when chewing. It is also essential nutritionally as it prevents macro and micronutrient deficiencies at the time when breast milk and infant formula become insufficient as a sole source of nutrition at around six months (26 weeks) of age.

The 'weaning window' (between four and six months, or 17 weeks and 26 weeks) is the blank canvas where feeding behaviour, food preferences, future long-term health outcomes and even the risk of allergy are determined. Over the last 25 years, infant feeding research has uncovered the startling importance of giving our infants the best nutritional start in life; however, recommendations and guidelines remain confusing and inconsistent at times. It's no wonder that 'getting the best start' really is at the forefront of many parent's and healthcare professionals' minds.

* Complementary feeding - the preferred term for 'weaning' because 'weaning' traditionally marks the reduction of breastfeeding'

WHAT DO THE GUIDELINES AND RECOMMENDATIONS SAY?

Current infant feeding guidelines and recommendations have evolved over many years. The Department of Health - Committee on Medical Aspects of Food

Policy (COMA) - Dietary Reference Values were published in 1991.² Giving the estimated daily energy and nutrient requirements for a range of ages across the lifespan, this document gave guidance on the safe nutritional intakes for infants from birth to one year of age, but no recommendations for the optimum age for weaning. These recommendations were based only on infants who were formula fed. COMA later produced the 'Weaning and the weaning diet' report in 1994³ recommending that solid foods should be introduced into the term infant's diet between four to six months of age. However, as early as 1974, COMA recommended that:

*'Breastfeeding is the best form of nutrition for infants. Mothers should be supported and encouraged in breastfeeding for at least four months and may choose to continue as the weaning diet becomes increasingly varied. The majority of infants should not be given solid food before the age of four months and a mixed diet should be offered by the age of six months.'*³

As well as UK based guidelines and recommendations, international documents are also considered. Over the years, UK infant feeding guidance hasn't always fully reflected international guidelines and recommendations. The World Health Organisation's (WHO) report on the optimal duration of exclusive breastfeeding (2001)⁴ recommended that 'exclusive breastfeeding for six months confers several benefits on the infant and the mother, and complementary

foods should be introduced at six months of age (26 weeks) while continuing to breastfeed. In 2001, the Scientific Advisory Committee on Nutrition (SACN) considered the 2001 WHO recommendations and concluded that, although breastfeeding until six months of age was nutritionally adequate, there should be scope for weaning to take place between four and six months of age.⁵ In 2003, the Department of Health updated its recommendations and stated that the introduction of solid food should be 'at around six months'.⁶

THE OPTIMUM WEANING AGE

The optimum weaning age has been the subject of debate throughout the subsequent production and publication of infant feeding recommendations, guidelines and research. Despite the publication of such documents it has always been common to find parents introducing solid foods earlier than four months of age. There is also the questionable relevance of the international guidelines within developed countries such as the UK. International guidelines are intended for safe

infant feeding practices within both developed and developing countries. Where infant mortality from contaminated weaning foods is much more of a reality than in developed countries, exclusive breastfeeding up until six months of age is highly recommended as the safest option. However, in the UK this is less of a concern and many query if withholding the introduction of solid foods until six months of age is strictly necessary.

Treating babies as individuals and tuning in to their readiness to start weaning should be factored into the advice given by healthcare professionals. Babies develop at different rates with several factors contributing to their readiness to begin taking solid foods, for example, gestational age, physical and cognitive development. Parental choice as well as social and cultural influences must be taken into consideration also. Going forward there have been additional guidelines and recommendations to support the four to six month 'weaning window', with greater flexibility for parents to start weaning. Table 1 shows a summary of infant feeding guidelines, recommendations and key research over the last 25 years.



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Table 1: Summary of infant feeding guidelines, recommendations and key research

Document	Year of publication	Key findings/recommendations
DH COMA Dietary Reference Values for UK report ²	1991	Gave recommendations for safe nutritional values for energy and nutrients for infants aged birth to one year. Based on bottle-fed infant data only.
DH COMA Weaning and the weaning diet report ³	1994	Solid foods should be introduced into the term infant's diet between four to six months of age.
WHO report on the optimal duration of exclusive breastfeeding ⁴	2001	Exclusive breastfeeding for six months. Solid foods should be introduced at six months of age while continuing to breastfeed.
SACN Committee Meetings ⁵	2001	Breastfeeding is nutritionally adequate as a sole source of nutrition up to six months of age. There should be flexibility to introduce solids. Not before four months of age.
Lanigan et al ⁷	2001	Systematic review. Acknowledged that breastfeeding for first six months of life is sufficient for many infants. Some may require complementary feeding earlier. Concerns regarding the increased risks of micronutrient deficiencies in those not weaned before six months of age.
Butte et al ⁸	2002	Concerns regarding the increased risks of micronutrient deficiencies in those not weaned before six months of age.
WHO Global strategy for infant and young child feeding ⁹	2003	All mothers should have access to skilled support to initiate and sustain exclusive breastfeeding for six months and ensure the timely introduction of adequate and safe complementary foods with continued breastfeeding up to two years or beyond. Governments are responsible for the development and implementation of a comprehensive policy on infant and young child feeding, in the context of national policies for nutrition.
DH Infant Feeding Recommendation ⁶	2003	Update following SACN 2001 recommendations. Complementary feeding should commence at 'around six months'.
Committee on Nutrition Complementary Feeding: A Commentary by the ESPGHAN Committee on Nutrition ¹⁰	2008	Literature review. Breastfeeding for about six months is a desirable goal. Complementary feeding should not be introduced before four months and not later than six months.
SACN Subgroup on Maternal and Child Nutrition (SMCN): The Influence of maternal, fetal and child nutrition on the development of chronic disease in later life ¹¹	2011	Recommended strategies to promote, protect and support exclusive breastfeeding. Recommendation six from the report: 'Strategies that promote, protect and support exclusive breastfeeding for around the first six months of an infant's life should be enhanced, and should recognise the benefits for long-term health.'
SACN Dietary Reference values for Energy ¹²	2011	More recent infant growth data from the UK-WHO Growth Standards (RCPCH, 2011) ¹³ used Separate values are provided for breast-fed and breast milk substitute-fed infants. Values are also given for when the method of feeding is mixed or not known. 10-14% higher at 0-3 months but are lower by between 7-18% for infants after three months of age compared to the COMA 1991 values.

British Dietetic Association (BDA) Policy Statement: Complementary feeding: Introduction of solid food to an infant's diet ¹⁴	2013	Paralleling DH 2003 recommendations. Exclusive breastfeeding from birth. Introduction of solid foods at around six months of age. Infants should be managed individually due to developmental differences. Consider parental opinion.
BLISS: Weaning your premature baby. 8th edition ¹⁵	2014	Most babies are ready to wean between five and eight months of age. It is best to wait until they are at least three months corrected age so that they can develop enough head control. Few babies are ready to wean at five months, start to look for signs that the infant may be ready. Government guidelines recommend weaning is not advised before six months, however, premature babies are not included in these guidelines.
SACN Subgroup on Maternal and Child Nutrition (SMCN): Review of complementary infant and young child feeding	Due 2016	Awaiting amendments and revisions. Awaiting amendments and revisions. SMCN considering the Draft Final Report of the WHO Commission on Ending Childhood Obesity (2016) www.who.int/end-childhood-obesity/final-report/en/

THE 1,000 DAYS CAMPAIGN

'Good nutrition in the 1,000 days between a woman's pregnancy and her child's second birthday sets the foundation for all the days that follow.'¹⁶ The 1,000 days campaign promotes the improvement of nutrition for both mother and infant during the first 1,000 days of the infant's life. Improving nutrition and preventing malnutrition during this critical window of development, which includes during pregnancy and the infant's first two years of life can 'program a person's ability to regulate weight and affects brain development'.¹⁷ The effects of poor nutrition in early life leaves lasting damage, which may also affect future generations.¹⁸

- By investing in better nutrition, the 1,000 days campaign also concludes that:
1. women who are well-nourished before and during pregnancy are less likely to die during childbirth;
 2. ensuring that mothers are able to breastfeed and babies receive only breastmilk for the first six months of life, the lives of almost one million children can be saved;
 3. faltering growth and stunting can be prevented, along with nutritional deficiencies such as iron deficiency anaemia;
 4. the risks of non-communicable disease, e.g. diabetes, heart disease and obesity can be reduced in later life;
 5. educational achievement can be improved.

For more information about this campaign and its activities visit www.thousanddays.org/ (accessed Feb 2016)

WHAT ABOUT ALLERGIES?

Weaning can be an anxious time for parents as well as an enjoyable one. Food allergy is often discussed with healthcare professionals when parents are preparing to wean their child. Approximately 6% of children in the UK will develop food allergies.¹⁹ The EAACI (European Academy of Allergy and Clinical Immunology) published their primary prevention of food allergy guidelines in 2014²⁰ which stated that avoiding complementary feeding beyond four months of age is not required. With regards to encouraging or withholding the exposure to allergenic food stuffs after four months of age, there is limited evidence to justify recommendations either way, irrespective of the family history of allergy. However, in 2015, the eagerly awaited results of the LEAP study were published suggesting that early exposure to allergens such as peanuts can help to reduce the incidence of food allergy.²¹

However, more research is needed in this area to alter any current recommendations on the prevention of food allergy. A further allergy and weaning study is in progress. The EAT (Enquiring about Tolerance) study is looking into how food allergy can be prevented.

Approximately 1,300 families have been recruited for the study, which is to be conducted by researchers at King's College and Guy's and St Thomas' Foundation NHS Trust, London. The study will take place over the next three years and is aiming to discover whether the early introduction of certain foods into an infant's diet alongside breastfeeding could prevent the development of food allergies.

Infant feeding is a complex issue and there is ever-growing evidence to suggest that the better the start, the better the outcome. Growth and development in the first two years of an infant's life is miraculous and infants require the best quality nutrition to ensure that they reach their potential. Our infant feeding guidelines and recommendations require consistent reviewing and tailoring to consider our ever-evolving knowledge base. However, it is key to remember that guidelines and recommendations won't fit with everyone's views and opinions. Future infant feeding guidance should include support and guidance for parents choosing infant formula as current guidance mostly focuses on breastfed infants. As healthcare professionals we must bear this in mind, supporting and guiding parents/carers in their feeding choices to the best of our ability.



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