New Perspectives of First Foods,
Complementary Feeding and Obesity
– 10 Key facts

1. Complementary feeding (commonly referred to as weaning) is the process of introducing foods to an infant’s diet, to meet their nutritional requirements which can no longer be met by breast or formula milk alone. Concern that the term ‘weaning’ might be misinterpreted to encourage curtailment of breastfeeding led The World Health Organization (WHO) to recommend the use of the term ‘complementary feeding’ to encourage continuation of breastfeeding alongside introduction of solid foods. The WHO recommends that babies are exclusively breastfed until they are 6 months old. The Department of Health adopted the WHO’s breastfeeding recommendation and advises that solid foods be introduced around the age of 6 months alongside breastfeeding, with consideration given to developmental signs of readiness including self-sitting; co-ordination of hands, eyes and mouth necessary for self-feeding; and swallowing of food. It is widely agreed that solid foods should not be introduced before 17 weeks (4 months). National guidelines on feeding infants during the first year are aimed at healthy term babies. Premature babies may require separate advice.

2. Surveys in the UK that have looked at recent complementary feeding practices indicate that the majority of mothers introduce solid foods before the recommended age of around 6 months, with about a quarter of mothers weaning their infants between 3 and 4 months. Research shows that early weaning has been associated with increased risk of childhood overweight and obesity. As childhood obesity is considered one of the most challenging public health issues of our time, it is important that parents have consistent, evidence-based guidance to help them decide what, when and how best to feed their children during infancy.

3. Children grow up in more “obesogenic” environments than in the past but not all children become overweight. To help prevent childhood obesity, it is important to understand how people interact with their environment and how these interactions predispose some children to gain excess weight. Pregnancy and infancy are considered ‘critical windows’ for reducing the risk of obesity and establishing healthy food preferences. Findings from the Southampton Women’s Survey suggest that early life risk factors including maternal obesity, excess weight gain during pregnancy, smoking during pregnancy, low maternal vitamin D status and short duration of breastfeeding are associated with greater risk of overweight and obesity in childhood, and the more risk factors observed the higher the overall obesity risk. At 6 years, children who had four or more risk factors were 4 times more likely to be overweight or obese in childhood compared to those who had no risk factors. These factors often co-exist. For example, maternal obesity is associated with a higher risk of excess weight gain during pregnancy and a shorter duration of breastfeeding, and maternal smoking is associated with lower vitamin D status in late pregnancy. If these risk factors are causally related, interventions that focus on obesity and smoking behaviours pre-pregnancy will positively affect the other risk factors. Thus interventions to promote healthy behaviours pre-pregnancy, during pregnancy and in early life should be key strategies to prevent obesity.

4. There is evidence for both environmental and genetic causes of obesity. Genetic susceptibility to the food environment is thought to explain some of the individual differences in weight in children. Data from a large paediatric twin birth cohort (Gemini) has shown that children can inherit appetitive (appetite-related) characteristics, such as an avid appetite and lower sensitivity to satiety (the feeling of being full), making them more likely to overeat when food is easily available. The study shows that genes are largely responsible for individual differences in appetite even during the first few months of life, before any solid food has been introduced, and these differences appear to play a role in causing infant
weight gain. Knowing that there are genetic influences in appetite might help parents understand and accept that children differ, and that some need more support in learning the boundaries of appropriate eating. For children who have a tendency to overeat, advice to parents could be to try and encourage their child to eat more slowly, have a ‘no second helpings’ policy, and keep tempting treats out of sight between meals.

5. The timings and types of food given during the complementary feeding period may influence obesity risk in childhood. Systematic reviews of the literature have found that the types of foods introduced during the complementary feeding period and the timing of the introduction of solid foods are key in ensuring good nutritional status and taste preferences but may not be independent risk factors for childhood overweight or obesity. Overall, the reviews reported no clear association between specific foods or timing of complementary feeding and higher BMI or body fatness in childhood. Some effects were seen in a small number of studies which suggested that introduction of solid foods before 4 months was associated with higher childhood BMI, but this was not enough to draw a firm conclusion. Adherence to breast feeding and complementary feeding guidelines should be encouraged to avoid possible risk factors, such as very early introduction of solids (before 4 months) and high energy intakes in infancy. A healthy, balanced diet in infancy plays an important role in determining childhood obesity.

6. The way in which infants are introduced to solid foods may have an important influence on later body weight and eating patterns in childhood. Recently baby-led weaning has become a fashionable method of introducing solid foods that is quite different from traditional methods, with emphasis on self-feeding foods in their whole form rather than spoon feeding (e.g. cooked carrot sticks vs. carrot puree). Emerging research has shown that babies who are introduced to solid foods using the baby-led weaning method, using spoon feeding and purees 10% of the time or less, show greater satiety-responsiveness and are less likely to be overweight at 18–24 months compared with those receiving the standard spoon-and-purée approach. Self-feeding and experiencing a wider range of finger foods at 6 months may provide an additional feeding style for parents alongside spoon feeding when introducing solids, which may help children maintain better appetite regulation. However, there are very few studies on the short or long term impact of baby-led weaning, and further research is needed.

7. Ethnic differences in infant feeding practices and food intake have been investigated in the Born in Bradford (BiB) 1000 Study (http://www.borninbradford.nhs.uk/). Whilst some mothers in both groups reported introducing solid foods earlier than 6 months, White British mothers provided solid foods to their infants earlier than Pakistani mothers (average age of weaning 4.2 vs 4.8 months). Clear differences in infant feeding practices and dietary intake exist at 12 and 18 months between White British and Pakistani infants. At 12 months, foods and drinks high in sugar/fat were consumed by all infants. Pakistani infants were found to have a higher intake of sweet commercial foods, fruit and high sugar drinks, and White British infants were found to have a higher intake of savoury baby foods and processed meat products. These dietary patterns not only track but also increase by 18 months. Evidence from the BiB study also suggests the influence of certain maternal characteristics on early infant diet such as maternal smoking, maternal obesity, more indulgent feeding style or a less warm parenting style. Whilst White British mothers were more likely to smoke during pregnancy, have a higher BMI and have a more indulgent feeding style, there was no strong evidence that the relationship between risk factors and childhood BMI differed by ethnicity. Culturally-appropriate interventions should be considered when promoting healthy eating patterns in infancy.

8. Research published as part of the HabEat study (http://www.habeat.eu/) in young children has shown that fewer than a fifth of children across Europe consume the recommended amounts of fruit and vegetables. Introducing vegetables as part of complementary feeding provides the foundation for liking at an early stage. Studies conducted in the UK, France and Denmark, as part of this European study, show that mothers use a variety of different methods to introduce vegetables into their babies’ diets.
These include adding vegetable puree to milk, hiding vegetables (vegetables by stealth) and using condiments to mask the distinctive flavour of novel vegetables. From these studies, early and repeated exposure (5-10 times), using a variety of vegetables, appears to be important in establishing liking and increased intake of vegetables in later childhood. The importance of fruit and vegetable consumption, as part of a balanced diet, to health outcomes throughout the life course has been demonstrated. So, early and repeated introduction of vegetables from the start of complementary feeding may be important for establishing good eating patterns.

9. As several risk factors for childhood obesity are identifiable during infancy, focusing support for obesity prevention on vulnerable families at greatest risk is an option. However, whilst health visitors may acknowledge their role in advising parents about infant feeding practices, they often find intervention with parents whose infants are at risk of obesity challenging. They may be reluctant to label infants as overweight or obese and be concerned about the impact such discussions may have on their professional relationship with parents. Parents may, for example, perceive larger babies to be healthier and be unaware that their feeding practices might be contributing to overweight/obesity risk. A need for training of health visitors and guidance has been identified, but this needs to be done with an awareness of the common barriers faced by health professionals. Crucially any interventions must be conducted in a context of empowering parents to improve their feeding practices, as well as the diets and physical activity habits of their infants. To this end, a digital interactive, education programme known as Proactive Assessment of Obesity Risk during Infancy (ProAsk) has been designed for UK health visitors to facilitate discussions about obesity prevention with parents during routine home visits. The programme incorporates an Infant Risk of Obesity Checklist (IROC) including a risk score based on the following factors: infant birth weight, maternal and paternal body mass index, smoking during pregnancy and initiation of breastfeeding. A feasibility study for ProAsk is currently underway.

10. HENRY was developed to deliver the evidence-based messages from the Department of Health’s report Tackling Child Obesity through the Healthy Child Programme: a Framework for Action. HENRY is a multi-layered, holistic early years intervention which addresses the research evidence on risk and protective factors for child obesity focusing on parenting, family lifestyle habits, healthy eating, physical activity and emotional well-being. A growing body of evidence suggests that bringing together these five elements of a healthy lifestyle enables families to make significant positive changes, which if maintained could promote a healthy lifestyle and embed the kind of eating behaviours, as well as food and activity habits, that may have potential to reduce the risk of later obesity. Noted changes following the intervention have included increased consumption of fruit and vegetables and frequency of family mealtimes. Over 5,000 families have participated in the 8-week programme, which is currently delivered in 30 local authorities across England and Wales. A randomised controlled trial of the HENRY programme is currently underway to further assess the impact of such interventions on reduction of obesity in children.

Useful references
This is a summary from the British Nutrition Foundation conference ‘New Perspectives on First Foods, Infant Feeding and Obesity’ held in London on 28th April 2015. Speakers were Dr Lucy Chambers (British Nutrition Foundation), Prof Marion Hetherington (University of Leeds), Prof Siân Robinson (University of Southampton), Jo Pearce (University of Nottingham), Dr Clare Llewellyn (University College London), Prof Sarah Redsell (Anglia Ruskin University), Prof Pinki Sahota (Leeds Beckett University), Dr Michelle Lee (Swansea University) and Kim Roberts (HENRY). The conference was chaired by Prof Marion Hetherington (University of Leeds).

The British Nutrition Foundation (BNF), a registered charity, delivers impartial, authoritative and evidence-based information on food and nutrition. Its core purpose is to make nutrition science accessible to all, working with an extensive network of contacts across academia, education and the food chain, and through BNF work programmes focussing on education in schools and nutrition science communication. The key role of BNF’s Council and Trustees is to ensure that the Foundation delivers its charitable aims, is impartial, transparent and acts with integrity. BNF’s Articles of Association require a majority of Council’s members to be leading academics from the nutrition science community, supported by leaders in education, communication and the food chain.

For more information about the conference and the British Nutrition Foundation, please see our website: http://www.nutrition.org.uk