Baby-led weaning: transitioning to solid foods at the baby's own pace

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Abstract
Baby-led weaning is an approach to the introduction of solid foods that is being followed by increasing numbers of parents, but what is it, and should health visitors be encouraging it? This paper aims to refresh practitioners' background knowledge of complementary feeding and to outline the key features of baby-led weaning, as well as to explore the evidence that supports this approach as a logical adjunct to the move to six months for the introduction of solid foods. The more common concerns of parents and professionals, such as choking and iron intake, are addressed. Tips for implementing baby-led weaning are included and some of the potential benefits identified.

Key words
Weaning, solid foods, complementary feeding, infant feeding, baby-led weaning

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The author has an interest in the sales of certain books and DVDs about baby-led weaning.

Introduction

The word 'weaning' can be interpreted in several ways. For the purposes of this paper, weaning refers to the transition from a diet consisting only of milk feeds (breastmilk or formula) to one that contains no milk feeds. Under this definition, weaning is a gradual process, which can be expected to take from several months to a few years. The introduction of solid foods marks the initiation of weaning and the final feed of breastmilk or formula its completion.

Baby-led weaning is an approach to weaning in which the baby is allowed to direct and control the process from the very beginning. Thus, during the introduction of solid foods, the parents decide what to offer but it is the baby who decides what they will eat, how much and how quickly. The key features of baby-led weaning are that:

- The baby sits with the family at mealtimes
- The baby is offered the same (healthy) food as everyone else, in pieces appropriate to their developmental level (large at first, then smaller)
- The baby feeds themselves from the beginning, first with their hands and later with cutlery
- Milk feeding (of breastmilk or formula) continues on demand, unconnected with mealtimes.

This paper aims to refresh practitioners' background knowledge of weaning before outlining and exploring the evidence to support baby-led weaning.

When and why is solid food needed?

The current recommendation of the World Health Organization (2002) and UK health departments (DH, 2003; DHSSPS, 2004; NHS Health Scotland, 2010) is that solid foods should be introduced at around six months. At this age, the infant's immune system, digestive tract and oral motor skills have developed sufficiently to allow them to cope with foods other than milk (Naylor and Morrow, 2001). At the same time, the infant's body stores of some important nutrients are beginning to reach the point where breastmilk (or formula) alone cannot replenish them sufficiently (Butte et al, 2002; Kramer and Kakuma, 2002).

It is unlikely that hunger is the primary driver for infants in the move to solid foods. The frame of reference for 'food' of an exclusively milk-fed baby does not include carrots or porridge. When babies of around five months appear fascinated by their parents' eating, and gesture excitedly toward their parents' plates, they are showing an interest in sharing their activity – as they would if the parents were wiring a plug or brushing their teeth – and not expressing a desire to eat. If babies are given food to handle, they will use their mouths to explore it but are unlikely to eat any. Over time, babies will progress to biting, chewing and then swallowing. Only much later will they discover that eating reduces their hunger. In the meantime, milk is what they ask for, and expect, when they are hungry.

Breastmilk or formula can continue to provide all that infants require in the way of macronutrients such as protein, fat and carbohydrate well beyond six months. What they will begin to need to obtain from other foods soon after that age are small amounts of some micronutrients, notably iron and zinc. The early weeks of weaning are a chance for the infant to discover a variety of textures and flavours, so that they develop a repertoire of foods from which they will later be able to select the nutrients they need.

Unfortunately, the assumed link between food and hunger dominates discussions about the introduction of solid foods. As professionals, we talk about milk no longer being 'enough' for a baby, or about babies not being 'satisfied' with milk alone. Parents also commonly focus on perceived hunger when considering introducing solids. All of this puts the emphasis on increasing the quantity of food, rather than on expanding the diet.

Breastmilk (or formula) should continue to be the main source of nourishment until the baby is around one year old, lessening in

importance thereafter. Daily milk intake should normally remain unchanged until about nine months, and then be reduced gradually. If solids are introduced too rapidly, milk feeds may be reduced prematurely and overall nutrition compromised as a result. A gradual start enables solid foods to complement milk feeds, not replace them.

Why do we need a new approach?

Prior to 2002, the UK's recommended minimum age for the introduction of solid foods was four months. What was barely acknowledged when the recommendation changed was that a baby of six months is developmentally very different from a four-month-old and that a different approach to solid feeding is therefore indicated.

Normal, healthy babies of six months can do many things that a baby of four months cannot. They can sit up with minimal or no support, reach out and grasp large pieces of food, and bring these to their mouths and chew them. All of these abilities develop as part of the normal maturation process, irrespective of whether the infant has received puréed foods.

The function of chewing is to pulverise (or purée) food so that it can be swallowed easily. Infants – and indeed adults – who cannot chew require their food to be puréed for them. If they cannot get food to their mouth, they need to be fed by someone else. However, if an individual of any age can get food into their mouth and chew it, then they do not need these things done for them. If an infant of four months truly needs solid foods, then spoon-feeding and purées are appropriate, while for most infants of six months they are not.

To become proficient at chewing, babies need experience with foods that require chewing; to become proficient at self-feeding they need frequent opportunities to practise. There is neither rationale nor research to support the use of purées or spoon-feeding for normal, healthy six-month old babies. Babies of this age are keen to be independent and to use the skills that they are developing. Six-month-olds who resist being spoon-fed are displaying normal behaviour and following their instincts, not being difficult.

If babies are not presented with opportunities to develop new skills at the time those skills are emerging (the 'sensitive' or 'critical' period), then their development can be hampered (Illingworth and Lister, 1964). The critical period for the development of chewing skills is the period from six to about nine months, and there is evidence that babies who are not introduced to lumpy foods by the time they reach 10 months are likely to be 'difficult to feed' as toddlers (Northstone et al, 2001). Some practitioners have seen this as a reason to start solids before six months, in order to allow plenty of time for the progression to chewable foods. If we instead recognise that six-month-olds have passed the age for puréed food and decide to offer them pieces of food immediately, then there is no need for a 'second stage' in which lumps are introduced.

Babies' skills develop gradually, and not in artificial stages. A baby may appear to have achieved a milestone (such as learning to crawl) overnight, but this is simply the culmination of weeks of practice. Baby-led weaning aims to support babies in making a gradual transition to solid foods, in their own time and at their own pace, and it is feasible for most babies (Wright et al, 2011).

MacQueen Award for Excellence in Practice 2011

Applications are being invited for the MacQueen Award 2011, which this year will recognise excellence in practice that demonstrates innovation and new ways of working in public health.

The winner will receive £3000 (£1000 for personal use and £2000 for professional use) in recognition of their personal achievement and to enable dissemination and publication of their work.

Left: Lord Victor Adebowale and Jane Dauncey with MacQueen Award 2010 winner Jayne Botham, and right: with MacQueen Travel Bursary for Public Health 2010 winner Felister Heeley

A ticket and travel and accommodation expenses will be provided to attend the Unite/CPHVA annual professional conference in Brighton on 19 to 20 October.

All applicants for the award should:

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Baby-led weaning is not new. It has probably existed throughout the world for millions of years (Palmer, in press). Even in the UK, where the commercialisation of infant feeding is entrenched, many parents (especially those with three or more children) have already followed it. This could be either because they had the confidence to do what felt right or because they did not have time for the 'faffing about' that making purées requires. Unfortunately for first-time parents, these more experienced parents tended to keep quiet about what they were doing, for fear of being seen as lazy.

Giving this natural and logical approach the name 'baby-led weaning' has served to validate the common sense and instinctive knowledge of parents who have already discovered it, and made it accessible to new parents. Its rapid spread has compelled health professionals to reconsider the information they provide about weaning.

Common concerns

The most common concerns about baby-led weaning revolve around nutrition, choking, and the approach's suitability for all babies.

Getting enough to eat

Many self-feeding babies appear to eat very little for the first couple of months. This causes concern for parents and health professionals alike, in spite of the fact that one of our biggest current public health concerns is obesity.

Our assumptions about how much babies need to eat are based largely on our experience of weaning as beginning at four months, and then following a 'schedule' within which the number of milk feeds is steadily reduced. Under this regime, the balance of milk versus solid foods shifts toward solids much earlier than is physiologically appropriate.

When solid foods are introduced too early, or in overly large amounts, breastfeeding babies (and some formula-fed babies) reduce their milk intake to compensate. Since total daily calorific needs do not normally increase significantly between six months and one year of age, this means that a rapid increase in solid foods tends to be accompanied by a similarly rapid decrease in milk intake. While this has been encouraged in the past, the recognition that milk-feeding should be exclusive until six months – and that breastmilk or formula should continue to form a large part of the infant's diet until at least the first birthday – means that we should now be concerned when we see babies under eight months consuming large quantities of solids.

While it is relatively easy to persuade a baby to take more food than they really need if they are being spoon-fed, it is almost impossible to do this if they are feeding themselves. Consequently, by putting the control in the hands of the baby, baby-led weaning forces us to face the reality of how much food infants really require. It also provides us with an ideal opportunity to throw out our outdated guidelines and start again.

A healthy diet

Baby-led weaning relies on the whole family eating meals that are suitable for a baby to share. It will therefore not be appropriate in households where this is not the case. However, the baby will eventually share their family's diet, so focusing on ensuring that the baby receives suitable food prepared (or purchased) for them alone may have only temporary benefits, and only for the baby. The introduction of solids using baby-led weaning provides an ideal opportunity for wider discussions about nutrition that may have far-reaching effects for the whole family. Discussions on online parenting forums suggest that at least some parents see the onset of weaning as an opportunity to reassess and change their own eating habits.

Many health professionals worry about iron levels during weaning, a concern that is fuelled by companies with a commercial interest in infant feeding. However, the too early introduction of solid foods is likely to compromise an infant's nutrition, not improve it. The iron content of breastmilk (and, by implication, infant formula) is adequate to meet the needs of healthy term babies for at least the first six months (Butte et al, 2002; Kramer and Kakuma, 2002). Since foods introduced earlier than this tend to be low in iron (eg cereals, fruit and vegetables – rarely meat) and since breastfeeding babies in particular will tend to reduce their milk intake to make room for those foods, the overall result for younger babies is likely to be a reduction in iron intake.

The gut of a six-month-old is much more mature than that of a four-month-old. There is therefore no need for the one-food-at-a-time approach recommended for younger babies. This means that iron-rich foods such as meat and eggs can be offered from the outset. With a continuing robust intake of breastmilk (the iron content of which, although not high, is readily biologically available) or formula (which contains high levels of iron, albeit not in an as easily assimilable form) alongside the offer of a variety of solid foods, the term, healthy infant is not at risk of iron deficiency.

Box 1. Information to help parents implement baby-led weaning

The following tips will help parents to implement baby-led weaning successfully (Rapley and Murkett, 2008, 2010):

- Make sure that the meals the baby is invited to share are nutritious
- Cook meals from scratch wherever possible – avoid added salt and sugar, ready-meals, honey, shellfish, shark, marlin and undercooked eggs
- Include the baby whenever anyone else is eating
- Try to make sure that the baby is neither hungry nor sleepy at mealtimes, so that they can concentrate and enjoy this new 'game'
- Ensure that the baby is sitting upright, supported if necessary, so that they can use their hands and arms freely
- Cover the floor with something clean (such as a plastic sheet) so that dropped food can be handed back
- Prepare foods so that they can be picked up and held easily, with some sticking out of the baby's fist – chunks of fruit, sticks of vegetables (cooked so that they are soft but not soggy), strips of meat, fingers of toast and sticks of cheese are all good first foods
- Aim to offer a gradually increasing variety of colours, flavours and textures to make eating interesting and promote skill development and a balanced diet
- Continue to offer milk feeds on demand, in between the shared mealtimes – the baby will reduce these themselves as their intake of solid foods increases
- Offer water with meals (formula-fed babies are more likely to need this than breastfed babies, but all babies will enjoy the chance to try it – a shot-sized cup is useful)
- Avoid small hard foods such as nuts, and cut small round foods (such as grapes and cherry tomatoes) in half
- Make sure that no one other than the baby puts food into their mouth (beware helpful toddlers)
- Never leave the baby alone with food

Risk of choking

Choking occurs when co-ordination of breathing and swallowing is disturbed. It can happen to adults and children alike. The risk of choking is increased if the individual is leaning back while eating, if their concentration is disturbed, or if the wrong technique is used to take in the food. Babies who are introduced to spoon-feeding before they are able to bite and chew use suction to take food from the spoon (Naylor, 2001). This action propels the food to the back of the throat, where it is swallowed. Thus, rather than helping babies to develop chewing skills, experience with puréed foods encourages them to swallow without chewing.

Food that is bitten off in a larger piece is not sucked to the back of the mouth, but stays near the front instead where it can be chewed. The ability to chew develops before the ability to hold food in the mouth or to move it backward for swallowing (Naylor, 2001). For this reason, early attempts at self-feeding often result in the food falling out of the baby's mouth. Since ingestion of large quantities is not the goal at this stage, this provides an ideal opportunity for experimentation and practice.

The ability to chew develops shortly after the ability to get food to the mouth. Thus, babies who can feed themselves, and who are sitting upright, allowed to pace themselves and concentrate on what they are doing are probably at no greater risk of choking than an adult. By contrast, a baby who is leaning back in a relaxer chair and being invited to suck semi-solids off a spoon might not be as safe from choking as is generally supposed.

Choking is uncommon in baby-led weaning, but gagging is common. Gagging is a safety mechanism through which food that has not been sufficiently pulverised in order to be swallowed easily is returned to the front of the mouth for further chewing. The place in the baby's mouth at which the gag reflex is triggered moves backward during the first year (Naylor, 2001). This means that babies at six months of age gag relatively easily when compared with one-year-olds.

Most baby-led weaning babies gag at first, but they do not continue to do so for long. This suggests that the gag reflex helps them to learn how far back to push food. It may therefore be a mechanism that confers longer term as well as immediate safety. Certainly, it does not seem to bother babies, even if it is uncomfortable for their parents to watch.

Is baby-led weaning suitable for all babies?

Babies whose development is delayed, or who have conditions that interfere with their ability to get food to their mouth, or to chew and swallow, may not be able to rely on self-feeding. However, this does not mean that they should be prevented from exploring food with their hands and mouths, or from doing what they can to feed themselves, in combination with whatever other method of feeding is indicated.

Babies who are born very prematurely will be (comparatively) late developing self-feeding skills. If sufficient nutrition cannot be provided by a combination of milk and vitamin and mineral supplements, puréed foods may be needed for a short time. However, there is no reason why these babies cannot be encouraged to self-feed as soon as they are able and be supported to move on to full self-feeding as they become competent.

KEY POINTS

- Baby-led weaning refers to the introduction of solid foods using a self-feeding approach, and it is developmentally and nutritionally appropriate for most infants
- Breastmilk (or formula) should continue to be the main source of nutrition up to one year
- From six months, babies need to practise the skills involved in self-feeding
- Provided basic safety rules are followed, self-feeding does not present any greater risk of choking than spoon-feeding
- This method of feeding during the weaning period has the potential to influence the infant's dietary choices and relationship with food for the remainder of their life

Implementing baby-led weaning

Points of information that can be provided to parents in order to help them implement baby-led weaning successfully (Rapley and Murkett, 2008, 2010) have been included (see Box 1).

Conclusion

Normal infant development seems to support a safe transition to solids without the need for specially-prepared foods. Instead, babies can be allowed to direct and control the changeover at their own pace, supported by an on-going, adequate intake of milk.

Handing over control of eating to babies makes mealtimes more fun for the child and less stressful for the parents. It allows the family to eat together and makes preparing meals simpler. Early anecdotal reports (see the many online blogs and forums such as www.babyledweaning.com/forum) suggest that baby-led weaning leads to fewer mealtime battles, less fussy eating and better appetite regulation in toddlerhood than conventional weaning.

Research is needed to establish whether or not this approach does indeed reduce feeding problems, help to prevent obesity and increase the chances of a healthy diet throughout life.

Further information

A leaflet for parents that outlines basic information about baby-led weaning is available free online – please see:

- www.rapleyweaning.com
- www.baby-led.com

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