

Guidelines On Infant Nutrition

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Nutrition is one of the most important factors in the maintenance of health. Health means not only a satisfactory nutritional state and lack of disease, but also psychological and social well-being.

Breast is Best

There are several reasons for claiming that breast feeding is better than other methods of feeding. It is worthwhile noting that human evolution was accomplished without universal access to nonhuman milk products. Modern techniques of analysis have shown that in many respects human milk is unique and it has become clear that it is not possible to reproduce its exact composition. The composition of human milk is variable from mother to mother, from day to day, between different times of day, and even during a single feed. Thus it is known that hind milk which is secreted after about 5-10 minutes from start of feed is much richer in fat than fore milk secreted at the beginning of the feed. This is why it is important that the mother keeps the baby suckling at each breast for a period of at least 10-15 minutes. Furthermore, the composition is influenced by the mother's diet — a woman who consumes a large part of her calorie intake in the form of carbohydrate will produce a milk much richer in fat than one who consumes a large proportion of fat.

Human milk differs from cow's milk in that secretory IgA (S-IgA) predominates in it whereas IgG and IgM are the main immunoglobulins in cow's milk. S-IgA, together with macrophages, probably interferes with the absorption of food antigens and aids in their elimination; such mechanisms may explain the lower incidence of reaginic allergies in breast-fed infants from atopic families. Human milk also contains a much higher concentration of lactoferrin. This enzyme has a strong affinity for iron which explains its bacteriostatic effect since bacteria need iron for growth. Similarly the presence of ligands for folic acid and vitamin B₁₂ both nutrients essential for the growth of some micro-organisms, offer a bacteriostatic effect comparable to that of lactoferrin. And apart from this immunity

conferred upon the breast-fed infant by the mother the hazards of artificial feeding are avoided. These hazards include allergic disorders and occasionally metabolic derangements and obesity.

Infant Formulae

However, in spite of all the advantages of breast feeding many mothers still choose not to breast feed, and in such cases the mother's choice should be respected. Nowadays, the infant food industry provides a wide range of carefully formulated products mostly based on cow's milk and since the human infant thrives well when fed at the breast, human milk is used as a reference standard for human nutrition that has not been improved upon.

The starting infant formula — that is, the formula used during the first 4-6 months of life — must satisfy all the nutritional needs of the infant. Such a formula is referred to as an adapted formula, so called because it is prepared by the adaptation of cow's milk to make it as much as possible close in composition to mature human milk which is breast milk that comes about 3-4 weeks after parturition.

After the age of 4-6 months the so-called "follow-Up" formulae are suitable for the infant. These are based on cow's milk that has undergone some modifications to make it suitable for the increasing nutrient needs of the infant, but the milks are not as highly modified as adapted formulae. An ideal follow-up formula would have the following properties.

- High protein content of high biological quality taking into account the relatively higher needs of the older infant.
- Adapted fatty acid composition with a higher content of unsaturated fatty acids especially linoleic acid.
- Blend of carbohydrates free of sucrose to prevent development of a sweet tooth. Consists mainly of lactose easily absorbable

glucose and small amounts of starch.

- Reduced mineral content compared to cow's milk. Fortified with calcium, iron and trace elements.
- Supplemented with vitamins, taking daily requirements into account.

Beikost

Round about this same age of 3-4 months breast milk or formula alone does not suffice for the nutritional needs of the infant and it is at this stage that weaning is recommended. The word "Beikost" is used as a general term for all food other than breast milk or formula in the feeding of infants. A very good reason for introducing Beikost is that it teaches the infant to chew and swallow at a time when the skill of chewing is developing and the later acquisition of which may be more difficult. It also habituates the infant to new tastes who is more willing to accept the spoon now than later on when he is teething and his gums are sore. In the second trimester of the first year of life there is an increased need for nutrients particularly for Vit C and iron.

Such higher needs cannot be satisfied by milk alone and although milk will still at this stage provide an important source of nutrients some form of solid food is essential.

It is important to remember that before the age of 4 months the infant can be rather intolerant to gluten, a protein found in wheat so that the infant should not be given any cereal or biscuit based on wheat flour. Gluten free cereals should be offered at this time and as with all solid food they should be spoon-fed not added to the bottle-feed. Milk is a complete food on its own and addition of any pap to it may render it

dangerously high in osmolarity with possible bad consequences on the infants' still underdeveloped kidneys.

Gluten-free cereals are based on rice and maize and their use is empirical at such a young age because the clinical picture of coeliac disease (intolerance to gluten) is similar to cow's milk protein intolerance so that it could become more difficult to differentiate. And if the infant is exposed so early, besides the increased risk of development of manifestations of disease it becomes much more difficult to treat successfully.

Other potential disadvantages of early introduction of Beikost are interference with breast feeding and disturbance of appetite regulation with a greater possibility of obesity in later life. There are also potentially harmful constituents namely sucrose which is a major cause of dental caries and its indiscriminate use leads to the development of a sweet tooth. Home-prepared vegetables particularly carrots and spinach are very highly concentrated in nitrates and therefore their use is contraindicated in the first 4 months. Special consideration should also be given to infants with a family history of atopy in whom potentially highly allergenic foods (e.g. eggs, fish, chocolate) should be strictly avoided during the first year.

From what has been said it can be concluded that the health of the infant and the child is related to the health and education of the mother and in industrialised countries problems in the field of maternal and child-health are largely psycho-social in nature and related to the family environment. Infant nutrition is therefore not only a problem of providing essential nutrients in adequate amounts, but also of ensuring an optimal psycho-social milieu in which the quality of interaction between mother and infant is of prime importance.

PHARMACIST LOCUM SERVICE

The Chamber of Pharmacists is organising a Locum service.

ALL pharmacists who wish to participate in the scheme are asked to write to the Secretary giving details of the dates and times when they are available.