



## News Articles, AAP Policy, Fetus/Newborn Infant, Nutrition

### 'Feeding' brain development: Key nutrients essential during first 1,000 days

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The brains of normal children develop in a complex process involving changes in the number and organization of brain cells in a specified sequence. The most active period of neurologic development occurs in the first 1,000 days of life. This period, beginning at conception and ending at the start of the third postnatal year, is a time of tremendous opportunity for neurodevelopment - and a time of great vulnerability.



In a new policy statement, the Academy emphasizes the importance of the nutritional environment of the fetus, infant and toddler and the effect it has on whether brain growth and differentiation proceed normally. The policy, *Advocacy for Improving Nutrition in the First 1,000 Days to Support Childhood Development and Adult Health* from the Committee on Nutrition, is available at <https://doi.org/10.1542/peds.2017-3716> and will be published in the February issue of *Pediatrics*.

Adequate overall nutrition (i.e., absence of malnutrition) and provision of adequate amounts of key macro- and micronutrients at critical periods in development are necessary for normal brain development. Importantly, the definition of "malnutrition" includes both undernutrition (inadequate amounts of macro- and/or micronutrients) and obesity (excessive calories, often at the expense of other crucial nutrients). Many nutrients exhibit a U-shaped risk curve, whereby inadequate or excessive amounts place the individual at risk, according to the policy. Both forms of malnutrition affect neurodevelopment, and they may coexist in an individual.

The key nutrients studied thus far that support neurodevelopment include protein, zinc, iron, choline, folate, iodine, long-chain polyunsaturated fatty acids and vitamins A, D, B6 and B12.

#### Promoting healthy nutrition

The policy focuses on supporting pediatricians and other health care providers in promoting healthy nutrition and advocating for the expansion of programs that affect early life nutrition as a means of preventing early developmental loss. In this way, the policy offers an opportunity to improve each child's chance for the healthiest and most productive life possible.

Pediatricians are encouraged to be knowledgeable about nutritional issues across the first 1,000 days. For the fetus and newborn, this includes partnering with obstetricians and family physicians to encourage improvements



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in maternal diet and attention to clinical situations that may limit the fetus's access to crucial micronutrients (e.g., maternal diabetes); educating pregnant women about breastfeeding; and supporting them during breastfeeding.

As the child becomes older, pediatricians can become conversant about food sources that supply the critical nutrients necessary for brain development during particularly important times. The *AAP Pediatric Nutrition Handbook* (Yellow Book), Bright Futures and the AAP breastfeeding recommendations (see resources) provide guidance for pediatricians.

Families also need support to take advantage of programs that provide nourishing food, particularly the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) after the first year of life.

### Powerful advocacy

Pediatricians and others who care for children are among the most powerful advocates for preservation and extension of programs that provide food to pregnant women, nursing mothers, infants and children. The information in the policy may provide evidence-based support for advocacy at the local, state and federal levels.

It is crucial to oppose changes in eligibility or financing structures that would adversely affect key programs offering early childhood nutrition. Such changes include providing funding through block grants or unlinking nutrition and health assistance programs, such as the adjunctive eligibility between WIC and Medicaid. Federal nutrition programs like the Supplemental Nutrition Assistance Program (SNAP) are successful because of eligibility rules and a funding structure that make benefits available to children in almost all families with little income and few resources.

If deficiencies in key nutrients do occur during the first 1,000 days, pediatricians can anticipate the need for early screening for neurodevelopmental concerns and intervention.

Finally, the policy seeks to empower pediatricians and other child health care providers to support organizations that work to reduce hunger at the local level, in the United States and globally - the "hunger community." It is important to encourage creation of food packages and meals that target the specific needs of pregnant women, breastfeeding women and children in the first two years of life.

### Recommendations

- Educate pregnant women about breastfeeding and help mothers and their infants when problems occur.
- Advocate at the local, state and federal levels to preserve and strengthen nutrition programs, focusing on maternal, fetal and neonatal nutrition.
- Become conversant about food sources that supply the critical nutrients for brain development during particularly important times.
- Focus attention of existing programs on improving micro- and macronutrient offerings for infants and young children.
- Encourage families to take advantage of early childhood nutrition programs and advocate for eliminating barriers to enrolling and remaining in such programs.

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# AAP News

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### Resources

- ["Pediatric Nutrition Handbook," 7th edition](#)
- [Bright Futures Guidelines](#)
- ["Breastfeeding Handbook for Physicians," 2nd edition](#)
- [AAP policy "Breastfeeding and the Use of Human Milk"](#)