American Academy of Pediatrics Updates Guidelines for Vitamin D Intake

October 14, 2008 — The American Academy of Pediatrics (AAP) has issued updated guidelines for vitamin D intake in infants, children, and teens to prevent rickets and vitamin D deficiency.

The new recommendations call for a daily intake of 400 IU per day of vitamin D for all infants, children, and adolescents beginning in the first few days of life.

"Rickets attributable to vitamin D deficiency is known to be a condition that is preventable with adequate nutritional intake of vitamin D," write Carol L. Wagner, MD, Frank R. Greer, MD, and the AAP Section on Breastfeeding and Committee on Nutrition. "Despite this knowledge, cases of rickets in infants attributable to inadequate vitamin D intake and decreased exposure to sunlight continue to be reported in the United States and other Western countries, particularly with exclusively breastfed infants and infants with darker skin pigmentation. Rickets, however, is not limited to infancy and early childhood, as evidenced by cases of rickets caused by nutritional vitamin D deficiency being reported in adolescents."

The primary natural source of vitamin D is from skin synthesis from cholesterol after exposure to UVB light. Natural dietary sources of vitamin D are limited, and the amount of sunshine exposure sufficient for the cutaneous synthesis of vitamin D is not easily determined for a given individual. Furthermore, that amount of sunshine exposure may increase the risk for skin cancer. Therefore, the AAP has revised its 2003 recommendations to ensure adequate vitamin D status to include all infants, including those who are exclusively breast-fed, as well as older children and adolescents.

All infants and children, including adolescents, should have a minimal daily intake of 400 IU of vitamin D beginning soon after birth, according to these revised guidelines. The current recommendation for healthy infants, children, and adolescents is based on findings from new clinical trials as well as on the historical precedent of safely administering 400 IU of vitamin D per day in the pediatric and adolescent populations. Furthermore, ingestion of 400 IU of vitamin D daily appears to treat as well as to prevent rickets.

New data suggest that vitamin D has a potential role in maintaining innate immunity and in reducing the risk for certain chronic diseases including diabetes and cancer. This new evidence may eventually change the definition of vitamin D sufficiency or deficiency.

Specific recommendations to ensure that healthy infants, children, and adolescents meet the required vitamin D intake of at least 400 IU per day are as follows:

Beginning in the first few days of life, breast-fed and partially breast-fed infants should be supplemented with 400 IU per day of vitamin D, and this should be continued unless the infant is weaned to at least 1 L per day or 1 quart per day of vitamin D–fortified formula or whole milk. Vitamin D levels in breast milk range from less than 25 to 78 IU/L, putting exclusively breast-fed infants at greater risk for vitamin D deficiency.

Whole milk should not be given until the infant is at least 1 year old.

A vitamin D supplement of 400 IU per day is indicated for all non–breast-fed infants and for older children who are consuming less than 1000 mL per day of vitamin D–fortified formula or milk. The daily intake of each child may include other dietary sources of vitamin D, such as fortified foods.

A vitamin D supplement of 400 IU per day is indicated for adolescents who do not ingest 400 IU of vitamin D per day from vitamin D–fortified milk (100 IU per 8-oz serving) and vitamin D–fortified foods (such as fortified cereals and egg yolks).

Despite ingesting 400 IU per day, children at increased risk for vitamin D deficiency, such as those chronically treated with antiepileptic drugs, may continue to be vitamin D deficient. Children with dark skin pigmentation require 5 to 10 times longer to generate vitamin D3 from sunlight exposure.
Pregnant and lactating women who are vitamin D deficient may expose their offspring to a higher risk for vitamin D deficiency after birth and during lactation. Although insufficient vitamin D intake in pregnant women adversely affects fetal skeletal development, tooth enamel formation, and general fetal growth, universal recommendations for high-dose vitamin D supplementation during pregnancy are not currently available.

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