

Abstract

Am J Clin Nutr. 2007 Feb;85(2):604S-607S.

In utero physiology: role in nutrient delivery and fetal development for calcium, phosphorus, and vitamin D.

Abrams SA.

US Department of Agriculture/Agricultural Research Service, Children's Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine and Texas Children's Hospital, Houston, TX, USA.

BACKGROUND: Only limited aspects of the transfer of calcium across the placenta to the fetus are known. Clinical outcome studies suggest that bone mineral mass in newborn infants is related to maternal size and dairy intake. Available data indicate that vitamin D deficiency may also limit in utero fetal bone mineral accumulation. Recent data suggest that maternal vitamin D status affects long-term childhood bone status.

FINDINGS: At present, no strong evidence exists showing that improving maternal calcium or vitamin D status has a long-term positive effect on childhood bone mass. In premature infants, clinical rickets and fractures are common. In utero rates of calcium accretion during the third trimester cannot be readily achieved. The use of fortifiers designed for human-milk-fed infants or specially designed high-mineral-containing formulas allows for bone mineral accretion at or near in utero rates. Recent data have shown that physical therapy programs, judiciously used, in combination with adequate mineral content, can enhance bone mineral mass in preterm infants. There is little evidence for the use of high doses of vitamin D in the management of premature infants. After hospital discharge, continuation of a relatively high mineral intake has been shown to enhance bone mineral acquisition.

CONCLUSION: Future research should include evaluations of the role of maternal vitamin D supplementation on fetal and infant bone mass, the mineral needs of infants weighing <800 g or <25 wk gestation, and the optimal discharge management of premature infants who are at risk of low bone mass.

PMID: 17284763

FREE FULL TEXT

