Customized vitamin D supplements may benefit pregnant women

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Individualized supplement doses help protect pregnant women from vitamin D deficiency, according to a new study published in the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*.

The research found vitamin D supplements are less effective at raising vitamin D levels in pregnant women if they deliver their babies in the winter, have low levels of vitamin D early in pregnancy or gain more weight during pregnancy. Women with these risk factors may need higher doses during pregnancy than other mothers-to-be.

Vitamin D is a hormone that helps the body absorb calcium. It plays a crucial role in bone and muscle health. The skin naturally produces vitamin D after exposure to sunlight. People also obtain smaller amounts of the vitamin through foods, such as milk fortified with vitamin D.

Vitamin D deficiency is common, including among pregnant women. Evidence suggests vitamin D deficiency during pregnancy can harm maternal health, fetal development and the child's long-term skeletal health.

"It is critical for pregnant women to have sufficient levels of vitamin D for the health of their baby," said one of the study's authors, Nicholas C. Harvey, MA, MB, BChir, MRCP, PhD, Professor of Rheumatology and Clinical Epidemiology at the University of Southampton in Southampton, U.K. "Our study findings suggest that in order to optimize vitamin D concentrations through pregnancy, the supplemental dose

given may need to be tailored to a woman's individual circumstances, such as the anticipated season of delivery."

The analysis examined data from the Maternal Vitamin D Osteoporosis Study (MAVIDOS), a multi-center, double-blind, randomized, placebo-controlled trial of vitamin D supplementation in pregnancy. The study examined vitamin D levels in 829 pregnant women who received early pregnancy ultrasounds at one of three United Kingdom hospitals.

Beginning around 14 weeks' gestation, the women were randomized to receive either a 1000 IU/day dose of a vitamin D3 supplement called cholecalciferol or a placebo. Researchers measured vitamin D levels in the participants' blood prior to the start of the study and again at 34 weeks' gestation.

Participants who received the supplement had varying levels of vitamin D in the blood, even though they received the same dose. Researchers found women who delivered in the summer, who gained less weight during pregnancy and who had higher vitamin D levels early in pregnancy tended to have higher levels of vitamin D in the blood than their counterparts. Women who consistently took the supplement also had higher levels of vitamin D than participants who did not.

"Our findings of varied responses to vitamin D supplementation according to individual attributes can be used to tailor approaches to prenatal care," said one of the study's authors, Cyrus Cooper, OBE, MA, DM, FRCP, FFPH, FMedSci, Professor of Rheumatology and Clinical Epidemiology at the University of Southampton's MRC Lifecourse Epidemiology Unit. "This work will inform the development of strategies to enhance bone development across generations."

More information: "Determinants of the Maternal 25-hydroxyvitamin D Response to Vitamin D Supplementation During Pregnancy," DOI:

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