Original article:

Chawes BL, Bønnelykke K, Stokholm J, et al. Effect of Vitamin D3 Supplementation During Pregnancy on Risk of Persistent Wheeze in the Offspring: A Randomized Clinical Trial. JAMA. 2016 Jan 26;315(4):353-61.

Review by: Gregory Metz, MD, AE-C

As more information is understood about factors contributing to the development of asthma, there is growing interest in targeted therapies for primary asthma prevention. It has been hypothesized that vitamin D may play a role, but the evidence is conflicting. Consequently, the purpose of this study was to explore whether vitamin D supplementation during the third trimester of pregnancy reduced the risk of persistent wheeze in the child.

Pregnant women were identified in Denmark from monthly lists of reimbursements to primary providers for office visits related to new pregnancies. Written invitations for the trial were mailed to these pregnant women. A total of 54,358 invitations were sent and 1,876 women responded. Responders were excluded if gestational age was above week 26, subjects had underlying chronic medical conditions, or currently took vitamin D3 supplementation >600 IU/day. A total of 623 women were ultimately randomized (1:1) to receive 2800 IU vitamin D3 daily vs. standard care which was 400 IU of vitamin D3 daily from pregnancy week 24 to 1 week after delivery.

A total of 581 children completed the study. The primary end point was risk of persistent wheeze from birth to 3 years of age. There was no statistical difference in the percent of children with persistent wheeze between the intervention and control groups (16% in vitamin D

2800 IU daily group vs. 20% in vitamin D 400 IU group). However, there was a reduction in the number of episodes of troublesome lung symptoms and an up-regulated airway immune profile in the 2800 IU vitamin D daily group.

There are several limitations of the study. First, the study was statistically underpowered. Second, the intervention of higher dose vitamin D supplementation may have been too low a dose, started too late in the pregnancy or the treatment may not have been long enough to exert a measureable effect. Based on this study, treatment with vitamin D 2800 IU daily during the third trimester did not reduce the risk of persistent wheeze in the children.

The asthma educator will encounter questions about the role of vitamin D and the development of asthma. This trial provides additional evidence that vitamin D's role in the development and prevention of asthma is not completely understood and requires additional study.