A randomized, double-blind, placebo-controlled of vitamin D3 for Irish children with asthma

C. P. Kerley1, Katrina Hutchinson2, P. Greally3, D. Coghlan3 and B. Elnazir3
1University College, Dublin, Belfield, Dublin 4, 2Biomnis Ireland, Sandyford business Estate, 3 Rock Rd, Dublin and 3The Adelaide and Meath Hospital, Dublin

Vitamin D deficiency (VDD) and asthma-incidence/severity share many common risk factors1. Vitamin D has a number of biological effects that are likely important in regulating key mechanisms in asthma, including immunomodulatory effects as well as altering airway hyperresponsiveness, pulmonary function, airway smooth muscle-remodeling and response to anti-asthma therapy(2). Thus, VDD may result in increased prevalence and severity of childhood asthma.

In Winter 2013–2014 we recruited 43 children (23 male), aged 5–15 (mean 8·7 y) with a mean body mass index of 19·9 kg/m² (13–32·6) all previously diagnosed with asthma (Dublin, Ireland, 53°N). We assessed vitamin D status (25[OH]D) PTH, PO4, calcium, IgE, CRP, WBC + differential and asthma control. These children were randomized to either 2,000iu vitamin D3/day or placebo for 15 weeks.

Mean 25(OH)D was 51 nmol/L (24–80). According to the IOM guidelines, 21 children had deficient 25(OH)D levels (<50 nmol/L), while 22 had sufficient 25(OH)D levels (>50 nmol/L). There was no significant difference in demographics (age, BMI), serum markers (PTH, PO4, IgE, CRP, WBC) or self reported measures of asthma control (Asthma Control Test or Paediatric Asthma Quality of Life Questionnaire) between the VDD group and the vitamin D sufficient group. However, pulmonary function was significantly higher in the vitamin D sufficient group, including FVC% (66·3 vs. 96·1%; \( p = 0·03 \)) and FEV1% (92·85 vs. 101·9%; \( p = 0·46 \)).

Our preliminary, baseline data indicate that vitamin D sufficiency may be important for pulmonary function in asthmatic children.