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Vitamin D to prevent bone loss during acute pulmonary exacerbation: More study is needed

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Dear Editor,

We appreciate the letter and interest in our work examining the role of vitamin D in the prevention of bone loss during an acute pulmonary exacerbation of cystic fibrosis (CF) by Kumar and colleagues [1,2]. We would like to address some of their key points raised.

First, they noted that the serum 25-hydroxyvitamin D (25(OH)D) concentrations rose and declined by 90 days in the group randomized to receive a single oral dose of 250,000 IU of cholecalciferol. We found a similar rise and fall of serum 25(OH)D concentrations in healthy participants receiving a single dose oral dose of 250,000 IU of cholecalciferol prior to the winter [3]. Like our study, after 90 days of receiving the cholecalciferol, the mean serum 25(OH)D was not within the vitamin D sufficient range (>30 ng/mL). This is not an unexpected finding because the circulating half-life of 25(OH)D is generally thought to be about 2 weeks. We agree that more frequent dosing of vitamin D or other formulations of vitamin D that have a longer circulating half-life is required to sustain serum 25(OH)D in the sufficient range and is worthy of future investigation. Kumar et al. also suggest that intramuscular formations of vitamin D may be considered in this population. We agree that this may be a good strategy in patients with CF. However, intramuscular formulations of vitamin D are not easily available in the U.S. market.

We agree that we should also examine other bone endpoints following dosing of vitamin D, such as bone density and fracture outcomes. We wish to note that the primary endpoint of the parent study was time to next pulmonary exacerbation [4]. Given the potential positive findings on our secondary endpoints of bone turnover markers, we agree that a follow-up

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study should include fracture incidence, bone density, and/or bone microarchitecture as endpoints.

Finally, we agree that vitamin D remains a potentially useful therapy in the prevention of bone loss in patients with CF given its good safety profile and its known role in calcium homeostasis. In addition to the role of vitamin D on inflammation and bone health, other roles of vitamin D in CF may include its impact on the gut microbiome and cystic fibrosis related diabetes [5,6].

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