

Correspondence

Reply

To the Editor:

We appreciate Dr Das'¹ interest in our article titled "Gut microbiota, probiotics, and vitamin D: Interrelated exposures influencing allergy, asthma, and obesity?"² Dr Das raised an important point about the use of intrapartum antibiotics, emergency cesarean section (CS), and childhood asthma. The rate of CS delivery is increasing worldwide,³ and antimicrobial prophylaxis is recommended for all CS deliveries to reduce postoperative maternal infectious morbidity.⁴ However, administration of prophylactic antibiotics in CS delivery has been inconsistent,⁵ and antibiotic administration is likely to be more common in emergency CS than in planned CS due to the increased risk for maternal infection. Thus, the finding of a higher risk for asthma among children born by emergency versus planned CS⁶ is interesting and merits further investigation. The underlying mechanisms for the association between planned or emergency CS and asthma are unclear. Antimicrobial therapy given prior to emergency CS may alter the maternal natural vaginal and/or gut flora that the neonate comes into contact with. Furthermore, emergency CS may be associated with an increased risk for postpartum complications, which are often followed by prolonged hospitalization, delayed breastfeeding, and antibiotic administration to the newborns (further altering their gut microbial development).⁷⁻⁹ In a study by Penders et al,⁹ hospitalization and premature birth were associated with a high prevalence of *Clostridium difficile*, similar to that seen after CS delivery.

At this time, there is not adequate evidence to recommend the use of probiotics to prevent or treat asthma. Although we² agree with Dr Das on the concept of "unified airway disease," not all asthma is associated with atopy or allergic diseases. Thus, improvement in allergic rhinitis outcomes with probiotics may or may not improve asthma outcomes. This was nicely demonstrated in the study by Giovannini et al¹⁰ (referenced by Dr Das¹). In that study,¹⁰ less than half of the study participants were characterized as having both asthma and allergic rhinitis. Moreover, fermented milk containing *Lactobacillus casei* was associated with reduced rhinitis symptoms but no significant change in asthma symptoms.¹⁰

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