

**Probiotic Use in Children with Acute Diarrhea**

Acute diarrhea in children is a significant cause of hospitalizations in the United States and is associated with significant morbidity and mortality in children worldwide. Probiotics have been used as adjunctive therapy for acute diarrhea, but therapeutic results are not clear due to the large amount of heterogeneity in clinical trials. The authors of this study evaluated the effectiveness of a probiotic regimen (predominantly containing *Lactobacillus acidophilus*) in potentially reducing the length of hospitalizations at a single, tertiary pediatric medical center.

Hospitalized children between 6 and 60 months of age diagnosed with acute diarrhea (based on ICD-9 codes) were included in the study. Acute diarrhea was defined as having symptom duration of less than 14 days. Study subjects were evaluated for multiple factors including age, race/ethnicity, gender, history of infection exposure, prior probiotic or antibiotic use, prior stool testing for pathogens, duration of intravenous (IV) fluid, and length of hospitalization. Study subjects were divided into two groups: Group 1 (65 patients) who received the probiotic mixture during hospitalization and Group 2 (225 patients) who did not receive probiotics. Patients receiving probiotics received an average of 4 doses (range 1 to 17 doses), and this patient group had a significantly longer duration of diarrhea prior to hospitalization as well as a higher positivity rate of *Clostridium difficile* toxin. Patients receiving probiotics required a longer duration of IV fluid resuscitation. The mean duration of hospitalization was significantly longer in patients receiving probiotics (58.3 hours) compared to patients not receiving probiotics (43.9 hours). Multiple regression modeling demonstrated that duration of IV fluid therapy was the only factor that was independently associated with length of hospital stay. Interestingly, the length of hospital stay was significantly longer in those patients with no identified infectious cause of diarrhea who had received probiotics compared with similar patients who did not receive probiotics.

This study did not demonstrate effectiveness of probiotics supplementation in the treatment of children hospitalized for acute diarrhea. This study highlights the difficulty in performing such clinical trials, in that children can have multiple causes of infectious acute diarrhea, and probiotic regimens are not routinely standardized for treatment. We need additional research with a high degree of patient selectivity as well as control of probiotic concentrations and dosing to determine if specific probiotic strains as well as specific clinical presentations may (or may not) benefit from probiotic therapy.

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Pinto J and Petrova A. "Lactobacillus acidophilus mixture in treatment of children hospitalized with acute diarrhea." *Clinical Pediatrics*. 2016; 55: 1202-1209.

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### Are There More Accurate Ways to Determine Feeding Volumes in Preterm Infants?

*Test weighing* (defined as weighing an infant before and after feeding) has been used as a technique to determine feeding volume in infants. However, there is little evidence regarding how efficacious this technique is for preterm infants. The authors of the study prospectively followed infants between 28 and 36 weeks' corrected age at a single newborn intensive care unit (NICU). Three consecutive infant weights were obtained within 30 minutes before and within 30 minutes after feeds, and volume of each feeding (formula or breast milk) was recorded. Infant test weights measured in grams (defined as estimated volume) were matched with formula volume consumed in milliliters (defined as actual volume) at a 1:1 ratio. NICU nurses recorded protocol concerns during the weighing procedure, if indicated.

In total, 68 infants were studied in which 101 protocol pre- and post-test weights were obtained. The average feeding volume for each feed was 36.4 mL, and 85% of test weights were within  $\pm 5$  mL of the volume consumed by each infant which was highly correlated statistically. Specifically, the correlation

between estimated and actual volume was excellent in relation to corrected age, mode of feeding (orogastric or nasogastric), feeding duration, feeding volume, use of formula or breast milk, or use of lower calorie versus higher calorie formula. Of note, test weight estimates were significantly more likely to be incorrect when NICU nursing expressed protocol concerns (such as difficulty securing oxygen tubing) compared to weights obtained when no protocol concerns were present.

This study demonstrates that test weighing is an accurate method for determining enteral intake in premature infants. This method has significant application when considering methods for determining caloric intake of premature infants that are breastfeeding.

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Rankin M, Jimenez E, Caraco M, Collinson M, Lostetter L, DuPont T. "Validation of test weighing protocol to estimate enteral feeding volume in preterm infants." *The Journal of Pediatrics*. 2016; 178: 108-112

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John Pohl, M.D., Book Editor, is on the Editorial Board of *Practical Gastroenterology*



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