**Probiotics: Do they really decrease antibiotic-associated diarrhea?**

**April, 2013**

Ashley Apruzzese, MD

Antibiotic associated diarrhea (AAD) occurs in 11-40% of children and is defined as three or more loose or watery stools in a 24 hour period by the World Health Organization. AAD can lead to dehydration, electrolyte abnormalities, and even more severe infections such as pseudomembranous colitis and toxic megacolon in the pediatric population. Probiotics are an oral supplement or food product that contains sufficient numbers of viable microorganisms to alter the microflora of the host, can restore balance to the gut flora, and have antibacterial and immune modulatory effects. A literature search was done on PubMed Mesh Database to answer the PICO question: *In children taking antibiotics, do probiotics versus placebo decrease the incidence of antibiotic associated diarrhea?* Search terms included “Probiotics” and “Diarrhea” and “antibiotics,” with limits of 10 years, humans, English, and 0-18 years. This resulted in five studies that were critically appraised: three randomized controlled trials, a Cochrane review and a meta-analysis. One study showed no difference between groups (Szymanski 2008), but the other two RCT’s as well as both meta-analyses showed that probiotics are associated with a decrease in AAD in children on antibiotics, with minimal side effects and low cost. These studies excluded infants, children with chronic gastrointestinal illnesses, and those who are immunocompromised, so the results would only be applicable to the otherwise healthy child requiring antibiotics for an acute illness. Future studies still need to look into the optimal strain and dose of probiotic, as well as further identifying the population at highest risk of developing AAD.

**REFERENCES**

Correa NBO, et al. “A Randomized Formula Controlled Trial of Bifidobacterium lactis and

Streptococcus thermophiles for Prevention of Antibiotic-Associated Diarrhea in Infants.” *J Clin Gastroenterol* 2005; 39: 385-389.

Hempel, et al. “Probiotics for the Prevention and Treatment of Antibiotic-Associated Diarrhea:

A Systematic Review and Meta-Analysis.” *JAMA* 2012;307(18): 1959-1969.

Johnston BC, JZ Goldenberg, PO Vandvik, X Sun, GH Guyatt. “Probiotics for the Prevention of

pediatric antibiotic-associated diarrhea (Review).” *The Cochrane Library* 2011; 11.

Kotowska M, P. Albrecht, H. Szajewska. “Saccharomyces boulardii in the prevention of

antibiotic-associated diarrhoea in children: a randomized double-blind placebo-controlled trial.” *Aliment Pharmacol Ther* 2005; 21: 583-590.

Szymanski H, M. Armanska, K. Kowalska-Duplaga, H. Szajewska. “Bifidobacterium longum PLO3,

Lactobacillus rhamnosus KL53A, and Lactobacillus plantarum PLO2 in the prevention of Antibiotic-Associated Diarrhea in Children: A Randomized Controlled Pilot Trial.” *Digestion* 2008; 78:13-17.