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ANTIBIOTIC-ASSOCIATED DIARRHEA (AAD) and CLOSTRIDIUM DIFFICILE ASSOCIATED DIARRHEA (CDAD) PREVENTION

Several meta-analysis reviews have been conducted on the use of probiotics in the prevention of AAD (antibiotic associated diarrhea)[1,2,3,4.] The protective effects of probiotics did not vary significantly among the probiotics strains, however the strongest evidence for prevention of AAD was found with the yeast saccharomyces boulardii and the bacterium lactobacillus rhamnosus (GG)[1,2,3,4,5.] Although the literature does not support routine use of probiotics to prevent AAD in all individuals receiving antibiotics, there is sufficient literature to support use in individuals considered to be at high risk for the development of AAD. As well, there is reasonable evidence that CDAD may be prevented through use of probiotic therapy[11,12]. Symptoms of CDAD are often difficult to discriminate with symptoms of AAD, but typically include a toxicology screen confirming the presence of clostridium difficile. Evidence shows that outcomes tracking colonization of clostridium difficile is not affected by probiotics, but outcomes of associated symptoms of infection tend to show marked improvement.[12]

CLOSTRIDIUM DIFFICILE ASSOCIATED DIARRHEA (CDAD) TREATMENT

This policy is not intended for the treatment of clostridium difficile associated diarrhea as literature has shown insufficient evidence to recommend probiotic therapy as an adjunct to antibiotic therapy at this time[7,8,9,10]. Likewise, treatment of clostridium difficile with probiotic monotherapy is not supported by the literature[11].

CONTRAINDICATIONS AND CAUTIONS FOR USE:

Saccharomyces boulardii: contraindicated in those with hypersensitivity to yeast; caution in immunosuppression as there has been case reports of systemic fungemia in immunosuppressed individuals; antifungal agents could decrease the efficacy of S. boulardii[6].

PROTOCOL:

Approved for use under the following conditions:

1. Resident has been prescribed a course of antibiotics
2. The antibiotic(s) is/are associated with a high incidence of AAD (e.g. cephalosporins, clindamycin, broad-spectrum penicillins, or fluoroquinolones)

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AND any **One** of the following risk factors:

3. a. the resident has an existing health condition(s) that could be worsened by AAD (ie. risk of hypovolemia, loss of electrolytes, impaired intestinal absorption of micronutrients and macronutrients, or malnutrition)
   b. the resident has had a history of antibiotic associated diarrhea
   c. the resident has had recent exposure to a nosocomial pathogen

TREATMENT COURSE:

Saccharomyces boulardii (Florastor ®): To be initiated within 48-72 hours after initiation of antibiotic(s), and continued for a minimum of 3 days but up to 2 weeks after the antibiotic(s) have been discontinued. Refer to product information (bottle or monograph for dose range and frequency)

Lactobacillus rhamnosus GG (Bacid ®): Autosubstitution to saccharomyces boulardii (Florastor ®) per Calgary LTC Formulary Autosubstitution List.

MONITORING/ADVERSE EFFECTS:

Saccharomyces boulardii: It has been reported to cause itching, urticaria, local/generalized exanthema, and angioedema; flatulence, constipation, and thirst have also been reported infrequently[6].

REFERENCES:

1. Sazawal S, et al. Efficacy of probiotics in prevention of acute diarrhea: a meta-analysis of masked, randomized, placebo-controlled trials. Lancet Infect Dis 2006;6:374-82.
2. D'Souza A, et al. Probiotics in prevention of antibiotic-associated diarrhea: meta-analysis. MBJ 2002;324:1361-1367.
3. Cremonini F, et al. Meta-analysis: the effect of probiotic administration on antibiotic-associated diarrhea. Aliment Pharmacol Ther 2002;16:1461-1467.
4. McFarland L. Meta-analysis of probiotics for the prevention of antibiotic associated diarrhea and the treatment of clostridium difficile disease. Am J of Gastroenterol 2006;101:812-822.
5. Pham M. New Drugs, Old Drugs. Probiotics: sorting the evidence from the myths. MJA Mar 2008;188;5:304-308
6. Micromedex Healthcare Series. Publisher: Thompson Micromedex, Greenwood Village, CO.
7. Pillai A, et al. Probiotics for treatment of Clostridium difficile-associated colitis in adults. Cochrane Database of Systematic Reviews 2008: Issue 1. Art. No.: CD004611. DOI: 10.1002/14651858.CD004611.pub2.

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8. Dendurkuri N, et al. Probiotic therapy for the prevention and treatment of Clostridium difficile-associated diarrhea: a systematic review. CMAJ 2005;173(2):167-170.
9. CADTH. Probiotics for Antibiotic-Associated Diarrhea, *Clostridium difficile* Infection and Irritable Bowel Syndrome. Jan 2013.
10. Pillai A, Nelson RL. Probiotics for treatment of Clostridium difficile-associated colitis in adults. *Cochrane Database of Systematic Reviews* 2008, Issue 1. Art. No.: CD004611. DOI: 10.1002/14651858.CD004611.pub2.
11. Johnson S,et al. Is primary prevention of Clostridium difficile infection possible with specific probiotics? Int J Infect Dis. 2012 Nov; 16(11):e7860-e792
12. Goldenberg JZ, Ma SSY, Saxton JD, MartzenMR, Vandvik PO, Thorlund K, Guyatt GH, Johnston BC. Probiotics for the prevention of Clostridium difficile-associated diarrhea in adults and children. *Cochrane Database of Systematic Reviews* 2013, Issue 5. Art. No.: CD006095. DOI: 10.1002/14651858.CD006095.pub3.