

# Lactobacillus GG reduced diarrhea incidence in children treated with antibiotics

Vanderhoof JA, Whitney DB, Antonson DL, et al. *Lactobacillus GG* in the prevention of antibiotic-associated diarrhea in children. *J Pediatr*. 1999 Nov;135:564-8.

## QUESTION

In children being treated with antibiotics, does coadministration of *Lactobacillus GG* (LGG) reduce the incidence of diarrhea?

## DESIGN

Randomized (allocation concealed\*), blinded (clinicians, patients, and outcome assessors),\* placebo-controlled trial with 10-day follow-up.

## SETTING

Primary care pediatric practice in Rapid City, South Dakota, United States.

## PATIENTS

202 children between 6 months and 10 years of age who had an acute infection of the upper or lower respiratory tract, urinary tract, soft tissues, or skin and were prescribed a 10-day course of antibiotics. Exclusion criteria were chronic disease, serious acute infection, or diarrhea at the start of antibiotic administration. 188 children (93%) (median age 4 y, 55% girls) completed the study.

## INTERVENTION

Children were allocated to LGG (CAG Functional Foods, Omaha, NE, USA) ( $n$

= 93) or placebo ( $n$  = 95). Children who weighed < 12 kg received 1 capsule (10 billion colony-forming units of live LGG) daily with meals and those  $\geq$  12 kg received 2 capsules (20 billion colony-forming units).

## MAIN OUTCOME MEASURES

Incidence of diarrhea ( $\geq$  2 liquid stools/d on  $\geq$  2 occasions), stool consistency (rated on an 8-point scale: 1 = watery, 4 = loose and soft, and 8 = hard and dry), and stool frequency.

## MAIN RESULTS

Fewer children who received LGG had diarrhea than did those who received placebo ( $P < 0.001$ )<sup>†</sup> (Table). The mean duration of diarrhea was slightly shorter in the LGG group than in the placebo group (4.7 vs 5.9 d,  $P = 0.05$ ). Fewer children

who received LGG had a stool consistency score < 4 than did those who received placebo ( $P < 0.001$ ) (Table). By day 10, stool frequency was lower in the LGG group than in the placebo group (mean number of stools/d 1.4 vs 2.0,  $P < 0.02$ ).

## CONCLUSION

In children being treated with antibiotics, the coadministration of *Lactobacillus GG* reduced the incidence and duration of diarrhea, watery or soft stool consistency, and stool frequency.

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\*See Glossary.

<sup>†</sup> $P$  value calculated from data in article.

## Lactobacillus GG (LGG) vs placebo for diarrhea in children receiving 10 days of antibiotics<sup>‡</sup>

Outcomes	LGG	Placebo	RRR (95% CI)	NNT (CI)
Diarrhea	8%	26%	71% (39 to 87)	6 (4 to 13)
Stool consistency score < 4 <sup>§</sup>	17%	48%	64% (43 to 78)	4 (3 to 6)

<sup>‡</sup>Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

<sup>§</sup>Stool consistency score < 4 means that stool consistency ranged from loose and soft to watery.

## COMMENTARY

Diarrhea is a common side effect of oral antibiotic therapy. Probiotics (microorganisms that survive passage through the gut and have a beneficial effect on the host [1]) have been used to reduce the incidence of antibiotic-associated diarrhea or the duration of diarrhea with rotavirus infection (2). The study by Vanderhoof and colleagues examines the effect of probiotics on antibiotic-associated diarrhea in children and quantifies its benefits. It thus adds to the existing fund of knowledge.

The study was done in the United States among outpatients who were 6 months to 10 years of age. The children were assessed every third day for frequency and consistency of stools and occurrence of other gastrointestinal symptoms. Diarrhea is usually defined as > 3 loose, watery stools per day (3). The authors, however, used a cut point of > 2 for defining diarrhea and reported that fewer children in the LGG group than in the placebo group had diarrhea. More children in the placebo group had increased stool frequency and loose stools at the end of the study. However, none of the patients discontinued antibiotic treatment because of changes in stool consistency or frequency.

The perceived benefits of LGG from the perspective of the patient (or parent) were not assessed in the study. Therefore, the payer must decide whether to spend extra money for the concomitant administration of LGG and oral antibiotic therapy to have about 1 less day with > 2 loose bowel movements.

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## References

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