Module 10: Probiotics, Prebiotics & Synbiotics

What works, what doesn't, and why strain matters more than species.

Tracks: Core, Clinical, Advanced | **Duration:** 55 min

KEY TAKEAWAYS

- Strain matters — not all Lactobacillus are the same. Clinical evidence is for specific strains, not genera.
- Strong evidence exists for AAD prevention, NEC prevention in preemies, and specific IBS symptoms.
- Most consumer probiotics have no strain-specific clinical evidence for the conditions they imply treating.
- Prebiotics (fiber, FOS, GOS) may be more reliably beneficial than probiotics for most people.

EVIDENCE-GRADED CLAIMS

Claim	Grade	Notes
S. boulardii prevents antibiotic-associated diarrhea	**A — Clinically established**	Multiple meta-analyses of RCTs support this; NNT ~10.
L. rhamnosus GG prevents pediatric AAD	**A — Clinically established**	Strain-specific evidence from >20 RCTs.
Probiotics cure IBS	**E — Popular, weak support**	Some strains improve specific symptoms; no strain cures IBS.
Higher CFU count means better probiotics	**F — Misleading or false**	No dose-response relationship established for most strains; marketing, not science.
Probiotics colonize the gut permanently	**F — Misleading or false**	Most transit through; colonization is person-specific and temporary.

CLINICAL CASE

The probiotic-for-everything patient

A 50-year-old with well-controlled T2DM takes 4 different probiotic supplements daily (total cost ~$180/month), each marketed for different benefits: 'gut health,' 'immune support,' 'mood,' and 'metabolism.' None list specific strain designations. He asks if he should add a fifth for 'brain health.'

How would you evaluate his current regimen, explain strain specificity vs generic labeling, and make evidence-based recommendations?

SUMMARIES

For Patients

Probiotics are live bacteria taken as supplements or found in fermented foods. The most important thing to know: not all probiotics are the same. The specific strain matters enormously. Some strains have good evidence for preventing antibiotic-related diarrhea, while others have been studied and found to do nothing. Most grocery-store probiotics have never been tested for the health claims on their labels.

For Clinicians

Evidence-based prescribing requires strain-level specificity. Grade A/B evidence: S. boulardii CNCM I-745 for C. diff-associated and AAD prevention; L. rhamnosus GG for pediatric AAD; B. infantis 35624 for IBS global symptoms. For NEC prevention in VLBW infants, multi-strain preparations reduce incidence (NNT ~33). Most consumer products lack strain identification, adequate CFU, or relevant clinical trials. AGA guidelines recommend probiotics only for specific clinical contexts.

REFERENCES

- Personalized gut mucosal colonization resistance to empiric probiotics is associated with unique host and microbiome features — Zmora N et al., Cell 2018 [Link]
- AGA Clinical Practice Guidelines on the Role of Probiotics in GI Disorders — Su GL et al., Gastroenterology 2020 [Link]