



## ANTIBIOTICS AND PROBIOTICS IN IBD

Fergus Shanahan, MD

The microbiota exert a versatile influence not only on the pathogenesis of inflammatory bowel disease (IBD) but also on different phases of the disease, including the progression of complications such as fibrosis (adhesions and strictures), bacterial translocation and sepsis, carcinogenesis, and risk of infections like *Clostridium difficile*-associated disease. In addition, the microbiota may be involved in the pathogenesis of extra-intestinal associated disorders such as sclerosing cholangitis. Finally, the microbiota may underlie the changing phenotype of Crohn's disease and associated metabolic conditions like obesity-related disorders. Thus, the rationale for devising microbial-based therapeutic interventions in these conditions appears sound. However, there are several challenges to realizing the potential for therapeutic manipulation of the microbiota in IBD. There is a striking disparity in results in animal models versus the human condition. The heterogeneity of IBD in humans is paralleled by heterogeneous therapeutic responses to both antibiotics and probiotics. There are also large gaps in knowledge of the normal microbiota and disturbances thereof in IBD. Current molecular profiling of the microbiota has limited resolution at the level of detail required to show differences from normal and differences across disease subsets. There are continual problems with imprecise terminology and flawed concepts. Some of the impediments to linking the science with the consumer include: misportrayal of probiotics by the media as if all were the same, uncertainty and vacillation among regulatory authorities, inadequate quality control by some product suppliers, and hyperbole from some investigators. Despite the hurdles, there have been several experimental success stories. The next generation of probiotics is on the horizon and encouraging results from fecal transplantation will prompt new developments that minimize or circumvent safety concerns. In addition, there is the prospect of 'mining' the microbiota for novel drug discovery. Identifiable targets and clear questions point the way forward for curious investigators and other risk-takers.

### Selected References

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