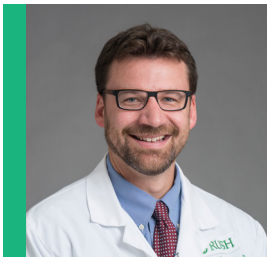
RUSH

The Link Between Circadian Management and Inflammatory Bowel Disease (IBD)

By Garth Swanson, MD, MS



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Garth Swanson, MD, MS, is a gastroenterologist at Rush University Medical Center in Chicago and is serving as the primary investigator on this study. He is an associate professor of medicine in the Division of Digestive Diseases and Nutrition. His practice focuses on the diagnosis, management and treatment of inflammatory bowel disease.

About this study

Rush University Medical Center is currently enrolling patients in a study to determine if there is a link between circadian management and inflammatory bowel disease (IBD), specifically ulcerative colitis (UC).

Recently, there has been compelling evidence that inflammatory bowel disease (IBD), both Crohn's disease (CD) and UC, commonly disrupts sleep. Disrupted sleep also correlates with the risk of an IBD flare.

Sleep/wake cycle, immune function, metabolism and multiple biological processes are all orchestrated by circadian rhythms. Circadian misalignment between the central circadian clock in the brain and environment has been found to contribute to a variety of metabolic and gastrointestinal tract diseases.

Yet, the prevalence and impact of circadian misalignment on IBD disease activity and gastrointestinal tract (GIT) mucosal inflammation is not well understood.

The study is funded through a five-year, $3 million grant from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) through the National Institute of Health. The sleep studies are conducted at Rush and we are partnering with Frank Sheer, PhD, MSc, a neuroscientist at Brigham and Women's Hospital and professor of medicine at Harvard Medical School, will join the study as a key collaborator. His work focuses on the influence of the endogenous circadian system and its disruption, such as with shift work, on cardiovascular, pulmonary, and

metabolic regulation and disease states.

Goals

Our main long-term objective is to establish the hypothesis that circadian misalignment worsens GIT mucosal inflammation and disease course in IBD patients.

The results of this innovative proposal will greatly increase our understanding of the important role circadian misalignment may have in UC disease activity and colonic inflammation. Throughout the course of this study, we are evaluating patients for any kind of subclinical inflammation related to intestinal permeability, stool calprotectin, microbiota, serum cytokines and mucosal inflammation.

Our modern, 24-hour, 7 day-a-week lifestyle with increased nighttime light exposure, light pollution, the increasing prevalence of shift work and nighttime eating have made circadian misalignment more common. Identifying environmental factors that worsen IBD is critical to improve the disease course for patients and limit significant disease-specific complications, such as hospitalizations and surgery.

How this study could impact patients

Although the study is in its early stages, possible bedside implications for the study could lead to the identification of new circadian regulated targets for treatment in UC, such as melatonin, bright light therapy, or small molecule modulators of circadian clock genes.

We are currently recruiting patients and now and hope to have meaningful results to share from the study within 3-5 years.

Ideal candidates for the study

Adults, 18 to 40 years of age, who have ulcerative colitis, or those who have no GI diseases (and would serve as the control group for this study) are ideal candidates. Those candidates should not currently work night shifts.

For more information about this study, please contact Alexander Yerkan at (312) 563-4981 or email alexander_m_yerkan@rush.edu.

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