ICU
MANAGEMENT & PRACTICE

'Good' Bacteria Could Fight Hospital Infections

A new study published in *JAMA* has shown that drinking a non-toxic strain of *Clostridium difficile* bacteria could help reduce the incidence of recurrent infection caused by the toxic strains of the bacteria.

C. difficile is the most common cause of healthcare-associated infection in U.S. hospitals. Recurrence occurs in 25 to 30 percent of patients, experts say. Toxic strains of *C. difficile* bacteria cause diarrhoea, abdominal cramps and, in some cases, severe inflammation of the colon.

The infection commonly affects people during or after a hospital stay, particularly those who have had a long course of antibiotics or have a weakened immune system. Prolonged antibiotic use can knock out "good" gut bacteria that would normally keep toxin-producing strains of *C. difficile* in check.

"The antibiotics don't completely get rid of the *C. diff* bacteria, and if the patient hasn't developed an immune response against the toxin the bacteria produces, they'll get sick again," said lead author Dale Gerding, MD, a professor of medicine at Loyola University Chicago Stritch School of Medicine.

Dr. Gerding and his colleagues tried a new approach: After patients were successfully treated with an antibiotic, the researchers gave them a non-toxic strain of *C. difficile*. They theorised that the good bug would crowd out what remained of its toxic cousin.

The study sample, 173 patients (18 years or older), was randomly assigned to four groups: three that received different doses of non-toxic *C. difficile*, and one that was given a placebo. The good *C. difficile*, Dr. Gerding noted, is completely natural -- with no genetic tweaking. Treatment involved drinking a colourless, odourless liquid once a day, for one week.

Of 125 patients who received the treatment, only 11 percent had a recurrent infection within six weeks. Notably, a subgroup that was given a relatively higher dose of the good bug fared even better -- only two of 43 patients (5 percent) suffered another infection. Patients on the therapy had headaches more often than the placebo group, but there was no evidence of serious risks, the research team noted.

After treatment, the good *C. difficile* bacteria "don't stay around forever," Dr. Gerding said, adding that the therapy may set the stage for patients' normal balance of gut bacteria to flourish again.

Dr. Lawrence Brandt, emeritus chief of gastroenterology at Montefiore Medical Center in New York City, commented on the importance of the findings: "This is a very important study because of the high recurrence rate of *C. difficile* infections, and because [recurrent] infections become progressively harder to treat."

However, larger studies are needed for the therapy to win approval, according to Dr. Erik Dubberke, a spokesman for the Infectious Diseases Society of America.

The Centers for Disease Control and Prevention (CDC) reported that approximately 500,000 *C. diff* infections occurred in the United States in 2011, with 83,000 recurrences and 29,000 deaths within 30 days of diagnosis.

Image Credit: Loyola University Chicago Stritch School of Medicine

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