ASH 2016: Preventative Antibiotics Could Prevent *Clostridium difficile* Among Stem Cell Transplant Recipients

By The ASCO Post

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Key Points

- Of the 73 patients who took vancomycin prophylactically, none developed *C difficile* during their inpatient admission for the stem cell transplant, which lasted an average of 33 days.
- In a group of patients who did not get vancomycin in advance, 11 out of 55 (20%) developed the infection, which is within the national average of between 20% to 30%.

It may be possible to safely prevent one of the most common—and costly to treat—infections contracted by hospitalized patients undergoing bone marrow transplantation for the treatment of blood cancers, according to a study from the Abramson Cancer Center at the University of Pennsylvania (https://www.pennmedicine.org/cancer/). Findings were presented by Ganetsky et al at the 58th Annual American Society of Hematology (ASH) Meeting and Exposition (http://www.hematology.org/Annual-Meeting/) in San Diego, California (Abstract 2225 (https://ash.confex.com/ash/2016/webprogram/Paper93290.html)).

Clostridium difficile infection causes diarrhea and can lead to severe inflammation of the bowel. These infections can be not only extremely uncomfortable, but can lead to other severe medical complications. Even with a course of antibiotics, the infection can lead to longer hospital stays and increased treatment cost. A study published last year by Nanwa et al in the *American Journal of Gastroenterology* (http://www.nature.com/ajg/journal/vaop/ncurrent/full/ajg201548a.html) found the average cost of *C difficile* ranges from $8,911 to $30,049 per patient.

Vancomycin

Oral vancomycin is a standard antibiotic used to treat *C difficile*, and researchers at the Abramson Cancer Center began giving it to patients on a preventative basis—twice daily from the day of admission to the day of discharge. Their study focused on patients with blood cancers undergoing an allogeneic stem cell transplant, in which patients receive stem cells from a healthy donor after high-intensity chemotherapy or radiation. Since these transplants require patients' immune systems to be suppressed so they do not reject their new bone marrow cells, this group of patients is at high risk for life-threatening infections as their new immune systems develop.

Findings

The results were significant. Of the 73 patients who took vancomycin prophylactically, none developed *C difficile* during their inpatient admission for the stem cell transplant, which lasted an average of 33 days. In a group of patients who did not get vancomycin in advance, 11 out of 55 (20%) developed the infection, which is within the national average of between 20% to 30%.

"This is the first study to evaluate this preventative strategy in stem cell transplant recipients, and the results are encouraging," said the study's lead author **Alex Ganetsky, PharmD**, a clinical pharmacist in the Blood and Marrow Transplantation Program in the Abramson Center Center. "This may become the standard of care at Penn among patients receiving allogeneic stem cell transplants."

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Dr. Ganetsky said the practice could expand, with acute leukemia patients who are being hospitalized for other types of treatment potentially being the next population to benefit from the prophylactic medication. But the researchers say that given the rising threat of antibiotic resistance across the world, further study will be needed to pinpoint best uses of the drug to avoid overuse.

"What we want to do is maximize the appropriate use of antibiotics," said the study's senior author **David Porter, MD**, Director of Blood and Marrow Transplantation and Jodi Fisher Horowitz Professor in Leukemia Care Excellence in the Abramson Cancer Center. "With our control group showing a 20% infection rate, that means we're giving the antibiotics to a lot of people who would not have otherwise developed *C difficile*, but given the risks associated with the condition for these patients, our results demonstrate a potential path to protecting more of them during a very vulnerable period in their recovery."

While the treatment has proven effective at preventing *C difficile*, the study did not show a shortened length of hospitalization among the patients.

"This was a retrospective analysis, so we need to follow up with randomized trials that specifically look at length of stay," Dr. Porter said. "Finding such a drop-off in *C difficile* is enough to push us to continue this line of study."

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