

Pneumonia patients get too many antibiotics—especially as they leave the hospital

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A million times a year, pneumonia sends American adults to the hospital. And while antibiotics help save lives, a new study shows two-thirds

receive more antibiotics than they probably need.

It's not the care that happens in the [hospital](#) that leads to over-treatment, the study finds. Rather, it's the prescriptions that patients receive as they head home from the hospital.

In all, 93% of the overly long [antibiotic prescriptions](#) given to [pneumonia patients](#) were written at [hospital discharge](#).

Extra doses of antibiotics come with a physical cost. The more days' worth of antibiotics a patient received beyond the recommended minimum, the higher the chance that they experienced problems related to the drugs, such as upset stomachs or yeast infections.

The findings come from detailed medical records of nearly 6,500 [pneumonia](#) patients treated at 43 Michigan hospitals, and phone conversations with 60% of them within a month of their hospital stay.

The analysis, led by University of Michigan researchers, suggests that hospitals have a major opportunity to right-size antibiotic prescriptions written for departing pneumonia patients. The team behind the study, from the Michigan Hospital Medicine Safety Consortium, is already working to help Michigan hospitals do that.

"Antibiotic stewardship, which includes choosing the right drug and the right duration for each patient, has become a part of most hospitals," says Valerie Vaughn, M.D., M.Sc., lead author of the new paper and an assistant professor of internal medicine at U-M. "But these results show us that we need to pay more attention to stewardship at discharge—and suggest that guidelines for prescribers should be clearer about how to calculate an appropriate duration based on a patient's condition."

Vaughn is a hospitalist, a type of physician that specializes in caring for

patients during hospitalization, as well as a health care and patient safety researcher.

She notes that national guidelines for treating pneumonia are not precise.

Determining how many days' worth of antibiotics a pneumonia patient needs depends on their diagnosis and how long it took for them to stabilize after treatment began. But in general, most patients without risk factors need about five days' worth of treatment, and those who have [risk factors](#) or pneumonia caused by especially stubborn bacteria need about seven days' worth.

The study shows that most patients who received a too-long prescription for antibiotics got two extra days' worth of pills; and that each extra day put patients at risk of side effects without improving care.

Hospitals varied widely in the percentage of their pneumonia patients who received too many antibiotics. At some hospitals, less than 50 percent did, but at other hospitals nearly every patient did.

Half of antibiotic prescribed for patients in the study came from prescriptions written at hospital discharge. Nearly a third of them were for fluoroquinolones, a powerful group of antibiotics that carry special risks of everything from fostering infections with "superbugs" to torn tendons and ruptured arteries.

Vaughn and her colleagues [previously studied fluoroquinolone prescribing](#) in Michigan hospital patients.

The patients in the new study who got excess antibiotics didn't have better outcomes from their pneumonia. But for every excess day of [antibiotics](#) they received, they were more 5% more likely to report some sort of adverse effect. These included diarrhea, gastrointestinal distress

and yeast infections.

A few factors seemed to play a part in which patients received overly long antibiotic [prescriptions](#). The longer someone was in the hospital, the more likely they were to get an extra-long antibiotic prescription. If they had a test to determine which kind of bacteria their lungs were infected with, they were also more likely to be treated too long.

Academic hospitals had lower rates of excess antibiotic prescribing—perhaps because they have more resources for stewardship programs. But the staff in those programs may not have access to discharge medication records, Vaughn notes.

Vaughn and her colleagues in the Michigan Hospital Medicine Safety Consortium continue to study the issue, and work to help hospitals improve.

"We have a perfect opportunity to really improve antibiotic use for many patients. If we can improve just one moment in time—that prescription [patients](#) get as they leave the hospital—we can eliminate nearly all unnecessarily prolonged treatment," she says.

The study is published in the *Annals of Internal Medicine*.

More information: *Annals of Internal Medicine*, [DOI: 10.7326/M18-3640](#) , annals.org/aim/article/doi/10.7326/M18-3640

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