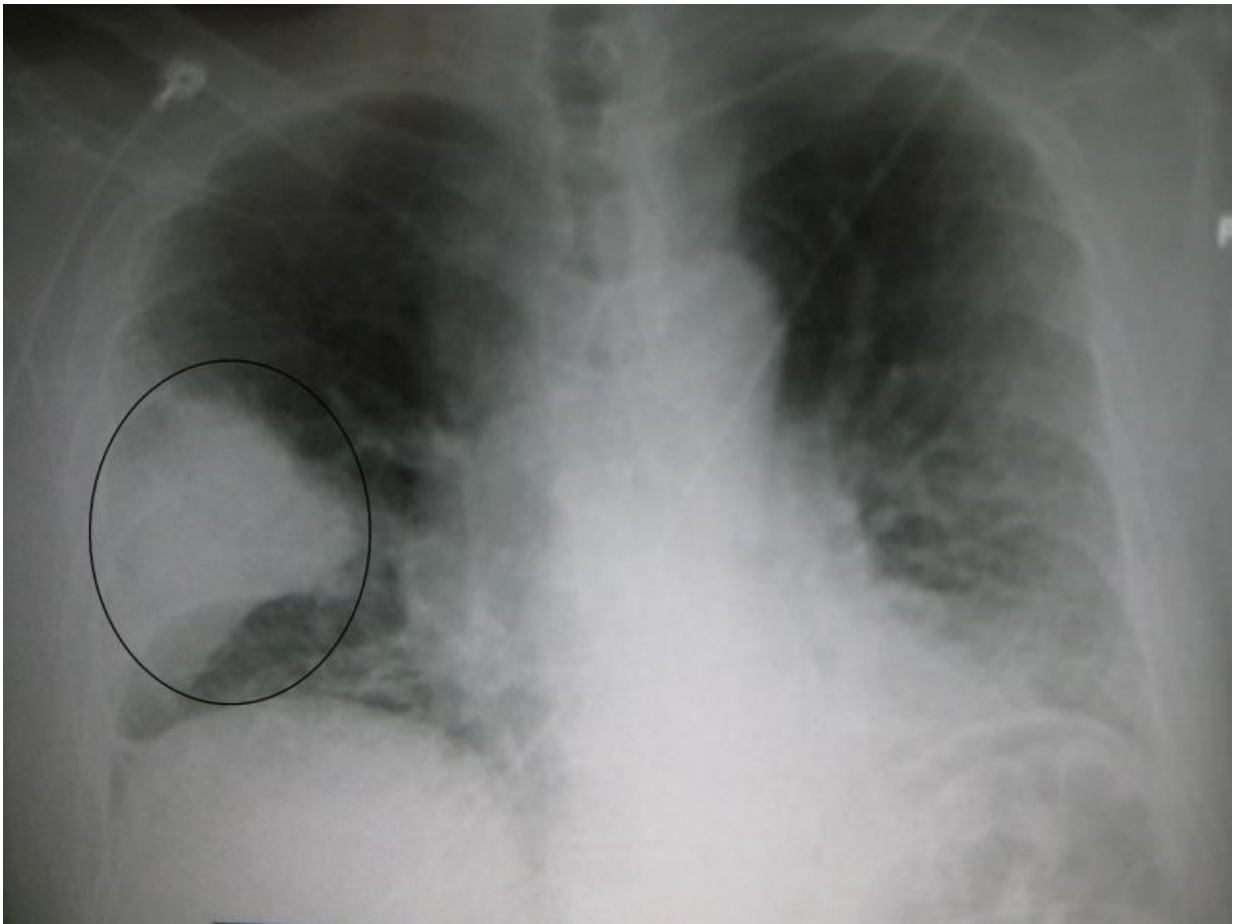


No benefit found in using broad-spectrum antibiotics as initial pneumonia treatment

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A black and white X-ray picture showing a triangular white area on the left side. A circle highlights the area. Credit: James Heilman, MD./Wikipedia

Doctors who use drugs that target antibiotic-resistant bacteria as a first-line defense against pneumonia should probably reconsider this approach, according to a new study of more than 88,000 veterans hospitalized with the disease. The study, conducted by University of Utah Health and VA Salt Lake City Health Care System researchers, found that pneumonia patients given these medications in the first few days after hospitalization fared no better than those receiving standard medical care for the condition.

"Sometimes in our eagerness to improve outcomes, particularly among critically ill patients, we, as doctors, may be overly broad in our initial treatments. This appears to be true with pneumonia, where we found no benefit associated with use of the so-called 'big gun' antibiotics as an [initial treatment](#) to cover resistant organisms, even among those patients who are at high risk for these types of infections." says Matthew Samore, M.D., the study's senior author, a U of U Health professor of medicine, and Director of the Informatics Decision Enhancement and Analytic Sciences Center at the VA Salt Lake City Health Care System.

The study, one of the largest ever to examine trends of antibiotic use in the treatment of pneumonia, appears in the *JAMA Internal Medicine*.

Pneumonia is the eighth leading cause of death in the United States, accounting for more than 1 million hospitalizations and about 50,000 deaths each year. It can be caused by viruses, fungi, and bacteria, including Methicillin-resistant *Staphylococcus aureus* (MRSA), which can cause a rare but hard-to-treat form of pneumonia.

Unfortunately, determining whether MRSA or other pathogens are responsible for any particular case of pneumonia is difficult. That's because testing sputum (mucus) samples for the cause of pneumonia is often inaccurate, and collecting lung tissue samples can be invasive and risky, especially in patients who are extremely ill.

So, doctors often have to rely on their best judgment to deduce what treatment might work until if and when definitive test results are available, says Barbara Jones, M.D., the study's lead author, a U of U Health assistant professor of internal medicine, and career development awardee of VA Health Research & Development Service.

To determine how this decision-making process affects patient care, Samore, Jones, and colleagues retrospectively examined the medical records of 88,605 [pneumonia patients](#), ages 62 to 81, who were admitted to VA Medical Centers nationwide between 2008 and 2013. The researchers tracked whether these patients were initially treated with standard antibiotic therapy for pneumonia—such as cerftriaxone and azithromycin—or two types of anti-MRSA care:

- standard therapy plus vancomycin (an antibiotic,)
- vancomycin without standard therapy.

The researchers observed that as doctors became more aware of and concerned about MRSA infection in the lungs, they became more likely to use anti-MRSA therapies→ as an initial treatment, despite the fact that MRSA only accounts for about 2% of pneumonia cases. In fact, use rose from about 20% of patients in 2008 to nearly half of them in 2013. As a result, many of the patients who were treated with anti-MRSA antibiotics probably didn't need them.

The researchers found no discernable benefit of anti-MRSA treatment in addition to standard treatment. In fact, anti-MRSA treatment was associated with a 40 % higher risk of dying within 30 days of discharge, perhaps due to the potentially severe side effects of vancomycin including increased incidence of kidney failure and secondary infections. However, further study is needed to fully determine the underlying causes of this increased risk, according to the researchers.

"Our study calls into question the strategy of broad empiric antibiotic coverage that has previously been promoted by pneumonia practice guidelines," Jones says. "We're not saying that it's never appropriate to use anti-MRSA therapy for treating [pneumonia](#). But in the absence of better tests to identify MRSA as a potential pathogen causing the disease, using anti-MRSA therapies does not seem to offer any advantage over standard treatment therapy.

"Under these circumstances," she adds, "it may be safer for patients if physicians to stick to standard antibiotic treatments for a couple of days to see how patients are doing rather than leaping into anti-MRSA [therapy](#) right off the bat."

More information: Barbara Ellen Jones et al, Empirical Anti-MRSA vs Standard Antibiotic Therapy and Risk of 30-Day Mortality in Patients Hospitalized for Pneumonia, *JAMA Internal Medicine* (2020). [DOI: 10.1001/jamainternmed.2019.7495](#)

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