

Early antibiotic treatment for severe COPD symptoms linked with improved outcomes

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Among patients hospitalized for acute exacerbations of chronic obstructive pulmonary disease (COPD), those who received antibiotics in the first 2 hospital days had improved outcomes, such as a lower likelihood of mechanical ventilation and fewer readmissions, compared to patients who received antibiotics later or not at all, according to a study in the May 26 issue of *JAMA*.

The fourth leading cause of death in the United States is COPD, which affects at least 12 million U.S. residents. "Acute exacerbations of COPD are responsible for more than 600,000 hospitalizations annually, resulting in direct costs of more than \$20 billion," the authors write. "Guidelines recommend antibiotic therapy for acute exacerbations of COPD, but the evidence is based on small, heterogeneous trials, few of which include hospitalized patients."

Michael B. Rothberg, M.D., M.P.H., of Baystate Medical Center, Springfield, Mass., and colleagues examined the association between use of antibiotics and outcomes among patients (40 years of age or older) hospitalized for acute exacerbations of COPD at 413 acute care facilities throughout the United States, between January 2006 and December 2007. The primary outcomes analyzed included a composite measure of treatment failure, defined as the initiation of mechanical ventilation after the second hospital day, inpatient [mortality](#), or readmission for acute exacerbations of COPD within 30 days of discharge; length of stay, and hospital costs.

Of 84,621 patients, 79 percent received at least 2 consecutive days of [antibiotic treatment](#). The researchers found that compared with patients not receiving antibiotics in the first 2 days, antibiotic-treated patients were less likely to receive mechanical ventilation after the second hospital day (1.07 percent vs. 1.80 percent), had lower inpatient mortality (1.04 percent vs. 1.59 percent), a lower incidence of treatment failure (9.77 percent vs. 11.75 percent), and lower rates of readmission for acute exacerbations of COPD (7.91 percent vs. 8.79 percent). Patients treated with and without antibiotics had similar lengths of stay, but patients treated with antibiotics had lower costs.

Patients treated with antibiotic agents had a higher rate of readmissions for the bacterial infection *Clostridium difficile* than those who were not treated. After further analysis, the risk of treatment failure was lower in antibiotic-treated patients. "Analysis stratified by risk of treatment failure found similar magnitudes of benefit across all subgroups," the authors write.

The researchers add that two findings, that all patient groups seemed to benefit from therapy and that harms were minimal, support the notion that all patients hospitalized with acute exacerbations of COPD should be prescribed antibiotics. "This recommendation, however, is not consistent with the fact that roughly 50 percent of COPD patients do not have a bacterial etiology for their exacerbation. Identifying these patients remains a challenge, because sputum cultures do not distinguish between active infection and colonization. New bacterial infections may cause exacerbations and are associated with increases in inflammatory markers, ... whereas colonization is not."

"... until more data are available, routine use of antibiotics for acute exacerbations of COPD may be appropriate," the authors conclude.

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