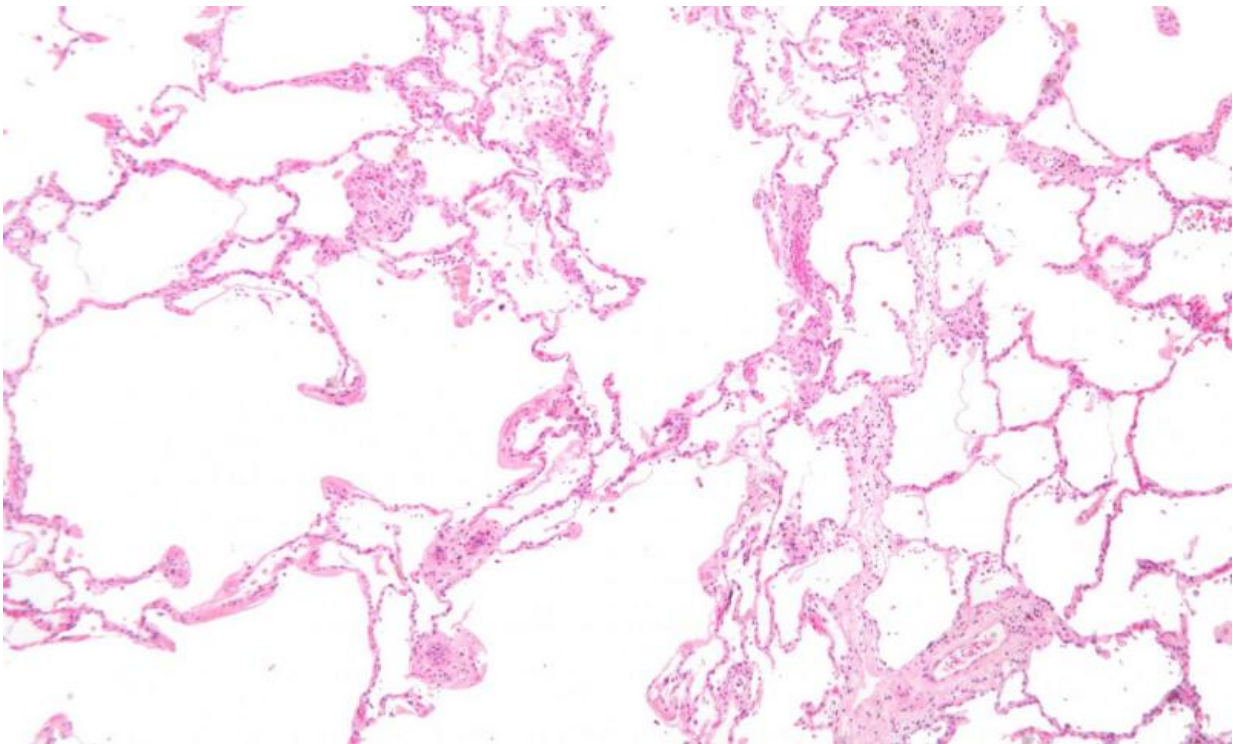


New hope for COPD patients possible with in-home device

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Micrograph showing emphysema (left – large empty spaces) and lung tissue with relative preservation of the alveoli (right). Credit: Wikipedia, CC-BY-SA 3.0

In a new paper published Feb. 4 in *JAMA*, Mayo Clinic researchers describe the benefits of in-home noninvasive ventilation therapy—which includes a type referred to as bilevel positive airway pressure, or BiPAP—for many patients with chronic obstructive pulmonary disease

(COPD). The team identified a number of benefits, including reduced mortality, fewer hospital admissions, lower risk of intubation, improved shortness of breath, and fewer emergency department visits.

COPD is a [chronic lung disease](#) that makes it difficult to breathe. COPD is the third leading cause of death in the U.S., with more than 15 million people currently living with the disease, [according to the American Lung Association](#).

Many people who have COPD suffer from hypercapnia, the retention of carbon dioxide—a waste product of metabolism normally expelled by the lungs as a person breathes. This may lead to acute respiratory failure and hospitalization. One treatment for chronic hypercapnia is noninvasive ventilation, or a machine with a mask that helps to improve breathing.

Michael Wilson, M.D., a pulmonary and critical care physician at Mayo Clinic, led the study, which was funded by the Agency for Healthcare Research and Quality under a contract with the Mayo Clinic Evidence-Based Practice Center.

"Although there is ample evidence supporting in-hospital use of breathing devices such as BiPAP, until now, we didn't know which benefits may be available when we send people home with a new piece of equipment," says Dr. Wilson. "There were indications that at-home therapy might be beneficial, but there were conflicting studies and guidelines as to what would be best for our patients."

He and his colleagues wanted to determine the best practice, collecting and summarizing all available medical knowledge surrounding the topic.

To that end, the team conducted a meta-analysis, combing all available peer-reviewed and other expert literature for relevant randomized

[clinical trials](#) and comparative observational studies.

After reviewing more than 6,300 citations, the researchers found 33 studies evaluating outcomes for 51,085 patients with COPD and hypercapnia who were followed for at least one month while using a noninvasive ventilator at home during nighttime sleeping hours.

Among these patients, use of a noninvasive ventilator device, such as bilevel positive airway pressure, compared to no device was significantly associated with lower mortality: 29.2% versus 22.3%. The use of a noninvasive ventilator device also led to fewer emergency department visits and hospitalizations, and lower rates of intubation if patients were admitted to the hospital.

"While there does seem to be some clear benefits to using devices such as BiPAP, we should be cautious as the studies included a lot of different types of patients with COPD. And many of the studies we evaluated were low or moderate in quality," says Dr. Wilson. "We still have a lot more to learn about which machine settings are best for different types of patients. In addition, although many studies in our review included quality of life measurements, we didn't see an improvement. While some studies showed better quality of life, other studies showed no difference. Again, this points to the importance of needing to more carefully evaluate which patients with COPD may receive benefit."

"Patients with COPD should talk with their physicians to determine whether a breathing device such as a BiPAP machine might be a good choice for them," he says. "For many patients, such a device may offer important benefits."

Provided by Mayo Clinic

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