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Study suggests new therapy for lung disease patients

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A new study by researchers at Northwestern University's Feinberg School of Medicine may change current thinking about how best to treat patients in respiratory distress in hospital intensive care units.

It has been commonly believed that high levels of carbon dioxide (CO2) or hypercapnia in the blood and lungs of patients with acute lung disease may be beneficial to them. Now, for the first time, scientists have shown how elevated levels of CO2 actually have the opposite effect.

The excessive CO2 impairs the functioning of the lungs. Jacob Sznajder, M.D., chief of pulmonary and critical care at the Feinberg School, and his research team found that high levels of CO2 make it harder for the lungs to clear fluid.

The excess CO2 initiates a signaling cascade leading to the inhibition of the action of sodium “pumps” that help move water out of the air spaces. This creates a greater risk of edema in which the lungs flood with fluid.

The investigators worked with rats and human cells for the study, which was published in the February issue of the Journal of Clinical Investigation.

"Allowing high levels of CO2 may contribute to the high mortality of patients with diseases like chronic obstructive pulmonary disease (COPD)," said Sznajder, a professor of medicine and of cell and molecular biology at the Feinberg School and a physician at

Northwestern Memorial Hospital. "This study argues toward therapies to reduce the high CO2 levels of patients toward normal levels, which is not the current practice in the intensive care unit."

COPD is the fourth leading cause of death in the United States, killing more than 120,000 people, according to the National Institutes of Health. When people have COPD, their lungs lose elasticity and have trouble exchanging carbon dioxide for oxygen. COPD used to be strictly a disease of smokers, but now it's also crippling the lungs of non-smokers.

Source: Northwestern University