

Mortality rate is cut in half by a lung rescue team

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A specialized Lung Rescue Team established by clinicians at Massachusetts General Hospital (MGH) to evaluate and treat patients with obesity receiving mechanical ventilation (MV) due to acute respiratory failure (ARF) has significantly reduced the risk of mortality compared to standard treatment. In a paper published in the journal *Critical Care*, MGH investigators reported that by individualized treatment for patients in the intensive care unit the Lung Rescue Team reduced by half the risk of death for up to a year in patients with acute respiratory failure.

"Our extensive research over the past 10 years has shown that standard protocols for treating patients with obesity and [acute respiratory failure](#) requiring ventilator support were inadequate to provide oxygenation because excessive tissue increased pressure on the lungs, resulting in their failure to expand," says Lorenzo Berra, MD, investigator in the Department of Anesthesia, Critical Care and Pain Medicine at MGH, and corresponding author of the study. "The Lung Rescue Team carefully assesses the respiratory, pulmonary and cardiac physiology of each patient. And based on those findings, it's able to implement

a ventilation titration strategy that counteracts the detrimental effects of increased pleural pressure, resulting in lung re-expansion."

The Lung Rescue Team was created in 2014 as a joint effort between MGH Respiratory Care Services and [critical care](#) physicians. The dedicated team consists of a critical care physician and two critical care fellows trained in cardio-pulmonary physiology who are asked to consult on cases involving patients with obesity and ARF within 24 hours of ICU admission. The intervention tools they employ include esophageal manometry to determine the intrapleural pressure inside the chest; trans-thoracic echocardiography to determine cardiac function during [mechanical ventilation](#) manipulation; and electrical impedance tomography (EIT) to measure the regional distribution of ventilation and assess the degree of [lung](#) collapse and overdistension.

Despite the rapidly growing incidence of obesity in the U.S., the MGH study is the first to evaluate personalized treatment of ARF in this population. Over the five-year trial, ventilator settings in the ICU for 50 patients with severe obesity (known as class III, with BMI, or body mass index, greater than 40 Kg/m²) were determined by the Lung Rescue Team, while ventilator settings for 70 other patients with class III obesity were based on standard protocols emanating from the ARDSnet trial in 2000, which excluded patients with [obesity](#) from its population. Despite this omission, the trial results have been applied to patients of all weight groups. The MGH study found that the ARDSnet protocol-based cohort had a 31 percent death rate at 28 days compared to 16 percent for patients treated by the Lung Rescue Team. At three months, the mortality rate was 41 percent for the ARDSnet standard protocol cohort compared to 22 percent for the Lung Rescue Team group. The mortality rates did not change for the two groups at one year.

The success of the Lung Rescue Team has

prompted interest from other institutions and health systems around the country, and a multicenter trial is being considered. "Intervention by the Lung Rescue Team is responsible for a remarkable improvement in respiratory mechanics and oxygenation for individuals with obesity and acute respiratory failure," emphasizes Berra. "By responding to the unique needs of this population, the Lung Rescut Team is helping to save lives."

More information: A lung rescue team improves survival in obesity with acute respiratory distress syndrome, *Critical Care* (2020). [DOI: 10.1186/s13054-019-2709-x](https://doi.org/10.1186/s13054-019-2709-x)

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