

# Donor smoking and recipient obesity tied to higher rates of death and lung injury after lung transplantation

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(Medical Xpress)—A multi-institution study led by researchers at the Perelman School of Medicine at the University of Pennsylvania has identified several important risk factors, including a donor's smoking history and recipient obesity, linked to severe primary graft dysfunction (PGD), the major cause of serious illness and death after lung transplantation. PGD is a common complication that affects up to 25 percent of lung transplant patients shortly after surgery. The study also found that some previously identified risk factors, including donor sex, race, age, and means of death, were not associated with PGD.

The study published in the March issue of the *American Journal of Respiratory and [Critical Care Medicine](#)*, is the first prospective, multicenter cohort study of risk factors for severe PGD after [lung](#) transplantation. It included 1,255 lung transplant recipients at ten U.S. lung transplant centers over an eight-year period. The researchers evaluated potential [risk factors](#) for severe PGD previously identified in the literature or with hypothetical clinical or biologic plausibility to be associated with PGD.

A key finding is that lung recipients from donors who were smokers have an absolute five percent higher risk of developing PGD than those who received lungs from nonsmokers. Researchers previously found that donor smoking increased the rate of death for lung recipients; the current study found that the cause of this is an increased rate of serious –

or Grade 3 – PGD.

"Even though donor smoking is tied to higher [death rates](#) and incidence of Grade 3 PGD, this doesn't mean we should prohibit smokers from donating lungs," said lead study author Joshua Diamond, MD, MSCE, instructor of medicine in the Division of Pulmonary, Allergy, and Critical Care at Penn. "Although PGD was higher after receiving a lung from a smoking donor compared with a non-smoking donor, other studies show that overall survival is significantly better than remaining on waiting lists for lung transplantation when donors with a smoking history are part of the donor pool. Given the limited pool of available lung donors, it's simply not feasible to exclude patients who were previous smokers as potential lung donors."

Another key finding is that overweight recipients had an absolute seven percent higher risk for PGD compared with normal weight, and obese recipients had an 11 percent higher risk of PGD. Active research is underway on the immune mechanisms behind this finding. Because of the known association between weight and PGD, [lung transplantation](#) centers generally restrict transplant candidates to those with a body/mass index of 30 or 35.

Provided by University of Pennsylvania

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