Objective
Feasibility of pumpless extracorporeal CO₂ removal.

Study Design
Prospective experimental outcome studies evaluating extracorporeal CO₂ removal.

Study Population
14 sheep.

Methods
5–24 hours pharmacologic respiratory paralysis.
Systemic artery to vein shunt with interposed cardiac low resistance gas exchangers.
Measurement of CO₂ removal performance, oxygen inlet pressure, systemic arterial pressure, pressure gradients across artificial lung, extracorporeal blood flow rate.

Results
Pressure gradient of gas exchange device amounted to 30 mmHg at 1 l/min blood flow.
Efficient CO₂ removal (transfer rate 92–180 ml/min).
Problems with thrombosis within the first few hours of use of the gas exchange device (off label use of oxygenator).
Pumpless extracorporeal CO₂ removal is effective, simple, minimizes blood trauma, and decreases the need for supervisory personnel and monitoring.

Commentary
The authors discuss the vasoconstrictive effect of elevated paCO₂ with systemic hypertension which after normalization of carbon dioxide levels may require a lower pressure gradient across the gas exchange device.