

## TOTAL EXTRACORPOREAL CO<sub>2</sub> REMOVAL IN A PUMPLESS ARTERY-TO-VEIN SHUNT

BARTHELEMY R, GALLETI PM, TRUDELL LA, MACANDREW J, RICHARDSON PD, PUEL P, ENJALBERT A.  
TRANS AM SOC ARTIF INTERN ORGANS 1982;28:354-8

CE1-36

### Objective

Feasibility of pumpless extracorporeal CO<sub>2</sub> removal.

### Study Design

Prospective experimental outcome studies evaluating extracorporeal CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 paCO<sub>2</sub> with systemic hypertension which after normalization of carbon dioxide levels may require a lower pressure gradient across the gas exchange device.

