

Technology Opportunity, Ref. No. IS-21/004

## Method to assess heart and lung function of patients under ECMO

The novel method is based on calculating the self-oxygenation capacity of a patient under ECMO treatment by measuring concentrations of specific gases from the air exhaled by the intubated patient and concentration of the respective gas released from the ECMO device. The newly developed algorithm estimates cardiac output (native heart function) from the ratio of these two gas concentrations in order to facilitate weaning.

**Keywords** Emergency medicine, cardiopulmonary failure, pulmonary blood flow, ventilation.

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**Reference** Am J Physiol Lung Cell Mol Physiol. 2020 Jun 1;318(6):L1211-L1221. doi: 10.1152/ajplung.00167.2019

**Background** ECMO has gained worldwide use for severe cardiopulmonary failure. The weaning procedure of intensive care patients from ECMO is very delicate and essentially based on the clinical experience of the treating physicians. There's a clear clinical need for improved monitoring that adds safety to this procedure and would allow less experienced personnel to initiate and monitor the weaning.

**Invention** The inventors found an ingenious methodology to calculate native pulmonary blood flow from the ratio of ECMO blood flow and exhaled gases of the patient and the released air from the ECMO device. The method allows to monitor native cardiac output, which in turn helps initiate weaning procedures and determine its success or failure. The method can be easily implemented into existing ECMO devices by measurements of exhaled gas concentrations.

**Application** Support system for the ECMO treatment of intensive care patients.

**Patent Status** International (PCT) patent application filed

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