

POSTER PRESENTATION

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# ECCO<sub>2</sub>R, a french national survey

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## Introduction

ECCO<sub>2</sub>R (extracorporeal dioxide carbon removal) is an extracorporeal decarboxylation technology described in 1978<sup>1</sup>. Physiological studies showed that 50% of produced CO<sub>2</sub> were eliminated<sup>2</sup>. Potential indications are: ultra-protective mechanical ventilation (MV) for acute respiratory distress syndrome (ARDS)<sup>3</sup> and hypercapnic patients at risk of failure of noninvasive ventilation (NIV)<sup>4</sup>. Because of the lack of scientific evidence, ECCO<sub>2</sub>R is not available in the USA. Several trials are currently conducted in Europe.

## Objectives

To assess the use of ECCO<sub>2</sub>R in France.

## Methods

This retrospective, observational study was performed in French intensive care units (ICUs) from January 2010 to January 2015. A phone interview was conducted with French ICUs affiliated to national societies and public and private hospitals registries. Data recorded were the following: use and indications of ECCO<sub>2</sub>R, type of ECCO<sub>2</sub>R, number of treated patients during the study period, complications associated with the technique, satisfaction rates (in term of efficacy, tolerance and global) based on a scale (0 to 10), and concomitant use of ECMO in the unit.

## Results

222 French ICUs were contacted (52 medical, 20 surgical, 132 polyvalent, 3 cardio-thoracic, 6 paediatric and 2 neurosurgical ICU). Only 3 refused to participate. Thirty-three (15%) ICU had used ECCO<sub>2</sub>R at least once in the past five years, in 292 patients. Most frequent devices used were: iLA<sup>®</sup> (Novalung) (63%) and Hemolung<sup>®</sup> (Alung) (36%). The median number per ICU of treated patients was 3[1-7]. The most frequent indication was ultra-protective ventilation for ADRS (54%). Other indications were: failure of NIV during COPD exacerbation (30%), weaning from

invasive MV in COPD patients (12%) and miscellaneous (4%). Among ICUs using ECCO<sub>2</sub>R, 22 (67%) reported at least one complication. The most frequent complications were bleeding (45%) and membrane failure (18%). Satisfaction rates were: in term of decarboxylation  $7.9 \pm 2.4$ ; tolerance  $6.9 \pm 2.6$ ; overall satisfaction  $6.8 \pm 2.2$ . Twenty-one (63%) of the 33 ICUs using ECCO<sub>2</sub>R, also used ECMO. The main reasons for not using ECCO<sub>2</sub>R were the lack of trained staff, unavailability of the device and the lack of scientific evidence (in respectively 56.5%, 38% and 19%).

## Conclusions

These preliminary results show that ECCO<sub>2</sub>R is not widely used in French ICUs. The lack of strong scientific data on outcome is probably the main reason behind the limited use of ECCO<sub>2</sub>R. French studies currently in progress will help define indications of ECCO<sub>2</sub>R and impact on outcome.

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## References

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