

# INPLASY PROTOCOL

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**Support:** No.

**Review Stage at time of this submission:** Preliminary searches.

**Conflicts of interest:**  
None declared.

## Extracorporeal membrane oxygenation in pregnancy and the postpartum period: A Systematic Review and Meta Analysis

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**Review question / Objective:** P: ("Extracorporeal Membrane Oxygenation"[MeSH Terms] OR ("extracorporeal membrane oxygenations"[Title/Abstract] OR "membrane oxygenation extracorporeal"[Title/Abstract] OR "ecls treatment"[Title/Abstract] OR "ecls treatments"[Title/Abstract] OR "treatment ecls"[Title/Abstract] OR "extracorporeal life support"[Title/Abstract] OR "extracorporeal life supports"[Title/Abstract] OR "life support extracorporeal"[Title/Abstract] OR "ecmo treatment"[Title/Abstract] OR "ecmo treatments"[Title/Abstract] OR "treatment ecmo"[Title/Abstract] OR "oxygenation extracorporeal membrane"[Title/Abstract] OR "ecmo extracorporeal membrane oxygenation"[Title/Abstract] OR "venoarterial ecmo"[Title/Abstract] OR "ecmo venoarterial"[Title/Abstract] OR ("Venoarterial"[All Fields] AND "ECMOs"[Title/Abstract]) OR "venoarterial extracorporeal membrane oxygenation"[Title/Abstract] OR "venovenous ecmo"[Title/Abstract] OR "ecmo venovenous"[Title/Abstract] OR ("Venovenous"[All Fields] AND "ECMOs"[Title/Abstract]) OR "venovenous extracorporeal membrane oxygenation"[Title/Abstract])) I: Extracorporeal Membrane Oxygenations O: Maternal mortality; Fetal mortality; Pregnancy complications etc.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 November 2022 and was last updated on 08 November 2022 (registration number INPLASY2022110036).

### INTRODUCTION

**Review question / Objective:** P: ("Extracorporeal Membrane Oxygenation"[MeSH Terms] OR

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treatments"[Title/Abstract] OR "treatment ecls"[Title/Abstract] OR "extracorporeal life support"[Title/Abstract] OR "extracorporeal life supports"[Title/Abstract] OR "life support extracorporeal"[Title/Abstract] OR "ecmo treatment"[Title/Abstract] OR "ecmo treatments"[Title/Abstract] OR "treatment ecmo"[Title/Abstract] OR "oxygenation extracorporeal membrane"[Title/Abstract] OR "ecmo extracorporeal membrane oxygenation"[Title/Abstract] OR "venoarterial ecmo"[Title/Abstract] OR "ecmo venoarterial"[Title/Abstract] OR ("Venoarterial"[All Fields] AND "ECMOs"[Title/Abstract]) OR "venoarterial extracorporeal membrane oxygenation"[Title/Abstract] OR "venovenous ecmo"[Title/Abstract] OR "ecmo venovenous"[Title/Abstract] OR ("Venovenous"[All Fields] AND "ECMOs"[Title/Abstract]) OR "venovenous extracorporeal membrane oxygenation"[Title/Abstract])) I:Extracorporeal Membrane Oxygenations O:Maternal mortality;Fetal mortality;Pregnancy complications etc.

**Condition being studied:** Data were retrieved from PubMed, EMBASE, and other databases from 1987 up to November 2022 for publications on ECMO in peripartum patients. Search terms included "ECMO," "ECLS," "pregnancy," "postpartum," and "peripartum." Then use Endnote, SPSS and RevMan to systematically evaluate and meta-analyze the retrieval results, make a profound study the influence of ECMO in pregnancy and the postpartum period.

## METHODS

**Search strategy:** ("Extracorporeal Membrane Oxygenation"[MeSH Terms] OR ("extracorporeal membrane oxygenations"[Title/Abstract] OR "membrane oxygenation extracorporeal"[Title/Abstract] OR "ecls treatment"[Title/Abstract] OR "ecls treatments"[Title/Abstract] OR "treatment ecls"[Title/Abstract] OR "extracorporeal life support"[Title/Abstract] OR "extracorporeal life supports"[Title/

Abstract] OR "life support extracorporeal"[Title/Abstract] OR "ecmo treatment"[Title/Abstract] OR "ecmo treatments"[Title/Abstract] OR "treatment ecmo"[Title/Abstract] OR "oxygenation extracorporeal membrane"[Title/Abstract] OR "ecmo extracorporeal membrane oxygenation"[Title/Abstract] OR "venoarterial ecmo"[Title/Abstract] OR "ecmo venoarterial"[Title/Abstract] OR ("Venoarterial"[All Fields] AND "ECMOs"[Title/Abstract]) OR "venoarterial extracorporeal membrane oxygenation"[Title/Abstract] OR "venovenous ecmo"[Title/Abstract] OR "ecmo venovenous"[Title/Abstract] OR ("Venovenous"[All Fields] AND "ECMOs"[Title/Abstract]) OR "venovenous extracorporeal membrane oxygenation"[Title/Abstract])) AND ("Pregnancy"[MeSH Terms] OR ("Pregnancies"[Title/Abstract] OR "Gestation"[Title/Abstract] OR "Pregnancy"[Title/Abstract])).

**Participant or population:** Pregnancy and perinatal patients.

**Intervention:** Extracorporeal Membrane Oxygenations.

**Comparator:** Imprecise.

**Study designs to be included:** Randomized controlled trial ; case report.

**Eligibility criteria:** The articles were screened based on title and abstract, and the final selection was performed after full-text evaluation. The eligibility of studies was independently assessed by two review authors and disagreements were resolved by consensus or appeal to a third author. Citations from selected articles were also screened and were included as hand-picked articles. We included all pregnant patients or patients up to a maximum of 15 days' postpartum who received ECMO. Case reports where ECMO was on standby but not used were excluded. Larger case series (>3 peripartum patients) which had minimal details about individual patients were not included.

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**Information sources:** Embase ; PubMed and web of science.

**Main outcome(s):** Maternal mortality during ECMO.

**Additional outcome(s):** Data on maternal demographics and presenting indications as well as adjuvant therapies employed, type and duration of ECMO used, and fetal and maternal outcomes, were extracted. Outcomes were quantified based on survival, the presence of complications and, when possible, duration of hospital stay. Collated and analyze the information above accordingly.

**Data management:** Univariate analysis was used to detect any statistically significant difference in the observed maternal survival associated with pre-ECMO adjuvant therapies. All the analyses were conducted at a two-sided alpha level of 5% using SPSS software, except for some data by R software.

**Quality assessment / Risk of bias analysis:** The eligibility of studies was independently assessed by two review authors and disagreements were resolved by consensus or appeal to a third author .Citations from selected articles were also screened and were included as hand-picked articles.

**Strategy of data synthesis:** The characteristics of the patients at baseline were reported as percentages for categorical variables and as mean with standard deviation for discrete variables.Categorical variables (ECMO indications, ECMO configuration) were compared with Chi-square or Fisher's exact tests, as appropriate. Univariate analysis was used to detect any statistically significant difference in the observed maternal survival associated with pre-ECMO adjuvant therapies. All the analyses were conducted at a two-sided alpha level of 5% using SPSS software, version 25, except for some data by R software.

**Subgroup analysis:** Not determined.

**Sensitivity analysis:** All the analyses were conducted at a two-sided alpha level of 5% using SPSS software.

**Language restriction:** English.

**Country(ies) involved:** China (The Second Hospital of Lanzhou University).

**Keywords:** Extracorporeal Membrane Oxygenations; pregnancy;Maternal mortality.

**Contributions of each author:**

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