

*Post-mortem* re-analysis  
of an under-powered randomized trial

# Original analysis of EOLIA

## EOLIA (Combes *et al.*, *NEJM*, 2018):

- randomized clinical trial
- evaluation of a new treatment for severe acute respiratory distress syndrome
- outcome: mortality rate after 60 days
- 249 patients:
  - 125 controls
    - ⇒ mechanical ventilation (conventional treatment)
  - 124 treated
    - ⇒ ECMO (extracorporeal membrane oxygenation – new(er) treatment)

## **Frequentist analysis:**

⇒ Relative Risk of death at 60 days for ECMO compared to control: 0.76

$CI_{95\%} = [0.55, 1.04]$

p-value = 0.09

# Bayesian re-analysis of EOLIA data

Goligher *et al.* (*JAMA*, 2018)

	Group	
	ECMO	Control
<b>group size <math>n</math></b>	124	125
<b>number of deaths at 60 days</b>	44	57

Observed data in the EOLIA trial

# Your turn !



**Read** EC Goligher *et al.*  
Extracorporeal Membrane  
Oxygenation for Severe Acute  
Respiratory Distress Syndrome and  
Posterior Probability of Mortality  
Benefit in a Post Hoc Bayesian  
Analysis of a Randomized Clinical  
Trial, *JAMA* 320(21): 2251, 2018.  
[DOI:10.1001/jama.2018.14276]

**Practical:** exercise 6