

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
group size n	124	125
number of deaths at 60 days	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 5