Antibiotic exposure for culture-negative early-onset neonatal sepsis: an international study

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AENEAS study

JAMA Network Open
2022

Original Investigation | Pediatrics

Analysis of Antibiotic Exposure and Early-Onset Neonatal Sepsis in Europe, North America, and Australia

757’979

infants ≥ 34 SA

AENEAS study

JAMA Network Open
2022

Original Investigation | Pediatrics

Analysis of Antibiotic Exposure and Early-Onset Neonatal Sepsis in Europe, North America, and Australia

Burden of treatment

→ Proportion of treated

→ Antibiotic exposure

Burden of CP-EOS

→ Incidence

→ Mortality

AENEAS study

JAMA Network Open
2022

Original Investigation | Pediatrics

Analysis of Antibiotic Exposure and Early-Onset Neonatal Sepsis in Europe, North America, and Australia

Burden of treatment

→ Proportion of treated: 2.86%

→ Antibiotic exposure: 135 antibiotic days/1'000 livebirths

Burden of CP-EOS

→ Incidence: 0.49 per 1'000 livebirths

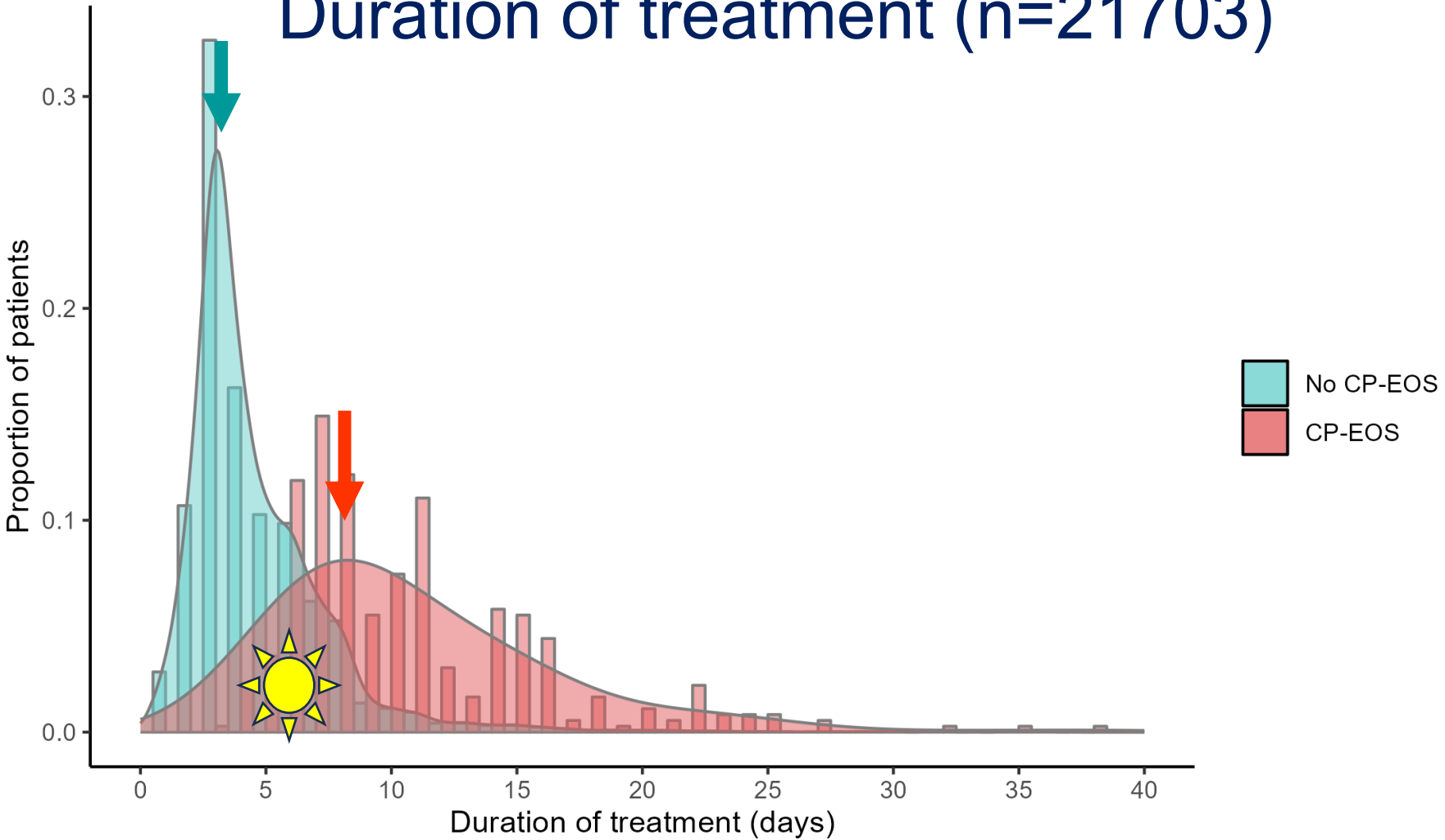
→ Mortality: 3.2%

1 out of 58 neonates started on antibiotics had a CP-EOS

Secondary analysis of AENEAS study

- 13 networks, 11 high-income countries
- Network : common strategy for preventing and managing suspected EOS
- Inclusion criteria :
  - Neonates ≥ 34 weeks
  - 5-year study period (2014-2018)
- No exclusion criteria

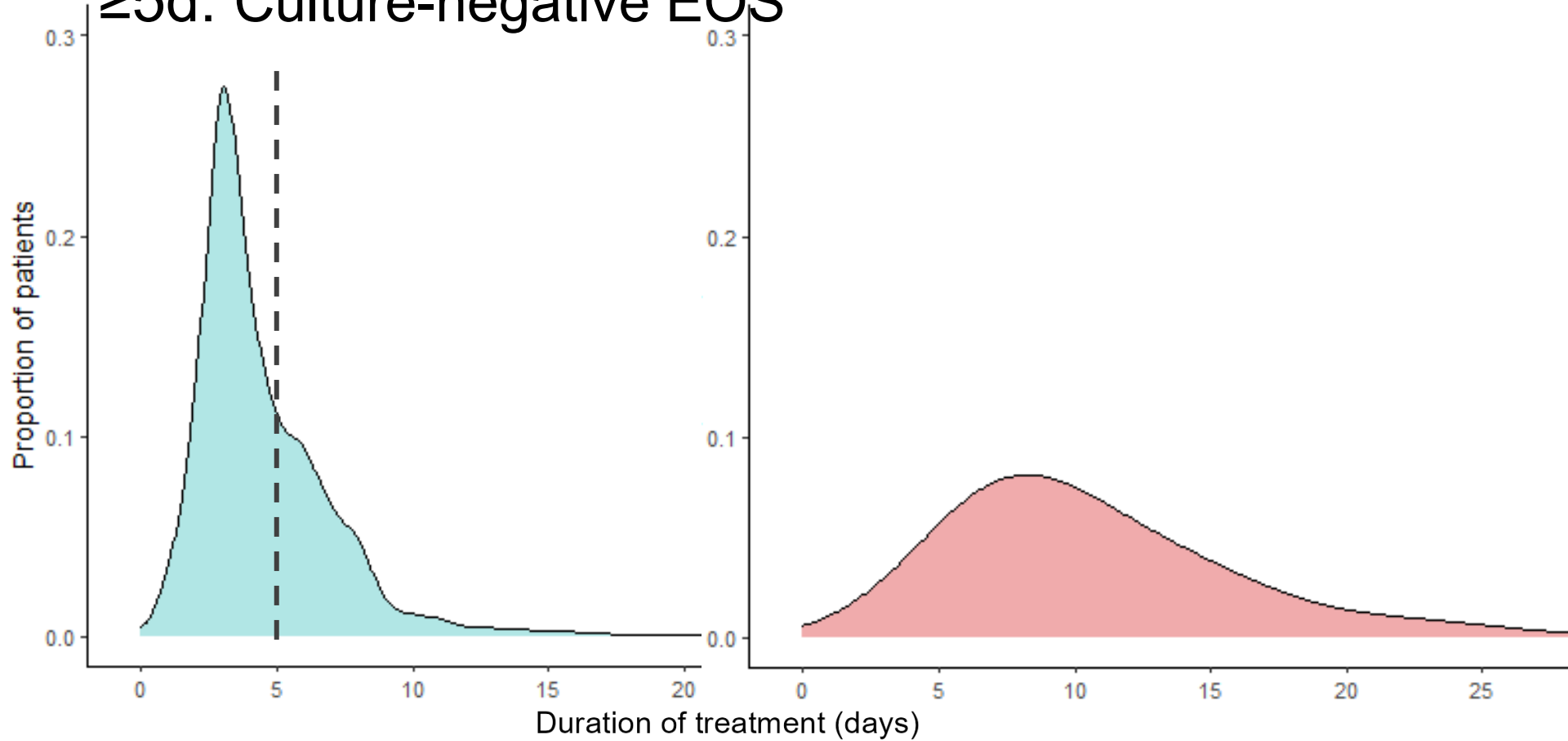
Duration of treatment (n=21703)

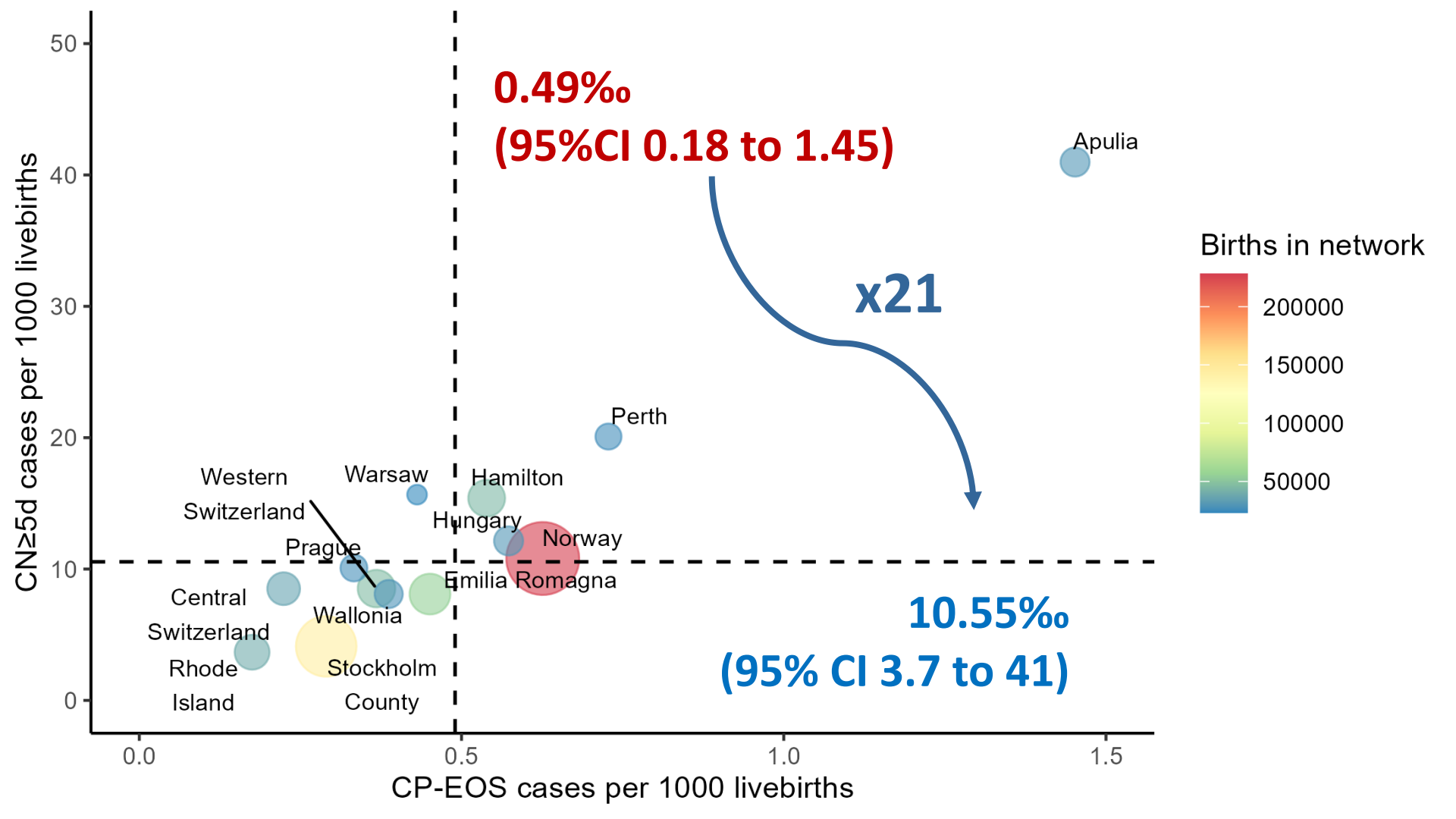


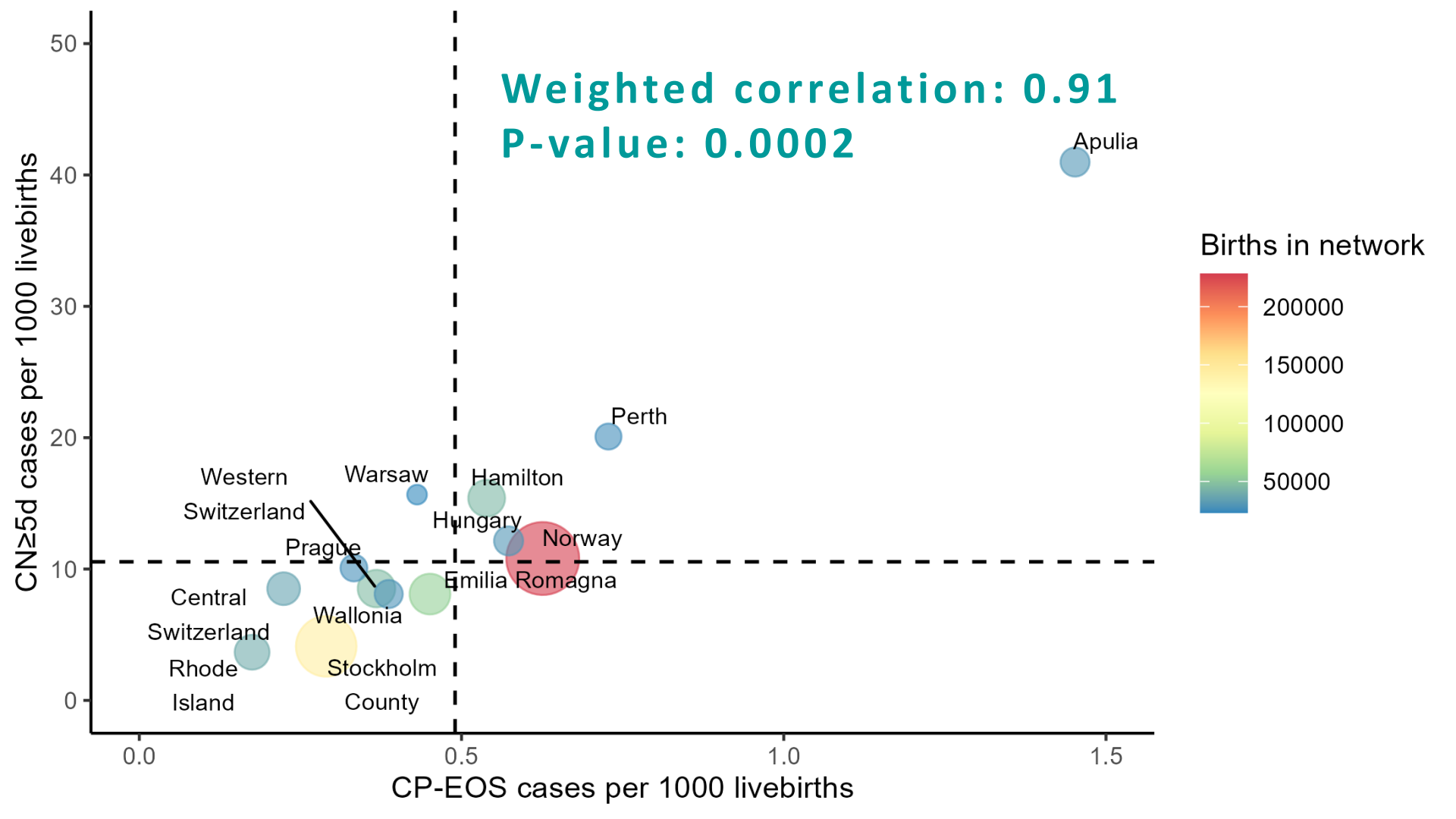
<5d: Ruled-out sepsis

≥5d: Culture-negative EOS

Culture-proven EOS




0.49‰
(95%CI 0.18 to 1.45)
x21
10.55‰
(95% CI 3.7 to 41)
Apulia
Perth
Western
Switzerland
Warsaw
Hamilton
Hungary
Norway
Prague
Emilia Romagna
Central
Switzerland
Wallonia
Rhode
Island
Stockholm
County
Births in network
200000
150000
100000
50000
CN≥5d cases per 1000 livebirths
CP-EOS cases per 1000 livebirths
0
10
20
30
40
50
0.0
0.5
1.0
1.5


Weighted correlation: 0.91
P-value: 0.0002
Apulia
Perth
Western Switzerland
Warsaw
Hamilton
Hungary
Norway
Prague
Emilia Romagna
Central Switzerland
Wallonia
Rhode Island
Stockholm County
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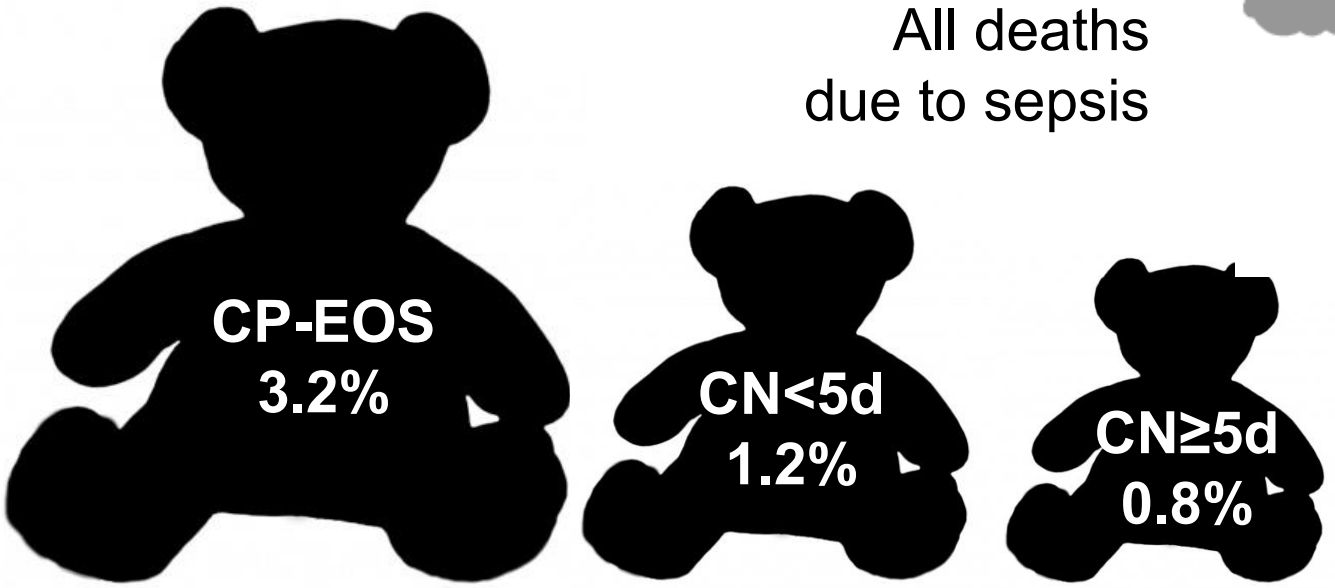
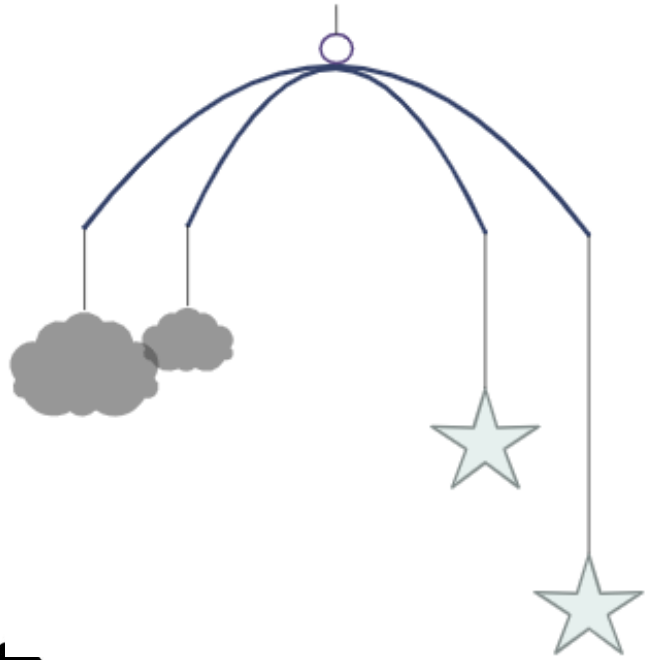
CP-EOS cases per 1000 livebirths
0
10
20
30
40
50
0.0
0.5
1.0
1.5

Mortality
(% of deaths in each group)

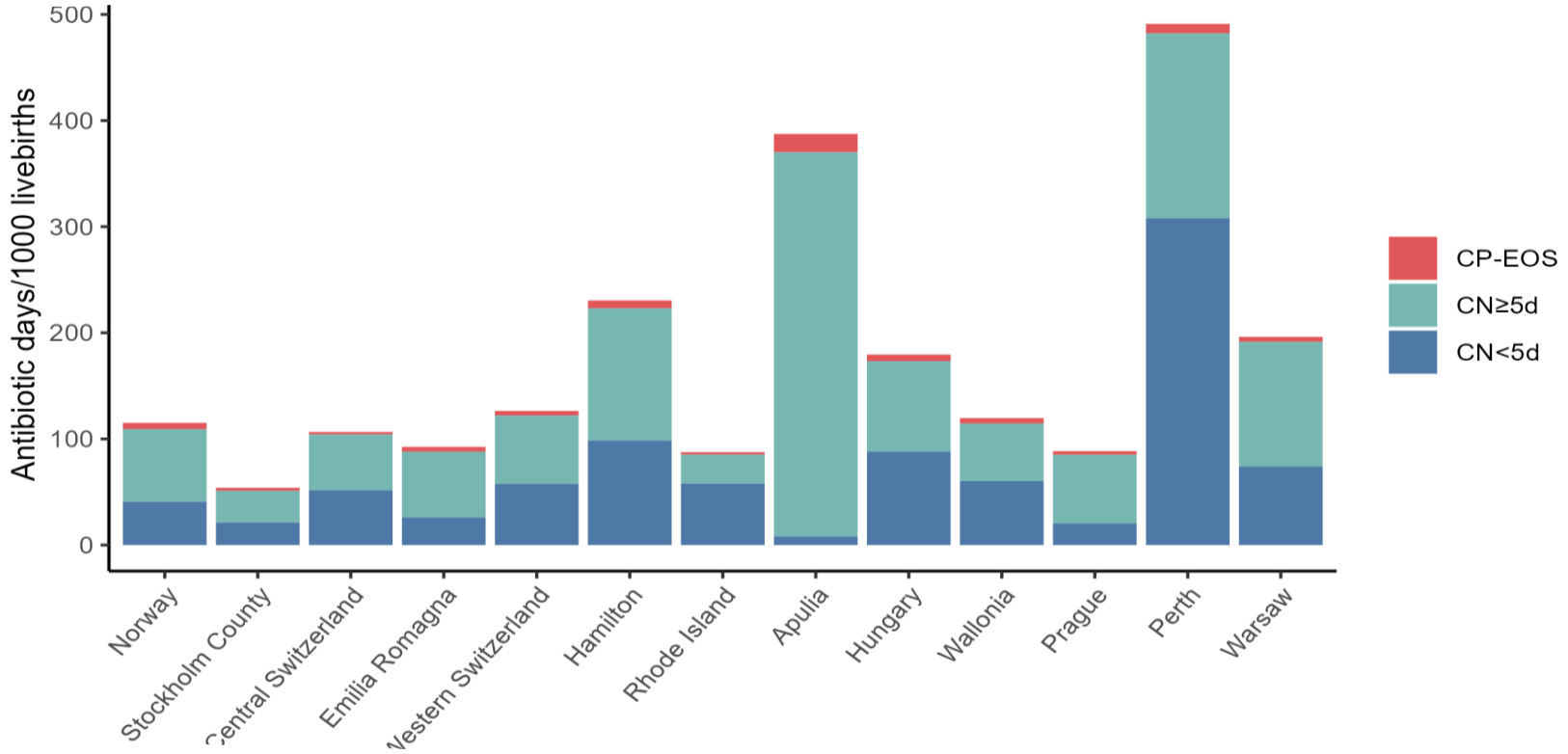
CP-EOS
All deaths
due to sepsis





CN≥5d
No deaths
related to
sepsis

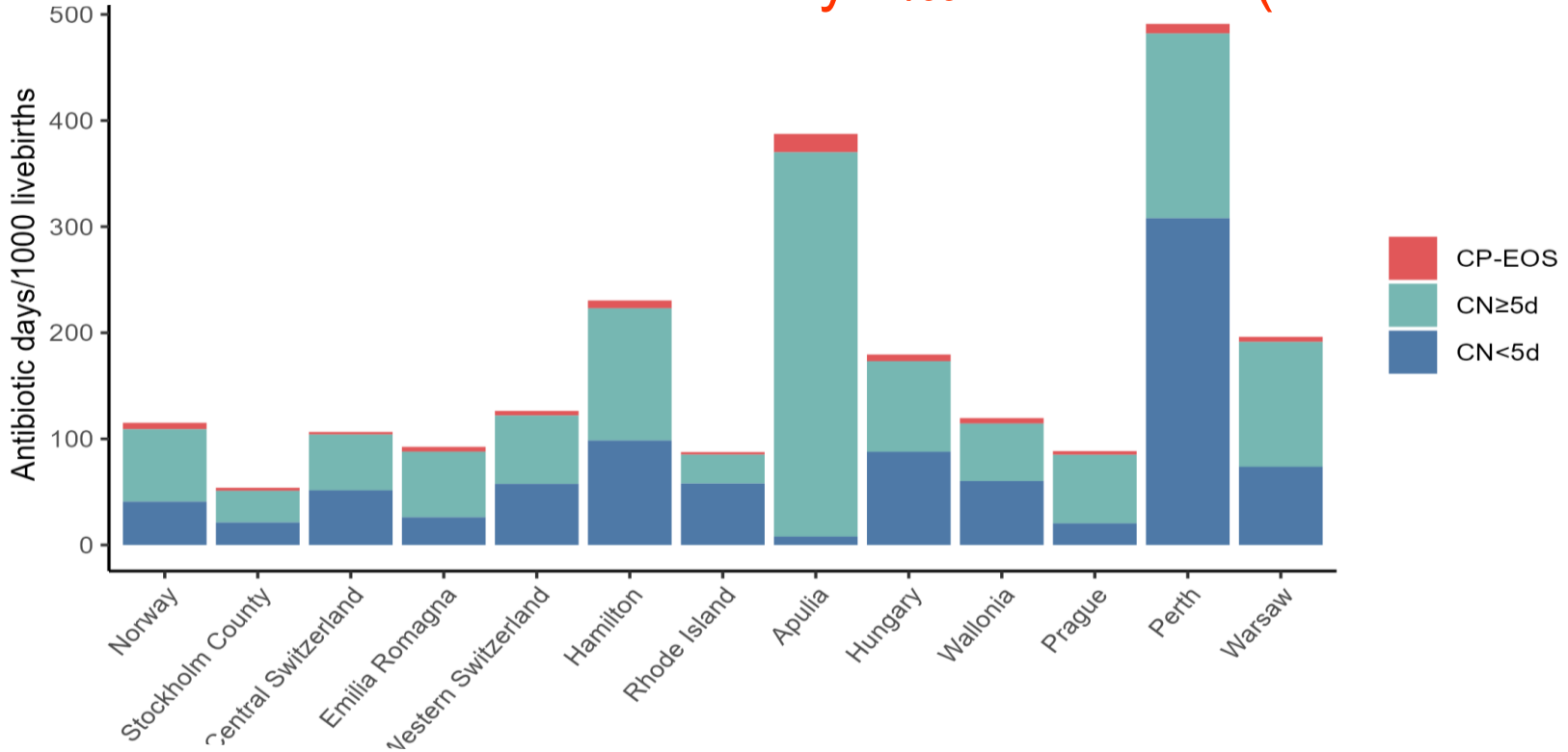
Antibiotic exposure in each network



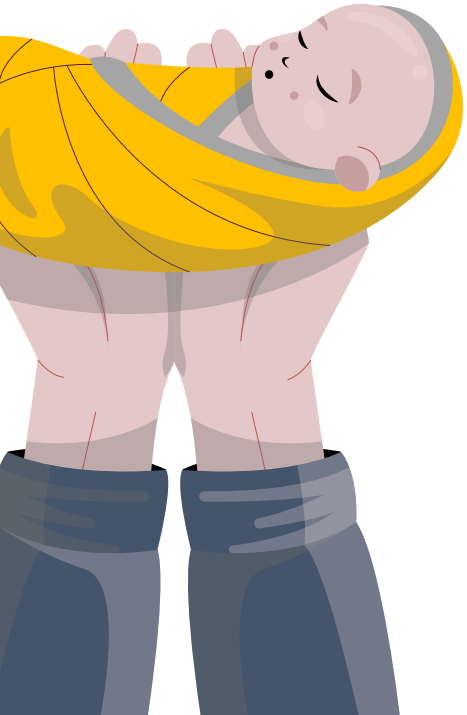
CN≥5d: 77 antibiotic days ‰ livebirths (13-fold variation)

CN<5d: 53 antibiotic days ‰ livebirths (38-fold variation)

CP-EOS: 5 antibiotic days ‰ livebirths (9-fold variation)



Conclusions for CN-EOS



- **Incidence 10.55/1’000 livebirths**
- **77 antibiotic days/1’000 livebirths**

- **Major contribution of CN-EOS to early-life antibiotic exposure**

- **Antimicrobial stewardship programs should target CN-EOS**

Manuscript under review

Less antibiotics 4 babies

Thank you

https://www.la4b.info