

#437 UNIT-LEVEL RESISTANT COLONISATION IN EUROPEAN NEONATAL UNITS – RESULTS FROM NeoIPC FEASIBILITY STUDY



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Conclusion

- Resistant bacterial colonisation was generally low across European neonatal units
- Both low-and-high-risk infants were colonised
- Findings to inform sampling strategy for NeoDeco trial
- Unit-level IPC interventions target both direct and indirect effects of colonisation regardless of risk level

- Interventions focusing only on infants at high risk of sepsis will miss significant resistant bacterial colonisation in low-risk infants

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Background:

- Colonisation pressure is a major contributor to the spread of resistant bacteria in neonatal units
- Pre-trial colonisation feasibility study to characterize baseline colonization pressure
- We aimed to understand feasibility of collecting and analysing these data using cross-sectional surveys to inform the sampling strategy for the NeoDeco study
- 4 cross-sectional surveys in a one-month period (skin swabs and stool samples)
- Stool samples analysed by PCR for the presence of bacterial resistance genes
- Individual data were aggregated to present a unit-level picture
- Proportion of infants ARB colonised at the survey timepoint excludes infants with missing samples or indeterminate PCR results.

Gene targets of interest in stool samples

Carbapenem resistance: *blaKPC*, *blaNDM*, *blaVIM*, *blaIMP*, *blaOXA-48*

Extended-spectrum beta-lactamase: *blaCTX-M* group1, *blaCTX-M* group9

Vancomycin resistance: *vanA*, *vanB*

Antibiotic resistant bacterial (ARB) colonisation was defined as the detection of at least one target gene in an infant's stool

Results:

- 20 sites (8 countries) had complete sample data from 4 surveys (n=80 surveys)
- Median 21 infants per survey (IQR: 13-27 infants)
- 30 / 80 surveys did not identify any ARB colonisation (**varied by country**)
- Median 45 % of infants (IQR: 35% - 60%) were born <32 weeks' gestation (high risk)

In surveys with any ARB colonisation

- Median 25% (IQR: 14–42%) were colonised per survey (median n= 3, IQR: 2-7)
- Median 1 (IQR: 1-3) high risk infants were colonized per survey
- ARB colonization prevalence not associated with proportion of high-risk infants on the unit

(logistic regression adjusted for country, OR 0.49, P = 0.71)

Number of surveys with any resistant bacterial colonisation by country

Greece	20/20 (100%)
Germany	4/4 (100%)
Italy	7/8 (88%)
Spain	10/12 (83%)
UK	8/12 (67%)
Switzerland	1/15 (6.3%)
Estonia	0/4 (0%)
Poland	0/4 (0%)

Any resistant bacterial colonisation[^] on unit at survey

	No (n = 30)	Yes (n = 50)
Total infants in survey	19 (7 - 26)	21 (14 - 28)
Number of infants present in previous survey	10 (5 - 14)	15 (9 - 17)
Gestational age (weeks)	32 (30 - 34)	32 (30 - 33)
Birthweight (grams)	1,715 (1,186 - 1,883)	1,658 (1,296 - 1,955)
Postnatal age (days) at survey	19 (11 - 30)	20 (14 - 24)
Length of stay on NICU at survey (days)	13 (9 - 21)	15 (11 - 20)
Number of infants received surgery prior to survey	2 (0 - 4)	4 (3 - 6)
Number of infants previously exposed to antibiotics	12 (6 - 20)	16 (12 - 22)

[^]Table presents median (IQR) for each characteristic

Figure 1. Number of infants colonised by antibiotic resistant bacteria per unit-survey split by high risk (born < 32 weeks gestation) and total number of infants present on the day of the survey

