

Descriptive interim analysis of the sampling strategy in anonymous repeated cross-sectional samples in European neonatal intensive care units (NICU)

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BACKGROUND

The NeolPC Unit Level Resistant Bacterial Colonization Surveillance project aims to foster infection prevention and control implementation in the high risk setting of European NICU to reduce resistant bacterial colonization and infection.

OBJECTIVES

- Assess feasibility of a proposed tailored sampling strategy for skin swabs and stool samples in neonates

MATERIAL AND METHODS

- Initial descriptive analysis of the sampling strategy in anonymous repeated cross-sectional non-invasive samples from neonates.
- Proposed sampling strategy: 4 colonization point prevalence surveys of skin swabs and stool samples per infant (minimum of 4 and maximum of 14 days apart) to capture the main breaks in the cumulative colonization curve having a colonization pressure >20% [1]
- Data analysis performed using RStudio (version 1.4.1717)

CURRENT RESULTS

At time of data extraction on November 15th 2022, 546 neonates had been included in 15 European study sites between February 2021 and October 2022.

There were 6 to 78 participants per study site, 56.2% were male. Median [IQR] gestational age (GA) and birth weight were 34.7 [30.6, 38.3] weeks and 2200 [1430, 3140] g, respectively.

References

[1] E. Iosifidis, C. Smit, E. Chorafa, A. Atkinson, M. Simitsopoulou, M. Pfister, K. Sarafidis, J. Bielicki, E. Roilides. Carbapenem resistant Klebsiella pneumoniae (CRKP) colonization: dynamics of acquisition in a neonatal intensive care unit (NICU), 31st ECCMID Congress, 2021

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Disclaimer

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CONCLUSIONS

- Sampling time interval windows instead of fixed timepoints allows for more variability enhancing scientific and clinical usefulness of results
- Colonization data will enable to assess resistant bacterial colonization pressure and model infant colonization dynamics

CURRENT RESULTS

A total of 969 skin swabs and 767 stool samples were collected. A proportion of 24.0% of neonates had ≥ 4 stool samples collected and 30.5% had ≥ 4 skin swabs (**Figure 1A and 1B**).

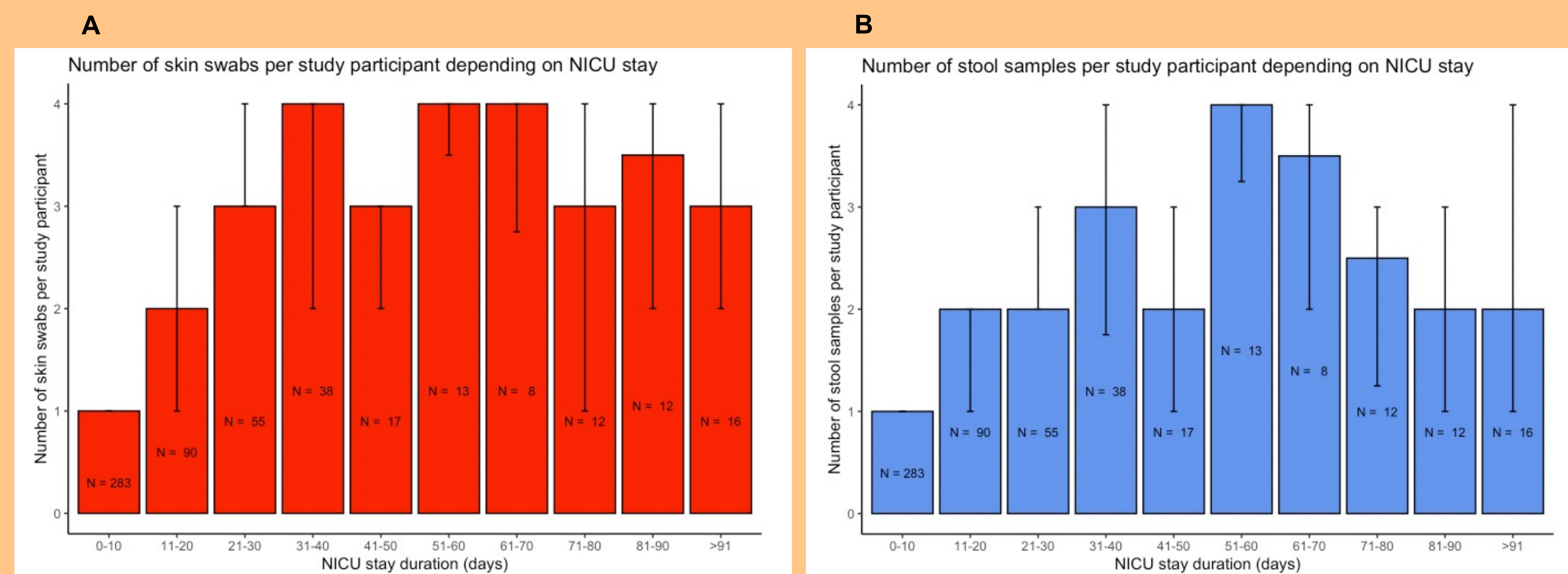


Figure 1. Median and IQR of number of skin swabs (A) and stool samples (B) per study participant depending on NICU stay.

The interval between two consecutive samples per infant was mainly 4 (20.5%), 7 (24.0%) and 14 days (19.4%).

NICU duration and sampling schedule

Preterm infants (GA ≤ 32 weeks) stayed longer in the NICU, 28.5 [13.8, 50.3] days versus 6.00 [3, 16] days for infants with a GA > 32 weeks (standard 2-sample T-test, p -value < 0.001).

A total of 283 neonates remained in the NICU for <10 days and had at least one skin or stool sample drawn, while 16 stayed for >3 months. Neonates remaining in the NICU between 51 and 60 days had >3 stool samples collected (**Figure 1A and 1B**).