

Background

We have previously demonstrated low diversity and high *mecA* prevalence of *S. epidermidis* in gut of preterm neonates admitted to mixed NICU/PICU. (Soeorg et al. 2017)

Aim

To describe diversity of *S. epidermidis* MLVA (Johansson et al. 2013; Cremniter et al. 2013) types and presence of *mecA* gene in neonatal stool (F), mother's own breast milk (MOBM) and parents' skin (PS) in a East-Tallinn Central Hospital Women's Clinic providing family centered care (FCC).

Materials and methods

Samples were collected from 32 parents-neonatal pairs (gestational age (GA) <34wk). Overview of the study process is presented on **Figure 1**. In the study the FCC was defined as intensive care that allowed parents to stay in the hospital and where the parents were encouraged to make early skin-to-skin contact and stimulate MOBM. Diversity of the MLVA types was described by Simpson's Diversity Index (SDI).

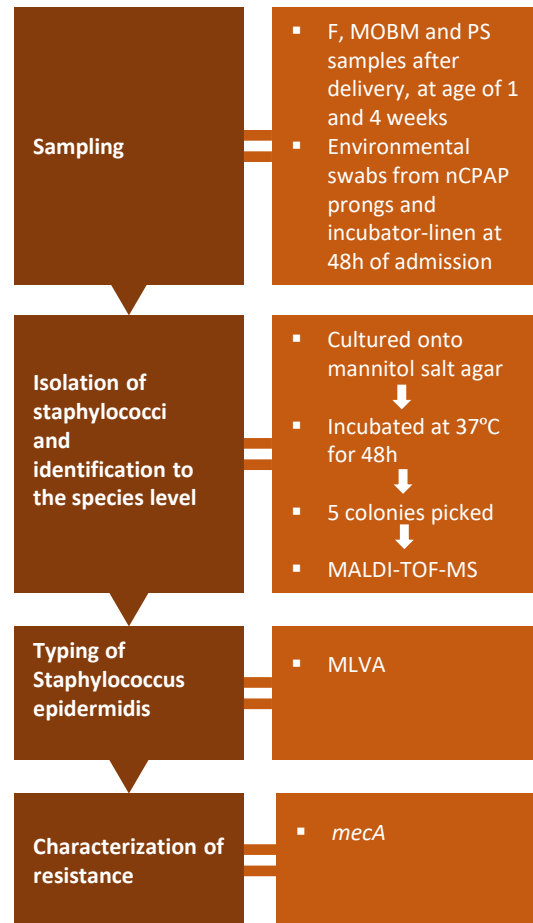


Figure 1. Overview of the study process

Results

Neonatal characteristics are shown in **Table 1**.

Table 1. Neonatal characteristics

Characteristic	Value
GA –w; median (IQR)	29 (26-33)
Birth weight – kg; median (IQR)	1,41 (0,80 – 2,49)
Length of NICU stay – d; median (IQR)	16 (9-28)
LOS caused by CoNS – n (%)	2 (6)

- 480/1567 (31%) *S. epidermidis* isolates were *mecA* positive
- 348 MLVA types were identified
- MecA* prevalence increased over time in MOBM (41%→62%→60%; p=0.002) but not in F (50%→83%→67%; p=0.115) and PS (30%→ 37%→43%; p=0.173)
- On prongs and linen *mecA* prevalence was 89%
- SDI (95% CI) was ≥0.993 in MOBM, F and PS throughout, on prongs 0.767 (0.677-0.856) and linen 0.942 (0.893-0.999)
- Phylogenetic analysis confirmed diversity (**Figure 2**)

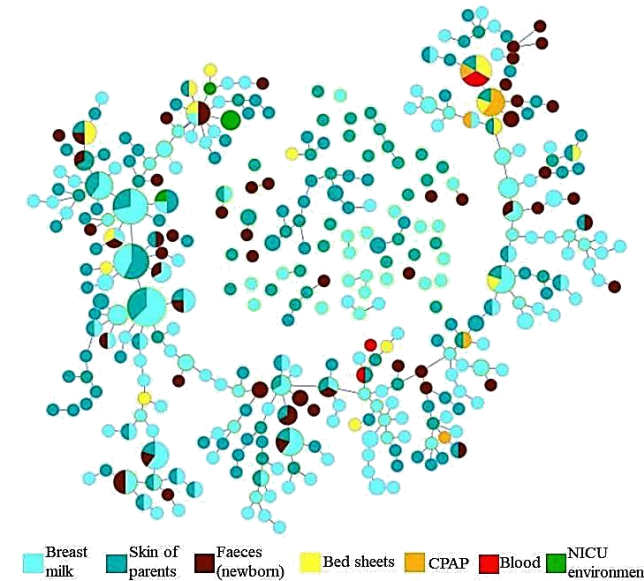


Figure 2. Genetic relatedness of MLVA types. A node presents a distinct MLVA type, and its size indicates the number of isolates of the MLVA type. Links between the nodes indicate single locus variant, and colour of the node localisation of MLVA type.

Conclusions

Close parental contact may preserve diversity of early gut colonisation with *S. epidermidis* despite increasing *mecA* prevalence in MOBM in NICU hospitalised preterm neonates.

ABBREVIATIONS

- NICU – neonatal intensive care
- PICU – pediatric intensive care unit
- MLVA – multi-locus variable-number tandem-repeats analysis
- GA – gestational age
- LOS – late onset sepsis
- MOBM – mother's own unpasteurized breast milk

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