

## **Effect of maternal skin-to-skin contact on decolonization of Methicillin-Oxacillin-Resistant Staphylococcus in neonatal intensive care units: a randomized controlled trial**

Fernando Lamy Filho, Universidade Federal do Maranhão

Sílvia Helena Cavalcante Souza, Hospital Universitário da Universidade Federal do Maranhão

Isolina Januária Sousa Freitas, Ministério da Saúde do Brasil

Zeni Carvalho Lamy, Ministério da Saúde do Brasil, Universidade Federal do Maranhão

Vanda Maria Ferreira Simões, Universidade Federal do Maranhão

Antônio Augusto Moura Silva, Universidade Federal do Maranhão

Marco Antônio Barbieri, Universidade de São Paulo – Ribeirão Preto

### **Abstract**

**Background:** Decolonization with topical antibiotics is necessary to control outbreaks of multidrug resistant bacterial infection in the Neonatal Intensive Care Unit (NICU), but can trigger bacterial resistance. The objective of this study was to determine whether skin-to-skin contact of newborns colonized with Methicillin-Oxacillin Resistant Staphylococcus aureus or Methicillin-Oxacillin-Resistant Coagulase-Negative Staphylococcus aureus (MRSA/MRSE) with their mothers could be an effective alternative to promote bacterial decolonization of newborns' nostrils. **Methods:** We performed a randomized clinical trial with 102 newborns admitted to the NICU in three hospitals in São Luís, Brazil. Inclusion criteria were birth weight of 1300 to 1800 g, more than 4 days of hospitalization, newborns with positive nostril cultures for MRSA and/or multidrug-resistant coagulase-negative Staphylococcus and mothers not colonized by these bacteria. We used a random number algorithm for randomization. Allocation was performed using sealed opaque envelopes. Skin-to-skin contact was given twice a day for 60 minutes for seven consecutive days. The control group received routine care without skin-to-skin contact. There was no masking of newborns' mothers or researchers but the individuals who carried out bacterial cultures and assessed results were kept blind to group allocation. The primary outcome was colonization status of newborns' nostrils after 7 days of intervention. The directional hypothesis was that more newborns who receive skin-to-skin holding 2 hours/day for 7 days than newborns who receive normal care will be decolonized. **Results:** Decolonization of MRSA/MRSE was greater in the intervention group (Risk Ratio = 2.27; 95%CI 1.27-4.07, p-value = 0.003). Number Needed to Treat (NNT) was 4.0 (95 % CI 2.2 – 9.4). After adjustment for the possible confounding effects of small for gestational age birth, antibiotic use, need for resuscitation, sex and cesarean delivery, skin-to-skin contact remained strongly associated with decolonization of newborns' nostrils from MRSA/MRSE bacteria (p = 0.007). There was no need to interrupt the trial for safety reasons. **Conclusion:** Skin-to-skin contact might be an effective and safe method for promoting decolonization of newborns' nostrils colonized by MRSA/MRSE.

**Trial Registration** The study was registered with ClinicalTrials.gov (NCT01498133, November 21, 2011).

**Keywords:** Skin-to-skin contact, Decolonization, MRSA/MRSE