

Transplacental transfer of RSV antibody in Australian Aboriginal infants

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Background:

- Acute lower respiratory infections (ALRIs) account for 31% of all hospitalisations in Australian Aboriginal infants.
- Respiratory syncytial virus (RSV) is the leading cause of ALRI hospitalisations in Aboriginal infants specifically those aged <6 months.
- The rate of RSV-associated hospitalisation double in Aboriginal compared to non-Aboriginal infants
- Maternally derived anti-RSV antibody (Ab) can protect against severe RSV disease in infancy. However, the efficiency of transplacental transfer of maternal anti-RSV Ab remains unknown in Australian Aboriginal infants

Methods:

- As a secondary outcome of a maternal pneumococcal vaccine trial among an Australian Aboriginal and/or Torres Strait Islander population, paired maternal and infant cord blood samples collected at birth analysed for anti-RSV Ab titres using a neutralization assay.
- Impact of covariates including low birth weight, infants' weight at birth (>3kg), gestational age, sex of the baby, maternal age (>25 years) and multiparity of the mother on cord to maternal anti-RSV Ab titre ratio (CMTR) investigated using multivariable logistic regression model
- A CMTR of ≥ 1 considered efficient transfer

Results:

- Serum samples available from 78 mother-infant pairs
- 78 infants born full term (median gestational age 39 weeks, IQR 38-40 weeks); 56% males
- Mean \log_2 anti-RSV Ab level in maternal blood at delivery $10.7 \text{ SD} \pm 1.3$ and in infant cord blood $11.0 \text{ SD} \pm 1.3$
- Mean CMTR 1.02 (SD ± 0.06)
- Almost one-third (22/78) mother-infant pairs had CMTR <1
- Maternal and infant cord blood Ab titres at birth correlated ($R=0.87$)
- Cord blood \log_2 anti-RSV Ab <11.0 in 48% of the infants (38/78)
- Covariates showed no effect on CMTR

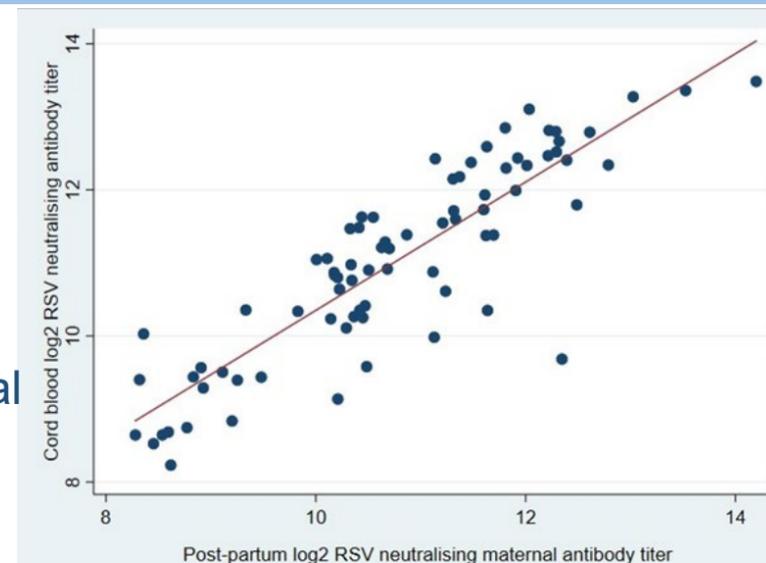


Figure 1: RSV neutralising antibody titres from 78 Australian Aboriginal mother-infant pairs

Conclusion:

To our knowledge this is the first study examining the transfer of anti-RSV Ab in Australian Aboriginal mother-infant pairs. One third of infants had suboptimal antibody transfer efficiency. Further research is needed to examine the clinical significance of transplacental transfer of anti-RSV Ab on severe RSV disease in Australian Aboriginal infants.