

Speaker Abstracts

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Microbiological endpoints for a Group B Streptococcal human challenge model

Background: Group B Streptococcus (GBS) is commonly found in the gut or lower vaginal tract, where it resides harmlessly in both men and women. The immunological and protective role of GBS carriage is unknown, but carriage in pregnancy is associated with ascending infection that can result in chorioamnionitis, preterm, stillbirth and early onset neonatal sepsis (first 7 days of life). Approximately 20% of pregnant women carry GBS globally. As GBS is the leading cause of neonatal infection worldwide, and carriage is critical in this process, a human challenge model could be developed to study the immunizing effect of an experimental carriage episode and its role in sustaining protective immunity in healthy non-pregnant women in preparation for a maternal GBS vaccine.

Challenges: Several studies highlight the transient nature of GBS carriage during pregnancy. Women who are intermittent carriers are often found to carry the same GBS type on recolonization, highlighting the possibility that low levels of GBS are missed due to insensitive microbiological methods or low density of carriage. Two African studies (South African and the Gambia) identified reduced rates of carriage associated with high antibody concentrations, implying an immunizing effect of exposure to GBS. However, the relative contribution of anticapsular and antiprotein responses in protection against carriage are still unclear, as is the correlation between mucosal and systemic immunity to colonisation.

Proposed Approach: The primary objective of a human challenge study would be to evaluate the association between natural serotype-specific serum CPS IgG antibody in relation to an experimental GBS carriage episode in non-pregnant women and the association between CPS antibody and clearance of GBS colonization.

Conclusion: Our hypothesis is that carriage would boost the pre-existing anti-GBS antibody responses, and that these altered responses would be protective against reacquisition of carriage and thus protect against passage of GBS from mother to child at birth.

