

1060. The Effect of Live Attenuated Influenza Vaccine (LAIV) on Bacterial Colonization in Healthy 2-4 Year Old Children. A Randomised Controlled Study

Valtyr Thors, MD¹; Begonia Morales-Aza²; Elizabeth Oliver, BSc³; Barry Vipond⁴; Peter Muir⁴; Adam Finn, MD, PhD⁵; ¹Pediatric Infectious Diseases and Immunology, University of Bristol, Bristol, United Kingdom; ²University of Bristol, Bristol, United Kingdom; ³Cellular and Molecular Medicine, University of Bristol, Bristol, United Kingdom; ⁴Public Health England, Bristol Laboratories, Bristol, United Kingdom; ⁵School of Clinical Sciences, University of Bristol, Bristol, United Kingdom

Session: 124. Vaccines: Influenza

Friday, October 10, 2014: 12:30 PM

Background. Common childhood respiratory virus infection may cause increased rates or density of nasopharyngeal (NP) carriage of bacteria such as *S.pneumoniae* (Sp), *M.catarrhalis* (Mc), *H.influenzae* (Hi) or *S.aureus* (Sa), possibly leading to changes in colonization dynamics and transmission rates to new hosts. We used LAIV, an effective vaccine against influenza which causes mild symptoms of URTI to test this hypothesis.

Methods. 151 2-4 year old children were recruited and randomized to receive LAIV either at the start of the study (2 doses 4 weeks apart) or a month later allowing comparison between vaccinated and unvaccinated children. NP swabs were taken at baseline (0) and at 7, and 28 days. Bacterial carriage and density was determined by

qPCR using *LytA* for Sp, *ompJ* for Mc, *hdp* for Hi and *sodC* for Sa using <35 cycles (CT) as a threshold of detection. Standard curves were generated against broth cultures to convert CT values to colony forming units (CFU/ml). Bacterial carriage rates and densities (summarised as area under the curve) were compared in the 2 groups using unpaired t-tests. A logistic regression model was used to analyze the relationship between age and bacterial load.

Results. Bacterial carriage rates (Sp 67%, Hi 58%, Mc 77%, and Sa 11%) were higher (except Sa which was lower) with increasing age. The same trends were observed for density (all $p < 0.025$). No significant differences were detected comparing carriage rates in vaccinated and unvaccinated children over 28 days. However, vaccinated children had highly significantly greater total bacterial densities observed over the 28 days for all 4 species when compared with controls, (all $p < 0.01$).

Conclusion. In this randomised controlled trial of young healthy children with high bacterial carriage rates, using qPCR to measure the presence and density of bacteria, we found that age is inversely related to bacterial density, which is a novel finding. High bacterial load may be important for transmission of bacteria between hosts and we found that LAIV seems temporarily to increase the density of the bacteria studied in the first month after vaccination in the absence of any known clinically significant safety signal. Further studies may reveal more marked or clinically important effects of wild-type respiratory viral infections.

Disclosures. All authors: No reported disclosures.