What's Making News?

Pediatric Infectious Disease (2020): 10.5005/jp-journals-10081-1270

Source: Fan W, Zhang M, Zhu YM, et al. Immunogenicity of hepatitis B vaccine in preterm or low birth weight infants: A meta-analysis. Am J Prev Med 2020. DOI: 10.1016/j.amepre.2020.03.009.
In this study, the reviewers aim to quantitatively assess the immune response to hepatitis B vaccine in infants born preterm or with low birth weight.

A total of 27 studies including 22,202 infants were eligible for analysis. The studies found that infants born preterm had significantly poorer immune responses to the hepatitis B vaccine. Preterm infants were 1.36 times more likely to exhibit nonresponse to the hepatitis B vaccine (95% CI = 1.12, 1.65, *p* value = 0.002) compared to their full-term counterparts. The pooled estimates for preterm birth may be subject to a potential publication bias. However, these results were stable as suggested by the leave-one-out analysis and fail-safe number. The association between low birth weight and impaired immune response to the hepatitis B vaccine was not statistically significant when birth weight was dichotomized at 2,500 g.

These findings suggest an association between preterm birth and lowered immune responses to hepatitis B vaccine.

Source: Chakrabarti A, Sood P, Rudramurthy SM, et al. Characteristics, outcome and risk factors for mortality of pediatric patients with ICU-acquired candidemia in India: a multicenter prospective study. Mycoses 2020. DOI: 10.1111/myc.13145.
As there are only few comprehensive studies on the observed variation in the epidemiology, clinical profile and outcome of pediatric candidemia by age, healthcare settings, and prevalent *Candida* species, researchers conducted a nationwide study addressing these differences. They examined 398 variables spanning demography, clinical characteristics, microbiology, treatment, and outcome among 487 children who contracted intensive care unit (ICU)-acquired candidemia at 23 Indian tertiary-care centers. Candidemia developed in both neonates and non-neonatal children early after ICU admission. Neonates, in majority, were premature (63.7%) with low birth weight (57.1%). The common comorbidities were perinatal asphyxia (7.3%), pneumonia (8.2%), and congenital heart disease (8.4%), and invasive procedures and widespread use of antibiotics (94.1%) were reported. Both age-groups had dominance of *C. tropicalis* (24.7%) and *C. albicans* (20.7%). Treatment with antifungals (66.5%) and removal of central catheters (44.8%) lagged behind.

Although there was overall low resistance, attention is needed toward the emergence of resistant *C. krusei* and *C. auris*. The 30-day crude mortality of 27.8% (neonates) and 29.4% (non-neonates) were reported. Following were the independent predictors of 30-day crude mortality in neonates: admission to public sector ICUs, mechanical ventilation, corticosteroid therapy, and antifungal therapy. Similarly, independent predictors for non-neonates were admission to public sector ICUs, mechanical ventilation, exposure to carbapenems, and azole antifungal therapy. These findings emphasize undertaking appropriate intervention strategies to decrease candidemia morbidity and mortality.

Source: Kilinc AA, Onal P, Oztosun B, et al. Determination of tuberculin skin test for isoniazid prophylaxis in BCG vaccinated children who are using anti-TNF agents for rheumatologic diseases. Pediatric Pulmonology 2020. DOI: 10.1002/ppul.24963.
In the present study, the researchers sought to examine latent tuberculosis infection (LTBI) by the size of the tuberculin skin test (TST) and to determine the prevalence of tuberculosis (TB) in bacillus Calmette-Guerin (BCG)-vaccinated children undergoing antitumor necrosis factor (anti-TNF) rheumatological disease treatment. Five hundred fifty-nine children (314 (56.3%) females and 245 (43.6%) males; mean age 13.1 ± 4.1 years) were included in the study. Demographics, anti-TNF agents, TST size, and isoniazid prophylaxis have been recorded. In all patients, the mean TST size was 4.2 ± 4.7 mm. In BCG-vaccinated children receiving anti-TNF treatment, a TST size of ≥10 mm may differentiate children at high risk of LTBI reactivation.

Source: Steinhardt LC, Richie TL, Yego R, et al. Safety, tolerability, and immunogenicity of *Plasmodium falciparum* sporozoite vaccine administered by direct venous inoculation to infants and young children: findings from an age de-escalation, dose-escalation, double-blind, randomized controlled study in Western Kenya. Clinical Infectious Diseases 2020;71(4):1063–1071. DOI: 10.1093/cid/ciz925.

Given the reports of safety, tolerablilty, and feasibility of direct venous inoculation (DVI) with *Plasmodium falciparum* sporozoite (PfSPZ) vaccine for prevention of malaria in adults, researchers sought to gain safety data for children and infants via performing an age de-escalation, dose-escalation randomized controlled trial in Siaya County, Western Kenya. They enrolled children and infants (aged 5–9 years, 13–59 months, and 5–12 months) into 13 age-dose cohorts of 12 participants and randomized them to vaccine or normal saline placebo in escalating doses: 1.35 × 105, 2.7 × 105, 4.5 × 105, 9.0 × 105, and 1.8 × 106 PfSPZ, with the 2 highest doses given twice, 8 weeks apart. Vaccinees and controls had similar rates of AEs for solicited (35.7% vs 41.5%) and unsolicited (83.9% vs 92.5%) AEs, respectively. Based on outcomes, infants and children could be administered PfSPZ vaccine in doses as high as 1.8 × 106 by DVI, as it was safe, well tolerated, and immunogenic.

Source: Burnett E, Parashar UD, Tate JE. Real-world effectiveness of rotavirus vaccines, 2006–19: a literature review and meta-analysis. The Lancet Global Health 2020;8(9):e1195–e1202. DOI: 10.1016/S2214-109X(20)30262-X.

Researchers analyzed published literature to determine the real-world effectiveness of rotavirus vaccines in a range of settings. Observational, post-licensure investigations of rotavirus vaccines, published from January 1, 2006, to December 31, 2019, in English,

with laboratory-verified rotavirus as the endpoint, were analyzed. Of 1,703 articles identified and screened, 60 studies from 32 countries were analyzed. Among children younger than 12 months old, Rotarix vaccine effectiveness against laboratory-verified rotavirus was estimated to be 86%, 77%, and 63% in low-mortality, medium-mortality, and high-mortality countries, respectively. In these respective countries, the estimated vaccine effectiveness for Rotarix in children aged 12–23 months was 86%, 54%, and 58%. In children younger than 12 months, RotaTeq vaccine demonstrated an effectiveness of 86% and 66% in low-mortality countries and in high-mortality countries, respectively. Overall, rotavirus vaccines afforded effective rotavirus-diarrhea prevention, with higher performance in countries with lower child mortality.

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