

What's in—Infectious Diseases?

Pediatric Infectious Disease (2021): 10.5005/jp-journals-10081-1308

Source: Muñoz-Alía MÁ, Nace RA, Zhang L, Russell SJ. Serotypic evolution of measles virus is constrained by multiple co-dominant B cell epitopes on its surface glycoproteins. *Cell Reports Medicine*. 2021 Mar 30:100225.

After centuries of pestilence and decades of global vaccination, measles virus (MeV) genotypes capable of evading vaccine-induced immunity have not emerged. More generally, the work of the authors suggests that to counter viral evolution, we should strive to develop vaccines that elicit antibodies targeting multiple distinct neutralizing epitopes and thus may be resistant to escape through viral antigenic evolution, like natural anti-measles immunity. Of course, this is easier said than done! But progress could come from building on the comparative studies described above to develop an improved mechanistic understanding of why the neutralizing antibody response to some viruses targets numerous co-dominant epitopes, whereas for others, it is highly focused on just a single immunodominant epitope.

Source: Dato MS, Natama NH, Somé A, et al. High efficacy of a low dose candidate malaria vaccine, R21 in 1 adjuvant Matrix-M™, with seasonal administration to children in Burkina Faso (April 20, 2021). Available at SSRN: <https://ssrn.com/abstract=3830681> or <http://dx.doi.org/10.2139/ssrn.3830681>

Researchers from the University of Oxford and their partners have reported findings from a Phase IIb trial of a candidate malaria vaccine, R21/Matrix-M, which demonstrated high-level efficacy of 77% over 12 months of follow-up. In their findings (posted on SSRN/Preprints with *The Lancet*), they note that they are the first to meet the World Health Organization's Malaria Vaccine Technology Roadmap goal of a vaccine with at least 75% efficacy.

The authors' report (in findings in press with *The Lancet*) from a Phase IIb randomized, controlled, double-blind trial conducted at the Clinical Research Unit of Nanoro (CRUN)/Institut de Recherche en Sciences de la Santé (IRSS), Burkina Faso. Four hundred and fifty participants, aged 5–17 months, were recruited from the catchment area of Nanoro, covering 24 villages and an approximate population of 65,000 people.

Source: Dawit G, Mequanent S, Makonnen E. Efficacy and safety of azithromycin and amoxicillin/clavulanate for otitis media in children: a systematic review and meta-analysis of randomized controlled trials. *Ann Clin Microbiol Antimicrob* 2021;20:28. <https://doi.org/10.1186/s12941-021-00434-x>

In this systematic review and meta-analysis, researchers compared the safety and effectiveness of azithromycin and amoxicillin/clavulanate for the treatment of otitis media in children. Comparative randomized clinical trial studies between azithromycin and amoxicillin/clavulanate to treat otitis media in children published up to September 30, 2019, have been involved. Seven hundred fifty-one records were identified and 14 studies were eligible for analysis. For treating otitis media in children, azithromycin is equivalent to amoxicillin/clavulanate but is safer and more tolerable. Azithromycin may also be considered a first-line treatment for pediatric otitis media.

Source: Saleh NY, Ibrahim RAL, Saleh AAH, et al. Surfactant protein D: a predictor for severity of community-acquired pneumonia in children. *Pediatr Res* (2021). <https://doi.org/10.1038/s41390-021-01492-9>

This prospective cohort investigation was carried out to determine how surfactant protein D (SP-D) contributes to community-acquired pneumonia severity prediction among pediatric patients. This study included 112 children admitted into wards with pneumonia (simple pneumonia) as well as 68 who were admitted into the pediatric intensive care unit (PICU) because of severe pneumonia (PICU admitted). Patients with simple pneumonia were found to have significantly lower SP-D levels, compared with patients with severe pneumonia. Children with mechanical ventilation, shock, hypoxia, sepsis, and mortality demonstrated the presence of significantly higher SP-D. Overall, findings showed a predictive value of serum SP-D concentration for the detection of the severity of community-acquired pneumonia among children.

Source: Nielsen MJ, Baines P, Jennings R, Siner S, Kolamunnage-Dona R, et al. Procalcitonin, C-reactive protein, neutrophil gelatinase-associated lipocalin, resistin and the APTT waveform for the early diagnosis of serious bacterial infection and prediction of outcome in critically ill children. *PloS ONE* 2021;16(2):e0246027. <https://doi.org/10.1371/journal.pone.0246027>

Researchers evaluated the diagnostic accuracy of procalcitonin (PCT), neutrophil gelatinase-associated lipocalin (NGAL), resistin, activated partial thromboplastin time (aPTT) waveform, and C-reactive protein (CRP) for serious bacterial infection (SBI) in children on admission to PICU. In addition, they examined their use as prognostic indicators. They obtained blood samples daily for biomarker measurement. Among a total of 657 patients included in the study, criteria for SBI were fulfilled by 92 patients (14%). Twenty-eight-day mortality of 2.6% (17/657) was observed, but for patients with SBI, it was 8.7% (8/92). Accurate and timely identification of SBI on admission to PICU may improve with combining biomarkers, including PCT.

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