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Press Release

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Study shows maternal immunization against respiratory syncytial virus *(RSV) would lower antimicrobial prescribing among infants*

RSV contributes to substantial antimicrobial prescribing among young infants, which may be prevented using effective maternal vaccines.

Washington, DC / New Delhi, India – RSV is a leading cause of severe acute lower respiratory tract infections (LRTIs) among infants globally, and a prominent contributor to common non-severe infections that account for high volumes of antibiotic consumption. Researchers from the University of California, Berkeley, Novavax, Princeton University, and **CDDEP** conducted a study to assess if maternal vaccination against RSV could reduce antimicrobial prescribing among young infants. The study, which is forthcoming in the *Proceedings of the National Academy of Sciences* and is based on data from a blinded, multi-country trial, found that infants of mothers assigned RSV fusion (F) vaccine experienced fewer antimicrobial prescription courses over the first 90 days of life than infants of mothers assigned a placebo.

Antimicrobial resistance (AMR) is a significant threat to human health and wellbeing. As human consumption of antimicrobial drugs contributes to the emergence and expansion of AMR, strategies to reduce antimicrobial use in situations where it is avoidable or unnecessary are a focus of AMR action plans. Understanding the potential for new vaccines to mitigate antimicrobial prescribing and AMR burden could inform priority-setting in vaccine development, evaluation, and approval.

Although no vaccine has been licensed to prevent RSV infection in infants, a recent randomized trial found that administration of a candidate RSV F protein nanoparticle vaccine to pregnant individuals conferred 41.4% efficacy, in an intent-to-treat analysis including clinical trial-specific and hospital record data, against medically significant RSV-associated LRTI among their infants during the first 90 days of life, and 24.7% efficacy against this outcome over the first 180 days. Efficacy against all-cause LRTI precipitating hospitalization was 39.8% over the first 180 days.

The authors determined vaccine efficacy (VE) against new antimicrobial prescription courses among infants during the first 90 days of life and through end of follow- up (scheduled around 365 days of life). They also assessed VE against new antimicrobial prescription courses among maternal participants through the end of follow-up (scheduled around 180 days post-delivery).

Overall, the study found that:

- RSV contributes to substantial antimicrobial prescribing among young infants, which may be preventable by effective maternal vaccines.
- Over the first 90 days of life, VE was 12.9% against all new antimicrobial prescription courses and 16.6% against lower respiratory tract infection-associated new antimicrobial prescription courses among infants.
- In high-income countries, VE against acute otitis media-associated new antimicrobial prescription courses was 71.3% over the first 90 days of life, although protection against this endpoint was not apparent in low- and middle-income countries.
- Drugs with the greatest observed reductions in prescribing included cephalosporins (VE: 28.0% through 90 days and 22.9% through end of follow-up) and aminoglycosides (VE: 25.3% through 90 days and 27.9% through end of follow-up).
- The estimated efficacy of the RSV F vaccine that was used in the trial analyzed against RSV-associated, medically significant LRTI did not meet the pre-specified criterion for success. However, the authors demonstrate that RSV contributes importantly to antimicrobial prescribing among young infants.
- Future RSV vaccine candidates with higher efficacy may achieve greater reductions in antimicrobial consumption.

According to the senior author on the study, Dr. Ramanan Laxminarayan, Director, CDDEP, "With decreases in bacterial pneumonia following the introduction of the pneumococcal conjugate vaccine, a vaccine against RSV represents one of our best investments to lower the burden of respiratory infections in children. Our findings that developing and introducing a vaccine against RSV would also help tremendously in the fight against antibiotic resistance should add greater urgency to research and development efforts in this area."

'*Prevention of antimicrobial prescribing among infants following maternal vaccination against respiratory syncytial virus: secondary analysis of a randomized, placebo-controlled trial*' is published in **PNAS** and is available for download.

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