

INCLLEN - BMGF Research Program to Emphasize Context Sensitive Approaches for Addressing the Challenges of Childhood Pneumonia in India

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Acute respiratory infection (ARI) and pneumonia scenario in children have changed enormously in the last 20 years; there is global reductions in its morbidity and mortality, and changes in aetiology due to introduction of effective vaccines and improvements in case detection and management. Notwithstanding these gains, huge variation in pneumonia morbidity and mortality emerge between, and within, different countries. In 2015, India was the top contributor to pneumonia disease burden globally (32%) [1]. During the Millennium Development Goal era (2000-2015), India contributed to the highest to the clinical pneumonia burden globally (32%) and observed only 3% decline in the number of pneumonia episodes [1,2]. Noticeable socio-cultural and economic changes have occurred in India since the 90s: lifestyle changes, urbanisation, migration, and, aspiration for better living conditions. Vaccines for *H. influenza* and *Pneumococcus* have been introduced in addition to expanding coverage for measles as part of the Measles Rubella Elimination campaign. These contrasting observations emphasize importance of context-sensitive control strategies and focus for equity if the country desires to witness decline in the pneumonia burden and related deaths.

To support and accelerate India's efforts towards reducing pneumonia deaths and emphasize its public health significance, a research program was supported by Bill and Melinda Gates Foundation (BMGF) through the INCLLEN Trust International. This research program aimed to provide catalytic support to the Indian investigators and institutions for generation of context specific evidence and knowledge on childhood pneumonia that has policy and program relevance. This childhood pneumonia research program in India was coordinated and managed by INCLLEN under guidance of a Joint Working Group (JWG) with membership (14 members) from Ministry of Health and Family Welfare, Department of Biotechnology, Indian Council of Medical Research, and Government of India, World Health Organisation (WHO), Unicef and technical experts of national and international repute. Seven focus areas for

funding were finalized: (i) determinants of pneumonia burden and deaths; (ii) improving case management with better access that mitigates barriers to care seeking; (iii) aetiology, determinants and outcome of neonatal pneumonia; (iv) diagnostic tools and point of care diagnosis; (v) respiratory syncytial virus pneumonia, particularly in neonatal and early infancy; (vi) pneumococcal conjugate vaccine scheduling and immunogenicity; and (vii) epidemiological tools for monitoring and surveillance of pneumonia and ARI program and impact assessment of different interventions. Overarching expectation from these studies has been of understanding subnational variation and contextual factors.

A multidisciplinary Technical Advisory Group (TAG) (n=32) including national and international experts from child health, pneumonia, microbiology, public health, social science, biostatistics, health economics, and health program reviewed 94 concept notes, down selected 29 applicants for full proposal submission and finally, approved ten proposals for funding. The selected proposals were not only from established researchers from leading institutions, but also included innovative ideas from four young and less-experienced investigators. Hand-holding and mentoring framework was embedded in to program governance particularly for young and new investigators. The TAG members designated for specific projects provided technical mentoring through progress review and site visits. The investigators were provided opportunity to attend Research LAMP (Leadership and Management Program) conducted regularly by INCLLEN; one research methodology workshop was also organised for the young investigators and research team members. The young investigators were also supported for data management, analysis and manuscript writing.

The ten supported studies focused on care-seeking behavior and determinants, case diagnosis and management, impact of alternate vaccine schedule, and cost effectiveness and etiology of neonatal pneumonia. It is interesting that the research projects supported under this program overlapped with seven priority research domains

identified in a recent ARI and pneumonia review commissioned by maternal, neonatal, child and adolescent health (MNCAH) division of WHO for exploring contextual challenges to decrease ARI related morbidities and mortality [3].

From these ten supported projects under this pneumonia research program, 29 manuscripts were submitted. While 14 articles have been already published in other international and national peer reviewed indexed journals [4-17], six research articles and one systematic review are included in this issue. Eight additional articles are under review. Two investigators have strengthened the research infrastructure at their institutions, and seven investigators have generated new research proposals catalysed by this program.

An external evaluation of the program was conducted by a three-member team to assess the public health appropriateness, program implementation and contribution to the research pool in Indian context [18].

The BMGF-INCLIN program was conceived in alignment with the mission and vision of The INCLIN Trust International. We expect this model of targeted research investment attempting to answer local challenges along with proactive efforts to expand the pool of young researchers will stimulate similar programs in future as well.

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