EDITORIAL

Improving Access and Reducing Childhood Deaths due to Pneumonia

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Child health has been the cornerstone of global public health agenda for a long time, and the focus has ever been increasing with implementation of various evidence-based interventions and programs. But unfortunately, these efforts have not materialized fully, and we are still far from reaching the goals that we set ourselves. It becomes highly unacceptable provided that these targets were never overambitious. Global under-five child mortality – though, has declined by more than half since the year 1990, and was pegged at 5.9 million deaths per year in 2015 [1] – is still very high considering that most of these deaths were preventable by implementation of existing cost-effective, evidence-based interventions. This existing burden of under-five mortality is vastly unevenly distributed with countries and regions with the most impoverished bearing the brunt.

Achieving substantial progress and accelerating the current progress would require a focused, determined approach on the most common causes of under-five mortality. Infectious diseases and neonatal complications encompass a vast majority of these deaths globally. Half of these under-five deaths are due to infectious diseases and conditions, including pneumonia, diarrhea, malaria, meningitis, tetanus, HIV and measles [1]. Pneumonia alone accounts for 17% of all global under-five deaths [2], and is the single most common infection-related cause. It is critical to intensify efforts to improve the coverage of proven preventive and therapeutic strategies to tackle pneumonia. World Health Organization (WHO) and United Nations Children's fund (UNICEF), in 2013, launched an integrated 'Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea' to create greater emphasis on countries to control these most common causes of child mortality [3].

The strategies for prevention of pneumonia are of unequivocal importance, including improved immunization, and better water, sanitation and environment, but adequate and timely diagnosis and management also holds unparalleled importance. Although most of these interventions are within the present health systems of many countries, their coverage and availability to poor and marginalized populations varies greatly. Majority of childhood pneumonia deaths are due to severe pneumonia, and management of these severe cases requires early identification, prompt referral and availability of good-quality care [4]. Previous guidelines developed by the WHO recommended that children, who have fast breathing with lower chest wall indrawing (severe pneumonia), be admitted and given parenteral antibiotics. But in underprivileged settings, failure to identify cases early is recognized as a major barrier and acknowledged to be the common determinant of mortality due to childhood pneumonia [5]. In many developing areas, even early identification and referral might not lead to optimum care for a number of reasons, including poor transportation systems, costs, distance, lack of skilled care providers and cultural perceptions [5].

Due to these existing inherent realities of the developing world, scientists across the world designed trials probing the possibilities of alternative management strategies, and multiple trials were designed to test the effectiveness of oral antibiotics for management of severe pneumonia. Oral amoxicillin was primarily tested, and proved as effective as injectable penicillin in the treatment of severe pneumonia. This provided an opportunity for substantial improvements in access to appropriate care, reduced nosocomial complications and iatrogenic infections, and reduced need for supplies, specialized care and costs. Trials also tested the feasibility of safe community-based treatment alternatives, and the authors documented that properly trained community health workers were able to satisfactorily diagnose and treat pneumonia associated with chest-indrawing [6]. This strategy could effectively increase access to care for pneumonia in settings where referral is difficult, and could become a key component of community detection and management strategies for childhood pneumonia, and substantially increase the number of children who can receive effective care.

These findings encouraged the WHO to revise the guidelines in 2014; all children with fast breathing and/or chest-indrawing are classified as having 'pneumonia' and treated with oral amoxicillin; the recommended dosage is 80 mg/kg for five days (40 mg/kg twice a day); in settings of low HIV prevalence, the duration of treatment for 'fast breathing pneumonia' can be reduced to three days [7]. The current systematic review, by Lodha, *et al.* [8], on oral antibiotics for community-acquired pneumonia with chest-indrawing in children below five years of age is a comprehensive synthesis of the existing evidence, and reaffirms that oral amoxicillin is effective for treating these cases in both the outpatient and community settings. These strategies, if implemented at scale in countries with a high pneumonia burden, will result in higher proportion of children receiving care at the outpatient or community levels, and a reduced number of pneumonia-related deaths.

The Lancet series on childhood pneumonia and diarrhea [9], has mapped the pathway of reducing under-five deaths due to these two conditions, but this will require a concerted effort using a systematic approach of sharpening evidence-based planning and implementation at all levels (communities, clinics and hospitals), and ensuring quality of care and effective systems of monitoring and accountability. Though, we as global community have missed the targets of child health in 'Millennium Development Goals' but let us aim to achieve the same in 'Sustainable Development Goals' targets.

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REFERENCES

1. You D, Hug L, Ejdemyr S, Idele P, Hogan D, Mathers C, *et al*; United Nations Inter-agency Group for Child Mortality Estimation (UNIGME). Global, regional, and national levels and trends in under-5 mortality between 1990 and 2015, with scenario-based projections to 2030: A systematic analysis by the UN Inter-agency Group for Child Mortality Estimation. Lancet. 2015;386:2275-86.
2. IGME 2015. Levels & Trends in Child Mortality. Report 2015 Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation. Available from: *http://www.childmortality.org/files_v20/download/IGME%20Report%202015_9_3%20LR%20Web.pdf.* Accessed May 13, 2016.
3. WHO, UNICEF. Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea. Geneva: World Health Organization/New York: United Nations Children's Fund, 2013.
4. Walker CL, Rudan I, Liu L, Nair H, Theodoratou E, Bhutta ZA, *et al*. Global burden of childhood pneumonia and diarrhoea. Lancet. 2013;381:1405-16.
5. WHO, UNICEF. Joint Statement: Management of Pneumonia in Community Settings. Geneva and New York: World Health Organization and United Nations Children's Fund, 2004.
6. Soofi S, Ahmed S, Fox MP, MacLeod WB, Thea DM, Qazi SA, *et al*. Effectiveness of community case management of severe pneumonia with oral amoxicillin in children aged 2-59 months in Matiari district, rural Pakistan: A cluster-randomised controlled trial. Lancet. 2012;379:729-37.
7. WHO. Revised WHO Classification and Treatment of Childhood Pneumonia at Health Facilities. Geneva: WHO; 2014. Available from: *http://apps.who.int/iris/bitstream/10665/137319/1/9789241507813_eng.pdf*. Accessed May 13, 2016.
8. Lodha R, Randev S, Kabra SK. Oral antibiotics for community-acquired pneumonia with chest-indrawing in children aged below five years: A systematic review. Indian Pediatr. 2016;53:489-95.
9. Bhutta ZA, Das JK, Walker N, Rizvi A, Campbell H, Rudan I, *et al;* Lancet Diarrhoea and Pneumonia Interventions Study Group. Interventions to address deaths from childhood pneumonia and diarrhoea equitably: What works and at what cost? Lancet. 2013;381:1417-29.