

Pneumonia: the leading killer of children

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Pneumonia kills more children than any other illness—more than AIDS, malaria, and measles combined (figure). More than 2 million children under 5 years of age die from pneumonia each year, accounting for almost one in five under-5 deaths worldwide. Yet few headlines report the effect of pneumonia on children's lives.

The world's attention has understandably turned to other major public-health scourges, such as HIV/AIDS, malaria, and tuberculosis. While we support these efforts, it is also important to recognise pneumonia's significant contribution to overall child mortality. Renewed efforts to improve child survival, especially within the context of the Millennium Development Goals, must ensure that pneumonia is adequately addressed.

For more than a decade, we have known which interventions reduce childhood pneumonia deaths. We know that preventing children from developing

pneumonia is important. Key prevention measures include immunising children (especially with *Haemophilus influenzae* type b [Hib], measles, and pneumococcal vaccines) and promoting adequate nutrition (including exclusive breastfeeding and zinc intake); reducing indoor air pollution might also have an effect.^{1,2} In symptomatic HIV-infected children, daily administration of cotrimoxazole also reduces deaths from opportunistic infections, including pneumonia caused by *Pneumocystis carinii*.³ For newborn babies, reducing the incidence of low birthweight is important, as is ensuring warmth after birth and appropriate feeding.⁴

We also know that once a child develops pneumonia, prompt treatment with a full course of effective antibiotics is life-saving because most severe cases are caused by bacterial pathogens.⁵ Because many developing countries have limited access to health services, prompt treatment might also require training health workers to diagnose and treat children in the community.

This approach is proven, affordable, and straightforward.⁶ In Nepal, for example, a 3-year study showed that this community-based approach led to a 28% reduction in the risk of death from all causes by the third year.⁷ In addition, a recent meta-analysis of nine studies that used this same approach showed that under-5 mortality was reduced by about 24%.⁸

This month, UNICEF and WHO published *Pneumonia: The Forgotten Killer of Children*,⁹ which analyses the most up-to-date estimates of the burden and distribution of pneumonia, as well as current levels of intervention coverage. The results are sobering.

More than 150 million episodes of childhood pneumonia occur every year in the developing world, accounting for more than 95% of all new cases worldwide. Between 11 and 20 million children with pneumonia will be hospitalised, and more than 2 million will die every year. South Asia and sub-Saharan Africa together bear the burden of more than half of all childhood pneumonia cases worldwide. And, three-quarters of all childhood pneumonia cases occur in just 15 countries.¹⁰

Analysis of the most recent survey data also showed that effective interventions reach too few children.⁹ Only one in five caregivers in the developing world know the two key symptoms of pneumonia—fast and difficult breathing—which indicate the child should be

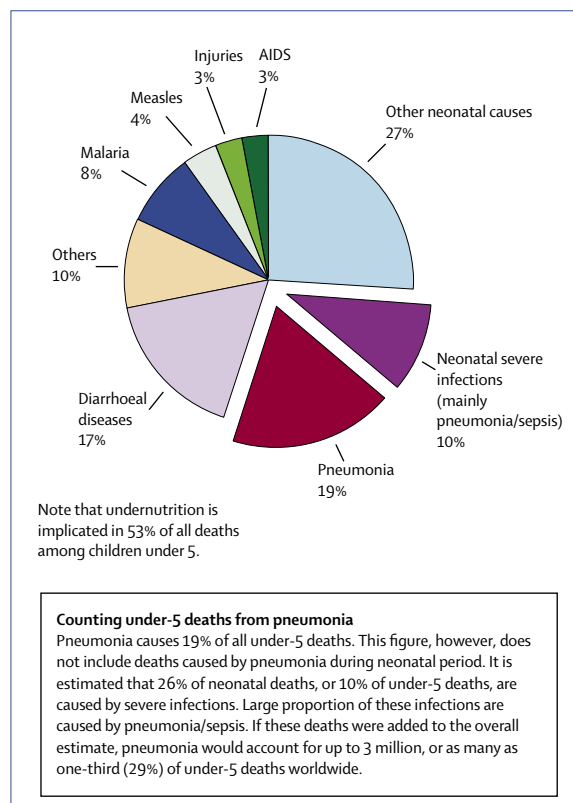


Figure: Pneumonia is the leading killer of children worldwide—global distribution of cause-specific mortality among children under 5, 2004
Source: Cause-specific mortality estimates from WHO. World Health Report 2005: Make Every Mother and Child Count. Geneva: World Health Organization, 2005; under-five mortality estimates from UNICEF. The state of the world's children 2006. New York: United Nations Children's Fund, 2005.

treated immediately. Only about half of children with pneumonia receive appropriate medical care. And, according to limited data from the early 1990s, less than 20% of children with pneumonia received antibiotics.

The cost of reducing pneumonia deaths is relatively low.¹¹ Around 600 000 children's lives could be saved yearly through universal treatment with antibiotics alone, at a cost of US\$600 million. South Asia and sub-Saharan Africa, where 85% of childhood pneumonia deaths occur, have the lowest treatment costs. Scaling-up coverage to universal levels in these regions alone would cost only around \$200 million annually.

Yet, despite overwhelming evidence of effectiveness and affordability, there has been slow progress in expanding coverage of these interventions. Why? There has been a serious lack of appreciation about the magnitude of the problem of childhood pneumonia. In addition, tackling pneumonia has often been perceived as too difficult and too costly. In the past, large-scale implementation of antibiotic treatment was viewed as difficult because of the weak health systems and poor supply and logistic chains in many developing countries. Community-based approaches to managing childhood pneumonia have proven successful; but expanding this approach has been met with resistance. Concerns have been raised about lower-level health workers, such as community health workers, administering antibiotics to children with pneumonia, and with fears that these activities could exacerbate antibiotic resistance. But community health workers can appropriately administer antibiotics consistent with guidelines.^{7,8,12} Although there have been efforts to include community-based approaches in broader child survival programmes, such as the Integrated Management of Childhood Illness (IMCI), these programmes have often been small-scale and fragmented, with the community and health-facility components not sufficiently linked.

A slowdown in research has also hindered progress. For example, there is an urgent need to better understand the cause of pneumonia. *Streptococcus pneumoniae* and Hib are major causes of severe pneumonia in children across the developing world. But more specific information on the pathogen-specific causes of childhood pneumonia is not available. Knowing the pathogens that lead to pneumonia is critical for guiding treatment and policies. For example, limited information on the burden of disease from Hib outside Africa and in parts of Asia, as

well as the high cost of the vaccine, poses a substantial barrier to its introduction in many developing countries. There is also an urgent need to better understand how effectively community-based case-management can be implemented at a national scale, while maintaining adequate control over antibiotic prescribing practices and adherence to the regimen.

Several new and exciting efforts are revitalising the fight against pneumonia. For prevention, three vaccines have the potential to substantially reduce deaths in children under-5—pneumococcal conjugate, Hib, and measles vaccines. Moreover, newer versions of the pneumococcal conjugate vaccine might become available as early as 2008, and will be more effective against the serotypes commonly found in the developing world. Recent results from a large-scale trial in The Gambia show the nine-valent vaccine to be highly effective in reducing child deaths from pneumonia.¹³ Indeed, immunised children had 37% fewer pneumonia cases, 15% fewer hospitalisations, and a 16% reduction in overall mortality compared with those not immunised.

In terms of funding for these vaccines, the Measles Initiative has already mobilised considerable resources for measles vaccination and results have been impressive. The GAVI Alliance for vaccines and immunisation is investing heavily in Hib vaccine and is likely to invest in the pneumococcal conjugate vaccine as well.^{14,15} In addition, the international community is also focusing its efforts on advance market commitments to increase funds to buy vaccines, including pneumococcal conjugate vaccines.¹⁶

There have also been exciting new developments in treating childhood pneumonia. In Senegal, for example, a public-private partnership was formed to expand antibiotic treatment for pneumonia in a community-based approach.¹⁷ With impressive results from a pilot programme, the Ministry of Health, with its partners, is now currently expanding treatment coverage to 18 districts, to cover about half the under-5 population.

A new approach to reducing childhood pneumonia deaths is required that spans prevention and treatment, and as the recent multi-country evaluation of IMCI concludes,¹⁸ incorporates facility and community-based components. Importantly, efforts to scale up community-based treatment must not be implemented in isolation from other efforts to scale up treatment for diarrhoeal diseases, HIV/AIDS, and malaria—all of

which are key components of integrated child survival programmes. Preliminary results of one such integrated model, the Accelerated Child Survival and Development programmes in 11 countries in west and central Africa indicate that such integrated approaches might have a substantial effect on under-5 mortality.¹⁹

We know what needs to be done to reduce childhood pneumonia deaths. Given its significant contribution to overall child mortality, pneumonia must assume a more prominent position on the child survival agenda.

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