Early identification and treatment of pneumonia: a call to action

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On the seventh World Pneumonia Day on Nov 12, 2015, we call for action to improve the early identification and treatment of childhood pneumonia at community and outpatient level to reduce deaths.

Of the estimated 5·9 million deaths in children younger than 5 years in 2015, pneumonia was one of the leading killers, causing 16% of deaths.[1] Most of these deaths are readily preventable or treatable with proven, cost-effective interventions.[2] Yet treatment is received by half of sick children, and only 54% with symptoms of pneumonia are taken outside the home for care.[1] Therefore, action must be taken immediately to save children's lives by expanding services that allow early identification of symptoms and appropriate treatment.

The case–fatality rate in untreated children with pneumonia is high, sometimes reaching 20%,[3] and death can occur as early as 3 days after illness onset.[4] Early identification of pneumonia and appropriate treatment saves lives. By initiating antibiotic therapy soon after onset of symptoms such as fast breathing in a child with cough, the progression of a pneumonia infection is blunted.[5] In the absence of early intervention, pneumonia progresses to a state where even intravenous antibiotics have limited impact, leading to the high hospital case–fatality rates for children.[6] Of an estimated 15 million hospital admissions for severe and very severe pneumonia globally in 2010, 0·3 million died, approximately 19% in a hospital.[7] Delayed care-seeking behaviour or poor access to hospital care, or both, explained the high number of severe pneumonia cases observed in hospitals.

Clinical trials show that children with fast-breathing pneumonia can be effectively treated with oral antibiotics.[8] As a result, many low-income and middle-income countries have now adopted policies for community case management of sick children in underserved communities, as recommended by WHO and UNICEF.[9] Evidence shows that when children are treated in accordance with these standard case management guidelines at health facilities or by community health workers (CHWs), children are treated promptly,[10] antibiotics are used more appropriately,[10,11] and mortality is reduced.[8] Recently, WHO released new guidelines for treatment of lower chest indrawing pneumonia with oral amoxicillin on an outpatient basis.[12] The rationale for introducing the new guidelines was not only because they are likely to reduce societal costs (due to less hospitalisation), but because they deliver better outcomes.

The WHO pneumonia management guideline is presumptive, based on identification of clinical signs in children with cough or difficult breathing and on treatment with antibiotics. Some argue that CHWs have insufficient capacity to correctly manage pneumonia[13] and that the evidence of efficacy of antibiotic treatment for fast-breathing pneumonia is questionable, especially when wheeze is present.[14] However, CHWs who have appropriate training, adequate supervision, and availability of drugs and necessary supplies have shown ability to provide quality care for pneumonia.[15] Although wheeze is more common in viral infections and often responds well to bronchodilators,[14] a placebo-controlled double blind trial showed higher clinical treatment failure in children with fast-breathing pneumonia and wheeze who received placebo compared to antibiotic.[16] Mixed viral and bacterial infections are common,[17] yet efforts to identify other clinical features to better diagnose bacterial pneumonia have not succeeded.[18] Since it is still impossible to clinically differentiate viral from bacterial pneumonia, prompt treatment of clinical pneumonia with antibiotics will remain a priority for the foreseeable future.

Antibiotics can effectively treat pneumonia, but hypoxaemia is a good marker of disease severity and is often associated with adverse outcome.[19] It is difficult to clinically identify hypoxaemia but the use of pulse oximetry and management of hypoxaemia with oxygen is associated with improved quality of care and reduced mortality. WHO recommends use of pulse oximetry to identify hypoxaemia and its management with oxygen.[12] Pulse oximetry is a reliable and non-invasive method for identifying hypoxaemia in children, yet these devices are rarely available outside the higher-level facilities in resource-constrained countries.

To reduce childhood deaths, early identification and prompt treatment of pneumonia is essential. Standard

case management of childhood pneumonia (including community case management) is an effective strategy to reduce the burden on hospital services, and improve equity.[7] Identification and management of hypoxaemia are essential along with antibiotics to reduce severe pneumonia mortality. This scale-up will need permissive policies allowing community health workers to detect and treat pneumonia with antibiotics, research and development to improve pneumonia diagnosis, and financial support for introduction and maintenance of pulse oximeters and oxygen therapy in health centres and hospitals.

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