Pneumonia and Child Mortality in India

As public health improves in the developing countries and other infections are better controlled, it can be expected that the respiratory infections will emerge from their present obscurity. This prophecy by Monto and Johnson came true in 1978 with the publication of a relatively minor study conducted in Narangwal—a rural area in Punjab. The study showed that mortality from pneumonia in rural children was high (and could be reduced).

Worldwide, pneumonia accounts for more than 25% of deaths in children below 5 years (about 4 million deaths per year); two-thirds of these occur in infancy and more than 90% in developing countries. Although the incidence of upper respiratory tract infections in children is similar in both the developed and developing world, the mortality from lower respiratory tract infections is about 30 times greater in developing countries. Hence, attention needs to be focused on the main killer, i.e., pneumonia.

What is the magnitude of the problem in India? Any guess is hazardous in the absence of complete reporting and an agreed definition. However, data from some meticulously conducted cohort studies in rural areas reveal that each year about 10% to 13% of children contract pneumonia, around 13% being the case-fatality rate. Similarly, pneumonia is the primary or an associated cause in 20% to 40% of childhood deaths. The pneumonia-specific mortality rate is 16 per 1000 children. Assuming the proportion of children below five years to be 12% of the national population, we reach a staggering estimate of 10 to 13 million attacks of childhood pneumonia each year, and 1 to 1.6 million pneumonia deaths in children below 5 years of age.

Prematurity, low birth weight, failure to breast feed, malnutrition, an attack of measles, domestic smoke and overcrowding have been implicated as the main predisposing factors. Lung puncture studies from India and other developing countries have consistently implicated Streptococcus pneumoniae, Haemophilus influenzae and Staphylococcus aureus as the causative organisms in childhood pneumonia providing a rational basis for treating all cases of childhood pneumonia with antibiotics.

Based on clinical studies the World Health Organization has recommended simplified criteria for the diagnosis of pneumonia in children. These include the presence of cough with tachypnoea (defined as respiratory rates of more than 60, 50 or 40 per minute in neonates, post-neonates and toddlers respectively). Treatment with procaine penicillin, oral ampicillin or co-trimoxazole has been recommended. The criteria for referral have been specified. Such case management of pneumonia by paramedical or village health workers has been visualized to be the mainstay of the national acute respiratory infections control programmes.

Will this strategy work? A field trial in Gadchiroli district, Maharashtra—an area with a population of 80 000—has recently provided strong evidence in its support. Extensive health education of parents to suspect pneumonia in their children and seek care, training of multipurpose health workers of primary health centres, village health workers and traditional birth attendants to diagnose and treat pneumonia with co-trimoxazole syrup were the main community-based interventions. In one year 612 cases of pneumonia were treated by these trained workers with a case-fatality rate of less than 1%. Without active case detection efforts, 76% of the cases of pneumonia in the area were covered by the programme with a resultant 30% decline in infant and under-five mortality and a 54% decline in the pneumonia mortality. The service became so popular that even rural medical practitioners started referring cases of childhood pneumonia to the village health workers and traditional birth attendants. The cost of the medicines was approximately Rs 4.5 per case treated or Rs 45 per death averted.

The gains of such a programme are four-fold—increased child survival, reduced morbidity, decrease in the use of irrational medicines for ordinary coughs or colds,
and enhanced credibility of the health workers. This programme has the potential for saving the lives of more than one million children each year in India alone, and is therefore a major step towards the child survival revolution.

Many issues are still unresolved. Neonatal pneumonia remains difficult to tackle. Overuse of antibiotics, emergence of antibiotic resistance and the phenomenon of so-called replacement mortality need close monitoring. A major organizational reorientation will be required to scale up this approach from a pilot project to the national level and to integrate it into the current activities of the primary health centres.

Other approaches to reduce the incidence or severity of pneumonia will have to be simultaneously pursued. Important among these are immunization especially against measles, safe delivery and neonatal care including promotion of breast feeding, improving child nutrition and, finally, reducing overcrowding and domestic smoke.

There is little doubt that the control of childhood pneumonia with community-based case management will be a major component of the primary health care strategy of this decade.

REFERENCES