



Improving Access and Efficiency in Public Health Services: Mid-Term Evaluation of India's National Rural Health Mission

Reducing Under-5 Mortality

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Reducing Under-5 Mortality

INDIA IS committed to achieving MDG 4 of reducing under-5 child mortality by two-thirds by the year 2015. Among the 2 million deaths of under-5 children each year in India, 45 percent occur in the neonatal period. In addition, pneumonia causes 370,000 deaths and diarrhea causes an additional 410,000 deaths (UNICEF 2009, WHO 2008). Neonatal, pneumonia and diarrheal deaths together account for approximately 84 percent of all under-5 deaths in India. A number of strategies are currently available to prevent each of these causes of death. In order to be effective, many of these strategies need to be initiated at the community level. The ASHA worker could play a pivotal role in ensuring the successful implementation of these strategies as discussed further.

1. Diarrhea

Since the late 1970s, oral rehydration therapy (ORT) has been the cornerstone of the successful treatment of diarrhea. This simple therapy has been credited with saving millions of lives in the past four decades. In an editorial, *Lancet* has hailed ORT as the most important discovery of the past century (The Lancet 1978). In 1980, there were 5 million deaths each year from diarrhea worldwide. Despite significant reduction, diarrhea continues to account for approximately 2 million deaths each year. Most of these lives could have been saved if ORS could have been administered as soon as diarrhea began. According to the recent NFHS survey, 58 percent of children with diarrhea were taken to a health facility but only 26 percent received ORS (NFHS-3 2005–06). ASHAs can play a major role in various aspects of the management of diarrhea including educating the mothers about the importance of initiating ORS as soon as possible, its proper use, and in providing ORS packets. Since ASHA lives in the community, she can dispense ORS as soon as diarrhea begins.

In addition to causing death, repeated bouts of diarrhea can adversely affect the nutritional status of children. A study on infants in a slum in Vellore found that infants suffer from one to five bouts of gastrointestinal illness a year (Gladstone et al. 2008). Unfortunately, there is a traditional belief that food should be withheld from children when diarrhea occurs. Sadly, this belief is reinforced by many medical care givers. Withholding food to an infant with diarrhea can aggravate the malnutrition-infection cycle and put the infant at increased risk for subsequent diarrheal episodes and other common childhood illnesses. ASHAs could play an important role in educating the mothers about appropriate feeding during diarrheal episodes. ASHAs should also be trained to look for signs of dysentery and refer the children immediately for appropriate antibiotic therapy. Similarly, ASHAs should be trained to assess dehydration so that children with dehydration are also referred for appropriate therapy. In the 1980s WHO organized one-week workshops all over the world for training community health workers specifically on the management of diarrhea. It is probably not practical to provide a one-week workshop specifically on diarrhea for all ASHAs. However, it is important that at least one to two days is allocated for specific training on the management of diarrhea. When possible, this training should include direct observation of the management of dehydrated children.

In addition to ORS, the use of zinc (Zn) supplementation for two weeks with each episode of diarrhea has been shown to reduce diarrheal mortality by 50 percent in a study in Bangladesh (Baqui et al. 2002). Both WHO and UNICEF now recommend the use of Zn supplementation with each diarrheal episode. In most of the poor countries of the world the infrastructure is not available for effective distribution system for Zn supplementation. The NRHM is in a unique position to implement this strategy since there is a very effective distribution system through ASHAs.

2. Pneumonia

The major strategies available for the prevention of pneumonia are (a) vaccines, (b) appropriate nutrition including breast feeding, and (c) reduction of indoor air pollution. The main strategy available for treatment of pneumonia is appropriate case management in the community and at medical facilities. ASHAs can play an important role in increasing compliance with several of these strategies.

2.1. Prevention of Pneumonia

Current coverage of measles and pertussis vaccines in some states with the highest mortality rate are as low as 27 and 29 percent, respectively (NFHS-3 2005–06). Both these vaccines have been shown to reduce pneumonia. In addition, measles vaccine has been shown to reduce both measles specific mortality and diarrheal diseases, both major causes of mortality. ASHAs could be instrumental in motivating and facilitating the families to go to immunization clinics. India has already made a decision to introduce *H. influenzae* type b (Hib) vaccine as a combination product containing the diphtheria, pertussis, tetanus and Hepatitis B antigens. The widespread use of this product should further reduce the rates of pneumonia and mortality. ASHAs can be very helpful in educating the parents about the importance of immunizing infants against Hib disease.

ASHA can play an important role in promoting breast feeding. Only 46 percent infants are exclusively breast-fed in their first five months of life (NFHS-3, 2005–06). In Asia, 45 percent of acute lower respiratory infection (ALRI) deaths in neonates and 19 percent of ALRI deaths in older children can be attributed to suboptimal breastfeeding practices (Roth et al. 2008). Several states in India also have specific nutrition supplementation programs. ASHAs should be trained on all the resources available for nutritional supplementation and make appropriate referrals.

2.2. Treatment of Pneumonia

For over two decades, WHO has recommended community-based identification and treatment of pneumonia along with appropriate referral of children with severe pneumonia. Community-based strategies have been very successful when implemented effectively. One such intervention, evaluated by Bang et al. (1990) in rural Maharashtra, reduced the mortality rate due to pneumonia by 54% in children under four years of age. According to the NFHS 03 data, 69 percent of children with ALRI seek care at a facility but only 12 percent receive antibiotics. If ASHA is appropriately trained, she can play an important role in identifying children with ALRI symptoms and treat them or refer them for care.

3. Neonatal Health

Like many other developing countries, the major causes of neonatal death in India are sepsis, asphyxia and prematurity. In the past decade, others and we have demonstrated that community-based management of sepsis can reduce neonatal mortality by 30 to 50 percent. Globally neonatal sepsis accounts for 27 percent of the neonatal mortality. In countries with high neonatal mortality, up to 50 percent of neonatal mortality can be caused by sepsis (Knippenberg et al. 2005). In a recent study in UP, we found that 47 percent of the neonatal mortality was caused by sepsis (Baqui et al. 2006).

Several community-based trials have used community health workers to educate mothers about birth preparedness and safe delivery. They also educate mothers on recognition of sepsis, refer for treatment and perform antibiotic treatment at home for those who refuse referral. The study by Bang et al. (1990), mentioned previously, also demonstrated a reduction in neonatal mortality of 48 percent by using CHWs to diagnose sepsis and treat with intramuscular antibiotics in the community. Another study by Kumar et al demonstrated that a set of behavioral interventions along with appropriate referrals performed by CHWs can reduce neonatal mortality by 54 percent (Kumar et al. 2008). In a recent study in rural Bangladesh, Baqui et al trained CHWs to identify signs of sepsis and make appropriate referrals for treatment (Baqui et al. 2008). The study demonstrated 34 percent reduction in overall neonatal mortality in the intervention arm compared to the comparison arm. Neonates whose parents refused referrals were treated with a seven-day course of intramuscular antibiotics. The CHW treatment was associated with a case fatality rate comparable to facility based care.

If properly trained, ASHAs can play a major role in educating mothers and families about various aspects of the management of delivery and care of the newborn. Since India has a very active program for hospital-based delivery which is facilitated by strong monetary incentives for mothers to deliver at a facility, ASHAs can play a pivotal role in the referral. However, there will still be a substantial proportion of mothers who deliver at home particularly in states with the highest infant mortality. ASHAs, if properly trained, can provide advice, training, and referral to the mother in various aspects of birth preparedness, clean delivery, warming the baby, immediate breast feeding, clean cord cutting, delaying bathing, and so on. ASHAs can also be trained to recognize danger signs of sepsis and institute prompt referral. Since the steps involved in ensuring safe delivery and appropriate newborn care is complex, the NRHM may want to consider training a cadre of ASHAs who receive specialized training in neonatal health.