

EDITORIAL

How will the Scaling up of Zinc for Treatment of Childhood Diarrhoea Affect Caretakers' Practices?

It is now one decade since the publication of the landmark randomized clinical trial results by Sazawal *et al.* demonstrating the efficacy of zinc in the treatment of acute childhood diarrhoea (1). Since that time, several hospital and community-based randomized trials have consistently shown that zinc is an effective treatment for either acute or persistent diarrhoea in children aged less than five years. Benefits include shortened duration of illness episodes, reduced likelihood of an episode of prolonged (<7 days) or persistent (<14 days) diarrhoeal illness and, following recovery, a decreased likelihood of a repeat episode over the next three months (2,3). Over this same period of time, risk for non-injury death has been estimated to be reduced by 50% (3). On the basis of these findings, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) jointly issued a statement in May 2004 recommending that all children with a diarrhoeal illness be treated by zinc (4). It is estimated that the successful implementation of this recommendation has the potential to save nearly 400,000 lives annually (5).

The accumulated weight of evidence in support of zinc as a treatment for diarrhoea has led to calls for the scaling up of zinc in developing countries, in particular in those countries where zinc deficiency is known to be common. As such programmes unfold, several important questions remain to be answered. This includes the impact zinc treatment will have on other treatment practices, in particular the use of oral rehydration solutions (ORS) (desirable) and antibiotics (undesirable). Additional questions address the acceptability (taste, consistency) of alternative zinc formulations, adherence to treatment instructions and recommended duration of

treatment, changes in household expenditure on a childhood diarrhoeal illness episode, and use of health services.

The paper by Baqui *et al.* published in this issue of the Journal addresses two important issues: the impact of zinc treatment on other treatment practices and use of health providers (6). As described by the authors, these questions were included as outcomes monitored in a randomized community trial of zinc treatment in Matlab, a rural Bangladesh sub-district (3). This is a long-standing demographic and health field site of ICDDR,B: Centre for Health and Population Research. For several years in the Matlab surveillance site, local volunteers, 'bari mothers', have been trained to provide advice on the management of childhood diarrhoea and to distribute ORS free of charge for a diarrhoeal disease episode. It is in this population that the randomized effectiveness trial of zinc treatment was carried out. The reported findings all favour the zinc-treated, study group compared to controls, i.e. higher ORS and lower antibiotic use and decreased use of other health providers.

What do the findings of Baqui *et al.* tell us? To begin with, they are very encouraging. To have reported the contrary would have put considerable doubt in the minds of those preparing for the large-scale roll-out of zinc. What the findings suggest is that the introduction of zinc as the definitive treatment for childhood diarrhoea will not adversely affect the use of ORS and that it may have several beneficial secondary effects, in particular decreased use of antibiotics. Nonetheless, there are limitations to this study, and a need to continue monitoring changes in treatment practices and health-seeking behaviours as zinc is scaled up. The outcomes observed occurred in the context of a randomized field trial. Whether similar outcomes will be observed in the more generalized context of populations largely served by the private or the government sector remains to be determined. We know from qualitative interviews recently carried out with caregivers in rural and urban Bangladesh that, if a child does not quickly improve when ORS is

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given, they will seek additional medication from a local provider. This, in most cases, results in the prescription of an oral antibiotic (ICDDR,B Scaling Up Zinc for Young Children Project team. Personal communication, 2004). If children are prescribed zinc as a treatment (not a supplement) along with ORS at the outset of their illness, it can be anticipated that their symptoms will subside earlier, and the perceived need for an additional medication will be less likely to occur. This is what is hoped, but yet to be confirmed.

Inappropriate antibiotic treatment of childhood diarrhoea is a pervasive problem in all countries, regardless of their level of economic development. This includes Bangladesh, where the majority of diarrhoeal episodes are treated with an antibiotic, and the WHO guidelines are not followed (7) [Results of the 2004 national survey of diarrhoea-management practices showed that, of over 3,500 active cases seen by a provider, 62% were prescribed an antibiotic]. Changing provider-prescribing practices in favour of zinc will require a multifaceted set of strategies directed at the public and private sectors. This begins with a national policy supporting zinc treatment of diarrhoea, followed by treatment guidelines in line with the joint WHO/UNICEF diarrhoea-management recommendations (4). Other considerations will include adequate production and distribution of a zinc formulation at an affordable price, educating providers and following up with personal contacts, mass media campaigns, and support from influential professional and lay leaders (8,9). These are the challenges faced in equitably scaling up zinc to reach all children with diarrhoea. The work of Baqui *et al.* represents an important, initial step in the provision of operational research findings in support of scale-up planning and implementation.

REFERENCES

1. Sazawal S, Black RE, Bhan MK, Bhandari N, Sinha A, Jalla S. Zinc supplementation in young children with acute diarrhea in India. *N Engl J Med* 1995;333:839-44.
2. Bhutta ZA, Bird SM, Black RE, Brown KH, Gardner JM, Hidayat A *et al.* (Zinc Investigators' Collaborative Group). Therapeutic effects of oral zinc in acute and persistent diarrhea in children in developing countries: pooled analysis of randomized controlled trials. *Am J Clin Nutr* 2000;72:1516-22.
3. Baqui AH, Black RE, Arifeen SE, Yunus M, Chakraborty J, Ahmed S *et al.* Effect of zinc supplementation started during diarrhoea on morbidity and mortality in Bangladeshi children: community randomised trial. *Br Med J* 2002;325:1059-62.
4. WHO/UNICEF Joint Statement. Clinical management of acute diarrhea. Geneva: World Health Organization, 2004. 8 p.
5. Jones G, Sketetee RW, Black RE, Bhutta ZA, Morris SS, and Bellagio Child Survival Study Group. How many child deaths can we prevent this year? *Lancet* 2003;362:65-71.
6. Baqui AH, Black RE, Arifeen SE, Yunus M, Zaman K, Begum N *et al.* Zinc therapy for diarrhoea increased the use of oral rehydration therapy and reduced the use of antibiotics in Bangladeshi children. *J Health Popul Nutr* 2004;22:440-2.
7. Ronsmans C, Islam T, Bennish ML. Medical practitioners' knowledge of dysentery treatment in Bangladesh. *Br Med J* 1996;313:205-6.
8. Homedes N, Ugalde A. Improving the use of pharmaceuticals through patient and community level interventions. *Soc Sci Med* 2001;52:99-134.
9. Laing RO, Hogerzeil HV, Ross-Degnan D. Ten recommendations to improve use of medicines in developing countries. *Health Policy Plan* 2001;16:13-20.

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