Bridging the gap from knowledge to delivery in the control of childhood diarrhoea

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Despite its low profile on the child survival agenda, diarrhoea is the second leading killer of children under 5 years of age and accounts for 10% of child deaths every year.[1] But although diarrhoeal disease is preventable and can be managed with low-cost interventions, progress in reducing its incidence in children has been slow in recent years.[2] In 2009, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) jointly published *Diarrhoea: why children are still dying and what can be done*, a report intended to raise awareness of the issue and to lay out a comprehensive plan of action for reducing the incidence of childhood diarrhoea and its associated mortality.[3] In June 2012, UNICEF issued another call to action in *Pneumonia and diarrhoea: tackling the deadliest diseases for the world's poorest children* and urged a refocusing of efforts to reduce preventable deaths caused by diarrhoea.[4]

This most recent UNICEF report underscores the need to intensify global commitment and funding for the fight against childhood diarrhoea and argues that scaling up key interventions among the poorest children would save lives. Key preventive interventions include an improved water supply and the promotion of community-wide sanitation and hand washing with soap, as well as vaccination against rotavirus infection and measles, promotion of breastfeeding and vitamin A supplementation.[3] Key therapeutic interventions for children with diarrhoea include continued feeding, the use of zinc tablets and fluid replacement therapy with low-osmolarity oral rehydration salts (ORS).

With the approach of the deadline for attaining the health-related Millennium Development Goals, the point has been repeatedly made that we know what interventions work.[3,5] This message is simple and strategic, but it fails to make clear that although proven preventive and therapeutic interventions do exist, we are not always able to deliver them. If further reductions in the burden of childhood diarrhoea and its associated mortality are to be realized, we need more than a catalogue of proven interventions. We need strategies for delivering them with high acceptability and coverage.

Our experience with the treatment of childhood diarrhoea illustrates the difficulty of translating knowledge into effective interventions. The use of ORS, which cost a mere US$ 0.10 per sachet, has been widely promoted since the 1970s and endorsed by national health programmes across the developing world, yet today only 34% of children under 5 years of age with diarrhoea receive ORS.[4] Many factors account for this disappointing coverage, including ORS' unpleasant taste and inconvenient one-litre packaging, which have made traditional formulations unpopular with children and caregivers alike. After years of stagnating ORS coverage, innovative delivery strategies are emerging. Flavoured varieties, smaller sachets for children and new distribution mechanisms are being promoted to at last improve the acceptability and uptake of this life-saving product.

Vaccination against rotavirus infection is another promising new component of diarrhoea prevention. Rotavirus is the leading cause of severe diarrhoea in young children and vaccination against rotavirus disease could play a crucial role in the control of childhood diarrhoea throughout the world. WHO now recommends including rotavirus vaccination in all national routine immunization programmes. Furthermore, the GAVI Alliance plans to support the vaccine's introduction in more than 40 countries by 2015. Despite this high-level support, the product's presentation could make widespread vaccine delivery difficult. The available rotavirus vaccines require a cold chain capacity much greater than that needed for Expanded Programme on Immunization (EPI) vaccines[6] and beyond what the public health infrastructure can sustain in some resource-limited settings. In fact, early experiences in Latin America and computational models for the Niger suggest that introducing the rotavirus vaccine where refrigeration and transport are inadequate could create bottlenecks that would reduce the flow of all vaccines.[7] Vaccination against rotavirus infection certainly holds promise for reducing diarrhoea incidence and mortality, but without innovations in vaccine delivery, including the development of more EPI-friendly presentations, vaccination may become so difficult that its potential impact may be undercut.

We echo the call of others for greater attention to delivery strategies[3,8] and take UNICEF's appeal for stronger global commitment in the fight against childhood diarrhoea as an opportunity to underscore the necessity to bridge the gap between knowing what interventions work and delivering them to all those in need. Progress in the fight against diarrhoeal disease will stagnate unless better intervention delivery strategies are developed. We commit ourselves and call upon our partners to critically assess the delivery strategies currently in place, identify local barriers to intervention uptake and respond with appropriate measures for improving outcomes in children with diarrhoea. Only by delivering what we know to be effective can we further reduce childhood diarrhoea throughout the world. ■

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