A Simple Solution That Saves Lives: Overcoming Diarrheal Disease in the Age of Universal Health Coverage

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At the beginning of the new millennium there were almost 10 million deaths annually of children younger than 5 years.¹ This year the number of deaths is expected to be 4.5 million with about 60% in the first month of their lives. While this is a great improvement it is still a human tragedy for the families who experience the loss of a child. Neonatal complications and infectious diseases, including pneumonia, diarrhea, and malaria are the leading causes of death among children younger than 5 years. Undernutrition, which predisposes to lower respiratory tract infection and diarrhea, contributes directly or indirectly to nearly half of these deaths.² At least 70% of deaths from diarrheal disease are related to undernutrition.¹ The aim of the Sustainable Development Goal 3.2 (SDGs) is to further reduce under-5 mortality to 25/1000 live births or a further 1.5 million deaths below the current level.³ Deaths from diarrhea have declined by more than 50% in the least economically developed regions of the world.⁴ However with climate change there is a risk that diarrhea will increase from a variety of causes, including contaminated water supplies and increased food contamination.⁴

SDG Goal 3.8 is to provide universal health coverage, for essential care. The World Health Organization estimates that at the present time only 50% of the world’s population have access to even basic health care and most of the preventable child deaths live in areas with no health service.⁵ To achieve 100% will require considerable upscaling in some of the world’s poorest nations and it will only be possible to use prevention and treatment strategies with the lowest cost measures in these areas. However, the continuing expansion of use of some of the simpler public health interventions will help save lives from diarrheal disease. Readily available effective prevention and treatment measures that can help in reducing deaths from diarrhea are nutrition interventions, vaccination against rotavirus and the universal use of oral rehydration solutions (ORS).

One of the best ways to improve the nutritional status of infants and young children and hence to reduce diarrhea is to promote exclusive breastfeeding for 6 months and then to at least 12 months and beyond. Less than optimal breastfeeding is responsible for increased susceptibility to infection and increasing breastfeeding could save 800 000 child lives per year.⁶

Rotavirus is the most common pathogen for diarrhea in young children and globally is estimated to cause 128 000 deaths of children younger than 5 years.⁷,⁸ In the Asia Pacific region there are an estimated 40 million cases with 5000 deaths. The World Health Organization estimates

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that worldwide 85% (116.2 million) of all infants have received the full course of (3 doses) diphtheria-tetanus-pertussis (DTP3).9 In 2017, the global coverage for rotavirus vaccine was only 28%. However the much higher rate for DPT3 suggests that rotavirus vaccine could be upscaled with relatively little effort and would be a cost-effective measure.10

This year is the 50th anniversary of the publication of an important article in the Lancet detailing the use of an ORS. In 1968, Nalin and Cash and colleagues reported on the use of an ORS in the treatment of 29 cholera patients in Pakistan.11 The addition of glucose promoted the active transport of electrolytes and water. The use of ORS became widespread throughout the world, but not widespread enough.12-14 The development of the use of ORS, a relatively simple and yet effective way of treating diarrheal disease, proved to be one of the most important advances in child health in the 20th century.15 The use of ORS in diarrheal disease is now also used as an indicator by UNICEF. In East Asia and the Pacific (excluding China) it is estimated 47% of the diarrheal episodes in children are still not treated with ORS.1 Inadequate sanitation, hygiene or access to water increase the incidence of diarrheal diseases. The highest proportion of deaths and disability-adjusted life years (DALYs), as well as the highest absolute numbers, occur in countries with high mortality patterns, such as in Africa and parts of Southeast Asia. Most diarrheal deaths in the world (88%) are caused by unsafe water, sanitation or hygiene. Overall, more than 99% of these deaths are in developing countries, and around 84% of them occur in children.16

ORS can be readily prepared at local level using sachets that are mixed with boiled water. However, having ORS available does not always mean it is used, even though it is almost universally effective. Health professionals and parent often prefer antibiotics of other more expensive drugs. A study in Vietnam found that mothers from wealthier families who could afford to pay more were often given expensive antibiotics to treat their children while the poorer families received the cheaper (and far more effective) ORS.17 The use of ORS has been adapted for use in industrial situations. There are many occupations, including mining and construction, that expose workers to heat stress. Adequate hydration and electrolyte balance is essential for health and for reducing morbidity and mortality.18,19

The development of ORS has been hailed as one of the greatest public health triumphs of the 20th century saving an estimated 54 million deaths.15 Such a simple, low-cost solution has saved more lives than just about any other intervention. Schools of Public Health have a central role to play in research that will find similar elegant interventions that can be applied to even the most disadvantaged communities. This is true public health, our core business. When health objectives are now centered on universal health coverage, we must remember that this also applies to the simplest effective interventions in the most disadvantaged communities. The journal will welcome reports on the control of morbidity and mortality in young children.

Also in this month’s issue we include articles on a variety of public health problems. The Asia Pacific Academic Consortium for Public Health (APACPH) is always interested in promoting the health of the disadvantaged in our societies. This includes members of the LGBTI community who are often subjected to discrimination which contributes to health problems. The article from one of APACPH’s Australian members highlights the importance of new technologies in the delivery of public health education and area in which APACPH has been pioneers through our Cyber University for Health.

References


