

Understanding and Tackling Health Disparities

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Diarrhea is one of the leading causes of child mortality globally, resulting in almost a half million deaths in sub-Saharan Africa annually. Simple interventions like clean water, sanitation, hygiene, vaccination, and timely treatment can effectively control it, yet these interventions often do not reach those who need it the most. Over the past year, my research group has continued to work on a series of projects to better understand these disparities, their consequences, and potential solutions.

New vaccines have recently been developed to control rotavirus diarrhea, which accounts for 40% of childhood diarrheal deaths. However such vaccines often do not reach those who need it the most. We recently completed a project to better understand the disparities in access to routine vaccination and the resulting effect on the health gains from new vaccines, such as that for rotavirus diarrhea. This work has included a grant from the Bill and Melinda Gates Foundation to better understand the determinants of vaccination disparities in Nigeria, which has been presented to UNICEF and conferences. It also included a study of how disparities in risk and access to vaccination can limit the impact of new vaccines, resulting in publications in *Vaccine* and the *Journal of Epidemiology and Community Health*. We are currently working with partners to use this information to increase the emphasis on programs reaching those who need it most.

Water and sanitation are also critical interventions to prevent diarrheal disease and malnutrition, as well as being basic rights. Over the past year we began collaboration with the Ministry of Health and Social Welfare in Tanzania to evaluate their National Sanitation Campaign (NSC). The NSC is a long-term effort to increase

the coverage of improved sanitation in rural Tanzania. Our collaboration provides the ministry with data on changes in sanitation behaviors, the barriers to change, and opportunities for improving the effectiveness of intervention activities. In particular, we focus on whether the campaign reaches the most vulnerable population and whether poorer households



benefit equally. This project is carried out through SHARE (Sanitation and Hygiene Applied Research for Equity), a research consortium based at the London School of Hygiene and Tropical Medicine and funded by the UK Department for International Development.

In collaboration with SHARE we have also carried out research to better characterize sanitation related disparities at a global level. This has included a study of the methods for measuring these disparities (published in *Tropical Medicine and Hygiene*) and another estimating the

disparities in child mortality associated with unequal access to sanitation.

Even when households make improvements in water and sanitation, children often face poor conditions in schools. Last year we completed a six year study of the impact and sustainability of school water, sanitation and hygiene in western Kenya. Our publications this year showed that improvements in conditions can reduce diarrheal incidence, reduce absenteeism, and improve gender parity in enrollment. However it also showed that these improvements can be difficult to sustain. The project included collaborators from CARE, Great Lakes University of Kisumu, and Emory University.

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