Water, sanitation, and child mortality in Tanzania

Woods Institute for the Environment 5th Anniversary Symposium

21 October 2009

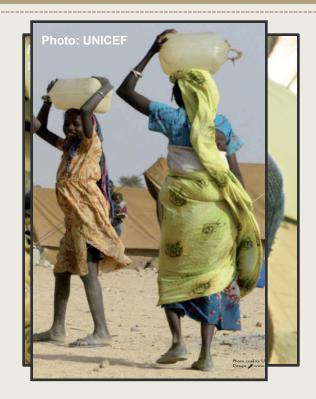


The challenge

- Diarrhea kills more children each year than AIDS, measles, and malaria combined
- 1.5 million children under the age of 5 die from diarrheal illness each year
- This is an average of 4,100 children per day--or about 30 children during the course of this presentation



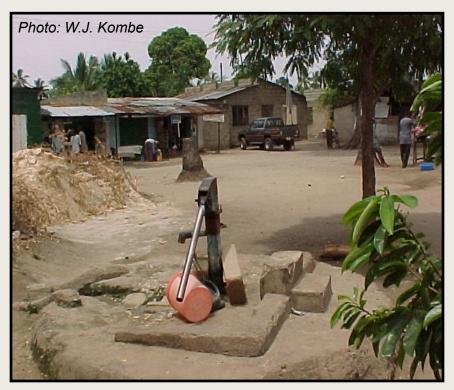
Is this a problem for medicine?



- Medical advances have helped reduce mortality from diarrhea (ORT)
- Improved understanding of etiology has spurred vaccine development (Rotavirus)
- 90% of all child diarrhea can be traced to inadequate water supply, sanitation, and hygiene

Is this an engineering problem?

- Almost 1 billion people are without improved water supply.
- 2.5 billion do not have basic sanitation.
- Low-cost water and sanitation infrastructure has mixed results for health.









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Lab and field teams

 DAWASA's Community Water Supply & Sanitation Program targets vulnerable populations





Deep borewells supply shared public taps





- Intensive training of field and lab teams
- Four visits per household over 3-month period
- In-depth surveys of mother and/or child caretaker







Water sampling

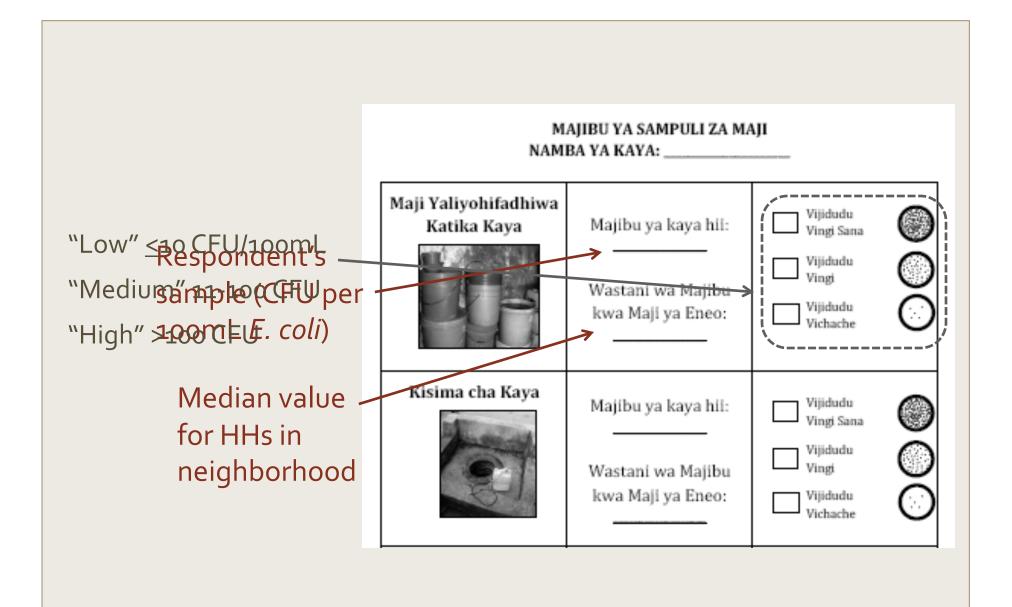




Hand rinse sampling



 All water and hand samples processed in team's field lab



Findings: Water contamination happening in the home – Information family receives affects future contamination

- Quality of utility water is generally good relative to stored water
- Hands of mothers and children had high *E. coli* concentrations
- E. coli levels declined significantly after families received personal information on their initial poor sanitation results
- However, for families who initially tested at lower *E. coli* levels relative to other families <u>and were told the good news</u>; follow-up testing found that their *E.coli* levels actually <u>increased</u> to approximate same level as other test groups.

Complete results with data will be available once study is published.

Findings: Changes in water management

Shock and awe!

Odds that a participant's family reported water management improvements during post-treatment period as compared to control cohort (all else held constant):

- "High" water contamination test result: 2.3 times higher
- •"Surprisingly high" water test result: 5.6 times higher

Next steps

- January 2010: Launch of Phase II study, including 1200 households and running for a full year
- Evaluate not only proximal outcomes, but health and mortality effects



Thanks for your interest.



Photo: Amy Pickering

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