EDUCATION ON HAND-WASHING AND WATER TREATMENT TO IMPROVE SAFETY OF WATER CAN REDUCE ABSENTEEISM AMONGST STUDENTS IN DEVELOPING WORLD AT RISK FOR DEVASTATING DISEASES

New Centers for Disease Control (CDC) Study Reports that Motivating Behavior Change Among Students Translates to Changes in the Household

Deerfield, IL, April 1, 2009 – Inadequate access to safe water and poor sanitation infrastructure contribute to an estimated 1.87 million deaths per year from devastating diarrheal diseases, mostly among children less than five years of age in the developing world. But, according to a new study released in the April issue of the American Journal of Tropical Medicine and Hygiene, school-based student hygiene education programs can impact behavior in the home and significantly reduce absenteeism amongst students.

The study, conducted by the Centers for Disease Control and Prevention in partnership with CARE (Cooperative for Assistance and Relieve Everywhere, Inc.), revealed that an in-school student hygiene and water treatment education program in Kenya significantly increased household adoption of water treatment and proper hand washing techniques while decreasing absentee rates among students. The information shared in-school with students was transferred to the home resulting in a 200 percent increase in household water treatment, a 164 percent increase of proper hand washing techniques among adult caregivers and 240 percent among students. As a result, student absenteeism decreased 26 percent after first follow-up (seven months). Results were also maintained at the time of the second follow-up (seventeen months).

“We are pleased that we were able to provide a community with important lessons about safe drinking water,” said lead study investigator, Elizabeth Blanton of the Centers for Disease Control and Prevention. “Perhaps most exciting is the idea that through student education we can help an entire community adopt new practices that will minimize the impact of diseases that can lead to death.”

"With more than one billion of the planet's inhabitants lacking safe water, and lacking adequate resources to immediately and fundamentally improve water-related infrastructure in so many resource poor areas of the world, we as a global population must find alternative, innovative and appropriate point of use interventions,” said Edward T. Ryan, M.D., President, American Society of Tropical Medicine (ASTMH). “This study is significant because it suggests that targeted education of children can not only decrease school absenteeism, but can also affect the family’s use of water. Such approaches warrant additional development and need to be pursued."
About the Study

The study involved training staff, installing water stations and distributing instructional comic books with samples of water treatment solutions in 17 rural primary schools in western Kenya. Trainings with school staff were held in the beginning of May 2007, where the staff was taught methods of water treatment and proper hand washing techniques. Water treatment methods included the utilization of the Procter & Gamble Company’s PuR® Purifier of Water (PuR®), a flocculent/disinfectant product, and Population Services International’s (PSI) WaterGuard, a hypochlorite disinfecting solution. Staff was then instructed to use the information to educate their pupils.

Each school was also given six 60 L plastic containers to store water, three for drinking water and three for hand washing and a 3-month supply of PuR® sachets and WaterGuard. They were encouraged to use PuR® to treat drinking water and, since younger students sometimes drink from hand washing containers, WaterGuard to treat the hand washing water. To help educate the students, a comic book entitled “Preventing Diarrhoea, Viki finds out how…” was produced and distributed to all students, who were encouraged to read it, discuss it with their class, and take it home to show their parents. In addition, each book contained 3 free sachets of PuR®, which students were encouraged to take home and demonstrate to their parents.

Baseline surveys were conducted on student and caregivers in February 2007. Follow-up surveys were conducted of the same students and caregivers interviewed at baseline who were still attending school/available in September 2007, and again in July 2008. The follow-up survey instruments included questions from the baseline survey with additional questions regarding health communications in the school and water treatment attitudes and practices. Caregiver surveys were conducted in the home where water storage vessels and caregivers’ typical hand washing procedure were observed, and tests were conducted on stored drinking water for free chlorine residuals.

Student absentee data were collected from 16 schools; one school that was unable to locate absentee records from 2005 was excluded. Absentee data collected from 2007 and 2008 were compared with absentee data from 2005 and 2006 to determine the impact of the program on school attendance. Because the intervention was implemented during the second of 3 school terms in 2007, student absentee rates were compared for the second term from school years before (2005 and 2006) and after (2007 and 2008) implementation of the intervention.

Awareness of PuR® was reported by 31 percent of students at baseline, 97 percent at first follow-up, and 98 percent at second follow-up. Of students who had heard of PuR® at baseline, fewer than 1 percent were able to correctly explain three key steps of the PuR® water treatment procedure; 53 percent of students at first follow-up and 54 percent at second follow-up could state the correct procedure. The most common information sources about PuR® changed from mass media (21 percent) and social networks (15 percent) at baseline to the school at first (88 percent) and second (91 percent) follow-up evaluations.

Awareness of WaterGuard was reported by 90 percent of students at baseline, 97 percent at first follow-up and 98 percent at second follow-up. Of these students, 15 percent could describe the correct Water-Guard treatment process at baseline, 36 percent at first follow-up, and 23 percent at second follow-up. The most common WaterGuard information sources were social networks (65 percent) and mass media (42 percent) at baseline. Schools increased as an information source from 14 percent at baseline to 83 percent at the first and second follow-up.
At baseline, 22 percent of students could demonstrate proper hand washing. This percentage increased to 53 percent at first follow-up and was 47 percent at second follow-up.

The Procter and Gamble Company exclusively funded the study but did not contribute to study design, data analysis, or interpretation of results.

**About the Participants**

At baseline, 666 students were interviewed. The median age of the students was 12 (range 8 to 19 years); 53 percent were male. Of these students, 28 percent were enrolled in grade 4, 22 percent in grade 5, 17 percent in grade 6, 21 percent in grade 7, and 12 percent in grade 8. In the first follow-up evaluation, 603 students were interviewed. In this follow-up, the median student age and proportion of students in each grade level were similar to baseline. 413 of the original 666 students interviewed at baseline were interviewed during the second follow-up. The median age of students and student gender remained similar to the 2 previous surveys, however the proportion of students in each grade level shifted as a result of interviewing in a new school year.

At baseline, primary caregivers of 662 (99 percent) of 666 students were interviewed. The median age of respondents was 42 years (range 13 to 91 years); 91 percent were female. The median number of persons per household was six (range 2 to 15).

All participants lived in communities whose water sources were limited to turbid earth pan or rainwater collection.

**About the ASTMH**

The American Society of Tropical Medicine and Hygiene (ASTMH), founded in 1903, is a worldwide organization of scientists, clinicians and program professionals whose mission is to promote global health through the prevention and control of infectious and other diseases that disproportionately afflict the global poor.

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