

Notes from the Field

Chlorination Strategies for Drinking Water During a Cholera Epidemic — Tanzania, 2016

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Since August 2015, the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) of Tanzania has been leading the response to a widespread cholera outbreak. As of June 9, 2016, cholera had affected 23 of 25 regions in Tanzania, with 21,750 cumulative cases and 341 deaths reported (Ally Nyanga, MoHCDGEC Emergency Operations Center, personal communication, June 2016). Approximately one fourth of all cases occurred in the Dar es Salaam region on the east coast. Regions surrounding Lake Victoria, in the north, also reported high case counts, including Mwanza with 9% (Ally Nyanga, MoHCDGEC Emergency Operations Center, personal communication, June 2016). Since the start of the outbreak, MoHCDGEC and the Ministry of Water (MOW) have collaborated with the Tanzania Red Cross Society, United Nations Children's Fund (UNICEF), World Health Organization (WHO), and CDC to enhance the water, sanitation, and hygiene (WASH) response to prevent the further spread of cholera.

Access to safe drinking water is critical and prevents cholera transmission (1). Chlorination effectively and affordably disinfects water and protects against recontamination. Because water quality might deteriorate after chlorination (2), during cholera outbreaks WHO recommends a minimum free chlorine residual of 2.0 mg/L at the point-of-filling for tanker trucks, 1.0 mg/L for standpipes and wells, and 0.2-0.5 mg/L at point-of-use (3). To ensure adequate free chlorine residual in drinking water, MoHCDGEC and MOW have encouraged municipal water authorities to increase chlorination of piped water to WHO-recommended free chlorine residual levels, and, because of the variety of water delivery mechanisms, developed two additional strategies in collaboration with WASH partners, including a bulk chlorination strategy in Dar es Salaam and a household water treatment strategy in Mwanza.

The bulk chlorination strategy in Dar es Salaam targeted water tanks of private vendors. These vendors sell to households where piped water supplies are limited. Vendors received a supply of 8.68-g sodium dichloroisocyanurate (NaDCC) tablets that disinfect up to 5,000-L volumes as well as instructions on proper use (4). In February 2016, this strategy was piloted

in the Manzese Ward, one of 27 wards in the Kinondoni District, in Dar es Salaam. Ward health officers were given test kits and trained to monitor free chlorine residual in water tanks each week. Activities included mapping of vendor locations, distribution of a 3-month supply of NaDCC tablets, and weekly free chlorine residual monitoring of storage tanks. The pilot in Manzese Ward was successful, and the strategy was then expanded to four additional cholera-affected wards in Kinondoni District. As of June 9, 2016, a total of 430 vendors, representing the majority of water vendors, have been mapped and 313 vendors in Kinondoni received tablets. Because of encouraging results, this program was subsequently expanded to two other districts in Dar es Salaam, as well as to parts of Morogoro and Zanzibar. An evaluation of the program will be completed in October 2016.

To increase access to safe drinking water at the household level, especially for communities that rely on untreated lake water for drinking, WASH partners developed a strategy for distribution of 67-mg NaDCC tablets that treat 20-L volumes. Cholera-affected communities in four regions of Tanzania were identified based on case counts, case-fatality rates, and recent cholera cases as reported by local Tanzania Red Cross volunteers. With support from UNICEF, the Tanzania Red Cross Society distributed a 1-month supply of NaDCC tablets and provided cholera prevention education to households in communities in the Mwanza region; distribution to three other regions followed. CDC provided 9 million tablets for this campaign, including 6 million tablets for distribution to cholera-affected regions and 3 million tablets as a reserve supply for future outbreaks. Distribution of NaDCC tablets to priority communities in Mwanza has been completed. WASH partners are committed to providing continued support in implementation and monitoring to improve access to safe drinking water during the cholera epidemic and beyond.

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