

What works in expanding the use of chlorine dispensers to purify water? Impact evidence from Kenya

According to the World Health Organization, diarrhoeal disease is the second leading cause of death among children under the age of five. Contaminated water is often to blame. Chlorine dispensers installed next to communal water sources are cost-effective means of providing access to safe water treatment. But people have to use the dispensers to treat the water they've just drawn. There is limited evidence on *what works* in expanding the use of chlorine dispensers in cost-effective and sustainable ways.

3ie funded a research team¹ to design and undertake three studies: one survey experiment and two large-scale randomised controlled trials for examining how a particular community-level water treatment device, the chlorine dispenser, is valued and allocated by local government officials and how best the chlorine dispensers can be financed and managed.

What they did

The **first study** involved 179 elected county councillors in rural Kenya, who chose among different chlorine dispenser packages. A public lottery then identified which 40 wards would be chosen for dispenser installation. Funding was provided for the installation and maintenance of these dispensers. This evaluation assessed how local politicians target and control the funding associated with maintaining the dispensers.

The **second study**, investigated if up front community payment for the dispenser increased future financing for the maintenance costs and if the threat of removing

Did it work?

The results suggest that both users and their representatives in local government value community-level water treatment infrastructure.

- County councillors generally valued the ability to geographically target the installation of the dispenser. However, on average, they were less likely to select a dispenser package if they were responsible for the upkeep.
- Up front payments for dispensers did not have an effect on household chlorine use three months after the installation.
- In contrast, significantly more chlorine was purchased by communities where the dispenser would be removed if it was found empty.
- Providing community workers a fixed financial payment did not affect household chlorine adoption compared to a volunteer contract where they got a t-shirt and certificate.
- Household chlorine adoption significantly increased in communities where workers received performance-based payments as compared to those under a volunteer contract.
- Performance-based payment, and not fixed compensation, is shown to be effective at motivating workers in what is traditionally a volunteer role.
- More socially connected community workers were successful in promoting the use of dispensers, irrespective of whether they received performance-based payment or were under a volunteer contract.

¹Ahuja, A, Gratadour, C, Hoffmann, V, Jakiela, P, Lapeyre, R, Null, C, Rostapshova, O and Sheely, R, 2015. *Chlorine dispensers in Kenya: scaling for results*, 3ie Impact Evaluation Report 30 (forthcoming). New Delhi: International Initiative for Impact Evaluation (3ie).

the dispenser encouraged its financing and sustained use. Communal water sources (and surrounding users) were randomly assigned to one of five treatment arms. One treatment arm had a free permanent chlorine dispenser along with free chlorine refills. Two treatment arms required users to raise a portion of the cost of the dispenser before it was installed. The remaining two treatment arms required users to regularly purchase the refills, failing which the chlorine dispensers would be removed. The comparison group had free permanent dispensers installed, but users were responsible for purchasing the refills.

The **third study** evaluated the effects of three alternative compensation schemes for community-based workers responsible for promoting and restocking the dispensers: (1) a volunteer contract which involved giving a t-shirt that identified volunteers as the promoter and a certificate of recognition of service to the community; (2) a fixed financial payment; or (3) a performance-based financial payment.

What next: lessons for future research and practice

Local officials were generally uninterested in taking responsibility for maintaining chlorine dispensers in their constituencies. Responses to the survey questions indicate that the politicians felt they did not have the time to take on this responsibility. Thus, it becomes important to identify cost-effective approaches for central financing and management of rural water treatment infrastructure.

Users were willing to contribute to the initial investment required for installation of a chlorine dispenser, and local elected officials valued the opportunity to decide on its location. However, local mobilisation of the resources required for upkeep of such infrastructure may not be feasible both financially and logistically.



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