Visit by Good Ventures and GiveWell to Innovations for Poverty Action's Dispensers for Safe Water, November 8-9, 2012

Participants:
Innovations for Poverty Action's Dispensers for Safe Water (DSW): Eric Kouskalis, *Program Director, Dispensers for Safe Water*; Evan Green-Lowe, *Research and Evaluations Manager, Dispensers for Safe Water*; Peter Mwaura, *Program Operations Manager, Dispensers for Safe Water*; as well as 12 field and community associates of the DSW team (present on November 9)
Good Ventures: Cari Tuna, *President*
GiveWell: Elie Hassenfeld, *Co-Executive Director*; Eliza Scheffler, *Research Analyst*; Stephanie Wykstra, *Research Analyst*

Summary: In Kenya, GiveWell and Good Ventures met with Innovations for Poverty Action's Dispensers for Safe Water (DSW) team to discuss their projects and to visit 2 on-site. The following notes include an overview of the Dispensers for Safe Water program and the chronology of its development, as well as DSW's explanation of its process, from how it chooses areas in which to work to the continuing operational support it provides. GiveWell and Good Ventures also visited two of DSW's chlorine dispensers and talked with members of the community who were collecting water. Our notes from those visits are included in this document as well.

Note: This is a set of summary notes compiled by GiveWell in order to give an overview of the major points made by DSW in our conversations.

Overview of Dispensers for Safe Water

Innovation for Poverty Action's (IPA's) project, Dispensers for Safe Water, installs chlorine dispensers near water collection points. Chlorine is dispensed at the source, stays in the water and continues to neutralize bacteria for a period of up to three days after the time of treatment, which addresses the issue of contamination between source and consumption. Each chlorine dispenser issues a pre-set amount of chlorine (3 mL) that is sufficient to treat about 20 liters of water, the amount held by a standard size jerry can that is commonly used for water in the villages in which DSW works.

IPA has already installed 2,000 chlorine dispensers, providing access to 400,000 people. In the area that encompasses all of these dispensers, there may be anywhere from 0.5 to 2 dispensers per square kilometer. DSW has plans to add 1,000-1,100 more dispensers in Western Kenya by February 2013.

Western Kenya is a good place to scale up chlorine dispensers because the people living there have relatively good access to water, high diarrhea rates, and there is high population density. This means that creating water sources is a lower priority in many areas, but there is a significant need to improve water quality.

Chronology of DSW

With water source improvement interventions, the main problems are that while water quality is improved at the source, a) in some cases, not all contamination is significantly reduced and b) many of those gains are lost at the household level because of recontamination during transport and storage, which limits the reduction in diarrhea rates. So then the question becomes, how can you improve water quality at the household level?
IPA began water research in Kenya about 10 years ago to address this question.

Chlorine stays in water for 1-3 days, depending on how the water is stored. This is one of big reasons to focus on chlorine – the residual effect. The way this works is that chlorine continues to bind to and neutralize organic matter and bacteria in water for as long as it has excess capacity.

There is variation in the measured effects of chlorine, but on average it has been found to reduce diarrhea rates by 40%, and it is inexpensive. This number is approximate, because most data on diarrhea relies on care-givers' reports of children's illness. But chlorine decreases the contamination of water, and there is a strong case that contaminants like E. Coli and Rotavirus cause illnesses.

As for why chlorine should be provided for free, studies have shown a low willingness to pay for water treatment products. One study conducted in western Kenya examined price sensitivity to bottled chlorine products sold through retail outlets. It found that charging above $0 dramatically decreased uptake.

After an RCT of chlorine dispensers from 2006-2007 showed initial promising results, 20 dispensers were installed, serving a total of 3000-4000 people. From March 2009-July 2012 IPA launched multiple pilots of chlorine dispenser programs. In these pilots, IPA has partnered with a variety of government institutions, as well as explored different models of dispensers and approaches to supply chain management, promotion efforts, forms of delivery, and getting the buy in of the people involved.

During this time, there were also multiple RCTs run. These studies assessed various aspects of chlorination programs, including community financing, promoter monitoring and incentives, and how public officials make decisions about the provision of public goods.

DSW found a variety of outcomes with different pilots, studies and models, with adoption rates ranging from anywhere from 15-60%,and has begun scaling up the most promising while continuing to test new approaches. For example, at the village meeting prior to installation, DSW plans to demonstrate improved water quality using chlorine-treated and untreated water and a chemical which changes color in the presence of bacterial contamination. DSW will also collect data on what percentage of people who attend that meeting then chlorinate their water.

At baseline in one of IPA's studies of chlorine dispensers, 4% of people were treating their water with other chlorination products. In other cases, the baseline fluctuated, but was always below 10%. After the dispensers were installed in the first RCT study of dispensers, 50-60% of people were treating their water, and this was verified up to 4 years after installation.

Evolution of dispensers
Over time, DSW has tried out a number of different dispenser models. Chlorine dispensers are now made of plastic. In 2010 and before, dispensers were made of metal. One issue with earlier models was that metal (especially the metal padlocks used) tended to corrode; now the containers and padlocks have been replaced with more corrosion-resistant materials.

Note that when GiveWell/Good Ventures visited the IPA office in Kisumu, we saw a number of examples of dispensers that were tried out and replaced with newer versions.

Costs to implement dispensers for safe water
DSW breaks down the direct implementation costs into 2 buckets:

1. Initial implementation (from the decision to install dispensers through the installation, including materials, community education, transportation, staff time, etc.) costs $200/chlorine dispenser; this will go down over time.
2. Ongoing operations (ensuring that the dispensers continue to function and increasing the rate at which they are used) are projected to cost $65/dispenser/year at scale. This includes chlorine supply, maintenance, hardware replacement after its projected lifespan, M&E, management costs and all overheads.

DSW implementation process

1. **Choose areas in which DSW will work** using data on diarrhea rates/waterborne disease, prevalence and type of water sources, and population density.

2. **Meet local stakeholders from the district to location-level governments.**

3. **Meet with local leaders** (e.g., church leaders, village elders) to discuss the possibility of installing dispensers. These officials provide lists of all water points in the areas they represent.

4. **Select the water points at which DSW will work.**

5. **Host community meetings in areas that DSW has selected**. The meeting is advertised by calling village elders, posting notices, announcements by megaphone, and by meeting with a couple villagers initially and asking them to tell others about the meeting. Community meetings serve to sensitize the community members to the program and inform them of the benefits of chlorine, as well as to ask if they are ready to have the program (to formally secure their

buy in). At community meetings, DSW staff explain how to use the chlorine dispensers to treat water, address any problems people raise, and collect phone numbers of community members for use when DSW sends text messages to promote the use of the dispensers. DSW also asks for a small contribution of sand and other materials needed to install the dispenser, as well as a mason from the community who can help install it.

6. **Choose water points for dispensers.**
   DSW's criteria for placing a dispenser near a water source: the water source must have low to moderate turbidity (because chlorine is less effective in treating highly turbid water); the source must have at least 10 households using it; the source must be working for at least 9 months out of the year; and, in situations where the water point is located on privately-owned land, the land-owner must be amenable to the dispenser. About 65-75% of water points in an area meet these criteria.

7. **Install the dispensers.**

8. **Host a smaller meeting at each water point** where a dispenser was installed so that people can see it and be reminded of how to treat their water.

9. **Attendees of this meeting elect a person from the village to be the official chlorine dispenser promoter** by show of hands or secret ballot. The promoters are charged with refilling dispensers with the chlorine supplies that DSW delivers, ensuring the dispenser is in working order, communicating any issues to DSW staff, and reaching out to people to encourage them to use the dispenser. Promoters are given chlorine dispenser promoter T-shirts, and are sometimes given a small gift such as $1 of phone credit per month, but in the past have otherwise been unpaid. DSW is studying variations on the incentives it offers promoters: it is experimenting with offering cash incentives, such that the promoter earns a reward for each household with chlorine present in their collected drinking water. It is also trying out a non-linear model in which the promoter is rewarded when the community reaches a certain percentage of households with chlorinated water.

10. **Provide services for ongoing operation** of each water point: chlorine supply, fixing malfunctioning dispensers, marketing to increase uptake, monitoring and evaluation (DSW conducts 2-month, 4-month and 12-month evaluations for the 2100 dispensers it has installed)
    DSW's field work is done by field associates who collect data, hold community meetings, etc, and by community field assistants who deliver the chlorine. DSW also has an area coordinator and associate area coordinator, to whom the field staff report. They in turn report to the Operations Manager.
    Field visits for chlorine delivery currently occur about every 3 months, but DSW is exploring reducing visits to 2-3 times per year.

The field associates visit a sample of households using the chlorine dispenser, and test for levels of chlorine present in stored household drinking water. [We did not discuss the results in depth during this meeting]. DSW also collects survey data in addition to monitoring chlorine levels.

Observations from visit to chlorine dispenser sites

We visited two chlorine dispensers installed at water points located close together (no more than a half mile apart), in a rural area of Busia. We had the opportunity to speak with the DSW promoter at the first spring. The spring was protected in 2009 (spring protection involves building a cement structure to encase the spring area and inserting pipes to channel spring water. This prevents water from the spring becoming mixed with contaminants from the pooling water around it before it is collected).

The promoter at the first dispenser site told us that about 300 people collect water from this spring, and DSW told us that the usage rate at this location was 33% (meaning that during the last random visit to this spring, 33% of the households sampled had detectable chlorine in their stored drinking water). The promoter said that he comes to the spring weekly to encourage people to use the chlorine.

This chlorine dispenser was installed opposite the small set of stairs leading down to the water collection point, which meant that in order to add chlorine to a container, the person collecting water would have to first step across the protected spring, and then lift the container up to the level of the dispenser. We asked why the dispenser was placed in this position rather than in a place that people would be able to access it more easily, but there was not a clear reason. DSW explained that this was one of their earlier pilots, and clearer placement instructions for dispenser installation staff had been put in place since then. DSW also explained that people are instructed to add chlorine to their containers first so as to avoid having to lift 20 liters of water while standing across the spring. [See GiveWell's photos: https://picasaweb.google.com/109427789386001570492/DispensersForSafeWaterSiteVisit?authkey=Gv1sRgCKmT_tPy8uf3Ow].

Community members told us that they came to draw water for washing every day, and to get drinking water every 2-3 days. They said they used different containers for washing and drinking water.

We spent less time at the second chlorine dispenser location. People in this area were collecting water from multiple points along an above ground stream, as well as from a protected spring. The dispenser was placed several yards (at least 4) away from any of these collection points, and appeared to be removed from where most people were gathered. DSW staff told us that they considered this to be a poorly designed dispenser installation, and improved placement guidelines after this dispenser was installed. A GiveWell staff member watched the people collecting water, and saw one man using the dispenser in several containers before filling them. It wasn't possible to get a clear count of how many people were filling water during the short time we watched the second dispenser.