

This is part of a series of project briefs discussing the activities, research findings, and field experiences of PATH's Safe Water Project.

SEPTEMBER 2012

Echoing Success:

Expanding Promotion of Home Water Treatment Through the Antenatal Water and Hygiene Kit Program in Malawi

Background

Since 2006 PATH has investigated how commercial market forces can help extend access to safe water in developing countries and reduce waterborne disease. Promoting household water treatment and storage products targeted to low-income consumers is a key part of the strategy. In Malawi, PATH's Safe Water Project worked with the United States Centers for Disease Control and Prevention (CDC) to assess the effects of an innovative program that promoted chlorine disinfectants for household water treatment to pregnant women seeking antenatal care (ANC).

Use of chlorine to treat drinking water is a part of the CDC's Safe Water System (SWS), which was developed as an inexpensive method to reduce risk of diarrhea in the developing world (CDC 2010). When combined with use of safe storage containers and appropriate education, treating water with disinfectants has been shown to decrease the risk of diarrhea by 24 percent to 85 percent (CDC



Health workers influenced pregnant women in Malawi to treat water with WaterGuard by talking about the health benefits of clean water during antenatal visits, thus reaching them when they were especially open to information about protecting their children's health.

2005). In Malawi, Population Services International (PSI) began socially marketing a chlorine disinfectant under the brand name WaterGuard in 2002. The results confirmed a lesson learned in other countries: while social marketing can generate high levels of awareness of water treatment products, it is not sufficient to build long-term purchase and use by consumers (Freeman et al. 2009; Olembo et al. 2005; Parker et al. 2006; Quick 2003; Thevos et al. 2000). A nationwide survey in 2005 found that nearly two-thirds of mothers in Malawi had heard of WaterGuard, but only 7 percent were currently using the

product (Stockman et al. 2007).

In 2007, a pilot program led by Malawi's Ministry of Health (MOH) and PSI sought to expand use of WaterGuard by distributing the product to pregnant women visiting antenatal clinics in Blantyre and Salima Districts (PATH 2011). The product was part of a free hygiene kit—which also included a water storage container with a lid and tap, a bar of soap, and oral rehydration solution—designed to reduce diarrheal disease, a leading cause of childhood morbidity and mortality in Malawi (NSO/Malawi and ICF Macro 2011). The hygiene kit, together with free refills

of WaterGuard and soap offered at subsequent clinic visits, also provided an incentive for pregnant women to seek antenatal care, deliver at a health facility, and return for postnatal care. This is important because Malawi has one of the highest maternal mortality rates in the world—around 1,100 deaths per 100,000 live births (Hogan et al. 2010; WHO 2007). Virtually all pregnant women in Malawi make at least one ANC visit, which suggests that the ANC platform can reach a large number of women. However, many women wait until late in their pregnancies to seek ANC, and most do not make the recommended four ANC visits or receive any postnatal care (NSO/Malawi and ICF Macro 2011). This contributes to high mortality rates among mothers and infants.

The pilot in Blantyre and Salima Districts succeeded in increasing long-term WaterGuard use (Sheth et al. 2010) and prompted a follow-on program in Machinga District from April to December 2010, led by the MOH and the Clinton Foundation/Clinton Health Access Initiative. The Water and Hygiene Kit (WHK) program distributed the same kits as the earlier pilot to 25,000 women seeking antenatal care at 15 health facilities in Machinga. The women were also eligible to receive up to three free refills of WaterGuard and soap at later antenatal and postnatal checkups.

Unlike the earlier pilot, the WHK program in Machinga was designed to promote male involvement in ANC and HIV testing, along with safe water and hygiene practices. Therefore, women were only eligible to receive the free hygiene kit if their husband or partner accompanied them to the antenatal clinic.¹ Clinic-based health care workers (HCWs) educated program participants and their husbands on

water treatment, handwashing, and use of the kits during the ANC visit. They also counseled the couple on HIV risks and encouraged them to take HIV tests. Health surveillance assistants (HSAs) made follow-up home visits to women enrolled in the program, during which they reinforced educational messages, observed whether WaterGuard and soap were present in the home, and tested stored drinking water for residual chlorine. During the intervention, PSI continued its normal distribution system and promotional activities for WaterGuard, including radio advertising and roadside billboards.

Program strategies

The programs in Malawi were designed to move expectant mothers across the behavior change continuum illustrated in Figure 1, from:

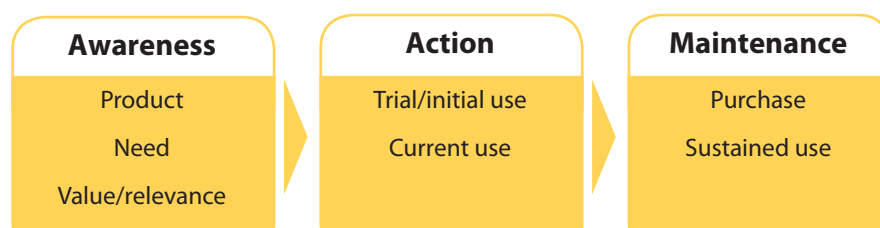
- *Awareness* of the need to treat water, the product, and its value to
- *Action*, that is, trying WaterGuard and using it regularly, and then to
- *Maintenance*, that is, budgeting for the regular purchase of WaterGuard and incorporating it into daily household routines.

Ultimately, the goal was to change social norms and encourage these new behaviors to diffuse across the community.

The WHK program in Machinga relied on a series of proven strategies to achieve this goal:

- **Teachable moment.** A trigger event—pregnancy—was used as a catalyst for behavior change. The program took advantage of a teachable moment when expectant mothers are open to messages concerning child health and may be motivated to make positive changes in their health practices. Behavior change messages were targeted to a particularly vulnerable population: households with children under age five.
- **Free product trial.** The free hygiene kit and subsequent WaterGuard refills served as an incentive to attract couples to health services, including ANC, postnatal care, and HIV testing. The extended free trial also allowed households to get used to WaterGuard and experience its health benefits before committing themselves to purchase.
- **Face-to-face interaction.** Interpersonal communication was leveraged for behavior change and complemented mass media promotions. Health workers, who are highly respected and credible information sources, educated couples on the need for safe water practices during clinic and home visits. The message spread as couples talked to family, friends, and neighbors, and social networks ultimately provided reinforcement for women's decisions

Figure 1. Behavior change continuum



¹Women who did not have husbands or whose husbands were unable to attend the clinic with them for legitimate reasons could obtain a letter from their village chief—a typical procedure in Malawi—as a precondition for receiving the hygiene kit.

to use WaterGuard.

- **Male involvement.** By requiring male partners to accompany their wives to the ANC clinic, the program encouraged men to become more involved in the pregnancy, to receive HIV testing along with their wives, and to take an active role in household water and hygiene matters.

Both quantitative and qualitative methods were used to evaluate the effect of the WHK program in Machinga. This project brief summarizes the findings from qualitative research conducted by PATH while noting relevant data from two rounds of surveys conducted by CDC.

Methods

CDC conducted baseline and follow-up surveys in March 2010 and March 2011 at 8 of the 15 health centers implementing the WHK intervention. Respondents included women enrolled in the program, plus close friends and relatives who could offer insight into the diffusion of the intervention. In May/June 2011, PATH conducted in-depth interviews and focus group discussions (FGDs) on the motivations for trying, purchasing, and continuing to use WaterGuard.

Female subjects for the interviews and focus groups were selected from the 87 program participants and 91 friends and relatives who took part in the follow-up survey. They were randomly selected without regard to their water treatment practices. In-depth interviews were conducted with 36 program participants and 15 friends and relatives. In addition, 14 FGDs were held—11 with program participants and 3 with HSAs. All but one of the women included in the qualitative research were married, and all but one had at least one child under age five. Their ages ranged from 21 to 44, and almost half had completed primary

school or had more education.

To provide context and other points of view, the PATH-led research team also conducted interviews with 16 husbands of program participants, 16 health workers (including both HCWs and HSAs), and 7 vendors who sold WaterGuard. In addition, three FGDs were conducted with HSAs. The health workers were selected opportunistically and had not necessarily participated in the WHK intervention, although all were responsible for disseminating messages about safe water and hygiene as a routine part of their work.

The interview and FGD guides explored potential motivational factors for WaterGuard use, including educational messages, perceived value of home water treatment, and social influencers. Health workers were also asked about program implementation issues.

Water treatment and storage practices

Most women collect water daily from

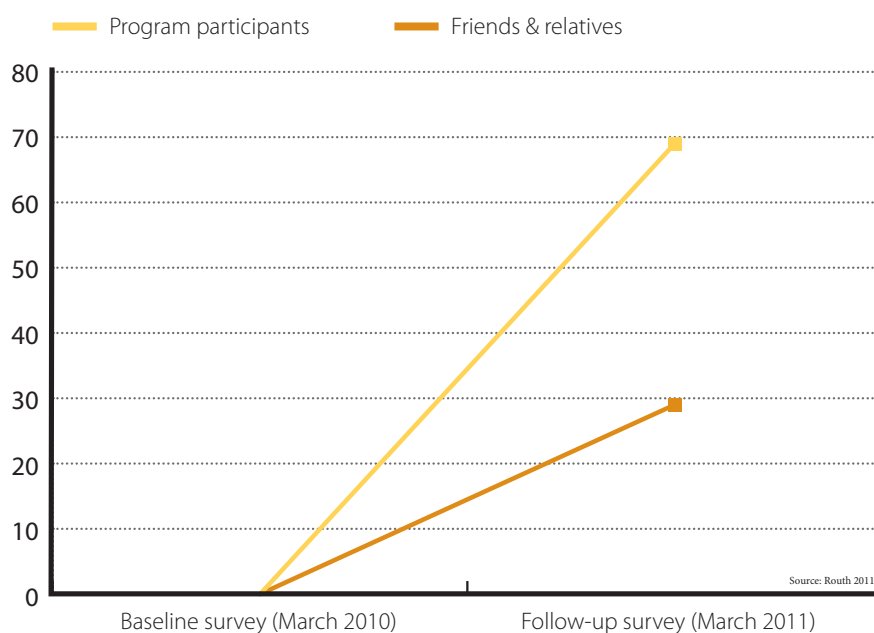
a borehole or well, and nearly all program participants continue to use the container from the hygiene kit to store their drinking water. Women are highly aware of the need to prevent contamination when storing or drawing water. For example, one woman in the friends and relative group explained:

After I add WaterGuard, I cover the bucket properly to prevent germs that cause diarrhea to enter the water.

All of the women and men interviewed had tried WaterGuard and purchased the product at least once. Men usually provide the money to buy WaterGuard and often make the purchase themselves, since they are in the market more frequently than women. While most households do not buy a new bottle until the old one is finished, a few reported stocking up on multiple bottles at one time or buying a new bottle in anticipation of running out, in order to avoid any gap in water treatment.

Nearly all of the women and men interviewed described themselves as regular—for the most part daily—users of WaterGuard. However, one-fifth of program participants and husbands,

Figure 2. Current, confirmed use of WaterGuard among respondents to CDC surveys



and a smaller proportion of friends and relatives, acknowledged that they had not used WaterGuard for at least one week prior to the interview.

Confirmed use of WaterGuard is somewhat lower than self-reported use. The CDC follow-up survey found that 69 percent of program participants, but only 29 percent of friends and relatives, had a bottle of WaterGuard in their homes and residual chlorine in stored drinking water (Figure 2). This is a dramatic increase over the baseline survey, which found no confirmed use of WaterGuard, and is similar to the results seen in Blantyre and Salima during the earlier pilot (Routh 2011).

The vast majority of women and men recognize the need to treat water year-round, but some admit making a greater effort to buy and use WaterGuard when they perceive the risks of contamination and waterborne disease to be higher, for example during the rainy season or when water comes from wells rather than boreholes. Vendors confirm that WaterGuard sales rise during the rainy season and diarrheal disease outbreaks. A few women even described doubling the dose of WaterGuard when they treated well water during the rainy season. One husband summarized his approach this way:

It is important to drink treated water all year round, but we just fail to do so because of other problems. I make sure I always use WaterGuard during rainy season. We are supposed to use it all the time, but I've run out of WaterGuard now. I try very hard to use WaterGuard during rainy season because the water is a bit dirty compared to the dry season.

Even when they do not have WaterGuard, few women drink water “as is.” Instead, they boil and/or sieve water to remove impurities. The earlier pilot in Blantyre and Salima found that many households switched back and forth from WaterGuard to a free stock chlorine solution distributed by

the District Health Office to treat their water (Wood et al. 2012). This was not the case in Machinga: very few of the women interviewed had ever tried stock chlorine, and some had never even heard of it. According to local health workers, stock chlorine has not been widely or consistently available in Machinga in recent years, so they promote WaterGuard instead.

Motivations for use

Preventing illness

According to health workers, diarrheal illnesses are one of the most common health problems in the community. Both women and men understand that water may contain germs that cause diarrheal diseases, including cholera, and that adequately treating water can help prevent these diseases. They consider diarrhea to be a serious problem that disrupts their ability to work and can even be fatal, as this woman friend of a program participant noted:

Diarrhea can kill. Say you have been stricken by cholera here and the clinic is far and only a bit of your life is left. You can die. So I fear it a lot.

Dissatisfaction with the source of drinking water—especially the possibility that it might carry disease—is a major motivator for using WaterGuard. Current WaterGuard users were less likely to be satisfied with the quality of their source water than those who had not used WaterGuard recently. One program participant explained how she manages the risks:

I'm satisfied [with my drinking water source] when I have money to buy WaterGuard and use in the water from the well. When I don't have it, I draw at the borehole, but I drink it with a suspicious mind, wondering if there are any germs or not.

By far the most common reason for trying

WaterGuard was women's desire to protect their families from diarrheal disease. Once they began using WaterGuard, most women noticed that their family was suffering less from diarrhea and stomach problems. That personal experience motivated them to continue using WaterGuard whenever possible:

We will keep using WaterGuard in this home, because in this home the children don't get stomach illnesses... So when we run out of WaterGuard, we will go buy some more.

Women and men also note that reducing illness yields economic benefits. They can work more because they are sick less often and do not have to care for sick family members. They save money on medicine and health care. And they generally have fewer worries.

Triggers to try WaterGuard

Although many program participants had heard of WaterGuard before the WHK program, few had tried it. They reported that the HCW's advice during their ANC visit, coupled with the free supplies in the hygiene kit, provided the immediate impetus to begin treating their water with WaterGuard. A program participant explained:

I'd hear about it, but I wasn't interested in it... We'd hear them say on the radio that it's good in water and makes the water safe, but I wasn't interested. But when I was pregnant, when I saw that they say we should use this way, that's when I decided to use it.

For friends and relatives, the trigger to buy and use WaterGuard was less clear cut. It involved some combination of social marketing messages, mostly on the radio, and the personal encouragement of husbands, health workers, friends, and relatives. According to the follow-up survey, 56 percent of friends and relatives reported that a WHK program participant had shared information with them (Routh 2011). A woman in the friends and relatives group described how

this happened:

[My friend] was pregnant, then she joined the program, then was asked to bring in a friend, so she introduced me to them, then she started explaining to me what WaterGuard was all about.

Role of health surveillance assistants

Ongoing encouragement from health workers, especially HSAs, was an important source of motivation for women and their husbands. Many program participants expressed gratitude for the home visits made by HSAs, and some considered it the most important part of the WHK program. Program participants credited HSAs with supporting their continued use of WaterGuard and helping them disregard negative comments from others:

My neighbors may say bad things about me treating my water, but HSAs come and compliment me on my treated water. They tell me that it is important to treat water so that my children will not get sick.

Data from the follow-up survey

confirms the importance of HSAs: use of WaterGuard is directly associated with the number of home visits received from HSAs (Figure 3).

Friends and relatives also described visits from HSAs to discuss hygiene practices, including water treatment, and said HSAs influenced their decisions to use WaterGuard. However, they did not express these sentiments as consistently or as strongly as program participants and their husbands.

Social reinforcement

Women overwhelmingly reported receiving encouragement to treat their water from others, including husbands, children, relatives, friends, even village chiefs. Husbands play a special role given cultural norms about household decision-making in Malawi and women's reliance on husbands to pay for and/or purchase WaterGuard. Program participants almost universally found support from their husbands for WaterGuard, although a few had to overcome some initial resistance. One

program participant described her husband's role as follows:

If I don't use WaterGuard on that day, he reminds me to keep the water treated. Yes, but also, if it is finished, I tell him and he goes to buy it. Maybe if he would say he doesn't want to buy it then I wouldn't have been using it, but he's the one who encourages me.

Education on safe water during the ANC visit may have heightened men's support for WaterGuard. However, most friends and relatives also reported strong support from their husbands for using Waterguard, even if it was not as explicit.

Some women, like this program participant, also received strong encouragement from family and friends:

My mother, she tells me to treat my water with WaterGuard especially because of the children; she tells me that if I do not want my children to have diarrhea then I have to treat my water.

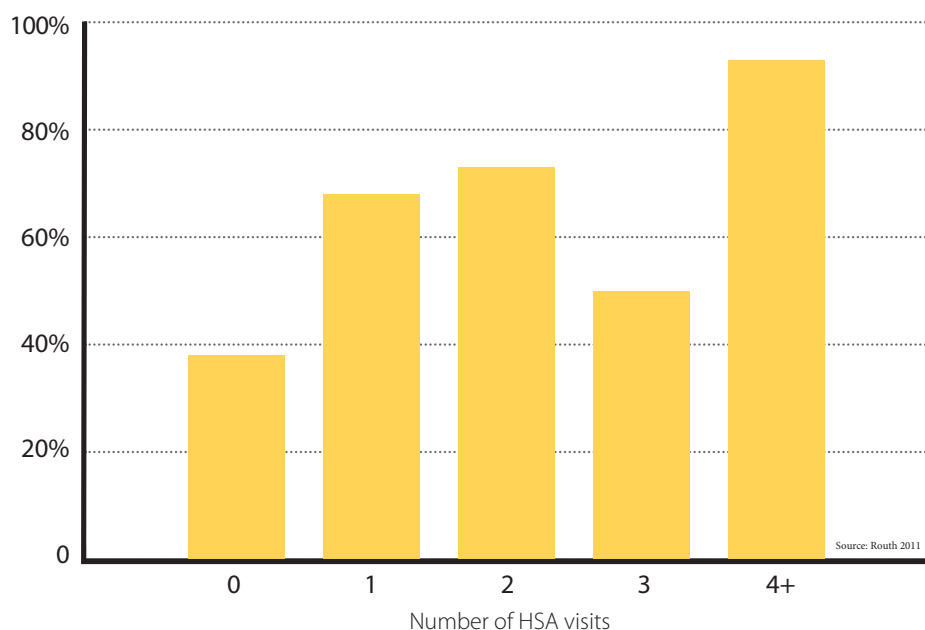
Once WaterGuard became an integral part of the household routine, women reported that their husbands and children would remind them to treat the water whenever they forgot:

You know the children [used to] shout by complaining about the smell of WaterGuard, but then they get used to it and if you do not put WaterGuard in the water, they ask why you did not put WaterGuard.

During the design of the WHK program, it was hoped that social networking among family, friends, and neighbors would diffuse messages about safe water throughout the community and change attitudes toward water treatment. Many of the women and men interviewed did report encouraging others to use WaterGuard. A woman in the friends and relatives group recounted this success story:

My friend, I tell her about WaterGuard... that WaterGuard is very important – it prevents germs, and disease becomes rare in the home. So when I told my

Figure 3. Confirmed use of WaterGuard by program participants (n=96), according to number of HSA home visits received, 2011 CDC follow-up survey



friend, she took interest, bought some, and started using.

It is less clear whether social norms have changed. Women generally felt that at least a few other community members were treating their water. Most program participants say that WaterGuard has not changed how community members view them, and some have been the butt of disparaging remarks. But other women believe that they are seen as more knowledgeable and modern, with healthier and happier children, since they began using WaterGuard.



PATH/Siri Wood

During in-depth interviews and focus group discussions mothers shared their motivations and disincentives for trying, purchasing and continuing to use WaterGuard.

Barriers to Use

Affordability

Women, men, health workers, and vendors all agree that cost is the leading barrier to consistent and continuing use of WaterGuard. Affordability was also the leading reason given for discontinuing its use in CDC's follow-up survey (Routh 2011). People usually paid MK30 (US\$.20) for a bottle of WaterGuard. Some thought this was "fair," "cheap," or "not a problem," but others called the price "expensive" or "too high." Most women and men—even those who consider the price fair—said it was sometimes difficult to find the money to buy WaterGuard. Some suggested reducing the price to permit more households to use WaterGuard consistently. An HSA urged:

I would like to see the price change to MK10 per bottle so that each and every family is able to buy [WaterGuard].

Affordability is subjective, however, and depends on how highly households prioritize water treatment. Some program participants were willing to forego other routine purchases or borrow from the store in order to keep

treating their water. One program participant described how she bought WaterGuard even if it meant that she could not "buy relish for the home," while another boasted that her husband "even sacrifices his cigarettes" to buy WaterGuard. Less committed individuals were not willing to make these kinds of sacrifices and only purchased WaterGuard when the money was readily available. This comment from a woman in the friends and relatives group is typical:

When I have money, I am able to buy WaterGuard, but sometimes I can't afford it... I rarely have money.

Some program participants and HSAs weighed the cost of WaterGuard against its benefits. They argued that WaterGuard is a good value because it prevents disease and saves money on medical expenses. For example, a program participant said:

I think it's better I pay the money [for WaterGuard] because if I didn't, I would pay more money [to treat diarrhea] and have more problems.

Some others admitted that they found it

difficult to spend money on WaterGuard because they had gotten used to receiving it for free from the ANC clinic.

Smell and taste

All of the respondents acknowledged that some people have an intense dislike for the chlorinated smell and taste of water treated with WaterGuard. One program participant vividly described their reaction:

They say that your water stinks and they refuse to drink it.

Three vendors thought the product would be more marketable if the smell were reduced.

Findings suggest that this barrier can be overcome. Respondents to the follow-up survey rarely cited the smell and taste of treated water as a reason for discontinuing WaterGuard, and most of the women and men interviewed said they liked the smell and taste of treated water. Part of the appeal is that the smell and taste signals the presence of germ-killing chemicals. In fact, a number of program participants referred to WaterGuard as medicine. However, it

does take time to get used to the smell and taste of water treated with chlorine. One program participant described the process this way:

When I drank the water, it wasn't good, but I'm now used to it. Other people also don't like it. When they come and they taste it, they say, "It's not good, it smells," so yes, but my family and I got used to using WaterGuard and when we run out of it, we see it as a big problem.

Availability and awareness

Some men and women reported traveling long distances to purchase WaterGuard—in some cases, only to find that it was not in stock or was beyond the expiration date. Prices also tend to be inflated in rural areas. Although WaterGuard users did not identify these as barriers to use, some HSAs expressed concerns about the availability of the product. During a focus group, one HSA said:

WaterGuard is mostly available in big trading centers and not in the typical village where there is really a need to protect their water. It would tremendously help if WaterGuard could be found everywhere, even in the small shops in the villages, so that the people would be able to treat their drinking water.

Health workers and vendors agreed that additional promotional efforts are needed to raise awareness of water treatment and WaterGuard. They suggested involving village chiefs in promotional efforts, holding community meetings, comparing the cost of WaterGuard to its benefits, broadcasting radio messages more frequently, and displaying posters at health facilities and shops.

Male involvement

In order to receive a free hygiene kit,

husbands had to accompany their pregnant wives to the ANC clinic, where both were offered an HIV test. Attending the ANC clinic was clearly foreign to many men and some resisted at first, largely because they were afraid to learn their HIV status. There was also some social stigma attached to accompanying one's wife to the clinic. However, the free hygiene kit—especially the storage container, which is expensive and not readily available—served as a strong incentive for men to attend, and the endorsement of the village chief also helped. According to one husband:

[The WHK program] has encouraged a lot of people in the village who didn't want to go and get an HIV test. They now get an HIV test because they know that they will receive the hygiene kit... Other men are shy, they refuse to escort their wives and they tend to look at us like foolish men, not knowing that they are the foolish ones because we know our status... They ask why we are accompanying our wives to the clinic when they can go on their own.

Both women and men overwhelmingly described their experience at the ANC clinic as positive and praised its benefits. Because men received information about pregnancy, HIV, and safe water directly, women no longer had to battle their skepticism about the messages they relayed. One program participant reported:

I was very happy because we heard the messages together. If I heard it alone, he wouldn't have believed me, he would have said I thought it all up by myself. That's what I was happy about.

Men and women enjoyed being treated as a family unit, and husbands became more involved and supportive of prenatal care and maternal well-being. Women also said the trip to the health center brought them closer to their husbands and made them feel loved and appreciated. During the focus group, a

program participant concluded:

Our marriages are strengthened after going to the ANC clinic together. We leave a better couple.

This was apparently the first time that many men had attended the health clinic or been tested for HIV. Women felt that joint HIV counseling and testing led to greater trust and fidelity between partners, and men acknowledged that receiving a negative test result made them rethink the importance of being faithful to their wives. One husband explained:

For my first two kids, she would go alone, but this time we [husbands] were also involved. I like that. I felt included in the pregnancy... I also liked it because I now know my status and I would like to keep it that way... It has helped me. A long time ago, before I got tested, I would not let a girl pass by. I would want her to be mine. But, now since I know my status, and because of the advice, I let them ladies go.

Health workers point out that joint counseling and testing is especially helpful in case of positive HIV test results. Prior to the WHK program, women would get tested on their own; if the result were positive, husbands often blamed or abandoned their wives and made it impossible for them to receive follow-up care. With joint counseling and testing, men do their part to care for their wives and children if the test results are positive.

Discussion and implications

The findings in Machinga confirm three key lessons learned on hygiene behavior change from the earlier ANC program in Blantyre and Salima (PATH 2011; Wood et al. 2012):

- ANC can be an effective platform for promoting behavioral changes that

promote the health of the family, such as regular home water treatment, increased participation in ANC, and uptake of HIV testing.

- Extended free trials do more than overcome cost barriers; they also give people time to get used to a new product such as WaterGuard and experience its health benefits firsthand.
- Interpersonal communication from trusted sources—such as health workers, husbands, relatives, and friends—provides social support essential to ongoing use of a new product.

The WHK program also provides additional insights into one of the key challenges for consistent and continuing home water treatment in Malawi: the recurring expense of purchasing WaterGuard. Cost has been a persistent issue for social marketing efforts promoting chlorine-based water treatment to low-income households (Olembo et al. 2005; Stockman et al. 2007; Loharikar et al. 2010). During the pilot project in Blantyre and Salima, people had the option of switching to a free stock chlorine solution distributed by the District Health Office. But stock chlorine was not widely or regularly available in Machinga so there was no easy way to reduce the financial burden of water treatment.

However, interviews in Machinga show that the concept of affordability is subjective and flexible. How great a priority households place on water treatment is as important to their purchasing decisions as the actual sums of money involved. Individuals in Machinga who were especially committed to water treatment, typically to protect the family's health, were willing to forgo other purchases or use store credit in order to continue buying WaterGuard even when funds were tight. This underlines the importance of convincing people of WaterGuard's value, including its economic benefits in reducing expenditures on health care.

Commitment to consistent water

Increased use of antenatal care and HIV services

According to health care workers, the incentive of receiving a free hygiene kit encouraged more pregnant women to seek ANC services and to visit an ANC clinic earlier in their pregnancy. During the focus group, one HSA reported that:

Most women are now attending antenatal [clinic] within three months of their pregnancy or during second trimester, since they know they will get the bucket if they attend their first antenatal service early enough in their pregnancy. But in the past women were coming here with a very old pregnancy.

The follow-up survey confirms that the intervention made a positive impact on pregnancy-related services. It showed that 89 percent of program participants made 3 or more ANC visits; 90 percent delivered at a health facility, and 90 percent had their infants checked by a health care provider (Routh 2011). In contrast, the 2010 Malawi Demographic and Health Survey (MDHS) found that only 73 percent of women delivered at a health facility and 52 percent received postnatal care (NSO/Malawi and ICF Macro 2011). The kit was not the sole influence, however. A few health workers reported that village chiefs had recently begun fining women who did not deliver at a health facility.

The WHK program also boosted rates of HIV testing, especially among men. According to the follow-up survey, 99 percent of program participants and their male partners were counseled on and tested for HIV, and 99 percent disclosed their HIV status to one another (Routh 2011). By comparison, the 2010 MDHS found that 87 percent of pregnant women received an HIV test through ANC, and just 60 percent of married men had ever been tested for HIV (NSO/Malawi and ICF Macro 2011).

Health workers also described improvements in a broad range of home hygiene practices, such as creating handwashing stations outside of toilets, washing hands with soap, and keeping the compound swept. A few health workers talked about how the program had helped create a “culture of hygiene,” where women feel more in control of and able to practice good hygiene and safe water handling and treatment. The surveys found that soap observed in the home increased from 58 percent of program participants at the baseline to 76 percent at the follow-up, while correct handwashing technique rose from 21 percent to 65 percent of program participants (Routh 2011).

treatment is also central to another challenge that proved to be as common in Machinga as in Blantyre and Salima, seasonal or situational use of WaterGuard. Many people, including some who say they are committed to

the idea of treating water daily, tend to use WaterGuard only when they perceive health risks to be higher (for example, during the rainy season, cholera outbreaks, or when using well water) or when they have the money.

This practice makes it difficult to identify and classify WaterGuard users and nonusers. Inquiring about or testing for WaterGuard use at one point in time, as the evaluations of the ANC pilot project and WHK program did, can be misleading. To better understand water treatment practices, researchers need to conduct a longitudinal follow-up that measures WaterGuard use throughout the course of a year as seasons and household resources wax and wane.

The WHK program added two components to the pilot project fielded in Blantyre and Salima: male involvement and HIV testing. Since the 1994 International Conference on Population and Development (ICPD) in Cairo, there has been increasing recognition of the important role men play in the health of their family, whether as clients, as partners, or as agents of positive change (Greene et al. 2006). Husbands have a strong voice in WaterGuard use in Malawi, where cultural norms recognize men as the ultimate authority in marriages, especially on financial matters. Therefore, the WHK program actively solicited male involvement by requiring husbands to accompany project participants on ANC visits.

Many initiatives in sub-Saharan Africa, including Malawi, have encouraged married men to take on an active role in ANC and preventing mother-to-child transmission of HIV. However, they have encountered a variety of obstacles, including a widely held perception that it is unnecessary, inappropriate, and unmanly for husbands to accompany their wives on ANC visits, as well as men's limited awareness of reproductive health issues, concerns about revealing their HIV status, and reluctance to take time from work (Byamugisha et al. 2010; Kululanga et al. 2011; Onyango et al. 2010). Although men in Machinga shared these concerns, the offer of a free hygiene kit proved to be a powerful incentive that persuaded men to go to

Implementation considerations

Health workers encountered several challenges during the implementation of the WHK program. First, their own workload increased as more women came for ANC services and they had to educate husbands as well. For the most part, this was outweighed by their new skills and increased effectiveness at work, although HSAs complained that the training was too short and missed important topics. One HSA weighed the costs and benefits this way:

This program has really added to the workload... We have accepted it because before when we visited the areas we were doing the same jobs, but now we have added to our responsibilities... It hasn't disturbed our jobs, but has increased our abilities because we have added new skills.

Despite workload challenges, the synergistic benefits of integrated programming should not be overlooked. Discrete programs to improve hygiene behaviors, increase use of ANC services, and HIV testing could prove more costly or more of a burden on health workers' time than an integrated approach.

Second, health facilities faced shortages of every component of the hygiene kit. Limited availability of WaterGuard in rural villages also undermined health workers' advice to buy and use the product consistently.

Finally, health workers questioned rules governing women's eligibility for the program. They pointed out contradictions between the program's various goals, which included increasing male involvement, reducing diarrheal disease, and encouraging women to come for ANC earlier in the pregnancy. Many health workers felt it was unfair to prevent women from benefitting from the program simply because they did not have a husband or their husband was away or refused to come. They also noted that it was counterproductive if the goal was to reduce diarrheal disease. During the focus group, one HSA argued:

The program is very good, but they should have set that everyone who is pregnant should receive the kit, because if we want to deal with hygiene, we should not mix it with motivation [for something else like husband involvement].

the clinic despite the social stigma.

Anecdotally, male involvement had multiple positive impacts for project participants. Not only did men offer verbal and financial support for home water treatment, they also became more involved in and supportive of ANC and maternal well-being. Both women and men agreed that joint counseling and HIV testing at ANC visits led to greater

trust between partners and strengthened the marital bond.

However, it is not certain how big a role male involvement played in the increased use of WaterGuard, since friends and relatives also reported that their husbands—who did not attend ANC visits—were largely supportive of home water treatment. In addition, previous experience with incentives



PATH/Siri Wood

While still uncommon in Malawi for males to accompany their partners to antenatal clinics, nearly all husbands interviewed spoke positively of the experience

in Malawi suggests that the positive impacts may not last. When Mwanza District Hospital began awarding prizes to village leaders for increased male involvement in maternal health care, the number of couples attending antenatal clinics rose. But when the incentives ended, men stopped coming (Kululunga et al. 2011). It is likely that without the lure of a free hygiene kit, men in Machinga will also stop accompanying their wives on ANC visits.

The addition of HIV testing to the WHK program expanded on the integrated approach to health education and services tested in Blantyre and Salima. ANC providers offered couple counseling on safe water, hygiene, and HIV testing as well as ANC during clinic visits. The approach proved successful on many levels. The free hygiene kit and refills encouraged pregnant women to come for antenatal care earlier in their pregnancies and to return to the health facility for more ANC visits and for delivery. As noted above, the kit also drew men to the clinics, where rates of HIV testing increased substantially. The intervention also contributed to broad changes in home hygiene that extended to handwashing, sweeping, and safe water handling as well as water treatment.

The success of the WHK program

suggests that the ANC platform could be an effective way to trial other products with proven home health benefits, such as improved cook stoves and latrines. Earlier studies in Tanzania offer support for this approach; they found that maternal and child health clinics make excellent distribution points for discount vouchers to buy insecticide-treated bed nets (Fraser-Hurt & Lyimo 1998; Mushi et al. 2003). Piggybacking these types of interventions on routine health services for pregnant and postnatal women offers several advantages. ANC-based programs (Wood et al. 2012):

- Target behavior change messages and product offers to a population that can potentially benefit the most, namely new mothers and young children.
- Take advantage of pregnancy as a catalyst for behavior change.
- Rely on health workers, who are highly respected and credible sources of information on health matters, to disseminate messages.

Yet the experience in Machinga also raises some cautions about this approach. It requires additional training for ANC providers and increases their workload because providers must cover more topics and address husbands' concerns

as well as those of women. Providers also may need to attend a larger number of clients if product offers prompt more women to seek ANC. While providers may enjoy their new skills and increased effectiveness, programs must plan carefully to ensure that the benefits of integrated programming and increased use of services are reaped and health workers manage their increased responsibilities effectively.

Promoting home water treatment products like WaterGuard is one of the most cost-effective ways to increase access to safe water for low-income households, but it requires significant behavior change—both in daily water handling practices and in the allocation of household budgets. Experience from Malawi has demonstrated that targeting pregnant women with a free product trial and extensive interpersonal communication can prompt them to try WaterGuard. The ANC platform also shows promise for other household health interventions. Sustaining the behavior change and transforming these women into consistent, committed WaterGuard users is far more challenging, however. Involving husbands can help by providing social reinforcement and financial support for the practice.

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