



WASHmobile Mobile Health and Chlorine E-Voucher Program

OPERATIONAL GUIDE



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1. Overview

This operational guide provides a detailed overview of how to implement the WASHmobile program building on lessons learned from our formative research and randomized controlled trials. We recommend piloting this approach in your context before large scale program implementation.

For more information on tailoring program delivery and components please [reach out to the WASHmobile team on our Contact Us page](#).

2. Background

Early alert and response systems for diarrhea outbreaks targeting populations at highest risk for diarrhea promote climate resilience and are a critical cost-saving measure to reduce diarrhea morbidity and mortality compared to a blanket approach. When a diarrhea patient presents at a healthcare facility for treatment, our research in the DRC has shown that individuals living within 500 meters are at >12 times higher risk of hospitalized diarrhea than the general population for the next 7 days.

Targeted WASH to those residing in close proximity to diarrhea patients can serve as a critical cost-effective approach to reduce diarrhea outbreaks for those at highest risk.¹⁻³ This type of targeted approach builds on the status quo, which is waiting until diarrhea outbreaks become large before responding with a “blanket approach” where WASH is delivered in-person to a large population, a costly and time-consuming approach.⁴ Furthermore, mHealth messages present a low-cost approach to alert populations of public health threats, which does not involve costly in-person visits.^{5,6} In partnership with the Ministries of Health in the DRC and Bangladesh, we developed a WASH mHealth messaging system for diarrhea patient households, as part of the WASHmobile Program (“PICH7” program in the DRC and “CHoBI7” program in Bangladesh).^{7,8}

This program was tested in our two recent randomized controlled trials (RCTs) of our WASHmobile mHealth program in the DRC (PICH7 site, N=2,334 participants)⁹ and in Bangladesh (CHoBI7 site, N=2,626 participants)¹ among diarrhea patient households. In these RCTs, we found that sending weekly automated WASH-related voice and text mHealth messages from a doctor and the provision of chlorine tablets and soapy water (water and detergent powder) to diarrhea patient households in a healthcare facility at the time of patient treatment resulted in significantly higher sustained water treatment and handwashing with soap and significant reductions in healthcare facility visits for diarrhea, diarrhea prevalence, and stunting over a 12-month period.^{1,9}

Building on this work, in partnership with the DRC Ministry of Health and Vodacom (a telecommunication company), we have now adapted this innovation to serve millions more beneficiaries through an automated location-based push notification system which delivers WASH mHealth messages and e-vouchers for chlorine tablets to redeem at local pharmacies to those in high-risk areas for diarrhea outbreaks. This program is delivered in health areas at the beginning stages of diarrhea outbreaks. Voice calls and SMS messages are sent from a doctor at a local cholera treatment center telling phone subscribers that there is a diarrhea outbreak in their health area, and it is important to treat household drinking water for the next 7-day high-risk period. An SMS message is also sent with an e-voucher to redeem for free chlorine tablets at a local pharmacy or shop.

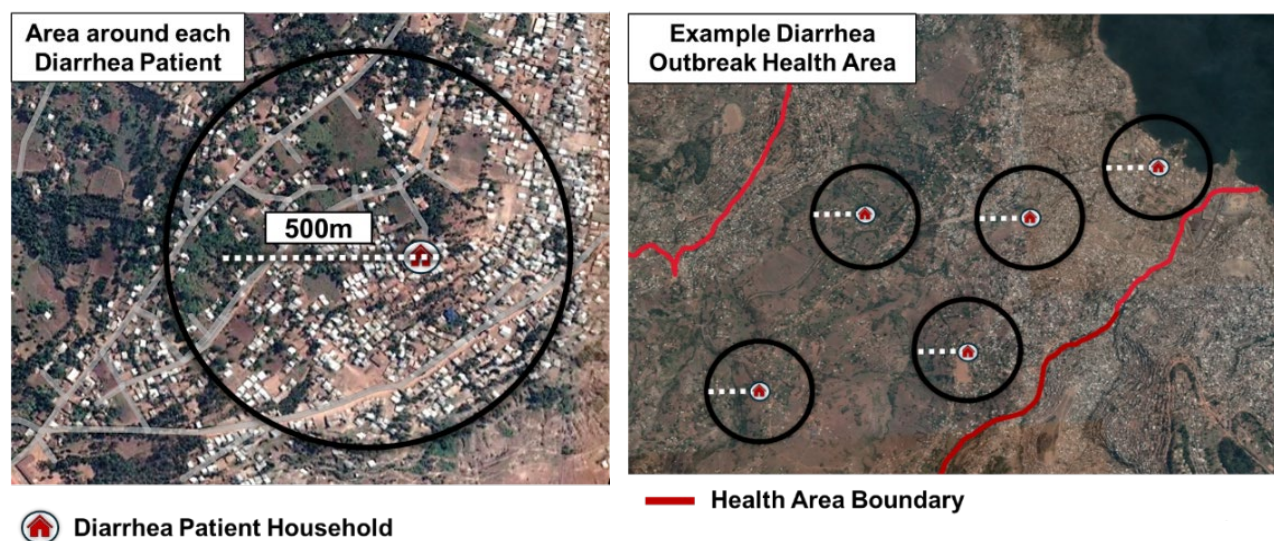
PICHA7 WASHmobile Pilot Findings

We conducted a pilot of this new service delivery model for WASHmobile in urban Bukavu in the South Kivu province of the DRC. This WASH mHealth and chlorine e-voucher program includes the delivery of automated voice calls and SMS messages from a doctor at a local hospital. The doctor states in a voice call that because there is a diarrhea outbreak in the phone subscriber's health area, it is very important that the household treats their water with chlorine during the next 7-day high-risk period. An SMS message containing an e-voucher for free chlorine tablets that can be redeemed at a nearby pharmacy or shop is sent at the same time. The pilot of the WASHmobile mHealth and chlorine e-voucher program was delivered in health areas where there were ongoing diarrhea outbreaks (diarrhea outbreak health areas) to 961 individuals in December 2024. Fifty-four percent of phone subscribers redeemed e-vouchers for free chlorine tablets at local pharmacies. During unannounced spot checks conducted on Day 7 after intervention delivery, 64% of households that redeemed e-vouchers had free chlorine greater than or equal to 0.2 mg/L in stored drinking water samples (indicating high water treatment), compared to only 20% of control households (p -value = 0.006). These findings demonstrate that this scalable service delivery model for our innovation using mHealth messaging and chlorine e-vouchers presents a promising approach to significantly increase chlorination of drinking water among high-risk populations for diarrhea outbreaks.

3. WASHmobile mHealth and e-Voucher Program Intervention Design

WASHmobile is delivered to two target study populations: (1) diarrhea patients and their household members; and (2) phone subscribers and their household members residing within approximately 500 meters of diarrhea patients in diarrhea outbreak health areas. Location-based push notifications in diarrhea outbreak areas to phone subscribers focus on the households within 500 meters of diarrhea patients, and messages are sent in the evening at 8 PM when most individuals are home. The intervention design is described in **Figures 1 and 2**.

Figure 1. Example of a 500-meter radius around a diarrhea patient household in a diarrhea outbreak health area in South Kivu province of the DRC.

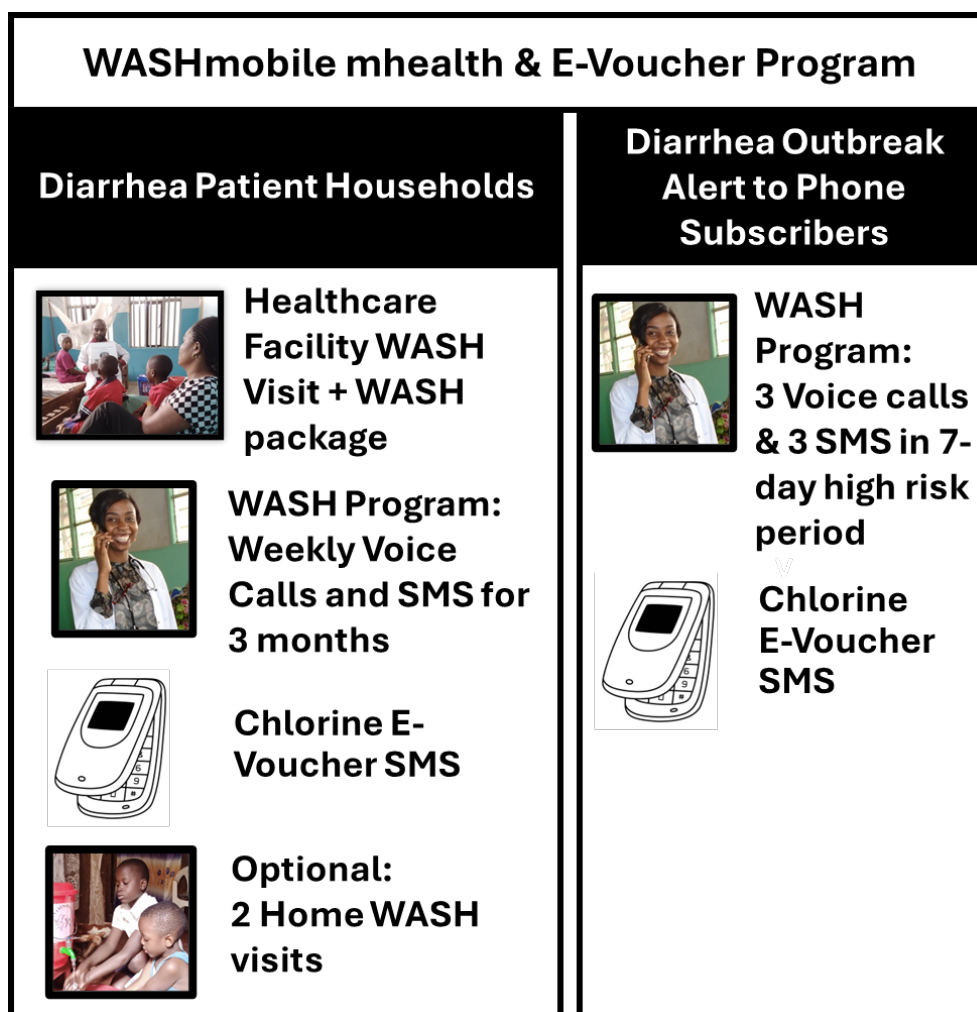


Description of the WASHmobile mHealth and e-voucher program

The final service delivery model for WASHmobile will need to be refined in each new context through formative research and piloting. A more detailed description of the e-voucher operational plan is provided below in **Section 3**. Here we present a general overview of the WASHmobile intervention components:

- **Diarrhea patients receive:** (i) one healthcare facility-based WASH visit by a health promoter; (ii) a WASH mHealth program comprising weekly automated voice and text messages for 3 months promoting handwashing with soap, drinking water treatment, and safe water storage; (iii) one e-voucher for 8 chlorine tablets to redeem at a pharmacy or shop (160 L of treated water); and (iv) one diarrhea prevention WASH package with oral rehydration solution (ORS), handwashing station (bucket, tap, basin), and soapy water (water and detergent powder). Optional: two home visits from a community health worker (within 7 days and 1 month of healthcare facility admission). In WASHmobile trials in Bangladesh, home visits provided no additional benefit over the mHealth only model.
- **Phone subscribers in diarrhea outbreak areas receive:** (i) 3 voice and 3 SMS mHealth alerts over 7 days from a doctor at the provincial hospital stating there is a diarrhea outbreak and recommending the use of ORS for diarrhea and handwashing with soap, water treatment, and safe water storage; and (ii) one e-voucher for 8 chlorine tablets to redeem at a pharmacy or shop (160 L of treated water).

Figure 2. WASHmobile mHealth and e-voucher program



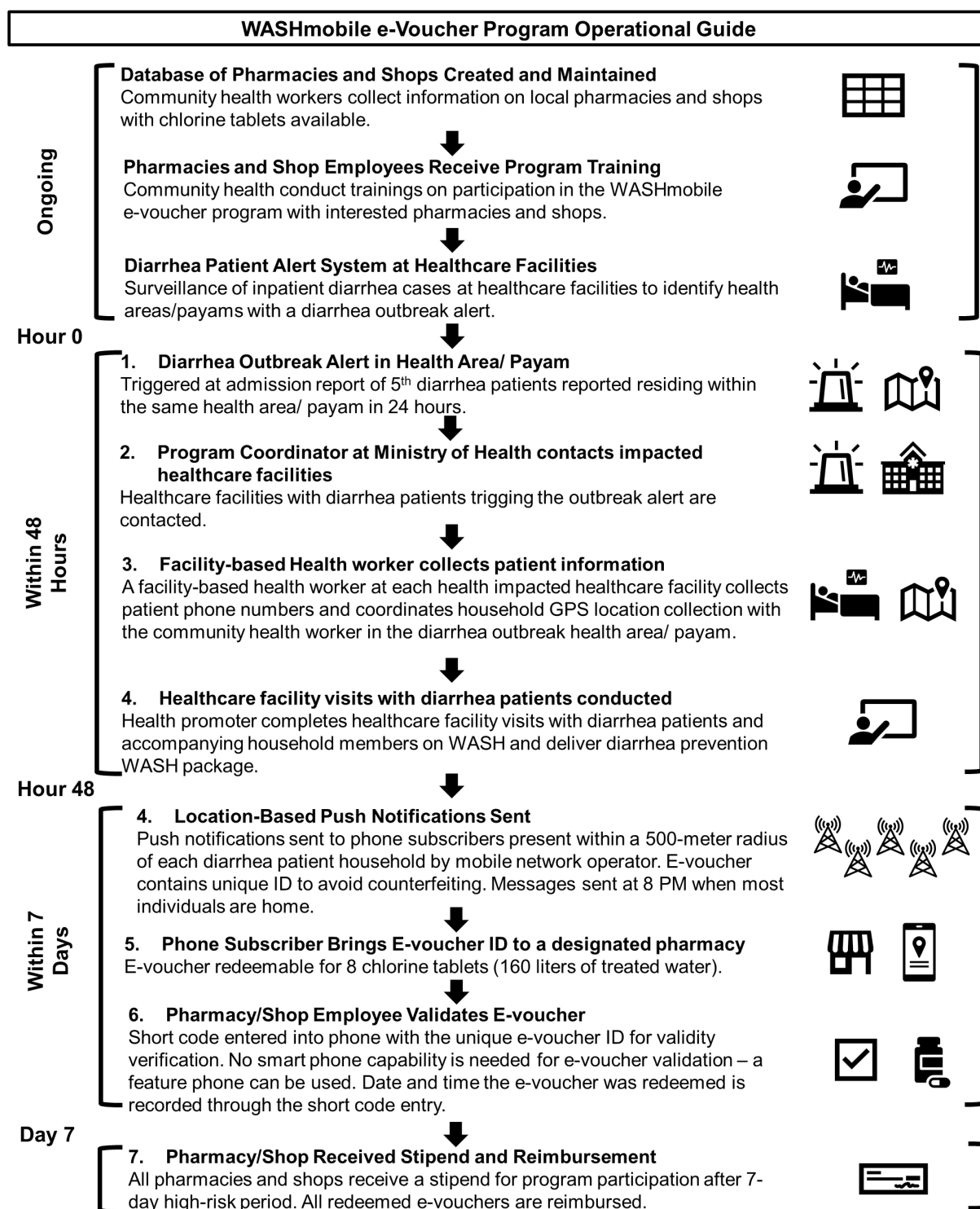
4. WASHmobile mHealth and e-Voucher Operational Guide

The WASHmobile mHealth and e-voucher program is initiated with an alert of a diarrhea outbreak in a health area defined as a health area having 5 or more inpatient diarrhea cases within 24 hours. This alert is based on the location where patients report residing, not the location where patients sought care. Inpatient diarrhea cases are captured through daily surveillance at healthcare facilities conducted in partnership with the Ministry of Health.

When a diarrhea outbreak health area is identified a health worker at that healthcare facility collects the phone number of the inpatient diarrhea case and contacts the public community health worker in their health area to collect the GPS location of the patient's household. In the DRC, public community health workers are embedded in the health system at the health area level. Within 48 hours, the intervention team conducts the healthcare facility visit for inpatient diarrhea cases triggering the diarrhea outbreak alert. Also within 48 hours of a diarrhea outbreak alert in the health area, location-based push notifications of a voice and SMS message from the WASHmobile mHealth and e-voucher program are sent to all phone subscribers within an approximately 500-meter radius of the diarrhea patient through nearby BTC receivers and cell phone towers by Vodacom (**Figure 1**). These location-based push notifications are sent to all phone subscribers in this area regardless of their telecommunication operator. Messages are sent in the evening at 8 PM when most individuals are home. The predominant languages in each diarrhea outbreak area will be considered when voice and SMS messages are sent, multiple languages can be sent if needed.

The SMS message contains a unique e-voucher ID (e.g. 6DE78-86518) and the location of a designated pharmacy in the phone subscriber's health area where the e-voucher can be redeemed. Phone subscribers have 7 days from the time the SMS message is sent to bring this unique e-voucher number (either on their phone or written down) to their designated pharmacies to redeem for 8 chlorine tablets (160 liters of treated water). When phone subscribers bring the e-voucher number to the pharmacy, the employee enters a short code into their phone with the unique e-voucher ID and they receive a reply back on whether the e-voucher is valid (e.g., unexpired and unused). No smartphone capability is needed for e-voucher validation – a feature phone can be used. If the e-voucher ID is valid, phone subscribers are provided with the chlorine tablets. The date and time the e-voucher was redeemed is recorded through the short code.

We engage public community health workers in each health area to maintain a database of pharmacies and shops that have chlorine products available. This will include the phone numbers of these pharmacies and shops, GPS locations, which chlorine tablet products are stocked, their interest in engaging with the WASHmobile e-voucher program, and purchases of chlorine products in the past month. This database is updated at least quarterly, with monthly updates in health areas that frequently have diarrhea outbreaks. Community health workers conduct a training with pharmacies and shops that stock chlorine tablets on how to enter short codes to check e-voucher validity. After the 7-day high risk period in the diarrhea outbreak health area is complete, pharmacies and shops receive a stipend for participation in the program and all e-vouchers redeemed will be reimbursed. On the next page we show the WASHmobile mHealth and e-voucher Operational Guide from the DRC as an example (**Figure 3**).

Figure 3. WASHmobile mHealth and e-Voucher Operational Guide

5. References

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