

BACKGROUND

Handwashing is a critical practice that is promoted to protect public health, especially during outbreaks of infectious diseases such as COVID-19. Handwashing stations are used both in emergencies and in other contexts to provide locations for people to wash hands with soap. In refugee camps and internal displacement centres, units for handwashing should be installed both at households and next to latrines and in communal areas, such as in markets, schools, and health centres. The criteria for a good handwashing station include:

Principle Considerations	Additional Considerations
<ul style="list-style-type: none"> • Cost • Maintenance required • Ability to limit hand contact by users with a tap interface (preferably with no touch or one touch action) • Accessibility, including for children, elderly and people with disabilities • Design that promotes usage through aesthetics, behavioural nudges, and ease of use • Robustness of design that can withstand misuse or vandalism and prevent theft 	<ul style="list-style-type: none"> • Ability to drain effectively without creating stagnant greywater • Availability and ease of assembly • Packability and ease of transport • Ability to conserve water

HANDWASHING STATION OPTIONS

This document lists a range of options for handwashing stations. This information is especially geared towards the need for communal handwashing, including in refugee/IDP settings. However, some handwashing designs can be used in households and/or adapted for use in other settings.

Handwashing stations can either be procured ready-made or they may be assembled locally. Some of the units presented below are completed products that have undergone years of research and development and thorough testing with end users. Other options present design ideas for handwashing stations that can be constructed locally. These design concepts require further adjustment to ensure they are reliable options for handwashing, especially when installed for communal use. Such handwashing stations should be tested not only for technical performance but for user satisfaction, correct use, and degree to which they are successful in promoting handwashing behaviour.

Completed Products	Ideas for Local Assembly	Other Options for Households
<ol style="list-style-type: none"> 1. Oxfam Handwashing Station 2. Oxfam Handy Wash Tap 3. Jengu (by ARUP, BRC, and LSHTM) 	<ol style="list-style-type: none"> 4. Twin Foot Pedal Design (by WaterAid Nepal) 5. Single Foot Pedal Design 6. Long Handled Taps 7. Single foot pedal tippy tap 8. Foot-paddled handwashing 	<ol style="list-style-type: none"> 11. Happy Tap 12. SpaTap 13. Oxfam Bucket 14. Tippy Tap 15. Soapy Water Bottle

	<p>9. Solawash facility</p> <p>10. Foot operated handwashing - with 3 handwashing compartments</p>	
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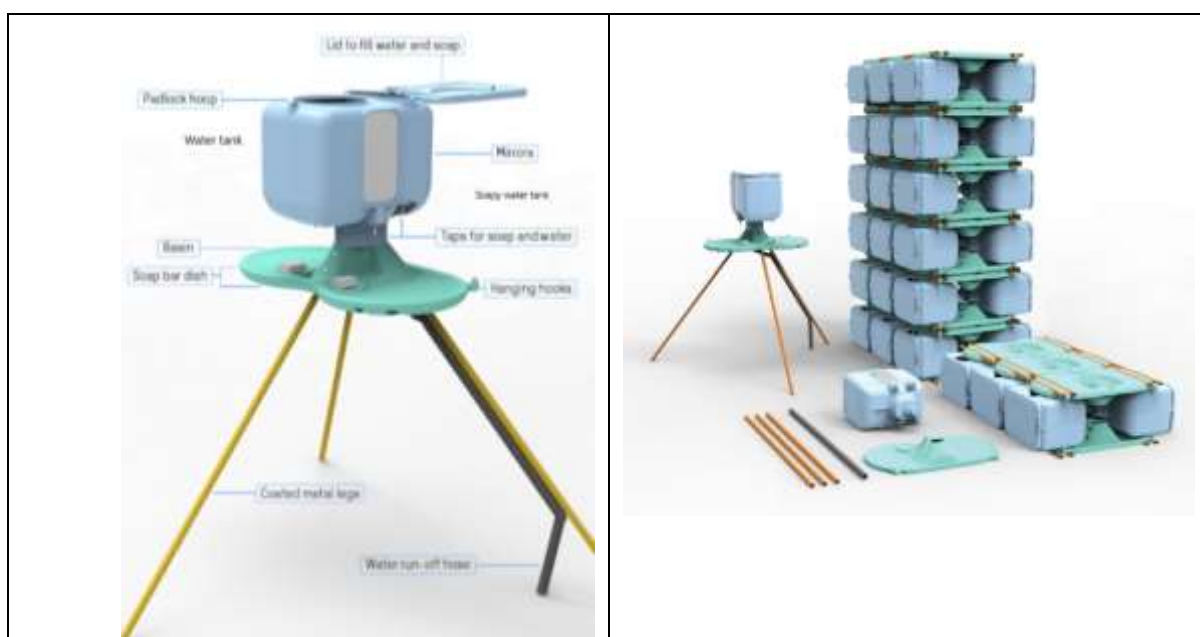
1 OXFAM HANDWASHING STATION

The Oxfam Handwashing Station is an easy to use, durable, low-cost, easy to transport handwashing station that can be set up in any humanitarian emergency. The handwashing kit, which has been extensively field tested, features a 24-litre water tank and 4-litre internal liquid soap water dispenser, allowing a user to wash their hands directly with soapy water. Bar soap can alternatively be used on a rope attached to the device. Mirrors attract people to engage in handwashing and promote long-term habits. Every element of the design is robust, theft resistant, lightweight and easy-to-use. Designed especially with refugee settlements in mind, it features 3 metal legs which can be securely installed in the ground. The kit allows for quick and easy installation.

A key feature is the redesigned ‘Handy Wash Tap’ which releases water only when pushed up, requiring only a one-touch action, limiting user contact with the tap. This also conserves water, allowing the handwashing station to provide for up to 240 handwashes when filled. The brass design of the nozzle has antimicrobial properties, keeping it clean.

The kit has been designed to stack compactly on a pallet for economical shipping. When the kits arrive at their destination, an instruction manual guides workers through installation.

The Handwashing Station is Oxfam’s recommended design for emergencies. The unit will be available for deployment in Summer 2020.



Oxfam Handwashing Station	Packed for Transport
<p>Pros</p> <ul style="list-style-type: none"> • Extensively field tested. The handwashing station has been developed through an iterative design approach over multiple years and has been tested and proven to work in a range of refugee settlement contexts. • Robust. The device is robust and can withstand stress from multiple users in communal areas. It has been tested in schools, at communal latrines in large camps, health centres and market places. • Adjustable. The height-adjustable tripod legs facilitate easy usage including by people with physical disabilities and children. • Compact. Six units are packed together making transport easy. • Conserves Water. The device is efficient in terms of conserving water and ideal for areas of water scarcity. It functions such that once the push control is released, the water stops flowing preventing unnecessary wastage of water. • Easy to Assemble. The handwashing station has all the components included in a single kit ready to assemble. 	<p>Cons</p> <ul style="list-style-type: none"> • International procurement. The device is not widely produced around the world and requires procurement from the Oxfam Supply Centre. • Not contactless. The device requires touching the small end of the tap a single time with one's hands. This can be done with the back of the hand. However, the brass material of the tap has antimicrobial properties, helping to reduce the transmission of pathogens. • Requires demonstration. Instruction is needed so that first time users will be able to operate the tap correctly.
<p>Cost: Approximately 40 GBP per unit</p>	

For further information, please see:

<https://views-voices.oxfam.org.uk/2019/02/user-centred-handwashing-kit/>

2 OXFAM HANDY WASH TAP

Made by Nag Magic, India

The Handy Wash is a one-touch tap that can be installed on a container to dispense water. The Handy Wash was developed and field tested over a period of three years. The tap dispenses small amounts of water for handwashing. The Handy Wash conserves water and prevents recontamination of the users' hands via its one-touch action.



Handy Wash Tap



Handy Wash Tap on Bucket

The Handy Wash can be attached to a range of different water containers and is therefore versatile for use in different situations. The taps are made from brass which is antimicrobial and helps prevent cross contamination during handwashing.

Pros	Cons
<ul style="list-style-type: none"> • Culturally appropriate. The Handy Wash device was found to be culturally appropriate through field testing in four countries (Liberia, Kenya, South Sudan and DRC). • Robust. The device is robust and can with stand stress from multiple users in communal areas. It has a push up control made of brass which is difficult to break. It has been tested in schools, at communal latrines in large camps, health centres and market places. • Compact. The Handy Wash device is compact and consists of a brass head and adapter plus 2 washers, elbow, and fixing nut with filter which are packaged together and can easily fit in the palm of one's hand. • Conserves Water. The device is efficient in terms of conserving water and ideal for areas of water scarcity. It functions such that once the push control is released, the water stops flowing preventing unnecessary wastage of water. • Easy to Install. The Handy Wash device can be fastened to any type of locally available container or recipient. 	<ul style="list-style-type: none"> • International procurement. The device is not widely produced around the world and requires procurement from the Oxfam Supply Center or from Nag Magic in India. • Not contactless. The device requires touching the end of the tap a single time with one's hands. This can be done with the back of the hand. However, the brass material of the tap has antimicrobial properties, helping to reduce the transmission of pathogens. • Requires demonstration. Instruction is needed so that first time users will be able to operate the tap correctly.
<p>Cost: Approximately 3.75 GBP per device (tap, filter, connecting adapter, washers)</p>	

For further information, please see:

<https://www.oxfamwash.org/handwashing>

<https://supplycentre.oxfam.org.uk/oxfam-hand-washing-tap---50-pce-715-p.asp>

3 JENGU

Designed by ARUP, British Red Cross, and LSHTM

The Jengu is a complete handwashing station designed for communal use in emergencies. The Jengu features a footpump which is used to pump water from a storage vessel up to a basin for handwashing. There are three different versions of the Jengu: for adult users, for children, and for people with disabilities. The device features a large mirror which promotes handwashing behaviour.



Adult and Child Size Jengu



Jengu Rendering

Photo Credit: ARUP, British Red Cross, LSHTM

Pros	Cons
<ul style="list-style-type: none"> • Different height options. A standard adult option is available as well as options both for children and for people with disabilities. • Locally adaptable. Some components, such as the basin and jerrycans can be procured locally rather than imported with the rest of the kit. • Hands free water dispensing. Water is supplied by operating a foot pump. • Robust. The device is robust with stainless or galvanized steel legs and disc feet to withstand stress from multiple users in communal areas. Pop riveting of components prevents theft. • Compact. The Jengu can either be flat packed or stacked for easy transportation. • Conserves Water. The device is efficient in terms of conserving water and ideal for areas of water scarcity. • Variable water source. The unit can be 	<ul style="list-style-type: none"> • International procurement. The device is not widely produced around the world and requires international procurement when ready for production. • Soap dispensing requires hands. The device requires operating a tap to dispense soap or use of bar soap. • Requires demonstration. Instruction is needed so that first time users will be able to operate the tap correctly. • May be prone to damage or tampering. The footpump may be prone to damage or tampering, especially by children, however the evidence for this is yet unknown.

operated with water containers of different sizes to source water.

Cost: Approximately 200 GBP

This cost may come down in the future if manufactured in the country where it will be deployed.

For further information, please see:
 Jengu Features. ARUP, British Red Cross, LSHTM.
<https://youtu.be/oTFvoS-lkEA>

LOCALLY MANUFACTURED PRODUCTS

4 TWIN FOOT PEDAL DESIGN

Designed by Water Aid Nepal

A variety of designs exist for handwashing stations operated with a foot pedal or foot pump. The distinct advantage of a foot-operated handwashing station is contactless tap opening.



WaterAid Nepal Design

Photo Credit: WaterAid Nepal



Oxfam Bangladesh Design

Photo Credit: Oxfam Bangladesh



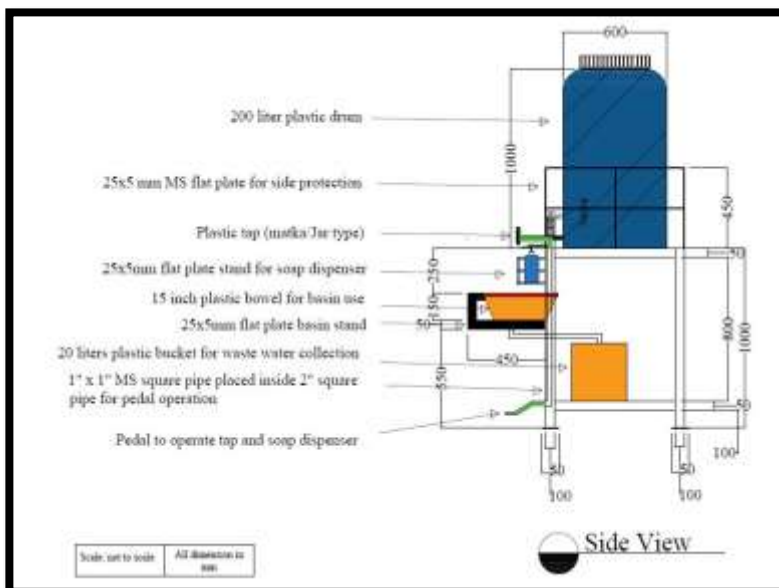
Push Down Nozzle



Photo Credit: Oxfam Ethiopia

The contactless hand washing station can be operated hands-free, allowing users to wash hands without touching taps. The handwashing unit features two foot pedals on either side of tank assembly. One foot pedal mechanically activates a nozzle, dispensing water. The second foot pedal allows liquid soap to be released from a plastic bottle. The estimated water consumption per use is 360 mL, offering a water savings over conventional taps.

The version of this design shown in the photo on the left above, by WaterAid Nepal, features a nozzle which is pushed up by a mechanical arm to dispense water. On the other hand, in the versions shown in the middle and on the right, by Oxfam in Bangladesh, a metal bar pushes down on a garden hose type nozzle, dispensing water. Further on the other two types shown on the left and right are designed by Oxfam in Ethiopia have similar operating models tested and proved to be effective and easy to use. The handwashing facility on the left is made with fiberglass which gives it greater chances of durability and easier to use. Water is released by pressing the foot pedal water pump which opens the tap and releases water that flows out through the tap; soap is dispensed by pressing the foot pedal connected to the soap pump.



WaterAid Nepal Contactless Handwashing Station Design

Pros	Cons
<ul style="list-style-type: none"> • Contactless tap. No contact with a tap is required. • Simple Mechanical Action. The simple mechanical action means there are few components requiring maintenance. • Customizable. The foot pedal operation can be installed on a wide range of tank sizes. • Locally assembled. Using a combination of components available in local markets, no import is required if pull action nozzles are available. • Easy to Install. Installation with a range of tank types is possible. • Durable. Compared to other locally produced handwashing devices, the pedal operated handwashing is durable, if the workmanship and quality of materials is ensured during production. • Compacted. Take small area to be fixed at individual household level (<i>for Ethiopia designed handwash facility</i>) • Attractive. Attract to wash hand since it is different from the conventional types which have been used for long. • Easy to use. The foot pedal operation is intuitive, and the device is easy to operate and suitable for all age group. 	<ul style="list-style-type: none"> • Prone to tampering. The exposed mechanical component can be tampered with or vandalized if installed in public places. • Not easily transportable. The shape of the unit makes it difficult to transport large numbers of devices at a time. • Soap is prone to theft. Bar soap or liquid soap is not secured and may be stolen. However, a variation of this design can be made with soapy water solution dispensed from a container through a nozzle using the same foot pedal mechanical action. • Prone to misuse by children. It attracts children to use the parts for recreational purposes. • Not easy to be maintained by refugees/beneficiaries. Cannot be repaired or maintained by the refugee/community since the metal pedal need welding machine. • High Installation cost. Compared to other locally conventional handwashing devices, the cost of installing is significant.
<p>Cost: Approximately 100 GBP for a 200 L unit</p>	

Approximately 65 - 85 for a 25 L unit (for the handwashing devices designed in Ethiopia)

For further information, please see:

Technical Brief on Contactless Handwashing. WaterAid Nepal, April 2020.

<https://www.youtube.com/watch?v=nkWLSGcgFnk>

https://www.youtube.com/watch?v=q4OX_JluXeA

5. FOOT-PADDLED HANDWASHING STATION Designed by Oxfam in Ghana

This handwashing device is designed with local manufactured metal with foot paddle used to tip water and soap without touching the container. It consists of two metal barrels-one that holds 200 litres of water and the other is converted to a washing basin that is connected with concrete platform. The device has an outlet at the lower base as a soakaway for wastewater. Materials and tools are readily available and easy to assemble; ideal for use at institutional level including schools and health facilities but can also be installed at household level.



Photo Credit: Oxfam Ghana

Pros	Cons
<ul style="list-style-type: none"> Durable. Built with quality materials to withstand all weather conditions in Ghana. It 	<ul style="list-style-type: none"> Prone to Theft and vandalism. Attracts thieves since it is made of metal, the exposed mechanical component can be

<p>is durable if the workmanship and quality of materials is ensured during production.</p> <ul style="list-style-type: none"> • Low water wastage. Stepping on the paddle at a time delivers just enough water for effective hand wash • Contactless tap. It prevents direct contact with the tap and the handwashing soap. • Attractive. Attract to wash hand since it is different from the conventional types which have been used for long. • Locally assembled. There are readily available and skilful local artisans who can maintain and install the systems. • Easy to use. The device is easy to operate and suitable for all age group. *Persons with disabilities may require support during handwashing at this facility. 	<p>tampered with or vandalized if installed in public places.</p> <ul style="list-style-type: none"> • Quite bulky: sometimes space for location is a challenge • Ownership by the community. More successful if given to individual (selected individuals) in the community trained to provide regular maintenance. • Low awareness of users on how to use. Prior demonstration on how to use and manage needed.
<p>Cost: 250 EURO depending on materials used.</p>	

6. SOLAWASH FACILITY

Oxfam Handwashing Innovation in Ghana

This is an automated handwashing facility designed by solar energy to promote handwashing practices in the COVID-19 pandemic. A dual storage container holds 140litres of clean water and 70litres wastewater capacity are twinned in a single stand made from recycled metal barrel. It has a single tap outlet for water and liquid soap. Upon detection of a hand under the tap, the system gives its first alert with a beep that releases liquid soap, giving interval for thorough handwashing, a second alert follows that releases clean water for rinsing off lather and a third and final beep which makes up the 25 seconds WHO recommended handwashing guideline. The facility has the following distinctive features:

- Automated 25 seconds handwash cycle
- Automated cycle activation via motion sensor detection
- 50 watts solar panels and batteries
- Built-in water tank for clear water and wastewater
- Infrared tap/faucet and sensors
- Water light electronics
- 140litres water capacity for 280 hand washes per cycle
- 2litres liquid soap capacity for 95 hand washes per cycle



Photo Credit: Oxfam Ghana

Pros	Cons
<ul style="list-style-type: none"> • Safe & Durable. Automated Handwashing System is ideal for public places with large crowd gathering where effective hand hygiene is critical. This automatic handwashing station includes a self-cleaning feature and is housed in a recycled stainless steel oil barrel housing that is extremely durable. • Low water wastage. The water dispensed is measured by a fixed time at ago (25 seconds) just needed for effective handwash. • Contactless tap. No contact with a tap is required, Avoid hand touch as a result no chance of contamination. • Attractive. Attract to wash hand since it is different from the conventional types which have been used for long • Locally assembled. There are readily available and skillful local artisans who can maintain and install the systems. 	<ul style="list-style-type: none"> • Prone to Theft and vandalization. Attracts thieves since it is made of metal, batteries, sensors, solar panels thus can be tampered with or vandalized easily. • Ownership by the community. More successful if given to individual (selected individuals) in the community trained to provide regular maintenance. • Low awareness of users on how to use. Prior demonstration on how to use and manage needed • Quite bulky: sometimes space for location is a challenge. • High volume of water: the system requires high quantity of water and where water supply is inadequate it becomes obsolete. • Sensors can be easily faulty and would require regular maintenance.

PROS	CONS
<ul style="list-style-type: none"> • Contactless tap. No contact with a tap is required • Simple Mechanical Action. The simple mechanical action means there are few components requiring maintenance. • Locally Assembled. Using a combination of components available in local markets, no import is required. • Easy to install the structure. • Easy to use. The foot pedal operation is in built and the device is easy to operate and friendly for children and PWDs. 	<ul style="list-style-type: none"> • Not easily transportable. The size of the unit makes it difficult to transport large numbers of devices at a time. • Soap is prone to theft. Bar soap or liquid soap is not secured and maybe stolen or played by children.
<p>Cost: Approximately 300 GBP</p>	

8. SINGLE FOOT PEDAL DESIGN

Designed by Oxfam, Democratic Republic of Congo

This foot pedal design is a free standing, gravity fed handwashing station. A metal foot pedal depresses a vertical rod, linked to nozzle handle by a horizontal strip of metal. Like the previous designs above, this mechanical linkage dispenses water without any springs, apart from the nozzle handle. The system combines a sink for wastewater collection. This handwashing station does not have a foot pedal for dispensing soap. Instead, bar soap or a separate liquid soap dispenser may be used with this design.



Single Foot Pedal Design Single Foot Pedal with Basin

Pros	Cons
<ul style="list-style-type: none"> • Contactless tap. No contact with a tap is required. • Simple Mechanical Action. The simple mechanical action means there are few components requiring maintenance. • Customizable. The foot pedal operation can be installed on a wide range of tank sizes. • Locally assembled. Using a combination of components available in local markets, no import is required if pull action nozzles are available. • Easy to use. The foot pedal operation is intuitive and the device is easy to operate. 	<ul style="list-style-type: none"> • Prone to tampering. The exposed mechanical component can be tampered with or vandalized if installed in public places. • Not easily transportable. The shape of the unit makes it difficult to transport large numbers of devices at a time. • Soap is prone to theft. Bar soap or liquid soap is not secured and may be stolen.
<p>Cost: Approximately 40 GBP for a 15 L unit</p>	

9. SINGLE TIPPY TAP PEDAL HANDWASHING

Designed by Oxfam in Ethiopia

This handwashing design consists of steel frame which is operated by using the foot pedal to dispense liquid soap and water for handwashing without touching the container. the tippy tap is made up of a jerry can for rinsing water and soap holder for handwashing. The jerry can tilt using foot operated pedal; with a narrow lid opening for water to dispense.



Nyawuor Ter, South Sudanese refugee, cleans latrine and washes her hand installed pedal tippy tap near the latrine in her compound in Nguennyiel camp Gambella Ethiopia,

Photo Credit: Oxfam Ethiopia

Pros	Cons
<ul style="list-style-type: none"> • Durable. The Tippy tap handwashing is durable if the workmanship and quality of materials is ensured during production. • Compacted. Take small area to be fixed at individual household level. • Low water wastage. Save water since it has narrow opening to pour water with small volume. • Contactless tap. No contact with a tap is required. • Attractive. Attract to wash hand since it is different from the conventional types which have been used for long • Easy to maintain by the refugee. Both the jerrycan and strings could be replaced by the refugees, • Locally assembled. Using a combination of components available in local markets. The jerrycan is provided during the monthly food 	<ul style="list-style-type: none"> • Prone to Theft and vandalism. Attracts thieves since it is made of metal, the exposed mechanical component can be tampered with or vandalized if installed in public places. • Prone to misuse by children. • Ownership by the community. More successful for household use than public usage.

<p>distribution as oil container. And the string is easy to afford and available in the refugee camp.</p> <ul style="list-style-type: none"> • Easy to use. The foot pedal operation is intuitive, and the device is easy to operate. And Suitable for all age group. • Low Installation cost. Compared to other locally produced foot pedal operated handwashing device the cost of production and installation is cheaper. 	
<p>Cost: Approximately EURO 20 to 25 for a 10 litre unit</p>	

10. OXFAM BUCKET

A common handwashing station can be made in the home from a bucket or barrel with a tap, such as the pre-fabricated Oxfam Bucket. This design requires contact with the tap both to dispense and turn off water and is most suitable for use in households.

Cost: 2.60 GBP per Oxfam Bucket (with tap)

For more information, please see:

<https://supplycentre.oxfam.org.uk/oxfam-jerry-bucket-14-litre---200-pce-948-p.asp?v=0&variantid=949>



11. LONG HANDLED TAPS



A tap with a long handle allows users to open and close the tap with one's elbows, preventing hand contact with the tap. A medical faucet is pictured here. While this exact design will not be installed in camp settings, designers may use a similar concept of long tap handles to promote hands-free use. Using such designs will require community engagement and clear instruction to users in order to effectively prevent use by hands.

OTHER OPTIONS FOR HOUSEHOLDS

12. HAPPY TAP

The Happy Tap is a ready-made handwashing unit for the home. The device is a portable bright green plastic sink with an integrated 15 L tank which dispenses water to users. It is made for use with bar soap, for which it comes with a storage space. The Happy Tap is currently available in Vietnam, Cambodia, and Bangladesh and is available for international shipments.

Cost: Approximately 8-11 GBP for wholesale orders, 12-14 GBP for retail sales

For further information, please see:

www.happytap.net/en



13. SPATAP



The SpaTap is a device that attaches to a plastic water bottle, allowing a bottle to be used as one-touch handwashing device. The SpaTap is affixed to an upside-down water bottle, which is suspended to provide gravity flow. The SpaTap is made from food grade, UV-stable silicone. The device provides 25 effective hand washes when fixed to a one litre bottle.

Cost: Approximately 5 GBP for wholesale orders, 15 GBP for retail sales

For further information, please see:

www.spatap.com

14. TIPPY TAP



The tippy tap is the general name given to a suspended container that can be tipped to pour water. Tippy taps are made from locally available materials, most often wood poles, string and a plastic container. Often containers with handles are used to provide an off-centre point to apply the tipping force. The tipping action can be foot or hand operated. Tippy taps are built for handwashing at homes or at small institutions. A range of different vessel sizes are used to dispense water. Tippy taps can be associated with poverty and the lack of aspirational design can discourage users. They have been known to be left unused after installation. The design requires upkeep and re-assembly when damaged by weather or use by children.

Cost: This device can be made from repurposed materials.

For further information, please see:

<http://www.tippytap.org/wp-content/uploads/2011/03/How-to-build-a-tippy-tap-manual.pdf>

15 SOAPY WATER BOTTLE

A simple handwashing device can be made by filling a small water bottle with soapy water. Laundry powder may be used to prepare the soap solution. Holes are then punctured in the cap of the water bottle. When squeezed, the bottle dispenses the soapy water.

Cost: This device can be made with repurposed materials.

Foot Pedal Handwashing Station



COMMUNITY ENGAGEMENT

Depending on the technology chosen, varying degrees of on-site support will be required. Especially in challenging settings, such as refugee settlements, paid attendants may be employed to look after handwashing stations, to refill water vessels, and to promote correct use of devices, while also sharing information on other safe hygiene practices that can prevent the transmission of infectious diseases, like COVID-19.

It is important to involve users in siting of communal handwashing stations. Users should also be engaged for demonstrating proper use, for organising schedules for refilling water storage tanks, for keeping drainage areas clean and dry, and for carrying out any repairs and maintenance needed. This should be further complemented with handwashing promotion strategies, such as through the 'Mum's Magic Hands' approach. Use of behavioural nudges, such as placing mirrors where people wash hands and painting footsteps leading to handwashing stations, should also be considered to encourage use of communal handwashing facilities.

Safe Programming is an important aspect of implementing any WASH activity, including placing handwashing stations in communities. Safe programming involves assessing, preventing and mitigating risks. Ensure that the whole handwashing station set-up is safe and does not cause harm to community members or others.

Once installed, it is important to regularly elicit feedback from users – women, men, boys, and girls, including persons with disabilities and other vulnerable groups. Monitoring should be carried out, both on the status of handwashing stations installed and for handwashing practice.

MORE INFORMATION

To learn about the 'Mum's Magic Hands' approach to handwashing behaviour, please visit: <https://policy-practice.oxfam.org.uk/our-work/water-sanitation-and-hygiene/mums-magic-hands>

For more resources and WASH guidance from Oxfam, please visit: www.oxfamwash.org

To order products from the Oxfam Supply Centre, please visit: <https://supplycentre.oxfam.org.uk/>