

Safe Water System and Hand Washing Curriculum for Training Health Care Workers



**Edition 4
September 2005**

Acknowledgments

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LEARNING OBJECTIVES FOR THE COURSE

At the end of this course, the student will be able to:

- ❖ **Identify common causes of diarrhea**
- ❖ **Understand what the Safe Water System is and the importance of using it**
- ❖ **Demonstrate proper hand washing techniques**
- ❖ **Teach the information to patients and address their questions/concerns**
- ❖ **Understand how safe water improves the lives of people living with HIV/AIDS and their families**

Module 1: Pre-Test on Safe Water System and Hand Hygiene (15 minutes)

Module 2: Diarrhea Facts and Statistics (15 minutes)

Module 3: Conventional Water-Treatment Options for Preventing Diarrhea
(30 minutes)

Module 4: An Overview of the Safe Water System (SWS) and Hand Washing with Soap
(15 minutes)

Module 5: Components of SWS (30 minutes)

Module 6: Components of Proper Hand Washing with Soap: When, Why, and How
(With Return-Demonstration) (45 minutes)

Module 7: Patient Education Messages and Frequently Asked Questions (30 minutes)

Module 8: Addressing Barriers to Change and Reasons Why It is Important to Promote
SWS and Proper Hand Washing with Soap as Health Professionals
(30 minutes)

Module 9: Wrap-Up/ Summary (15 minutes)

Module 10: Post-Test on SWS and Hand Washing with Soap (15 minutes)

Estimated Total Time of Training Session: 4 Hours

MODULE 1: The Pre-Test

A Note to the Instructor:

- It is important to pre-test the students in order to gather baseline data on students' knowledge level of the material.
- Hand out the pre-test as students enter the room and allow them to work on it for 15 minutes.
- Work should be done individually and without using references.
- Make sure that the students do not feel anxious about the test. Tell them to do the best that they can, but reassure them that they will be learning the material that they do not know during the training session.

MODULE 1: Safe Water System and Hand Washing Pre-Test

Take about 15 minutes to answer the questions. Do your own work. Fill in as much as you can.

Name _____

Sex _____ (Male or Female) Age _____

Department you work in (For Example: Emergency Department, Public Health, or Maternal Child Health, etc.) _____

Profession (Circle the response that fits best. Choose one.)

- a. Nurse (Community, Registered, Midwife)
- b. Nutritionist
- c. Public Health Technician / Officer
- d. Laboratory Technician / Technologist
- e. Clinical Officer
- f. Other (specify) _____

Number of years you have worked in your profession _____

1. Which of the following methods can effectively disinfect water? (Choose one)

- a. Boiling
- b. Filtration
- c. Sedimentation
- d. WaterGuard
- e. Jik
- f. Solar
- g. Do nothing at all
- h. I don't know
- i. Choices A, E, and G only
- j. Choices A and D only

2. What is the standard definition of diarrhea? (Choose one)

- a. Passing loose or watery stools 3 or more times a day
- b. Passing loose or watery stools once a day
- c. Passing loose or watery stools at least 10 times per day (or 15 times for children per day)

3. Which of the following water sources has the potential for contamination?

(Choose one)

- a. River
- b. Lake
- c. Piped water
- d. Protected hand dug well
- e. Borehole
- f. Rainwater catchment
- g. All of the above
- h. I don't know

- 4. Where can water become contaminated? (Choose one)**
- At the source (i.e. at the well, lake, borehole, etc.)
 - During transport
 - During storage
 - ALL of the above
 - NONE of the above
- 5. What is the safest way to store your drinking water? (Choose one)**
- In an improved plastic container or a clay pot with a narrow mouth and lid
 - In a modified clay pot without a lid
 - In an ordinary bucket
 - In a superdrum
 - In an ordinary clay pot
 - I don't know
- 6. What is the Safe Water System? (Choose one)**
- A method of filtering water to make it safe for drinking.
 - A system designed to improve water quality in homes through sustainable technology that includes three components: water disinfection, safe storage, and behavior change.
 - A combination of boiling and whatever means necessary to make drinking water safe.
 - I've never heard of it before.
 - I've heard of it before, but I don't know what it is.
- 7. What is the purpose of the Safe Water System? (Choose one)**
- Prevention of diarrheal disease
 - Treatment of diarrheal disease
- 8. Which of the following is a goal of the Safe Water System? (Choose one)**
- To provide piped water to everyone in the community
 - To improve the microbial quality of water in homes by means of a sustainable technology.
 - To encourage people to drink water from any source available.
 - To teach people that they have no way of preventing diarrhea.
- 9. What is the correct amount of WaterGuard to add for CLEAR water (for a 20L container (Kenya) or a 25L container (Nigeria))? (Choose one)**
- ½ capful
 - 1 capful
 - 2 capfuls
 - 3 capfuls
- 10. What is the recommended amount of time to wash hands? (Choose one)**
- 1-5 seconds
 - 6-9 seconds
 - 10-15 seconds
 - 16-31 seconds
 - 31 seconds to 1 minute

- 11. Which of these water treatment methods is the most efficient? (Choose one)**
- a. Boiling
 - b. Filtration
 - c. Sedimentation
 - d. WaterGuard
 - e. Solar
 - f. Jik
 - g. I don't know
- 12. Which of the following statements is true? (Choose one)**
- a. WaterGuard will NOT help prevent diarrhea in your family.
 - b. Water that looks clean does NOT need to be treated.
 - c. Store your water in a closed container with a lid to avoid recontamination.
 - d. It is NOT necessary to treat water year round.
 - e. Rain water is blessed and should not be treated
- 13. Do you think health providers should teach patients about hand washing with soap? (Choose one)**
- a. Yes
 - b. No
- 14. Which patients should be taught about the Safe Water System? (Choose one)**
- a. Only patients with diarrhea
 - b. Mothers of well children
 - c. HIV-positive pregnant women
 - d. People living with HIV/AIDS and their caretakers
 - e. All clients
- 15. Which of the following approaches would be the best way to inform your patients about proper hygiene? (Choose one)**
- a. Have your patient perform a return-demonstration and give plenty of encouraging feedback.
 - b. Tell patients when they have answered a question wrong.
 - c. Lecture the patients about hand washing with soap.
 - d. It is not necessary to teach them.
- 16. After using the Safe Water System correctly, your patient complains that the treated water tastes like chlorine. What can you tell your patients to do about it? (Choose one)**
- a. Tell them not to treat their water.
 - b. Teach people that the chlorine smell or taste means that the water is safe to drink.
 - c. Tell them to use less than the recommended dose of chlorine.

- 17. Why do you think providers should teach patients about hand washing with soap? (Choose one)**
- a. Clean hands make a person germ-free.
 - b. It is nice to have clean hands.
 - c. Clean hands make a person more likeable.
 - d. It is the number one prevention against the spread of disease and infection.
 - e. I don't know.
- 18. What should you teach your patients about hand washing with soap? (Choose one)**
- a. It is necessary to wash your hands ONLY when you see visible dirt on them.
 - b. Wash your hands for at least 10-15 seconds before and after eating/handling food, after toileting, and after caring for someone who is sick.
 - c. Hand washing is not very important. It is better to spend your time teaching your patients about other health issues.
 - d. Wash your hands for at least a minute.
 - e. I don't know.
- 19. When should you tell your patients to wash their hands? (Choose one)**
- a. Before preparing or eating food
 - b. After going to the latrine
 - c. After cleaning up a child who has gone to the latrine
 - d. When tending to someone who is sick
 - e. ALL of the above
- 20. What is your role as a health professional in motivating patients for behavior change regarding proper hygiene and water treatment? (Choose one)**
- a. Patients can motivate themselves.
 - b. Use the information correctly at work, but when you're at home or out in the community it doesn't matter what you do or how you act.
 - c. Increase the knowledge level of your patients and be a positive role model at work as well as in the community.

MODULE 2: Diarrhea Facts and Statistics

Learning Objectives of Module 2

At the end of this module, the student will be able to:

- ❖ Define diarrhea
- ❖ Identify common causes of diarrhea
- ❖ Recognize specific diarrheal diseases that bacteria, viruses, and parasites can cause
- ❖ Learn the routes of diarrhea
- ❖ Identify who diarrhea affects / statistics

What is diarrhea?

Diarrhea is passing of loose, watery stools 3 or more times per day.

What are common causes of diarrhea?

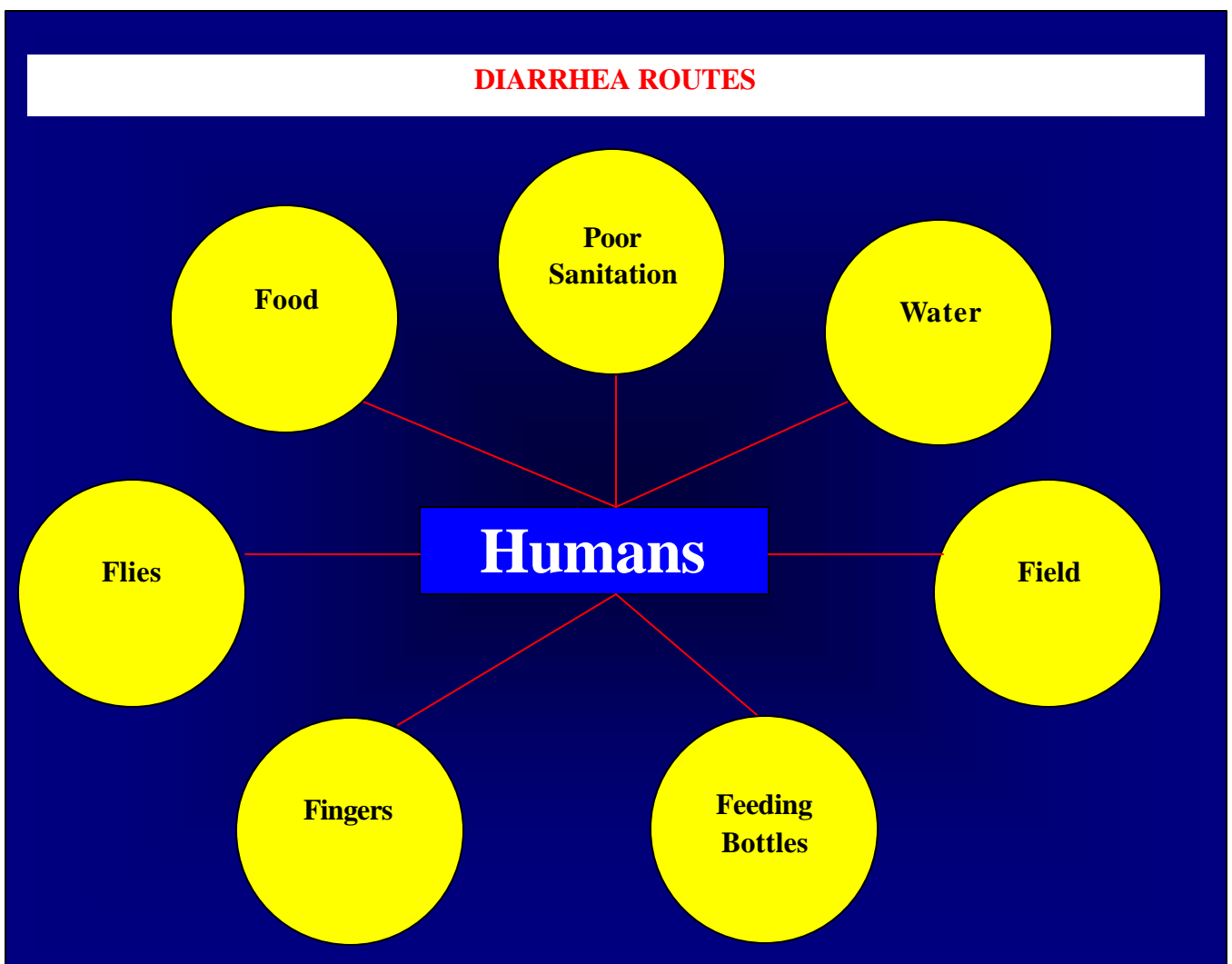
- Drinking unclean water
- Poor sanitation (defecation on the ground)
- Viral infections such as: rotavirus, norovirus, cytomegalovirus, and viral hepatitis
- Poor hygiene
- Suppressed immune system and dehydration due to HIV/AIDS
- Bacterial infections such as: *E. coli* (*Escherichia coli*), Cholera (*Vibrio cholerae*), Shigella (*S. flexnerii* or *S. dysenteriae*), and sometimes Typhoid (*Salmonella typhi*)
- Parasites and protozoans, such as amoeba and giardia
- Certain intestinal disorders, such as Crohn's disease and diverticulitis
- Some prescription drugs, such as antibiotics, blood pressure medications, and antacids containing magnesium.
- Food intolerances, (for example, drinking milk if you are lactose intolerant or eating large amounts of fatty foods)

What are some diseases caused by bacteria?

- **Cholera:** An acute bacterial infection of the intestine caused by ingestion of food or water contaminated with *Vibrio cholerae*, serogroups O1 or O139. Symptoms include acute watery diarrhea and vomiting which can result in severe dehydration. When left untreated, death can occur rapidly.
- **Dysentery:** Diarrhea containing blood. Although several organisms can cause dysentery, Shigella are the most important. *Shigella dysenteriae* type 1 (Sd1), also known as the Shiga bacillus, is the most virulent of the four serogroups of Shigella. Sd1 is the only cause of epidemic dysentery. In addition to bloody diarrhea, the illness caused by Sd1 often includes abdominal cramps, fever and rectal pain. Less frequent complications of infection with Sd1 include sepsis, seizures, renal failure and hemolytic uremic syndrome. Approximately 5-15% of Sd1 cases are fatal.

Module 2

- **Typhoid:** Contracted when people eat food or drink water that has been infected with *Salmonella typhi*. It is recognized by the sudden onset of sustained fever, severe headache, nausea and severe loss of appetite. It is sometimes accompanied by hoarse cough and constipation or diarrhea. Case-fatality rates of 10% can be reduced to less than 1% with appropriate antibiotic therapy. Paratyphoid fever shows similar symptoms, but tends to be milder and the case-fatality rate is much lower.



Who does diarrhea affect?

EVERYONE, but especially children under five years old in developing countries and people living with HIV/AIDS.

- Annually, 2 to 3 million children less than 5 years old die of diarrheal disease.
- 1.1 billion people lack access to improved drinking water supplies; many millions more rely on improved water sources that are not safe and store their water in the home which puts the water at risk for contamination.
- 2-4 billion people lack access to basic sanitation.
- 2.2 million die of waterborne diseases each year.

(Statistics from WHO, 2004)

Death and mortality statistics for diarrhea

Death statistics for diarrhea: The following are statistics from various sources about deaths and diarrhea:

Diarrhea death statistics for various regions worldwide:

- About 707,000 deaths from diarrheal diseases in Africa, 2002 (The World Health Report, WHO, 2004)
- About 604,000 deaths from diarrheal diseases in South Asia, 2002 (The World Health Report, WHO, 2004)
- About 259,000 deaths from diarrheal diseases in Eastern Mediterranean (Middle East), 2002 (The World Health Report, WHO, 2004)
- About 154,000 deaths from diarrheal diseases in South East Asia and Western Pacific, 2002 (The World Health Report, WHO, 2004)
- About 57,000 deaths from diarrheal diseases in The Americas, 2002 (The World Health Report, WHO, 2004)
- About 16,000 deaths from diarrheal diseases in Europe, 2002 (The World Health Report, WHO, 2004)

(Instructors may insert LOCAL DATA here on diarrhea incidence and prevalence if available).

MODULE 3: Conventional Water-Treatment Options for Preventing Diarrhea

Learning Objectives of Module 3:

At the end of this module, the student will be able to:

- ❖ Recognize the different water-treatment options.
- ❖ Explain what each water treatment option involves.
- ❖ Understand advantages/disadvantages for each option.

Note to the Instructor: Many people already treat their drinking water through one or several different methods. You may want to have students list the treatment methods that they can think of before you continue with a discussion on types of methods and advantages/disadvantages of each.

STRUCTURAL LEVEL/ INFRASTRUCTURE INTERVENTIONS

1. Centralized systems of piped, treated water

Advantages

- The gold standard for water supply
- Treated at the plant so that it is ready to drink by the time it comes out of the tap
- Easy and convenient

Disadvantages

- Expensive to construct
- Need to organize a strategy to pay for the system
- Need for extensive training on maintenance and repair
- Time consuming
- Potential for contamination still exists because people tap their own connections into the pipes which create breaks in the line.
- Power outages cause negative pressure in the pipes and old systems result in leakage within the pipes
- Water can still be inadequately treated
- Flow may be intermittent allowing contamination through leaks where pipes are connected
- Water rationing occurs
- Old piped systems may have sediment in the lines which consume chlorine
- Many places have piped water at community taps, but the water must still be transported home and stored which would allow for the possibility of recontamination

Module 3

- 2. Protected wells, boreholes, and spring protection:** A deep hole drilled into the ground to obtain water that is safe.

Advantage

- Provide safe water at the source

Disadvantages

- Potential for contamination still exists during transport and storage
- Community supply (rather than a household supply)
- Need for maintenance and repair training of the protected well and boreholes.

HOUSEHOLD LEVEL INTERVENTIONS

• Physical treatment methods:

- 1. Boiling:** To heat water to a temperature at which it turns to gas when bubbles form (Keep water at a rolling boil for 3 minutes).

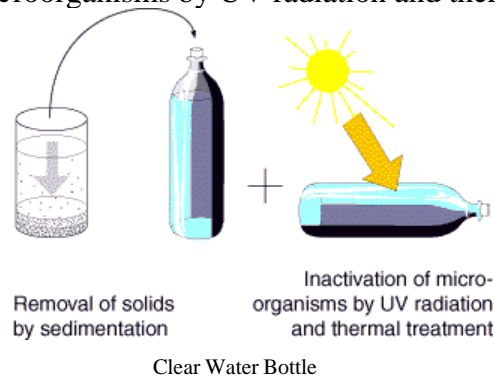
Advantages

- Effective in improving water quality and preventing disease when done properly
- Universally available
- Universally practiced for cooking

Disadvantages

- High cost (time)
- Recontamination possible
- Environmentally harmful

- 2. Solar Disinfection (SODIS):** Removes solids through sedimentation and then inactivates microorganisms by UV radiation and thermal treatment.



Module 3

Advantages

- Does not affect color, taste, odor
- Materials usually available locally
- Inexpensive: little to no initial cost

Disadvantages

- Not useful to treat large volumes of water
- Requires relatively clear water
- Needs solar radiation; exposure times:
 - 5 hours under bright sky or up to 50% cloudy sky
 - 2 consecutive days under 100% cloudy sky
- Post-treatment microbial contamination is possible

3. Filtration: Straining the water through a cloth or a porous material to remove undissolved particles and other visible contaminants.

Advantages

- Simple to use
- Improves taste of water
- Improves appearance of water

Disadvantages

- Cost
- Maintenance
- Need to replace filter regularly
- Time consuming

4. Settling and Decanting: Allowing the water to sit for a period of time to allow the particles/sediment to sink to the bottom of the bucket then pouring the clear water into a clean container leaving the sediment behind.

Advantages

- Simple to do
- Improves appearance of water
- Inexpensive

Disadvantages

- Requires a waiting period (of up to 1 day) before the water can be used
- Does not remove microbial contamination

Module 3

- **Chemical treatment methods**

1. **Chemical disinfection:** A sodium hypochlorite solution (chlorination) is introduced into the water in order to kill pathogens (*This is one component of the Safe Water System which will be discussed further in Module 4*). (Advantages and Disadvantages of this method will be discussed in Module 4)
2. **Coagulation, flocculation, precipitation (PuR):** To cause particles suspended in water to aggregate into clumps or masses that then sink or can be removed by filtering. After the water has been cleaned (see step 5 below), there is a chlorination step for residual protection.



1. Source Water



2. Floc Formation



3. Floc Formation after complete stirring



4. Decanting the water through a cloth filter



5. Clean water ready for storage and use

Advantages

- Clarifies water: aesthetic feedback
- Residual disinfection benefits
- Removes organic/heavy metal contaminants
- Removes bacteria, viruses, and cysts
- Well suited for emergencies
- Private sector initiated product

Disadvantages

- More steps required for treatment
- Relatively expensive: \$0.01 per liter (\$6.00 per month)
- Limited availability

MODULE 4: An Overview of the Safe Water System (SWS) and Hand Washing with Soap

Learning Objectives of Module 4:

At the end of this module, the student will be able to:

- ❖ Define the Safe Water System (SWS)
- ❖ Identify the 3 components of the SWS
- ❖ State the goals of the SWS
- ❖ Know why the SWS should be used instead of alternative options
- ❖ Recognize the link between the SWS and hand washing with soap

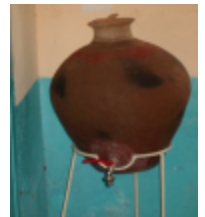
Note to the Instructor: You may want to ask how many of your students already know what the SWS is and how many are teaching it to their patients. Involve them in discussion and have them explain the definition in their own words before you show them your definition.

What is the Safe Water System (SWS)?

The Safe Water System is a household-based water quality intervention that has developed in response to the need for inexpensive, alternative means of water treatment and storage in the short to medium term for populations lacking access to safe water.

What Are the 3 Components of the SWS?

1. Water treatment in the home with a dilute, locally produced sodium hypochlorite solution/ bleach (i.e. WaterGuard).
2. Safe storage container which has a narrow mouth and a lid (i.e. modified clay pots or jerrycans). Containers with spigots have additional benefits but cost more. If a wide mouthed container is the only vessel available, make sure that there is a lid to cover the container and a long-handled ladle to dispense the water.
3. Behavior change techniques regarding water treatment, storage, and hand washing with soap.



The Goals of the SWS:

1. To improve the microbial quality of the water in homes by means of a sustainable technology.

Module 4

and diarrhea from contaminated drinking water.
c behaviors related to water use.

What are the Advantages of the Safe Water System?

- It is simple, inexpensive, and effective.
- It gives households a way to make their drinking water safe until they gain access to a piped, treated water system.
- The SWS provides a residual effect against recontamination, whereas boiling is expensive, time consuming, hard on the environment, and does not protect against residual recontamination.
- WaterGuard is easy to obtain and is recommended by health care providers.
(Note to the Instructor: This is a good time to reemphasize your students' role in teaching this information to their patients.)
- The SWS has been shown to reduce diarrhea risk in developing countries by about half.

What is the Link between the SWS and Hand Washing with Soap?

- Together, the SWS and proper hand washing techniques (refer to Module 6) can dramatically reduce the risk of diarrheal diseases.

Reasons Why it is Important for Health Care Providers to Promote the SWS and Hand Washing with Soap:

- Hand washing with soap protects individuals and their families from spreading germs which cause diarrhea.
- Treating household drinking water helps protect individuals from diarrhea, including vulnerable groups such as children and people with HIV/AIDS.
- Health care professionals have a PROFESSIONAL OBLIGATION to promote cleaner water and better hygiene practices.

MODULE 5: Components of the Safe Water System (SWS)

Learning Objectives of Module 5:

At the end of this module, the student will be able to:

- ❖ **Demonstrate understanding of what WaterGuard is, how long it lasts, correct dosing, how to store the product, where to buy it, its limitations, and safety considerations.**
- ❖ **Identify what the key features of improved storage containers are, advantages and disadvantages of the containers, and cleaning recommendations.**
- ❖ **Use motivational interviewing techniques to motivate patients for behavior change.**

The 3 Components of the Safe Water System (SWS):

1. The Disinfection Process (WaterGuard)
2. Safe Storage Container
3. Behavior Change (encourage adoption of the SWS and hand washing with soap)

PART I: Important Facts to Know about WaterGuard:

What is WaterGuard?

WaterGuard is a 1% sodium hypochlorite solution (a dilute bleach) which is used to disinfect water and make it safe for drinking.

When should you use WaterGuard?

Every time you refill your water container, you should treat the water with WaterGuard. Water should be treated YEAR ROUND. You should even treat your water if you have piped water and store it, because the water can become contaminated during storage.

How much WaterGuard should be used for a 20 litre container (or 25L container in Nigeria) if the water is clear?

1 capful. For containers larger than the standard size (e.g., 20 litres in Kenya and 25 litres in Nigeria), the dose of WaterGuard increases proportionately. In Kenya, 2 capfuls of WaterGuard are needed to treat clear water in a 40 litre container. In Nigeria, 2 capfuls are needed to treat clear water in a 50 litre container.

How much WaterGuard should be used for a 20 litre container (or 25L container in Nigeria) if the water is cloudy?

2 capfuls. In Kenya, the dosing is doubled to 4 capfuls for a 40 litre container. In Nigeria, the dosing is also doubled to 4 capfuls for treating a 50 litre container of cloudy

Module 5

Where should the bottle of WaterGuard be stored?

Out of sunlight, out of the reach of children, in a cool, dry place

Where is WaterGuard sold?

Kiosks, hospital canteens, some pharmacies, other retailers, and some community-based organizations.

How long does a bottle of WaterGuard last?

The product's shelf life is about 9-12 months if UNOPENED. Once opened, the solution should be used up within 2 months, because the introduction of air causes it to lose its potency.

What are other purposes of WaterGuard besides using it for drinking water?

WaterGuard should also be used for hand washing, washing fruits and vegetables, and cleaning cooking utensils.

Is WaterGuard a prevention or a treatment for diarrhea?

WaterGuard is a PREVENTION for diarrhea, whereas Oral Rehydration Solution (ORS) is a treatment.

What does WaterGuard taste like?

WaterGuard has a chlorine or metallic taste to it. It is important to tell your patients that a slight odor of chlorine means that their water is safe to drink.

What are the limitations of WaterGuard?

WaterGuard inactivates most, but not all, waterborne microscopic organisms that cause diarrhea. Giardia and cryptosporidium are protozoa that are resistant to chlorination, because they exist in water in a cyst form. Cryptosporidium and giardia can thus be removed by filtration. If giardia or cryptosporidia are a significant health problem in the project area, a filtration step (through ceramic, sand, or other filters) can be added before adding the sodium hypochlorite. The Safe Water System intervention has been proven to reduce diarrhea, and this intervention DOES inactivate the germs that cause the most severe diseases, like cholera, dysentery, and typhoid fever.

What are safety considerations regarding WaterGuard?

Chlorine has been used since the early 1900s as a disinfectant. Water purification has been revolutionized with the introduction of chlorine and incidence of waterborne diseases has been dramatically reduced. However, it was discovered that chlorine reacts with organic matter and bromine which are naturally present in water and creates four compounds, collectively called trihalomethanes (THMs). THMs are currently used as an

indicator chemical for all potentially harmful compounds that are formed when chlorine is added to water. The following information is available about THMs:

- The World Health Organization (WHO) International Agency for Research on Cancer reports that two of the four THMs are considered *potential* human cancer-causing agents. None of the compounds is a proven human cancer-causing agent.

Module 5

- Thus, the risk of bladder cancer from using WaterGuard is quite low or non-existent. Most importantly, the World Health Organization specifically and repeatedly states in its 1996 Guidelines that:
“Where local circumstances require that a choice must be made between meeting either microbiological guidelines or guidelines for disinfectants or disinfectant by-products, the microbiological quality must always take precedence, and where necessary, a chemical guideline value can be adopted corresponding to a higher level of risk. Efficient disinfection must never be compromised.”

The benefits of WaterGuard far outweigh any small risks. This is the position taken by the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and the world’s leading water experts.

WaterGuard is dilute and very safe. If WaterGuard is accidentally ingested in large quantities by children, in the majority of cases, there are only minor, transient adverse effects on health.

PART II: Important Facts to Know about Safe Water Storage Containers

There are two acceptable types of safe water storage containers:

Modified Clay Pots



and

Jerrycans



What makes these containers “safe”?

These containers have a lid and a narrow mouth to prevent recontamination of the water once the water has been treated. Some of the containers have spigots which help keep the water clean by reducing the likelihood of people putting their hands in the water.

Although we encourage the use of the recommended safe storage containers, patients should be taught to use WaterGuard in whatever storage vessel they

can afford for now. They will still have some benefit.

What are examples of containers that are “NOT SAFE”?

Ordinary clay pots, buckets, or other vessels with a wide mouth and no lid.

Module 5

What are advantages of the modified clay pot?

- Readily available in some communities
- Effective (spigot, narrow mouth, and lid reduce risk of recontamination)
- Keeps the water cool

What are disadvantages of the modified clay pot?

- Break easily
- Vary in volume (Makes dosing of WaterGuard difficult)
- More expensive than traditional clay pot

What are advantages of jerrycans?

- A narrow mouth for filling
- Appropriate shape and dimensions so that it is not too difficult to carry
- Standard volume simplifies WaterGuard dosing

What are disadvantages of jerrycans?

- Some are expensive
- Does not keep water cool
- Over time, exposure to sunlight damages the vessel causing it to crack
- More difficult to clean because of the narrow mouth

Cleaning Recommendations:

The vessel should be washed out each time it is emptied before new water is added.

PART III: Important Facts to Know about Behavior Change

Behavior change is required for the positive impacts of SWS and hand hygiene to take effect!

Aspects to consider when dealing with behavior change:

- Cultural issues/ acceptability
- Awareness of a problem
- Patient preferences

Use motivational interviewing techniques to promote the Safe Water System and Hand Washing with Soap. Motivational Interviewing involves the following elements described in the acronym ‘FRAMES’:

Feedback

**Responsibility
Advice
Menu (of options)
Empathy
Self Efficacy**

1. **Providing Feedback** involves non-judgmental sharing of local data on diarrhea rates and water quality within the patients' community. This also includes education on the causes of diarrhea.
2. **Responsibility** for change within each patient is emphasized.
3. **Advice** is given (but in a professional, non-threatening manner). The patient is free to decide how the suggestions fit his or her own personal lifestyle and to accept or reject the advice.
4. **Menu** of options is given for dealing with the problem.
5. **Empathic** listening style is important to build the trust of the patients.
6. **Self Efficacy**, or self confidence in achieving change, is supported. It is important to support any thought, desire, or attempt at behavior change by expressing beliefs that change is achievable for that person.

The components of motivational interviewing also involve using the following:

- *Open-ended questions* (These are questions such as, "How do you feel about trying a different water treatment method?") These are NOT yes/no questions!
- *Affirmations* (Positive statements, such as: "Yes, that is very good.")
- *Reflective listening* (Repeating what your patient has just said, such as "What I hear you telling me is that you think WaterGuard is too expensive.")
- *Summarizing* (Listening to what your patient says and then sum it up concisely.)

Your role as a health care provider in encouraging behavior change from your patients:

- Serve as positive role models for your patients. Incorporate the changes into your own lifestyle, so that when patients see you out in the community using the SWS and proper hand washing techniques, they'll want to try it too.
- Do NOT TELL your patients what to do. Instead, it is more effective to encourage them by reinforcing the benefits of using the SWS and proper hand hygiene.
- Do NOT use scare tactics. Positive reinforcement and knowing your facts goes a long way in encouraging change.

- Listen to the concerns of your patients and constructively address their questions or comments. AVOID argumentation.
- Be open-minded and patient. Do not expect change to happen overnight. Patients will change their behavior when they are ready to do so. Be supportive in the meantime and continue teaching the message...you never know when the message will finally hit home with a patient and motivate him or her to change!

MODULE 6: Components of Proper Hand Washing with Soap - When, Why, and How (With Return-Demonstration)

Learning Objectives of Module 6:

At the end of this module, the student will be able to:

- ❖ **Identify reasons why hand washing with soap is so important**
- ❖ **Understand the principles to keep in mind when teaching patients about hand washing with soap**
- ❖ **Identify when it is necessary to wash hands**
- ❖ **Perform a correct hand washing demonstration for patients (step-by-step)**

Benefits of integrating proper hand washing into daily hygiene routine:

- *Hand washing is the number one prevention against spread of infection.*
- Hand washing is the cornerstone of infection-control practice.

Key elements to remember when teaching your patients about hand washing:

- *How* you wash your hands is just as important as *when* you wash them. (Just rinsing them is not enough!)
- Unwashed (or poorly washed) hands can transfer harmful microorganisms to other people.
- Discourage multi-use of wash basins from eldest generations to youngest generations. Instead, change water between each person.
- Encourage patients to share the hand washing message with their family, neighbors, and friends.

When should you tell your patients to wash their hands?

- After going to the latrine
- After cleaning up a child
- Before preparing or eating food
- Before and after tending to someone who is sick
- After handling uncooked foods, particularly raw meat, poultry, or fish
- After blowing your nose, coughing, or sneezing
- After handling an animal or animal waste

- After handling garbage
- Before and after treating a cut or wound

Hand washing training

1. Hand washing is best learned through watching and doing.
2. Demonstrate proper hand washing with each patient (step-by-step) then ask patients to do it while you coach them.
3. Give feedback.

Module 6

Proper Hand Washing Steps



1. Wet hands and wrists



2. Use Soap



3. Briskly rub hands and between fingers for 10-15 seconds.



4. Rub under fingernails



5. Rinse hands.



6. Dry hands with a clean towel.



7. If no clean towel is available, air dry hands.

Module 6

Steps in Proper Hand Washing Techniques:

1. Place your hands together under water (warm water if possible)
2. Use soap
3. Rub your hands together for at least 10-15 seconds. Wash all surfaces thoroughly, including wrists, palms, backs of hands, fingers, and under the fingernails.
4. Clean the dirt from under your fingernails
5. Rinse hands
6. Dry your hands completely with a clean towel if possible (this helps remove the germs). Pat your skin rather than rubbing to avoid chapping and cracking
7. If no clean towel is available, air dry hands

Note to the Instructor:

You should do more than show your class this series of pictures. Engage them in the process! Demonstrate each of these steps as you talk them through it. Then have someone from the class volunteer to come up to the front to try. If the volunteer misses a step or two, ask the rest of the class if they recognize what was done wrong. However, always give positive feedback to the volunteer and thank him or her for assisting you in the lesson. Make sure you emphasize that this same process can be done when they teach their patients!

MODULE 7: Patient Education Messages and Frequently Asked Questions

Learning Objectives of Module 7:

At the end of this module, the student will be able to:

- ❖ **Identify the key education messages. They should master these messages before they begin instructing their patients.**
- ❖ **Recognize that there are many correct way to answer patient questions. The examples provided show some common patient questions with possible responses.**

What Your Patients Should Know about the SWS and Hand Washing with Soap Patient Education Messages:

- Always drink water treated with WaterGuard.
- WaterGuard will help prevent diarrhea in your family.
- WaterGuard will kill bacteria and viruses (germs) in your water that causes diarrhea-- including cholera.
- WaterGuard should be dosed according to the instructions.
- Store your water in a closed container with a lid to avoid recontamination.
- Even tap water or water that looks clean can have germs. All drinking water must be treated.

- WaterGuard is a household-based water treatment intervention. It is not suitable for treatment of water in boreholes or wells.
- When traveling, bring treated water with you.
- Treat your water year round, not just during the rainy season.
- Use treated water to prepare food and infant formula
- Use treated water for washing fruits, vegetables, and other foods consumed raw which potentially reduces the incidence of food-borne infections. Also, use treated water for washing kitchen utensils.

Module 7

- WaterGuard is a PREVENTION for diarrhea, NOT a treatment for diarrhea. An important part of treatment of diarrhea is with the use of oral rehydration solution (ORS). Oral rehydration therapy encompasses two phases of treatment:
 - 1) A rehydration phase, in which water and electrolytes are administered as oral rehydration solution (ORS) to replace existing losses.
 - 2) A maintenance phase, which includes both replacement of ongoing fluid and electrolyte losses and adequate dietary intake.
- Hand washing with soap is the most important means of preventing the spread of disease and infection.
- Encourage hand washing with soap after using the latrine, cleaning up after a child, caring for a sick person, and before preparing or eating food.

Questions You May Encounter from your Patients and Different Ways to Respond:

Note to the Instructor:

You will want to discuss with your students that there is not one correct way to answer questions that patients may have. Below are several potential questions and various ways in which the question can be addressed.

What do I do if the water is cloudy?

Filter water with a cloth. (To make a filter, fold the cloth over a number of times, enough to remove particles and visible contaminants yet optimize flow.)

OR

Use a settling technique (Let water settle for several hours or overnight and then decant the cleared water into a new container.)

Why does my water taste like chlorine and what can I do about it?

Teach patients that the smell of chlorine means that their water is safe to drink.

OR

Teach them that if they treat their water in the evening for the following day, the chlorine taste will be less strong.

Can I just use commercially-prepared bleach instead?

No, because the concentration varies so it is difficult to ensure the proper dose (under-or over-treatment is likely). WaterGuard is formulated specifically for drinking water.

OR

Commercial bleach may contain chemical additives that may not be intended for human consumption.

MODULE 8: Addressing Barriers to Change and Reasons Why It is Important to Promote the SWS and Proper Hand Washing as Health Professionals

Learning Objectives of Module 8:

At the end of this module, the student will be able to:

- ❖ **Identify obstacles to teaching the information.**
- ❖ **Identify obstacles that patients may have with implementing the information.**
- ❖ **Understand reasons why health care providers need to promote this message.**

Note to the Instructor:

Ask your students what they think will be some of the potential responses of their patients to this information. Ask them what type of negative comments they may receive and how they would deal with these potential situations. Then, discuss different ways to approach these barriers.

Potential Obstacles to Teaching the Information to Your Patients:

Too Many Patients Per Day Per Health Care Provider

- Teach the material to groups of patients at a time.
- Give health talks while patients are sitting in the waiting room.
- Include information on safe water systems in existing health talks to vulnerable groups such as pregnant women, mothers of young children, people living with HIV/AIDS and their families, etc.

Lack of Time in the Work Day

- Organize your work day to make patient-teaching a priority.
- Make use of one-on-one interactions with the patient and incorporate teaching into those time periods.
- Make posters or videotapes about the information that can be displayed or played in the waiting rooms

Potential Obstacles That your Patients May Have with Implementing the Information:

Lack of Knowledge/ Lack of Understanding of the Material

- Repeat key points throughout your instruction. It often takes hearing something more than one time for a person to remember the information.
 - Be patient when teaching the information. People learn at different rates.
- Module 8 Repeat the message everyday, so that when the patient returns to the clinic for follow-up appointments, the message may finally start to sink in.
- As a health care provider, be knowledgeable about your material so that you are able to accurately answer your patients' questions.
 - Use existing groups such as HIV/AIDS post-test clubs and community groups providing home based care to reinforce the messages.
 - Work with local non-governmental organizations, civil society groups and faith-based groups to include messages about safe water in community mobilization efforts, behavior change communication for preventing communicable diseases, etc.

Cost/ Too Expensive

- Explain that it's cheaper than taking your child to the clinic for treatment or cheaper than boiling all drinking water.
- It is cheaper than bringing an HIV-positive person to the clinic for treatment of diarrhea or related opportunistic infections, and is likely to prolong their ability to work and live positively.
- It can save your life by preventing cholera.
- It will save you time that you have to take off from work by taking your child to the clinic.
- It costs less than one glass of beer and lasts for one to two months.

Spouse is Not Supportive

- Encourage the patient to incorporate whatever changes she can, such as proper hand washing techniques.
- Continue with the educational message throughout different units in the clinic so that if the spouse comes in for an appointment, he will also be exposed to the message. He may just need to hear for himself the message from a health care provider.
- HIV-positive spouses will stay healthier if the household uses treated water

Don't Know Where to Purchase WaterGuard

- Reiterate during your instruction all of the different venues where WaterGuard is sold (i.e. kiosks, hospital canteens, some pharmacies, community-based organizations, and other retailers).

They've Never Treated Their Water Before and They Do Not Understand Why They Should Start Now

- If your child has ever had diarrhea, reinforce that it may have been caused by contaminated drinking water.
- Emphasize that drinking water can have germs at any time and that drinking water should ALWAYS be treated.
- Treated water will help HIV-positive mothers to wean their children from breastmilk more safely at six months, or feed them formula.
- HIV-positive people and people with AIDS are very vulnerable to diarrhea and infection, and treating water will help them live longer and feel healthier.

Module 8

They Report That They Use Tap Water and it “Looks Safe”

- Even tap water can be contaminated.
- The germs are too small to see, so even if the water looks clear, it can be unsafe.
- The city does not treat the water all the time, and it can also get re-contaminated in the pipes.

Your Patient Believes That Water Only Needs to be Treated During the Dry Season

- Reinforce that water needs to be treated year-round, because even if their water looks clean, it can have germs that cause diarrhea at any time of the year.

Reasons Why Health Care Providers Need to Promote this Message :

- **Health care providers have a PROFESSIONAL OBLIGATION to teach patients about the SWS and proper hand washing with soap.**
- **Nurses are among the most trusted purveyors of health care messages, so by educating your patients on the importance of these interventions, people will listen!**
- **Health care providers can help their patients with HIV/AIDS and other chronic or serious diseases live longer and feel better if they encourage use of the SWS and proper hand washing.**
- **The Safe Water System and proper hand washing with soap have become the Standard of Care for professional practice.**

MODULE 9: Wrap-Up and Summary

Note to the Instructor: Review the Learning Objectives from each module and ensure that your students understand the concepts.

Close with the following thoughts:

- People (especially children) in developing countries continue to be at risk for illness and death due to diarrheal diseases, but the Safe Water System has been shown to reduce diarrheal disease risk by about half in field trials.
- People with HIV/AIDS and their families face additional risks from diarrhea, but the Safe Water System has been shown to reduce their risk.
- The Safe Water System is inexpensive, simple to use, adaptable to different conditions, and can be implemented in a relatively short period of time.
- As health care providers, your patients trust you and listen to what you have to say. By introducing the Safe Water System and hand washing with soap into your patient education sessions, you are helping to improve the health and quality of life of your patients.
- It is important to repeat the message daily so that each person who enters the clinic has the opportunity to learn about the Safe Water System and hand washing with soap. Also, some people need to hear the message more than once before they actually change their behaviors.

- It is important for you to work with community-based organizations to ensure that messages about the Safe Water System are reinforced at the community level.
- By being leaders and role models in implementing the Safe Water System and hand washing with soap, you are directly contributing to the development and productivity of your patients and the community.

Note to the Instructor: Ask your students if they have any further questions before you hand out the post-test and thank them for their time and participation.

MODULE 10: Safe Water System and Hand Washing Post-Test

Take about 15 minutes to answer the questions. Do your own work. Fill in as much as you can.

Name _____

Sex _____ (Male or Female) Age _____

Department you work in (For Example: Emergency Department, Public Health, or Maternal Child Health, etc.) _____

Profession (Circle the response that fits best. Choose one.)

- a. Nurse (Community, Registered, Midwife)
- b. Nutritionist
- c. Public Health Technician / Officer
- d. Laboratory Technician / Technologist
- e. Clinical Officer
- f. Other (specify) _____

Number of years you have worked in your profession _____

1. Which of the following methods can effectively disinfect water? (Choose one)

- a. Boiling
- b. Filtration
- c. Sedimentation
- d. WaterGuard
- e. Jik
- f. Solar
- g. Do nothing at all
- h. I don't know
- i. Choices A, E, and G only
- j. Choices A and D only

- 2. What is the standard definition of diarrhea? (Choose one)**
- Passing loose or watery stools 3 or more times a day
 - Passing loose or watery stools once a day
 - Passing loose or watery stools at least 10 times per day (or 15 times for children per day)
- 3. Which of the following water sources has the potential for contamination? (Choose one)**
- River
 - Lake
 - Piped water
 - Protected hand dug well
 - Borehole
 - Rainwater catchment
 - All of the above
 - I don't know
- 4. Where can water become contaminated? (Choose one)**
- At the source (i.e. at the well, lake, borehole, etc.)
 - During transport
 - During storage
 - ALL of the above
 - NONE of the above
- 5. What is the safest way to store your drinking water? (Choose one)**
- In an improved plastic container or a clay pot with a narrow mouth and lid
 - In a modified clay pot without a lid
 - In an ordinary bucket
 - In a superdrum
 - In an ordinary clay pot
 - I don't know
- 6. What is the Safe Water System? (Choose one)**
- A method of filtering water to make it safe for drinking.
 - A system designed to improve water quality in homes through sustainable technology that includes three components: water disinfection, safe storage, and behavior change.
 - A combination of boiling and whatever means necessary to make drinking water safe.
 - I've never heard of it before.
 - I've heard of it before, but I don't know what it is.
- 7. What is the purpose of the Safe Water System? (Choose one)**
- Prevention of diarrheal disease
 - Treatment of diarrheal disease
- 8. Which of the following is a goal of the Safe Water System? (Choose one)**
- To provide piped water to everyone in the community

- b. To improve the microbial quality of water in homes by means of a sustainable technology.
 - c. To encourage people to drink water from any source available.
 - d. To teach people that they have no way of preventing diarrhea.
- 9. What is the correct amount of WaterGuard to add for CLEAR water (for a 20L container (Kenya) or a 25L container (Nigeria))?** *(Choose one)*
- a. ½ capful
 - b. 1 capful
 - c. 2 capfuls
 - d. 3 capfuls
- 10. What is the recommended amount of time to wash hands?** *(Choose one)*
- a. 1-5 seconds
 - b. 6-9 seconds
 - c. 10-15 seconds
 - d. 16-31 seconds
 - e. 31 seconds to 1 minute
- 11. Which of these water treatment methods is the most efficient?** *(Choose one)*
- a. Boiling
 - b. Filtration
 - c. Sedimentation
 - d. WaterGuard
 - e. Solar
 - f. Jik
 - g. I don't know
- 12. Which of the following statements is true?** *(Choose one)*
- a. WaterGuard will NOT help prevent diarrhea in your family.
 - b. Water that looks clean does NOT need to be treated.
 - c. Store your water in a closed container with a lid to avoid recontamination.
 - d. It is NOT necessary to treat water year round.
 - e. Rain water is blessed and should not be treated
- 13. Do you think health providers should teach patients about hand washing with soap?** *(Choose one)*
- a. Yes
 - b. No
- 14. Which patients should be taught about the Safe Water System?** *(Choose one)*
- a. Only patients with diarrhea
 - b. Mothers of well children
 - c. HIV-positive pregnant women
 - d. People living with HIV/AIDS and their caretakers
 - e. All clients
- 15. Which of the following approaches would be the best way to inform your patients about proper hygiene?** *(Choose one)*

- a. Have your patient perform a return-demonstration and give plenty of encouraging feedback.
- b. Tell patients when they have answered a question wrong.
- c. Lecture the patients about hand washing with soap.
- d. It is not necessary to teach them.

16. After using the Safe Water System correctly, your patient complains that the treated water tastes like chlorine. What can you tell your patients to do about it? (Choose one)

- a. Tell them not to treat their water.
- b. Teach people that the chlorine smell or taste means that the water is safe to drink.
- c. Tell them to use less than the recommended dose of chlorine.

17. Why do you think providers should teach patients about hand washing with soap? (Choose one)

- a. Clean hands make a person germ-free.
- b. It is nice to have clean hands.
- c. Clean hands make a person more likeable.
- d. It is the number one prevention against the spread of disease and infection.
- e. I don't know.

18. What should you teach your patients about hand washing with soap? (Choose one)

- a. It is necessary to wash your hands ONLY when you see visible dirt on them.
- b. Wash your hands for at least 10-15 seconds before and after eating/handling food, after toileting, and after caring for someone who is sick.
- c. Hand washing is not very important. It is better to spend your time teaching your patients about other health issues.
- d. Wash your hands for at least a minute.
- e. I don't know.

19. When should you tell your patients to wash their hands? (Choose one)

- a. Before preparing or eating food
- b. After going to the latrine
- c. After cleaning up a child who has gone to the latrine
- d. When tending to someone who is sick
- e. ALL of the above

20. What is your role as a health professional in motivating patients for behavior change regarding proper hygiene and water treatment? (Choose one)

- a. Patients can motivate themselves.

- b. Use the information correctly at work, but when you're at home or out in the community it doesn't matter what you do or how you act.
- c. Increase the knowledge level of your patients and be a positive role model at work as well as in the community.

MODULE 1 & 10: ANSWER KEY

Take about 15 minutes to answer the questions. Do your own work. Fill in as much as you can.
ANSWERS ARE IN YELLOW

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- d. WaterGuard
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- i. **Choices A, E, and G only**
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2. What is the standard definition of diarrhea? (Choose one)

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- c. Passing loose or watery stools at least 10 times per day (or 15 times for children per day)

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(Choose one)

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- d. Protected hand dug well
- e. Borehole
- f. Rainwater catchment
- g. **All of the above**
- h. I don't know

4. **Where can water become contaminated? (Choose one)**
- a. At the source (i.e. at the well, lake, borehole, etc.)
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 - c. During storage
 - d. **ALL of the above**
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8. **Which of the following is a goal of the Safe Water System? (Choose one)**
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12. Which of the following statements is true? (Choose one)

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13. Do you think health providers should teach patients about hand washing with soap? (Choose one)

- a. Yes
- b. No

14. Which patients should be taught about the Safe Water System? (Choose one)

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- b. Tell patients when they have answered a question wrong.
- c. Lecture the patients about hand washing with soap.
- d. It is not necessary to teach them.

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- a. Tell them not to treat their water.
- b. Teach people that the chlorine smell or taste means that the water is

- c. safe to drink.
- c. Tell them to use less than the recommended dose of chlorine.

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- a. Clean hands make a person germ-free.
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- b. Wash your hands for at least 10-15 seconds before and after eating/handling food, after toileting, and after caring for someone who is sick.
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- d. Wash your hands for at least a minute.
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- c. After cleaning up a child who has gone to the latrine
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- c. Increase the knowledge level of your patients and be a positive role model at work as well as in the community.

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