

# Household Water Treatment for People Living with HIV/AIDS

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## Learning Expectations



1. Identify households with vulnerable populations
2. Explain why knowledge of vulnerable populations are important to a CHP

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## Materials



- Flip Chart with learning expectations
- Two glasses of water
- Food colouring
- Syringe or eye dropper to draw food colouring
- 6 bottles of toothpicks
- 1 piece of flip chart paper for each zone/ community present. Draw 1 stick man on one side to represent few soldiers, and many stick men on the other to represent many soldiers.

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## Preparation



- Rewrite lesson plan
- Fill two clear glasses with water and add food colouring to one

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## Introduction



1. Ask for 2 volunteers.
2. Tell them that they represent two kings, one with a large army and another with a very small army.
3. Recruit 2 participants to protect 1 of the kings and 6 to protect the other.
4. Recruit another 6 participants to play the enemy army. Tell them that their task is to try and touch the king. If they touch him he will become sick – or potentially even die if several enemy soldiers touch him.
5. Get the enemy to attack the king with few soldiers first. Ask the participants to tell you what they observed. (*The kings army was easily outnumbered and so the king was attacked easily*)
6. Now ask the enemy to attack the king with many soldiers, and ask participants to observe what happened. *It was more difficult to reach the king because he had more protection.*
7. ATP who in this exercise represented a vulnerable person and why. *The one with few soldiers, because vulnerable people have less immunity.*

8. Ask them what the enemy represented. *Germs and sickness.*
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### **Activity 1: Discuss the connection between safe water and vulnerable populations**



1. Explain that vulnerable populations are people with less immunity or (in other words) less soldiers to fight off diseases.
2. ATP to give you some examples of vulnerable populations. Record their answers
  - *Elderly*
  - *Children under 5*
  - *Sick – including PLWHA, People Living with HIV/AIDS*
3. Explain that people with less soldiers can get sick from water that is only slightly contaminated – water that healthy people might be able to drink without getting ill.
4. Explain body immunity using a glass demonstration. Fill two clear glasses with water. Add food colouring to one glass to represent people with compromised immunity and leave the second glass clear.
5. Add a drop of food colouring to each glass. The one with colour already should become a deep colour.
6. Explain that the colour is hardly visible in the glass representing the healthy person, but that it shows up as a deep colour in the one that represents the vulnerable person, just as dirty water will affect them far more.

### **Activity 2: Identify the vulnerable populations in your community**



1. ATP to divide into groups according to zones or the people that they live near in their community.
2. Provide each group with two bottles of toothpicks and a flip chart paper with the stick men representing soldiers.
3. ATP to separate the sticks representing households with vulnerable people in their zones. They can place these piles on the side of the flip chart with just one soldier.
4. Ask them to put a stick for each household where no vulnerable person is present on the side of the flip chart with many soldiers.
5. Ask participants to do a gallery walk and identify which zone has the largest number of households with a vulnerable population.
6. Put all the sticks representing households with vulnerable populations in one group, and all the sticks representing households with no vulnerable population on another. Discuss which pile is larger and why.
7. Ask what the implication of a large number of household with vulnerable populations is for a CHP.

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### **Review**



1. Think, pair, share why it is important for CHPs to be conscious of vulnerable populations.



### Learning Expectations



1. Describe what characterizes a vulnerable population.
2. Discuss why diarrheal diseases have a significant impact on vulnerable populations.
3. Illustrate how access to safe water significantly reduces the exposure to diarrheal diseases.
4. Explain why the multi-barrier approach to household water treatment is necessary to protect vulnerable populations.

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### Materials



- Flipchart paper
- Sticky tack
- Markers
- Computer and projector
- Multi-barrier Approach pictures
- Technical Brief: HWT for PLWHA
- PowerPoint: HWT for Vulnerable Populations
- PowerPoint: HWT for PLWHA
- Pathogen and Household Water Treatment activity (1 slip per participant)
- Safe Water for Vulnerable Populations activity (1 slip per participant)

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### Preparation



- Review topic in Technical Brief: HWT and PLWHA, PowerPoint: HWT for PLWHA, and PowerPoint: HWT for Vulnerable Populations
- Write the session Learning Expectations on flipchart paper
- If you are using the PowerPoint:
  - Cue the PowerPoint on the computer
  - Make sure the computer and projector are working
- Write the heading *Diarrheal Disease and Vulnerable Populations* on flipchart paper
- Write the list of roles and rules for the Safe Water and Vulnerable Populations activity on flipchart paper
  - Disease – Shake hands and squeeze once
  - Healthy Adult – Must be squeezed three times and then die
  - Vulnerable Population – Squeezed once and then die
  - Safe Water – Shake hands and squeeze twice
- Print, laminate and cut up Safe Water for Vulnerable Population activity slips
- Print, laminate and cut up Pathogens and Household Water Treatment activity slips





1. Divide participants into four groups: Healthy adults, sick, elderly and children. Explain that each group will have to move but in a particular way:
  - Healthy adults walk normally
  - Sick people are sitting in chairs and schuffling forward
  - Elderly are hunched over and can only move an inch at a time
  - Children move on their knees
2. ATP to practice their movements.
3. ATP to line up at one end of the room or outside where there is 30-50 metres of space. Explain that they are going to have a race against disease. They will have 30 seconds to travel the 30-50 meters. Once the time is up ATP to freeze where they are. Explain that if they covered the distance, they are free of disease and if not, then they have been infected.
4. **LINK:** Explain that the groups of sick, elderly and children are vulnerable populations. Vulnerable to disease and death. Vulnerable means more likely to be affected. In pairs, ATP to discuss anyone in their life that would be considered vulnerable.
5. Present the learning expectations.

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## Diarrheal Disease and Vulnerable Populations

30 minutes



1. In pairs, ATP to discuss why some people are more vulnerable to diarrheal disease.
  - *Immune system or ability to fight disease is either not yet developed (children) or decreasing in strength (sick or elderly)*
2. Explain that people living with HIV/AIDS (PLWHA) are also particularly vulnerable because of their weakened immune system. Explain that there is a lot of research that demonstrates just how harmful diarrheal diseases are to PLWHA.

**Option A:** Use PowerPoint: HWT for Vulnerable Populations

**Option B:** Present the following information on flipchart paper and ATP to discuss.

<b>Strength of Immune System (CD4 count / <math>\mu</math>L)</b>	<b>Percentage of People with Diarrhea (%)</b>
<200	56.1
200-500	29.8
>500	14.7

- CD4 cells are white blood cells that fight infection in the body. With low levels our bodies cannot fight against diseases that enter our bodies.
  - CD4 count of a healthy person is 1000
  - The weaker the immune system the higher the percentage of people with diarrhea
  - Of 20,000 deaths due to HIV/AIDS in Uganda, 7 out of every 10 people died from diarrheal diseases (Sewankambo et al.)
  - Global deaths from diarrhea of children aged less than 5 years were estimated at 1.87 million (Bulletin of the World Health Organization, September 2008)
3. ATP to write a one sentence conclusion after discussing the information presented.

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### Safe Water and Vulnerable Populations

**20 minutes**



1. Present the list of roles and rules for the Safe Water and Vulnerable Populations activity flipchart. Hand out slips of paper with a role on it. It must be kept a secret. Collect the slips of paper after everyone has looked at their role.
2. Explain that everyone will walk around the room and shake hands with each other. If you get hit by disease and need to die, do it dramatically a few moments after being squeezed. Let the activity play out for three minutes.
3. Second time round, hand out the slips of paper again and include both Safe Water roles. Explain that if you get squeezed twice (by Safe Water) you get an extra 'life' (e.g. A healthy adult with one more squeeze left before dying will actually have two lives).
4. Let the activity play out for three minutes. Discuss how adding Safe Water changed the activity and why.
5. Divide the participants into small groups of three or four people. ATP to draw a diagram to illustrate how vulnerable populations, diarrhea and safe water are connected.
6. If safe water is so important, ATP to discuss what treatment options are available. *This should be a review of the multi-barrier approach.*



1. ATP to discuss what vulnerable population need to protect themselves from diarrheal diseases.
  - *Safe water*
2. Divide participants into small groups of three to four people. Hand out a set of the multi-barrier approach pictures to each group. ATP to organize the pictures in order.
3. ATP to review how each barrier works to help keep or make water safer to drink. Review as a whole group.
4. Explain the importance of the multi-barrier approach for the following reasons:
  - Sedimentation will remove the larger pathogens
  - Filtration may not remove all of the viruses
  - There are pathogens that are resistant to chlorine – cryptosporidium
5. Move into an open area that represents contaminated water full of different pathogens. Hand out slips of paper that designate the participants as a type of pathogen and includes the HWT step that will remove them from the water. When that step is called out they have to die and fall to the ground. Hand out the Pathogens and Household Water Treatment activity slips.
6. Call out Disinfection and wait till those pathogens 'die'. ATP how safe the water is if disinfection was the only treatment used. Ask those on the ground to stand up. Ask the Cryptosporidium participants to put up their hand. ATP what we know about Cryptosporidu and chlorine?.
  - *Chlorine resistant*
7. Call out Sedimentation and wait till those pathogens 'die'. ATP how safe the water is if sedimentation was the only treatment used. Ask those on the ground to stand up.
8. Call out Filtration and wait till those pathogens 'die'. ATP how safe the water is if filtration was the only treatment used. Ask those on the ground to stand up.
9. Call out all three and wait till all the pathogens 'die'. ATP to discuss the impact of using all three steps to HWT.

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**Review****5 minutes**

1. Ask partners to take turns choosing a vulnerable population to represent and imagine drinking unsafe water. Act out and describe at the same time

- What happens?
- Why?
- What do you need to prevent it?
- How do you get it?

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**Reflections on Lesson**

