

Lesson Plan 9: Animal Excreta Management



45 minutes total

Lesson Description



This lesson introduces zoonotic diseases related to animal excreta and the importance of animal excreta management. Three different participatory activities are given as options for participants to learn about different diseases, their transmission routes and prevention methods.

Learning Outcomes



At the end of this session participants will be able to:

1. Identify some diseases that are related to animal excreta.
2. Discuss the importance of animal excreta management.
3. Discuss some good animal excreta management practices to prevent disease transmission.

Materials



- Flipchart paper
- Markers
- Tape

Optional:

- Glitter or turmeric
- Tool: Animal Excreta Transmission Routes
- Role play activity

Preparation



- Option A is recommended to use in *Introduction to WASH* workshop
- Review topic in Technical Brief: Animal Excreta Management
- Ask host about local diseases that are related to animal excreta
- Introduction Option B: Write the heading “Zoonoses” on flipchart paper and the following definitions underneath:
 - *Animals that have very large noses, like an elephant*
 - *Diseases that are transmitted from animals to people*
 - *Animals that have escaped from the zoo*
 - *Diseases that are transmitted from people to animals*
- Disease Transmission Option A: Review Tool (See Appendix 2). Print and cut out the Animal Excreta Transmission Routes activity cards appropriate for the region, available at: <https://resources.cawst.org/activity/d0546830/animal-excreta-transmission-routes-activity>. Have one set prepared for each group. You can

interchange animals from different regions (e.g., pig, cow, goat) to match your local context.

- Disease Transmission Option B or C: Select the animal excreta disease cards that best represent local diseases. Print and cut out the cards at the end of the Lesson Plan. Have one card prepared for each group.

Introduction

5 minutes

Option A:



1. Put glitter or turmeric on the floor, people walk around, look at their feet and see what's on the bottom.
2. **LINK:** Ask people what the glitter/turmeric on the bottom of their shoes represents.
3. Explain that the glitter represents soil contaminated by animal feces.
Ask the participants to discuss what diseases can be passed between soil and people.
4. Present the lesson description or learning outcomes.

Option B:

1. Show the definitions of the word “zoonoses” on the flipchart paper or read the definitions aloud.
2. Ask the participants to guess which the correct definition is. They can vote in secret by showing their fingers in front of their chest. For example, 1 finger means definition one, 2 fingers means definition two, 3 fingers means definition three, 4 fingers means definition four.
3. **LINK:** Zoonoses are diseases and infections that are naturally transmitted between animals and people.
4. Present the lesson description or learning outcomes.

Disease Transmission

35 minutes



1. Explain that just as human excreta presents health hazards, so does animal excreta. Many zoonotic diseases are transmitted by pathogens found in animal excreta. Not only can animal excreta transmit pathogens directly, it can also provide a breeding site for other disease vectors, like flies.

Use this Option for introduction to WASH workshop

Option A: Animal Excreta Transmission Routes Activity (Appropriate for an audience with low literacy level. This activity is also easier after having completed the regular Transmission Routes Activity for Human Excreta in Lesson Plan 5.)

1. Divide participants into groups of three or four people. Tell the participants that we are going to do the transmission routes activity again (if already done in Lesson Plan 5: Disease Transmission), but this time considering animal feces instead of human feces.

Introduce the topic and start with the pictures of the animal feces and the child. Explain that there are many ways in which pathogens can be “transmitted” from the feces to the child. The transmission does not necessarily have to be to the child’s mouth, it can also affect other parts of the body, like the foot in the case of soil-transmitted helminths.



2. Hand out the white cards and arrows to each group. Explain that they should use the white cards and arrows to create as many transmission routes as they can to show how pathogens can find their way from the animal feces to the child.
3. Optional depending on time: When the groups have made their diagrams, ask one group to share with another group. Let them respond to questions raised by the other groups.



4. Hand out the orange cards to each group. Explain that they should use the orange cards to block the transmission of disease. It is useful to have blank paper and pens so that the group can create its own blocks if the pre-cut cards do not cover all situations.
5. Optional depending on time: When the groups have made their diagrams, ask one group to share with another group. Let them respond to questions raised by the other group.



6. Discuss with the large group the different ways to block transmission of pathogens from animal excreta, and what is similar and different with preventing diseases from human feces. Ask if the groups identified any new ways that were not included in the orange cards.
 - *Treat your water to make it safe to drink*
 - *Wash your hands*
 - *Prepare food well (e.g., washing vegetables with safe water)*
 - *Cover food and water to prevent contact from animals and flies*
 - *Fence or tether animals*
 - *Fence gardens to prevent animals from accessing them*
 - *Wear protective footwear to prevent soil-transmitted helminth infections*
 - *Remove excreta from the living environment and treat/dispose in a safe location*
7. Encourage discussion to find out why participants placed the pictures in the particular order and ensure everyone understands the meaning of “transmission route”.
8. Summarize by explaining that if we can prevent animal feces from getting into the environment in the first place, then we do not have to worry so much about treating water, storing food correctly or keeping away flies. That is why our first priorities should be safe animal excreta management and handwashing with soap.
9. Ask the participants to identify any local diseases that are related to animal excreta and good management practices to prevent their transmission.

Option B: Role Play (Appropriate for an audience with a high literacy level and understanding of some basic medical terminology, like disease symptoms.)



1. Divide participants into groups of three or four people. Hand out a different role play card to each group.
2. Ask each group to create a short role play (3 minutes maximum) using the information on their card, including the disease description, its symptoms, the transmission routes, and how to prevent transmission of the disease.
3. Ask each small group to present their role play to the large group. After each role play, ask the large group to identify the disease and add other possible prevention ideas. Summarize the disease and its transmission with the large group. Optional: Draw or write the transmission routes on flipchart paper.
4. Ask the participants to identify any other local diseases that are related to animal excreta and good management practices to prevent their transmission.




10. Discuss with the large group the different ways to block transmission of pathogens from animal excreta, and what is similar and different with preventing diseases from human feces. Ask if the groups identified any new ways that were not discussed.
 - *Treat your water to make it safe to drink*
 - *Wash your hands*
 - *Prepare food well (e.g., washing vegetables with safe water)*
 - *Cover food and water to prevent contact from animals and flies*
 - *Fence animals*
 - *Fence gardens to prevent animals from accessing them*
 - *Wear protective footwear to prevent soil-transmitted helminth infections*
 - *Remove excreta from the living environment and treat/dispose in a safe location*


Option C: Drawing Transmission Routes (Appropriate for an advanced audience with a high literacy level who are able to analyze and organize information.)



1. Divide participants into groups of three or four people. Hand out a different transmission route card, flipchart paper and markers to each group.
2. Ask each group to draw a diagram of the transmission routes of the disease using the information on their card.
3. Optional depending on time: When the groups have made their diagrams, ask one group to share with another group. Let them respond to questions raised by the other group.
4. Ask each group to draw on their diagram how to prevent the transmission of the disease.
5. Optional depending on time: When the groups have made their diagrams, ask one group to share with another group. Let them respond to questions raised by the other group.

-  6. Ask each group to post their diagrams on the wall. Discuss with the large group the different ways to block transmission of pathogens from animal excreta, and what is similar and different with preventing diseases from human feces. Ask if the groups identified any new ways that were not included.
- *Treat your water to make it safe to drink*
 - *Wash your hands*
 - *Prepare food well (e.g., washing vegetables with safe water)*
 - *Cover food and water to prevent contact from animals and flies*
 - *Fence animals*
 - *Fence gardens to prevent animals from accessing them*
 - *Wear protective footwear to prevent soil-transmitted helminth infections*
 - *Remove excreta from the living environment and treat/dispose in a safe location*
7. Ask the participants to identify any other local diseases that are related to animal excreta and good management practices to prevent their transmission.

Review**5 minutes**

-  1. In pairs, ask the participants to discuss something new or interesting that they learned about animal excreta management.

Reflections on Lesson

Option B and C: Animal Excreta Disease Cards

Disease: Cystic echinococcosis

Pathogen: *Echinococcus granulosus* tapeworm

Description: Cysts, often in the stomach, grow slowly over time and can become very large. The cure is usually surgery.

Symptoms: Because the cysts grow slowly, people may not have symptoms for many years. Pain or discomfort in the chest, nausea, vomiting, or coughing may occur. The cysts can rupture and cause allergic reactions or even death.

Transmission: The tapeworm's natural life cycle is as a cyst in sheep and as a tapeworm in dogs. Dogs feed on infected sheep meat and in turn shed eggs in their feces, which are ingested by sheep. People become infected by ingesting food or water contaminated with animal feces containing tapeworm eggs, or when they have direct contact with infected dogs.

Prevention:

- Using sanitation to prevent sheep and dog feces from contaminating food and water
- Deworming dogs and preventing dogs from eating undercooked sheep meat
- Controlling stray dogs
- Using proper hygiene when slaughtering sheep
- Washing hands after contact with dogs and sheep
- Treating water to make it safe to drink
- Washing food with safe water before eating

Disease: Cysticercosis**Pathogen: *Taenia solium* tapeworm****Description: Tapeworm cysts infect the brain, muscle, or other tissue. They are a major cause of adult seizures in most low-income countries.****Symptoms: Cysts in the brain may cause seizures and/or headaches. Other less common symptoms include confusion, difficulty with balance, and can result in death. Cysts in the muscles generally do not cause symptoms. They may cause lumps under the skin.****Transmission: People become infected when eating raw or undercooked pork meat contaminated with tapeworm larvae. The larvae develop in the intestine of humans where they become adult tapeworms, which can grow to more than three metres long. These adult worms shed eggs in human feces. These can infect other people as well as pigs by direct contact or by ingesting contaminated water or food.****Prevention:**

- Using sanitation to prevent human and pig feces from contaminating food and water
- Cooking pork meat thoroughly to kill larvae
- Treating water to make it safe to drink
- Washing food with safe water before eating

Disease: Leishmaniasis**Pathogen: *Leishmania* protozoa****Symptoms: Visceral leishmaniasis (also known as kala-azar) is the most serious form of the disease and fatal if left untreated. It affects several organs, usually the spleen, liver and bone marrow.****Symptoms: Some people do not have any symptoms. People who develop symptoms usually have fever, weight loss, enlargement (swelling) of the spleen and liver, and abnormal blood tests.****Transmission: People can become infected with leishmaniasis if bitten by female *phlebotomine* sandflies carrying the *leishmania* protozoa. The sandflies can breed or live in animal feces, dung and mud-plastered houses, rodent nests, garbage and bushes.****Poverty increases the risk for leishmaniasis. Poor and crowded housing and a lack of environmental sanitation (e.g., lack of waste management, open sewerage) can increase sandfly breeding and resting sites, as well as their access to people.****Prevention:**

- Reducing sandfly breeding and resting sites through sanitation to properly manage animal excreta, and solid waste management to remove garbage
- Controlling sandflies by using insecticide spray, insecticide-treated bed nets and personal protection

Disease: Roundworm Infection**Pathogen: *Ascaris lumbricoides* worm****Description: The roundworm reproduces inside the intestine. The worm goes through several stages:**

- 1. Swallowed eggs first hatch in the intestine.**
- 2. The larvae then move through the bloodstream to the lungs.**
- 3. After maturing, the roundworms leave the lungs and return to the stomach and small intestine. There they lay eggs.**
- 4. The cycle continues. Some eggs are excreted through the feces. Other eggs hatch and return to the lungs.**

Children have the highest risk of infection and it impairs their physical, nutritional and cognitive development.**Symptoms: People infected with roundworms often show no symptoms. The symptoms depends on where roundworms are found in the body. Symptoms of roundworms in the lungs include coughing or gagging, vomiting roundworms, and wheezing or shortness of breath. Symptoms of roundworms in the intestines include nausea, vomiting, irregular stools, stomach pain and weight loss.****Transmission: Roundworm infections are transmitted by eggs present in human and animal feces, which in turn contaminate soil in areas where sanitation is poor. This can happen in several ways:**

- Eggs attached to vegetables are ingested when the vegetables are not carefully cooked, washed or peeled**
- Eggs are ingested from contaminated water**
- Eggs are ingested by children who play in soil and then put their hands in their mouths without washing them**

Prevention:

- Using sanitation to prevent human and animal feces from contaminating soil**
- Treating water to make it safe to drink**
- Washing food with safe water before eating**
- Washing hands after contact with contaminated soil (especially for children playing outside)**