

Comprehensive One Health Education

A facilitator's guide for promoting integrated health in Somalia schools



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Cover photo: Graphic illustration of a community highlighting the interaction between humans, animals and the environment (photo credit: Midjourney)

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1 Background

The One Health approach recognizes the interconnectedness of human, animal, and environmental health, emphasizing that the health of each component is vital for overall well-being. In Somalia, pastoralists depend on their livestock for survival and live close to these animals. This approach looks at the connection between human, animal, and environmental health, helping to understand and reduce these communities' health risks.

Somalia faces a unique set of health challenges, including a high burden of infectious diseases and an increasing incidence of zoonotic infections that arise from close interactions between humans and animals. These issues are compounded by climate change, conflict, and inadequate sanitation, which further strain public health systems. This manual aims to equip students in Somalia with the knowledge and skills to understand and address these complex health challenges through a One Health lens. By covering essential topics such as human health, animal health, environmental health, zoonotic diseases, Water, Sanitation, and Hygiene (WASH), and antimicrobial resistance, the manual provides a comprehensive framework for students to explore how these elements are interconnected. Furthermore, it raises students' awareness of the One Health approach, encouraging them to apply its principles in their undergraduate studies and future careers, equipping them to contribute to holistic health solutions in their communities.

Through participatory lessons, interactive activities, and real-world examples, students will develop a deeper understanding of the importance of collaborative efforts in health promotion and disease prevention. By fostering awareness of the One Health approach, this manual encourages students to become informed advocates for health within their communities, ultimately contributing to the improvement of health outcomes in Somalia.

1.1 About the manual

This manual is specifically designed for students in Somalia, offering a series of interconnected lessons centered on the One Health approach. The manual contains eight main lessons covering a variety of One Health topics contextualized to Somalia. Lesson 1 introduces the concept of One Health and its importance, while Lesson 2 focuses on understanding human health. Lesson 3 highlights animal health and its connection to the One Health approach, and Lesson 4 discusses environmental health. Lesson 5 delves into zoonotic diseases, their transmission, and prevention. Lesson 6 emphasizes the significance of WASH (Water, Sanitation, and Hygiene) for maintaining health. Lesson 7 addresses antimicrobial resistance, and finally, Lesson 8 serves as a revision session, reinforcing key concepts from the previous lessons.

1.2 Lesson structure

Each lesson has the following main components:

- a) **Facilitator preparations:** Preparation tips to help facilitators deliver content effectively. It emphasizes the importance of:
 - Understanding the local context
 - Engaging students through interactive techniques
 - Preparing relevant materials for activities and discussions
- b) **Lesson content:** Detailed subtopics for each lesson with real world examples.
- c) **Main takeaways:** Each lesson ends with summary points that reinforce key ideas and encourage understanding of the links between human, animal, and environmental health.

Figure 1. Human activities that are damaging the environment. Source: <https://www.earthreminder.com/climate-change-drawings>



Figure 1. A drawing showing pollution and deforestation forcing birds to flee—highlighting the environmental cost of human actions. Source: [45+ Climate Change Drawing Ideas | Earth Reminder](#)

2 Lesson 1: Introduction to One Health

2.1 Lesson Overview

Duration: 60-90 minutes

Objectives:

- Recognize how human health, animal health, and environmental health are interconnected
- Explore practical examples and engage in discussions about the relevance of One Health

2.2 Facilitator preparation

Before the session, familiarize yourself with the following:

- One Health basics: Understand the key concepts related to the One Health approach
- Local context: Be aware of specific health challenges in Somalia that relate to One Health, such as zoonotic diseases
- Interactive techniques: Prepare to engage students through questions, group discussions, and hands-on activities

2.3 Materials needed

- Whiteboard/blackboard and markers
- Flipchart paper and pens
- Illustrations (Pictures 25-31 showing *human-animal interaction*)
- Handouts summarizing key messages (translated into Somali language)

2.4 Introduction to One Health (10 minutes)

Engage the students:

- **Start with a question:** What do you think One Health means? Allow a few students to share their thoughts
- **Explain:** One Health is an approach that connects human health, animal health, and environmental health. It's important for keeping everyone healthy!

Purpose:

Emphasize that understanding One Health helps us tackle health problems more effectively.

2.5 What is One Health? (10 minutes)

Explanation:

- Discuss how the One Health approach examines the interactions among people, animals, and the environment Highlight that diseases affecting one area can impact others.

Example:

- Share a relatable example: When water sources like rivers or wells dry up due to environmental changes or overuse, both people and livestock may have to travel long distances in search of water. During this time, livestock such as goats and camels come into contact with wild animals at shared watering points. This increases the risk of disease transmission, such as Rift Valley fever or other zoonotic diseases, from wild animals to livestock, and then from livestock to humans.

Key Points

The One Health approach:

Works at community, regional, national, and global levels to improve health security for both people and animals

Promotes collaboration among different sectors, such as health services, environmental conservationists, and animal health authorities

2.6 Why is One Health important? (10 minutes)

Statistics

Present key facts to highlight the significance of One Health:

- Did you know that about 60% of human infections and 75% of newly emerging diseases in the world come from animals?
- It's estimated that around 26 billion people are infected with zoonotic diseases each year

Discussion

Facilitate a discussion:

- Why do you think these facts are important for us to know? Encourage students to connect these points to their own experiences

2.7 How human activities affect One Health (10 minutes)

Examples

Provide two clear examples of how human actions impact health

- Deforestation: Explain that as forests are cleared for farming, animals lose their habitats and come into contact with people, increasing the spread of diseases
- Large-scale farming: Discuss how large farms like the poultry farming and semi-intensive

camel farming (Barqamaal) in Somalia use antibiotics, which can lead to antibiotic resistance and make it harder to treat infections

Visual Aid:

- Use pictures 25-31 showing *human-animal interaction*.

2.8 Key organizations involved in One Health (10 minutes)

Introduce National organizations:

Discuss key national bodies that work together to promote the One Health approach:

- Ministry of Livestock
- Ministry of Health
- Ministry of Environment and Climate Change

2.9 Benefits of One Health (10 minutes)

Discuss how the One Health approach provides numerous advantages:

- In non-emergency situations, it helps raise awareness about zoonotic diseases, preparing people to prevent and control them
- During emergencies like what was experienced during the COVID19 outbreak, collaboration leads to faster, more coordinated responses, which helps control diseases effectively.

2.10 Main takeaways on One Health (15-20 minutes)

Setting up the activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

- Explain: We are going to discuss important facts about One Health and how the health of humans, animals, and the environment is connected. After each fact, I'll ask follow-up questions or invite volunteers to share their thoughts.

Key takeaway 1: *What is One Health?*

- Message: One Health is an approach that recognizes how the health of humans, animals, and the environment are interconnected. It promotes collaboration between human health, animal health and environmental health sectors.

- Follow-Up:
 - Why do you think it's important to think about all these sectors working together?
 - Can you give examples of how humans, animals, and the environment affect each other's health?

Key takeaway 2: Human activities and One Health

- Message: Human activities, such as deforestation and urbanization, can affect the health of animals and the environment, which in turn affects human health.
- Follow-Up:
 - How do you think deforestation impacts on the health of wild animals?
 - How might changes to the environment impact the spread of diseases to people?

Key Takeaway 3: One Health on a National scale

- Message: Nationally, ministries of livestock, health and environment work together to promote the One Health approach and prevent zoonotic diseases

Figure 2 Pictogram showing interaction between human, animal and environmental health



Figure 3. One Health: Connecting Human, Animal, and Environmental Health: This Venn diagram illustrates the interconnectedness of human, animal, and environmental health—emphasizing the integrated approach of the One Health concept. Source: [Zoonotic Infectious Disease Research | One Health Trust](#)

3 LESSON 2: UNDERSTANDING HUMAN HEALTH

3.1 Lesson overview

Duration: 60-90 minutes

Objectives:

- Understand the concept of human health and its importance within the One Health framework
- Recognize the interconnectedness of human health with animal health and environmental health
- Explore practical examples and engage in discussions about human health challenges and solutions

3.2 Facilitator preparation

Before the session, familiarize yourself with the following:

- Human Health Basics: Understand key concepts related to human health and its determinants
- Local Context: Be aware of specific health challenges faced by communities in Somalia, including prevalent diseases and healthcare access
- Interactive Techniques: Prepare to engage students through questions, group discussions, and activities

3.3 Materials needed

- Whiteboard and markers
- Flipchart paper and pens
- Handouts summarizing key messages

3.4 Introduction to Human Health (10 minutes)

Engage the students:

- Start with a question: What does human health mean to you? Allow a few students to share their thoughts
- Explain: Human health refers to our overall well-being, including physical, mental, and social aspects. It's a crucial part of the One Health approach!

Purpose:

- Emphasize that understanding human health helps us recognize its role in the larger context of health for all living beings

3.5 What is Human Health? (10 minutes)

Explanation:

- Define human health as a state of complete physical, mental, and social well-being, not merely the absence of disease.

Key Points:

Discuss various factors influencing human health:

- *Nutrition: The impact of a balanced diet on health*
- *Exercise: How physical activity contributes to overall well-being*
- *Mental health: The importance of mental well-being and support systems*

Example:

Share a relatable example: Eating healthy foods and staying active can prevent diseases like diabetes and heart disease

3.6 Why is Human Health important? (10 minutes)

Statistics:

- Present key facts to highlight the significance of human health:
 - Did you know that non-communicable diseases account for over 70% of global deaths?
 - In Somalia, access to healthcare services can significantly affect health outcomes as many people, particularly pastoral live in remote areas

Discussion:

- Facilitate a discussion: Why do you think these facts matter for us as individuals and as a community? Encourage students to connect these points to their own lives.

3.7 How Human Health affects One Health (10 minutes)

Examples:

- Provide clear examples of how human health is interconnected with animal and environmental health:
 - Zoonotic diseases: Discuss how diseases like Ebola and rabies can affect human populations

- Environmental pollution: Explain how pollution can lead to health issues such as respiratory diseases

3.8 Challenges to Human Health (10 minutes)

Key Challenges:

Discuss common challenges to human health:

- Infectious Diseases: Highlight the impact of diseases like malaria and cholera
- Access to Healthcare: Explain how lack of access to medical services can affect health outcomes

Discussion prompt:

- Ask students: What are some health challenges you see in your community? Encourage them to share their experiences

3.9 Importance of preventive health measures (10 minutes)

Preventive strategies:

- Discuss the significance of preventive healthcare:
 - Vaccination: Emphasize the role of immunizations in preventing diseases
 - Health Education: Highlight the importance of educating communities about hygiene and health practices

Real-life connection:

- Share local initiatives focused on improving public health through prevention and education. E.g. take how Amoud University school health program is overall health outcome of the community.

3.10 Main takeaways on human health (15-20 minutes)

Setting up the activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

Explain:

- We are going to discuss important facts about human health and how it connects to our overall well-being. After each fact, I'll ask follow-up questions or invite volunteers to share their thoughts.

Key takeaway 1: What is Human Health?

- Message: Human health encompasses physical, mental, and social well-being
- Follow-up:
 - *Why is it essential to consider all aspects of health?*
 - *Can you share an example of how lifestyle choices impact health?*

Key takeaway 2: Factors influencing health

- Message: Nutrition, exercise, hygiene, and access to healthcare are critical factors affecting health
- Follow-Up:
 - *What are some healthy foods you enjoy?*
 - *How does regular exercise make you feel?*

Key takeaway 3: Preventive health measures

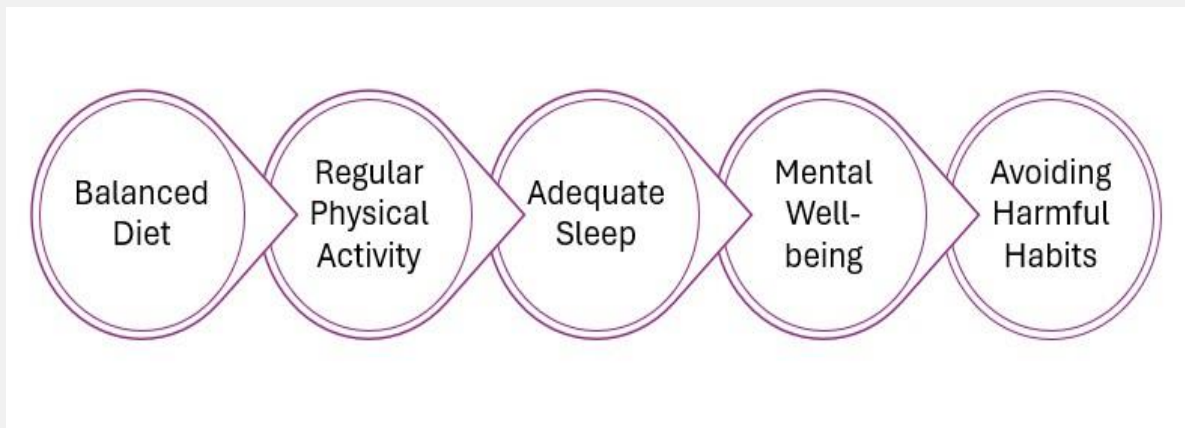
- Message: Preventive healthcare, including vaccinations and health education, is vital for maintaining health
- Follow-Up:
 - *What vaccines do you know about?*
 - *How can we educate others about staying healthy?*

Closing discussion:

Now that we've discussed human health, ask the students:

- What surprised you the most about human health?
- Which Key Takeaway do you think is the most important to remember?

Figure 3. Five key factors contributing to a healthy lifestyle. Produced using PPT



4 LESSON 3: UNDERSTANDING ANIMAL HEALTH

4.1 Lesson overview

Duration: 60-90 minutes Objectives:

- Understand the concept of animal health and its significance within the One Health framework
- Recognize the interconnectedness of animal health with human health and environmental health
- Explore practical examples and engage in discussions about animal health challenges and solutions

4.2 Facilitator preparation

Before the session, familiarize yourself with the following:

- Animal Health Basics: Understand key concepts related to animal health and its determinants
- Local Context: Be aware of specific challenges related to animal health in Somalia, including prevalent diseases and livestock management
- Interactive Techniques: Prepare to engage students through questions, group discussions, and activities

4.3 Materials needed

- Whiteboard and markers
- Flipchart paper and pens
- Illustrations (Use illustrations 17, 21)
- Handouts summarizing key messages (translated into Somali language)

4.4 Introduction to animal health (10 minutes)

Engage the Students:

- Start with a question: What do you think animal health means? Allow a few students to share their thoughts
- Explain: Animal health refers to the overall well-being of animals, including their physical and welfare. It is an essential part of the One Health approach!

Purpose:

- Emphasize that understanding animal health is critical for preventing diseases that can affect both animals and humans.

4.5 What is animal health? (10 minutes)

Explanation:

- Animal health refers to the overall well-being of animals, including their physical, mental, and behavioral condition, as well as their ability to function normally and resist diseases. It involves proper nutrition, care, and management to ensure animals live healthy and productive lives.
- Discuss how healthy animals contribute to food security and public health

Key Points:

Discuss the various factors influencing animal health:

- Nutrition: The importance of providing balanced pasture for livestock
- Animal welfare: Providing proper housing, nutrition, the ability to express natural behaviors, and protection from pain, suffering, and distress.
- Veterinary Care: The role of vaccinations and regular health checks in preventing diseases

Example:

- Share a relatable example: When livestock are healthy, they can produce more milk or meat, which benefits families and communities.

4.6 Why is animal health important? (10 minutes)

Statistics:

Present key facts to highlight the significance of animal health:

- Healthy animals are crucial for food security; approximately 1 billion people worldwide depend on livestock for their livelihoods
- Outbreaks of animal diseases can have severe economic impacts on communities
- The livestock sector is the backbone of the Somali economy and a significant source of livelihood for more than 70–80% of the Somalia population (ILRI, Somalia round table).

Discussion:

- Facilitate a discussion: Why do you think animal health matters to us as individuals and as a community? Encourage students to connect these points to their own experiences with animals.

4.7 How animal health affects One Health (10 minutes)

Examples: provide clear examples of how animal health is interconnected with human health and environmental health:

- Zoonotic Diseases: Discuss how diseases like Anthrax can spread from animals to humans
- Environmental Impact: Explain how healthy animal populations contribute to ecosystem balance

Visual Aid:

- Use illustrations:
- Number 17: Animals must be vaccinated against infectious diseases in the area
- Number 21. When animals are sick or dying, you must consult with an animal health professional.

4.8 Common animal health challenges (10 minutes)

Key challenges:

Discuss prevalent animal health issues:

- Infectious diseases: Highlight diseases such as foot-and-mouth disease, Peste des Petits Ruminants (PPR), Contagious Caprine Pleuropneumonia (CCPP) and their impact on livestock.
- Parasites: Explain how parasites (like helminths) can weaken animals and affect production

Discussion prompt:

- Ask students: What are some health challenges you see in animals around you? Encourage them to share their observations.

4.9 Importance of Veterinary care (10 minutes)

Veterinary role:

- Discuss the crucial role of veterinary care in maintaining animal health:
 - Preventive care: Vaccinations and regular health checks can help prevent outbreaks

Real-life connection:

- Share local initiatives focused on improving veterinary care and animal health in Somalia. Take an example of Community Animal Health Workers (CAHWs) training.

4.10 Main takeaways on animal health (15-20 minutes)

Setting up the activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

- Explain: We are going to discuss important facts about animal health and how it connects to our overall well-being. After each fact, I'll ask follow-up questions or invite volunteers to share their thoughts

Key takeaway 1: What is Animal Health?

- Message: Animal health is vital for the well-being of animals and for preventing diseases that can affect humans
- Follow-up:
 - Why is it important to keep animals healthy?
 - Can you share an example of how animal health impacts food safety?

Key takeaway 2: Factors influencing animal health

- Message: Nutrition, veterinary care, welfare and living conditions significantly impact animal health
- Follow-up:
 - What are some ways we can ensure animals are well-cared for?
 - How does a good pasture affect livestock health?

Key takeaway 3: Veterinary care

- Message: Access to veterinary services is crucial for preventing and treating animal illnesses
- Follow-Up:
 - What should we do if we see a sick animal?

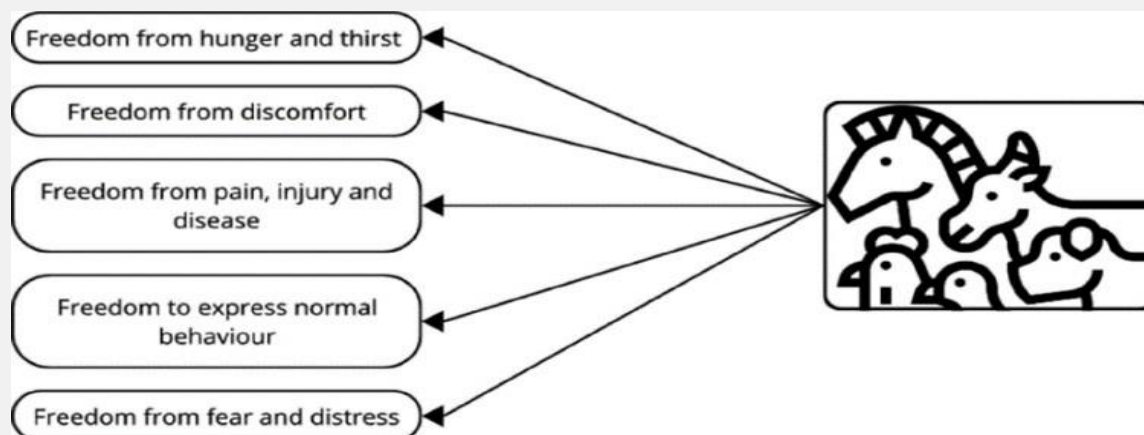


Figure 4. This diagram highlights the essential rights ensuring animal well-being: freedom from hunger, discomfort, pain, fear, and the ability to express natural behavior. Source: https://link.springer.com/chapter/10.1007/978-3-031-16411-8_16

5 LESSON 4: UNDERSTANDING ENVIRONMENTAL HEALTH

5.1 Lesson overview

Duration: 60-90 minutes

Objectives:

- Understand the concept of environmental health and its significance within the One Health framework
- Recognize the interconnectedness of environmental health with human health and animal health
- Explore practical examples and engage in discussions about environmental health challenges and solutions

5.2 Facilitator preparation

Before the session, familiarize yourself with the following:

- Environmental Health Basics: Understand key concepts related to environmental health and its determinants
- Local Context: Be aware of specific environmental challenges faced by communities in Somalia, including pollution, deforestation, and water quality
- Interactive Techniques: Prepare to engage students through questions, group discussions,

and activities

5.3 Materials needed

- Whiteboard and markers
- Flipchart paper and pens
- Illustrations (use number 22, 23 and 24)
- Handouts summarizing key messages (translated into Somali language)

5.4 Introduction to Environmental Health (10 minutes)

Engage the Students:

- Start with a question: What do you think environmental health means? Allow a few students to share their thoughts
- Explain: Environmental health focuses on how our surroundings affect our health It's an essential part of the One Health approach!

Purpose:

- Emphasize that understanding environmental health helps us recognize its role in promoting overall health for all living beings.

5.5 What is Environmental Health? (10 minutes)

Explanation:

- Environmental health is a part of public health that looks at how the places we live, the air we breathe, and the water we drink affect our health and how well we live.

Key Points:

- Discuss various factors influencing environmental health:
 - Air Quality: The impact of pollution on respiratory health
 - Water Quality: The significance of clean drinking water and safe sanitation
 - Soil Quality: How contaminated soil can affect food safety and health

Example:

- Share a relatable example: Poor air quality can lead to respiratory issues, while contaminated water can cause diseases like cholera.

5.6 Why is Environmental Health important? (10 minutes)

Statistics:

- Present key facts to highlight the significance of environmental health:

- Did you know that around 24 million deaths each year are caused by waterborne diseases?
- Air pollution is responsible for approximately 7 million deaths globally each year

Discussion:

- Facilitate a discussion: Why do you think these facts are important for us as individuals and as a community? Encourage students to connect these points to their own experiences.

5.7 How Environmental Health affects One Health (10 minutes)

Examples:

Provide clear examples of how environmental health is interconnected with human health and animal health:

- Pollution: Discuss how pollution can lead to health issues in both humans and animals
- Climate Change: Explain how changes in climate can affect the spread of diseases and disrupt ecosystems

Visual Aid:

- Use illustration

Number 22: Air pollution by the industry.

- Number 23: Human waste destroying natural habitats
- Number 24: Human activity destroying the environment

5.8 Common Environmental Health challenges (10 minutes)

Key challenges:

Discuss prevalent environmental health issues:

- Water Contamination: Highlight the impact of unsafe drinking water on public health
- Air Pollution: Explain how poor air quality affects health outcomes, especially for vulnerable populations

Discussion prompt:

- Ask students: What environmental issues do you notice in your community? Encourage them to share their observations

5.9 Importance of sustainable practices (10 minutes)

Sustainable Practices:

- Discuss the significance of sustainable practices in promoting environmental health:

- Waste Management: The importance of proper waste disposal to prevent pollution
- Conservation: Highlight how protecting natural habitats helps maintain healthy ecosystems

Real-Life Connection:

- Share local initiatives focused on improving environmental health through sustainability in Somalia. e.g. how our cities need proper drainage during rainy seasons which usually causes cholera outbreaks.

Main takeaways on Environmental Health (15-20 minutes)

Setting up the activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

- Explain: We are going to discuss important facts about environmental health and how it connects to our overall well-being. After each fact, I'll ask follow-up questions or invite volunteers to share their thoughts

Key takeaway 1: What is Environmental Health?

- Message: Environmental health focuses on how our surroundings impact our health and well-being
- Follow-Up:
 - Why is it important to have a healthy environment?
 - Can you think of ways the environment influences our health?

Key Takeaway 2: Factors Affecting Environmental Health

- Message: Pollution, waste management, and climate change significantly impact environmental health
- Follow-Up:
 - How can we safely dispose of our waste to protect the environment?

6 LESSON 5 UNDERSTANDING ZOOONOTIC DISEASES

6.1 Lesson overview

Duration: 60-90 minutes

Objectives:

- Understand what zoonotic diseases are and how they affect both human and animal health
- Recognize the ways zoonotic diseases spread and how to prevent them
- Learn about the importance of vaccination and safe practices to protect health

6.2 Facilitator preparation

Before the session, familiarize yourself with the following:

- Zoonotic Diseases Basics: Understand the key concepts related to zoonotic diseases
- Local Context: Be aware of specific zoonotic diseases prioritized in Somalia
- Interactive Techniques: Prepare to engage students through questions, discussions, and activities

6.3 Materials Needed

- Whiteboard and markers
- Flipchart paper and pens
- Illustrations (Use numbers 2, 4, 5, 6, 10, 12 and 18)
- Handouts summarizing key messages

6.4 Introduction to zoonotic diseases (5-10 minutes)

Engage the Students:

- Start with a question: Have you ever heard the term zoonotic diseases? What do you think it means? Allow a few responses
- Explain: In this Lesson, we will focus on zoonotic diseases—these are diseases that can spread between animals and humans. Understanding how they spread and how we can prevent them is very important for our health

Purpose:

- Emphasize that zoonotic diseases pose serious risks and that knowledge can help protect both humans and animals

6.5 What are zoonotic diseases? (10 minutes)

Explanation:

- Define zoonotic diseases as infections that can be transmitted from animals to humans
Discuss various pathogens that cause these diseases, including viruses, bacteria, fungi, and parasites

Examples:

Present well-known zoonotic diseases in Somalia:

- Ebola: This viral disease spreads through contact with infected animals, like fruit bats. It can lead to severe illness or even death in humans.
- Anthrax: Anthrax is a serious infectious disease caused by the bacterium *Bacillus anthracis*. It primarily affects livestock and wild animals, but it can also infect humans through contact with infected animals, their products, or inhalation.
- Avian Influenza (Bird Flu): This virus mainly affects birds but can sometimes spread to humans, causing flu-like symptoms and, in severe cases, death.
- Rabies: This viral disease is usually spread through bites from infected animals (dogs or foxes) and is almost always fatal once symptoms appear.

6.6 How do zoonotic diseases spread? (10 minutes)

Key Transmission Methods:

- Direct Contact: Bites, scratches, or contact with fluids from infected animals can transmit diseases. Example is rabies.
- Consumption: Eating raw or undercooked meat from infected animals or drinking contaminated water can cause illness. Examples include Anthrax and Brucellosis.
- Vector-Borne Transmission: Discuss how some zoonotic diseases are spread by vectors, like mosquitoes or ticks. Examples include Rift Valley Fever (RVF).

6.7 Priority zoonotic diseases in Somalia (10 minutes)

Local context:

Discuss specific top seven priority zoonotic diseases in Somalia (Osman, et al. 2023)

- Rift Valley fever
- Middle East respiratory syndrome

- Anthrax, trypanosomiasis
- Brucellosis
- Zoonotic enteric parasites (including Giardia and Cryptosporidium)
- Zoonotic influenza viruses.

Engage the class:

- Invite students to share if they have heard of any of these diseases and discuss their impacts on health and communities

6.8 The impact of zoonotic diseases (10 minutes)

Consequences:

- Economic Losses: Explain how outbreaks can devastate livestock populations, which many people rely on for food and income. For instance, bird flu outbreaks often require the culling of many birds to stop the spread of the disease
- Health Impacts: Discuss the serious health consequences of zoonotic diseases. The Ebola outbreaks in West Africa and the Democratic Republic of the Congo are examples of how these diseases can lead to widespread illness and strain health services.

6.9 Prevention of zoonotic diseases (10 minutes)

Key strategies:

- Proper animal handling: Discuss the importance of avoiding contact with sick animals and using protective gear like gloves
- Vaccination: Explain that vaccines are available for some zoonotic diseases, such as rabies and anthrax
- Food handling: Teach students the importance of cooking meat thoroughly and avoiding raw dairy products to prevent infections
- Keeping livestock out of residential homes: As close interaction can cause a disease, animals should not be allowed in the living areas.

Visual Aid: Use illustrations below

- *Number 2: Mosquitoes can pass diseases like Rift Valley Fever (RVF) from animals to humans. If people help animals give birth without using gloves or plastic bags on their hands, they can get sick.*
- *Number 4: Health message showing gloves to be used while assisting animals giving birth*
- *Number 5: Health message showing gloves to be used when slaughtering animals*
- *Number 6: If a dog bites you, wash the wound right away with soap and water. Then, go to the nearest health facility for help*
- *Number 10: Never drink milk from an aborted animal*

- *Number 12: Milk should always be boiled before drinking or giving it to children; never give them unboiled milk*
- *Number 18: After your livestock are treated by an animal health professional, you should not eat the meat or drink the milk during the withdrawal period, which varies depending on the specific medication given to the animal*

6.10 Rabies: A case study in zoonotic disease (10 minutes)

Case Study:

- Explain rabies as a preventable zoonotic disease. Rabies spreads through the bite of an infected animal. Once symptoms appear, it is usually too late for treatment

Prevention:

- Stress the importance of immediate medical care after an animal bite.

6.11 Vaccination and treatment (10 minutes)

Vaccination Importance:

- Discuss the role of vaccines in preventing zoonotic diseases like rabies and anthrax. Vaccines can be given to both animals and humans to prevent outbreaks.

Treatment:

- Explain that treatment options for many zoonotic diseases are limited once symptoms appear. Stress the importance of prevention.

6.12 Main takeaways on zoonotic diseases (15-20 minutes)

Setting Up the Activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

- Explain: We are going to share important facts about how zoonotic diseases spread and what we can do to stay safe. As I share each fact, I'll ask some follow-up questions or invite volunteers to share examples. Let's learn together!

Key takeaway 1: How do zoonotic diseases spread?

- Message: Zoonotic diseases can spread between animals and humans in many ways:
 - A bite or scratch from an infected animal
 - Eating meat or drinking raw dairy products (like milk, yogurt, or cheese) from an infected animal
 - Touching an infected animal or its fluids (like blood, urine, or saliva)
 - Breathing in germs from a sick animal (especially when handling hides)
 - Helping an animal during birth
- Follow-up questions:
 - Have you ever heard of any diseases spreading in these ways?
 - Why is it important to handle animals carefully if they are sick?

Key takeaway 2: Rabies – The danger of delay

- Message: Once a person starts to show signs of rabies, it is too late for treatment. This means that the person will die. That's why it is very important to take all animal bites seriously. If you are bitten by an animal, wash the bite for 15 minutes with soap and water, and go to a clinic immediately
- Follow-up:
 - Why do you think rabies is so dangerous?
 - How could washing a bite help prevent infection?

Key takeaway 3: What to do if an animal dies of Anthrax

- Message: If an animal dies from anthrax, it must be burned or buried properly. Leaving it out in the open can spread the disease to other healthy animals. Animals that die from anthrax should never be eaten.
- Follow-up:
 - Why do you think it's dangerous to leave a sick animal in the field?
 - How should farmers handle their animals to keep everyone safe

Key takeaway 4: Selling or eating sick animals

- Message: Even if it might seem like a good idea to sell or eat a sick animal to avoid financial loss, this can spread diseases to other animals and people. It's always safer to separate the sick animal and ask for advice from a vet or animal health worker

- Follow-Up:
 - What could happen if a farmer sells a sick animal to someone else?
 - Why is it better to get help from a vet or an expert?

Key takeaway 5: Symptoms of Bovine Tuberculosis

- Message: The symptoms of bovine tuberculosis (TB) can depend on where the infection is in the animal's body. For example, if the infection is in the lungs, coughing is common. If it's in the stomach, symptoms might include pain and diarrhea.

Key takeaway 6: Zoonotic diseases in cities and rural areas

- Message: Zoonotic diseases can spread anywhere—not just in rural areas. Diseases can spread quickly in crowded places, like cities, and travel between countries. The spread of COVID-19 is a good example of how diseases can cross borders quickly.

Key takeaway 7: Zoonotic diseases can be deadly

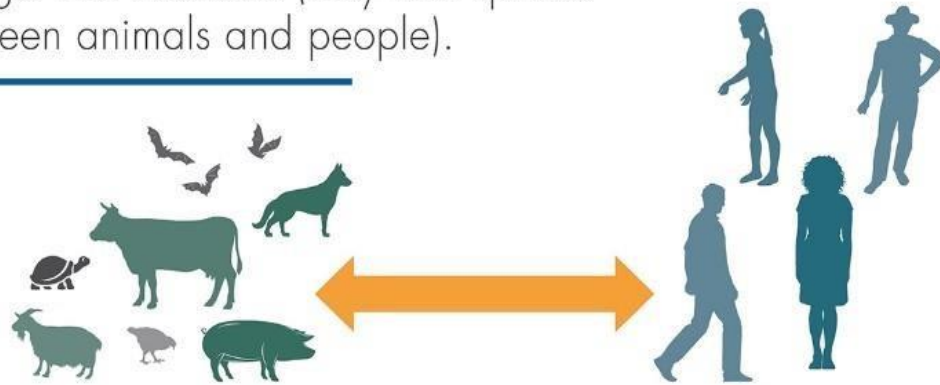
- Message: Zoonotic diseases can cause serious illness and death in both humans and animals. Some diseases, like Rift Valley fever, can kill many animals without spreading easily between people, while others, like Ebola, can spread very quickly from person to person.

Closing discussion:

Now that we've gone through the Key Takeaways, ask the students:

- What surprised you the most?
- Which message do you think is the most important to remember?

More than half of all infections that people can get are zoonotic (they can spread between animals and people).



www.cdc.gov/onehealth



Figure 5. Zoonotic Diseases: Shared Risks Between Animals and Humans: Over half of human infections originate from animals highlighting the importance of One Health in preventing and controlling zoonotic diseases.. Source: CDC

7 LESSON 6: UNDERSTANDING WASH (WATER, SANITATION, AND HYGIENE)

7.1 Lesson Overview

Duration: 60-90 minutes

Objectives:

- Understand the importance of WASH (Water, Sanitation, and Hygiene)
- Recognize how WASH practices impact health and the environment
- Learn practical steps to maintain good hygiene and sanitation

7.2 Facilitator Preparation

Before the session, familiarize yourself with the following:

- WASH Basics: Know the key concepts of water, sanitation, and hygiene
- Local Context: Be aware of the specific WASH challenges faced in Somalia, such as access to clean water and sanitation facilities
- Interactive techniques: Prepare to engage students through questions, discussions, and hands-on activities

7.3 Materials Needed

- Whiteboard and markers
- Flipchart paper and pens
- Illustrations (Use numbers 11 and 13)
- Water samples (clean and contaminated, if possible)
- Soap and handwashing supplies
- Handouts with Main Takeaways (translated into Somali)
-

7.4 Introduction to WASH (5-10 minutes)

Engage the students:

- Start with a question: What do you think WASH stands for? Allow a few responses
- Explain: WASH stands for Water, Sanitation, and Hygiene These three elements are crucial for keeping us healthy

Purpose:

- Emphasize that good WASH practices help prevent diseases and improve overall health

7.5 What is WASH? (10 minutes)

Explanation:

- Water: Discuss the importance of access to safe, clean drinking water. Share how it prevents diseases and supports good hygiene.
- Sanitation: Explain sanitation as the management of human waste. Discuss how proper sanitation facilities protect the environment and health.
- Hygiene: Define hygiene practices, like handwashing, and their role in preventing disease

Interactive Activity:

- Ask students to share how they use water, sanitation, and hygiene in their daily lives Write down their responses on a flipchart

7.6 Why is WASH Important? (10 minutes)

Statistics:

- Present facts on the impact of WASH:
 - Did you know that poor WASH conditions lead to millions of illnesses every year?
 - Good WASH practices can reduce the risk of diseases like diarrhea by up to 30%

Discussion:

- Facilitate a discussion on how these facts relate to the students' lives. Ask questions like:
 - What diseases have you heard of that are caused by poor water or sanitation?

7.7 How WASH Affects Health (10 minutes)

Illustrate with Examples:

- Waterborne Diseases: Explain how contaminated water leads to illnesses Use a simple chart to show diseases like cholera and diarrhea
- Sanitation Issues: Discuss the health risks of inadequate sanitation. Encourage students to share experiences or stories related to sanitation

Visual aid:

Show the difference between clean vs contaminated water (demonstrate if possible).

Use the illustrations below

Number 11: Feces contaminating food and causing illness

Number 13: Health message showing washing hands with soap and cooking food

7.8 WASH in schools (10 minutes)

Importance of WASH in education:

- Explain that healthy students learn better
- When schools have clean water and sanitation facilities, students are more likely to attend classes and succeed

Discussion prompt:

- Ask: What do you think a school should have to keep students healthy? Write their ideas on the flipchart

7.9 WASH practices everyone should follow (10 minutes)

Practical steps:

Share key WASH practices:

- Drink only safe water
- Always wash hands with soap after using the toilet and before eating
- Use sanitation facilities properly
- Keep your surroundings clean

Demonstration:

- Conduct a handwashing demonstration Use soap and water, explaining the steps as you go

7.10 Challenges in WASH Access (10 minutes)

Discussion:

- Talk about barriers to accessing clean water and sanitation in Somalia:
- Many communities face challenges like lack of infrastructure or funds to build toilets
What do you think can be done to overcome these challenges?

Engage:

- Encourage students to think of solutions How can we work together to improve WASH conditions in our community?

Main takeaways on WASH (15-20 minutes)

Setting up the activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

- Explain: We are going to discuss important facts about WASH and how water, sanitation, and hygiene are connected to our health. After each fact, I'll ask some follow-up questions or invite volunteers to share their thoughts

Key takeaway 1: Importance of clean water

- Message: Access to safe and clean drinking water is crucial for preventing diseases and maintaining good health
- Follow-up:
 - Why is it important to drink clean water?
 - Can you think of places where people might not have access to clean water?

Key takeaway 2: Proper sanitation

- Message: Proper sanitation facilities, like toilets, help manage waste and protect people from diseases
- Follow-Up:
 - What happens when there are no toilets available?
 - How can proper sanitation improve community health?

Key takeaway 3: Handwashing

- Message: Washing hands with soap and clean water is one of the most effective ways to prevent the spread of germs and diseases
- Follow-Up:
 - Why do you think handwashing is often overlooked?

Key Takeaway 4: Community responsibility

- Message: Everyone has a role to play in improving WASH conditions in their community by practicing good hygiene and sanitation
- Follow-Up:
 - What can you do to help improve WASH practices at your school or in your community?
 - Why is it important to work together for better health

Closing Discussion:

Now that we've discussed WASH, ask the students:

- What surprised you the most about the WASH approach?
- Which Key Takeaway do you think is the most important to remember?

8 LESSON 7: UNDERSTANDING ANTIMICROBIAL RESISTANCE

8.1 Lesson overview

Duration: 60-90 minutes

Objectives:

- Recognize how Antimicrobial Resistance (AMR) develops and spreads
- Learn practical steps to prevent antimicrobial resistance in everyday life

8.2 Facilitator preparation

Before the session, familiarize yourself with the following:

- Antimicrobial Resistance Basics: Understand the key concepts related to AMR and its implications for health
- Local Context: Be aware of the specific challenges regarding AMR in Somalia, including antibiotic misuse and healthcare access
- Interactive Techniques: Prepare to engage students through questions, discussions, and activities

8.3 Materials needed

- Whiteboard and markers
- Flipchart paper and pens
- Illustrations (Use numbers 16 and 20)
- Handouts summarizing key takeaways (translated into Somali)

8.4 Introduction to Antimicrobial Resistance (5-10 minutes)

Engage the students:

- Start with a question: What do you think antimicrobial resistance means? Allow a few responses
- Explain: Antimicrobial resistance (AMR) occurs when bacteria, viruses, fungi, and parasites change in response to the use of medicines, making treatments less effective. Understanding AMR is essential for protecting our health

Purpose:

- Emphasize that AMR is a serious threat to global health that can affect anyone

8.5 What is Antimicrobial Resistance? (10 minutes)

Definition:

- AMR (Antimicrobial Resistance) is when germs like bacteria, viruses, fungi, and parasites no longer respond to the medicines that used to kill them or stop their growth. This means that antibiotics (for bacteria), antivirals (for viruses), antifungals (for fungi), and antiparasitics (for parasites) may not work anymore. It's important to use these medicines correctly to help prevent AMR.

Examples:

Present examples of resistant infections:

- MRSA (Methicillin-resistant Staphylococcus aureus): This is a type of skin infection that doesn't get better with regular antibiotics.
- Multi-drug-resistant tuberculosis (MDR-TB): This is a serious lung infection that doesn't respond to the strongest medicines used to treat it.

8.6 How does Antimicrobial Resistance develop? (10 minutes)

Key factors:

- Discuss the primary causes of AMR:
 - Overuse of Antibiotics: Taking antibiotics when you don't really need them or not finishing your medicine can make bacteria stronger and harder to kill.
 - Misuse in Agriculture: Using antibiotics to make farm animals grow faster can lead to germs that resist medicine, which can then get into our food.
 - Infection control: Not keeping things clean and having bad hygiene can help spread infections that are hard to treat.

8.7 The impact of Antimicrobial Resistance (10 minutes)

Consequences:

- Health Risks: Explain that AMR can lead to longer hospital stays, higher medical costs, and increased mortality. Infections caused by resistant bacteria are harder to treat and can become life-threatening
- Economic Impact: Discuss the economic burden AMR places on healthcare systems, affecting both families and communities

8.8 Preventing Antimicrobial Resistance (10 minutes)

Key strategies:

- Responsible Use of Antibiotics: Only take antibiotics when a doctor gives them to you, and always finish the whole course, even if you feel better.
- Hygiene Practices: Keeping clean is important to stop infections. Wash your hands often and prepare food safely.

8.9 The role of students in combating AMR (10 minutes)

Empowerment:

Discuss how students can make a difference in combating AMR:

- Educating Others: Encourage students to share what they learn about AMR with friends and family

8.10 Main takeaways on Antimicrobial Resistance (15-20 minutes)

Setting up the activity:

- Select 10 students for the demonstration
- Ask everyone to stand up and come to the front of the room

Instructions:

- Explain: We are going to discuss important facts about antimicrobial resistance and what we can do to stay safe. As I share each fact, I'll ask follow-up questions or invite volunteers to share examples. Let's learn together!

Key takeaway 1: What is Antimicrobial Resistance?

- Message: Antimicrobial resistance occurs when microbes change and no longer respond to medications that once worked
- Follow-up:
 - Why is it a problem for us?

Key takeaway 2: How AMR develops

- Message: AMR develops due to the overuse and misuse of antibiotics in humans and animals
- Follow-Up:
 - What are some examples of antibiotic misuse you've heard about?
 - How can we use antibiotics responsibly?

Key takeaway 3: Prevention strategies

- Message: We can prevent AMR by using antibiotics wisely, practicing good hygiene, and getting vaccinated.
- Follow-up:
 - What are some hygiene practices you can follow?
 - How can vaccination help prevent infections?

Closing Discussion:

Now that we've discussed antimicrobial resistance, ask the students:

What surprised you the most about AMR?

Which Key Takeaway do you think is the most important to remember?

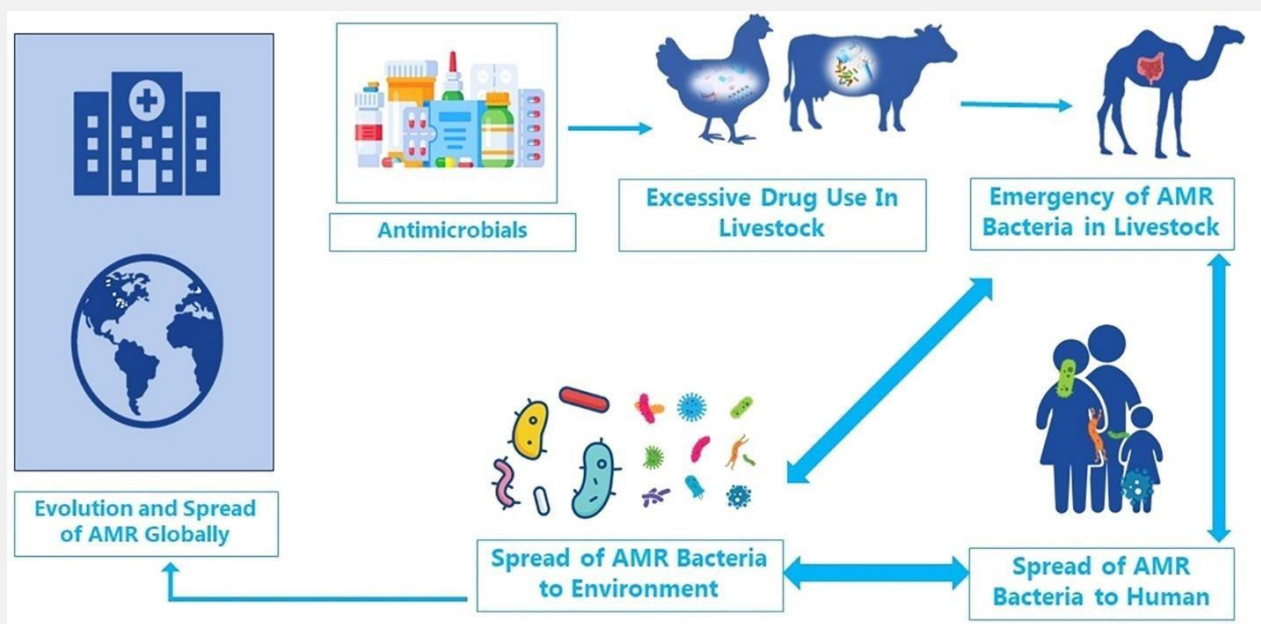


Figure 6. Diagrammatic presentation of AMR occurrence at the human-livestock-environment interface.
Source: <https://www.cabidigitallibrary.org/doi/10.1079/cabionehealth.2023.0025>

9 LESSON 8: REVISION

9.1 Introduction to One Health (10 minutes)

Engage the students:

- Start with a question: What does One Health mean to you? Allow a few students to share their thoughts.
- Explain: One Health is an approach that connects human health, animal health, and environmental health. It's crucial for keeping everyone healthy!

Purpose:

- Emphasize that understanding One Health helps us tackle health problems more effectively

9.2 Understanding Human Health (15 minutes)

Explanation:

- Define human health as a state of complete physical, mental, and social well-being, not merely the absence of disease

Key factors:

- Discuss various factors influencing human health, including nutrition, exercise, hygiene, and access to healthcare

Statistics:

- Present key facts to highlight the significance of human health, such as the prevalence of non-communicable diseases

Discussion:

- Facilitate a discussion: Why do you think human health is important for our communities?

9.3 Understanding Animal Health (15 minutes)

Explanation:

- Define animal health as the overall well-being of animals, including physical and mental health and their welfare.

Importance:

- Discuss how healthy animals are essential for food security and public health Key Challenges:

- Highlight prevalent animal health issues, such as infectious diseases and parasites

Discussion prompt:

- Ask students: What animal health issues do you see in your community?

9.4 Understanding Environmental Health (15 minutes)

Explanation:

- Define environmental health as the branch of public health that concerns how the environment influences human health

Key factors:

- Discuss factors affecting environmental health, such as pollution, water quality, and waste management

Statistics:

- Present facts related to the impact of poor environmental health on public health

Discussion:

- Ask: How does a clean environment contribute to better health for both humans and animals?

9.5 Understanding zoonotic diseases (15 minutes)

Explanation:

- Define zoonotic diseases as infections that can be transmitted from animals to humans

Examples:

- Discuss priority zoonotic diseases in Somalia: Rift Valley fever, Middle East respiratory syndrome, anthrax, trypanosomiasis, brucellosis, zoonotic enteric parasites (including *Giardia* and *Cryptosporidium*), and zoonotic influenza viruses.

Transmission:

- Explain how zoonotic diseases can spread through direct contact, consumption of contaminated food or water, and vector-borne transmission

Discussion:

- Ask: What can we do to prevent zoonotic diseases in our communities?

9.6 Understanding Water, Sanitation, and Hygiene (WASH) (15 minutes)

Explanation:

- Define WASH and its importance in promoting health and preventing diseases

Key Practices:

- Discuss the significance of clean water, proper sanitation, and good hygiene practices

Statistics:

- Present facts related to the impact of WASH on public health, such as the prevalence of waterborne diseases

Discussion Prompt:

- Ask: How can we improve WASH conditions in our communities?

9.7 Understanding Antimicrobial Resistance (15 minutes)

Explanation:

- Define antimicrobial resistance (AMR) as the ability of microbes to resist the effects of medications that once treated them

Key Causes:

- Discuss factors contributing to AMR, including the overuse and misuse of antibiotics in humans and animals

Impact:

- Highlight the health and economic consequences of AMR on individuals and healthcare systems

Discussion:

- Ask: Why is it important to use antibiotics responsibly?

10 REFERENCES

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11 Annex

All illustrations used for this manual are available here:

Mor, S. M., Lemma, M., Mumin, F. I., Fascendini, M., Assefa, A., & Kaba, M. (2024). Community Conversations: Facilitating awareness and behaviour change regarding One Health hazards. [Community Conversations: Facilitating awareness and behaviour change regarding One Health hazards](#)