Infectious Disease Management
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This module is One of 16 One Health Training Modules developed by the One Health Central and Eastern Africa network (OHCEA), a network of 8 countries, 21 institutions of Public Health and Veterinary Medicine in Africa: Kenya, Uganda, Tanzania, Rwanda, Ethiopia, Democratic Republic of Congo, Cameroon and Senegal. The OHCEA network’s vision is to be a global leader in One Health, promoting sustainable health for prosperous communities, productive animals and balanced ecosystems. OHCEA seeks to build capacity and expand the human resource base needed to prevent, detect and respond to potential pandemic disease outbreaks, and increase integration of animal, wildlife and human disease surveillance and outbreak response systems. The overall goal of this collaboration is to enhance One Health policy formation and implementation, in order to contribute to improved capacity of public health in the region. OHCEA is identifying opportunities for faculty and student development as well as in service public health workforce that meet the network’s goals of strengthening One Health capacity in OHCEA countries. The modules were developed based on One Health Core Competencies that were identified by OHCEA as key elements in building a skilled one Health workforce. This network is supported by two United States University partners: Tufts University and the University of Minnesota through the USAID funded One Health Workforce project.

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Overview of Infectious Disease Management Module

Many of the emerging diseases are of zoonotic and epidemic nature of which the Ebola virus is a recent example. Majority of the newly recognized infectious agents responsible for emerging infectious diseases (EIDs) originate in animals, including wildlife (e.g., severe acute respiratory syndrome [SARS], highly pathogenic avian influenza H5N1, the pandemic influenza A/H1N1 2009 virus, and Nipah, West Nile, Rift Valley fever, and Ebola viruses). They involve complex interactions between human, animal and the environment as well as socio-economic circumstances intertwined with ignorance and poverty. Infectious disease management requires collaboration across sectors in order to achieve more rapid, mutually beneficial and effective responses. This collaboration requires a comprehensive and strategic way of thinking about the problem of infectious diseases in order to minimize the impact. The infectious disease management module will help participants to get a better understanding of infectious disease management from a One Health perspective, at both the individual, organizational and community levels. The module will provide participants with insights into: definition of key concepts; infectious diseases risk factors; development and implementation of infectious disease management plans as well as evaluation of infectious diseases management activities.

One Health is defined as the collaborative effort of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and our environment. The one health paradigm emerged from the recognition that the wellbeing of humans, animals and ecosystems are interrelated and interdependent, and there is need for more systematic and cross-sectoral approaches to identifying and responding to global public health emergencies and other health threats arising at the human-animal ecosystem interface. The One Health concept is therefore a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. The synergism achieved will advance health care for the 21st century and beyond by accelerating biomedical research discoveries, enhancing public health efficacy, expeditiously expanding the scientific knowledge base, and improving medical education and clinical care. When properly implemented, it will help protect and save untold millions of human and animal lives in present and future generations.

This infectious disease Management module is one of 16 One Health modules developed by the One Health Central and East Africa Network(OHCEA), a network of 21 schools of public health and veterinary medicine in East and Central Africa for purposes of building capacity in these institutions to prevent, detect and respond to any emerging pandemics using a One health approach. This module aims to introduce participants to the basic principles of preventing, detecting, and responding to infectious disease outbreaks in the context of One Health. The module uses a One Health approach to examine various important infectious diseases of humans and animals and helps students understand the
fundamentals of infectious disease ecology and their impacts on humans, animals and the environment. Key outcomes of the module are the ability to:

- Illustrate One Health concept as it relates to infectious disease management
- Explain the relationship between humans, animals, and the environment in infectious disease transmission.
- Understand the role of surveillance in infectious disease management.
- Apply multi-disciplinary approaches to infectious disease investigation and response.

Target audience: Module can be used by undergraduates or postgraduate University students, practitioners, first responders and other professionals.

Goals of the Module
The module is designed to produce professionals able to identify and respond to infectious disease outbreaks utilizing one health approach.

At the end of the module, participants will:
1) Use the One Health approach to manage emerging infectious diseases, including emerging zoonotic infectious agents, newly identified infectious agents capable of causing pandemic threats,
2) Have knowledge and skills to work in multi-disciplinary teams in disease outbreak investigation and management
3) Know the principles of infection control and personal protection for responders in infectious disease management
4) Be aware of gender dynamics and apply gender sensitive approaches to emerging pandemic prevention, disease control, surveillance and response.
5) Be knowledgeable about leadership principles for the detection and response towards infectious diseases
6) Be able to communicate risk associated with infectious diseases

Learning Objectives of the Course.
At the end of this module, participants will be able to:

1) Illustrate One Health concept as it relates to infectious disease management
   a. Describe the One Health concept
   b. Apply One Health core competencies in multiple disciplines
2) Identify emergence and reemergence of infectious diseases
   a. Describe the interactions between humans, animals and environment and their roles in disease occurrence and spread
   b. Outline patterns of occurrence and spread of infectious disease-causing agents and their determinants
   c. Describe the various disease surveillance strategies and indicators of emergence or reemergence of infectious diseases
3) Design One Health response strategies tailor-made to fit infectious disease outbreak situations
   a. Explain the common principles in infectious disease outbreak response
   b. Illustrate the roles and management approaches for multi-disciplinary response teams in disease outbreak investigation and management
4) Apply gender sensitive approaches to infectious disease management
   a. Describe the basic principles and concepts in gender, culture, beliefs and ethics
   b. Illustrate role of gender, culture, beliefs and ethics in infectious disease management
5) Apply effective risk communication principles and approaches to infectious disease response management strategies
   a. Describe the key concepts and strategies for effective risk communication in infectious disease management
   b. Illustrate risk communication strategies for various target groups
6) Apply the principles of infection control and personal protection in infectious disease management
   a. Describe the basic principles of infectious disease occurrence and transmission patterns
   b. Evaluate infectious disease risk and the appropriate infection control
   c. Design personal protection protocol for responders in infectious disease management

Programme/Agenda

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<th>Day 5</th>
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<tr>
<td>Foundations of Infectious disease management: basic concepts of Infectious disease management and One Health</td>
<td>Global burden of emerging zoonotic diseases</td>
<td>Gender and emerging pandemics</td>
<td>Leadership in infectious disease management</td>
<td>Simulation exercise</td>
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<td>Epidemiology and risk factors for infectious agents</td>
<td>Steps and stakeholders in outbreak investigation</td>
<td>Infection control and Personal protection equipment</td>
<td>Communication in infectious disease management</td>
<td>Evaluation /assessment of the simulation and module</td>
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## Module overview

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<tr>
<th>Topic</th>
<th>Learning Objectives (LO)</th>
<th>Instructional activities (mode of delivery)</th>
<th>Materials</th>
<th>Time (Min)</th>
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| **Illustrate One Health concept as it relates to infectious disease management** | Describe the One Health concept and apply One Health core competencies in multiple disciplines | ● Published Articles review  
● Case studies on one Health  
● Video: fatal infestations  
● Group discussions  
● Brainstorming  
● Power point presentations | ● Sticky notes  
● Flip chats  
● Markers  
● Computer | 195 |
| **Understand the foundations of Infectious disease management:** basic concepts of Infectious disease management and One Health | 1. Define basic concepts of infectious diseases management  
2. Explain the relationship between humans, animals and the environment in infectious diseases transmission | ● Brainstorming using sticky notes to define: infectious diseases,  
● Published articles review  
● Role plays  
● Video: contagion  
● Case studies  
● Power point presentation | ● Sticky notes  
● Flip chats  
● Markers  
● Projector  
● Computer  
● White board | 215 |
| **Epidemiology and risk factors for infectious agents** | 3. List the types of infectious agents  
4. Explain the epidemiology of selected infectious agents: Plague and Malaria  
5. Explain the risk factors for | ● Brain storming  
● Lecture in Power point presentation  
● Group assignment  
● Case study  
● Group discussions  
● Demonstration of data management  
● Demonstration of contact tracing and case identification | ● Projector  
● Computer  
● White board  
● Sticky notes  
● Flip chats  
● Markers | 140 |
| 03 | **Global burden of emerging zoonotic diseases** | 6. Explain the epidemiology and burden of recent highly infectious disease outbreaks | • Group discussions  
• Published articles review  
• Video: contagion  
• Power point presentations  
• Brainstorming  
• Game  
• Case studies | 220 |

7. Explain the social and economic impacts of recent highly infectious disease outbreaks

| 04 | **Steps and stakeholders in outbreak investigation** | 8. Explain the steps in disease outbreak investigation | • Group discussions  
• Group activity  
• Brainstorming  
• Game  
• Case studies  
• Power point presentations | 230 |

9. Identify and assess the roles/powers of different stakeholders in outbreak investigation

| 05 | **Gender and emerging pandemics** | 10. Define and analyze gender roles  
Illustrate role of gender in Infectious disease management; transmission, prevention and control | • Group activity  
• Brainstorming  
• Power point presentation  
• case studies  
• Group discussions  
• Published articles review  
• Mapping exercise | 160 |

- Projector  
- Computer  
- White board  
- Sticky notes  
- Flip chats  
- Markers
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<th>Time</th>
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<th>Tools/Equipment</th>
<th>Notes</th>
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<tr>
<td>06</td>
<td><strong>Infection control and Personal protection equipment</strong></td>
<td>10. Explain how gender and infectious diseases affect each other</td>
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<td></td>
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<td>11. Explain the different types of infection control precautions</td>
<td>● Brainstorming&lt;br&gt; ● Power point presentation&lt;br&gt; ● case studies&lt;br&gt; ● Group discussions&lt;br&gt; ● Published articles review&lt;br&gt; ● Demonstration of PPE use</td>
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<tr>
<td></td>
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<td>12. Explain the different types of PPE available for use by healthcare workers</td>
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<td>13. Explain the principles of selection of PPE</td>
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<tr>
<td>07</td>
<td><strong>Leadership in infectious disease management</strong></td>
<td>14. Explain the qualities of a good leader</td>
<td>● Brainstorming&lt;br&gt; ● Power point presentation&lt;br&gt; ● case studies&lt;br&gt; ● Group challenge&lt;br&gt; ● Published articles review</td>
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<td>15. Develop a vision and strategy for infectious disease management</td>
<td>● Projector&lt;br&gt; ● Computer&lt;br&gt; ● White board&lt;br&gt; ● Sticky notes&lt;br&gt; ● Flip chats&lt;br&gt; ● Markers</td>
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<td>16. Assess stakeholders for infectious disease management</td>
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<td>17. Simulation exercise</td>
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<tr>
<td>08</td>
<td><strong>Communication in infectious disease management</strong></td>
<td>18. Explain the basic concepts communication</td>
<td>● Power point presentation&lt;br&gt; ● Group activity&lt;br&gt; ● simulation</td>
<td>210</td>
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<tr>
<td></td>
<td>and risk communication</td>
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<td>Explain why risk communication is important in infectious disease management</td>
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<td></td>
<td>Explain the risk communication types and best practices</td>
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<thead>
<tr>
<th>08</th>
<th><strong>Problem based learning, simulation of emergency And logistics</strong></th>
<th>Exposure to Problem Based learning and creation of an emergency response plan Simulation of emergency</th>
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<tbody>
<tr>
<td></td>
<td>● Power point presentation ● Group activity ● simulation</td>
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Infectious Diseases Management Short Course: Understanding Basic concepts of Infectious disease management and One Health and Infectious Disease Management

**Session Overview**

This opening session will provide participants with an overview of the course goals and learning objectives. The session on Foundations will introduce to participants the basic concepts of One health and infectious disease management.

**Session Learning Objectives and Activities**

<table>
<thead>
<tr>
<th>Learning Objective:</th>
<th>Participants will be able to:</th>
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<tbody>
<tr>
<td>▪ Explain the basic infectious diseases management concepts including: infectious diseases, One Health, epidemic, pandemic, biological agent, reservoir, host, emerging infections, surveillance, triage, screening etc.</td>
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<tr>
<td>▪ Explain the relationship between humans, animals and the environment in infectious diseases transmission</td>
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<tr>
<td>▪ Types of infectious agents including viruses; bacteria, fungi, parasites, protozoa and prions.</td>
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<td>▪ Explain the epidemiology of selected infectious agents</td>
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<td>▪ Explain the risk factors for selected infectious agents</td>
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<thead>
<tr>
<th>Schedule</th>
<th>Topic/Activity</th>
<th>Learning Activity</th>
<th>Materials</th>
</tr>
</thead>
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<td>8:00 - 9:00</td>
<td>Registration</td>
<td></td>
<td>Sign in sheet</td>
</tr>
<tr>
<td>9:00 - 10:00</td>
<td>Introduction</td>
<td>Presentations</td>
<td>PowerPoint, Post Its® (2 colors), Flipcharts, Tape, Pre-Test</td>
</tr>
<tr>
<td></td>
<td>• Goals and Agenda</td>
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<td></td>
<td>• Expectations</td>
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<td></td>
<td>• Pre-Test</td>
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<tr>
<td>10:00 - 10:15</td>
<td>Tea Break</td>
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<tr>
<td>10:15 - 1:00</td>
<td>Introduction to One health One Health core competencies</td>
<td>Group activity, Case studies, video</td>
<td>Flipcharts &amp; Markers, Computer, Flip charts, power point</td>
</tr>
<tr>
<td>1:00 - 2:00</td>
<td>Lunch</td>
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<tr>
<td>2:00 - 2:30</td>
<td>Basic concepts of infectious disease management and one health Types of infectious agents</td>
<td>Pre-work (review paper), Small Group Activity</td>
<td>Flipcharts &amp; Markers</td>
</tr>
</tbody>
</table>

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### GENDER AND EPT SHORT COURSE: Day Two

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<tr>
<th>Time</th>
<th>Activity</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:30 – 3:30</td>
<td>Epidemiology of selected diseases: Plague and malaria</td>
<td>Presentation &amp; Small Group Activity, PowerPoint, Post Its® (2 colors), Flipcharts &amp; Markers</td>
</tr>
<tr>
<td>3:30 - 3:45</td>
<td>Tea Break</td>
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<tr>
<td>3:45 - 4:30</td>
<td>Risk factors for infectious diseases</td>
<td>Group paper review and presentations, Review Paper, Flipcharts &amp; Markers</td>
</tr>
<tr>
<td>4:30 - 4:45</td>
<td>Evaluation of the Day</td>
<td>Plenary, Flip Chart</td>
</tr>
</tbody>
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**led Facilitator Notes**

**Registration (60 minutes)**
- Sign the OHCEA attendance register

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**Break**

5 min

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**Introduction to One Health**

**Assignment: Required reading:** One Health: Interdependence of people, other species and the planet by Meredith A. Barret and Steven. A. Osofsky. Learners should read this paper prior to beginning of class.

- You have a blank piece of paper
- Draw on it a picture that you think represents One Health (that in your opinion can be understood by a community member)
- Tape the paper against the wall
- All participants should review the drawings and grade them
- The grades are 1-5 with 5 being the highest or what is considered best
- Select the best 3 pictures and discuss why
Discovery Activity; What is One Health?

Watch the following videos
One Health: from concept to Action by CDC
https://www.youtube.com/watch?v=TG0pduAYESA
One Health: from Idea to action:
https://www.youtube.com/watch?v=gJ9ybOumITg&t=4s

Briefly discuss the two videos thinking about the drivers of disease emergence and the role of One Health

Take 5-7 minutes to think about and legibly write down on separate post it notes the answers to the following questions:
- Define what One Health approach means
- Identify two examples of One Health in practice
- Identify two to three advantages to multiple disciplines working together to promote one health

Display these post it notes on the wall in the three separate sections. Then in a plenary review the following
- What are the common things identified?
- What are the differences?
- Is there anything that surprised anyone?
Come up with a group description of what One Health is.

Video: Fatal Infestations

- Watch the video fatal infestations

The CDC, US army and a Bronx Zoo veterinarian join forces to identify the disease that is rapidly filling the city’s emergency rooms and curiously killing 17,000 crow and Zoo birds in NYC.

- After viewing the video, divide into three groups of mixed disciplines.
- Each group has a flipchart paper and markers with one of the following:
  - Stakeholders
  - Human Animal Environmental Interactions
  - Socio-political Interactions
Discuss the video in your group based on your topic and develop a presentation. Each group will have 10 minutes to prepare their assignments, and prepare to present. Groups are encouraged to present their assignments in the most innovative ways—such as using role plays, mimes, timelines, news interviews.

- Present your activity
- Discuss the video: based on the following
  - Main themes of the video
  - Disease, human animal environment ecosystem dynamics
  - Disciplines involved and the relationships and how this affects the response
  - The socio-political interactions
  - Outcomes and policy implications
- Discuss how this is related to One health
- Debrief by identifying:
  - Areas of agreement/disagreement among team members as they worked on their assignment
  - Any surprises

Roles of Different Stakeholders

The next activity involves identifying the roles of all the players in this emergency

- Each group will be given a set of pieces of papers, on each piece of paper a task that should be carried out by a One Health Rapid Response Team (RRT) member is written. (see power point)
- Groups will then have to:
  o List down the professionals usually constituting a rapid response team using the video as an example
  o Correctly associate each task to a rapid response team member using strips of paper on a table with 2 columns.

Display the information for the whole group to view
Identify any members who have been left off, the roles they play and the reasons why they should be part of the team. Most of the time non-traditional health professionals such as entomologists, gender specialists, media personnel are left off the list. To effectively constitute a One Health team, they need to be included.

Tasks for the rapid response team members
<table>
<thead>
<tr>
<th>Members/Functions</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>RRT member (e.g. Clinician, Epidemiologist, social scientist)</td>
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<tr>
<td>RRT member</td>
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<tr>
<td>RRT member</td>
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</table>

**Point presentation on One Health**

This presentation introduces One Health, the interdependence between humans, animals and the environment and why disciplines need to work together. Also answers the questions: why one health and why now?

Debrief the session by asking students to reflect on:
- What one health is and any questions they may have related to the power point presentation.

**Point presentation on One Health Core Competencies**

This presentation introduces One Health Core competencies, what they are, how they have been developed from the global forums to the African region.

**Health Systems thinking as a competency**

An introductory power point lecture on systems thinking.
Why can’t we ‘solve’ the health problems at the human, animal, ecosystems because they are... Wicked

Characteristics of Wicked Problems

- Too complex to fully understand
- No simple technical “solution”
- Actions precipitate unanticipated and unintended consequences
- Compelling and demand action
- Require innovative approaches

Group activity

Systems thinking from a One Health perspective allows us to solve “wicked problems” through a simplified process. It provides a means of analyzing the human animal environmental interactions and the different disciplines engaged and how they work together and as a system to solve complex health problems. It systematically covers the policies, processes, practices and people, the roles each play and how they interact to function effectively to solve public health threats.

Systems thinking uses the problem defining approach to identify and solve the problem

Activity: form two groups. Each group should use the above systems thinking approach to map out, identify and begin to address the challenge identified below

Challenge 1. There is an outbreak of Rift Valley Fever among people and animals in a small town in Northern Kenya.
Challenge 2. Three individuals come to the health station showing signs and symptoms of hemorrhagic fever in a small town in Uganda.

Questions:

▪ Can you identify different stakeholders and their roles in addressing the problem?
▪ Can you identify different policies that can be employed in addressing?
▪ What are the processes and practices that increase or mitigate the risk of the problem?
▪ What do you need to know about systems thinking in order to use a systems thinking approach in addressing One Health problems?
▪ In what order should you research the items identified in the previous challenge?
▪ What are the primary resources that you will use?
▪ What will you do when you cannot find the information that you want?
▪ What will you do when you have questions?
▪ How will you know when you have enough information?

Groups should present their systems maps and briefly discuss the three questions above. Summarize the session by stressing the need to simplify the problem and to solve it step by step.

Introduction to Infectious disease management and Epidemiology
Discovery Activity: Infectious disease epidemiology
Prior reading material: Send out the article below participants to read before they come to the training:


Based on the review of the paper: Barreto M., Teixeira M.G., Carmo E.H. 2006. Infectious diseases Epidemiology. J Epidemiol Community Health 2006, 60: 192-195, Break into 3 small groups and answer the following questions:

**Group 1**
- a) What is an infectious disease?
- b) What is an infectious agent?
- c) What is an infection?

**Group 2**
- a) What is the difference between endemic, epidemic, pandemic and epizootic?
- b) What is the difference between a definitive host, intermediate host and reservoir of infection?

**Group 3**
- a) What is an emerging infectious disease?
- b) What is the difference between direct and indirect transmission of disease?

Relate your findings from the paper to some of your experiences and generate some examples along with the definitions for the terms above. Each of the groups should appoint a leader to present their work to the rest of the participants.

Discovery Activity: Identifying Infectious agents
- Divide into small groups. In each group, identify the different types of infectious agents with examples of diseases in each category.
• Write the infective agents with examples of diseases on Post it cards. Post their responses on walls and look for the similarities/differences as the groups present to each other.

Fundamental concepts of infectious disease transmission

You are provided with the following four infectious diseases, these are common diseases in the region.

Small Group Role Play: Disease Transmission

Break into four groups. Each group will be assigned one of the diseases presented and will develop a role play to demonstrate how the disease is transmitted and how the transmission cycle can be interrupted and disease prevented.

Instructions:

“For the disease you have been assigned, design a short role play (no more than 5 minutes) demonstrating how the disease is transmitted. Once you have demonstrated transmission, demonstrate how certain prevention measures can break the cycle of transmission.”

You have 15 minutes to plan your role plays and 5 minutes to present.

During role play presentations:

Other students will observe the presentations and take notes to provide feedback as well as identify gaps. A checklist is provided to aid in evaluation.

After role play presentations:

Fill out an index card listing one thing you think would help prevent transmission of the disease you presented.

Large Group Debrief: Disease Transmission Role Play

Discuss the activity and identify key take-home messages and conclusions.
Power point presentation for 15 minutes. Highlight definitions and concepts related to epidemiological triad of disease, infectious disease management and One Health.

Disease surveillance:

Divide into 2 groups

Our group will review the following scenario on plague in the 2017 plague outbreak in Madagascar

Case study on Surveillance

1: Plague outbreak in Madagascar

In December 2016, the Ministry of Public Health of Madagascar (MoPH), in line with the International Health Regulations (2005), alerted WHO to an outbreak of plague in Befotaka district in south-eastern Madagascar. The IHR requires countries to report to WHO any situation that might constitute a public health event of international importance. The outbreak began in August, but Befotaka is so remote and lacking in basic services – such as telecommunications and health facilities – that health officials only learned about the outbreak in December.

Plague, though terrifying, is nothing new in Madagascar, where around 600 cases are reported annually. But there was something different about a suspected plague outbreak reported last December. The outbreak’s location was far away from recent outbreaks and implied plague had spread to new parts of the island nation, but health officials couldn’t explain it.

Our group should review the plague outbreak in Madagascar, focusing on the causes, any relation to environmental factors, animal factors, etiological agent; transmission, clinical signs, transmission cycle, global distribution and local distribution data, stakeholders involved and how Madagascar took control and managed the disease.

From newspaper on plague in Madagascar: “Treatment centers bulked up their staff. Responders did extensive contact tracing to break the chain of person-to-person transmission. Health workers tracked down about 7,000 people who had interacted with confirmed and suspected plague patients. Ninety-five percent of them have taken preventative antibiotics. Fewer than a dozen of them came down with plague symptoms. In all, about 9,300 people received antibiotic treatment against the plague”.
Group 2: Outbreak of Monkey pox in Nigeria

The second group will review the following excerpt from a newspaper:

Nigerian authorities have called for calm after dozens of suspected cases of monkey pox were reported in seven states across the south of the country. Currently, the monkey pox virus outbreak has spread to 11 states with 74 suspected cases recorded, minister of Health Prof. Isaac Adewole of Nigeria has said. In another meeting, speaking on the theme, “Perennial flooding in Nigeria: Communicable diseases and looming antimicrobial resistance”, the WHO coordinator said floodwater was a major source of infectious communicable diseases because animals defecate in floodwater, which humans come in contact with. “Flooding is known to facilitate infectious disease transmission. It is no longer in doubt. Therefore, that will expose affected communities to outbreak of epidemics, zootomic and other epizootic effects such as cholera and of course we have had reported cases of cholera this year.

“Until proved otherwise, I think that flooding has a role in the sudden outbreak of monkey pox. This has been here before and it was never a problem but these things are now becoming dislodged from their normal habitat and moving towards us (humans).

This group should review the monkey pox outbreak in Nigeria, focusing on the causes, any relation to environmental factors, animal factors, etiological agent; transmission, clinical signs, transmission cycle, global distribution and local distribution data, stakeholders involved, their roles and how Nigeria is trying to control the outbreak took control and managed the disease.

Present to the participants the Malaria case study and request them to discuss it in groups. The case study discussion will help the participants to get an understanding of surveillance of infectious diseases.

Disease Surveillance: Malaria Case study.

Read the following Malaria case study and discuss it in groups.

Case Study: Malaria in Northern Uganda
Historically, the prevalence of Malaria in northern Uganda has been high (prevalence=15%+). Between 2012 and 2014, Indoor Residual Spraying (IRS) was introduced as an additive malaria prevention intervention in Northern Uganda. A few months after IRS, the population of mosquitoes was drastically reduced and the communities no longer felt the need to use mosquito nets anymore. The number of Malaria cases had indeed gone down. However, in June 2015, the Uganda National Medical stores reported increased consumption of anti-malarials in Northern Uganda. This prompted the ministry of health to investigate the cause of this increased consumption of anti-malarials. The ministry discovered that there was an ongoing malaria epidemic that had gone undetected for 3 months.

Questions

1) How could you tell that the burden of malaria was previously high?

2) What do you think prompted the communities to stop using bed nets?

3) How would you be able to know that Indoor Residual Spraying worked?

4) How could a multidisciplinary team have detected the outbreak earlier?

5) Think of a model system that can integrate reporting of malaria cases in the community, at the health facility, and at the district and national levels.

6) If the community is reporting an increased number of fever cases, how could you/your team go about confirming whether it is an outbreak of malaria or not?

Each group should spend about 10 minutes brainstorming answers to each question posed by the scenario. They should then use the remaining 15 minutes to focus on responding to their assigned question or questions.

Information flow in an outbreak

In your groups, come up with a chart on how information flows when there is an outbreak. While doing this, you should ask questions like:

Where does the information start from and where does it end?
Does feedback flow in the same way?
Are other disciplines involved?
When do they get involved?
What are the limitations to their involvement?
How would you apply a One Health approach in communication to ensure that different multiple disciplines are engaged right from the beginning and receive correct information to respond.

Review the Ministry of Health information flow chart below. Identify points of entry for other relevant disciplines such as veterinarians, environmentalists, social scientists, entomologists especially in relation to Malaria.

Ministry of Health Information flow

Draw a different chart that includes multiple disciplines and present these to the plenary for discussion. In summary there is need to have a multidisciplinary team of people doing surveillance, contact tracing and response together.

Activity:

**r the following questions:**

1) What are the risk factors for Ebola?
2) What are the risk factors for Marburg?

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**the movie contagion as an assignment for the next day and read the following material before the next day**

1. **Required reading:** Article, “Interventions for Avian Influenza: A (H5N1) Risk Management in Live Bird Market Networks” (Fournie et al 2013.)

2. Avian Influenza Fact Sheet (World Health Organization [WHO])

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**References**


One Health Approaches to Ebola: https://www.youtube.com/watch?v=OSAJJcg1a1c


Global burden and Outbreak investigation

Session Overview

On day two of the course, participants will undertake two sessions: one on global burden of highly infectious diseases and another on outbreak investigation with a focus on steps and stakeholders’ involvement. The combined learning objectives for the two sessions are provided here:

Session Learning Objectives and Activities

Learning Objectives: Participants will be able to:
- Explain the recent highly infectious diseases outbreaks: epidemiology and burden (morbidity and mortality)
- Explain the health, social and economic impacts of recent highly infectious disease outbreaks in Africa
- Explain the steps involved in outbreak investigation
- Identify and analyze the roles and powers of different stakeholders to participate in outbreak investigation

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<td>Small Group Activity</td>
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Detailed Facilitator Notes

Morning Reflections
- On two flipcharts in front of the room, the following questions are written:
  - On one “Do you feel that highly infectious diseases like Ebola have serious socio-economic impacts on communities? If yes, why? And if no, why not?”
  - On the other flipchart “Do you feel that your country has capacity to investigate and manage infectious disease outbreaks? If yes, why? If no, why?”

Using two Post It® Notes
- Write your responses on the Post It® Notes
- Put your Post It® Notes on the respective flipcharts

Debrief:
- Review and discuss the comments

Infectious Disease Management Fundamentals
Discussion of movie Contagion
To better understand the importance of the mode of disease transmission and possible risk factors, and to form a logical disease management plan, consider and discuss the following questions based on the movie:
- What type of infectious organism is involved in outbreak?
- What host species are usually infected?
- Are there known reservoir hosts that spread organisms, but do not develop disease?
- How is the disease transmitted from host to host?
- What interventions (treatment, prevention, vaccination) are available?
- What are possible prevention strategies?

Next 25 minutes discuss questions related to the movie as indicated below.
Begin by identifying the main themes in the movie:

a) Interspecies Transmission: Spread of the virus: how does that happen?
b) What are some OH competencies recognized in the movie?
c) Mitch was immune: how real is that? Can you explain that concept?
d) Did the symptoms seem plausible?
e) Can you identify multiple stakeholders in the movie and their roles?
f) What are other social and economic effects/impacts that can be seen?
g) What is the role of communication and impact of miscommunication?

**t the power point on Contagion fundamentals**

20 min

**point presentation on Global Burden of Disease.**


**Discovery Activity:**

Based on the review of the paper: Social economic impact of Ebola virus disease in West Africa countries. A call for national and regional containment, recovery and prevention. UNDG West – Central Africa (2015). [http://reliefweb.int/sites/reliefweb.int/files/resources/ebola-west-africa.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/ebola-west-africa.pdf), work in 4 groups to answer the following questions

**Group 1**

1) What is the history of Ebola in Africa?
2) How many countries were affected by the recent (2014 – 2015) Ebola outbreak in West Africa?
3) Which country was affected most?

**Group 2**

1) How were children and women affected?
2) When was the first case identified and how was the trend after?
3) What was the morbidity and mortality due to Ebola in the affected countries for the general population and health workers?


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Group Presentations: Plenary

Discovery Activity:
Based on the review of the paper: Social economic impact of Ebola virus disease in West Africa countries. A call for national and regional containment, recovery and prevention. UNDG West – Central Africa (2015). http://reliefweb.int/sites/reliefweb.int/files/resources/ebola-west-africa.pdf, work in 2 small groups on the following:

3
1) What was the impact of Ebola on poverty?
2) What was the impact of Ebola on trade?
3) What was the impact of Ebola on GDP growth?

Group 4
1) What was the impact of Ebola on Education?
2) What was the impact of Ebola on access to health services?
3) When was the impact of Ebola on Food security?

Group Presentations
• In plenary present your findings
• Regroup and analyze the groups findings

Lunch Break
First-hand account of an outbreak investigation
An Invited speaker will present a first-hand account of an outbreak investigation, the different teams involved and the roles they played.

Steps in outbreak investigation
You have been provided with index cards. On these index cards, are various steps in an outbreak investigation. Form two groups and align the cards correctly and the steps in the right order.

Case Studies in Outbreak Investigation and stakeholder involvement
Divide into four groups, you are provided with the following scenario:

22 people rumoured admitted in Kagamba main hospital in Kibaale district after eating a dead cow.

1. What happens next?
2. Who informs who?
3. Who does what, and when?
4. Who should liaise/collaborate with whom?

Each group should tackle one question and open it up for discussion in a plenary. Debrief and wrap-up of the session.

Divide into two groups. You are provided with the following case studies:

- Panic in Rwanda
- Bovine Tuberculosis

Read your case study, answer the questions at the end of the case and prepare a 10-minute report summarizing the case and conclusions.

Case Study: Panic in Rwanda
In Rwanda, Herdsmen frequently graze their animals in the Akagera national park. As a result, their cows are attacked by wildlife specifically lions. This constantly causes conflict between the communities and wildlife park management. In many incidents when domestic animals are killed, the farmers respond by using furadone, a pesticide to poison the wild animals. In one such incident, when a farmers cow was killed he was
layered the dead animal with furadone. The following day there were dead carcasses of lions, and hyenas. A few days later many scavenger birds like vultures were found dead. Tourists going through the park found very many dead vultures and immediately panicked and reported it to the game warden as possible cases of avian influenza. Since it coincided with a worldwide outbreak of avian influenza, newspapers magnified the story. Rwanda depends very heavily on the tourism industry and any mention of influenza was immediately going to stall the country economically. Politicians and high level government officials mobilized a team and send them to investigate and to work with the community. This incident led to the extinction of the lion in Rwanda.

Analytical questions

1. Discuss human wildlife conflict in Rwanda and in the other East African countries
2. What are the effects of the pesticides on the animals, humans and environment?
3. Considering the information provided by the tourists and how it affected Rwanda, how would you communicate or control flow of information in this scenario
4. What kind of team should be mobilized to respond to this emergency and to work with the community?
5. With an international crisis of avian influenza, how should the Rwanda team manage this situation
6. How does the extinction of the lion affect the ecosystem?
7. What interventions would be used in this situation?
8. What is the role of the community and how should they be involved?

Case Study: Bovine Tuberculosis (TB)
Every year, there are 8–10 million new cases of TB reported, and 2–3 million deaths attributed to TB. In many countries in Africa, HIV-AIDS is widespread. The biggest killer of people with HIV-AIDS is TB. However, the Impact of Bovine TB on humans is poorly documented. BTB is a major problem for livestock in developing countries and wildlife play a major role in the failure of TB eradication programmes. In many cases, consumption of raw meat and milk and development of bush meat consumption as cheap source of protein are the principal routes of human contamination with BTB. Human TB of animal origin (zoonotic TB) is an important public health concern in developing countries. African nations face a particular challenge in TB control, deficiencies in public health control measures for cattle and animal products. Once detected, tuberculosis is curable in 90 percent of cases for as little as $15 per treatment. HIV/AIDS is fueling the TB epidemic, and coordination between the TB and HIV communities is lacking. The spread of extensively drug-resistant TB (XDR-TB) is a major threat and there is a significant lack of infrastructure and capacity, including laboratory facilities and health workers. This is made worse by the fact that smaller, less-regulated farmers sell unpasteurized milk directly to consumers and most consumers in the village do not boil their milk to the required standards. Mycobacterium bovis has a broad host range as the principal cause of TB in free-living wildlife, captive wildlife, domestic livestock, and non-human primates. Wild ruminants and carnivores, such as African buffalo, lion, cheetah, greater kudu, leopard, warthog, and eland, can be infected and infect both humans and domestic animals. Scavengers (hyenas, genet) and chacma baboons in Kenya became infected through the ingestion of abattoir wastes. Furthermore, recent development of wildlife activities, such as game tourism, farming, and hunting to develop the peripheral
zones of protected areas has increased human contact with wild animals. Due to international travel and migration, TB is now considered a rapidly re-emerging pandemic. Many cases diagnosed are Multi-drug resistant (MDR) or XDR.

Questions:
1. Who and what are the different elements involved and stakeholders in the case of TB?
2. What disciplines should work together to control this re-emerging pandemic?
3. What are the benefits of cross-sectoral cooperation and the sharing of resource and information between countries?
4. What gender issues do you see in this scenario and how would you deal with them?

One Health stakeholder analysis:

You have been provided with a set of sticky notes.
1. On a sticky note, write a name of a stakeholder or player in your case study scenario. One name per note. Write as many stakeholders as you can think of. Identify them by their roles. Consider their gender as well especially at the community level.
2. Line the sticky notes on the plain piece of paper according to whether they are international, national, regional or local
3. Draw a circle around those stakeholders with lots of power and authority using a red marker
4. Draw a square around those players with the most interest in the activity or who are impacted the most
5. Using a red marker, draw arrows that show flow of decision making (power and authority) from one stakeholder to another
6. Using a green Marker draw arrows that show flow of resources (funding) from one stakeholder to another
7. Using a blue marker draw arrows that show communication flow from one stakeholder to another. Have the groups discuss the map and the following questions:
   - Who has power and authority?
   - Who do you think should have power and yet does not?
   - Who is being left out of the different arrows and yet considered important and how do you include them?
Can you identify any gender differences in power, communication flow and resource flow?
One Health Systems Mapping (This tool/activity was adopted from the OH-SMART toolkit developed by the University of Minnesota in collaboration with the United States department of Agriculture [https://www.vetmed.umn.edu/centers-programs/global-one-health-initiative/one-health-systems-mapping-and-analysis-resource-toolkit](https://www.vetmed.umn.edu/centers-programs/global-one-health-initiative/one-health-systems-mapping-and-analysis-resource-toolkit))

Instructions: using the two case studies above. Draw a table consisting of Many rows and two columns. The first column shows the stakeholders involved in the event. The second column shows the timeline of their involvement. The mapping will be done from the left to the right.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Time</th>
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<tr>
<td>Community member</td>
<td>Day 1</td>
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<td>Day 2</td>
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<td>Day 3</td>
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<td></td>
<td>Day 4</td>
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<td></td>
<td>Day 5</td>
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</tbody>
</table>

At the center of the table on the left, insert the first stakeholder and the genesis of the public health even: ie. An animal suspected of having rabies bites a child. Draw a square around this activity. In the left column enter. Community member as your stakeholder. Using an arrow, link up this activity to what happens next and the stakeholder involved in that next activity: for example, child goes to local health center and receives first aid, enter the second stakeholder in the next row- that would be the local Health center. Keep adding activities as they happen in a chronological order and all the stakeholders until you have a map linking up the stakeholders to each other and the activities happening. If you think there is any missing information put a question and star it for discussion.

I.e of map:
After mapping,

- Identify the process steps that may not be clearly understood or accepted; show discrepancies or differences in responses noted by stakeholders or duplication of functions.
- Note any significant stakeholders not included in the map: for example, in the Rift valley fever case: the environment department and entomologists were not included in the mapping showing a clear gap since these two groups play a major role in the surveillance for RVF.
- Mark interactions that are working well and how they might be made more effective.
- Present the maps to the rest of the class.
Presentations
- Each group has 15 minutes to present and 15 minutes for discussion on their case study map

Concluding Comments
The case studies demonstrated how infectious diseases start and spread as well as the need for a multi-disciplinary approach in managing them. Key concepts include:
- Infectious disease outbreaks are not limited to one sector.
- Outbreak investigation and response requires a multi-disciplinary approach
- Involvement of several stakeholders is critical – need to understand the roles, influence and powers of each of the stakeholders.

Day Two Evaluation
- Create the flipchart shown below.
- Ask the class: “How did it go today?”

How did today go?

😊  🌟  😞

Comments:
References


Gender and Infection Control in Infectious disease management

**Sessions Overview**

This morning session of day three will focus on gender in infectious disease management. The Gender session will help participants to appreciate gender concepts and relate gender to infectious disease outbreaks and management. Additionally, it will help participants to appreciate the relationships between gender and infectious diseases.

The afternoon session on day three will focus infection control and personal protection equipment (PPE) in infectious disease management. The session will provide participants with insights into: infection control procedures and practices; personal protection programs as well standards/guidelines for infection control.

**Session Learning Objectives and Activities**

**Learning Objective:** Participants will be able to:
- Explain the linkages between gender and emerging pandemics
- Explain how gender and infectious diseases affect each other
- Explain the different types of infection control precautions
- Explain the different types of respiratory and PPE available for use by healthcare workers
- Explain the principles for selection of PPE

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<td>Activity 4</td>
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Detailed Facilitator Notes

Attendance and Introduction to day 3
- Have participants sign the OHCEA attendance register
- Introduction to day 3

Group Activity: What does it mean to be Gender sensitive?

Divide into four groups. Each group will be assigned one of the activities below. You have 5 minutes to review the activity provided, discuss it and present your findings to the rest of the team. The teams should be able to respond to the following questions:
- Can you identify any gender related actions in these activities?
- What should be done to address the gender issues?

**Group 1:** In this community, there is conflict between the people and the national parks because the community is collecting medicinal plants and firewood from the national parks— an area that is protected. The wildlife has also been destroying the villagers’ crops and killing their domestic animals. The national park management decides to create awareness about the role of wildlife by delivering a training and awareness program primarily through night classes.

**Group 2:** For several years, a community organization has announced its meetings and events through the use of local grocery store and day-care bulletin boards, and has held its meetings in the local Women’s Institute Hall.

**Group 3:** The government in the country you work in wants to target farmers for training in poultry production and management on Avian Influenza prevention and control. They ask the animal health workers in the communities to identify people for training. Since men are the heads of households, they are selected to attend the training.

**Group 4:** There is an outbreak of avian influenza in this community. The government decides that in order to completely eradicate this disease, they will slaughter all birds be they ducks or chicken. They decide to compensate...
all bird owners with more than 50 birds. Backyard poultry farmers are not compensated because they are not considered important enough.

**Presentation on Gender and infectious diseases**

Give a brief power point presentation on gender concepts, social issues and culture in infectious disease management. As part of this presentation, discuss:

**Answer the following questions**

1) Are there Gender roles in your community that can make:
   - Individuals vulnerable to infectious disease?
   - Expose Individuals to infectious disease?
2) Any practices in your community that prevent your community from accessing health services?
3) Any practices in your community that prevent health interventions in your community from being effective

Have the participants discuss the questions in plenary session.

**Case Study on Gender mapping**

- Divide into two groups.
- Work on the case study on installing a water system in Teso, Uganda.
- Read the case study, answer the questions at the end of the case and prepare a 10-minute report summarizing the case and conclusions.

**Case Study: Installing a water system in Teso, Uganda.**

A village in eastern Uganda consists of a farming community that keeps both livestock and grows crops. The children go to school during the mornings then help their parents with chores up to the evening. The men’s activities generally consist taking the cattle for grazing in the communal fields at around 9-10am. This would be after the women have milked the cows and fed the calves. The young boys take the goats and sheep that are tethered around the home to graze and browse in the nearby fields upon
returning home from school. Cultivating in the crop garden during the rainy season starts in the cool of the morning, just before dawn ending by around 10:00am. Both men and women participate and oxen may be used to draw the ploughs. Sometimes children help especially in the planting up just before they go to school which starts at 8:30am. The women use the remainder of the day to do their household activates. Notably, the afternoons up to 4:00pm are set aside to collect water from the village stream. The market day is usually held twice a month on Saturdays and is an activity where the whole family participates. The men would be selling livestock, farm implements, farming pesticides and acaricides, crops like rice and maize. The women, on the other hand sell vegetables, fruit, dried fish and oil seed crops like groundnuts and sim-sim. It is during this period that village bazaars are held or entertainment. It is interesting that due to strong religious cultural beliefs, the men do not intermingle.

Recently, an NGO visited the village and upon the suggestion from the men, built and installed a water tap in the Centre of the village. This was hoped to help the women by decreasing the amount of time spent collecting water from the stream. However, to their disappointment, the women neglected to use the tap and insisted on going in their groups to collect water from the stream. Only in cases when one had to attend to a sick patient at home, did they use the nearby tap.

Questions:
1. Draw a daily activity chart for the men and women in the village
2. What would be the best time to meet the women and where would the meeting be?
3. What would be the best time to meet the men and where would that meeting be located?
4. Is it possible to have a combined meeting for the men and women? Where would it be and when?
5. Plot a resource map indicating issues of access, ownership and control.
6. Why did the women shun the tap built by the NGO’s?
Presentations
- Each group has 10 minutes to present and 5 minutes for discussion on the case study.

Concluding Comments
The case studies demonstrate how access, ownership and control of community resources vary with sex and gender. This variation in access, ownership and control has implications on infectious diseases.

Presentation on Infection control and PPE in infectious diseases management
Power point presentation on Infection control and PPE in infectious diseases management.

Instructions: Answer the following questions:
1) What are some of the recommended infection control practices?
2) What PPE is recommended for healthcare workers?
review (Discovery Activity)

Review the following paper: Preparedness of institutions around the world for managing patients with Ebola virus disease: an infection control readiness checklist. Tartari et al. (2015)

Respond to the following questions:
1) What is the paper about?
2) Which infection control precautions and practices are mentioned in the paper?
3) What infection control challenges were experienced in the hospitals?
4) Did hospitals have isolation rooms (for suspect or probable cases) available for use at all times?
5) Did hospitals have trained contact tracing teams in place?
6) Did hospitals have policies for safe management of the dead?
7) Were respirators available for use during aerosol generating activities?
8) Were medical/surgical masks provided for suspected or confirmed Ebola cases during transportation?
9) Were healthcare workers trained on using PPE?

Group Presentations
- In plenary ask the different groups to present their findings.
- Each group to present for 15 minutes and 15 minutes of discussion.

end
Summary of the Day
▪ Review gender analysis tool and relationship to infectious diseases
▪ Review infection control practices and PPE
▪ Ask students:
  – What stood out as key learnings?
  – What surprised you?

End of Day Three Evaluation
▪ Create the flipchart shown below.
▪ Ask the class: “How did it go today?”

How did today go?

😊  🕒  😞  Comments:
References


Infectious disease simulation training centre (2013). Infection control tool kit on emerging infectious disease outbreaks.
Leadership and Communication in Infectious Disease Management

Sessions Overview

The morning of day four focuses on Leadership in Infectious diseases management. The leadership session will focus on qualities of a good leader, development of a vision/strategy for infectious diseases management as well as stakeholder identification and analysis for effective response.

The afternoon session of day four will focus on communication infectious diseases management. The communication session seeks to equip participants with knowledge and skill of communication for infectious diseases management. The session will focus on the basic communication concepts, risk communication types and principles as well as communication best practices.

Sessions Learning Objectives and Activities

Learning Objective: Participants will be able to:
- Explain the qualities of a good leader
- Identify and assess stakeholders to be involved in infectious diseases management
- Develop a vision and strategy for infectious disease management
- Explain the basic concepts of risk communication including risk, communication, risk communication, hazard and outrage
- Explain why risk communication is important in infectious disease management
- Explain the risk communication best practices

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<tr>
<th>Schedule</th>
<th>Topic/Activity</th>
<th>Learning Activity</th>
<th>Materials</th>
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<tr>
<td>8:00 - 9:00</td>
<td>Registration</td>
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<td>9:00 - 9:15</td>
<td>Introduction to Day Four</td>
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<td>9:15 - 10:15</td>
<td>Basic Leadership concepts &amp; principles</td>
<td>Presentation/ Group Activity</td>
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<td>10:15 - 10:30</td>
<td>Tea Break</td>
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<td>10:30 - 11:30</td>
<td>Stakeholder involvement: identification and analysis</td>
<td>Presentation/ Group Activity</td>
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<td>11:30 - 1:00</td>
<td>Planning (Vision/strategy setting): Case study on Ebola outbreak in Luwero</td>
<td>Group activity</td>
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<td>1:00 - 2:00</td>
<td>Lunch</td>
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<td>2:00 - 3:00</td>
<td>Basic communication concepts and principles</td>
<td>Presentation/ Group Activity</td>
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<td>3:00 - 3:15</td>
<td>Tea Break</td>
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GENDER AND EPT SHORT COURSE: Day Two

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<tr>
<th>Time</th>
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<tr>
<td>3:15 - 4:00</td>
<td>Case study: Northern Uganda</td>
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<td>4:00 - 4:45</td>
<td>Message development</td>
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<td>4:45 - 5:00</td>
<td>Evaluation of the Day</td>
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**Facilitator Notes on Leadership**

**Preparation**

- 60 min
- OHCEA attendance register

**Action**

This morning focuses on Leadership and management in infectious diseases control. In this session, participants will be equipped with knowledge and skills on: definition of leadership; leadership basic concepts for infectious disease management; stakeholder identification and analysis as well as planning and vision/strategy setting.

**Group activity**

- Come up with leadership definitions and write them on flip charts.
- Categorize the definitions based on themes and move around the flip charts to appreciate the thematic definitions of leadership.
- Discuss five qualities of a good One health leader
- Choose an animal that you think has a character that best describes a good leadership style.
- Give reasons for your selection

**Presentation on Leadership and infectious diseases**

Power point presentation on leadership and management in infectious disease control, highlighting concepts, importance, team work and stakeholder involvement.

Questions for discussion:

- What is Leadership?
- What is management?
- Leadership styles: democratic; authoritative; charismatic; bureaucratic; Laissez-Faire etc.
- The role of Leadership in infectious disease management

**Team work**
Watch video on competency building, leadership and teamwork by Candy Mauricio

- [https://www.youtube.com/watch?v=nD6tUEp1lws](https://www.youtube.com/watch?v=nD6tUEp1lws)
- After watching this video:
  - Break down into groups: Each group will be given 10 minutes to generate an idea and develop a role play/skit on teamwork.
  - The teams will then present their role plays to the rest of the class. The role plays should only last at most 3 minutes. Discuss the role plays and key themes identified that make a good team.
- Summarize the section by talking about teamwork and the qualities expected of an efficient One Health team. Discuss the concept of teams.

Points for discussion:

- What happened? What did you notice about how teams prepared?
- What were the leadership dynamics? (e.g., Were there discussions about who would lead? Did different people assume leadership at different times?)
- What did the leader(s) do that was effective? Not as effective?
- As a team member, how did you communicate to leadership your personal needs and opinions?
- Did you feel you were competing with the other teams to be the first? Or did the teams collaborate?
- What will you do differently next time... as a leader? As a follower?

Watch the following video on eradicating Rinderpest.

- YouTube – Eradicating Rinderpest
  - [http://www.youtube.com/watch?v=tuG5 wd0050](http://www.youtube.com/watch?v=tuG5 wd0050)

Divide students into groups of 3 to 4 and consider the following questions. Groups should prepare a short overview of their discussions and conclusions to share with the group.

- Who were the partners involved in the eradication of Rinderpest?
- Why did they make an effective partnership?
- What was the vision or goal, if any? Was it “shared”?
- What leadership styles and/or decisions may have contributed to the eradication of the Rinderpest?
- In your opinion, what leadership barriers slowed down the eradication of Rinderpest?
Presentation on stakeholder engagement in infectious diseases
don’t discuss:
• Why engage stakeholders in infectious disease management
Group activity – Read the following case study and discuss the questions that follow:

Karatu case study

Karatu district is located in Arusha region, Tanzania and is known by its agricultural activities. People practice irrigated farming. Among the major drawback that faces the farmers are pests. As a means to overcome such problems, farmers indiscriminately use pesticides to protect their crops. This practice has been reported to be associated with many problems to the people, domestic and wild animals and the environment at large. Cases of abortions in humans and animals are quite high in the district and are associated with pesticide poisoning. Skin diseases and infertility are also rampant especially to people working in horticultural farms. Incidences of fish and aquatic bird mortalities especially Lesser flamingoes (Phoenicopterus minor) are observed and all are linked with pesticide poisoning. In 2004, up to 45 000 Lesser flamingoes died at Lake Manyara, which is being fed by rivers draining from the agricultural fields in Karatu district. Studies have shown high levels of pesticide residues in milk, beef and local chicken eggs. A case control study conducted in pregnant women who go to deliver at Mount Meru Hospital in Arusha showed that they had very high levels of pesticide residues in breast milk and abdominal fats. The newly born babies had also high levels of pesticides in muceoneum and umbilical blood. Studies further showed high levels of pesticides in water collected from Lake Manyara and different rivers around irrigated farms. Efforts have been done by the government to overcome the problem. The Tanzania Ministry of Agriculture has been conducting seminars, extension work and restricting uses of pesticides including advocating the integrated pest control systems but the problem still exist and is getting worse.
Using the Karatu case study, divide into 2 groups. The group members will be required to read the case study and answer the following questions in their respective groups:

**Group 1**
- Brainstorm issues identified in this case study
- What are the underlying issues impacting this community?
- What key One Health issues can be identified?
- What sectors are involved?
- What measures can be done to protect the health of humans, animals and the environment?

**Group 2:**
- Identify the individuals who will attend the meeting (work on a flip chart)
- Justify why each member is critical to the response. (i.e., role, expertise, responsibilities, etc.)
- Discuss who should chair the stakeholders meeting and why?
- Relate the above case study to policy and governance.
- Develop an intervention strategy

In a plenary session, each of the groups will be given 5 minutes to present and 5 minutes for discussions.

**activity on Planning for Emergency Response – Case study: Ebola outbreak in Luwero.**

You have just been informed that there is a suspected Ebola outbreak in Luwero village, in western Uganda bordering, Rwanda. A total of 14 people have died and 26 others in the village are reportedly sick. There is only one health center in the area manned by one local doctor and two nurses. The Government is putting you in charge of the emergency response. You have been given a budget of 20,000 dollars to mobilize a team to prepare and respond to this emergency

- In 3 groups respond to the scenario in the following manner:
  - Create a budget for this emergency response
  - Identify and price the key resources that you will need
  - Identify key personnel and logistics required to respond to this emergency
• Develop a timeline of your activities to respond to the emergency.

In a plenary session, present for 5 minutes and discuss for 5 minutes.

• You receive information from the ministry of health informing you that you only have 8,000 dollars because the 12,000 dollars was a commitment from one of the international organizations and those funds have not come through. You still need to respond to the emergency

• Re-budget and identify priority resources that you will need and what you will eliminate to work with the 8,000 dollars that you now have.

In a plenary session, have each group present for 5 minutes and discuss for 5 minutes.

Just as you finish budgeting and are getting ready to leave for the field, you are informed that your contact health personnel on the ground, the local doctor and the two nurses at the local hospital have died of Ebola.

• Present a plan on how you are going to go ahead and respond to this emergency without the local team.

Step 4

When you are in the village, you hear the local politician telling the community members that they should burn down the houses of all the Ebola victims to ensure that there is no more spread.

• What do you do in this situation?

• Who can you reach out to help you solve the problem?

Pointers: Ask the class, “What should be included in an emergency communication plan?” Possible answers include:

• Assigned roles and responsibilities including primary decision-maker/emergency coordinator and back-up

• Emergency contacts (e.g., police, fire department, doctors

• Contact list of all personnel

• Phone/e-mail trees

• Employee evacuation plan

• Website and/or phone/voice mail emergency messaging plan

• System to account for all personnel

• Stakeholder communication plan including clients, regulatory agencies, etc.

• Media communication plan
Training and summary booklets/brochures/cards

Debrief:

Questions are critical in defining the limiting constraints on an initiative, or the scope, resources and schedules available in an emergency.

Led Facilitator Notes on Communication

Power point presentation on Risk Communication
Risk communication is an open, two-way exchange of information and opinion about risk that leads to better understanding and better risk management decisions by all involved. It is critical to have a plan in place to deal with a crisis before it happens. Communicating information about possible life threatening issues can be difficult,

Developing Risk Communication Plans
- Divide into five groups.
- Each group will develop an interim plan for risk communication and information dissemination to educate the public regarding exposure risks and effective public response on an emergency of your choice.

Group Presentations
Present in a plenary the plan developed

Presented with the following scenarios. Find solutions through think pair and share technique. You should think of an answer, pair with a neighbor,
share with each other and then have one of you share with the rest of the
group the solutions you came up with.

Scenario 1

- You are spokesperson for the National Emergency Taskforce
  leading government response to an outbreak of anthrax in wildlife
  in a national park in Kenya, that has spilled over to domestic
  animals and humans. Over 500 hippos have so far died
- Following the initial press release about the outbreak you are
  miss-quoted in the international media - miss-information which
  may cause undue concern or alarm and massively affect the
  tourism industry (outrage!).
- As a spokesperson how should you address inconsistent messages
  about the outbreak?

Scenario 2

- You receive information that there seems to be a “strange
disease” / hemorrhagic fever outbreak in remote town in the
Democratic Republic Of Congo
- As a One Health leader how can you communicate appropriate
  risk messages and ensure that you are communicating to the right
  audience (take gender roles into consideration; who has access to
  what communication channels?)
- Identify one audience, one to two communication vehicles and
  develop 3 key points (messages)

Scenario 3

- There is an outbreak of Marburg in Kween district, Eastern
  Uganda. Marburg is known to be a hemorrhagic fever with high
  fatality rates. The index cases died three days ago.
- A traditional burial was done. He was a renowned business man
  trading between Uganda and Kenya. He had more than ten wives
  and three of them are presenting with signs and symptoms of
  Marburg. His care taker who was his closest sister has developed
  signs & symptoms too.
- The health worker requests that they isolate anyone who meets
  the case definition. However, the community at large thinks that
  this could be witchcraft because the disease is congregated in one
  family. They have hidden the suspected cases and promise to
strangle any health worker who comes around asking for the case.

- As a One Health champion, how best would you communicate this incidence to the media and the community at large so that they are able to understand the consequences of not reporting suspected cases.

**Concluding Comments**

Best practices in risk communication include:

- Remember communication is two-way street
- Be aware of cultural and language differences
- Listen to your audience and seek understanding
- Communicate with empathy and concern
- Don’t assume
- Use appropriate terminology
- Accept uncertainty
- Use key points
- Provide resources
- Foster partnerships
- Remain accessible

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**Day 5: Problem Based learning, Simulation and evaluation: putting it all together**

**Sessions Overview**

On day 5, participants will be able to analyze a problem based Learning scenario, and then to plan for an emergency, identify, and manage challenges that occur in any emergency situation. They should also be able to explain the financial and logistical complications experienced in an emergency. They will then use a simulation tool to bring it all together. A simulation is a tool used for the reproduction of an event and analysis of its results in order to improve readiness for an eventual occurrence of the situation or similar situations. From the point of view of “One Health,” a simulation is defined as a multi-sector and coordinated approach integrating fauna,
animal health, human health, the environment and communication and aims at responding in a more effective way an emerging pandemic threat

Session Learning Objectives and Activities: Leadership

Learning Objective: Participants will be able to:

▪ Use problem based learning as a tool to analyze an emergency
▪ Create an emergency response plan
▪ Implement the emergency response plan
▪ Prevent detect and respond to the emergency
▪ Develop a post emergency evaluation plan
▪ Evaluate and assess the course module

Reading Materials:


Infectious disease simulation training center (2013). Infection control tool kit on emerging infectious disease outbreaks.

Rift valley fever to present Problem Based Learning:

Using Problem Based Learning concept through power point presentation

into two groups. One group will analyze the RVF case, while the other group will observe the process, specifically looking at the role of the facilitator and group dynamics. Present the Rift Valley fever case scenario.

With the first trigger: Will receive one trigger at a time

f: at the end of the case: you should be able to answer the following:

▪ Describe the causative agent, epidemiology, pathogenesis, clinical signs, transmission, control and treatment of RVF in animals and humans
▪ Identify the role of animals in transmission of RVF to humans
▪ Differentiate RVF from other similar diseases
▪ Describe and explain zoonotic diseases
▪ Analyze the role played by the environment (climate, weather, soil types) on the occurrence of RVF
Assess the benefits of a multidisciplinary approach in solving public health threats keeping RVF in mind

Using a system thinking approach, identify multiple stakeholders that could be involved in an RVF outbreak and describe their role

Explain gender roles and distribution of labor in the pastoralist community and the impact of culture in this particular outbreak

Evaluate the steps of an outbreak investigation

Outline the benefits of a good communication strategy

To identify the policies related to transboundary disease and RVF

To illustrate the control measures that can be taken to control RVF

The rest of the day will be spent developing a simulation exercise. The participants will form 4 groups

- Preparation team
- Detection (surveillance)
- Response
- Post Emergency evaluation
Using a Simulation to Integrate Course Concepts, Skills and Knowledge

A simulation is a tool used for the reproduction of an event and analysis of its results in order to improve readiness for an eventual occurrence of the situation or similar situations. From the point of view of “One Health,” a simulation is defined as a multi-sector and coordinated approach integrating fauna, animal health, human health, the environment and communication and aims at responding in a more effective way an emerging pandemic threat. This approach recognises the need to strengthen collaboration, communication and the coordination amongst specialists of different sectors. This implies the need to create bridges between disciplines in order to complete planning, intervention in terms of surveillance or response, reporting, data analysis and evaluation of activities in an integrated manner in order to better fight pandemic threats.

In this module, we are using a simulation to integrate skills and knowledge across the domains of:

- Epidemiology
- Emerging Pandemic Threat Response
- Gender Analysis
- One Health

This simulation will evaluate the participants’ ability to:

Integrate knowledge across multiple domains
Identify the necessary actions within the framework of a national plan of preparation to a pandemic
Follow procedures when planning and responding to epidemics and epizooties.
Work on multi-disciplinary teams
Coordinate actions across sectors
Communicate clear and consistent messages to multiple audiences

In this section, participants will be able to prepare and respond to an emergency taking into consideration all the tools and skills given during this training, identify, and manage challenges that occur in any emergency situation. Begin by presenting the following scenario to the participants:
You have just been informed that there is a suspected Ebola outbreak in Luwero village, in western Uganda bordering Rwanda. A total of 14 people have died and 26 others in the village are reportedly sick. There is only one health center in the area manned by one local doctor and two nurses. The Government is putting you in charge of the emergency response. You have been given a budget of 10,000 dollars to mobilize a team to prepare and respond to this emergency.

The four different groups are first of all expected to get together, brainstorm and draw up a plan of action for each different group: preparation team, detection, response team and post emergency evaluation team.

**Step 1**
Using flip charts and sticky notes map out a plan of action including the personnel and resources you will need in your group. Put resources and personnel and action items on the left side of one flip chart and on the right indicate how you will make the process gender sensitive by responding to above questions. Present this to the plenary. Each group has 10 minutes to make a presentation.
Step 2
Based on the above, identify/select 5 key activities that your group feels are important to achieve your objective of an efficient gender sensitive preparedness, response or post emergency evaluation program.

Step 3
Using the material provided create/build a visual of your plan focusing on the five activities mentioned above and ensuring that gender issues are reflected in that visual.
Step 4
Each group will be allowed 10 minutes to present your visual/construction plan to the rest of the group. All participants will then grade the groups depending on how good their visual is, how easy it is to understand, how it encompassed gender issues discussed in the training and how efficient it seems to be to achieve its objective. The participants will then select what is considered as the best visual.
Power point presentation on Logistics Management in Emergencies
Give power point presentation on logistics management in outbreak investigation situation. This should give your participants an opportunity to discuss the importance of logistics in any infectious disease outbreak scenario.
Simulation evaluation.
- complete the simulation evaluation for both self and group.

Closing Session and Course Evaluation
- Form a circle
- say in one or two words what you thought of the training
- Fill out OHCEA Event Evaluation.
- Place their completed evaluations in an envelope.
- Seal the envelope and give the evaluations to the OHCEA course coordinator.
<table>
<thead>
<tr>
<th>SIMULATION SELF-EVALUATION</th>
<th>Not Effective</th>
<th>Partially Effective</th>
<th>Effective</th>
<th>Quite Effective</th>
<th>Very Effective</th>
<th>Comments</th>
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<td>Challenge appropriately</td>
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<td>Ensured everyone contributed</td>
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<td>Gender Analysis Skills</td>
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<td>Advocated for use of gender analysis/use of gender tools</td>
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<td>Ensure that women will be present and participate in the discussions/activities</td>
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<td>One Health Team Member Skills</td>
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<td>Brought to the discussion my disciplinary skills and knowledge.</td>
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<td>SIMULATION TEAM EVALUATION</td>
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<td>Team Effectiveness</td>
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<td>Ensured everyone listen, contributed and opinions were valued</td>
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As a team, summarize what your team did well in the response and areas were challenging.
Is there anything you, as a team, would do differently the next time responding to an emerging pandemic threat?

How can you use a simulation in your work?
outs

- Simulation Scenarios for Each Team
  - Prepare Team
  - Detection Team
  - Respond Team
  - Evaluation Team

- Post-Test

- OHCEA Event Evaluation
Aim of One Health

- To improve health and well-being through the prevention of risks and the mitigation of effects of crises that originate at the interface between humans, animals and their various environments. For that purpose, there is a need to promote a multi (cross) sectoral and collaborative approach as well as promote a “whole of society” approach to health hazards, as a systemic change of perspective in the management of risk. One Health is more of an approach than a new concept. It is rapidly becoming an international movement based on cross-sectoral collaborations.

The benefits of One Health

- The benefits of a One Health approach include:
• Improving animal and human health globally through collaboration among all the health sciences, especially between the veterinary and human medical professions to address critical needs

• Meeting new global challenges head-on through collaboration among multiple professions—veterinary medicine, human medicine, environmental, wildlife and public health

• Developing centers of excellence for education and training in specific areas through enhanced collaboration among colleges and schools of veterinary medicine, human medicine, and public health

• Increasing professional opportunities for multiple professionals as well as adding to our scientific knowledge to create innovative programs to improve health

**Definition of one Health:**

Regardless of which of the many definitions of One Health is used, the common theme is collaboration across sectors. Collaborating across sectors that have a direct or indirect impact on health involves thinking and working out of silos and optimizing resources and efforts while respecting the autonomy of the various sectors. To improve the effectiveness of the One Health approach, there is a need to establish a better sectoral balance among existing groups and networks, especially between veterinarians and physicians, and to increase the participation of environmental and wildlife health practitioners, as well as social scientists and development actors.

AVMA definition: One Health is the collaborative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, and the environment. The more recent use of One Health may be traced to a story about Ebola hemorrhagic fever on April 7, 2003, when Rick Weiss of the Washington Post quoted William Karesh, DVM as saying, "Human or livestock or wildlife health can't be discussed in isolation anymore. There is just one health. And the solutions require everyone working together on all the different levels. The following year, Karesh and colleagues Robert Cook, VMD and Steve Osofsky, DVM launched a series of conferences around the world with the theme of One World - One Health

**The One Health approach:**

- Recognizes the interdependence of, and seeks to improve human, animal and environmental health.
- Recognizes that communication, collaboration and trust between human and animal health practitioners is at the heart of the One Health concept.
- Has a broad vision and includes other disciplines such as economics and social behavior that are essential to success.
- Needs to promote the ‘doable,’ such as improving surveillance and response for emerging infectious diseases whilst developing the broader approach.
- Emphasizes community participation and development of community capacity, and especially, an open transparent dialogue.
- Requires both ‘ground up’ and ‘top down’ action.
Recognizes that understanding ecosystems, including molecular ecobiology, are an essential part of One Health.

Recognizes that One Health is a major component of food security and safety.

Identify the parties that should be involved in the notification and investigation of an infectious disease outbreak.

The first people to be contacted in a disease outbreak are hospital personnel, which are the nurses, medical assistants, and primary care doctors to prepare them for the potential influx of sick people to the local hospitals and clinics. The state and district health officers should investigate and confirm the disease outbreak. The investigating team visits the affected areas and cooperates with their counterparts from the Department of Veterinary Services and the Department of Environmental Health. The information obtained from the investigation is transmitted to the authority of the country that decides on the course of action for the outbreak. The authority after being informed of the severity of the outbreak institutes measures to control, contain, and if possible eliminate the disease in animals compensate to the farmers for the losses. The government, as a mean of risk communication, periodically inform and update the public on the risk and status of the disease. This action is to prevent unnecessary concern among the public.

Discuss “One Health” approach in the control and prevention of RVF disease outbreaks.

One Health is a public health management approach involving people, animals, and the environment. One health approach is a coordinated multidisciplinary and multisectoral local, national and international collaboration to detect, prevent and control emerging and re-emerging diseases at the animal-human-ecosystem interface. Thus, the success of One Health approach in the monitoring and control of public health threats lies in the full cooperation of the physicians, veterinarians, environmental experts, policy makers, and the community. This can be achieved through the understanding of mode of diseases spread among people and animals and in the environment. Outbreak of RVF virus infection implicates animals, humans, and the environment. Thus the stakeholders responsible for the control and prevention of RVF outbreaks, include the Department of Veterinary Services, Department of Wildlife, Ministry of Health, Ministry of Housing, and Ministry of Environment. Among the functions of these stakeholder are to restrict entry of unauthorized people into the area where the outbreak is occurring. The stakeholder must also formulate and execute the safe disposal of animal carcasses. A carcass burial grounds is assigned after due consideration is given to water seepage from the burial grounds into ponds and water-ways. If burning is the choice of carcass disposal, it must be done with due consideration for dioxin emission. The public must be informed of the status of outbreak and if necessary the authorities can declare a state of national emergency/crisis for the outbreak. The following stakeholders should be involved:

- Department of Veterinary Services
- Ministry of Health
- Department of Wildlife
- Community members: women and men separately
● Ministries of Environment and Health
● Ministry of Information
● Local politicians'/community elders
● Any local NGOs and CBOs
OHCEA EVENT EVALUATION – INFECTIOUS DISEASE MANAGEMENT SHORT COURSE

Facilitators:
___________________________________________________________________________

Dates:           ________________________________

RESPOND supported you to attend the Infectious Disease Management Short Course event. Please take a few minutes to fill out the following confidential questionnaire. Your responses will help us better understand the value of this event and improve future programs. Thank you!

Please circle your response to each of the following

1. This event met my expectations.
   a) Strongly disagree
   b) Disagree
   c) Agree
   d) Strongly agree
   e) Don’t know

2. This event was relevant to my personal interests.
   a) Strongly disagree
   b) Disagree
   c) Agree
   d) Strongly agree
   e) Don’t know

3. This event was relevant to my professional interests.
   a) Strongly disagree
   b) Disagree
   c) Agree
   d) Strongly agree
   e) Don’t know

4. The information presented was new to me.
   a) Strongly disagree
   b) Disagree

5. The amount of information provided was:
   a) Not enough
   b) About right
   c) Too much

6. This event helped clarify my understanding of “One Health.”
   a) Strongly disagree
   b) Disagree
   c) Agree
   d) Strongly agree
   e) Don’t know

7. The pre-event logistics were well organized.
   a) Strongly disagree
   b) Disagree
   c) Agree
   d) Strongly agree
   e) Don’t know

8. The event itself was well organized.
   a) Strongly disagree
   b) Disagree
c) Agree
d) Strongly agree
e) Don’t know

9. Overall, I found this event to be worthwhile.
a) Strongly disagree
b) Disagree
c) Agree
d) Strongly agree
e) Don’t know

10. I intend to take actions in my work as a result of what I learned at this event.
a) Strongly disagree
b) Disagree
c) Agree
d) Strongly agree
e) Don’t know
11. Describe what, if any, actions you will take in your work as a result of this event.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

12. What were the strengths of this event?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

13. What can be done to improve this event?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

14. What single most important lesson did you learn from this event?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

15. Please write any additional comments you may have about this event.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________
16. Did you present at this event?
   a) Yes
   b) No

16a. If yes, what was the topic of your presentation?

17. What is your primary area of work?
   a) Nursing
   b) Human Medicine
   c) Veterinary medicine
   d) Wildlife Medicine
   e) Public Human Health
   f) Public Veterinary Health
   g) Other (please specify): _______________________

18. Which sector do you represent?
   a) Government
   b) Private sector
   c) Education
   d) Non-governmental organization (NGO)
   e) Research
   f) Other (please specify): _______________________

19. What is your sex?
   a) Male
   b) Female

20. Nationality: ____________________________