USAID | STOP AI
FROM THE AMERICAN PEOPLE

PARTICIPANT MANUAL

AVIAN INFLUENZA: BIOSECURITY AND TRAINING OF TRAINERS FOR GEORGIA

FEBRUARY 2009

DISCLAIMER

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Republic boundary
Autonomous republic (ASSR) boundary
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Republic capital
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Autonomous oblast (AO) center
Railroad
Road
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ACKNOWLEDGEMENTS

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STOP AI courses were developed in collaboration with several different organizations. The following organizations have contributed their time, knowledge, and training materials:

- UC Davis School of Veterinary Medicine/Global Livestock CRSP's Avian Flu School provided content for modules on the Overview of Avian Influenza, Animal Surveillance, Biosecurity Principles, Procedures and Planning, and Considerations of Outbreak Recovery.

- Bird Flu Control (BFC) developed content for the modules on Outbreak Response and Depopulation and Disposal.

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- Management Sciences for Health (MSH) developed the content on Human Health Surveillance.

- BFC, MSH, and UC Davis School of Veterinary Medicine collaborated to develop content for the Public Health and Personal Safety module.

TRAINER BIOGRAPHIES

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Dr. Miles received her DVM in 1989 from Virginia-Maryland Regional College of Veterinary Medicine and then completed an Internship in Poultry Medicine North Carolina State University College of Veterinary Medicine (NSCU-CVM). She also holds a BS in Science Education and a PhD in Animal Science from the University of Delaware. Her PhD research focused on the molecular biology of viruses affecting poultry. Dr. Miles has worked as a poultry veterinarian in industry, academia, government and internationally as a consultant. She worked for Embrex, Inc. in Research Triangle Park, helping to develop the modular Inovoject™ egg injection system, which is now used to vaccinate 80% of the broilers in the US and in at least 40 other countries. For 5 years she served on the faculty of NC State College of Veterinary Medicine in the Poultry Health Management, where her research included a study on the effects of H3N2 avian influenza on broiler breeders. In the government sector she worked in avian influenza control, prevention and response programs as Eastern Region Poultry Epidemiologist with USDA/APHIS/Veterinary Services and Public Health Surveillance Veterinarian for the Emergency Programs Division of the North Carolina Department of Agriculture. For the last two years she has worked internationally as a consultant on avian influenza preparedness and training programs.

MAURA FULTON
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Maura Fulton is an experienced trainer and facilitator with over 15 years of experience designing and evaluating training programs and content workshops with the U.S. government and nongovernmental organizations for diverse audiences all over the world. Ms. Fulton has extensive experience designing, implementing, managing and evaluating participatory community development and service projects. She specializes in training design and delivery, strategic planning, participatory community development, cross-cultural communication and integration, and non-formal education. As a full-time consultant with TRG, she has been assisting with the design and delivery of a variety of USAID funded projects as well as with organizational development support to nonprofit organizations. Ms. Fulton serves as a member of the STOP AI team that provides training design, development and delivery for a number of training courses around the world. She has designed and facilitated STOP AI training courses in Ghana and has developed materials programs in countries such as Ethiopia, Tanzania, Macedonia and Azerbaijan. She has extensive knowledge of and experience in development programs in Georgia. She worked with the International Rescue Committee in Zugdidi for one year and for the US Peace Corps in T'bilisi for two years and is very happy to be returning to Sakartvelo. Ms. Fulton holds a master's degree in international affairs.

AVIAN INFLUENZA: BIOSECURITY AND TRAINING OF TRAINERS FOR GEORGIA AGENDA

TIME	Monday 16 February 2009	Tuesday 17 February 2009	Wednesday 18 February 2009	Thursday 19 February 2009	Friday 20 February 2009
AM	Opening and Introductions Overview of AI	Lesson 2: Biosecurity Practices for Large Commercial Farms and Small Commercial Farms Biosecurity Video Lesson 3: Biosecurity Practices for Transporting Poultry	Lesson 6: Biosecurity Planning 1. Describe Setting 2. Evaluate Biosecurity 3. Prioritize Measures 4. Write the Plan	Training of Trainers (TOT) • Adult Learning • Facilitation Skills	Training of Trainers (TOT) • Practice Training and Feedback
LUNCH					
PM	Biosecurity for Farms and Markets Lesson 1: Overview of Biosecurity Principles Lesson 2: Biosecurity Practices for Large Commercial Farms and Small Commercial Farms	Lesson 4: Biosecurity Practices for Live Bird Markets Lesson 5: Biosecurity Practices for People Who Move Between Farms Lesson 6: Biosecurity Planning • Introduction	5. Write a Standard Operating Procedure 6. Decide how to present Plan 7. Decide how to teach the SOP SOP Presentations Evaluations and Comments	Training of Trainers (TOT) • Facilitation Skills Practice • Preparing for Practice Training	Training of Trainers (TOT) • Practice Training and Feedback Application Planning Course Closing

OBJECTIVES

By the end of the course, participants will be able to:

- Define avian influenza;
- Identify avian influenza subtypes and pathogenic forms;
- Describe how the avian influenza virus is transmitted among birds and other species;
- Define the three principles of biosecurity: isolation, traffic control and sanitation;
- Identify potential biosecurity risks;
- Explain appropriate biosecurity measures for commercial and smallholder farms;
- Explain appropriate biosecurity measures for poultry transport and discuss transport of poultry in the Azerbaijan context;
- Explain appropriate biosecurity measures for live bird markets;
- Advise poultry growers, sellers, and live bird market administrators in developing a biosecurity plan for their farm or market;
- Transfer these concepts and techniques to various audiences.

MONDAY, 16 FEBRUARY 2008

Time	Modules/Topics	Presenter/ Facilitator
9:00 – 12:00 *including break*	Welcome and Course Opening	Dr. Andrea Miles Maura Fulton
12:00-1:00	Avian Influenza (AI) Overview • Activity 1.1 (5 min)* • Activity 1.2 (30 min) • Activity 1.3 (10 min) • Activity 1.4 (10 min)	Dr. Andrea Miles
1:00 – 2:00	Lunch	
2:00 – 3:45 *including break*	Biosecurity for Farms and Markets Lesson 1: Overview of Biosecurity Principles • Activity 2.1 (30 min) • Activity 2.2 (15 min) • Activity 2.3 (10 min)	Dr. Andrea Miles
3:45 – 5:00	Lesson 2: Biosecurity Practices for Large Commercial Farms and Small Commercial Farms • Activity 3.1 (10 min) • Activity 3.2 (20 min) • Activity 3.3 (10 min)	Dr. Andrea Miles

**suggested times for activities*

TUESDAY, 17 FEBRUARY 2008

Time	Modules/Topics	Presenter/ Facilitator
9:00 – 11:00 *including break*	Lesson 2: Biosecurity Practices for Large Commercial Farms and Small Commercial Farms • Activity 4.1 (10 min) • Activity 4.2 (10 min) • Activity 4.3 (30 min) • Activity 4.4 (10 min)	Dr. Andrea Miles
11:00 – 12:00	Biosecurity Video	Dr. Andrea Miles
12:00 – 1:00	Lesson 3: Biosecurity Practices for Transporting Poultry • Activity 5.1 (10 min) • Activity 5.2 (30 min) • Activity 5.3 (10 min)	Dr. Andrea Miles
1:00 – 2:00	Lunch	
2:00 – 3:45 *including break*	Lesson 4: Biosecurity Practices for Live Bird Markets • Activity 6.1 (30 min) • Activity 6.2 (30 min) • Activity 6.3 (10 min)	Dr. Andrea Miles
3:45 – 5:30	Lesson 5: Biosecurity Practices for People who Move Between Farms • Activity 7.1 (20 min) • Activity 7.2 (20 min) • Activity 7.3 (10 min) • Activity 7.4 (10 min) • Activity 7.5 (10 min) Lesson 6: Biosecurity Planning (Intro) • Activity 8.1 (15 min)	Dr. Andrea Miles

WEDNESDAY, 18 FEBRUARY 2008

Time	Modules/Topics	Presenter/ Facilitator
9:00 - 1:00 *including break*	Lesson 6: Biosecurity Planning 1. Describe Setting 2. Evaluate Biosecurity 3. Prioritize Measures 4. Write the Plan • Activity 8.2 (all day)	Dr. Andrea Miles
1:00 - 2:00	Lunch	
2:00 - 3:30 *including break*	Lesson 5: Biosecurity Planning 5. Write a Standard Operating Procedure 6. Decide how to present Plan 7. Decide how to teach the SOP	Dr. Andrea Miles
3:30 - 5:00	Biosecurity Presentations Evaluations and Comments • Activity 8.3 (10 min)	Dr. Andrea Miles

THURSDAY, 19 FEBRUARY 2008

Time	Modules/Topics	Presenter/ Facilitator
9:00-1:00 *including break*	Training of Trainers (TOT) • Adult Learning • Facilitation Skills	Maura Fulton
11:00 - 1:00	Lunch and Travel to the Field	
2:00 - 5:00 *including break*	Training of Trainers (TOT) • Facilitation Skills Practice • Preparing for Practice Training	Maura Fulton

FRIDAY, 20 FEBRUARY 2008

Time	Modules/Topics	Presenter/ Facilitator
9:00 - 1:00 *including break*	Training of Trainers (TOT) • Practice Training and Feedback	Maura Fulton
1:00 – 2:00	Lunch	
2:00 – 4:00 *including break*	Training of Trainers (TOT) • Practice Training and Feedback Practice Training Debrief	Maura Fulton
4:00 – 5:00	Application Planning Course Closing • Evaluation • Certificates • Group Photograph	Dr. Andrea Miles Maura Fulton

AVIAN INFLUENZA (AI) OVERVIEW

MODULE PURPOSE

To provide an overview of the basic facts about Avian Influenza (AI).

MODULE OBJECTIVES

At the conclusion of this module, participants will be able to:

- Identify potential sources of introduction of avian influenza;
- Describe the potential threats to man and birds from avian influenza;
- Describe the clinical signs of avian influenza;
- Describe the typical incubation time of avian influenza;
- List the types of influenza that are highly pathogenic.

Adapted from Avian Flu School (UC Davis School of Veterinary Medicine and Global Livestock CRSP)

LESSON 1: AVIAN INFLUENZA VIRUSES

What is bird flu?
Where does it come from?
How is AI spread?

Bird flu is the common name for avian influenza, a respiratory disease of birds that is caused by a virus. Avian influenza viruses are carried by healthy ducks, geese, and shorebirds who do not typically exhibit any signs of disease. These bird species are well-suited for spreading avian influenza worldwide because they migrate for long distances spreading large amounts of virus through contaminated feces. Poultry exposed to infected feces become infected with avian influenza. Avian influenza viruses can be highly pathogenic, causing massive deaths in birds, or low pathogenic, causing very mild disease signs.

For HPAI, it has not been shown sufficiently that wild waterfowl and migratory birds are responsible for the numerous outbreaks all over the world. Instead, trade in poultry and poultry products is thought to be the prime mechanism of spread.

AVIAN INFLUENZA ETIOLOGY

RNA virus is single-stranded strand
Family Orthomyxoviridae

Influenza viruses are divided based on internal proteins (M and P) into types A, B, and C:

Influenza A

- epidemic or pandemic
- animals and humans
- divided into subtypes
- based proteins (H & N)

Influenza B

- epidemic
- humans (primarily)
- not divided into subtypes

Influenza C

- humans
- mild respiratory illness

H5N1 HPAI

What is your experience with H5N1 HPAI?

KEY TERM
Avian Influenza — Commonly called "bird flu"— An infection caused by influenza viruses that occur naturally in birds, and less commonly in pigs and humans. For more information, go to www.pandemicflu.gov

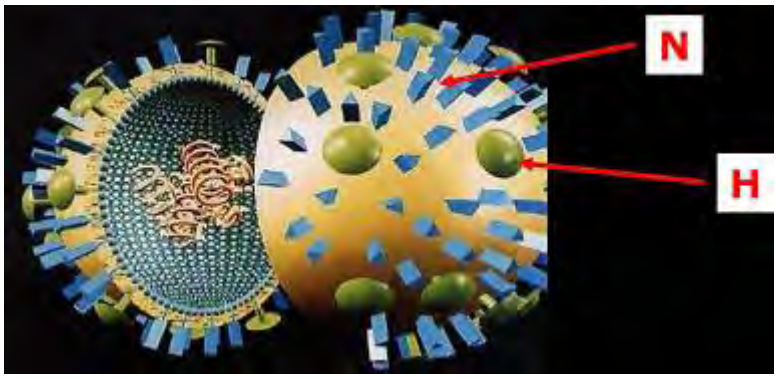

Figure 1. Diagram of an influenza virion

There are many kinds of flu viruses with various classifications and subtypes. For example, seasonal flu, which infects humans, is different than avian flu. Birds, waterfowl, and shorebirds are the reservoir hosts of influenza A viruses.

Influenza viruses are named by the proteins on their surfaces, the hemagglutinin antigen (H) and neuraminidase antigen (N) proteins. There are 16 H types and 9 N types with a possible 144 combinations. The vast majority of these subtypes infect only birds.

H5N1 is the subtype of the virus that is the current concern.

Reassortment. Influenza viruses have segmented genomes, meaning that the virus' blueprints are in pieces that can be exchanged with pieces of the blueprints of other flu viruses. Since they are RNA viruses, they also make mistakes each time they make copies.

Reassortment results in large changes in the virus, genetic shift.

Mutations. Mutations happen every time the virus reproduces itself, changing the virus in very small changes and genetic drift.

New viruses form when their genetic material combines, resulting in a new virus.

Avian influenza viruses can adapt to grow in new hosts or change in virulence either by reassortment or mutation.

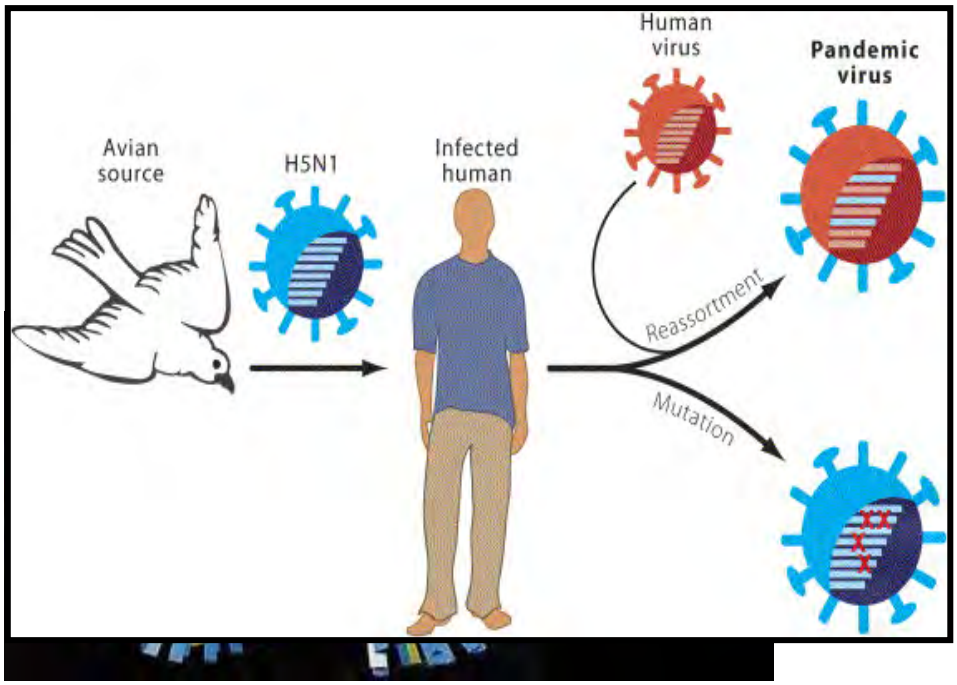

Figure 2. Potential Genesis of an H5N1 pandemic Virus
From Russell and Webster: Cell.2005.10.019

LOW OR MILDLY PATHOGENIC VS. HIGHLY PATHOGENIC

Avian influenza viruses can be further divided into two forms based on what they do to non-exposed, or naïve, chickens:

1. Low or mildly pathogenic avian influenza (LPAI)
    - Causes few to no signs of sickness in infected birds.
    - Can be any of the 144 subtypes.

2. Highly pathogenic avian influenza (HPAI)
    - Causes mortality rates of up to 100% in poultry flocks.
    - Has only been H5 or H7 subtypes.

Some H5 and H7 LPAI strains may mutate into HPAI strains as the viruses reproduce.

HISTORY OF H5N1

HISTORY OF THE GLOBAL SPREAD OF H5N1 HPAI

- The precursor of the current H5N1 HPAI subtype was from a sample of a goose collected in 1996. Where was the sample collected?
- First reported outbreak in domestic poultry in 1997 (Hong Kong)

  - Led to first human infections,18 cases, 6 deaths (Hong Kong)

  - Resulted in culling 1.5 million chickens in Hong Kong to contain spread
- Appeared again in Hong Kong (2001)—led to destruction of 1.2 million birds

  - Numerous outbreaks in Southeast Asia followed
- May-June 2005—disease killed birds in China, Mongolia, and Siberia signaling a dramatic geographic expansion and possible involvement of migratory birds in transmission.
- The first outbreaks in the European Union were recorded in January 2006 when cases were confirmed in migrating wild swans in Italy, Greece, Germany, and Austria.
- February 2006—H5N1 HPAI was detected in commercial poultry flocks in Nigeria. Since then, the virus has been reported in Burkina Faso, Niger, Cameroon, Sudan, Egypt, and Djibouti on the African continent. The virus has also been reported in migratory waterfowl and poultry in numerous others countries throughout Asia, Eurasia, and Europe.

Threats from Highly Pathogenic Avian Influenza Virus

- Deadly for many poultry species
- Constantly evolving with unpredictable results
- Could lead to a human influenza pandemic
- Threatens livelihoods, especially for rural poor
- Has a negative economic impact on trade in poultry and poultry products

CLINICAL SIGNS OF HPAI

Variable and dependent on species, age, concurrent diseases and environment:

- Sudden depression of entire flock followed by >>>
- Sudden high mortality in flock
- Respiratory signs (sneezing, gasping, coughing)
- Discharge from eyes, nares or beak
- Swollen face, combs and/or wattles
- Bluish combs and wattles
- Diarrhea
- Hemorrhages on skin of shanks and breast
- Egg production drops
- Twisted necks, paralyzed wings or legs

PRIMARY SPREAD

H5N1 HPAI can be introduced in a new country or region by:

- Legal and illegal poultry trade (live birds and/or poultry products)
- Legal and illegal wild bird/pet trade
- Migratory birds: H5N1 HPAI shows a seasonal occurrence in high-risk areas, which coincides with migratory activity

EPIDEMIOLOGY OF AI

- Affected species: chickens, ducks, geese, turkeys, guinea fowl, quail and pheasants are very susceptible
- Source: direct or indirect contact with infected birds, manure, fomites
- Highly contagious within a flock
- High concentrations of virus are excreted in feces and in discharges from eyes, beak and nares

Incubation period

- Usually 3-7 days, as short as 24 hours for HPAI

Depends on:

- Strain of the virus, dose and route of exposure
- Species and age of host
- Immune status of host

HPAI MOVEMENT IN A FLOCK

Although not reported in scientific literature, the behavior of HPAI in a flock can be predicted based on the behavior of other respiratory viruses in poultry flocks

- The behavior of HPAI in a flock is hard to predict
  - Many factors that will influence the spread – cage vs. floor, hot vs. cold environment, number of houses/farm, nipple, cup or trough

- AI and other respiratory disease viruses travel rapidly through a poultry flock
  - Usually 3 to 5 days
  - A good example is a "rolling" vaccine reaction

- The incubation period for HPAI is usually between 3 to 7 days. H5N1 HPAI can be as short as 24 to 48 hours.

- Clinical signs (including death) in the entire flock can be seen as early as 4 days and as late as 12 days after initial exposure.

- If the exposure is heavy (during move, contaminated house, etc) signs and death may be noted within 3 days of exposure.

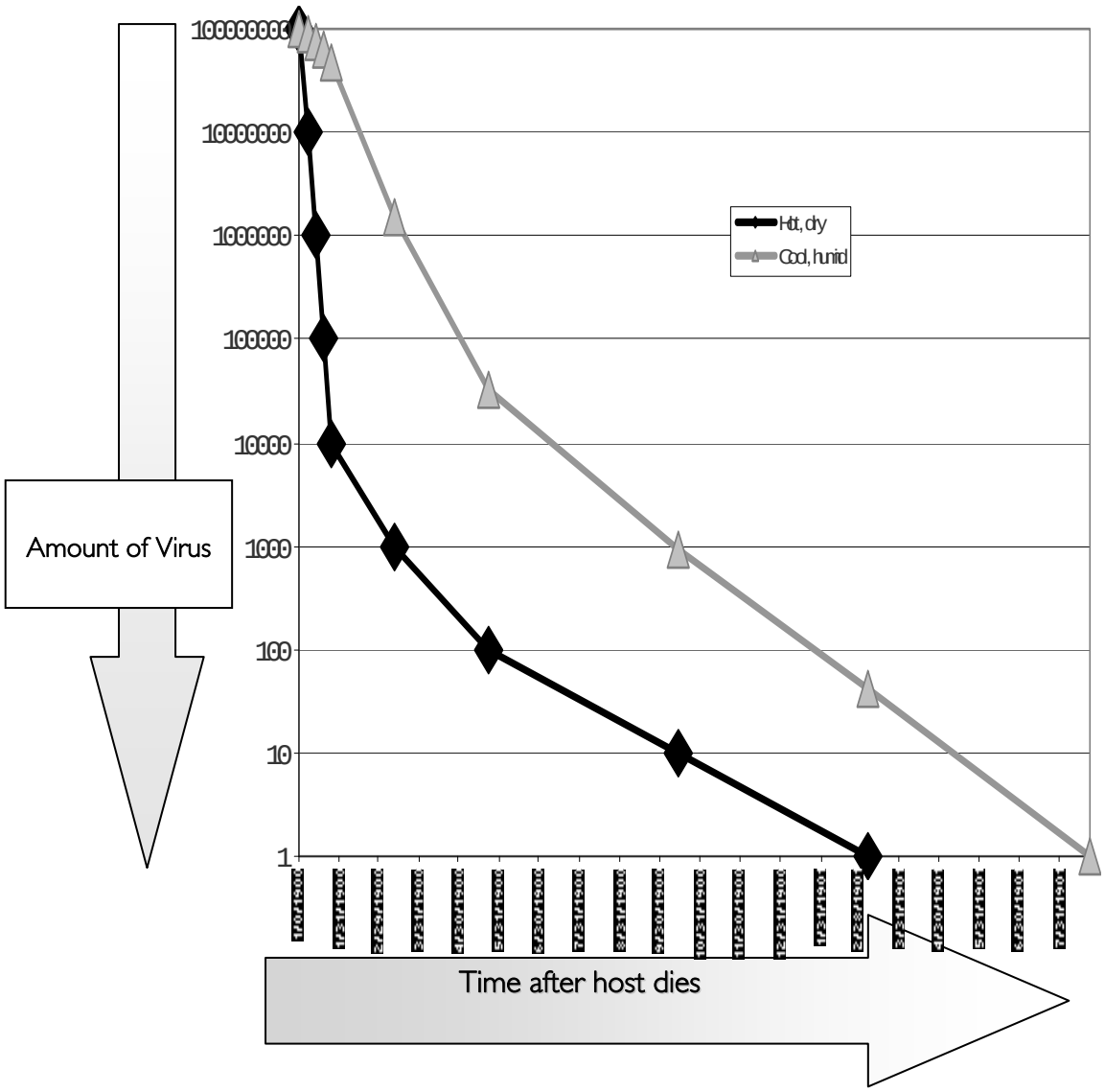

Figure 3: The amount of virus in the host declines after a host dies with variations for environmental conditions.

VIRUS SURVIVAL

Avian influenza (AI) viruses are enveloped.

The virus is inactive when the envelope, or membrane coat, is destroyed.

Heating, drying, disinfecting and washing with soap and water will destroy the envelope.

Avian influenza viruses need a living host to replicate and stay alive.

The amount of virus in a host declines quickly after a host dies. However, the virus will live longer in a dead host if the environmental conditions are humid and cool.

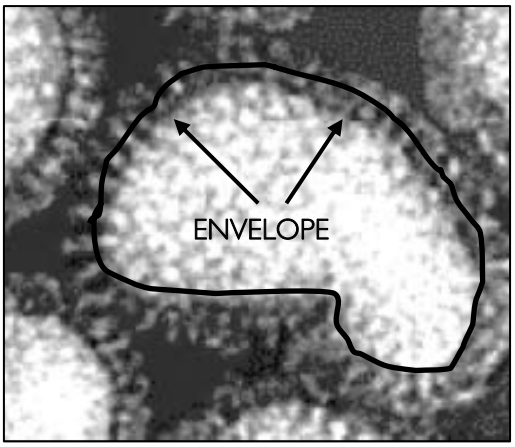

Figure 4: Photo of an influenza virion.

Viruses can't survive long outside of their hosts.

Over time, viruses will die as they are exposed to heat, light, or drying.

Avian influenza viruses will be preserved by wetness and cooling.

VIRUS TITERS IN AN INFECTED BIRD

- Early in infection (when the first clinical signs are observed), the virus titers in flock are high
- As the infection progresses in the flock, the virus titers decline
- After all of the susceptible birds have died or have been infected, the virus titer dramatically declines because the lack of a susceptible host
- At this stage, flock virus shedding is minimal or stops
- The amount of virus shed parallels the virus titer in a bird
- High virus shed early from trachea declines as disease progresses
- Low virus shed very early from gut, high virus shed late

Taking samples in an infected flock

- It is important to wear Personal Protective Equipment (PPE)
- Blood tests for antibodies
  –It takes 8 to 10 days to develop an antibody response, so the blood of dead birds might not have antibodies
- Virus detection tests
  –Oropharygeal are as good as tracheal samples and may provide better samples early in infection when clinical signs are first noted
- Tracheal samples in early infection (when clinical signs are first noted) are as good as cloacal swabs
- Cloacal swabs may be better later in the infection
- Trachael swabs are better for PCR testing because feces may cause interference. However, for species other than chickens their virus titers will be higher in the cloacal swab.

LESSON 2: HPAI TRANSMISSION

Highly pathogenic influenza viruses are transmitted in the same basic ways as other influenza A viruses. Most of that transmission is via direct contact or droplet-borne virus rather than by fine aerosol.

WITHIN SPECIES (INTRASPECIES) TRANSMISSION

The most common transmission for influenza A viruses is from one member of a species to another member of the same species.

BETWEEN SPECIES (INTERSPECIES) TRANSMISSION

Interspecies transmission of the influenza A virus occurs rarely between the majority of species, but has higher rates of interspecies transmission between other species, such as between ducks and turkeys. Generally, larger doses of virus and longer contact periods are required for between-species transmission than for transmission within a species.

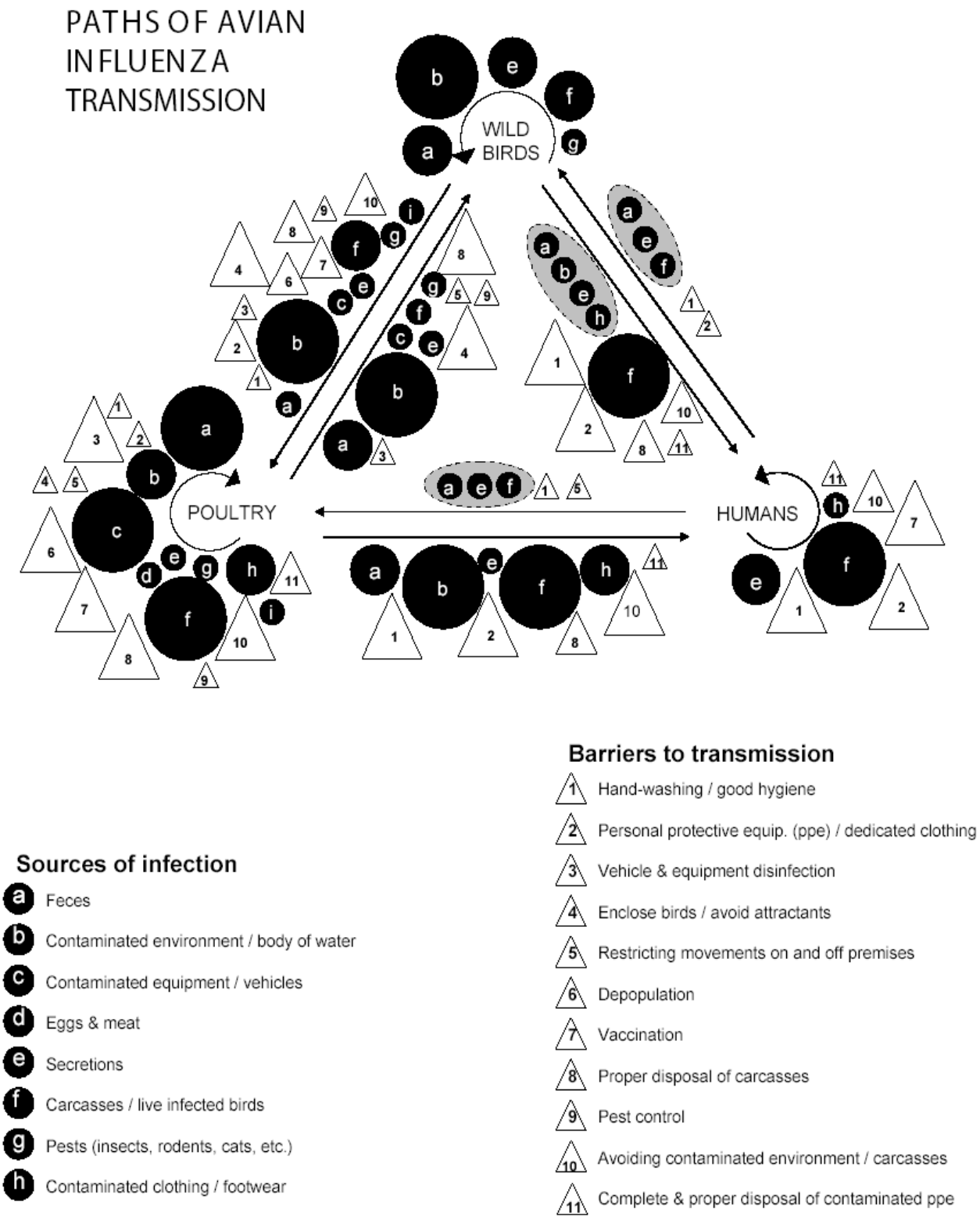

Figure 5: Illustration of the paths of Avian Influenza transmission.

REFLECTION AND NOTES

REFLECTIONS AND NOTES

BIOSECURITY FOR FARMS AND MARKETS

MODULE PURPOSE

To learn methods working with farmers and live bird market owners to prevent an H5N1 HPAI outbreak.

MODULE OBJECTIVES

At the conclusion of this module, participants will be able to:

- Describe biosecurity principles;
- Use biosecurity checklists to identify potential biosecurity risks;
- Explain appropriate biosecurity measures for large and small farms as well as live bird markets;
- Explain appropriate biosecurity measures for poultry transport;
- Advise poultry growers, sellers, and live bird market administrators on effective biosecurity planning and practices.

LESSON 1: OVERVIEW OF BIOSECURITY PRINCIPLES

WHAT IS BIOSECURITY?

What is Biosecurity?

Bio = Life
Security = Protecting
Biosecurity = Protecting Life

The term biosecurity means "protecting life." Protecting your poultry from disease is critical to the success of your farm or market.

Biosecurity is a set of practices designed to prevent the spread of disease into your farm or live bird market. It is accomplished by maintaining the farm or market in such a way that there is minimal traffic of disease-causing agents crossing its borders. In its simplest meaning, it is the process of keeping germs away from poultry and keeping poultry away from germs.

Biosecurity is the cheapest, most effective means of disease control available. Preventing diseases is always cheaper than treating or suffering the effects of disease. Small investments in improved housing and equipment, and creating and training staff on proper biosecurity procedures will lead to healthier and more productive birds.

There are simple steps, or biosecurity practices, that you can use to prevent HPAI, Newcastle disease, and other poultry diseases from entering your farm and infecting your birds.

Biosecurity has three major components:

1. Isolation – Keeping your poultry protected from sources of infection – including unauthorized access and carriers of disease – and separating groups of animals to minimize the spread of infection across the population.

2. Traffic control – Limiting incoming traffic and traffic within your farm or market, and controlling the movement of equipment, vehicles, people, feed, birds and eggs to prevent exposure to disease.

3. Sanitation – Regularly cleaning and disinfecting housing, equipment, vehicles, and people to destroy disease agents.

An essential prerequisite to biosecurity is good management and animal husbandry – keeping poultry healthy so they are naturally resistant to disease, and closely monitoring their health for signs of illness.

In order to effectively guard against the entry of disease, it's important to understand how diseases are spread. Infectious diseases can be spread by:

- Introduction of sick birds
- Introduction of birds that are carriers of disease
- Carcasses of dead birds

- Egg transmission either by:
  a. mechanical means(organisms from dirty egg surfaces penetrating egg pores) or
  b. vertically from an infected hen directly infecting a fertilized or unfertilized egg (there is a little bit of research evidence for vertical transmission of HPAI in eggs).

- Pests: insects, rodents, wild animals and birds
- Contact with objects that are contaminated with disease agents
  - People's shoes and clothing
  - Feed, feed bags, egg flats, crates, coops, etc.
  - Delivery trucks, motorcycles, wheelbarrows, etc.
- Contaminated water, such as surface drainage water
- Contaminated premises through soil and old litter

The introduction of new birds and traffic pose the greatest risk to bird health. Properly managing these two factors should be a top priority on your farm or market.

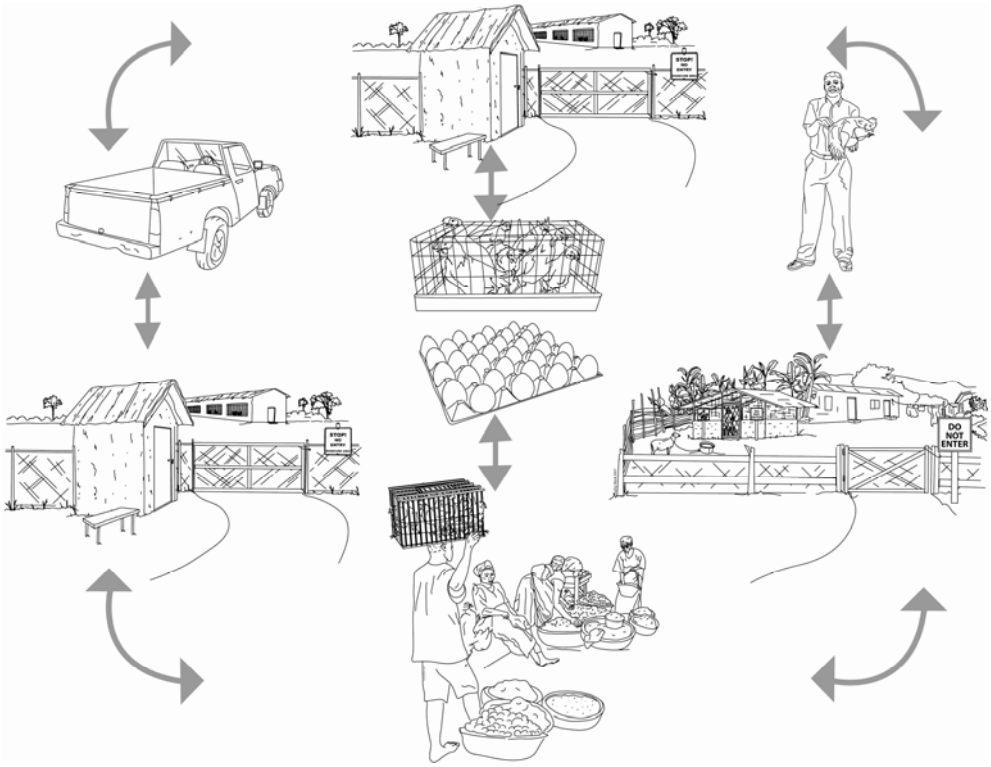

Figure 1: Illustration of How Disease Spreads Between Farms and Markets

BASIC BIOSECURITY MEASURES

Although specific biosecurity measures will vary depending on the needs of a site, some **basic biosecurity measures** common across settings, include:

- **Isolation**: prevent domestic flocks from mixing with wild birds.
- **Traffic Control**: restrict the movement of animals, manure, eggs, equipment, and people between farms and markets.
- **Sanitation**: wear clean, protective clothing when working with flocks and storing it in the immediate work area. Practice basic hygiene such as hand-washing to protect people

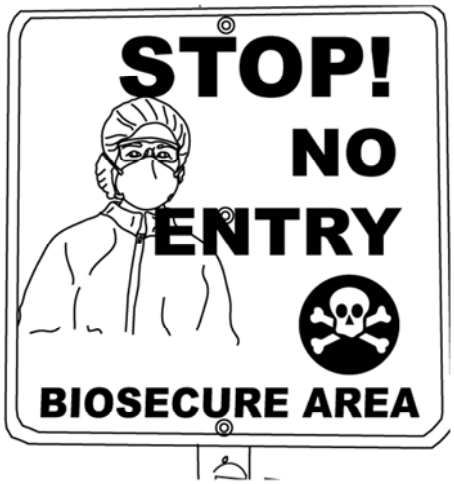

Figure 2: Biosecurity sign.

IDENTIFYING BIOECURITY RISKS

The illustration of a farm on the next page contains many biosecurity risks (at least 10). As you go through this training, identify the risks you see in the illustration and think about ways you would correct them. Later in the training we will discuss the risks together…

Problem Farm

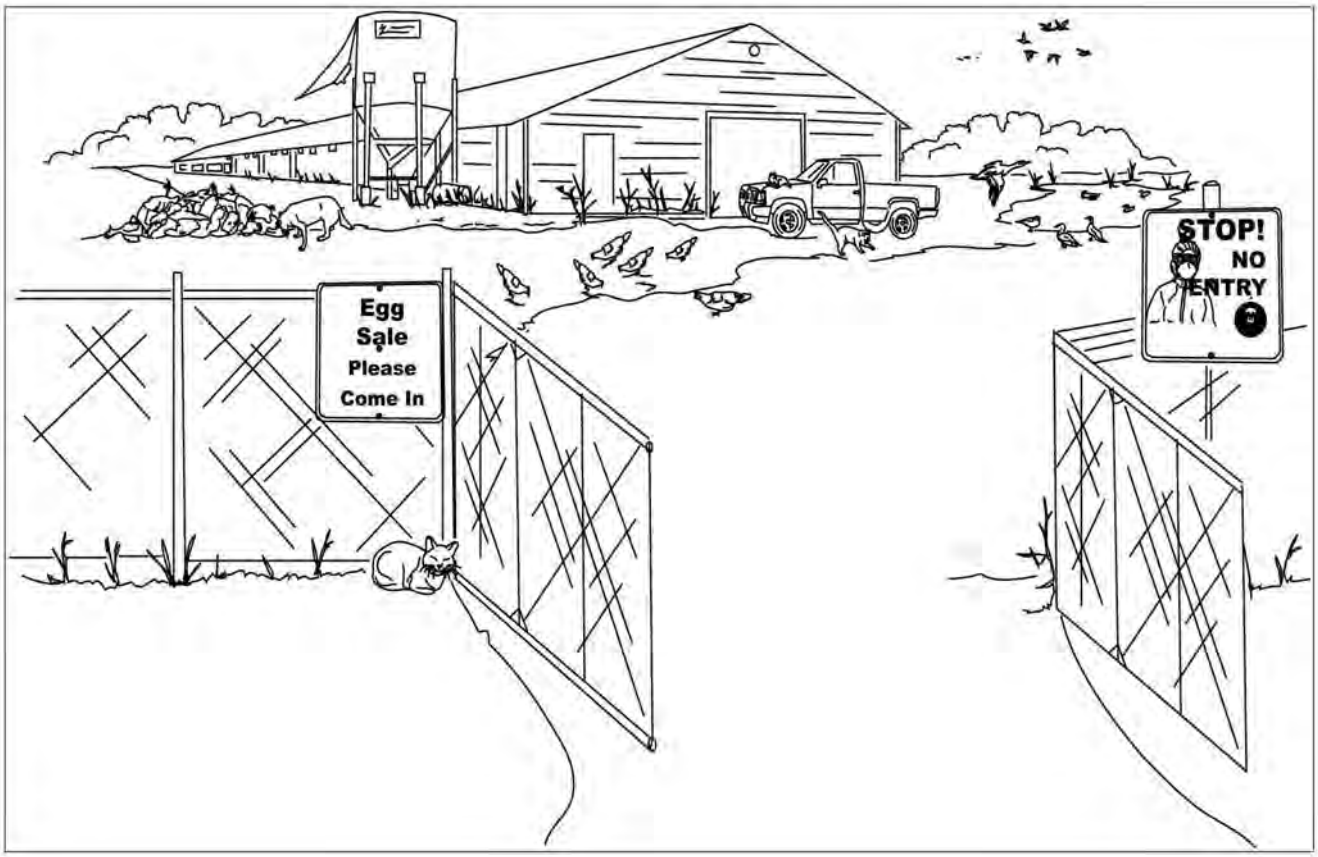

Figure 3: Illustration of Problem Farm

LESSON 2: BIOSECURITY PRACTICES FOR LARGE COMMERCIAL FARMS AND SMALL COMMERCIAL FARMS

Depending on whether you're on a large commercial farm or a medium to small private farm, transporting poultry and eggs from farm to market, or at a live bird market, the type of biosecurity measures needed will differ. The key biosecurity measures listed above are universal, but the specifics of how they are applied will vary based on the circumstances.

As the figure below illustrates, each step in the poultry production and market chain is connected – from the farm to dealer and to the market – and biosecurity must be a consideration throughout.

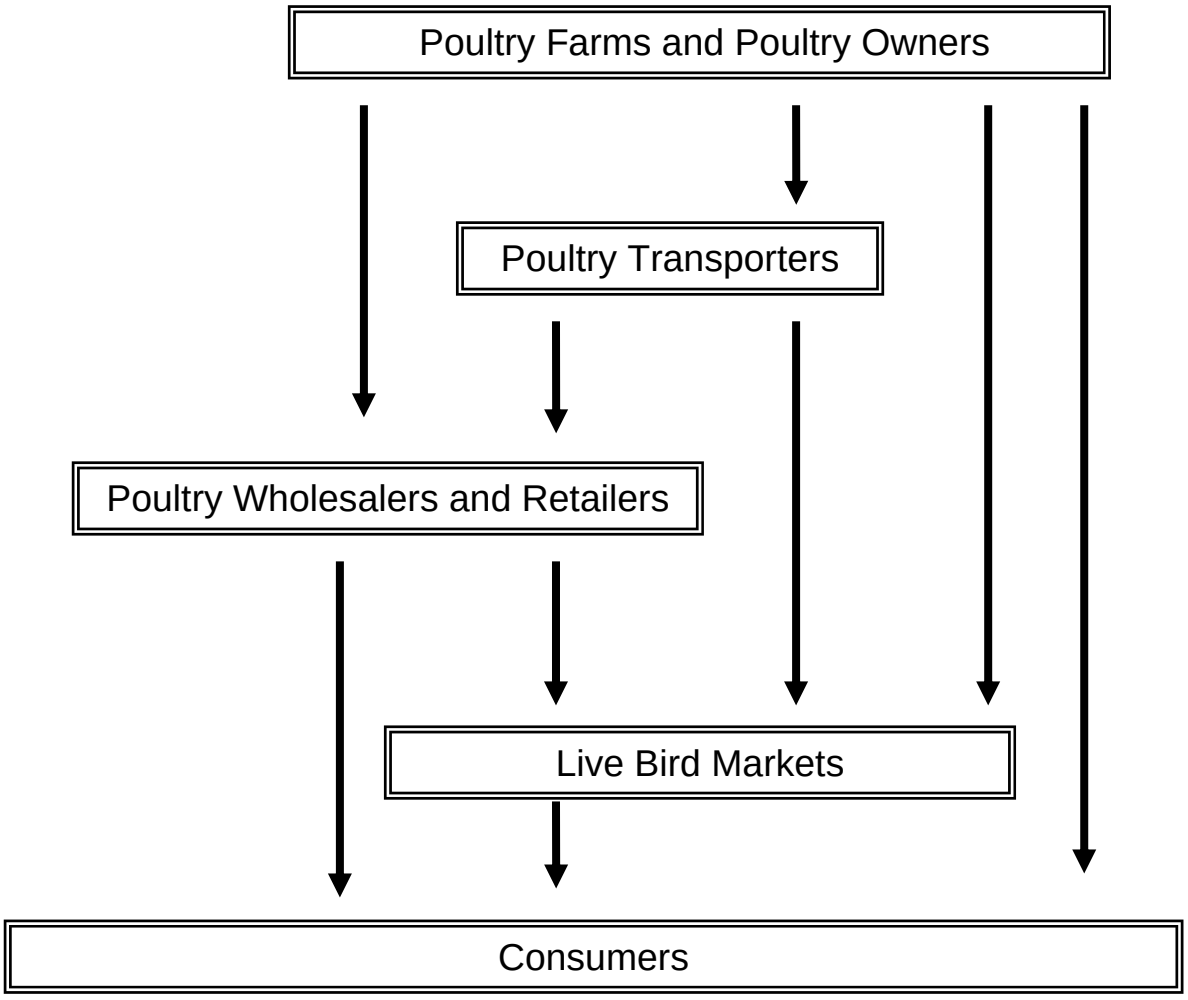

Figure 4: The movement of poultry from farm to market.

The following sections describe the specific application of biosecurity practices on commercial farms, on smallholder farms, when transporting poultry and eggs, and in live bird markets.

BIOSECURITY PRACTICES TO PROTECT YOUR BIRDS FROM HPAI

This section contains several recommendations for implementing the principles of biosecurity and protecting your birds from HPAI.

For some recommendations, you will see different options presented – identified as either "Best Practice," or "Good Practice." Whenever possible, you should use the "Best Practice." However, if this is not an option in your current situation, the "Good Practice" suggestion will provide you with an alternative until you are able to upgrade to the "Best Practice."

Prerequisite: Practice Good Animal Husbandry
1. Isolation: Design and Maintain Your Farm to Keep Diseases Out
2. Traffic Control: Control Entry to and Movement on Your Farm
3. Sanitation: Keep Your Farm Clean

PREREQUISITE: PRACTICE GOOD ANIMAL HUSBANDRY

Healthy birds are less likely to get sick, and one sick bird can spread disease to many other birds very quickly. So it is very important to maintain good animal husbandry practices that will ensure your birds are healthy and resistant to disease.

1. Provide Enough Feed, Water and Ventilation

Sufficient feed and water will make birds healthy, grow rapidly and produce large numbers of eggs. Feeders and waterers should be adjusted for height at least once each week. The lip of the feeder should come to the top of the bird's breast bone. The waterer's should be high enough for a bird to crouch and walk underneath them. Birds must have proper air ventilation to remove ammonia and moisture that builds up in the litter. There should be exhaust fans on one side of the building and intake vents on the other side of the building. Circulation fans hung overhead will help to mix the warm and cool air.

2. Remove Dead Birds from Your Flock at least 2 Times per Day

Often live birds will eat dead birds and the live birds will get the disease that the other bird died from.

3. Cull Sick Birds Regularly

Sick birds serve as a source of germs for healthy birds. In large flocks, sick birds will never reach the growth or production potential of healthy birds. Remove sick birds from the flock, kill them humanely, and dispose of the carcasses by burning or burying.

4. Monitor Your Flock's Health by Keeping Good Records

Good records will help you find disease and production problems early when they are easier to treat or correct. Collect the following information for each flock (some sample forms are provided in the Appendices).

- Bird inventory – the number of birds placed in the house with the daily death loss subtracted.
- Number of dead birds collected each day.
- Amount of food and water consumed each day.
    - You can gather this information by keeping track of how many bags of food need to be added to the feeders each day. That will be the amount consumed during the previous day.
    - Measure a bucket to see how much water it will hold and then record the number of buckets needed to fill the drinkers each day.
- Number of eggs collected each day.
- Vaccines given, plus name, manufacturer and expiration date of the vaccine.
- Drugs, minerals or vitamins added to the food or water.
    - Remember to include how the drug was given (feed, water, etc.) and how long the medicine was given.
- For all birds, especially meat-type birds, weigh a representative sample, usually 30 to 100 birds, once a week and record that information also.

5. Never Add New Poultry to an Existing Flock or Return them After the Market

Adding roosters to a flock of breeders, introducing new hens to replace dead ones, returning live birds back to your farm from a live bird market often results in bringing disease to flocks.

6. Do Not Keep Multiple Species of Poultry (Chickens, Turkeys, Ducks, Pheasants, and Guinea Fowl) on Your Farm or in the Same Cages at the Market

One species may serve as a disease source for other species. Ducks may be infected with HPAI and show no signs of disease.

Best Practice: The best management practice is "All-In, All-Out": this means you place all the birds on your farm at one time, raise them (and possibly collect eggs), and then sell all the birds on your farm at the same time.
Allow 2 to 4 weeks between flocks, with no birds on the farm, to break any disease cycle.

Good Practice: If multiple ages of poultry are kept on a farm, ***never*** have poultry of more than one age in a single pen.

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1. ISOLATION: DESIGN AND MAINTAIN YOUR FARM TO KEEP DISEASES OUT

Disease can be brought onto the farm by people, new poultry, equipment, village poultry or wild animals including wild birds; so it is important that you restrict access to your birds wherever possible. By restricting access, you are practicing ***isolation*** and protecting your birds from carriers of disease.

1. Restrict Access to the Entire Farm

Build a farm gate and fence to keep out unwanted visitors and animals:

- Keep the gate closed, and locked if possible, when not in use.
- Put up signs that say "Do Not Enter" on all gates.
- Repair holes in fencing so that village poultry and small animals cannot get into your farm or poultry area.

Best Practice: Fence the entire farm and then build another fence or arrange the area where poultry are kept so people will know when they are about to enter the poultry area.

Good Practice: If it is impractical to fence the entire farm, at least fence the poultry area.

- Never allow bodies of water (standing water, ponds) on your farm because it attracts wild waterfowl and can be a breeding ground for insects. Waterfowl are known carriers of HPAI; insects may be carriers as well.

2. New poultry houses

- If you are building new poultry houses, build them so that air from one building does not go into another poultry building.

- Below is a sample of a well-designed commercial poultry farm. This farm has a fence, a closed gate, a warning sign, and a place for workers and visitors to change their clothing and shoes.

3. Secure doors

- Keep doors to poultry buildings closed and locked.

Figure 5: A Well-Designed Commercial Poultry Farm

2. TRAFFIC CONTROL: CONTROL ENTRY TO AND MOVEMENT ON YOUR FARM

The previous sections show that a good farm design with gates, fences, doors, and screening, as well as careful planning for re-stocking birds, are important to protect your poultry from outside sources of diseases like HPAI. However, you have to make sure that you, your farm workers, your family, and visitors follow basic steps when moving to and from your farm so they do not bring diseases to your farm.

1. Entering the Farm

- Visitors

  - Allow only visitors with legitimate business to enter your farm.
  - Keep a written list of people who visit your farm. This will help you to remember who has visited and when, in case they are suspected of bringing disease onto your farm.

Best Practice: Keep a visitor logbook. Require visitors to write their name, date of visit, contact information, and any poultry facilities visited in the last 10 days. This includes any place where live birds are housed (even if there were no birds on site when visited) or birds are slaughtered. In case of an outbreak of HPAI or any other disease, this information will make it easier to track down the source of infection and to start disease prevention and control measures.

  - *Every person* who enters the farm must take precautions not to bring disease onto the farm on their body, clothes, or footwear (see "Best Practices" for farm workers below). Family and visitors should be provided with a change of footwear, water-resistant disposable shoe covers, or have their footwear washed and disinfected at the farm gate.
  - Visitors should never be allowed into bird pens. If visitors such as agriculture workers or others must enter bird pens, they must change into clean clothes and footwear, wear a hair cover, and wash their hands or put on clean gloves before entering pens.

Figure 6: Visitors should not enter poultry houses unless absolutely necessary.

- Farm Workers

    - Do not hire farm workers who raise birds for food or have birds for pets on their property. They may carry disease from their birds to your birds.

Best Practice: Provide your workers with meat or eggs so they are not tempted to raise birds at home.

    - All workers should bathe before coming to work. Make sure you always have soap and water available so that workers can wash their hands and feet prior to entering bird areas. This should also be done whenever they leave and re-enter the farm.

Best Practice: Workers should wear footwear and clothing that never leaves the farm.

Build a place near the farm entrance for workers to wash their hands and feet and put on clean clothes and footwear, which you provide, before they enter the farm.

Work uniforms and different colored shoes make it easy to see who is following the biosecurity practices correctly. shoes can be spray painted to mark them as "farm shoes."

Good Practice: All workers must clean and disinfect their footwear upon entering the farm. They should arrive wearing clean clothing or change into freshly laundered clothing when they arrive.

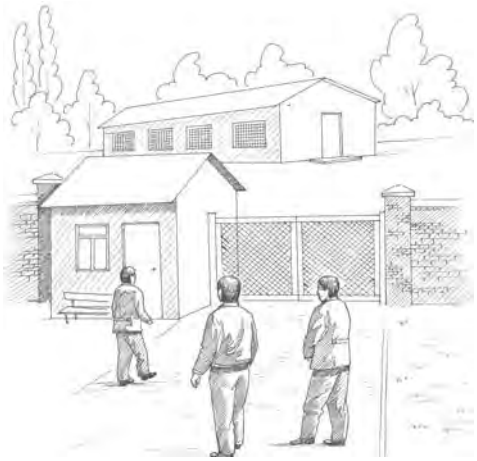

Figure 7: Arriving at work

Figure 8: Workers wash hands, disinfect shoes and change clothes before entering the farm.

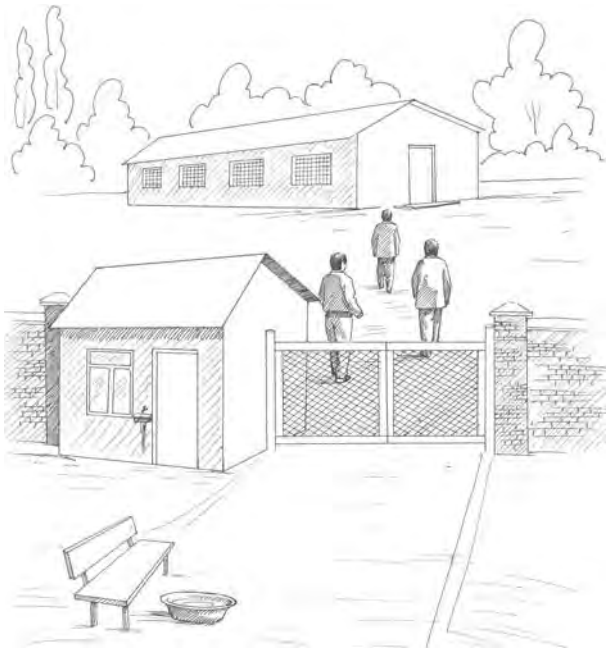

Figure 9: Workers have washed their hands, changed clothes and disinfected or changed shoes, and are ready for work.

- Vehicles and Equipment

  - All vehicles (cars, trucks, bicycles, motorcycles), carts, and equipment that are not used for farm work or business should be left outside the farm gate. All of these things can carry disease and must never be allowed near the bird pens.

  - Vehicles and equipment that are used for legitimate farm operations (such as feed delivery and hauling of market-age birds or eggs) must be cleaned and disinfected at the farm entrance to remove any organic material (feces, feathers, litter, dirt, etc.) or other disease carrying agents.

    - Clean and scrub vehicles with soap and water (hot water preferred) to remove all dirt, feathers, bedding, blood, and excrement before disinfecting.
    - Clean both the vehicle's wheels and underside, and surfaces that have come in contact with birds or cages on the exterior and interior of the vehicle.
    - Use an appropriate disinfectant, at the recommended concentration for the recommended contact time (usually 10 minutes).
    - Apply disinfectant with a sponge, brush or spray unit.

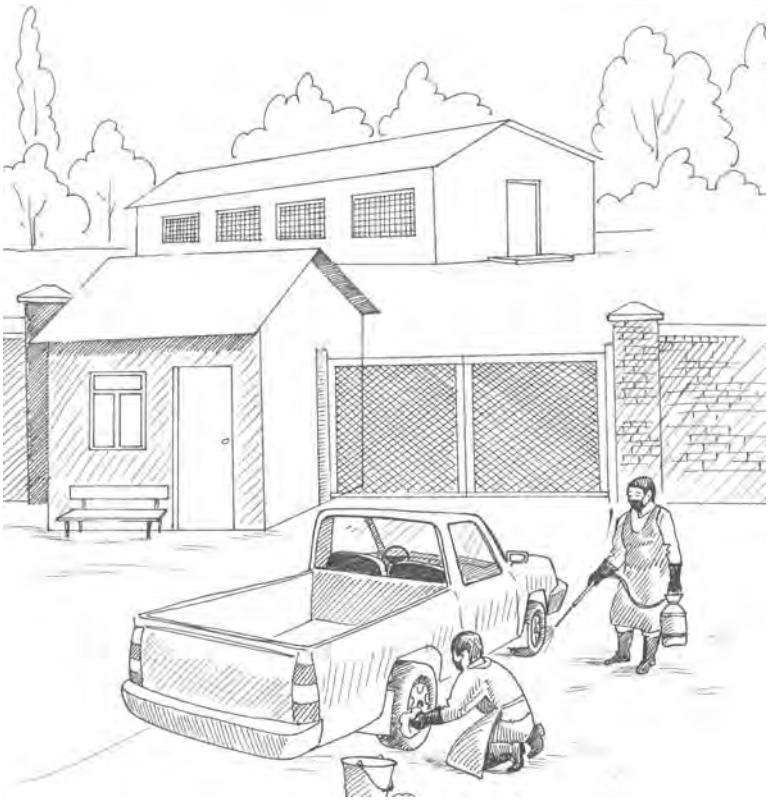

Figure 10: One person washes. The other disinfects after the truck is washed.

- Feed Truck

Best Practice: The feed truck should not come onto your farm, this is especially true if the truck does not belong to you and makes stops at several other farms.

Have the feed delivered to the front gate and then have the workers move the feed into the farm.
If feed is delivered to a feed bin, place the feed bin such that the feed truck can deliver feed to the bin without entering the farm (place it next to the farm fence).

Good Practice: If the feed truck must enter your farm:

- Wash and disinfect the truck at the farm gate
- Do not allow the feed truck driver to get out of his truck
- If the driver must get out, he must wear water-resistant shoe covers and should never enter a poultry building
- Be a good neighbor and wash and disinfect the truck as it leaves your farm.

- Equipment
  - Poultry crates, egg flats, and other equipment that have been taken off the farm must be thoroughly cleaned and disinfected, and allowed to dry under the sun for at least 2 days before allowing them to come in contact with your birds. This destroys infectious agents that may transmit disease to your poultry.
  - Do not store or keep flats, crates or other equipment where they can be exposed to wild ducks, geese, swans or other water birds, as well as rodents.

Figure 11: One person washes the crates and the other disinfects after all organic material is removed.

Best Practice: Use one color of plastic crates or flats that are used only on the farm and use a different color plastic crates or flats that leave the farm.

Before leaving the farm, eggs can be transferred from the farm-only crates to the external-only crates near the farm gate.

If you have multiple breeder farms and a hatchery, color code the egg crates/flats so that only one color of egg crate/flat is used per farm.

Good Practice: Clean and disinfect any plastic egg flats, crates or equipment taken off the farm as soon as you return, in an area near the gate and as far away from your birds as possible.

2. Movement Within the Farm

- When caring for poultry, work from healthy birds to sick birds and from young to older birds.

    - For example, if all birds are healthy, feed the youngest birds first, then the older birds. If the youngest birds are sick, feed the other birds from youngest to oldest and then the sick birds last. This practice helps prevent the spread of disease from one group of birds to another.

- When moving between poultry houses, wash or disinfect hands, and either disinfect footwear or change into footwear dedicated for each building.

    - Having footwear dedicated to a building is important because it prevents germs outside of poultry buildings from getting inside.
    - Dedicate one color of footwear for each building on the farm. That way, you will know who is not following biosecurity procedures.

Best Practice: Construct a small room just inside the door to the poultry house. In that room, keep flock records, soap and water for washing hands and feet, coveralls to cover clothes, and shoes or boots that are only worn in that poultry house.

Good Practice: Hang shoes designated for each building at the building entrance for workers to change into before entering the building.

Good Practice Alternative: Footbaths for disinfection are another option if they are kept free of organic material and the disinfectant and water are changed regularly. However, they do require a couple of minutes for the disinfectant to work and scrubbing to remove any organic material on footwear, so brushes should also be provided.

Figure 12: Workers clean shoes, wash hands, and walk through a foot bath with disinfectant before entering poultry houses to work with the birds

3. Movement from the Farm

- Never visit bird markets or other places where birds are present unless absolutely necessary, because the birds there may be infected with a disease like HPAI or Newcastle disease.
    - If you must visit bird markets or places or events involving birds, disinfect your footwear upon returning to your farm. Bathe and change your clothes before entering any building or bird pens.
    - Never visit a neighbor who has sick poultry. You may bring disease back to your farm. If you have sick poultry, do not let your neighbor visit your sick poultry because he could take that disease back to his farm.

4. Conducting Farm Business

- If you transport birds or eggs off your farm, be sure to bathe and change clothes before returning to your birds. Clean and disinfect your vehicle as well, especially the passenger cab, tires, cargo area, and undercarriage.
- Never allow fowl dealers or egg buyers on your farm. Birds and eggs can be exchanged at the farm gate.

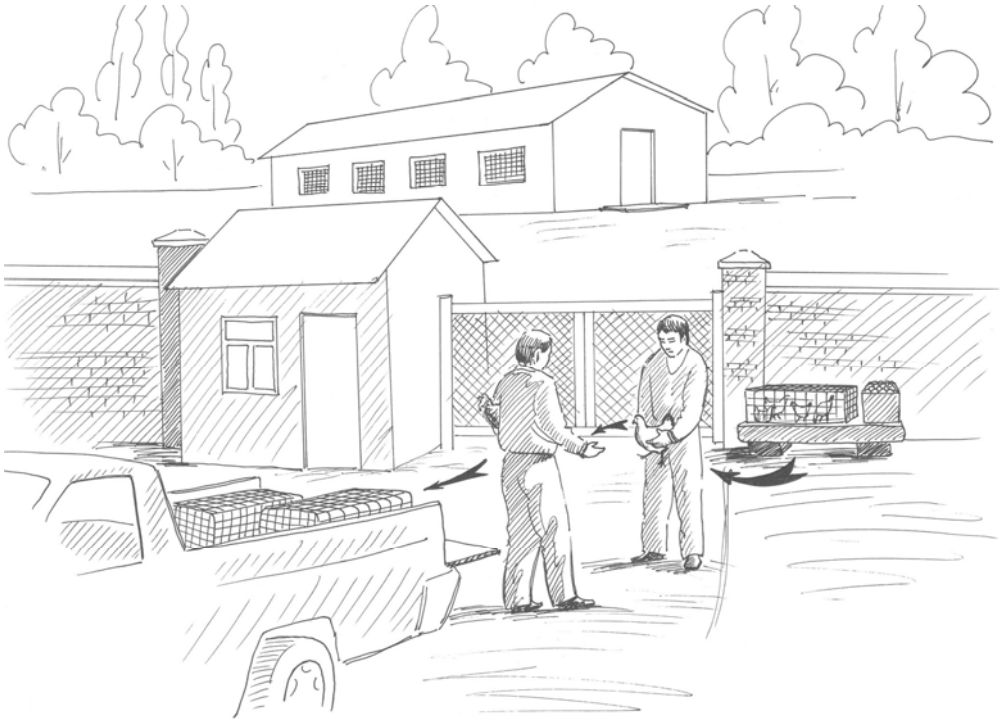

Figure 13: Meet fowl dealers at the gate of your farm.

- Buying Live Birds
  - Only buy chicks, pullets or breeders from hatcheries or people you know and trust, and make sure the previous owner or hatchery practices good biosecurity.
  - Do not buy birds showing signs of illness.
  - Never purchase or accept birds from a country, region, or farm where HPAI is present. Although this may save you money in the short run, in the long run the cost to you and your neighbors could be the loss of your business and the possibility of human death; it is not worth the risk.
  - Quarantine any new birds for 2 weeks, at least 10 meters away from other birds.

- Selling Live Birds
  - It is best to arrange to have a poultry dealer buy all the birds on the farm or all the birds in one pen at a time (this is similar to All-In, All-Out management).
  - When selling live poultry, use the following practices to protect them from disease:

Best Practice, *Transport Offsite to a Poultry Dealer:* Have your workers collect the poultry to be sold from your farm in your own clean disinfected plastic or metal crates/coops. Transport the poultry to a location outside your farm where you meet a poultry dealer and transfer the poultry from your crates to his crates.

Clean and disinfect your crates immediately before you enter your farm and allow them to sit in sunlight for two days before storing them near your poultry.

Alternative Practice, *Transfer to a Poultry Dealer on Your Farm:* When the poultry dealer arrives at your farm, have him wait at the gate. Transfer birds from your crates to his crates.

Keep the dealer's vehicle at the farm gate as far away as possible from poultry buildings. Do not allow the driver out of the truck unless he wears water-resistant shoe covers or disinfects his footwear. Do not let him on your farm. Never allow him into the poultry buildings or pens.

Have your workers collect the birds and put them in the dealer's crates. Do not put the dealer's crates in the buildings or pens where birds are kept. The driver may inspect birds after they are outside the pen and in the crates.

Alternative Practice, *Transport to a Live Bird Market:* Have your workers collect the birds to be sold from your farm in clean disinfected crates or coops. Transport the poultry to the live bird market and transfer poultry to cages there.

Clean and disinfect your crates immediately before you enter your farm and allow them to remain in sunlight for 2 days before storing them near your poultry.

Never return birds from a live bird market to your farm. It is better to slaughter them and share the meat with your workers than to risk the possibility of bringing disease back to your farm.

Good Practice: *Selling Directly from the Farm:* If poultry are sold directly from the farm, they should be sold at the farm gate. Clients should never come onto the farm or enter the bird area to inspect birds. Any birds taken outside the farm gate should never be returned to their original pen, but kept separate from other birds until they are sold.

- Selling Eggs
  - If you sell eggs, use the following practices to protect your poultry from disease:

Best Practice: Have your workers collect eggs on plastic egg flats that are cleaned and disinfected daily. This prevents the spread of disease from one pen to another. In the egg room, sort eggs into clean paper flats for sale. Never return paper egg flats from the market to the farm.

Good Practice: Have your workers collect eggs on one color of plastic egg flats on the farm, marked and dedicated for each building or pen. In the egg room, use a different color plastic egg flat to sort the eggs for sale. Wash and disinfect sale egg flats before they are returned to the egg room.

For example – you collect eggs in blue flats from building #1 and green flats from building #2. These flats are only used on the farm and only in one poultry building; they never go further than the egg room. You use red flats for selling the eggs and these leave the farm, but they are always cleaned and disinfected before being brought to the egg room for filling.

Good Practice – Alternative: Have your workers collect eggs onto paper egg flats, marked and dedicated to each pen. In the egg room sort the eggs into clean paper egg flats for sale. Never return paper egg flats from the market to the farm.

Good Practice, *If Eggs are Sold Directly from the Farm:* Eggs should be sold at the farm gate, not on the farm. Clients should never come onto the farm or enter the bird area to inspect your poultry.

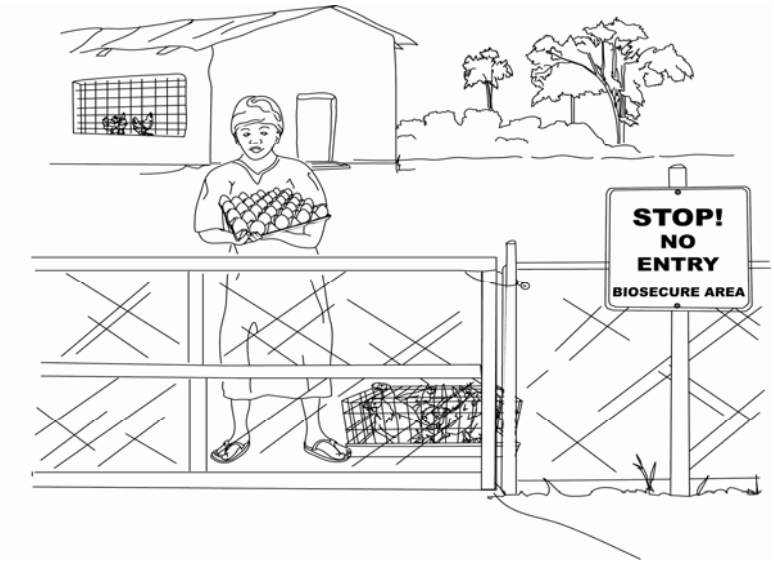

Figure 14: Sell eggs at the gate of the farm.

3. SANITATION: KEEP YOUR FARM CLEAN

1. Clean Equipment Regularly

- Keep your farm and all equipment that comes in contact with birds clean. Clean all bird areas and equipment, including crates, cages, food and water containers, feed scoops, shovels, rakes and brooms.

  - Using soap and water (preferably hot water), clean and scrub to remove feathers, bedding, blood, and excrement before disinfecting.
  - Use an appropriate disinfectant, at the recommended concentration for the recommended contact time (usually 10 minutes).
  - Apply disinfectant with a sponge, brush or spray unit.

Figure 15: Clean all the equipment that comes into contact with the birds on a regular basis.

Best Practice: Once each day thoroughly clean and disinfect watering and other equipment that comes in contact with birds.

Good Practice: At least once each week thoroughly clean and disinfect all bird areas and equipment that come in contact with your birds.

2. Feed Management

- Keep feed and feed ingredients in closed containers to protect them from pests and moisture.

- Keep your feed storage area and feed mill clean and keep the doors closed.

- Clean up feed spills as soon as they are discovered.

- If you have an automatic feed system, clean the bin, angles, and bends at least once a month to prevent fungal growth and mycotoxins.

- If you use bagged feed:

  - Keep the bags in a covered building.
  - Keep the doors closed and all openings should be screened.
  - The area where feed is kept should not be exposed to wide temperature ranges.
  - Do not re-use feed bags. If you must re-use them, they should be washed, disinfected, and dried before they are used again.

Figure 16: Keep feed covered.

3. Litter Management

- Properly managed litter/bedding will help decrease disease problems.

  - Change wood shavings/litter regularly and whenever it becomes wet.

Best Practice: change all litter after every change of flock.

Good Practice: change all litter in the brooder area after every flock change. In the grow-out area, remove caked or compacted litter and add fresh litter.

- Do not spread freshly used litter/manure on the ground near poultry buildings. You could be spreading disease. To make litter/manure safe to spread as a fertilizer, do the following:

  - It should be stored in an area that is covered so that it is protected from rain.
  - It may be composted by using green plant material at a ratio of 2 parts plant material to 1 part litter/manure. The material should be mixed and allowed to sit for 5 to 7 days. After sitting, the material should be mixed again and allowed to sit for another 5 to 7 days.
  - Once it has gone through this process, the material can be used as a mild fertilizer.

4. Cleaning Poultry Houses between Flocks

As soon as a flock is removed and a pen or a building is emptied:

- Remove all food from the building.
- Drain, clean and disinfect all water systems.
- Brush down dust and dirt onto the floor, starting from the ceilings and working down the walls.
- Clean out litter.
- Wash down ceiling and then the walls from top to bottom. Make sure to remove all organic material (feed, litter, manure).
- Repair holes in walls and screens.
- Disinfect all surfaces including feed and water equipment.
- Replace mouse and rat baits.
- Spray insecticide to kill flies and other insects.
- Allow buildings to sit empty for 2 weeks so they will dry.
- Re-stock your building.
- Remember to put feed and water in the building less than an hour before the birds arrive. If you put it there too early, it will attract mice and rats.

Figure 17: Clean poultry houses between flocks.

5. Pest Control

- Keep feed and feed ingredients in closed containers to protect them from pests and moisture.
- Keep your feed storage area and feed mill clean, and keep the doors closed.
- Clean up all feed spills as soon as they are discovered.
- Keep weeds and grasses cut short around poultry buildings. This helps to eliminate areas where pests can hide.
- Keep the area around poultry buildings free of vehicles, equipment, trash, dead birds and other debris that is attractive to scavengers.

- Keep the employee clothes changing area clean and orderly to prevent mice and rats from hiding in that area.

- Use an appropriate mouse and rat poison or traps in a safe manner.

- Change bait type every 3 months to prevent pests from becoming resistant to the active ingredient in the bait.

6. Summary of Key Points

The basic biosecurity measures discussed in this section can be summarized as follows:

- Wear clean, protective clothing and footwear; only use it on the farm when working with flocks.
- Keep protective clothing and footwear on your farm for workers and visitors.
- Prevent domestic flocks from mixing with wild birds, other animals, and pests.
- Restrict the movement of animals, manure, eggs, equipment, and people between farms and markets.
- Control the movement of animals, manure, eggs, equipment, and people on the farm so disease is not spread.
- Practice basic hygiene – particularly regular hand-washing and decontaminating footwear.

Figure 18: Well-designed small poultry farm.

The lessons you learned about biosecurity for commercial poultry producers can easily be applied to small poultry producers. The same basic biosecurity principles of isolation, traffic control, and sanitation apply to small poultry producers as well. Good farm design will help stop the spread of disease (see above). Once again, it is important to not let people on the farm that have been around other poultry. Buy birds only from people that you trust. All vehicles and equipment should be washed and disinfected before being allowed on the farm.

LESSON 3: BIOSECURITY PRACTICES FOR TRANSPORTING POULTRY

These recommendations are for anyone moving live poultry from farm to market.

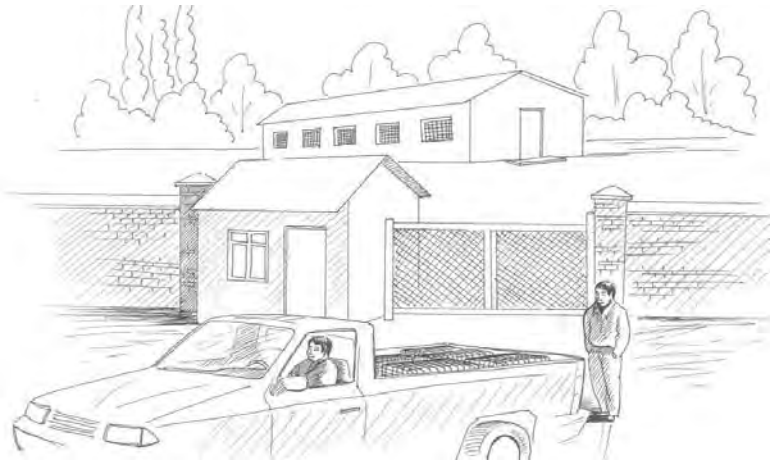

Figure 19: Moving poultry from farm to market.

PREREQUISITE: Start with Healthy Birds

- Only buy poultry from reliable producers who practice good biosecurity.
- Do not accept or purchase from flocks showing signs of disease.

1. ISOLATION: Separate Bird Pick-Ups

- Avoid collecting birds from different farms on the same day.

2. TRAFFIC CONTROL: Don't Spread Disease

- Dealer and transporter cages should ***never*** go on farms.
- Have easily identified cages – color-coded or tagged. For example, you can tie pieces of colored cloth to your cages to identify them as yours.
- Do not enter poultry houses to pick up birds.
    - Birds should be picked up at a designated location away from the farm.
    - If you must enter the farm, clean and disinfect your vehicle before entering the farm (see details below).
    - If you must enter poultry houses, wash your hands and change into fresh clothes and shoes. Shoe covers and coveralls are best, if available.

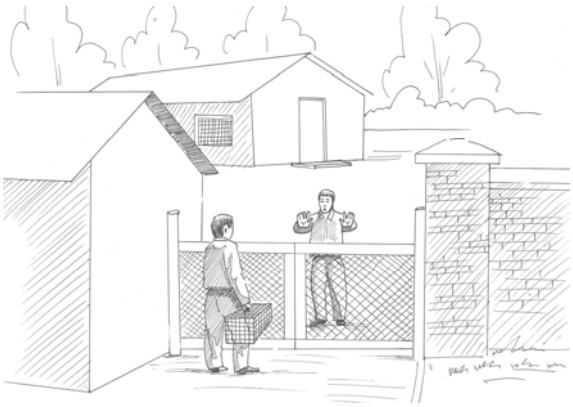

Figure 20: Do not bring cages onto farms.

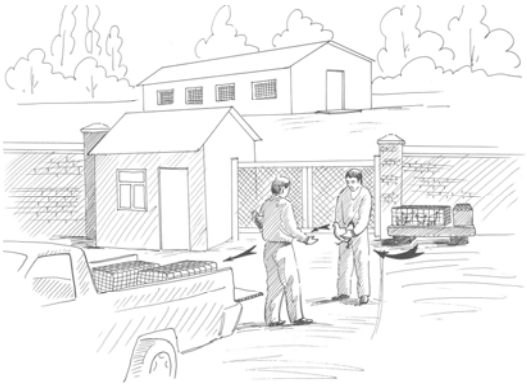

Figure 21: Exchange birds outside the farm gate.

- Avoid carrying people and live poultry together in the same vehicle. Also avoid carrying poultry with other birds or animals.
- Respect poultry movement bans to help in outbreak efforts.

Figure 22: Avoid transporting people, live poultry and other birds/animals together.

3. SANITATION: Keep it Clean

- Use cages made of plastic or metal (stainless steel, galvanized, vinyl coated or wire mesh) for easy cleaning.

    - If this is not possible, frequently replace (burn or bury) the traditional cages made from local materials.

- Clean and disinfect vehicles (cars, trucks, bicycles and motorbikes, animal-drawn carts) before and immediately after hauling birds.

Instructions for Cleaning and Disinfecting Vehicles & Equipment

- Clean and scrub vehicles and equipment with soap and water (hot water preferred) to remove all dirt, feathers, bedding, blood, and excrement before disinfecting.

- Clean both the vehicle's wheels and underside, and surfaces that have come in contact with birds or cages on the exterior and interior of the vehicle.

- Use an appropriate disinfectant, at the recommended concentration for the recommended contact time (usually 10 minutes).

- Apply disinfectant with a sponge, brush or spray unit.

Figure 23: Clean and disinfect vehicles.

LESSON 4: BIOSECURITY PRACTICES FOR LIVE BIRD MARKETS

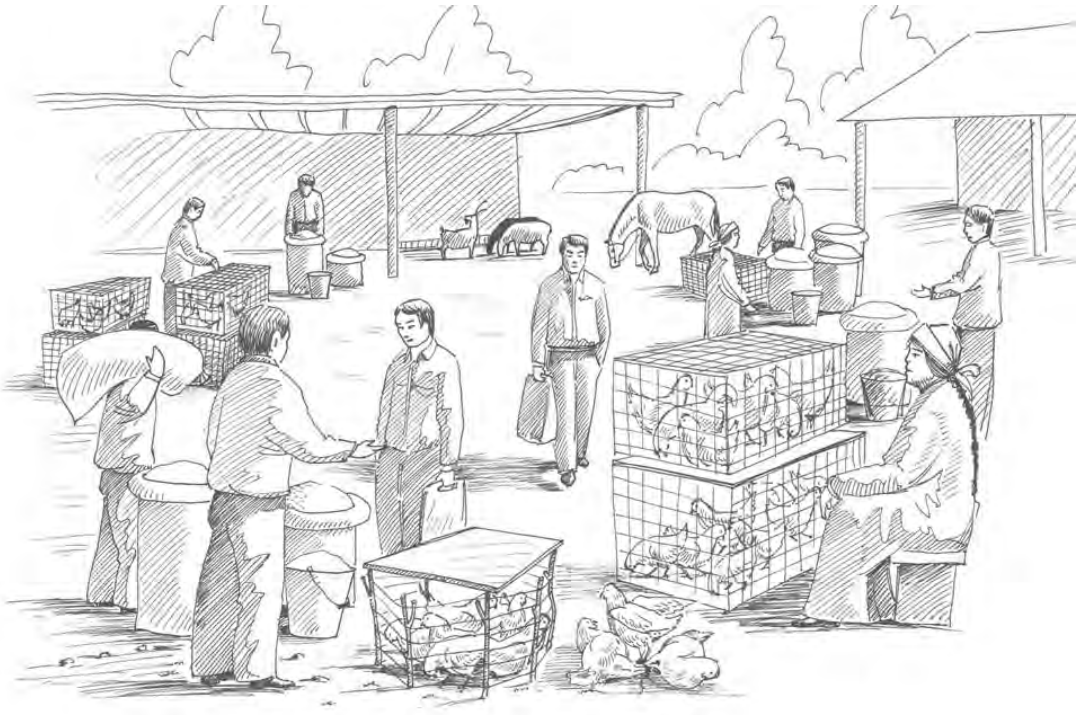

Figure 24: A typical live bird market with very little biosecurity.

Figure 25: A well designed and managed live bird market with biosecurity measures in place.

LESSON 4.1 BIOSECURITY FOR URBAN LIVE BIRD MARKETS

This section includes biosecurity recommendations for municipal authorities who manage urban live bird markets and for poultry sellers in the market.

The municipal authorities who manage urban live bird markets are responsible for ensuring that the markets are organized and equipped to facilitate good biosecurity. The following recommendations on market structure and management are intended as advice to municipal market managers.

1. Locate markets away from food

Best Practice: Locate live bird markets away from the main municipal market and away from areas where food is sold, prepared or cooked.

Good Practice: If the market is already located in the larger municipal market, wall off the live poultry area and provide a separate entrance that would prevent customers from walking through the main market carrying poultry.

2. Control the flow of traffic in the market

- Set up the market so that the traffic of people flows in one direction, from the entrance to the exit.
- Create an unloading area for trucks and other vehicles bringing in birds from rural areas and commercial farms.
    - This controls the flow of traffic and restricts it to one area that is a potential entry point for disease. Also, a single unloading area is easier to clean and disinfect regularly.

3. Provide for Good Sanitation

- Provide the space and water needed for washing cages, vehicles, etc.

Best Practice: Provide an area for washing cages and trucks before they leave the market.

Best Practice: Provide running water from sinks or hoses.

Good Practice: Collect and store waste in barrels and buckets.

- Provide changing rooms and bathrooms for sellers to use to change into work clothes and wash their hands and feet or shoes before and after work. These areas can be as simple as buckets of water in an enclosure if there is no running water.

Provide sellers with designated booths that are easy to clean.

Best Practice: Build booths with well-built cages made of plastic or wire (stainless steel, galvanized, vinyl-coated or wire mesh).

Good Practice: Install concrete slabs. These are easy to clean and can be lined with a single layer of cages made with a wood frame and wire netting.

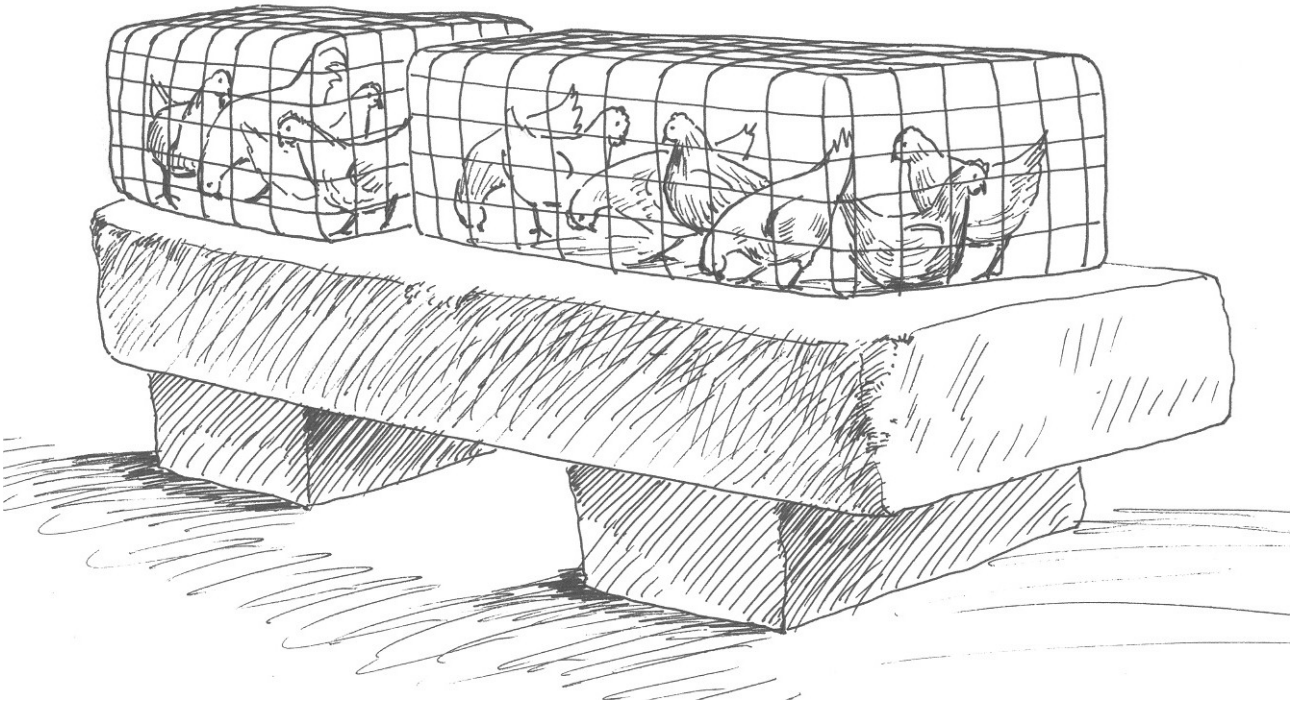

Figure 26: Concrete slabs allow sellers to line up cages in a single layer.

- Provide the necessary equipment for safe waste disposal at the market.

Best Practice: Provide a central waste bin in the market for the temporary disposal of dead birds, feathers and manure. The bin should have a tight lid to prevent access by scavengers and pests such as rodents. The bin should not leak, spill or produce odors.

Empty the central waste bin every day and dispose of the waste by incineration, burning in a pit, or burial. See Appendix H for a description of the various methods of disposal.

Good Practice: Require sellers to have their own, or provide them with, individual bins that have tight-fitting lids for temporary waste disposal throughout the day. At the end of each day, take the waste bins to a central location for disposal by burning them in a pit or burying them. The bins should prevent access by pests or other animals, should not leak or spill, and should not produce odors.

Empty the whole live bird market of birds to clean and disinfect thoroughly once a month.

- Prepare equipment needed for cleaning and disinfecting the market (buckets, brushes, brooms, gloves, masks, disinfectant).
- Remove all poultry from the market – either by selling or slaughtering any unsold birds.
- Move equipment (cages, scales, tables) away from walls.
- Remove manure and all organic matter from cages, pens or crates.

- Remove organic matter and solid wastes from the room starting with the ceiling, then walls and finally the floor.
- Wash the equipment and room with hot water. Use a pressure spray if available, but a hose or bucket and brush can work just as well. Start with the equipment, then the ceiling and walls and lastly the floors.
- Apply an appropriate disinfectant, such as chlorine bleach, again starting with the equipment and ending with the floors.
- Leave the market empty for 24 hrs before restocking.

4. Educate sellers about biosecurity practices

Best Practice: Require poultry sellers to attend a short class on basic biosecurity practices in order to get or renew their license to sell live poultry.

Good Practice: Link the payment of a seller's market duties or taxes with an inspection of the selling area by municipal workers to ensure cleanliness.

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5. Conduct regular disease surveillance

- Targeted surveillance and disease monitoring of live bird markets can serve as an early warning indicator of HPAI H5N1 entry into a country. Governments, states, districts and municipalities should set up surveillance programs.
- This can be as simple as visiting the live bird markets and talking to owners and customers on a routine basis.
- Food and meat inspectors can also be trained to carry out surveillance activities in live bird markets.

Best Practice: Food or meat inspectors should inspect live poultry for illness before they are slaughtered. In many countries, public health employees share this duty with the veterinary services.

- All cases of sick or dead birds in the market should be reported to the veterinary, livestock, and public health authorities.
    - Appropriate action such as market shutdown may have to be taken when lab test results are confirmed to be positive for H5N1 HPAI.
    - Remember, the sooner H5N1 HPAI is recognized and controlled, the faster the market can start selling birds again.
- Markets should develop a system that makes it easy to trace birds back to the farm where they were raised. When single sources for birds are used, this is a simple process. When multiple suppliers are used, this process can be extremely

difficult.

- A simple way to do this is to label each cage with the name of the farm that raised the birds, the name of the dealer that brought the birds to the market, and the name of the truck owner that brought the birds if the dealer's own truck did not bring them.

LESSON 4.2 BIOSECURITY PRACTICES FOR POULTRY SELLERS

While the market's management must provide the infrastructure necessary to allow good biosecurity, the ultimate responsibility rests with the sellers themselves to practice good hygiene on a daily basis. The following recommendations are for the poultry sellers themselves.

The most important rules to follow to protect yourself, your birds, and your business from disease are:

NEVER BUY OR SELL SICK POULTRY

NEVER SELL THE CARCASSES OF DEAD POULTRY

1. Start with Healthy Birds

   - Only buy poultry from trusted sources that produce good stock and practice good biosecurity.

   - Do not mix different species of poultry (chickens, ducks, geese, guinea fowl and turkeys), game birds or pigeons in one cage, or mix birds of different ages in the same cage.

Best Practice: House ducks and other waterfowl in a separate area of the market. These birds can carry avian influenza viruses without showing signs of illness. They are silent carriers of the disease.

   - Practice "all-in, all-sold."
     - Only buy birds from one source.
     - Do not any introduce any new birds during a particular selling period. For example, only pick up new birds from one farm on Sunday or Monday, and buy enough to sell for the entire week.
     - Do not return any unsold birds to the farm of origin. Slaughter any unsold birds.

2. Be Alert for Illness in Your Birds

   - Separate birds that become sick from the rest of the birds. Have a designated cage for sick birds. Slaughter and dispose of these birds at the end of each day.

   - Remove dead birds regularly and dispose of them properly.
     - Keep the carcasses in a secure container and bury or burn them at the end of each day.

- Do not leave carcasses lying around.
- Do not throw carcasses into bodies of water such as rivers, streams and lakes.

- **Keep good records** of the birds you bring into the market and how many birds die each day – this can alert you to any disease problems early.

- **Immediately report any unusual mortality or sickness in birds to the municipal market authorities.**

- **Respect poultry movement bans** and market shutdowns if there is an outbreak of HPAI.

3. Keep it Clean

- **Have specific clothing or a uniform** (for example, coveralls or an overcoat) and shoes that are only worn at the market.

- When arriving at work, **wash your hands** and change into your work clothes/uniform and work shoes.

- **Wash your hands frequently** with soap and water, especially after handling a bird during a sale.

- **Use well-designed and constructed cages**

Figure 27: Wash your hands frequently when handling birds.

Best Practice: Use cages made entirely of plastic or wire (stainless steel, galvanized, vinyl coated or wire mesh) for easy cleaning and good ventilation.

Good Practice: Use locally available materials; use them for only one week and discard them. Old cages should be disposed of properly by burning or burial.

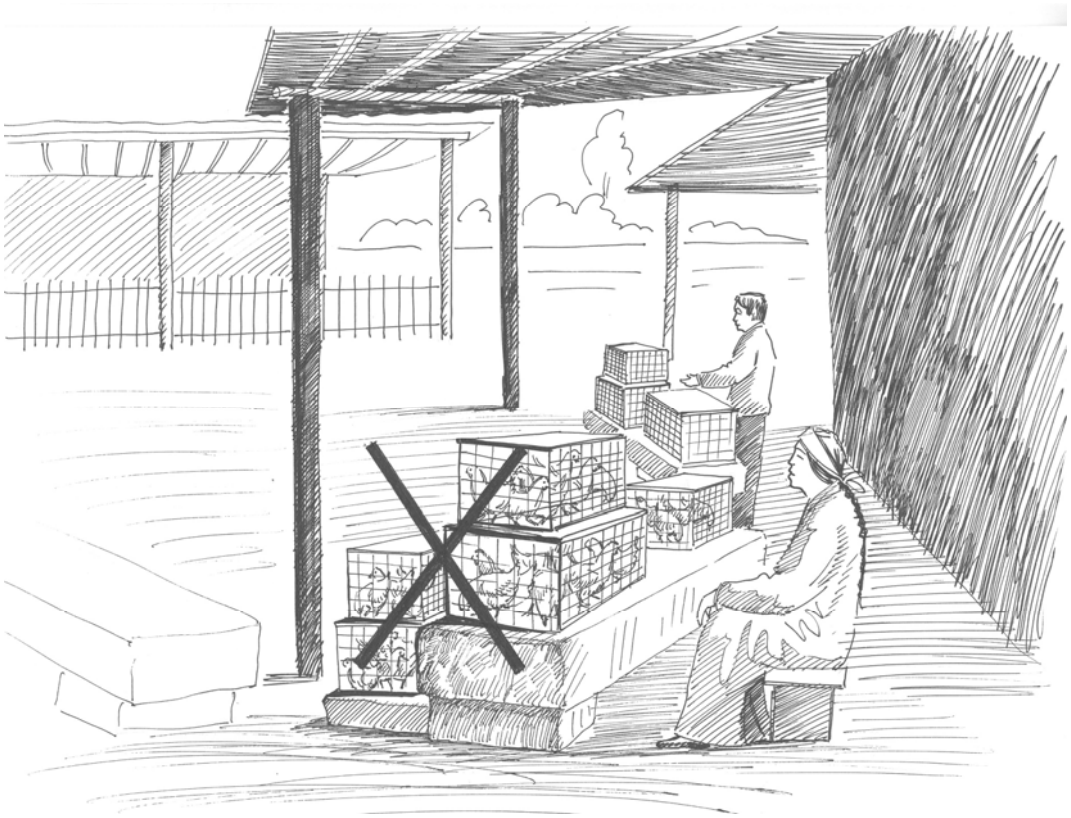

Figure 28: Do not stack cages on top of each other. Feces from top cages can fall on birds, water and feed in bottom cages.

- **Line the bottoms of all cages** with old newspaper or banana/plantain leaves for easier cleaning of manure build up.

- **Cages should have good feeders and water troughs** that need to be cleaned and filled regularly.

- **Buy feed from a good, reliable source.** Feed can be easily contaminated by viruses and other disease organisms.

- **Store feed in tightly sealed containers** to discourage the presence of rodents and other pests, and to prevent feed from degrading at high temperatures.

- **Sweep your stall** every day to keep it clean and free of manure and feathers, and clean feeders and water troughs.

- **Thoroughly clean your stall weekly**

    - Sell or slaughter all your birds by the end of the week.

- Clean the cages and feeding and watering equipment in an area away from people, animals, and food to minimize potential exposure to disease.
- Remove the newspaper/leaf liners from the bottom of the cages and dispose of them by burying or burning.
- Scrub the cages and equipment with soap and water to remove all dirt, feathers, bedding, blood, and excrement before disinfecting.
- Disinfect and dry under the sun. To disinfect, use either a locally available disinfectant such as Dettol (see Appendix K for a list of other disinfectants) or traditional soaps and ash.
- Baskets and cages made from local materials such should be burned and/or buried and replaced every week.
- Clean and disinfect the walls, counters or shelves, and floors of your stall.
- First scrub off any dirt, manure, etc. from top to bottom. Then sweep the floor.
- Disinfect all surfaces and allow them to dry before replacing the cages and other items.

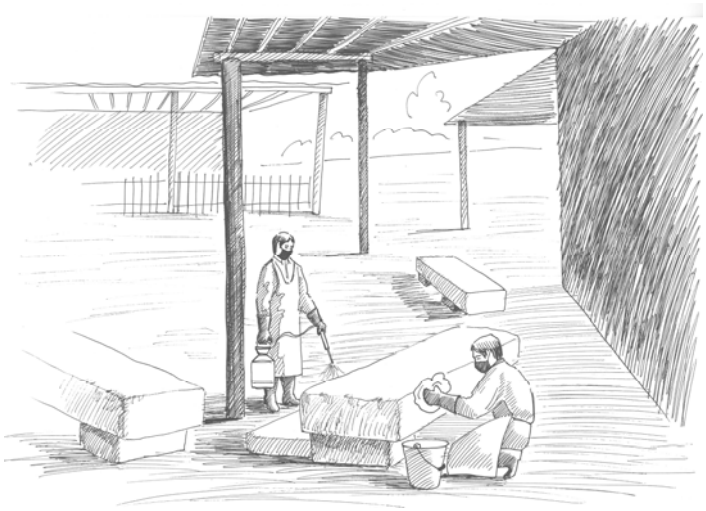

Figure 29: Workers cleaning and disinfecting their market stall.

LESSON 4.3 BIOSECURITY IN RURAL MARKETS

The following recommendations are for poultry sellers in rural poultry markets.

The most important rules to follow to protect yourself, your birds,
and your business from disease are:

NEVER BUY OR SELL SICK POULTRY
NEVER SELL THE CARCASSES OF DEAD POULTRY

1. Start with Healthy Birds

   - Only buy poultry from trusted sources that produce good stock and practice good biosecurity.

2. Be Alert for Illness

   - Separate birds that become sick from the rest of the birds.

   - Remove dead birds regularly. Burn or bury the carcasses.

3. Organize the Market

   - Keep poultry in a separate area from other livestock species and from areas where food is bought, cooked, or sold.

   - Confine all birds in cages. Do not leave them piled on the ground, tied to each other or to stakes.

     - The best cages to use are plastic or metal cages because they can be cleaned easily. The cages can be made of stainless or galvanized steel, or vinyl-coated or wire mesh.
     - If these kinds of cages are not available, local cages made from dried millet or sorghum stalks can be used.

   - Do not stack cages on top of each other. Manure from the top cages will fall into the lower cages, making the birds in lower cages both dirtier and more susceptible to disease.
   - Separate different species. Poultry should be separate from ducks, guinea fowl and pigeons.

4. Keep it Clean

- Wash your hands frequently with soap and water, especially after handling a bird during a sale.
- Sweep often to keep the area clean and free of manure and feathers.

- Line the bottom of the cages with large leaves (banana or plantain leaves) to protect the bottom of the cage from manure buildup. Change the leaves at the end of the market day and bury or burn the leaves.

- Clean and disinfect vehicles, bicycles, and animal-drawn carts used to bring the birds to market after each use.

    - Clean both the wheels and underside of the vehicle, and surfaces that have come in contact with birds or cages on the exterior and interior of the vehicle.
    - First scrub with soap and water to remove all dirt, feathers, bedding, blood, and excrement before disinfecting.
    - Then disinfect and dry under the sun. To disinfect, use either a locally available disinfectant such as Dettol (see Appendix K for a list of other disinfectants) or traditional soaps and ash.

- Clean and disinfect cages after they've been emptied of birds, at the end of the market day.

    - Use the same procedure described above for cleaning and disinfecting vehicles.
    - If you're using baskets or cages made from natural materials (wood, millet stalks), replace them at least once every two weeks and dispose of the old baskets/cages by burning or burying.

LESSON 5: BIOSECURITY PRACTICES FOR PEOPLE WHO MOVE BETWEEN FARMS

Special care must be taken by veterinarians, agriculture workers and company managers who must travel from farm to farm as part of their job. They should not visit more than 2 farms per day. If they visit a farm where the birds are sick, they should go home, bathe, change clothes and not visit another farm that day. They should take the following steps when entering and leaving a farm. As the farm owner, you have the right and the responsibility to ensure that all visitors follow the proper steps when coming onto your farm.

Park your vehicle (car, truck, motorcycle, bicycle) outside the farm and walk onto the farm. If it is necessary to drive onto the farm, disinfect the tires and undercarriage of the vehicle as soon as you arrive.

Best Practice: If there is a changing area at the farm, use it to wash your hands and feet and change into farm-supplied clothes. After visiting the farm, return to this area, wash your hands and feet, and change back into your regular clothes.

Good Practice: If a changing area is not available on the farm:

- Before getting out of the vehicle remove your watch, any jewelry and cell phone; leave them in the vehicle. Put on water-resistant shoe covers or boots. It is best to use disposable shoe covers, but rubber boots that can be disinfected prior to leaving the farm are also acceptable. If shoe covers or boots are not available, plastic bags can be used as boots.
- Step out/off of the vehicle and put clean coveralls on over your clothing. These should be disposable if HPAI is suspected; washable clean cloth coveralls are acceptable if no HPAI is suspected.
- If you need to collect samples, put collection materials in a clean plastic bag and then drop that plastic bag into another plastic bag to take with you onto the farm. Do not bring anything extra onto the farm.
- Leave a waste disposal bag and a clean plastic bag in the vehicle, in an easily accessible place. If rubber boots are being used, leave a bucket of water with disinfectant and a scrub brush ready near the vehicle.
- Enter the farm, following all biosecurity procedures established for that farm.

When finished at the farm, return to the vehicle.

- If rubber boots were worn, use water, disinfectant and a brush to remove all visible organic material and disinfect boots.
- If cloth coveralls were used, remove them and place them inside the clean plastic bag. Remove the inside bag containing the samples and place them in the clean plastic bag. Put the outside bag in the waste disposal bag.
- Tie the clean bag and then put it in the trunk of the car or back of the truck so that samples can removed later and coveralls can be cleaned for re-use.

- If disposable coveralls and shoe covers were used, place them in the waste disposal bag. Have the farmer burn them so they will not be re-used.
- If soap and water are not available on the farm, either bring your own soap and water in a container or bring your own hand sanitizer. To make hand sanitizer solution, mix alcohol and glycerin, at a ratio of 1:20, and keep it in a squeeze bottle. Squirt this mixture onto your hands to disinfect them before touching anything in the vehicle.

THE PERSONAL PROTECTIVE EQUIPMENT (PPE) KIT

Each PPE Kit includes:

1. Tyvek Coveralls

- Wear these coveralls to protect your skin and/or clothing against contamination when in contact with chicken droppings, dust from chicken droppings, or animal fluids such as blood, saliva, and mucous. The coveralls reduce the chance of spreading the avian influenza virus to other farms or from one person to another via their clothing.
- The man-made material Tyvek is water resistant, so even if the coveralls get dirty or wet, they will still protect you.
- You can wear your regular shoes and clothing under the coveralls.

2. Shoe Covers

- Because avian influenza can be easily spread by contaminated shoes, it is important to put as many layers of protection as possible between the ground and your feet.
- These covers fit over your coverall feet, giving you another layer of protection.

3. N-95 Respirator

    - This equipment protects you from inhaling the avian influenza virus into your nose and lungs. Often respirators are called "masks," but the respirator in your kit is **not a mask.**

4. Goggles

    - Goggles protect your eyes from splashes and liquids.
    - They should fit snuggly over and around your eyes.
    - The goggles in your PPE Kit are adjustable to ensure the best fit.
    - Personal glasses are not a substitute for goggles; if you wear eye glasses, the goggles should be placed over them.

5. Aprons

    - These fit over the coveralls to give you an added layer of protection.

6. Gloves

    - The PPE Kit contains non-sterile gloves made of nitrile that will protect your hands.
    - There are two pairs of gloves in the kit, a white or clear pair and a pair that is usually of a different color.

7. Germicidal Wipes

    - Use these wipes to clean your outer gloves before removing them.

8. Alcohol Wipes

    - Use these wipes to clean skin that may have accidentally been contaminated.

9. Infectious Waste Bag

    - This bag is used for disposing of contaminated PPE items.
    - As soon as you remove a contaminated item, place it in the infectious waste bag.
    - Tie the bag at the top and take it to your work supervisor for proper burial.

IMPORTANT THINGS TO REMEMBER

WEARING PPE

Workers have said that wearing PPE can sometimes make the job more difficult to accomplish because they can be cumbersome, hot, or uncomfortable. However, they also know that when properly used, this equipment will prevent them from becoming infected or from spreading the virus to other farms or people, especially the people they care most about. Remember that:

- All of the items supplied in the PPE Kits are disposable and are designed to be used only once. Do not reuse any PPE or wash it for reuse – reuse could infect you or someone else.

- Do not use, or provide N-95 respirators to others, without instruction on the health risks associated with them. For example, workers with poor lung function may not be able to wear these respirators.

- If you can, do a fit test to make sure no particles can get through. A video on test fitting is available for viewing.

- Always wear the respirator when you are working; don't hang it around your neck.

- If any piece of PPE is torn or becomes dirty, change it immediately.

- A designated area for putting on PPE should be identified. It should ideally be a clean area away from birds or any other potentially contaminated equipment, such as cages, crates or farm tools. All personnel should use this area to put on their PPE.

DISPOSING OF PPE

- An area for removing PPE should be identified. Ideally, this area will be away from the area that has recently been depopulated and/or decontaminated. All personnel should use this area to remove their PPE.

- Remove all of your PPE and discard them before taking a break. Put on a new set after the break.

- Immediately after using PPE, place them in the red plastic bag provided in the PPE Kits.

- The red plastic bags should be sealed and disposed of properly. Follow the instructions of the local officials or person supervising the work on where to place red infectious waste bags when they are full.

LESSON 6: BIOSECURITY PLANNING FOR FARMS AND MARKETS

The regular and consistent practice of biosecurity is necessary to effectively prevent disease from entering your farm or market. Creating a biosecurity plan that is specific to your farm or market – its size, structure, and stock – is essential to ensure the safety of your farm or market.

Because every person who works on the farm or market plays a role in maintaining biosecurity, it is important to make sure that everyone is involved in the development of the biosecurity plan.

It is helpful to form a small group of people to guide the process, preferably led by the farm or market manager. They should gather input from people working at each point in the production process at the farm, or in the different functions at the market. The initial design of a biosecurity plan should include expert input from veterinarians.

Here is a suggested process for developing a biosecurity plan:

1. Define the Objectives

It is important to be clear about what the biosecurity plan is going to be designed to accomplish. Generally, the objectives of a biosecurity program are to:

- Minimize the risk of the introduction of diseases
- Prevent the spread of disease from an infected area to an uninfected area.

However, it may not be practical to control all disease from entering the farm or market (such as coccidiosis), so you might want to define which disease(s) you will focus on in your plan. Choose the diseases that pose the greatest threat to the health and productivity of your flocks and the economic health of your farm/market, such as HPAI.

2. Assess Risks

The next step is to conduct a risk assessment to determine the conditions present that may increase the risk of disease.

Use the risk assessment checklist to identify the risks (Checklist A for commercial farms and Checklist B for live bird markets). Distribute the checklist to several people, preferably workers with different functions on the farm or at the market, and ask them to walk around and make observations while completing the checklist.

After completing the checklists, come together as a group and compare your assessments, and agree on the top-10 risks facing your farm or market.

3. Establish Biosecurity Procedures

Best Practice: Standard operating procedures (SOPs) are useful to document specific biosecurity procedures to be followed. They are particularly helpful for training new staff or sellers and ensuring that your efforts are consistent.

The group responsible for developing the biosecurity plan, with the help of selected workers and the advice of a veterinarian, should prepare SOPs to respond to the 10 biggest risk factors you identified. The final SOPs should include detailed information and a written protocol that specifies what will be done, by whom, where, and when (see Appendix I for an SOP template).

As you go through the process of developing SOPs, be sure to consider what obstacles you're likely to face when implementing these biosecurity measures, and what options you have for overcoming these obstacles. The effort of developing SOPs will be wasted if your workers or market sellers cannot or will not comply with the procedures due to time and resource constraints, or lack of knowledge.

Good Practice: The group assigned the task of developing the biosecurity plan should write down simple methods that people can use to eliminate or minimize the biggest risk factors.

Biosecurity Plan

1. Field Personnel

A. Field personnel should avoid entering poultry houses whenever possible.

B. Required to wear clean clothes and shoes when arriving to the farm.

C. All employees will wear designated protective coveralls, footwear, hair covering, and will sanitize their hands before entering the farm.

D. Vehicles are to be parked off-farm in the designated parking site. Vehicles will be completely washed and thoroughly disinfected upon entering the farm.

E. Interiors of farm vehicles operated by supervisors and/or farm employees are to be kept free of debris and are disinfected upon leaving one farm and entering another.

2. Farm Employees

A. Required to wear clean clothes and shoes when arriving to the farm.

B. All employees will wear designated protective coveralls, footwear, hair covering, and will sanitize their hands before entering the farm.

C. Vehicles are to be parked off-farm in the designated parking site. Vehicles will be completely washed and thoroughly disinfected upon entering the farm.

D. All farm personnel are assigned to one farm only.

E. Farm personnel are not allowed to own or possess any live poultry and/or birds of any kind.

F. All family members of farm personnel are required to practice the same biosecurity rules practiced by farm managers.

G. Farm personnel are not allowed to visit any other poultry operation or location where poultry is raised or sold.

H. All traffic entering the farm must be disinfected regardless of the purpose of the visit and can be allowed entry onto the farm only if they meet the standards mentioned above.

I. All employees are trained quarterly in biosecurity. All company employees understand the consequences of coming into contact with poultry/birds off-farm. Employees will clean and disinfect their vehicles and footwear, launder their clothes, shower, and wear different clean clothing and footwear to work the next day.

3. Equipment

A. All equipment used is cleaned and stored after use. Any equipment brought onto the farm from an outside source is cleaned and disinfected prior to use on the farm.

B. In the event that two or more farms utilize the same equipment, it is cleaned and disinfected before leaving the initial farm and disinfected again upon entering the second farm.

4. Outside personnel (Visitors)

A. All personnel involved or uninvolved with the operations of XYZ Farm are considered as possible disease vectors and are instructed in the practice of biosecurity procedures followed by XYZ Farm prior to entering any farm. See attached visitor policy.

5. Pests

A. XYZ Farms uses rodenticide baited traps that are serviced monthly. Logs are kept of the rodents trapped on the farm.

B. Attractants for wild birds (standing water, spilled feed, and carcasses) are removed as soon as possible.

6. Flock replacement

A. Houses are fully cleaned and disinfected when a flock is removed.

B. Houses remain empty at least 1 week after they fully cleaned and at least 2 weeks before a new flock is housed.

4. Train Staff

Training is an important part of understanding and implementing the biosecurity plan.

Best Practice for Commercial Farms: All company personnel involved with livestock, growers, livestock contractors and suppliers should undergo at least annual training sessions on the farm's biosecurity procedures.

Once the SOPs are completed, conduct training for all staff on how to implement them.

Good Practice for Commercial Farms: All company personnel should gather together at least once a year to discuss the biosecurity plan. At that time, comments from workers concerning areas that need improvement or awareness of additional risk should be discussed. Agreement should be reached on how the risks will be eliminated.

New workers should be trained by supervisors on proper biosecurity practices and should be assigned to work with a more experienced worker to further reinforce the earlier training.

Best Practice for Live Bird Markets: All stall operators should be required to participate in an annual biosecurity class in order to receive and renew their license to sell poultry.

Good Practice for Live Bird Markets: Once a year gather together all the stall operators in the market to discuss the biosecurity plan. Ask for input from the sellers and discuss any concerns they have about the procedures.

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5. Monitor the Effectiveness of the Biosecurity Plan

- Your farm or market's biosecurity plan should be continuously evolving – animal diseases and the local environment are always changing, and so you must regularly evaluate whether your current biosecurity procedures are still effective.
- Monitor the effectiveness through regular HPAI surveillance and testing.
- The farm/market manager(s) should continually evaluate all areas of operation under their direction.
- The on-going input of the farm's staff and market sellers is very important for the success of the plan.
- Periodically – for instance, quarterly – conduct an audit of the plan to see if the procedures are being used as planned. Use these audits to determine if modification of specific SOPs or if additional staff/seller training is necessary.

BIOSECURITY PLANNING

Follow the steps below to complete this exercise.

	EXERCISE 2: BIOSECURITY PLANNING
I	**Describe** In this exercise, you will be evaluating the biosecurity efforts of a specific setting and creating a plan for improvements. With your group, choose the setting that you will use for this exercise: commercial farm, smallholder farm, or live bird market. Discuss characteristics of a typical setting in Georgia (you may choose a farm that you work with). **Description** of the setting your group will evaluate:

	EXERCISE 2: BIOSECURITY PLANNING (CONTINUED)	
2	**Evaluate** Look at the biosecurity measures listed in the *Participant Manual* for your type of setting. In the columns below, indicate which measures are currently observed and which have not been implemented yet.	
	Measures currently implemented	Measures not currently implemented
3	**Prioritize** As a group, discuss the relative importance and impact of each of the measures which are not currently implemented. Identify the three measures that you think should be addressed first. 1)_____ 2)_____ 3)_____	

	EXERCISE 2: BIOSECURITY PLANNING (CONTINUED)
4	**Analyze** Identify any likely or potential obstacles that might be faced when implementing the measures your group selected. Then, for each potential obstacle, identify options that would help overcome it.

Potential obstacles	Options for overcoming obstacles

5	**Plan** Describe, as thoroughly as possible, the steps necessary to implement your top three measures successfully. 1)_____ 2)_____ 3)_____
6	**Review and Revise** Note that in the "real-world," you should review your biosecurity compliance often and evaluate how successfully you implemented new measures. Once new measures are in place, go through the steps again to identify additional areas for improvement.
7	Be prepared to share your answers with the group.

CHECKLIST A
COMMERCIAL FARM RISK ASSESSMENT CHECKLIST

The purpose of this form is to determine conditions present on the farm that may increase the risk of introducing or spreading disease.

In the risk level column, quantify the level of risk of each factor as Very Risky (+++), Risky (++), or Mildly Risky (+).

Risk Type	Yes	No	Risk Level	Comments
A. Environment				
1. Important infectious disease (endemic or exotic) present in the area				
2. High farm density in the area				
3. Larger poultry farm located within 750 meters of this poultry farm				
4. Presence of a backyard flock within 400 meters of this farm				
5. This poultry farm located within 3 km of a poultry slaughter place (wet-market, plant, etc.)				
6. Presence of a pond, stream or dam on the farm or in very close proximity				
7. Poultry house very close to the road (less than 50 meters)				
8. Farm located along a main busy road				
9. Manure piled or spread near poultry houses				
10. Dense vegetation comes to the edge of poultry houses				
11. Piles of equipment and construction material abandoned near the poultry houses				
12. Feed spill or feed from previous flock discarded near poultry houses				
13. Non-poultry farms (swine, cattle/buffalo, goats) nearby				
B. Farm Characteristics				
1. Free access to poultry houses (absence of doors, screens or locks)				
2. Free access to the farm (absence of gate, fence, or signs)				
3. Free range commercial poultry (chickens or ducks)				
4. Birds of two different age groups in the same building at the same time				
5. Several flocks of different ages on the same farm				
6. Poultry houses oriented so that air flow goes from one building to another				
7. Untreated surface water of dam, lake, or creek used for drinking				

Risk Type	Yes	No	Risk Level	Comments
8. Untreated ground water used for drinking				
C. Flock Characteristics				
1. Breeder flock health status unknown				
2. Flock composed of chicks from multiple breeder flocks				
3. More than one hatchery used to populate a flock				
D. Wild Birds				
1. Wild birds able to enter the poultry house				
2. Wild birds able to enter feed storage area				
E. Pets				
1. Dogs and cats present on the farm				
2. Dogs and cats on farm have access or are fed poultry carcasses				
F. Other Farm Animals				
1. Other farm animals like pigs, cattle, buffalos, goats, etc., raised on the poultry farm				
G. Pests				
1. Rat and/or mice infestation				
2. Fly infestation				
3. Other insect infestation				
H. People (Farm employees includes owners, managers, veterinarians and other workers)				
1. Farm employees also own poultry				
2. Farm employees own pet (exotic) birds				
3. Farm employees hunt wild birds				
4. Farm employees walk through a village, where there are loose poultry, on their way to work				
5. Family of farm employees own birds or work at another poultry farm				
6. Farm employees visit homes of relatives or friends who own poultry farms				
7. Friends and other visitors permitted on the farm				
10. Visitors to the farm are not required to sign log book, or are not asked if they visited another poultry farm prior to their visit				
I. Vehicles				
1. Cars and trucks parked too close to poultry houses (less than 30 meters)				
2. Farm vehicles go off farm				
3. Farm employee rides between two or more houses or farm units in feed, egg, or chick truck				
4. Farm vehicles used for more than one purpose (carrying manure and feed, etc.)				
5. Vehicles are not disinfected before entering the farm				
6. Feed truck or chick delivery driver allowed out				

Risk Type	Yes	No	Risk Level	Comments
of truck				
J. Management				
1.Records of flock mortality, medications, vaccinations, eggs produced, and feed consumed are maintained daily.				
2. On farms with flocks of several ages, people go from house to house without consideration of flock age or flock health status				
3. Some birds are left in poultry house when most are removed for slaughter				
4. Usually only a portion of the birds in a house are removed for slaughter at one time				
5. The time between removal on one flock, cleaning and disinfection and placement of the next flock (downtime) is short (less than 10 days)				
K. Hygiene				
1. Farm-specific footwear is not provided for employees				
2. Farm-specific clothing is not provided for employees				
3. Visitors not provided with farm-specific footwear and clothing				
4. Visitors not provided with head covering (cap) or respirators/face masks				
5. Hand washing is not required before and after handling birds, eggs, feed etc.				
6. Showers are not available on farm, or no shower is taken before entering the farm				
7. Footbaths are not available at the entrance to poultry buildings				
8. Footbaths are available, but filled with old disinfectant and dirt				
9. Poultry houses not disinfected between two flocks				
10. Outside equipment brought on farm without cleaning and disinfection				
L. Feed				
1. Feed shed accessible to rodents or wild birds				
2. Feed can get wet in storage room and feed pan				
M. Dead Bird Disposal				
1. Central location for dead bird disposal used by several poultry growers				
2. Dead birds stockpiled prior to burial/burning allows access to: pests (rats, flies) pets (dogs, cats) wildlife (foxes, crows)				

Risk Type	Yes	No	Risk Level	Comments
3. Dead birds left inside the poultry house for many hours				
4. Cart or truck used for dead bird disposal not disinfected every day				
N. Any Other Risk Factors Present on Farm that are Not on this List				

COMMENTS AND NOTES:

CHECKLIST B

SMALL HOLDER FARM RISK ASSESSMENT CHECKLIST

The purpose of this form is to determine conditions present on the farm that may increase the risk of introducing or spreading disease.

In the risk level column, quantify the level of risk of each factor as Very Risky (+++), Risky (++), or Mildly Risky (+).

Risk Type	Yes	No	Risk Level	Comments
A. Environment				
1. Important infectious disease (endemic or exotic) present in the area				
2. High farm density in the area				
3. Larger poultry farm located within 750 meters of this poultry farm				
4. Presence of a backyard flock within 400 meters of this farm				
5. Poultry farm located within 3 km of a poultry slaughter place (wet-market, plant, etc.)				
6. Presence of a pond, stream or dam on the farm or in very close proximity				
7. Poultry house very close to the road (less than 50 meters)				
8. Farm located along a main busy road				
9. Manure piled or spread near poultry houses				
10. Dense vegetation comes to the edge of poultry houses				
11. Piles of equipment and construction material abandoned near the poultry houses				
12. Feed spill or feed from previous flock discarded near poultry houses				
13. Non-poultry farms (swine, cattle/buffalo, goats) nearby				
B. Farm Characteristics				
1. Poultry houses have not locks or doors				
2. Farm has not gate, fence or signs				
3. Farm has free range poultry (not kept indoors)				
4. Birds of two different age groups in the same building at the same time				
5. Flocks of different ages on the same farm				
6. Untreated surface water of dam, lake, or creek used for drinking				
7. Untreated ground water used for drinking				
C. Flock Characteristics				
1. More than one hatchery used to populate a flock				

Risk Type	Yes	No	Risk Level	Comments
D. Wild Birds				
1. Wild birds able to enter the poultry house				
2. Wild birds able to enter feed storage area				
E. Pets				
1. Dogs and cats present on the farm				
2. Dogs and cats on farm have access or are fed poultry carcasses				
F. Other Farm Animals				
1. Other farm animals like pigs, cattle, buffalos, goats, etc., raised on the poultry farm				
G. Pests				
1. Rat and/or mice infestation				
2. Fly infestation				
3. Other insect infestation				
H. People (Farm employees includes owners, managers, and other workers)				
1. Farm employees also own poultry				
2. Farm employees own pet (exotic) birds				
3. Farm employees hunt wild birds				
4. Farm employees walk through a village, where there are loose poultry, on their way to work				
5. Family of farm employees own birds or work at another poultry farm				
6. Farm employees visit homes of relatives or friends who own poultry				
7. Friends and other visitors permitted on the farm				
10. Visitors to the farm are not required to sign log book, or are not asked if they visited another poultry farm prior to their visit				
I. Vehicles				
1. Cars and trucks parked too close to poultry houses (less than 10 meters)				
2. Farm vehicles used for more than one purpose (carrying manure and feed, etc.)				
3. Vehicles are not disinfected before entering the farm				
4. Feed truck or chick delivery driver allowed out of truck				
J. Management				
1.Records of flock mortality, medications, vaccinations, and eggs produced, are maintained daily.				
2. On farms with flocks of several ages, people go from house to house without consideration of flock age or flock health status				
3. Usually only a portion of the birds in a house are removed for slaughter at one time				

Risk Type	Yes	No	Risk Level	Comments
4. The time between removal on one flock, cleaning and disinfection and placement of the next flock (downtime) is short (less than 10 days)				
K. Hygiene				
1. Farm-specific footwear is not provided for employees				
2. Farm-specific clothing is not provided for employees				
3. Visitors not provided with farm-specific footwear and clothing				
4. Hand washing is not required before and after handling birds, eggs, feed etc.				
5. Footbaths are not available at the entrance to poultry buildings				
6. Footbaths are available, but filled with old disinfectant and dirt				
7. Poultry houses not disinfected between two flocks				
8. Outside equipment brought on farm without cleaning and disinfection				
L. Feed				
1. Feed shed accessible to rodents or wild birds				
2. Feed can get wet in storage room and feed pan				
M. Dead Bird Disposal				
1. Central location for dead bird disposal used by several poultry growers				
2. Dead birds stockpiled prior to burial/burning allows access to: pests (rats, flies) pets (dogs, cats) wildlife (foxes, crows)				
3. Dead birds left inside the poultry house for many hours				
4. Cart or truck used for dead bird disposal not disinfected every day				
N. Any Other Risk Factors Present on Farm that are Not on this List				

CHECKLIST C
BIOSECURITY CHECKLIST FOR BIRD MARKETS

The purpose of this form is to determine conditions present in the bird market that may increase the risk of introducing and spreading disease.

In the risk level column, quantify the level of risk of each factor as Very Risky (+++), Risky (++), or Mildly Risky (+).

Risk Type	Yes	No	Risk Level	Comments
A. Isolation and Traffic Control				
1. Market located in a larger municipal market				
2. Market fenced to separate it from other areas in the large market				
3. Entry and exit doors separate				
4. Unloading area for trucks				
5. Sellers have distinct booths				
7. All birds in cages				
9. Cages made of plastic or metal (easy to disinfect)				
B. Management				
1. Sales and mortality records maintained				
2. Marketing license required				
3. All birds stay at market or are sold/slaughtered at the end of the day (none return home)				
4. Birds sold live				
5. Birds slaughtered and processed at market				
6. Birds separated by species in cages or pens				
7. Waterfowl present in market				
8. Sick birds removed to separate cages				
9. Cages are not stacked				
10. Cages are lined with paper or other material				
11. Clean feed and water provided				
12. Feed stored in airtight and				

Risk Type	Yes	No	Risk Level	Comments
rodent-proof containers				
13. Stray cats and dogs are not present in market				
19. Other livestock species in market				
20. Rodent control program in place at market				
C. Sanitation				
1. Clean clothing or uniforms worn by sellers				
2. Water is available for hand washing by sellers and buyers				
3. Waterers and feeders in pens and cages are kept clean				
4. Permanent pens are cleaned and disinfected at least once a week				
4. Cages are cleaned and disinfected before returning to sellers farm/home				
5. Proper disposal of dead birds is provided on-site				
6. Proper disposal of feathers, manure, offal and other organic material provided on-site				
N. Any Other Risk Factors Present on Farm that are Not on this List				

STANDARD OPERATING PROCEDURE DESCRIPTION

Standard Operating Procedures (SOPs) describe how you wish a procedure to be done on your farm or at your market. For some SOPs, the steps may be identical for all farms/markets; others will vary widely. For that reason, these documents must be prepared for each farm or market to reflect the needs and conditions of that particular farm or market.

Below is a template you can use to develop your own SOPs.

Standard Operating Procedure Number: (Usually numbered by category 1.1 to 1.10 might be for cleaning and disinfection, 2.1-2.6 might be for employee biosecurity, etc.

Farm Name:

Title: [Give the SOP a title. For example, Farm Entry Protocol.]

Date: [Enter the date this SOP was written.]

Replaces: [If this is a new SOP, write "New;" if it is a revised SOP, enter the date of the previous one.]

Responsibility: [Type in the names or positions of the people who will be responsible for supervising and doing these procedures.] Example: The gate attendant is responsible to make sure that all employees and visitors change into farm shoes as they enter the farm gate. The gate attendant will notify the farm manager if there are not enough farm shoes available, if replacements are needed due to sizes unavailable. The gate attendant is responsible for collecting and disinfecting all farm shoes when employees and visitors leave for the day.

Objective: [Employees responsible for carrying out the SOP will have a much better understanding and will do a much better job at their tasks if they understand the reasons for doing it. This also keeps the document focused on one specific purpose.] Example: This SOP is intended to prevent diseases such as avian influenza from being carried onto the farm on employee and visitors shoes and clothing.

Procedures: [Enter the procedures in a step-by-step manner, like writing a recipe. This makes the procedure clear and concise, improving compliance. Write the procedures in the simplest terms, without compromising the spirit of the objective. Also, make sure each step put in this section meets with the objective.] Example below:

1. Rubber farm shoes in sizes small, medium, large and extra large will be provided at the farm gate by the gate attendant.
2. Upon crossing into the farm, all employees and visitors much exchange their shoes for farm shoes.
3. Upon leaving the farm the gate attendant will collect farm shoes, return street shoes to the owner and place the farm shoes in the dirty area.
4. The gate attendant will clean and disinfect all shoes in the dirty area at least once each day, and return them to the clean area, so that they are dry and available for the next day.
5. The gate attendant will clean and disinfect the entry area and dirty area at least once each day or whenever it becomes visibly soiled.

STANDARD OPERATING PROCEDURE TEMPLATE

Standard Operating Procedure Number:

Farm Name:

Title:

Date:

Replaces: New or Revision

Responsibility:

Objective:

Procedures:

APPENDICES

APPENDIX A
SAMPLE COMMERCIAL FARM EMPLOYEE TRAINING LOG

Name	Farm	Employment Date	Type of Training	Trainer
	Black Star	03 Feb 99	Biosecurity Principles	

APPENDIX B
SAMPLE FARM VISITOR LOG SHEET

Name	Date	Farm/Facility Visited	Reason for Visit	Last Poultry Farm Visited / Date
A. Stefanovski	04 Aug 08	Athens Star Farm	Meet with supervisor	Fulton's Fine Poultry / 20 Jul 08

APPENDIX C
SAMPLE FLOCK HEALTH RECORD

Record the number of **dead birds/culls picked up each day**. In the comments section, note any vaccinations given along with the method of vaccination (feed, water, injection).

								Inventory	
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week Total	Start 15,000	Comments
	10/2	12/4	15/2	11	10/8	9/4*	107	14,793	*started vitamins in water

APPENDIX D
WASTE DISPOSAL METHODS

Carcasses and other wastes can be safely disposed of using three methods:

- Incineration – Best practice
- Burning in a pit or above ground – Good practice
- Burial – Good practice

1. INCINERATION

Incineration is a waste treatment technology that uses high heat to destroy organic material and change it into ash, gas and heat. The ash generated still has to be buried, but incineration reduces the amount of material to be buried by about 95%. Incinerators are operated according to laws set by government agencies dealing with the environment.

> Environmental concerns: Incinerators produce certain gases such as dioxin that are dangerous for human health, so their use is very controversial. Many countries have gas emission standards that have to be observed. Newer models of incinerators emit very little gas and have meters that also record small emissions. The same environmental concerns apply to surface and pit burning, but with the added disadvantage that gas emissions cannot be measured adequately. Sites for burning must be located away from the market.
>
> It is important to:
>
> - Register incinerators with Ministry of Environment
> - Install equipment to monitor emissions
> - Keep records of incinerator emissions

2. BURNING

Carcasses can be burned to ashes in a pit or flat surface before final burial. Like incineration, it reduces the amount of material to be buried. To prepare the fire bed, you will need an area about 2.4 meters x 0.9 m (8 x 3 ft) for every 100 chickens. Carcasses are placed on an amount of fuel – such as firewood – that is enough to reduce everything to ashes.

Do not use fuels such as gasoline, kerosene, or other highly flammable materials!

These cause a fire that can quickly get out of control!

3. BURIAL

A burial pit for 100 chickens should be at least 2.3 m wide and 3 m deep (7 x 9 ft). After the carcasses are buried, the pit should be covered with at least 2m (6 ft) of soil to prevent scavengers from digging out the carcasses. The covering soil should not be compacted. Decomposition and gas

formation cause cracking, bubbling and leaking of fluids from a compacted burial site. The soil should be mounded and graded.

Environmental concerns: It is important to locate burial sites as far away from a market as possible. Potential impacts of burying carcasses are:

- Contamination of groundwater
- Contamination of surface water
- Nuisance odors
- Contact with disease vectors.

To protect drinking wells, the burial site should be at least 152 m (500 ft) from the nearest public well and 45.7 m (150 ft) from the nearest private well.

To protect surface water, the burial site should be 15.2 m (50 ft) from the nearest stream or river.

APPENDIX E
LIVE BIRD MARKET WEEKLY MORTALITY RECORD SHEET

MARKET NAME:_____ MUNICIPALITY: _____
WEEK DATE _____
Seller's name:
Seller's address:
Seller's mobile phone #:

Day/Date	Cage Number	Total Birds	Number Dead	Total Dead	Comments
Sunday					
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					

APPENDIX F
DISINFECTANT GROUPS

Chemical Group	Examples
Oxidizing agents	Hydrogen peroxide Virkon®
Alcohols	Isopropyl Ethanol
Halogens	Betadine (iodine) Sodium hypochlorite (bleach)
Acids	Acetic acid
Phenolics	Lysol Tek-Trol Dettol
Quaternary Ammonium	Roccal Quatracide
Coal Tar Distillates	Cresol Cresolic Acid
Aldehydes	Glutaral Glutaraldehyde Formaldehyde

APPENDIX G
COMMON DISINFECTANTS

Product	Dilution	Mixing Instructions	Comments
5.25% Sodium hypochlorite (NaOCl) household bleach	3%	Add 11liters (3 gallons) of chlorine bleach to 8 liters (2 gallons) of water; mix well	
Virkon®	1%	10g Virkon powder to1 liter water	Virkon-S
Acetic acid	4-5%	192 ml (6.5 fluid ounces) to 4 liters (1gallon) water: mix well	Vinegar is a 4% solution of acetic acid

Source: The Ohio State University Extension Factsheet

REFLECTIONS AND NOTES

REFLECTIONS AND NOTES

TRAINING OF TRAINERS

MODULE PURPOSE

To introduce the key concepts in behavior change, how adults learn and effective tools for delivering training to learners.

MODULE OBJECTIVES

At the conclusion of this module, participants will be able to:

- Describe the elements and value of the Experiential Learning Cycle and how it applies to training adult learners;
- Plan and deliver organized training sessions which are crafted to a specific audience;
- Use a core set of facilitation skills to conduct training sessions and on the key ideas and concepts from the STOP AI Biosecurity Course.

BEHAVIOR CHANGE

- Think of a time when you wanted to change your own behavior.

- What was hard about it?

- What helped you change your behavior?

- What got in the way?

WHAT DO PEOPLE NEED TO BE AWARE OF TO MOTIVATE BEHAVIOR CHANGE?

- What's in it for me?
  - Remember, it is all about your audience, whether you are delivering a simple message or full scale training. They are constantly wondering how the information you are sharing pertains to them. Ask questions, do a quick "needs assessment," and find out what their interests and concerns are so that what you are offering them is relevant. Make it clear upfront how this information is beneficial to them and keep repeating the message!

- Recognize and Articulate the Return
  - Also be sure to tell them about the returns or incentives; this will get them interested in what you have to say. As much as you can, make this very personal – to get the message across to any audience, you need to invest the time in getting to know them.

- Articulate the Risks
  - Similar to returns, you want to be very upfront about the risks involved. This includes the risks of not implementing what you are asking them to as well as acknowledging the risks they may encounter if they do take action. Make sure you talk openly about the risks and how, if possible, they can be mitigated.

- Counter their concerns or fears with examples and stories of the benefits of change.
  - Your best tool is to have stories or examples of success. Know upfront what the concerns of others might be and be prepared to share these successes. In addition, collect stories and examples for others to enhance the messages you are trying to get across. Also, be sure to draw from the successes of your audience – perhaps the most powerful tool of all.

- Experience (Build on it and Create it)
  - Experience is the richest resource for adult learning. Therefore, the core methodology for adult learning (or even just great discussions) involves active participation in a planned series of experiences, the analysis of those experiences, and their application to work and life situations. In addition, for the training or discussion to be successful, participants need to be able to see connections between their past experiences and this new information to make sense of how to bring change to their work and/or life.

- It Takes Small Steps First
  - Behavior change is no simple task, but it can be more manageable if you focus on the small steps people can take to get started. As you talk about behavior change,

ask people to consider which steps are both easy and important for them to take (1-3 steps at most). Encourage people to commit to taking these steps immediately and to sustain their commit to those tasks before moving onto other steps (it takes 30 days to form a habit!).

FUNDAMENTAL ASSUMPTIONS ABOUT ADULT LEARNERS[1]

1. Adults are motivated to learn as they develop needs and interests that learning will satisfy. Therefore, learners' needs and interests are the appropriate starting points for organizing adult learning activities - and the critical guideposts for delivering training.

2. Adult orientation to learning is life- or work- centered. Therefore, the appropriate frameworks for organizing adult learning are life- and/or work- related situations, not academic or theoretical subjects.

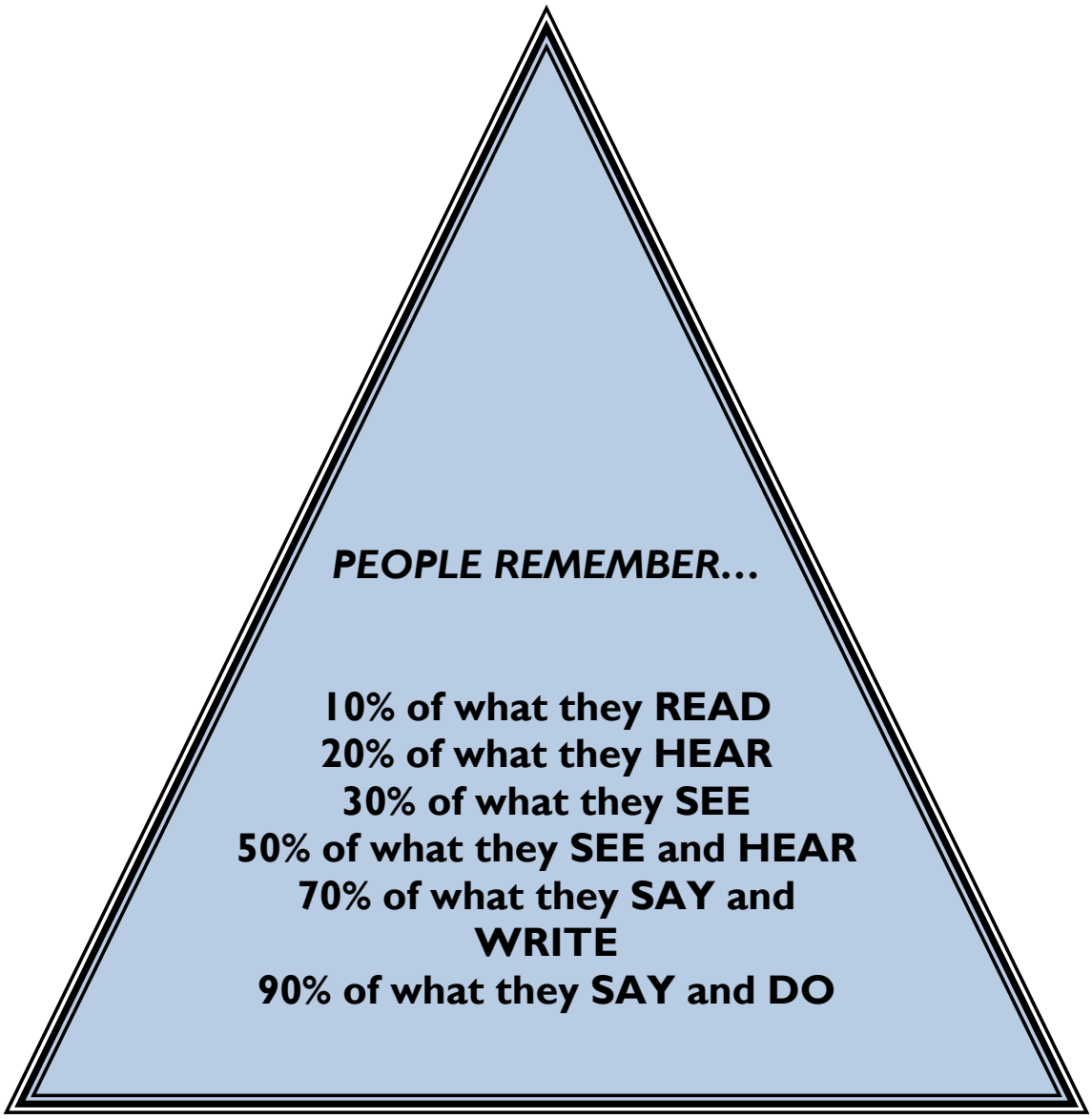
3. Experience is the richest resource for adult learning. Therefore, the core methodology for adult learning involves active participation in a planned series of experiences, the analysis of those experiences, and their application to work and life situations.

4. Adults have a deep need to be self-directing. Therefore, the role of the trainer is to engage in a process of inquiry, analysis and decision-making with learners, rather than to transmit his or her knowledge to them and then evaluate their conformity to it.

5. Individual differences among adult learners increase with age and experience. Therefore, adult learning programs must take optimum provision for differences in style, time, place and pace of learning.

[1] These assumptions are distilled from the major works of Malcolm Knowles, an important early contributor to our understanding of andragogy. These works include: *The Adult Learner: A Neglected Species* (Houston: Gulf Publishing Co., 1978) and *The Modern Practice of Adult Education: From Pedagogy to Andragogy* (Chicago: Follett Publishing Co., 1980).

DALE'S CONE OF EXPERIENCE

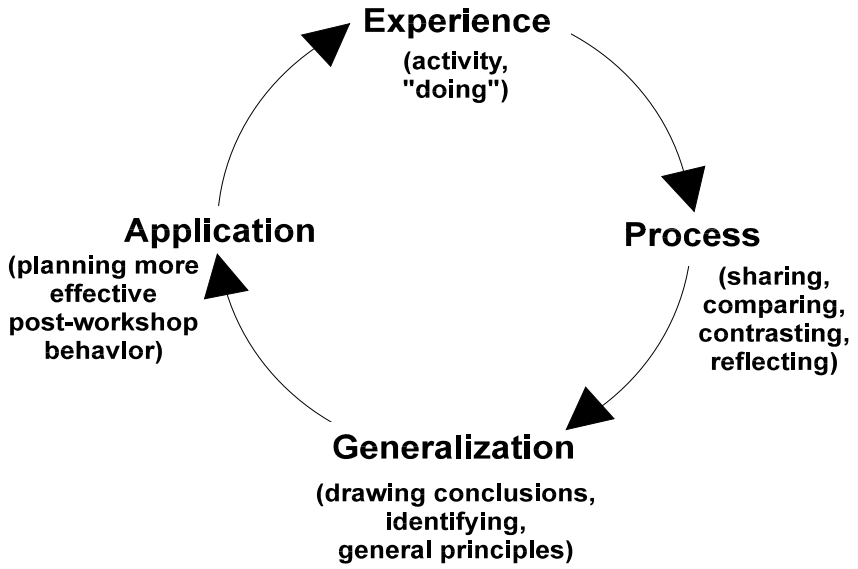


THE EXPERIENTIAL APPROACH TO TRAINING [2]

By: James A. McCaffery

Experiential learning is exactly what the name implies -- learning from experience. The experiential approach is learner-centered and allows the individual trainees to manage and share responsibility for their own learning with their teachers. Effective training strategies that incorporate experiential learning approaches provide opportunities for a person to engage in an activity, review this activity critically, abstract some useful insight from the analysis, and apply the result in a practical situation (Gudykunst and Hammer, 1983, provide a brief historical review of the experiential approach.)

A graphic representation of the model is presented below and may be applied to training in the following ways:



Experience

The experience phase is the initial activity and the data-producing part of the experiential learning cycle. This phase is structured to enable participants to become actively involved in "doing" something. Doing, in this instance, has a rather broad definition, and includes a range of activities like the following:

- case studies
- role plays
- simulations
- games
- lecturettes
- films and slide shows
- skill practice
- completing an instrument
- living with a family from another country

[2] This is an excerpt from a paper entitled, "Independent Effectiveness: A Reconsideration of Cross-Cultural Orientation and Training." *International Journal of Intercultural Relations* Vol. 10 (1986): 159-178.

This sample list indicates that the range of training techniques varies from the more passive and artificial (lecturette) to the more active and real (living with a family). Exactly which technique one chooses as an educational activity would depend largely on the session goals.

Process

Once the experience stage is completed, the trainer or instructor would guide the group into the process part of the cycle. During this phase, participants reflect on the activity undertaken during the experience phase, and they share their reactions in a structured way with the whole group. This may happen on an individual basis, in small work groups, or in a full training group. Individuals share both their cognitive and affective reactions to the activities in which they have engaged. In addition, with trainer assistance, they try to link these thoughts and feelings together in order to derive some meaning from the experience.

The trainer's role as facilitator is very important during each phase of the cycle. During the process phase, he/she should be prepared to help the participants think critically about the experience and to help the participants verbalize their feelings and perceptions, as well as draw attention to any recurrent themes or patterns which appear in the participants' reactions to the experience. The trainer's role involves helping the participants to conceptualize their reflections on the experience so that they can move toward drawing conclusions.

Generalization

The generalization stage is that part of the experiential learning cycle in which the participants extract conclusions and generalizations which might be derived from, or stimulated by, the first two phases of the cycle. During this phase, participants are helped to "take a step back" from the immediate experience and discussion, and to think critically in order to draw conclusions that might be generalizable to "real life" or to a particular theoretical construct. This stage is perhaps best symbolized by the following questions:

- What did you learn from all this?
- What more general meaning does this have for you?

The trainer or instructor structures this part of the experiential learning model so that participants work alone first, and then guides them into sharing conclusions with each other so that they may serve as catalysts to one another. In addition, the trainer helps to facilitate this step by:

- Asking and helping individuals to summarize what they have learned into concise statements or generalizations.
- "Pushing back" at people to help make their thinking more rigorous.
- Relating the conclusions reached and integrating them into a theoretical model.
- Making sure, within reasonable time boundaries, that everyone who wishes to share significant insights gets a chance to contribute.
- Helping the group compare and contrast different conclusions, identifying patterns where they exist, and identifying legitimate areas of disagreement.

Application

Drawing upon insights and conclusions they have reached during the previous phase (and other phases), participants incorporate what they have learned into their lives by developing plans for more effective behavior in the future. In an ideal educational or training event, participants would be able to apply what they have learned immediately after the workshop ends. The applications that they plan may relate to their profession, their personal life, or their student efforts, depending on the background and needs of specific participant groups.

Techniques used to facilitate the application stage include the following:

- Individual work to develop a thoughtful action plan which puts "thought into action".
- Participants review each other's plans, and provide consultation and help as appropriate to each other.
- Some parts of individual plans might be shared with the whole group in order to create a sense of synergy.
- Participants identify other learning needs.

One of the ways the trainer assists during this process is by helping participants be as specific as possible in developing their application plans.

MAKING PRESENTATIONS MORE INTERACTIVE

The following are some ideas on how instructors can increase learning by making their presentations more interactive.

1. Do not present more than 20 to 30 minutes without having participants do something more active than listening.

2. Pose questions to the group. Facilitate the group to answer the question rather than answering it yourself.

3. Create discussion points in your presentation. Pick something that is an important learning point, ask the group their opinion. Get part of the group analyzing it from one direction and another part of the group from the opposite. Facilitate participants presenting their views to one another. You can then give your opinion.

4. Give problems to solve. Have the participants work out the problem individually. Then ask for answers. Take several. Add you input to theirs.

5. Don't present all the information in lecture format. Occasionally give participants short (one, two or three pages) content pieces to read and then discuss it.

6. Have participants turn to the person they are sitting next to and think through a problem or an issue. Then ask for several responses. Add your input to theirs.

7. Use small groups to develop an approach to an issue and have them report out to one another. Facilitate the discussion. See that the right learning points surface, but use their input as well as your own.

8. Ask the participants' questions, draw points out of them, and let this make up the basic content of your presentation.

TIPS
Stop to elicit input
Summarize frequently
Use concrete examples
Employ humor
Ask questions

EFFECTIVE PRESENTATION SKILLS DESIGNED TO GET PEOPLE TO TAKE ACTION

Body Language, Voice Tone and Word Choice

When presenting new ideas to others, it is not only your word that matters but your body language and voice tone as well. Over the years there have been a number of studies about what goes into the effective delivery of a message. One of those studies was conducted by a Dr. Mehrabian, a professor at the University of California at Los Angeles who looked at what people are paying attention to when they are on the receiving end of a presentation. Imagining that the total message is equal to 100%, he found that 7% of that message was attributed to the words being said, 38% percent of messages receivers' attention was on voice tone, and 55% of the total was focused on the presenter's body language.

Given this there are several basic presentation skills which are essential to effectively delivering a message:

- Keep your messages concise and clear.
- Ensure that your body language, voice tone and words are aligned with the message you are delivering.
- Speak loudly and clearly at an even pace.
- Make eye contact throughout the room.
- Have an open body posture. Keep your hips faced towards your to your audience.
- Use motion to your advantage.
- Encouraging others to engage.
- Add to the content with your own stories.

Asking Questions

Another critical skill for effectively sharing information and influencing others is the ability to ask questions. There are two key reasons why your ability as a presenter/trainer/discussion leader is so important:

- Tailoring Your Session/Uncovering Experience: Questions help you understand the knowledge, concerns, expectations and issues that your audience is already bringing to discussion/training. By asking questions, you will be better acquainted with the baseline knowledge of your audience from which you can build on throughout a session (formal or informal). With this information, discussion leaders can link key points in their presentation back to the needs/interests of the audience.
- Engaging Others: The more engaged an audience is in the discussion, the better chance you have that they will remember the key messages (an important precursor to behavior change). Asking open-ended questions gets audiences involved in the conversation and ultimately identifying changes in behavior that are feasible in their environments. By asking questions, both the discussion leader and the participants serve as "experts" which leads to enhanced learning and better solutions to challenges.

There are 3 types of questions presenters/trainers/discussion leaders can use to expand both the listener's and speaker's understanding: open-ended questions, clarifying questions and closed questions.

- Open-ended questions usually begin with "what", "how", "when", "where" and are posed in a way in which the speaker cannot answer "yes" or "no", but must expand on their answer by offering more information. Good open-ended questions meet the following criteria:
    - *Clear* – questions are succinct; they are worded in a way that is easy to understand.
    - *Curious (not leading)* – questions are genuinely curious in that the question asker in interested in the opinion/perspectives/knowledge/experience of the respondent(s) – not trying to "force" people to give a specific response.
    - *Personal* – questions ask for people to answer from their personal viewpoint, where they are the experts of the response.

- Clarifying questions are posed in order for the discussion leader/trainer and participants to become more clear about the situation and often begin with "which", "why", "do you mean to say...", etc.

- Closed questions can be answered with a "yes" or "no" and are asked to get specific information. Closed questions are important in discussions and training, as they help a discussion leader/trainer to: (1) Getting specific information; (2) Poll the group; (3) Wrapping up a discussion or switching topics. Some examples of each are below:

    - *Getting specific information:* Where are you located? How many years how you worked in the field of veterinary medicine?

    - *Polling:* How many of you work with poultry farmers who have flocks of 50 birds or less? Do you work with poultry transporters on a regular basis? Are we in agreement on this proposed solution?

    - *Wrapping up a session or switching topics:* Are there any final questions on this topic?

  Also, sometimes you need closed questions to get enough information to ask a good open-ended question. An example of how you might use closed and open-ended questions together is offered below:

  Where are you located? (closed question)
  What year did you start working in that area? (closed question)
  What changes have you seen in poultry farming in your area over the years you have been there? (open-ended question)

Summarizing

The discussion leader/trainer, when appropriate during the course of the conversation, identifies and verbalizes the key elements or details of the conversation up to that point. The purpose of summarizing is to ensure that everyone is clear on the key points of the

conversation and is also and effective tool to end one phase of the conversation and either terminate or move on to the next phase. Summarizing is valuable in controlling the pace and amount of time spent listening and conversing.

When you summarize, you are providing people with a "bulleted" list of key points which are clear and concise. As you summarize verbally it is often helpful to have visual aids (PowerPoint, flipchart, handouts, etc.) so that participants can both see and hear the key points (which increases the chances of them retaining information by 30%). Some sample phrases you can use to summarize a discussion include:

- To summarize our discussion today, they key points we have heard are…
- The three main points to take away from our discussion/training today are…
- Let's take a minute to review our key messages and ensure that we are clear on what they mean...
- As we wrap up this session, here is a brief recap of the key points from this lesson…

Listening

Basic presentation skills and key communication skills (asking questions and summarizing) are only truly effective when you use the skill of listening as well. Listening goes beyond just hearing what other people have to say. It requires focused attention to the messages others are trying to get across. This will help you to know your audience, ask better follow up and clarification questions, summarize more accurately and to incorporate the viewpoints of participants into group discussions. Some tips for more effective listening include:

- Quiet your mind – try to stop thinking about what you are going to say so you can give full attention to the other person.
- Let the other person know you are focused on what they have to say through body language: make eye contact, have your body faced towards them and use encouragers (such as appropriate facial expressions, nodding, etc.) to let them know you are engaged.
- Find key words that are at the heart of what they are trying to say so that you can repeat them back later.
- Let them know you have listened by summarizing what they have said, asking follow-up/clarification questions and incorporating/linking their comments into the presentation, discussion or training.

SUGGESTED OPEN-ENDED QUESTIONS

CLARIFYING AND EXPLORING

1. Background
- What led up to _____?
- What have you tried so far?
- How did it happen?
- What do you make of it all?

2. Identification of Problems
- What seems to be the trouble?
- What seems to be the main obstacle?
- What worries you the most about ____?
- What do you consider the most troublesome part?

3. Example
- What examples can you give us?
- For instance?
- Like what?
- What is an illustration you can give us?

4. Description
- What was it like?
- Tell me about it.
- What happened?
- How might you describe it in your own words?

5. Appraisal
- How do you feel about it?
- How does it look to you?
- What do you make of it all?
- What do you think is best?

6. Clarification
- What if this doesn't make sense to you?
- What seems to confuse you?
- What do you mean by _____?
- What do you make of it all?

7. Alternatives
- What are the possibilities?
- If you had your choice what would you do?
- What are the possible solutions?
- What if you do and what if you don't?

8. Exploration
- How about going into that a little deeper?
- What are other angles you can think of?

9. Extension
- What more can you tell me about it?
- Anything else?
- What more you would like to discuss?
- What other ideas do you have about it?

10. Planning
- How could you improve the situation?
- What do you plan to do about it?
- What could you do in a case like this?
- What plans will you need to make?

11. Predictions and Outcomes
- How do you suppose it will all work out?
- Where will this lead?
- What if you do - or what if you don't?
- What are the chances of success?

12. Reasons

- Why do you suppose you feel this way?
- How do you account for this?
- What reasons have you come up with?
- What is the logical solution to this?

13. Failures, Preparation for

- What if it doesn't work out the way you wish?
- What if that doesn't work?
- And if that fails, what will you do?
- What are some alternatives?

14. Relation

- How does this fit in with your plans?
- How does this affect your work?
- How does this stack up with your picture of yourself?
- How do the two plans relate?

15. Evaluation

- In what way?
- How is this for you?
- According to your own standards, how does it look?
- How would you evaluate all of this?

FORMAL AND INFORMAL SESSIONS

Most likely as a discussion leader and/or trainer you will find yourself in different situations for providing information to others on the topic of avian influenza. Based on whether you are in a public setting, a more formal training session or a more informal discussion setting with participants, you will need to adjust your approach to offering the information. While the same basic principles apply of (1) knowing your audience; (2) using effective presentations skills; (3) employing the facilitation skills of questions and summarizing, here are some additional key points to keep in mind for each setting:

	Presentation (Public)	Discussion (Informal)	Training (Formal)
Analyzing Your Audience	Interview of few key people beforehand to get familiar with the key issues and concerns of the audience.	Do a quick "needs assessment" using your open-ended questioning skills to understand their issues and concerns.	Combine the approaches from the public and informal. Find out before the session and continue to explore during the session their needs and concerns.
Presentation Style	Use your basic presentation skills, highlight with stories and examples. Get the audience engaged by being energetic, using humor, if appropriate, and focusing on why this information is important to them.	Use your basic presentation skills, highlight with stories and examples. "Read" the body language and tone your audience and adapt your style accordingly.	From the beginning, tell the group that you will be a guide in terms of the structure of the training, offering information and facilitating discussion, their role as participants is to actively engage by sharing their own experiences, thoughts and perspectives and being open to the ideas of others.
Session Structure	Let participants know what the structure of your presentation will be (key topics, time, Q&A). Ensure that there is time for some interaction with the audience through Q&A.	Give participants and clear idea of topics to be discussed focusing on how they relate to their needs and concerns. Be interactive (asking questions, summarizing), operate with as equals in the discussion where everyone has something to contribute, as well as something to learn.	Give the group a clear picture of the structure of the session by offering the objectives and agenda upfront. Make sure that you link the objectives and agenda with their needs/expectations as outline in the audience analysis. Use the facilitation skills and a mix of small group exercises (i.e. discussions, role plays, case studies, etc.) along with information sharing and plenary discussion will help to enhance your course and keep participants engaged.

Key Messages	Make sure your key messages are clear, concise, easy to remember and few (no more than 5). Stay on topic – ensure everything you are saying is clearly related to these key messages.	Be prepared with some basic key messages and stories you can share. You will need to choose what key messages to present based on their needs and concerns. Make a point of offering these messages and asking for their reactions, questions, and own experiences.	Make sure that each session/lesson you are going to offer in the training has a few key messages – come prepared with a few key messages and stories. When and where appropriate, offer your messages and stories to the audience and seek reactions (i.e. surprises, concerns, clarifications) and/or comparisons with their own experiences.
Visuals/ Handouts	If possible consider PPT, posters, photos, flipcharts and/or handouts to help people understand the key points during the session and to remember the key points after they leave.	If you are able to prepare beforehand, handouts of basic information might be useful in your discussion. Also, you may consider sending a follow-up note which summarizes the key points from your discussion afterwards (i.e. email, note, etc.).	Utilize any and all types of visuals to enhance your training session (i.e. PPT, posters, photos, videos, flipcharts and handouts) to help people understand the key points during the session and to remember the key points after they leave.

PRACTICE TRAINING ACTIVITY #1: AUDIENCE ANALYSIS

Instructions:

For this activity, the trainers will assign you one lesson from the STOP AI Biosecurity Training. Based on the lesson assigned to you, complete the following tasks as a group.

STEP 1: Consider the different audiences you might be delivering the concepts from the course to. Select one target audience that you would like to address.

STEP 2: Conduct a short audience analysis. Identify your audience's general characteristics, experience with biosecurity/poultry diseases, education/literacy level, interests/concerns and learning environment.

General Characteristics	
Experience with Biosecurity/Poultry Diseases	
Education/Literacy Level	
Interests/Concerns	
Learning Environment (Informal, Formal)	

STEP 3: Create a flipchart with your audience analysis and be prepared to the present your analysis to the large group (no more than 7 minutes). Make sure that each person has a role in the presentation.

FOCUSING ON THE AUDIENCE

Overall Audience Analysis

Before beginning to develop any presentation, you must have a strong understanding and a working knowledge of your audience. If you fail to analyze, you risk delivering a presentation for which they have no need or interest. Use your analysis to help you determine your presentation goals and to help you construct the presentation in a way that "speaks" to the unique needs of the audience.

Here is a list of questions you can choose from to analyze your audience.

Questions to Ask

1. What is the main purpose of this presentation?

2. What are the key ideas, concepts and skills you would like your audience to learn?

3. What information in your presentation will already be well known or familiar to them?

4. What information in your presentation will be new to them?

5. What general level of knowledge (technical or otherwise) will your audience have compared to your own?

6. Keeping your audience in mind, what technical aspects of the topic should be presented in a simplified, non-technical way?

7. What examples/stories can you identify that will help the audience relate to the topic?

PRACTICE TRAINING ACTIVITY #2: FACILITATION PRACTICE

Instructions:

For this activity, you will use the same lesson and audience that you analyzed in the previous activity.

STEP 1: Use the Trainer Guide and select a segment of your lesson that you would like to deliver. The facilitator will provide you detailed instructions on the length of time.

STEP 2: Decide how you will divide responsibilities for the lesson among each person in your group.

STEP 3: Use the presentation planning questions on the following page to help you decide how you will present your lesson.

STEP 4: Develop any visual aids you are going to use.

STEP 5: Practice your lesson. As one person is presenting, the other two people will offer feedback on their presentation.

PRESENTATION PLANNING

Adequate preparation is essential to the success of a presentation. Here are some questions that trainers can review each time they are planning any type of presentation (formal or informal).

- What do I want the participants to learn/remember? What's really important? How does the presentation relate to the session objectives?

- What are the principal points I want to make? How will I sequence them?

- What visual aids will I use? How do I want them to look?

- Am I trying to cover too much material either in my presentations or in my visual aids?

- How will I make my points understood? What examples will I use to illustrate what I mean?

- How long will my presentation take? Will I extend past "prime listening" time?

FEEDBACK ON THE SMALL GROUP PRACTICE SESSIONS

As you listen to the other members of your group present, watch for their use of the following skills and be prepared to offer them feedback.

- Basic presentation skills:
  - How was their body language, eye contact, word choice?
  - How did the present their key points? Where their key points clear?
  - Did they offer stories and examples to supplement the content? Where they helpful?
- Asking questions:
  - What open-ended questions did they ask? Follow-up questions?
  - Did the questions meet the criteria? (Clear, Curious and Personal)
- Summarizing:
  - Did they summarize throughout the conversation? At the end?
  - Was their summarizing accurate and to the point?
- Listening:
  - When others were sharing, did they listen to the others persons' response?
  - How did you know?
- What is one thing you liked about the presentation?
- What is one thing the presenter could enhance to make their presentation more effective?

REFLECTIONS ON MY SMALL GROUP PRACTICE SESSION

Record some of the feedback you received on your training practice.

What you are doing well:

Areas for improvement:

What are you discovering about using questions and listening skills to elicit participation?

What skill areas do you want to pay particular attention to as you both prepare for and practice your training session?

PRACTICE TRAINING ACTIVITY #3: DELIVERY

Tomorrow you will present your lesson. Your colleagues will serve as your participants – just like you were in a real training situation. Based on the feedback you received in your small group practice session, make any final adjustments to your session and finalize any visual aids you would like to use (i.e. PPT, flipchart, handouts). Use the space below to take notes from the feedback you received in the plenary session.

REFLECTIONS ON MY PLENARY PRACTICE SESSION

Record some of the feedback you received on your training practice.

What you are doing well:

Areas for improvement:

REFLECTIONS AND NOTES

APPLICATION PLANNING

Take a few minutes to reflect on what you have learned in this course. Consider the technical knowledge you have gained as well as the skills you practiced during the TOT.

1. What are the two *most important* pieces of knowledge or new skills you have learned during this course?

1.

2.

2. How will you apply these skills in your work and in your life after the course?

3. What additional support or assistance do you need?

CHECKLIST A
COMMERCIAL FARM RISK ASSESSMENT CHECKLIST

The purpose of this form is to determine conditions present on the farm that may increase the risk of introducing or spreading disease.

In the risk level column, quantify the level of risk of each factor as Very Risky (+++), Risky (++), or Mildly Risky (+).

Risk Type	Yes	No	Risk Level	Comments
A. Environment				
1. Important infectious disease (endemic or exotic) present in the area				
2. High farm density in the area				
3. Larger poultry farm located within 750 meters of your poultry farm				
4. Presence of a backyard flock within 400 meters of your farm				
5. Poultry farm located within 3 km of a poultry slaughter place (wet-market, plant, etc.)				
6. Presence of a pond or dam on the farm or in very close proximity				
7. Poultry house very close to the road (less than 50 meters)				
8. Farm located along a main busy road				
9. Manure piled or spread near poultry houses				
10. Dense vegetation comes to the edge of poultry houses				
11. Piles of equipment and construction material abandoned near the poultry houses				
12. Feed spill or feed from previous flock discarded near poultry houses				
13. Non-poultry farms (swine, cattle/buffalo, goats) nearby				
B. Farm Characteristics				
1. Free access to poultry houses (no locks on doors)				
2. Free access to the farm (no gate, no fence, no signs)				
3. Free range commercial poultry (chickens or ducks)				
4. Birds of two different age groups in the same building at the same time				

Risk Type	Yes	No	Risk Level	Comments
5. Several flocks of different ages on the same farm				
6. Poultry houses oriented so that wind flow goes from older birds to younger ones				
7. Untreated surface water of dam, lake, or creek used for drinking and/or cooking				
8. Untreated ground water used for drinking				
C. Flock Characteristics				
1. Breeder flock health status unknown				
2. Flock composed of multiple breeder flocks of widely differing ages				
3. More than one hatchery is used to populate a flock				
4. Flock composed of multiple breeder flocks of similar age				
D. Wild Birds				
1. Wild birds able to enter the poultry house				
E. Pets				
1. Dead poultry are fed to dogs, cats, etc. on the farm				
2. Stray dogs present on the farm				
3. Pets like dogs and cats present on the farm, but not inside chicken houses				
5. Pet birds like parrots kept on the farm				
F. Other Farm Animals				
1. Other farm animals like pigs, cattle, buffalos, goats, etc., raised on the poultry farm				
G. Pests				
1. Rat and/or mice infestation				
2. Darkling beetle infestation				
3. Fly infestation				
4. Mosquito infestation				
5. Cockroach infestation				
H. People				
1. Farm employees also own poultry				
2. Farm employees attend cock fights				
3. Family of farm employees owns birds or works at another poultry farm				
4. Farm employee owns pet (exotic) birds				
5. Farm employees hunt wild birds				
6. Employee lives on the farm				
7. Poultry dealers or catching crew wear same clothing when going between farms				
8. Grower or employee visits other poultry farms				

Risk Type	Yes	No	Risk Level	Comments
9. Visitors to the farm don't sign a log book, or are not asked if they visited another poultry farm prior to their visit				
10. Non-authorized visitors permitted on the farm				
11. Grower or employee regularly visits places patronized by many other poultry people (restaurant, club)				
12. Farm employees visit homes of relatives or friends who own poultry farms				
13.On farms with flocks of several ages, people go from house to house without consideration of flock age or flock health status				
I. Vehicles				
1. Cars and trucks parked too close to poultry houses (less than 30 meters)				
2. Farm vehicles go off farm				
3. Farm employee rides between two or more houses or farm units in feed, egg, or chick truck				
4. Outside vehicles are not cleaned or checked for cleanliness before entering the farm				
5. Feed truck driver goes on farm				
J. Management				
1. Leaving some birds on farm after load-out				
2. Partial pickup				
3. Short downtime between two flocks (less than a week)				
K. Hygiene				
1. No farm- specific clothes for employees and visitors, or no special clothing requirements				
2. No special footwear requirements for employees or visitors				
3. No showers available on farm, or no shower is taken before entering the farm				
4. Outside equipment brought on farm without special sanitation considerations				
5. No farm washing or disinfection between two flocks				
6. No gloves used and no hand washing before and after handling birds, eggs, feed etc.				
7. People dress wild birds on farm premises				
8. Dirty footbaths filled with an old (non-active) disinfectant solution at the entrance of the poultry house				

Risk Type	Yes	No	Risk Level	Comments
9. No head gear (cap) used by person visiting the farm				
10. No face masks are used by visitors				
L. Feed				
1. Feed shed accessible to rodents or wild birds				
2. Feed can get wet in storage room and feed pan				
M. Dead Bird Disposal				
1. Central location for dead bird disposal used by several poultry growers				
2. Dead birds stockpiled overnight before disposal and exposed to pests (rats, flies) pets (dogs, cats) wildlife (foxes, crows)				
3. Dead birds left inside the shed for many hours				
N. Any Other Risk Factors Present on Farm that are Not on this List				

CHECKLIST B
BIOSECURITY CHECKLIST FOR BIRD MARKETS

The purpose of this form is to determine conditions present in the bird market that may increase the risk of introducing and spreading disease.

In the risk level column, quantify the level of risk of each factor as Very Risky (+++), Risky (++), or Mildly Risky (+).

Risk Type	Yes	No	Risk Level	Comments
A. Isolation and Traffic Control				
1. Market located in a larger municipal market				
2. Market fenced to separate it from other areas in the large market				
3. Entry and exit doors separate				
4. Unloading area for trucks				
5. Sellers have distinct booths				
6. Good distance between booths				
7. Birds in cages (if live)				
9. Cages made of plastic or metal				
9. Cages made of wood				
10. Birds on ground (if live)				
B. Management				
1. Sales and mortality records kept				
2. Market license displayed				
3. Healthy birds bought from one reliable source				
4. New birds introduced without quarantine				
5. All birds sold in one day				
6. All birds sold in one week				
7. Birds sold live				
8. Birds slaughtered and processed at market				
9. Birds separated by species in cages or pens				
10. Stocks include waterfowl				
11. Separate cage for sick birds				
12. Unsold birds returned to farms of origin				
13. Cages are stacked				
14. Cages are lined with paper or other material				
15. Cages have clean feed and water troughs				
16. Clean feed and water provided				
17. Feed stored in airtight and rodent-proof containers				
18. Stray cats and dogs in market				
19. Other livestock species in market				

Risk Type	Yes	No	Risk Level	Comments
20. Rodent control program				
C. Sanitation				
1. Clean uniforms worn				
2. Frequent hand washing				
3. Cleaning and disinfection of market				
4. Regular cleaning and disinfection of cages and pens				
5. Proper disposal of dead birds				
6. Proper disposal of feathers, manure and other organic material				
A. Isolation and Traffic Control				
1. Market located in a larger municipal market				
2. Market fenced to separate it from other areas in the large market				
3. Entry and exit doors separate				
4. Unloading area for trucks				
5. Sellers have distinct booths				
6. Good distance between booths				
7. Birds in cages (if live)				
9. Cages made of plastic or metal				
9. Cages made of wood				
10. Birds on ground (if live)				
B. Management				
1. Sales and mortality records kept				
2. Market license displayed				
3. Healthy birds bought from one reliable source				
4. New birds introduced without quarantine				
5. All birds sold in one day				
6. All birds sold in one week				
7. Birds sold live				
8. Birds slaughtered and processed at market				
9. Birds separated by species in cages or pens				
10. Stocks include waterfowl				
11. Separate cage for sick birds				
12. Unsold birds returned to farms of origin				
13. Cages are stacked				
14. Cages are lined with paper or other material				
15. Cages have clean feed and water troughs				
16. Clean feed and water provided				
17. Feed stored in airtight and rodent-proof containers				
18. Stray cats and dogs in market				

Risk Type	Yes	No	Risk Level	Comments
19. Other livestock species in market				
20. Rodent control program				
C. Sanitation				
1. Clean uniforms worn				
2. Frequent hand washing				
3. Cleaning and disinfection of market				
4. Regular cleaning and disinfection of cages and pens				
5. Proper disposal of dead birds				
6. Proper disposal of feathers, manure and other organic material				
A. Isolation and Traffic Control				
1. Market located in a larger municipal market				
2. Market fenced to separate it from other areas in the large market				
3. Entry and exit doors separate				
4. Unloading area for trucks				
5. Sellers have distinct booths				
6. Good distance between booths				
7. Birds in cages (if live)				
9. Cages made of plastic or metal				
9. Cages made of wood				
10. Birds on ground (if live)				
B. Management				
1. Sales and mortality records kept				
2. Market license displayed				
3. Healthy birds bought from one reliable source				
4. New birds introduced without quarantine				
5. All birds sold in one day				
6. All birds sold in one week				
7. Birds sold live				
8. Birds slaughtered and processed at market				
9. Birds separated by species in cages or pens				
10. Stocks include waterfowl				
11. Separate cage for sick birds				
12. Unsold birds returned to farms of origin				
13. Cages are stacked				
14. Cages are lined with paper or other material				
15. Cages have clean feed and water troughs				
16. Clean feed and water provided				
17. Feed stored in airtight and rodent-proof containers				

Risk Type	Yes	No	Risk Level	Comments
18. Stray cats and dogs in market				
19. Other livestock species in market				
20. Rodent control program				
C. Sanitation				
1. Clean uniforms worn				
2. Frequent hand washing				
3. Cleaning and disinfection of market				
4. Regular cleaning and disinfection of cages and pens				
5. Proper disposal of dead birds				
6. Proper disposal of feathers, manure and other organic material				

CHECKLIST C
SMALL HOLDER FARM RISK ASSESSMENT CHECKLIST

The purpose of this form is to determine conditions present on the farm that may increase the risk of introducing or spreading disease.

In the risk level column, quantify the level of risk of each factor as Very Risky (+++), Risky (++), or Mildly Risky (+).

Risk Type	Yes	No	Risk Level	Comments
A. Environment				
1. Important infectious disease (endemic or exotic) present in the area				
2. High farm density in the area				
3. Larger poultry farm located within 750 meters of your poultry farm				
4. Presence of a backyard flock within 400 meters of your farm				
5. Poultry farm located within 3 km of a poultry slaughter place (wet-market, plant, etc.)				
6. Presence of a pond or dam on the farm or in very close proximity				
7. Poultry house very close to the road (less than 50 meters)				
8. Farm located along a main busy road				
9. Manure piled or spread near poultry houses				
10. Dense vegetation comes to the edge of poultry houses				
11. Piles of equipment and construction material abandoned near the poultry houses				
12. Feed spill or feed from previous flock discarded near poultry houses				
13. Non-poultry farms (swine, cattle/buffalo, goats) nearby				
B. Farm Characteristics				
1. Free access to poultry houses (no locks on doors)				
2. Free access to the farm (no gate, no fence, no signs)				
3. Free range poultry (chickens or ducks)				
4. Birds of two different age groups in the same building at the same time				
5. Flocks of different ages on the same farm				

Risk Type	Yes	No	Risk Level	Comments
6. Untreated surface water of dam, lake, or creek used for drinking				
7. Untreated ground water used for drinking				
C. Flock Characteristics				
1. Breeder flock health status unknown				
2. Flock composed of multiple breeder flocks				
3. More than one hatchery is used to populate a flock				
D. Wild Birds				
1. Wild birds able to enter the poultry house				
E. Pets				
1. Dead poultry are fed to dogs, cats, etc. on the farm				
2. Pets like dogs and cats present on the farm, and may enter poultry houses				
3. Pets like dogs and cats present on the farm, but not inside poultry houses				
4. Pet birds like parrots kept on the farm				
F. Other Farm Animals				
1. Other farm animals like pigs, cattle, buffalos, goats, etc., raised on the poultry farm				
G. Pests				
1. Rat and/or mice infestation				
2. Darkling beetle infestation				
3. Fly infestation				
4. Mosquito infestation				
5. Cockroach infestation				
H. People				
1. Farm owner/employees also own poultry				
2. Farm owner/employees attend cock fights				
3. Family of owner/employees owns birds or works at another poultry farm				
4. Farm owner/employees owns pet (exotic) birds				
5. Farm owner/employees hunt wild birds				
6. Farm owner/employees live on the farm				
7. Poultry dealers or catching crew wear same clothing when going between farms				
8. Farm owner/employees visits other poultry farms				
9. Visitors to the farm don't sign a log book, or are not asked if they visited another poultry farm prior to their visit				
10. Non-authorized visitors permitted on the farm				

Risk Type	Yes	No	Risk Level	Comments
11. Farm owner/employees regularly visits places patronized by many other poultry people (restaurant, club)				
12. Farm owner/employees visit homes of relatives or friends who own poultry farms				
13.On farms with flocks of several ages, people go from house to house without consideration of flock age or flock health status				
I. Vehicles				
1. Cars and trucks parked too close to poultry houses (less than 30 meters)				
2. Farm vehicles go off farm				
3. Farm owner/employees rides between two or more houses or farm units in feed, egg, or chick truck				
4. Outside vehicles are not cleaned or checked for cleanliness before entering the farm				
5. Feed truck driver goes on farm				
J. Management				
1. Leaving some birds on farm after load-out				
2. Partial pickup				
3. Short downtime between two flocks (less than a week)				
K. Hygiene				
1. No farm- specific clothes for owner/employees and visitors, or no special clothing requirements				
2. No special footwear requirements for owner/employees or visitors				
3. No showers available on farm, or no shower is taken before entering the farm				
4. Outside equipment brought on farm without special sanitation considerations				
5. No farm washing or disinfection between two flocks				
6. No hand washing before and after handling birds, eggs, feed etc.				
7. People dress wild birds on farm premises				
8. Dirty footbaths filled with an old (non-active) disinfectant solution at the entrance of the poultry house				
9. No head gear (cap) used by person visiting the farm				
10. No face masks are used by visitors				

Risk Type	Yes	No	Risk Level	Comments
L. Feed				
1. Feed shed accessible to rodents or wild birds				
2. Feed can get wet in storage room and feed pan				
M. Dead Bird Disposal				
1. Central location for dead bird disposal used by several poultry growers				
2. Dead birds stockpiled overnight before disposal and exposed to pests (rats, flies) pets (dogs, cats) wildlife (foxes, crows)				
3. Dead birds left inside the shed for many hours				
N. Any Other Risk Factors Present on Farm that are Not on this List				