

Avian Influenza Quick Reference Guide for Responders



2020

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Note:

✧ In Power Point, Slide Show view is required to [access hyperlinks](#).

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Avian Influenza

Source and Transmission

- Avian influenza (AI) is an infectious disease caused by type A influenza viruses.¹
- AI virus is carried in the intestines of wild migratory water fowl, such as geese, ducks, and shorebirds. Because infection in these birds does not cause disease, the water fowl act as natural reservoirs for Type A influenza viruses.
- Domestic poultry such as **chickens, ducks, quail, pheasants, and turkeys** are highly susceptible to infection and death.
- AI is transmitted by contact with **saliva, nasal secretions, and feces** of infected birds or contaminated surfaces.

Avian Influenza

Virus Survival

- AI virus can survive outside a host for prolonged periods of time depending on the temperature and humidity of the environment.¹⁹
 - The virus can live for up to **one month** in a poultry house setting at 40°F.
 - AI virus has also been found to survive in lakes, where waterfowl usually congregate, for over **30 days** at freezing temperatures.
- Because the virus can linger on surfaces and in water, it is important to undergo proper disposal and decontamination of carcasses, litter, manure and other contaminated products.
 - AI virus can be inactivated by exposure to chemicals, heat, and extreme pH. ³

Avian Influenza

Agent Characteristics

- AI virus is characterized into subtypes based on surface proteins called hemagglutinin (H) and neuraminidase (N).
 - **Hemagglutinin (H)** proteins are responsible for binding the virus to the cell that is being infected. There are **18** identified hemagglutinin subtypes. (H1-H**18**)
 - **Neuraminidase (N)** proteins help the virus get into a host cell. There are **11** neuraminidase subtypes. (N1-N**11**)

*Birds can carry 144 possible combinations of influenza A subtypes.¹

- AI can also be classified into two categories, Low Pathogenic Avian Influenza (LPAI) and Highly Pathogenic Avian Influenza (HPAI), based on virulence.
 - **LPAI** – the most common form of AI. Signs of disease range from none, to ruffled feathers and a decrease in egg production.
 - **HPAI** – less common, but spreads rapidly in poultry flocks, causing severe illness, and can kill **90 - 100%** of infected birds within 48 hours of exposure.

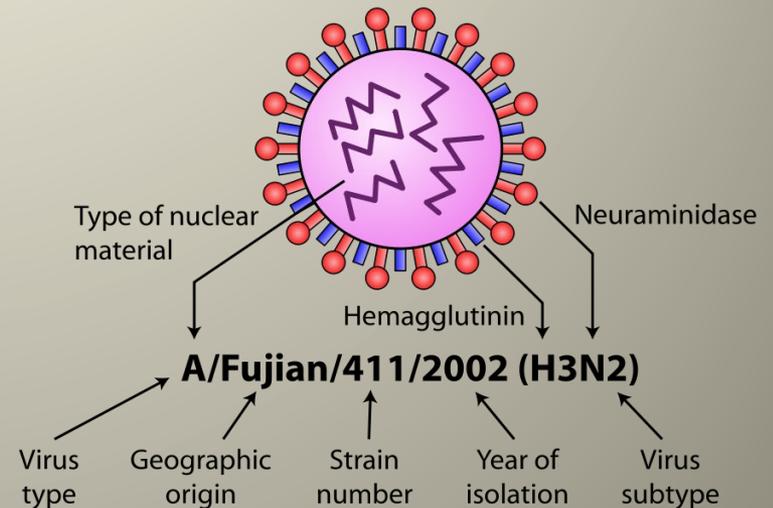
*Subtypes LPAI H5 and H7 are carefully monitored as they have been known to mutate into HPAI.⁶

Avian Influenza

Nomenclature

Identification and naming of an influenza strain is based on:

1. Virus type (A,B, or C)
2. Host of origin (if not human)
3. Geographic origin
4. Strain number
5. Year of isolation
6. Hemagglutinin /Neuraminidase



A strain of H5N1 avian influenza in chickens during 1998 in Hong Kong would be written as: A/chicken/HK/5/98(H5N1)

Avian Influenza

Clinical Signs in Birds

- Inactivity, ruffled feathers, poor appetite, diarrhea³
- Decreased egg production, soft-shells or misshapen eggs
- Swelling of the head, eyelids, comb, wattles and hocks
- Cyanosis (dark blue color) of wattles, combs, and legs
- Coughing, sneezing, nasal discharge
- Sudden death

(Inactivity)



Cornell University/PIADC

(Swollen Wattles)



Cornell University/PIADC

(Comb Cyanosis)



Avian Influenza

Human Concerns

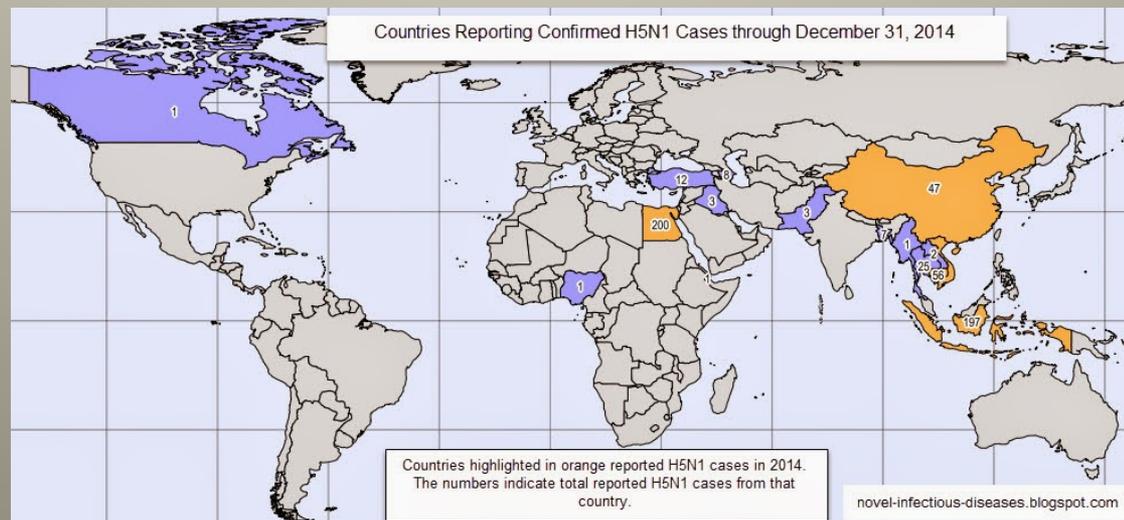
- AI viruses generally do not cause disease in humans; however, cases of human infection have been reported. Most infections resulted from direct contact of mucous membranes (e.g. eyes, nose, and mouth) with feces and body fluids of infected poultry.²
- **Clinical signs** in people include conjunctivitis, influenza-like symptoms (e.g., fever, cough, sore throat, muscle aches), severe respiratory illness (e.g. pneumonia, acute respiratory distress) and sometimes nausea, diarrhea, vomiting and neurologic changes.
- Responders should get seasonal influenza vaccination and take prophylactic antiviral medications throughout a response. Note that the seasonal influenza vaccination is used to prevent mutant variants from forming and will not prevent AI infections.
- The Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) recommend oseltamivir (Tamiflu), a prescription antiviral medication, for treatment and prevention of human infection with avian influenza A viruses.
- Transmission of AI virus from person to person is rare.

Avian Influenza

HPAI H5N1 – Bird Flu

- HPAI H5N1 has killed millions of birds and is one of the few avian influenza viruses that have crossed the species barrier and infected humans. Emerging from Hong Kong in 1997, it has caused the largest number of confirmed cases of severe disease and death in humans from an AI virus.¹
- **As of January 23, 2020, HPAI H5N1 has been confirmed in 17 countries mainly throughout Asia, Africa, Middle East and Europe. There have been 861 confirmed human cases and 455 deaths, with an overall mortality of 53%.²⁴**
- **HPAI H5N1 was first reported in the U.S. in 2015 in a green-winged teal and outbreaks of other HPAI subtypes have occurred in poultry.^{2, 25}**

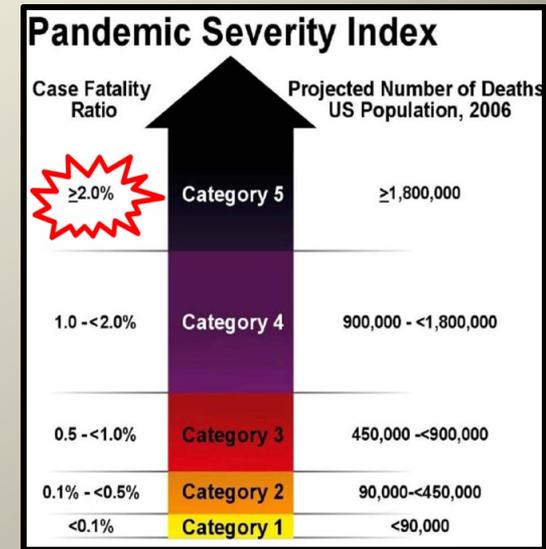
Confirmed Human HPAI H5N1 Cases (2003-2014)



Prevention

Preparedness

- Throughout history, there have been multiple influenza pandemics. The most infamous is the 1918 "Spanish Flu," which killed between **20-40 million** people worldwide, targeting healthy young adults.²¹
- Avian influenza in the presence of "human" or seasonal flu has the potential to mutate and develop into a new subtype of virus. Globally, there would be little immunity to this new strain.



Phase of Pandemic Alert

Inter-Pandemic Phase: New Virus in Animals, NO Human Cases	Low Risk of Human Cases	1
	High Risk of Human Cases	2
Pandemic ALERT: New Virus Causes Human Cases	No or Very Limited Human-to-Human Transmission	3
	Evidence of Increased Human-to-Human Transmission	4
	Evidence of Significant Human-to-Human Transmission	5
PANDEMIC	Efficient and Sustained Human-to-Human Transmission	6

While the virus is not able to spread easily from person to person (Phase of Pandemic Alert) it does cause severe disease (Pandemic Severity Index). The potential for a mutation to increase the transmission rate is low, however, the consequences would be deadly.



Prevention

Biosecurity

- The CDC defines **biosecurity** as “the cumulative measures that can or should be taken to keep disease from a farm and to prevent the transmission of disease within an infected farm to neighboring farms.”⁵
- Practicing good biosecurity is important for decreasing the risk of acquiring any disease, which can result in financial losses.
- As a responder, following good biosecurity measures will help prevent viral transmission. More information on biosecurity practices will be provided in the following topics.

For biosecurity “*Dos and Don’ts*,” visit **NAHEMS Quarantine and Movement Control: Highly Contagious Diseases, Appendix I**

http://www.dem.ri.gov/topics/erp/nahems_quarantine_and_movement_control.pdf

Prevention

Surveillance and Monitoring

Surveillance and monitoring are key factors in early detection which lead to better response times and lower risk of disease transmission.

- The U.S. Department of Agriculture (USDA) conducts avian influenza surveillance programs, including the National Poultry Improvement Plan (NPIP) and the Smuggling Interdiction and Trade Compliance (SITC).³
- Under the National Center of Import Export (NCIE), all imported live birds, except from Canada, undergo a minimum 30-day quarantine period and are tested for avian influenza.
- Poultry and eggs from countries with HPAI H5N1 are not imported into the US.

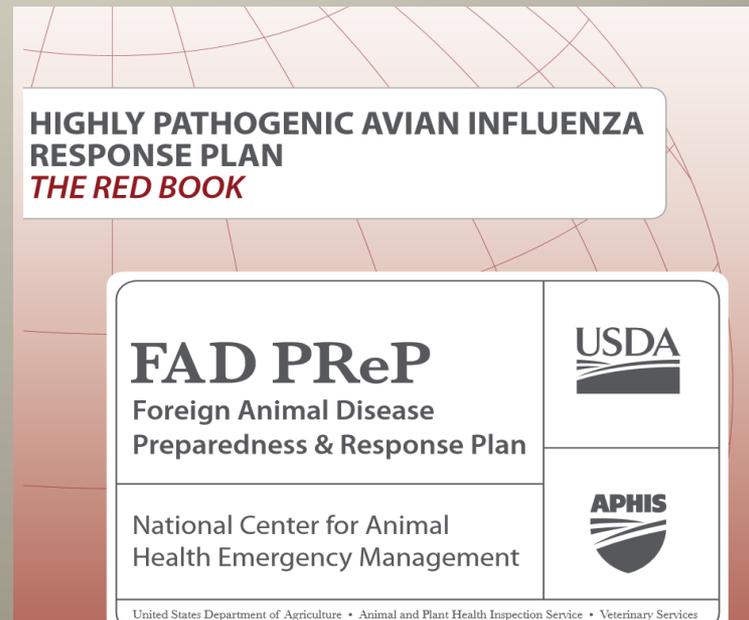
Prevention

Response Plan

- Having a prepared response plan to an avian influenza outbreak can help prevent an isolated event from turning into an epidemic.
- The plan should address how to quickly detect the disease, confirm a diagnosis, respond, and recover from an outbreak.

The **USDA's Highly Pathogenic Avian Influenza Response Plan** contains a detailed description on how to manage an outbreak:

https://www.aphis.usda.gov/animal_health/downloads/animal_diseases/ai/hpai-preparedness-and-response-plan-2015.pdf



Response

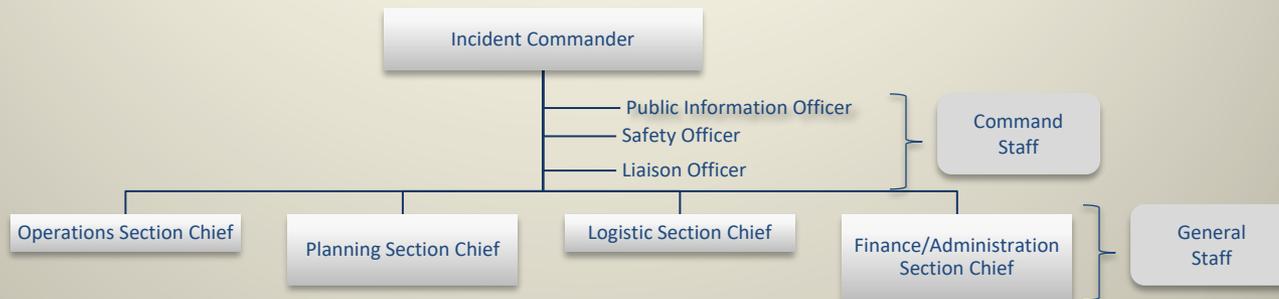
Reporting Disease

- Avian influenza is a World Organization for Animal Health (OIE) [reportable disease](#). OIE tracks global outbreaks of potentially detrimental animal diseases. HPAI is considered a reportable disease, which can result in major trade disruptions, such as export bans on poultry products from infected countries.
- If animal handlers notice signs of infectious disease, they should notify their state veterinarian or contact the USDA through their free hotline (1-866-536-7593).
- A team of Federal and State advisors will be deployed to the incident site, evaluate the situation, and provide an epidemiological assessment to the Deputy Administrator of Veterinary Services within 24 hours of arrival.³



Response

Incident Command System (ICS)



- During an AI outbreak, the ICS would be used.⁷
- ICS utilizes a chain of command structure and can be easily incorporated into a larger, multi-agency federal response if necessary.
- All incident officers and section leaders should be easy to identify by wearing labeled vests.

Key leadership roles include:

1. The incident commander manages emergency response operations in the field.
2. The National Incident Coordinator at the APHIS Emergency Operations Center in Riverdale, MD, provides national support to the incident commander.

Responders may be organized into branches within the Operation Section

Response

ICS - Operations Section Tasks

As a responder, it is important to understand the procedures involved with each branch, as you may be called upon to assist state and/or federal agencies in carrying them out.

Disease Control Branch:⁷

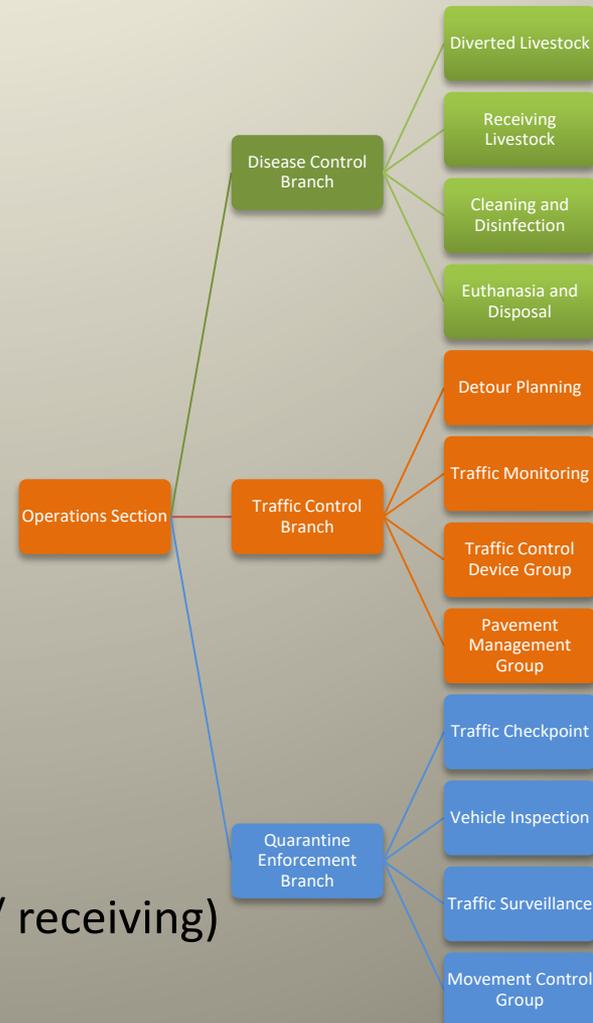
- Depopulation team
- Disposal team
- Decontamination team

Traffic Control Branch:

- Plan routes
- Monitor traffic queues
- Set up signs, lights, barricades, etc.

Quarantine Enforcement Branch:

- Surveillance teams
- Inspection of vehicles
- Movement of animals (transporting / receiving)



Response

Personal Protective Equipment (PPE)

Depending on the magnitude of the outbreak, assistance may be requested. The **National Veterinary Stockpile (NVS)** can deploy “**push packs**” within 24 hours, each containing critical response equipment.³ For information regarding NVS and push packs, visit:

https://www.aphis.usda.gov/publications/animal_health/2013/faq_nvs_push_pack.pdf

PPE is designated into 4 different levels (A-D), with A being the highest level of protection. An avian influenza outbreak requires Level C PPE. Level C PPE is to be used when airborne substances are identified, air purifying respirators are necessary, and skin and eye exposure is unlikely.⁷

All responders should be medically cleared, respirator fit-tested, and trained with PPE before potential exposure to infected materials. Questions about PPE should be directed to the safety officer.⁸

Response

Personal Protective Equipment (PPE)

Personal Protective Equipment:^{8,16}

- Nitrile disposable gloves or thick rubber work gloves that can be disinfected
- Disposable shoe covers/cleanable Polyurethane boots
- Coveralls with hood* and outer impermeable apron
- Safety goggles or face shields
- Disposable head covers
- Duct tape (cover wrist/ankles)
- Particulate mask (N-95 or higher) or powered air purifying respirator (PAPR)



(N-95 mask)



(PAPR)

Never enter a facility if a proper mask fit cannot be achieved!

*If there is no attached hood, a disposable head cover must be worn

Response

Personal Protective Equipment (PPE)

Coveralls: Use of disposable (cotton) or reusable (nylon) coveralls may depend on the type of work being done.¹⁶

Gloves: Avoid latex to prevent allergic reactions. Torn gloves must be changed. May use inner and outer gloves.

Goggles: Goggles must prevent particles from entering the eye (no vented goggles). Prescription glasses alone are not appropriate.

Respirator: If it becomes wet, it must be replaced. If responder has facial hair or unusual facial features, a PAPR must be worn instead.¹²

Response

Personal Protective Equipment (PPE)

Fit Testing for Disposable Masks (N-95 or higher)¹¹

Step 1: Place hood over head without mask while Bitrex (bitter smell) or Saccharin (sweet smell) aerosol is sprayed.

Step 2: Don mask and adjust to fit face. Aerosol is sprayed.

Step 3: If you can taste or smell the agent, then try a different mask and/or size. If you can not taste or smell the agent, then you pass the fit test.



Response

Personal Protective Equipment (PPE)

When should PPE be worn?⁷

- On the infected premise
- On the contact premise
- When in close proximity to infected animals or materials
- During movement of animals or equipment
- During depopulation, disposal, and decontamination



Response

Personal Protective Equipment

It is important to understand the order of donning (putting on) and doffing (taking off) PPE so you don't contaminate yourself.

Donning PPE ¹²	Doffing PPE ¹²
1. Inspect PPE for tears	1. Disinfect gloves and open bag
2. Step into coveralls	2. Remove apron and place in bag, disinfect gloves
3. Put on foot covers	3. Remove foot covers and place in bag, disinfect gloves
4. Don respirator, adjust fit, and test for proper seal	4. Remove outer gloves, place in bag
5. Don goggles, adjust to a snug fit	5. Remove coveralls, place in bag
6. Don apron	6. Remove goggles, place in bag
7. Put on inner gloves then outer gloves	7. Remove respirator, place in bag
	8. Remove inner gloves and seal bag
	9. Wash or disinfect hands

Watch this video for proper [donning and doffing](#) of PPE.

Response

Site Setup

Control zones should be determined and set up prior to response activity in order to prevent viral exposure and contamination.

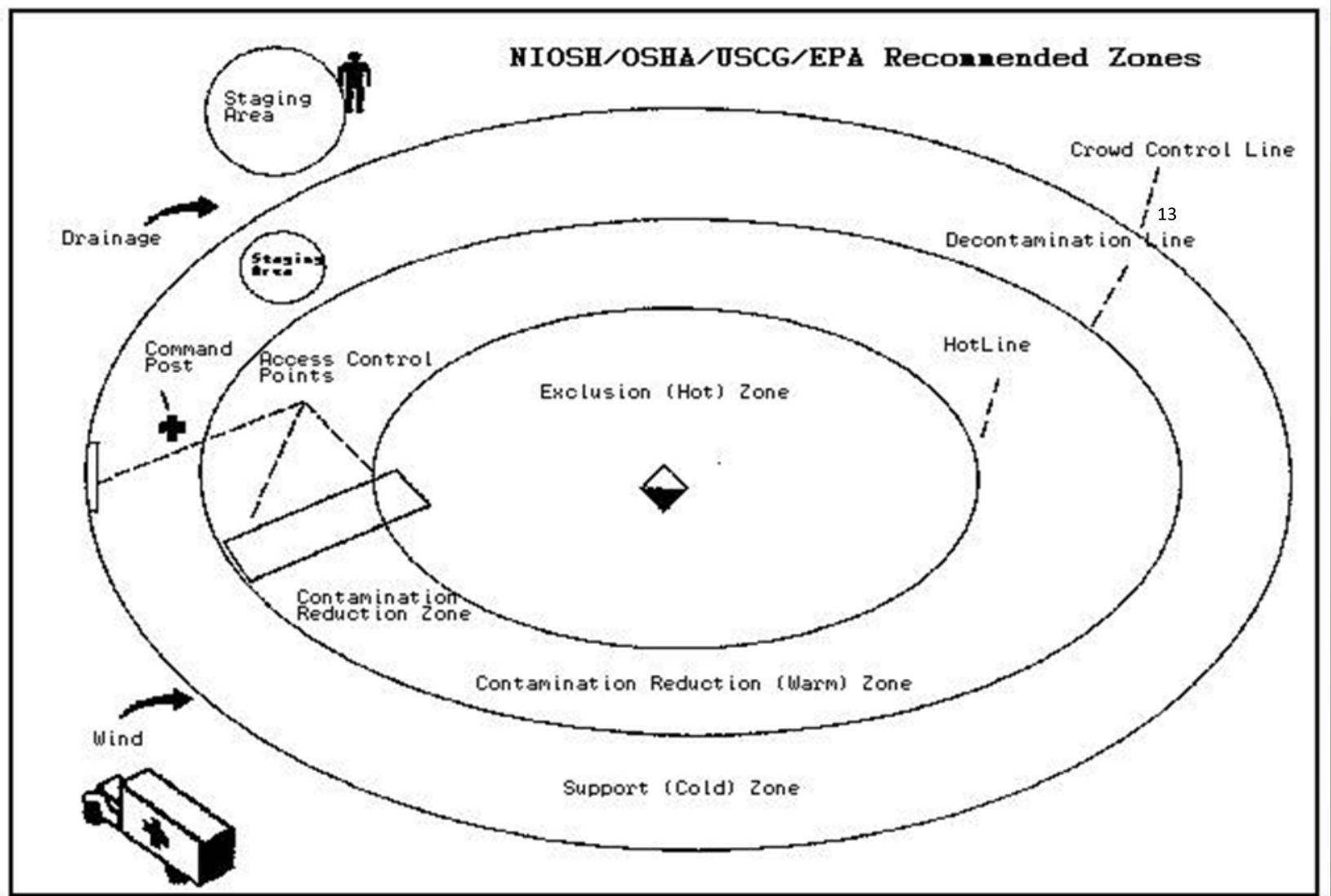
The site should be divided into four major zones:¹³

1. **Hot Zone**: The potentially contaminated area where infected birds and equipment are located.
2. **Decon Corridor**: Area between Hot and Warm Zone where decontamination of personnel and equipment occurs.
3. **Warm Zone**: The contamination reduction area , where decon and removal of PPE takes place.
4. **Cold Zone**: The uncontaminated area where staging occurs (Incident Command Post) and PPE is donned.

Considerations:

- Warm Zone access point should be uphill and upwind of Hot Zone to avoid aerosol or runoff contamination.
- Zone boundaries should be clearly marked off and labeled.
- Security gates should be established at access points between each zone.
- Keep log of personnel, hours worked, and equipment that enter and exit the zones.

Response Site Setup



Response

Sample Collection

Antigen Capture kits may be used to sample potentially infected poultry.¹⁴

- Detects influenza Type A viruses
- May be performed in the field
- Results in 15 minutes



Tracheal swabs (domestic poultry) and cloacal swabs (waterfowl) are the preferred methods of sampling for virus detection tests.³

Response

Sample Collection

Samples must be packaged and shipped to USDA-approved laboratories where diagnostic tests will verify disease status.³

Samples that may be required:¹⁴

- Tracheal swabs
- Cloacal swabs
- Blood
- Tissues (deceased birds)



(Cloacal Swab)



(Tracheal Swab)

Response

Sample Collection

Collecting and shipping samples:¹⁴

1. Appropriate PPE must be worn when handling birds and vials.
2. Unwrap the swab, avoiding contamination of the tip.
3. For waterfowl, gently secure the bird and swab the cloaca in a circular motion.
4. For domestic poultry, secure the bird and wait for the protective cartilage to open when air is passing, then lightly swab the back and sides of the trachea.
5. Open the vial and place the swab tip in the transport media.
6. Snap off the swab stem while keeping the swab in the vial and secure the cap.
7. Label the vial with the date, species, sample type, location, and ID number in sample database.

The transport media used will determine storage temperatures and times of samples. WHO has shipping procedures for **Safe Transport of Infectious Substances** that should be followed:

http://www.who.int/csr/emc97_3.pdf

Response

Diagnosis

- Swab samples are submitted to USDA-approved laboratories where diagnostic tests (RT-PCR and virus isolation) are used to detect disease.³
- If results come back positive, they are sent to the [National Veterinary Services Laboratories](#) (NVSL) for confirmation.
- The NVSL can verify the presence of avian influenza, the specific viral subtype, and the pathogenicity.

For information on diagnostic testing, see: [Diagnostic Testing at the NVSL.](#)

Response

Quarantine

- When **quarantine** is placed on a potentially infected area, movement restrictions are enforced and culling of infected or exposed birds occurs for a given time period to prevent the spread of virus.³
- In the event of an AI outbreak, a quarantine will be placed on the premise.
- Premises and zones are established to monitor and survey virus location.
- When creating quarantine areas, insect and rodent control plans should be considered in an effort to prevent further transmission of AI. (e.g. insecticides and mouse traps)

Response

Quarantine, Premises and Surveillance Zones

Premises Classifications:³

- **Infected premises:** Area where HPAI is presumed or confirmed in birds and susceptible animals.
 - Euthanasia and disposal (euthanize remaining live birds; dispose all birds)
- **Contact premises:** Area with birds or other susceptible animals or products that have been exposed directly or indirectly to birds and other animals, products, materials, people, or aerosol from an infected premises.
 - Euthanasia and disposal (sick birds)
- **Suspect premises:** Area with birds or other susceptible animals that are under investigation , but with no apparent exposure.
 - Quarantine at least 42 days
 - Movement by permit only
- **At-risk premises:** Area in a buffer surveillance zone with birds or other susceptible animals that do not have clinical illness.
 - Movement of animals by permit only with At-Risk Premise
- **Free premises:** Area with birds or other susceptible animals that do not have clinical illness. (Outside surveillance zones)
- **Vaccinated premises:** Area within a buffer vaccination zone, where vaccination is to be used.

Response

Quarantine, Premises and Surveillance Zones

Surveillance Zone Designations:³

Infected zone: A perimeter of all presumptive or confirmed positive cases. (May contain infected and contact premise) Once set, the zone shall extend at least 2 miles beyond the initial perimeter. No birds should enter the infected zone unless going to slaughter.

Buffer surveillance zone: The zone immediately surrounding the infected zone. Size depends on situation.

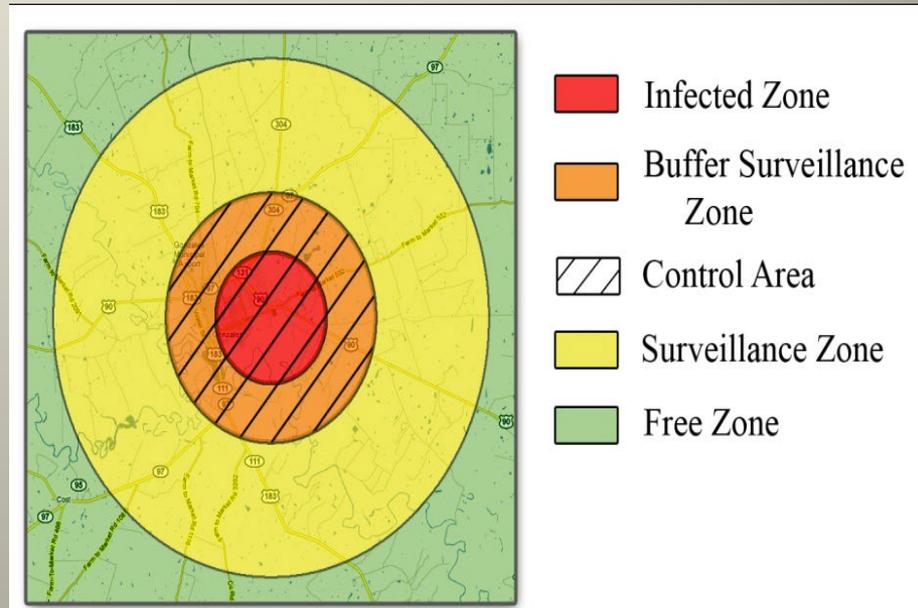
Buffer vaccination zone: If vaccination is used this zone will be within the buffer surveillance zone.

Control area: Includes infected zone, buffer vaccination zone, and buffer surveillance zone.

Surveillance zone: Zone that separates the buffer surveillance zone from the free zone and extends into free zone

Free zone: Area determined free of HPAI.

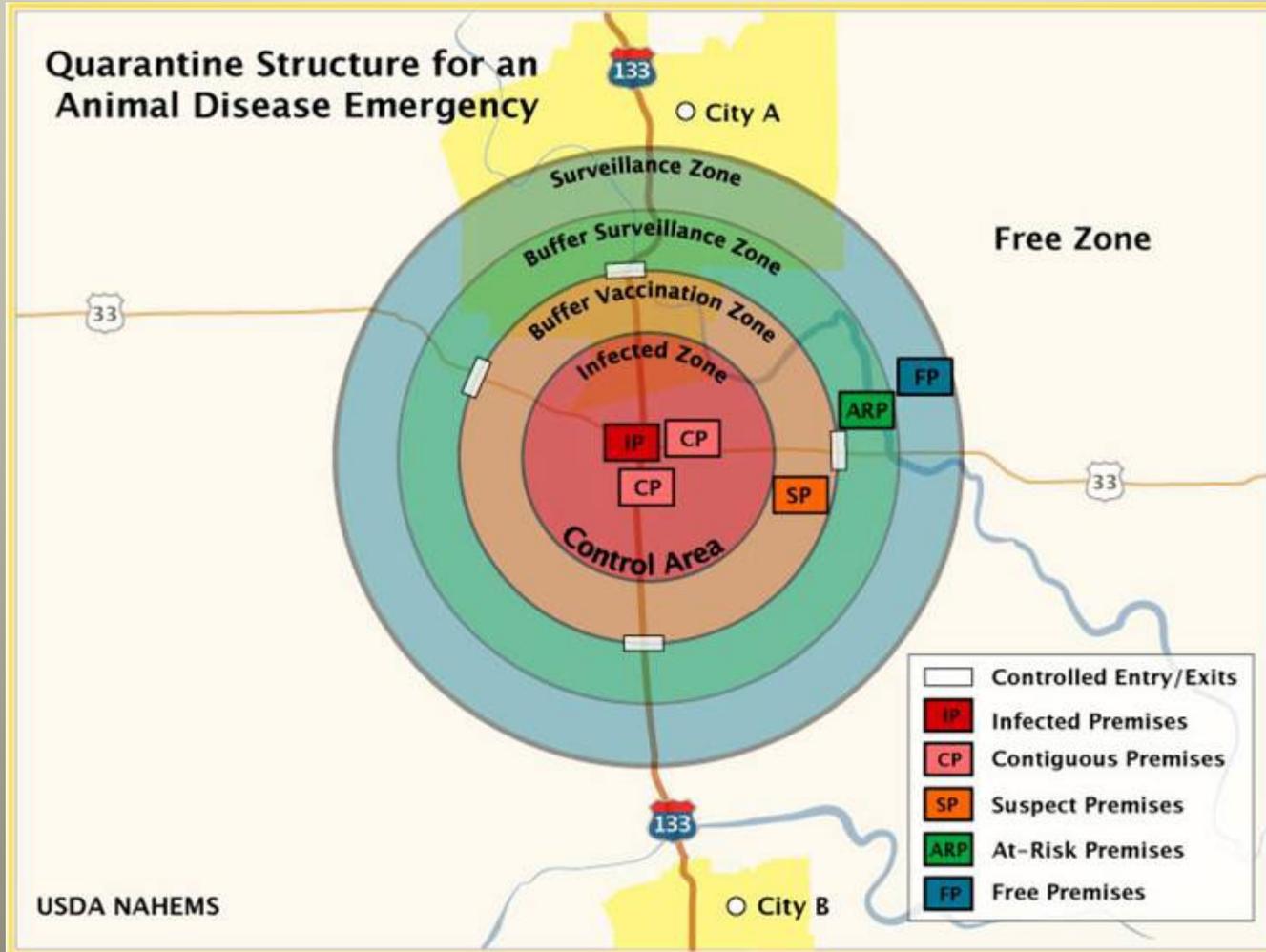
Surveillance Zones



(Boundaries may change over time)

Response

Quarantine, Premises and Surveillance Zones



Response

Vaccinations

Currently, there are two main types of poultry vaccines for avian influenza.²²

1. Inactivated, whole-virus vaccine (most common)
2. Fowl pox vectored AI vaccine for H5 subtypes

Vaccination Results:

1. Protects birds from developing signs
2. Reduces viral shedding in infected vaccinated birds
3. Lowers chance of spreading virus to uninfected birds
4. Protects against virus mutations



Vaccination during an AI outbreak requires serious thought. If the vaccine is not used appropriately, it could result in the infection becoming endemic. Also, the virus still replicates in healthy vaccinated birds but the signs are masked, thus removing the most significant warning signal for HPAI.²²

- Vaccination of birds in the US is determined by USDA-APHIS.³
- Generally not used in the US, however, exceptions are occasionally made for commercial turkey flocks and isolated poultry farms. The USDA-APHIS made the decision to **not** use any existing poultry vaccines to fight the 2014-2015 AI outbreak.
- When vaccination is used, it should be stopped as soon as possible to allow the region or State to quickly return to a favorable trade status.

The HPAI Vaccination Decision Tree can be seen in the **Highly Pathogenic Avian Influenza Response Plan**, page 5-38. To view this plan, visit:

https://www.aphis.usda.gov/animal_health/emergency_management/downloads/hpai_response_plan.pdf

Response

Depopulation

Within 24 hours of a premise being classified as infected, the birds and susceptible animals will be humanely euthanized.³

- Euthanasia and Mass Depopulation
 - Performed to prevent pathogenic spread.
 - Procedures vary by state and will be determined by officials from the affected jurisdiction.
 - Procedures are only carried out by qualified persons to assure methods are performed in a quick, safe, and humane manner.

Common Euthanasia Methods⁷

Physical:

- Cervical dislocation

Chemical:

- Carbon dioxide gas
- Water based foam



Response

Depopulation

- Cervical dislocation – Uses mechanical pressure (usually manual) to separate the spinal cord from the skull. An inexpensive method, but only used on small numbers of small birds.¹⁵
- Carbon dioxide gas – Results in hypoxia. Can be used in all species but must be contained.
- Water based foam – Causes suffocation and hypoxia. Recommended for birds housed in unsound complexes that would be dangerous to enter or in outbreaks that pose an imminent threat to human health (e.g. HPAI H5N1). Used in all birds, but requires a foam delivery system and results in a slower death.¹⁷

Response

Disposal

All infected/contaminated carcasses, eggs, litter, manure, and waste should be effectively disposed of.³

Disposal methods are determined on a case-by-case basis. (See USDA-APHIS [Flowchart](#)) (LINK NOT WORKING)

Common Disposal Methods^{3,9}

Composting: Decomposition of organic waste by microorganisms

- In-house composting is the preferred method of disposal as it limits risks of groundwater and air pollution and is relatively inexpensive.

Incineration: Complete combustion of organic compounds

- One of the biologically safest ways to eliminate disease, but may be expensive and cause air pollution. This is different than burning, which may not reach total combustion.

Burial: Carcasses are placed in the ground and back-filled with soil

- Quick and inexpensive but creates potential for groundwater pollution.

Rendering: High temperatures and pressure break down animal remains

- Requires transportation off site but recycles carcasses into protein by-product meal.
- Disposal of limited number of carcasses only; regular rendering facilities and equipment are not designed to handle catastrophic (high volume) mortalities

Alkaline Hydrolysis Digestion : Uses hydroxides to break down carcasses

- Disposal of limited numbers, expensive, but very effective way of destroying pathogens.

For **Poultry Carcass Disposal Options**, visit:

<http://www.cast-science.org/download.cfm?PublicationID=2941&File=f030eee6c1a96d4919406e1f396879496e70>

Response

Disposal

Handling Materials:³

To prevent self-contamination, materials should be handled using the following techniques:

- Spray carcasses and materials with disinfectant prior to handling them.
- Use tools (shovels, pitchforks, wheelbarrows, etc.) to avoid direct contact.
- Avoid creating dust particles.

Response

Transport

- There may be times when infected materials must be transported off site for disposal (Rendering/Landfill).¹⁶
- State and/or Federal authorities must authorize the movement of HPAI materials. This includes permission from the Department of Transportation (DOT), Environmental Protection Agency (EPA), and Centers for Disease Control and Prevention (CDC).
- Vehicles transporting infected materials may be escorted by a government official.

Response

Transport

Vehicles that may be used to transport infected materials include roll-off dumpster trucks, tractor trailers, or custom built trucks.¹⁶



Response Transport

It is important to have a planned route of transport, which should consider the following:¹⁶

- Be direct as possible with as few stops as possible
- Pass through the least populated area
- Pass through roads that will allow for truck maneuverability
- Avoid roads that are close to other poultry farms

Response

Transport

Preloading:

- Inspect containers for holes or cracks. Don't use if any large openings are found.¹⁶
- Seal any small openings with several layers of duct tape and plastic liner, or with caulk or silicone.
- After sealing holes, double line the container with polyethylene sheets.
- Once the containers are ready, the infected materials should be sprayed with disinfectant to kill the virus and decrease the potential for creating aerosols. However, fully saturating the material should be avoided to prevent dripping.

Response

Transport

Loading:

- Using a skid steer loader, transfer the materials evenly into the container/trailer.¹⁶
- When fully loaded, fold the inner plastic lining over itself and secure with duct tape. Then fold the outer lining over itself and tape.
- Seal the container with a lid or with 2 tarps separated by a polyethylene sheet.
- To secure tarps, use duct tape or tie down.
- Conduct final inspection of truck for leaks or tears and clean and disinfect the outside of the vehicle/container.
- If loading material into fixed trailer trucks, the driver should remain in the truck donned in PPE.

Response

Transport

Unloading:

- Unloading must be done as close as possible to disposal site.¹⁶
- After all materials are unloaded, remove the liners and clean and disinfect the inside.
- Then clean and disinfect the exterior and undercarriage of the truck.
- Any equipment used during the loading/unloading process should be cleaned and disinfected.
- After completing delivery, drivers should undergo decontamination procedures like discarding PPE and showering.

Response

Decontamination

It takes only 1 gram of contaminated manure to infect a million birds!¹²

Decontamination involves two processes:¹⁶

Cleaning – the physical removal of materials, such as dirt, manure, feed, and blood.

Disinfecting – destroying the virus by direct exposure to disinfectants.

Steps to clean and disinfect:⁷

1. Remove all visible materials from surfaces, as it may prevent disinfectant from reaching the site of contamination
2. Wash with hot water and detergent
3. Scrub with brushes
4. Rinse with hose or pressure washer
5. Apply approved [EPA disinfectants](#)
6. Rinse



Decontamination of the infected premises begins as soon as infected birds, other susceptible animals, and products have been properly disposed of.³

Response

Decontamination

Decon Area:

- Located in the warm zone perimeter starting at the “hotline.”¹⁸
- Decon set up must prevent ground contamination. This is done through the use of pools, pads, and tarps.
- Reusable equipment should be dropped in marked bins or tarps within the corridor for decontamination.
- A glove and boot wash/rinse pool should be placed at the “hotline” of the decon area where they will be sprayed with disinfectant and rinsed. If using disposable boot covers and gloves, this step may not be necessary.
- Apron, coveralls, and outer boot covers should be removed while avoiding the outer contaminated surfaces and placed in bags or disinfectant if reusable.
- While moving through the decon corridor into the warm zone, eye protection and respirators should be removed and placed in proper receptacles.
- Boots should be dipped in footbaths for a final decontamination.
- Hands and face should be washed and personnel should shower after leaving the infected premise and change into clean clothes.
- Clothing worn during infected premise decontamination is not to be worn home, even underwear.

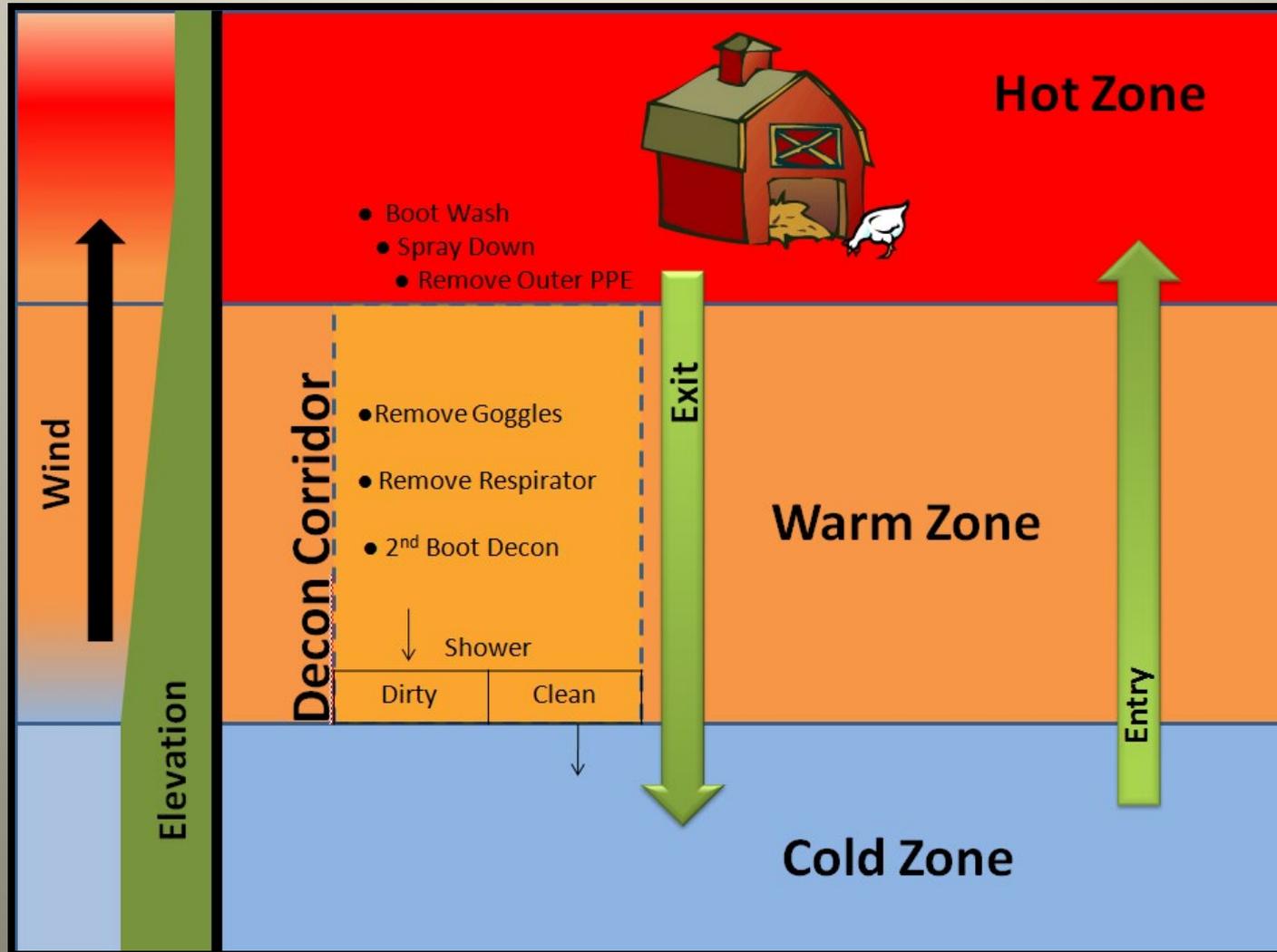
Response

Decontamination

- All reusable PPE must remain at the decon station for reuse until all decontamination is complete. Upon completion of decon, PPE must be placed in bags and properly disposed of.¹⁸
- All disposable PPE must be placed in bags after each use and properly disposed of.
- All bags for disposal must be disinfected on the outside when sealed.
- The Decontamination Group is required to decontaminate themselves and their equipment.

Response

Decontamination



Response

Hazards

Response personnel should be aware of potential on site hazards

Pathogenic:

- Exposure to HPAI
- Tetanus

Environmental:

- Temperature
- Dehydration
- Uneven grounds
- Trench or structural collapse

Chemical:

- Carbon dioxide
- Carbon monoxide
- Disinfectants

Machinery:

- Physical
- Electrical
- Carbon Monoxide

Response

Emergencies and Exposures

Despite having a response plan, there is always the potential for emergency situations to occur. Having a good contingency plan will help maintain biosecurity procedures during unforeseen events.

Medical Emergencies:²⁰

- In the event of a medical emergency, notify immediate supervisor.
- Trained medical personnel with appropriate PPE may respond to patient.
- The medical facility should be notified of a potential avian influenza exposure.
- A decon team member should be sent with cleaning and disinfecting supplies to meet the emergency vehicle at the medical facility.
- Responder and patient clothing that may be contaminated should be removed and properly disposed of or laundered.
- Any equipment and surfaces that may have been contaminated should be thoroughly cleaned and disinfected.

Exposure:¹⁰

- In the event of an exposure notify immediate supervisor.
- Observe for signs or symptoms of avian influenza for 7 days after last exposure.
- If signs or symptoms develop, seek medical attention and notify health care facility of potential exposure to avian influenza prior to arrival.

Recovery

Quarantine Release

Continuous monitoring and testing for avian influenza are required before a farm or premise can be released from quarantine.³

Releasing Federal Quarantines

- Once decontamination is complete, the infected premises must have a downtime of 42 days or until sampling shows negative results for AI virus.
- Eligibility for infected premises release requires that all infected and contact premises within a set portion of the control area are also eligible for release.
- Notification of other agencies, states, slaughter plants, and public should be made upon quarantine release.

Recovery

Indemnification

- Indemnity is part of USDA disease control program that provides fair compensation for the owner's financial losses, thereby promoting prompt and complete cooperation of the owner in eradicating AI in affected poultry.³
- Owners must contact State and/or Federal authorities for payment.
- Contact must be made promptly to qualify.
- The Code of Federal Regulations and the Farm Bill regulate the indemnity process.

Catalog of Federal Domestic Assistance: [Avian Influenza Indemnity Program](#)

Biosecurity

Commercial Poultry Farmer Video

[Click here](#) to watch a biosecurity video that provides tips for commercial poultry farmers.



Additional Sources of Avian Influenza Information

Center for Disease Control and Prevention

<https://www.cdc.gov/flu/avianflu/index.htm>

U.S. Department of Agriculture, Animal and Plant Health Inspection Service

[Summary of the National Highly Pathogenic Avian Influenza Response Plan](#)
[Avian Influenza \(AI\)](#)

U.S. Department of Agriculture

[Biosecurity Guide for Poultry and Bird Owners](#)

The Food and Agriculture Organization of the United Nations (FAO)

[Manual on Procedures for Disease Eradication by Stamping Out](#)

World Health Organization (WHO)

[Avian Influenza Factsheet](#)

[Rapid Operations to Contain the Initial Emergence of Pandemic Influenza](#)

Animal and Plant Health Inspection Agency (APHIS)

[Foreign Animal Disease Preparedness and Response Plan \(FAD PReP\)](#)

List of Acronyms

AI	Avian Influenza
APHIS	Animal and Plant Health Inspection Service
EPA	Environmental Protection Agency
HA	Hemagglutinin
HPAI	Highly Pathogenic Avian Influenza
ICS	Incident Command System
ICT	Incident Command Team
LPAI	Low Pathogenic Avian Influenza
NA	Neuraminidase
NAHEMS	National Animal Health Emergency Management System
NCIE	National Center for Import Export
NPIP	National Poultry Improvement Plan
NVS	National Veterinary Stockpile
NVSL	National Veterinary Services Laboratories
OIE	World Organization for Animal Health
RT-PCR	Real Time Polymerase Chain Reaction
PPE	Personal Protective Equipment
SITC	Smuggling Interdiction and Trade Compliance Agency
USDA	U.S. Department of Agriculture
VI	Virus Isolation
WHO	World Health Organization

Glossary

Antigen - any substance that can stimulate the production of antibodies and combine specifically with them.

Cloaca - the common cavity into which the intestinal, urinary, and reproductive canals open in birds.

Conjunctivitis – inflammation of the mucous membrane that lines the exposed portion of the eyeball and inner surface of the eyelids.

Cyanosis- blueness of the skin, as from imperfectly oxygenated blood.

Epidemic – a widespread occurrence of a disease attacking or affecting many persons simultaneously in a community or area.

Indemnification – the act of compensation.

Pathogenicity - the disease-producing capacity of a pathogen.

Polymerase Chain Reaction - a technique for rapidly synthesizing large quantities of a given DNA segment.

Prophylactic – preventive or protective.

Virulence - the relative ability of a microorganism to cause disease .

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