Practical Poultry Biosecurity: Preventing Disease Before It Starts

Farmer-Focused Training Presentation

What is Biosecurity?

✓A set of practical steps to prevent disease entry and spread:

✓Keeping diseases OUT of your farm

✓Stopping diseases from spreading BETWEEN birds

Common Poultry Diseases Prevented by Biosecurity

- Newcastle Disease
- Infectious Bronchitis
- Coccidiosis
- Salmonella
- Avian Influenza

Newcastle Disease

Cause: Virus

Spread:

- Direct contact with infected bird/ Movement of infected birds between farms
- Respiratory secretions and dropping
- Contaminated feed, water, equipment, clothing, or vehicles

Prevention

1. Vaccination (Most Important)

2. Biosecurity Measures

- ✓ Restrict farm access
- ✓ Disinfect equipment, footwear, and vehicles
- ✓ Isolate new or sick birds/ Avoid mixing birds of different ages
- ✓ Control wild birds and rodents

3. Good Management Practices

Newcastle

- Source; Poultryvetcare.com

Infectious Bronchitis (IB)

Cause: Virus

Spread:

- Airborne respiratory droplets (very rapid spread)
- Direct contact with infected birds
- Contaminated equipment, feed, water, clothing, and crates
- Movement of people between poultry houses

- **Prevention:**
    1. Vaccination (Key Control Method)
    2. Biosecurity
    3. Good Management

Infectious Bronchitis (IB)

- Source: Slideshare.net

Coccidiosis

Cause: Protozoan parasites

Spread:

- Contaminated litter, feed, or water
- Wet and dirty litter
- Overcrowding
- Poor sanitation

The parasite multiplies in the intestine and damages the gut lining.

- **Prevention**

1. Anticoccidial Medications-

a. Ionophores- Monensin, Salinomycin, Lasalocid, Narasin, Maduramicin, Semduramicin

b. Chemical (Synthetic) Anticoccidials-
Amprolium, Nicarbazin, Diclazuril, Decoquinate, Clopidol, Robenidine, Zoalene (Zoalene®/3-Nitro), Sulfaquinoxaline, Sulfadimethoxine, Sulfamethazine

- **Generally, NOT Recommended in Laying Hens (During Active Egg Production)**

a. Ionophores- Monensin, Salinomycin, Lasalocid, Narasin, Maduramicin, Semduramicin

b. Chemical Anticoccidials, Nicarbazin (can severely affect egg quality and hatchability), Clopidol, Robenidine, Zoalene (3-Nitro), Sulfaquinoxaline, Sulfadimethoxine, Sulfamethazine

2. Vaccination

3. Good Litter Management

4. Biosecurity and Hygiene

Coccidiosis

Salmonellosis (Salmonella Infection)

Cause: Bacteria of the genus *Salmonella*.

Types in poultry:

- *Salmonella Pullorum* (Pullorum disease)
- *Salmonella Gallinarum* (Fowl typhoid)
- *Salmonella Enteritidis* and *Salmonella Typhimurium* (food safety concern)

Spreads:

- Contaminated feed and water, equipment /Fecal contamination/ Infected eggs (vertical transmission)
- Rodents, wild birds, insects/poor hygiene

Prevention

1. Strict Biosecurity
2. Hatchery and Breeder Control
3. Good Farm Management
4. Monitoring and Testing
5. Vaccination (Where Available)

Salmonella Infection

- Source: Vet and wildlife rescuer

Avian Influenza

- **Cause:** Virus:

  Low Pathogenic Avian Influenza (LPAI) – causes mild disease

  Highly Pathogenic Avian Influenza (HPAI) – causes severe disease with high mortality

- **Spreads:**

  Direct contact with infected birds

  Respiratory secretions and feces

  Contaminated feed, water, equipment, clothing, and vehicles

  Live bird markets

  Migratory wild birds (natural reservoirs)

- **Prevention**

  1. Strict Biosecurity (Most Important)

  2. Surveillance and Early Detection

  3. Vaccination (Where Approved)

  4. Proper Disposal

Avian Influenza:
Photos- Latimes.com / msdvetmanual.com

Common diseases of poultry

Disease	Causative Agent	Key Symptoms	Mortality	Zoonotic Risk
Newcastle Disease	Newcastle Disease Virus	Coughing, sneezing, nasal discharge, greenish diarrhea, twisted neck, paralysis, drop in egg production	Moderate to very high (depends on strain)	No
Avian Influenza	Influenza A virus (H5, H7 subtypes)	Sudden death, swelling of head/comb, purple discoloration of comb/wattles, respiratory distress, diarrhea, drop in egg production	High in HPAI	Yes (some strains)
Infectious Bronchitis	Infectious Bronchitis Virus (Coronavirus)	Coughing, sneezing, watery eyes, nasal discharge, poor egg quality (thin shells), reduced egg production, kidney problems (wet droppings)	Low to moderate	No
Coccidiosis	*Eimeria* spp. (protozoa)	Bloody diarrhea, weight loss, ruffled feathers, weakness, poor growth, reduced feed efficiency	Moderate (if untreated)	No
Salmonellosis	*Salmonella* spp. (bacteria)	Diarrhea, weakness, poor growth, decreased egg production, high chick mortality (Pullorum), swollen joints (sometimes)	Low to moderate (high in chicks)	Yes
		Note: Respiratory signs prominent: Newcastle, Avian Influenza, Infectious Bronchitis **Bloody diarrhea:** Coccidiosis **Public health concern:** Avian Influenza (some strains), Salmonella **Nervous signs (twisted neck):** Newcastle disease		

Poultry Vaccination Schedule (With Age & Benefits)

Disease	Vaccine Type	Age of Administration	Method	Applicability	Purpose / Benefits
Newcastle Disease (ND)	Live (B1)	Day 1–7	Eye drop / Spray	Broilers, Layers, Breeders	Early protection; stimulates local respiratory immunity
	Live (LaSota booster)	Day 14–21	Drinking water / Spray	Broilers, Layers, Breeders	Strengthens immunity; reduces virus circulation
	Inactivated (killed)	8–12 weeks (56–84 days)	Injection	Layers, Breeders	Long-lasting immunity; protects egg production
	Booster (live/killed)	During lay (every 3–4 months if needed)	Water / Injection	Layers, Breeders	Maintains high antibody levels during production
Infectious Bronchitis (IB)	Live (Mass type)	Day 1	Spray / Eye drop	Broilers, Layers, Breeders	Early respiratory protection
	Live booster	Day 14–21	Drinking water / Spray	Broilers, Layers, Breeders	Enhances protection; improves flock uniformity
	Inactivated	8–12 weeks (before lay)	Injection	Layers, Breeders	Long-term protection; improves egg quality and shell strength
Coccidiosis	Live oocyst vaccine	Day 1 (hatchery)	Spray / Gel droplets	Broilers (some), Layers, Breeders	Develops natural intestinal immunity; reduces drug resistance
	Booster	Usually not required	—	—	Immunity develops through controlled cycling
Salmonellosis	Live attenuated	Day 1–7	Drinking water	Layers, Breeders	Reduces intestinal colonization and shedding
	Booster (live)	6–8 weeks (42–56 days)	Drinking water	Layers, Breeders	Strengthens immunity before maturity
	Inactivated	10–16 weeks (before lay)	Injection	Layers, Breeders	Reduces egg contamination; longer antibody protection
Avian Influenza *(where permitted)*	Inactivated (H5/H7 specific)	1–3 weeks (7–21 days)	Injection	Layers, Breeders (high-risk areas)	Reduces mortality and virus shedding
	Booster	10–16 weeks (before lay)	Injection	Layers, Breeders	Maintains protection during laying period

Why Biosecurity Matters

- Prevention is cheaper than treatment
- Reduces mortality and production losses
- Protects your investment
- Maintains market access and consumer trust

The little stuff we brush off today can come back and hit us hard tomorrow.

Real Utah Cases — What Happened & Why It Matters

- Utah has commercial, small-scale, and backyard flocks
- Migratory bird flyways increase Avian Influenza risk
- Outbreaks can restrict interstate poultry movement
- Prevention protects Utah’s poultry reputation

Case 1: 2025 Poultry HPAI Utah Detections

Date Confirmed	County	Facility Type	Number of Birds Affected	Quarantined/Released
9/26/2025	Sanpete	Commercial Turkey	34,798	Released
9/28/2025	Sanpete	Commercial Turkey	8,744	Released
10/4/2025	Sanpete	Commercial Turkey	12,985	Released
10/5/2025	Sanpete	Commercial Turkey	30,936	Released

Case 2: Large Chicken Flock Loss — Cache County (2024)

- HPAI outbreak, northern Cache County, fall 2024:

  Culling of an estimated 1.6–1.8 million chickens at a commercial poultry farm.

- Largest poultry losses Utah has seen in recent years.

- Demonstrates how quickly disease can spread once introduced.

Case 3: Backyard & Commercial Cases Across Utah (2024)

- In November 2024, additional HPAI cases were confirmed.
  - **Three turkey farms in Piute County**
  - **Small backyard flock in Salt Lake County**.

- Between November 10 to 19, 2024,
  - Three turkey farms in Piute County
  - Totaling 107,800 turkeys depopulated
  - One backyard flock of 253 **birds being depopulated** in Salt Lake County

- Backyard flocks often serve as sentinel indicators of disease spread in a region.

Case 4: *Wild Birds: Real Disease Pressure in Utah*

- As of Feb. 10, 2025, 122 wild birds

  One mountain lion,

  Some skunks and,

  three red foxes in Utah tested positive for avian flu- 2022.

- The counties currently seeing positive avian flu cases in wild birds since November include:

  Box Elder, Cache, Carbon, Davis, Emery, Millard, Salt Lake, San Juan, Tooele and Weber

How Diseases Enter our Farm

- Visitors and workers
- New birds introduced to flock
- Wild birds and rodents
- Contaminated equipment
- Feed and water contamination

Practical Poultry Biosecurity: Preventing Disease Before It Starts

- ✓Control Farm Access/Footbath Best Practices
- ✓Clean and Disinfect Equipment/ Isolate New Birds
- ✓Control Rodents and Wild Birds/Water and Feed Safety
- ✓Daily Health Monitoring/Sick Bird Management
- ✓Proper Disposal of Dead Birds/Worker Hygiene
- ✓Farm Layout Planning
- ✓Vaccination and Veterinary Support/ Emergency Response Plan

Control Farm Access

- Limit visitors:
  - ✓ Keep a visitor logbook
  - ✓ Provide farm-specific boots and coveralls

Footbath Best Practices

Place at every poultry house entrance

- ✓ Use recommended disinfectant
- ✓ Change solution regularly
- ✓ Remove dirt before stepping in
- ✓ Have a permanent footwear used only in your poultry house

Worker Hygiene

✓Wash hands before and after handling birds

✓Use dedicated farm clothing

✓Avoid visiting other poultry farms

✓Shower in/shower out if possible

Boot / Handwashing/Foot Dip/coverall

Clean and Disinfect Equipment

✓Clean before disinfecting (remove organic matter)

✓Use approved disinfectants

✓Avoid sharing equipment between farms

✓Disinfect vehicles entering farm

Poultry Disinfectant Dilution & Contact Time Guide

Disinfectant Type	Common Dilution Range	Minimum Contact Time	Best Use Areas	Important Notes
Sodium Hypochlorite (Bleach 5–6%)	1:32 (½ cup per gallon) for general disinfection	10 minutes	Floors, equipment, footbaths	Clean surfaces first; inactivated by organic matter; corrosive to metals
Quaternary Ammonium Compounds (Quats) e.g. Alkyl dimethyl benzyl ammonium chloride	1:200 to 1:400 (per label)	10 minutes	Equipment, walls, boot dips	Less effective in heavy organic matter; good for routine sanitation
Phenolic Disinfectants	1:64 to 1:256	10–20 minutes	Floors, walls, vehicles	Works better in presence of some organic material
Accelerated Hydrogen Peroxide (AHP) (e.g., Virkon-type products, Virkon®-S, Accel®/SaniDate® products)	1% solution (10 g per liter or per label)	10 minutes	Housing, equipment, footbaths	Effective against viruses (AI, ND); relatively low residue
Peracetic Acid / Peroxygen Blends e.g. Peracetic acid + hydrogen peroxide products	0.2–0.5% (per label)	5–10 minutes	Equipment, waterlines, fogging	Strong oxidizer; good cold-weather performance
Iodophors	1:100 to 1:200	10 minutes	Footbaths, water sanitation	Stains surfaces; reduce concentration for drinking water use
Formaldehyde (Formalin)	2–5% solution or fumigation per protocol	6–24 hours (fumigation)	Terminal disinfection (empty house)	

Isolate New Birds

✓Quarantine new birds for 2 - 4 weeks

✓Monitor for signs of disease

✓Do not mix immediately with main flock

Control Rodents and Wild Birds

✓Seal holes in houses

✓Use rodent traps and bait stations

✓Keep feed stored securely

✓Use netting to prevent wild bird access

✓Eliminate standing water that attracts waterfowl

✓Prevent wild bird nesting near poultry housing

Water and Feed Safety

- ✓Provide clean drinking water
- ✓Clean drinkers regularly
- ✓Store feed in dry, rodent-proof containers
- ✓Discard moldy feed immediately

Daily Health Monitoring

✓Check birds twice daily

✓Watch for coughing, sneezing, diarrhea

✓Look for drop in feed or water intake

✓Record mortalities

Sick Bird Management

- ✓Isolate sick birds immediately
- ✓Consult veterinarian early
- ✓Dispose of dead birds properly
- ✓Never sell sick birds

Proper Disposal of Dead Birds

- ✓Burial (where permitted)
- ✓Composting
- ✓Rendering (if available)
- ✓Follow local regulations

Farm Layout Planning

✓Separate clean and dirty areas

✓Designate loading zones away from poultry houses

✓Maintain perimeter fencing

Vaccination and Veterinary Support

- ✓Follow recommended vaccination schedule
- ✓Keep vaccination records
- ✓Build relationship with local veterinarian

Emergency Response Plan

✓Report unusual deaths immediately

- Restrict movement on farm
- Contact veterinary authorities
- Follow official guidance

✓Contact Utah Department of Agriculture & Food (UDAF)

- Work with Utah State University Extension
- Any local veterinary unit in your area

Economic Benefits of Biosecurity

- ✓Higher productivity
- ✓Lower treatment costs
- ✓Better flock performance
- ✓Sustainable poultry business

Key Take-Home Message

✓Biosecurity is everyone’s responsibility

✓Small daily actions prevent big losses

✓Healthy birds = Profitable farm