



PROMOTING HEALTHY DPP

HOW TO PREVENT DISEASES AND
PROMOTE HEALTHY FLOCKS

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Aim of the Manual and Training



The purpose of this manual is to provide clear, practical information on common poultry diseases to help farmers, extension officers, and Field Service Representatives (FSRs) understand the causes, signs, prevention, and basic management practices associated with poultry health. It is designed to strengthen knowledge and awareness so that diseases can be recognized early, reported promptly, and managed effectively, thereby reducing flock losses, improving productivity, and supporting food security and income generation for rural households.

How to Use This Manual

This manual is designed as a practical reference guide to help users understand common poultry diseases and the basic measures required to prevent and control them. It is organized into clear, easy-to-follow sections that explain the cause, transmission, signs, treatment, and prevention of each disease in simple language.

Readers are encouraged to use the manual in the following ways:

- To recognize healthy birds
- For early recognition: Use the descriptions of signs and symptoms to help identify when a disease may be present in a flock.
- For improved prevention: Apply the recommended biosecurity and management practices to reduce the risk of disease introduction and spread.
- For better decision-making: Use the information provided to guide when and how to seek professional help.
- For training and extension: FSRs, extension officers, and trainers can use the manual as a teaching tool when working with farmers and poultry groups.

Disclaimer

This manual is not intended to enable farmers, Field Service Representatives, or extension officers to diagnose or treat poultry diseases independently. The information provided is for educational and awareness purposes only and should be used to support better understanding, early recognition, and informed decision-making.

It is important to note that the manual is not a substitute for professional diagnosis or treatment. The World Poultry Foundation (WPF) strongly encourages that all diagnoses and treatments be carried out by a qualified and responsible professional, such as a veterinarian or certified animal health practitioner. Consulting a professional ensures that appropriate measures are taken to safeguard poultry health, prevent the spread of disease, and protect livelihoods.

Introduction

Why Poultry Health is Important

Poultry health is important because it determines the success of a farming venture. The biggest production cost in poultry farming is feed, and this investment should translate into increased body weight or egg production. When birds are unhealthy, feed is diverted toward fighting disease instead of supporting growth or egg production. In some cases, feed is wasted through watery droppings or consumed by parasites such as worms.

The greatest loss associated with poor poultry health is mortality. Maintaining a healthy flock therefore improves livability and ensures that more birds survive to market age or peak production. An unhealthy flock reduces profits by increasing production costs through the purchase of medicines and veterinary services. Profits also decline due to reduced production and higher mortality rates.

On the other hand, healthy birds grow faster, lay more eggs, and provide adequate nutrition through both eggs and meat. They generate more income because farmers can sell strong birds and good-quality eggs. Healthy chickens also reduce expenses, as farmers spend less on treatments and face a lower risk of losing birds to disease.

Sick birds spread disease rapidly within a flock and can, in some cases, transmit diseases to humans, leading to even greater losses. Sick birds are also vulnerable to other diseases. So even after initial treatment, the birds might still not recover, due to underlying diseases. For this reason, poultry health is the foundation of profitable farming, improved livability, well-nourished families, and stronger communities.



What Causes Diseases

Diseases can be divided into infectious and non-infectious depending on what causes them.

a. Non-infectious diseases

These result from factors related to nutrition, management, environment, or genetics. These diseases often develop when birds are exposed to poor feeding practices, inadequate housing, extreme weather, or stress. While they do not spread from one bird to another, non-infectious diseases can cause significant losses by reducing growth, egg production, and overall flock performance.

Cause	Example	Prevention/Control
Poor Nutrition	Vitamin/mineral deficiencies (e.g., rickets, weak legs)	Provide balanced feed according to age and purpose.
Toxins	Mouldy feed (aflatoxins), chemical poisoning	Store feed properly; avoid contamination.
Environmental Stress	Overcrowding, poor ventilation, extreme heat or cold	Maintain proper housing and ventilation.
Injury	Broken bones, wounds	Avoid sharp objects and rough handling.
Genetic or Metabolic Issues	Fatty liver syndrome, sudden death syndrome	Manage feed intake and provide exercise for breeders/layers.

b. Infectious diseases

Infectious diseases are caused by micro-organisms called pathogens (germs). These pathogens can spread from one bird to another or from flock to flock through direct contact, contaminated feed, water, equipment, people, or air. Some diseases which are caused by these pathogens can be passed on to humans as well.

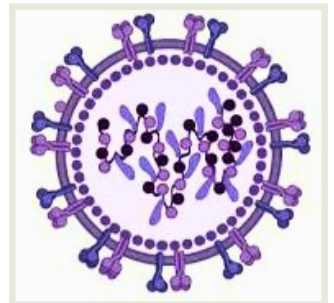
Microbes or micro-organisms can be found everywhere in the environment. Some of them are good and some are bad (pathogens). Microbes especially pathogens become most problematic when their load increases to levels that are harmful to the birds. After infection, susceptible birds will start showing signs of disease. Susceptibility to diseases is dependent on the breed, age, sex and immune status of the birds. Dual-purpose birds are more resistant to diseases BUT it does not mean that they cannot be infected by diseases. It means that they have an ability of fighting off the infection better than single-purpose breeds but in the presence of other stress factors such as increased load of the pathogen, poor environmental conditions and low immunity, they will be affected by these diseases. Microbial load is increased if the environmental conditions are conducive for their growth. Moist, warm environments such as the one found in a poultry house with damp bedding, encourage an increase in microbial load and further increases the risk of diseases.

There are four types of pathogens that cause diseases in poultry. These include viruses, bacteria, fungi and protozoa. Pathogens are living organisms which are very small and cannot be seen by the naked eye. They can only be seen through a microscope. Pathogens are found everywhere and have different characteristics which make the unique:

Characteristics of pathogens:

Virus

Viruses are the smallest of all pathogens, and they cause some of the most serious diseases in the poultry industry, such as Newcastle disease, Gumboro, and Fowl Pox. They cannot reproduce outside a host cell, and some cannot survive outside the body for long. Viruses spread quickly from one bird to another through the air, droppings, contaminated equipment, or people moving between flocks. Once a bird is infected with a viral disease, medicines cannot cure it. The best way to protect chickens is through good biosecurity and vaccination. Viruses that are outside the body can be destroyed by sunlight, extreme temperatures, or chemicals such as disinfectants.



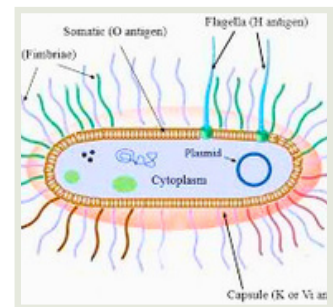
Kadhim, Zahraa & Sulaiman, Ghassan & Al-Shammari, Ahmed & Mohammed, Hamdoon & Mohammed, Salman. (2023).





Bacteria

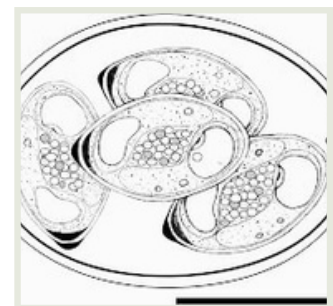
Bacteria are larger than viruses but smaller than fungi and protozoa. There are millions of different bacteria in the environment – some are beneficial, while others are harmful. The harmful bacteria can cause diseases such as infectious coryza and salmonellosis when they are allowed to reproduce and increase in number. They thrive in conditions with moisture, food, and the right temperature – all of which are commonly found in a poultry house. Bacteria usually spread through dirty water, contaminated feed, wet litter, or direct contact with sick birds. Unlike viruses, some bacterial diseases can be treated with the right medicines, but treatment is often costly and not always successful. Diseases caused by bacteria are treated with medicines called antibiotics. Examples of common bacterial diseases in poultry include salmonellosis, caused by *Salmonella* species, which results in diarrhoea, poor growth, and reduced egg production, and colibacillosis, caused by *Escherichia coli*, which often leads to septicemia and respiratory infections. Another example is infectious coryza, caused by *Avibacterium paragallinarum*. The best way to control bacteria is by keeping poultry houses, water, and feed clean, reducing stress, and following strict biosecurity practices.



Teklemariam, Addisu & al-hindi, Rashad & Albiheyri, Raed & Alharbi, Mona & Alghamdi, Mashail & Filimban, Amani & Mutiri, Abdullah & Al-Alyani, Abdullah & Alseghayer, Mazen & Almanee, Abdulaziz & Albar, Abdulgader & Khormi, Mohsen & Bhunia, Arun. (2023).

Protozoa

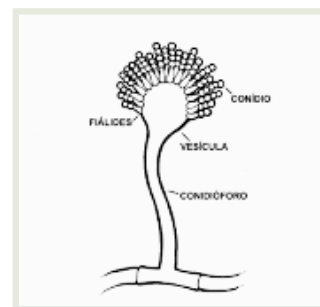
These are single-celled organisms that are larger than bacteria but smaller than fungi. They are parasitic in nature, meaning they live off other organisms. They often thrive in moist, unhygienic environments and spread through contaminated water, feed, or droppings. Once inside the host, protozoa multiply rapidly and damage organs such as the intestines, liver, or blood cells. A common protozoan disease in poultry is coccidiosis, caused by *Eimeria* species, which leads to diarrhoea, poor growth, and sometimes death. Effective sanitation, proper housing, and the use of preventive medications are essential for controlling protozoan diseases in poultry.



Fernández-Álvarez, Angela & Modry, David & Foronda, Pilar. (2016).

Fungi

Fungi are micro-organisms that belong to the mould and yeast families. Fungal spores are so small that they can be inhaled or ingested by birds. These organisms can multiply outside the body, and when they become densely populated, they produce spores that are visible in moist, warm, and poorly ventilated environments, appearing in different colours depending on the type of fungus. As they reproduce, fungi can produce poisonous chemicals called toxins, which may cause illness in birds when inhaled or ingested. Moulds and yeasts



Mesquita-Rocha, Sabrina. (2019).

can develop in feed that is poorly stored, as well as in litter or dust, especially in houses with inadequate ventilation. Examples of fungal diseases in poultry include aspergillosis, caused by *Aspergillus* species commonly found in mouldy feed, which leads to respiratory distress, reduced growth, and high chick mortality. Good ventilation, dry litter, and hygiene are essential to prevent fungal infections in poultry houses.

How Pathogens Spread

Pathogens spread through vectors, which are anything that can carry pathogens from one place to another. The main vectors on a poultry farm include humans, equipment, vermin, vehicles, neighbouring farms, water, feed, litter, and newly introduced birds.

Humans

Humans are among the most common carriers of pathogens. Disease-causing organisms can attach to shoes, clothing, hair, skin, and even under fingernails. Entering poultry houses without proper disinfection, handling birds without washing hands, or moving between different farms without biosecurity precautions can all contribute to the introduction and spread of disease. Visitors, workers, and service providers can easily transfer pathogens from one place to another.



(ChatGPT, 2026)

Contaminated Equipment and Tools



(ChatGPT, 2026)

Unclean equipment provides ideal surfaces for pathogens to survive and multiply. Tools such as feeders, drinkers, egg trays, crates, and cleaning implements can carry infectious agents from one flock to another. Sharing equipment between poultry houses or farms without cleaning and disinfection significantly increases the risk of disease transmission. Vehicles used for transporting feed or birds can also act as mechanical carriers.

Vermin and Pests

Vermin are small animals that can carry pathogens from one area to another. These include rodents (rats and mice), cats, wild birds, and various insects. Rodents and wild birds are particularly problematic as they are attracted to feed and water, contaminating them with droppings, saliva, or feathers. Insects such as mites feed on birds' blood and spread pathogens as they move between hosts. Flies, often drawn to ammonia odours and wet litter, can also transport infectious agents to feed, water, and surfaces.



(ChatGPT, 2026)

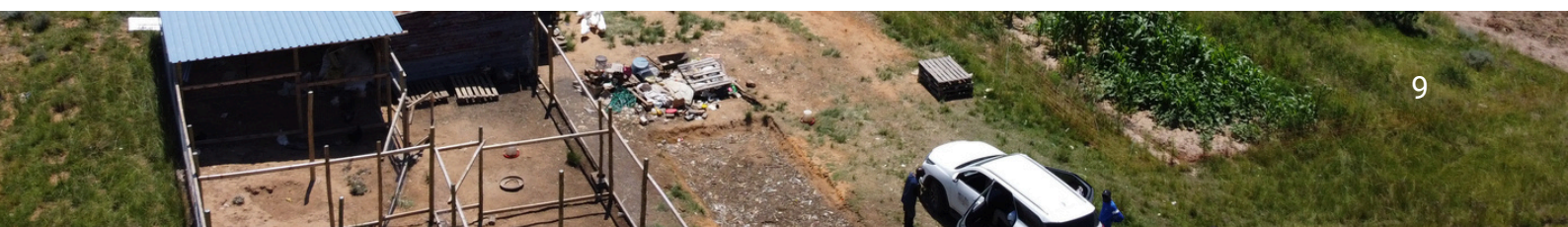
Vehicles and Bicycles

Tyres of motor vehicles, bicycles, and other transport equipment can collect pathogens from contaminated areas and introduce them onto the farm. Once deposited, these pathogens can infect birds directly or multiply under favourable conditions such as warmth, moisture, and organic matter.



Neighbouring Farms

Farms located too close to one another increase the risk of cross-contamination. Some pathogens — particularly those that cause respiratory diseases — can spread through the air over short distances. In areas where there is a high density of poultry farms, the likelihood of disease transmission increases, especially if neighbouring operations have poor disease control practices.





(ChatGPT, 2026)

Water, Feed, and Litter

Contaminated water, spoiled feed, or dirty litter are major sources of infection. Pathogens can multiply rapidly in wet litter or mouldy feed and infect birds when consumed or inhaled.

Introduction of New Birds

Bringing new birds into an existing flock without proper quarantine is one of the fastest ways to introduce pathogens. New stock may appear healthy but can still carry infectious agents that spread to the rest of the flock. Likewise, an existing flock may carry diseases that can be transmitted to newly introduced birds.



Signs and Symptoms of Unhealthy Birds

Unhealthy birds can be identified based on their behaviour and physical outlook. A good stockman should use their four senses to detect any signs and symptoms of unhealthy birds.



Sight

Observe the birds' appearance and behaviour. Look for signs such as drooping wings, ruffled feathers, discharge from eyes or nostrils, changes in comb colour, or abnormal droppings.



Hearing

Listen for unusual sounds like coughing, sneezing, gurgling, or changes in the normal clucking pattern that may indicate respiratory or stress-related problems.



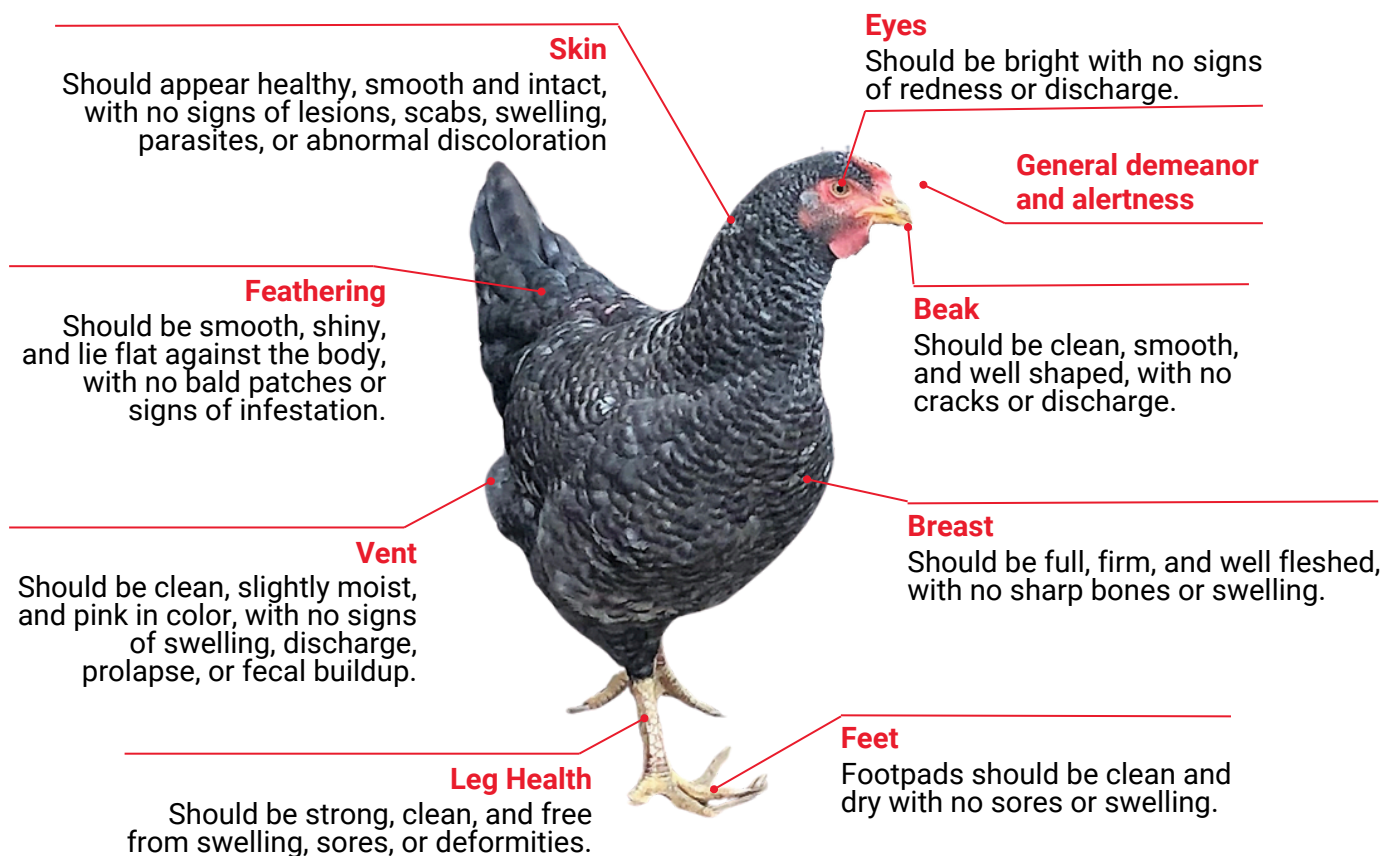
Smell

Notice any foul or unusual odours from the chicken house, droppings, or wounds, which can signal infections or poor hygiene.



Touch

Feel the birds to check crop fullness, skin condition, or any swelling, stiffness, or injuries.



Below are common signs and symptoms that indicate a bird may be unwell:

General signs and symptoms of illness in poultry:

Not Drinking (Adipsia and Hypodipsia): Healthy birds drink regularly throughout the day. A sick bird often reduces its water intake (hypodipsia) or stops drinking altogether (adipsia), which can quickly lead to dehydration and worsen its condition.

Not Eating (inappetence): Loss of appetite is one of the earliest signs of illness. Birds that refuse feed may be suffering from infections, digestive problems, or systemic diseases.

Body Sores, Warts, and Scabs: Skin lesions, scabs, or wart-like growths can be signs of viral infections such as fowl pox, bacterial infections, or injuries that have become infected.

Loss of Weight and Emaciation: Birds that lose weight rapidly or appear thin despite eating may have internal parasites, chronic infections, or metabolic diseases.

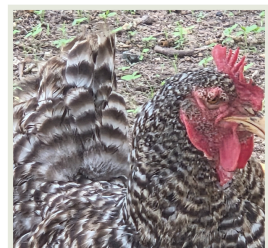
Pale or Discoloured Comb: A healthy comb is bright red and firm. A pale, bluish, or darkened comb may signal poor circulation, anaemia, respiratory disease, or systemic infection.

Increased Mortality: A rising number of sudden or unexplained deaths within the flock is a strong sign of a disease outbreak that requires immediate investigation.

Ruffled Feathers: Birds often fluff up their feathers when they are unwell to conserve body heat. Persistent ruffling is a clear indicator of illness.

Behavioural changes: Changes in aggression, vocalization, or social behaviour.

Blindness: Cloudy eyes, swelling, or discharge can lead to partial or complete blindness, often resulting from severe infections or vitamin A deficiency.



General signs of a healthy bird

Good Appetite: They eat and drink regularly and show interest in feed and water.

Clean and Bright Eyes: The eyes should be clear, bright, and free from discharge or cloudiness.

Smooth and Shiny Feathers: Feathers of healthy birds are smooth, glossy, and well-preened.

Good Body Condition: Healthy birds have firm, well-muscled bodies without signs of weight loss, weakness, or swelling.

Clean Nostrils and Beak: The nostrils should be dry and clear, and the beak should be free from cracks or overgrowth.

Normal Comb and Wattles: The comb and wattles should be bright red and firm, indicating good circulation and health. Pale, bluish, or shrunk combs may suggest illness.



Digestive and excretory signs and symptoms:

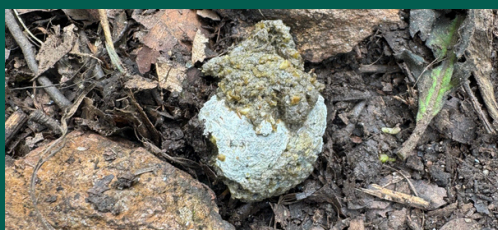
Bloody Stool: The presence of blood in droppings often indicates intestinal damage, commonly caused by diseases like coccidiosis or severe enteritis.

Greenish Stool: Green droppings can signal liver problems, certain bacterial infections (such as salmonellosis), or reduced feed intake due to illness.

Changes in consistency, frequency of droppings: Frequent watery droppings (diarrhoea) are a common sign of digestive disorders, bacterial infections, or parasitic diseases, and can quickly lead to dehydration.

Vent Abnormalities (Soiling, Swelling, or Discharge): Changes around the vent such as pasted faeces, inflammation, swelling, or discharge—can indicate enteric disease, cloacitis, reproductive tract infections, or severe diarrhoea. This sign links digestive and reproductive pathology and is very useful in flock-level assessment.

Enlarged Abdomen: Swelling in the abdominal area may be caused by internal infections, egg peritonitis, tumours, or fluid accumulation due to organ disease.



Signs of a healthy digestive tract

Normal Droppings: Healthy droppings are well-formed and consistent in colour and texture.

Respiratory signs and symptoms:

Nasal Congestion and Discharge: Mucus or discharge from the nostrils is a common symptom of respiratory infections and can be accompanied by noisy breathing or snoring sounds.

Eye Congestion: Swelling, redness, or discharge around the eyes suggests respiratory disease or eye infections. Severe cases can lead to blindness if untreated.

Respiratory Distress: Coughing, sneezing, wheezing, gasping, or open-mouth breathing indicate respiratory disease. Birds may also stretch their necks frequently in an attempt to breathe more easily.



Signs of a healthy respiratory system

Steady Breathing: Breathing should be quiet and regular without wheezing, coughing, or nasal discharge.

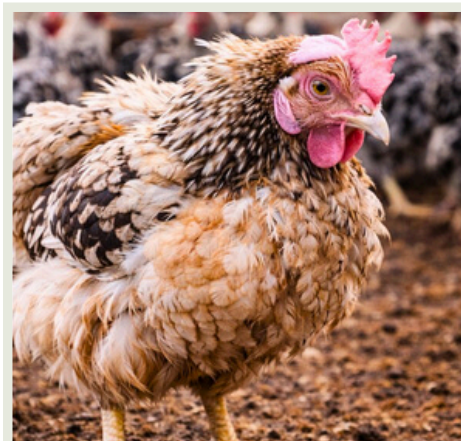
Signs and symptoms to do with movement and locomotion:

Inactivity: Sick birds often show reduced movement and spend more time sitting or sleeping. They may also fail to respond to stimuli or isolate themselves from the flock.

Lethargic: Sick birds often appear weak, dull, and inactive. They may isolate themselves from the flock, spend long periods sitting, or show reluctance to move.

Abnormal Posture (Hunched or Drooping Wings): Sick birds often adopt an abnormal posture such as a hunched back, drooping wings, or head held low. This is a classic, easily observable sign of systemic illness, pain, fever, or severe weakness and is widely used in field diagnosis.

Deformity: Crooked toes, Swollen hocks, Hyper-extended or rubbery legs.



(ChatGPT, 2026)

Signs of healthy movement

Active and Alert: Healthy birds are lively, curious, and responsive to their surroundings. They move around freely, scratch the ground, and interact with other birds.



Nervous signs and symptoms:

Paralysis: Partial or complete paralysis of wings or legs can result from viral diseases such as Marek's disease, nutritional deficiencies, or neurological infections.

Trembling: Is often a sign of illness or distress and may indicate diseases that affect the nervous system, such as Newcastle disease or avian encephalomyelitis. It can also result from weakness, high fever, or nutrient deficiencies, particularly a lack of certain vitamins like vitamin E or selenium.

Neck twisting (torticollis or stargazing): The bird's head and neck twist abnormally, often backward or to one side. It is commonly associated with diseases that affect the nervous system, such as Newcastle disease.



Reproductive signs and symptoms:



Poor Quality Eggs: Soft-shelled, or discoloured eggs often point to nutritional imbalances or diseases affecting the reproductive system.

Low Egg Production: A sudden or unexplained drop in egg production may indicate that hens are unwell. Many diseases affect reproductive performance before other signs become obvious.

Prolapse: Occurs when the internal tissues of the reproductive tract protrude through the vent, often appearing as a red, swollen mass. It is a sign of reproductive disorder and may result from excessive straining during egg laying, oversized eggs, or underlying infections that weaken the reproductive tract.

Signs of a healthy reproductive system

Consistent Egg Production (for hens in lay): In laying birds, steady egg production with good shell quality is a sign of overall health.



Responding to Suspected Cases of Disease

Early reporting, good biosecurity, and cooperation with veterinary authorities are essential in effectively managing suspected disease outbreaks.

Escalation Strategy for Farmers and FSRs: Observe, Record, and Call

When a disease is suspected in a poultry flock, prompt and careful action is essential to prevent its spread and reduce losses. The first step is to **observe** the signs and symptoms that may indicate illness. Farmers and FSRs should look for any abnormal behaviour, changes in appetite, unusual droppings, respiratory sounds, or differences in physical appearance.

After observing these signs, the next step is to **record all observations**, including the number of affected birds and when the symptoms began (Appendix 1). This information is important for accurate diagnosis. Once signs have been confirmed and recorded, the affected birds must be isolated immediately from the healthy flock to minimise contact and reduce disease transmission. Mortalities should be removed from the poultry house and disposed appropriately. During this time, birds should not be slaughtered, sold, or moved, as this can spread the disease further.

A qualified veterinarian or animal health technician must be notified as soon as possible for proper diagnosis and treatment. They may request samples for laboratory testing to confirm the cause of the disease. Appendix 2 shows the contact details of veterinarians that can assist in cases of disease outbreaks.

While awaiting guidance, **strict biosecurity must be maintained**. This includes washing of hands, disinfecting equipment, clothing, and housing, and limiting access to the affected area. Healthy birds should be provided with clean water, adequate nutrition, and a low-stress environment to strengthen their resistance.



FSR Escalation Protocol: Steps for Field Service Representatives

Step	Action	Prevention/Control
1	Observe & Assess	Upon notification, the FSR must visit the site immediately to verify the situation. Observe the signs and symptoms reported by the farmer, confirm the number of birds affected, and identify potential contributing factors.
2	Record & Document	Document all observations meticulously. This includes precise counts of affected/deceased birds, specific symptoms, dates, times, and any relevant environmental conditions. Clear documentation is vital for veterinary assessment.
3	Report to APMI Manager	The FSR promptly relays all gathered, accurate information to their APMI Manager. This communication should be immediate once verification is complete.
4	Manager Coordinates Response	The APMI Manager takes the lead, contacting relevant authorities like the local veterinarian. The manager also informs the WPF.
5	Communicate & Instruct	The FSR receives the veterinarian's instructions (e.g., quarantine measures, specific treatments, culling procedures). The FSR must then clearly communicate these instructions to the farmer, ensuring full comprehension and agreement on the necessary actions.
6	Advise & Monitor	The FSR provides continuous support to the farmer in implementing the required measures. This involves regular follow-ups and monitoring the situation's progress until the issue is fully resolved and the site is clear of further risk.

Escalation Steps for Farmers

Observe

Look for unusual signs that may indicate disease (behaviour, droppings, appetite, respiratory sounds, sudden deaths, etc.).

Record

Write down the signs, the number of affected birds, and when symptoms started.

Contact

Contact the veterinarian, animal health technician, or your FSR immediately.

Follow Instructions

Follow all guidance from the veterinarian, animal health technician, or FSR.

Apply Strict Biosecurity

Disinfect equipment, limit movement of people and birds, and ensure clean water and proper hygiene to reduce the spread of disease.

Common Diseases in Poultry

A disease is not diagnosed based on a single sign or symptom. After identifying external signs and symptoms, further investigations are required. Post-mortem and laboratory examinations should be conducted to make an accurate diagnosis.

Viral Diseases

It is important to note that there is no specific treatment for viral diseases.

Newcastle Disease

Cause:

Newcastle disease is caused by the Newcastle disease virus (NDV), a highly contagious virus that affects chickens and many other bird species.

Transmission:

The virus spreads easily from one bird to another through the air, droppings, contaminated feed or water, and dirty equipment. It can also be carried by people, vehicles, clothing, and wild birds from one flock to another.

Forms of Newcastle Disease:

Newcastle disease can present in three forms depending on the strength of the virus and the immunity of the birds:

- **Mild form:** Causes mild respiratory signs such as sneezing or slight nasal discharge. Birds usually recover quickly, and this form is sometimes used as a live vaccine.
- **Moderate form:** Affects the respiratory and nervous systems, causing signs like gasping, diarrhea, twisting of the neck, and a drop in egg production.
- **Virulent form:** The most severe type, spreading rapidly and causing severe respiratory distress, watery diarrhoea, nervous signs, swelling of the head, and sudden death. Mortality can reach up to 90–100%.



Signs

- Coughing, sneezing, and breathing difficulties
- Greenish or watery diarrhoea
- Twisting of the neck, tremors, or paralysis
- Drop in egg production or soft-shelled eggs
- Swelling around the eyes and head
- Sudden death, especially in young or unvaccinated birds
- Postmortem will show haemorrhaging (bleeding) of the proventriculus

Treatment

There is no treatment for Newcastle disease. Sick birds can only be given supportive care such as warmth, water, and good nutrition to help them recover, but most do not survive severe infections.



Prevention and Control

- With proper vaccination, this disease can be prevented.
- Isolate new birds before mixing them with the flock.
- Clean and disinfect poultry houses, equipment, and vehicles.
- Limit visitors and prevent contact with wild birds.
- Dispose of dead birds properly to prevent further spread.



Infectious Bursal Disease (IBD/Gumboro)

Cause

Gumboro disease, also known as Infectious Bursal Disease (IBD), is caused by the Infectious Bursal Disease Virus (IBDV). Vaccinated parent stock can pass on immunity to chicks, which protects them until about the third week of age. After this period, chicks become vulnerable to infection. The disease mainly affects young chickens, especially those between 3 and 6 weeks old, by attacking their immune system, particularly an organ called the bursa of Fabricius, which plays a key role in producing disease-fighting cells. The virus typically incubates in the body for about two days before clinical signs appear.

Transmission

The virus spreads quickly through droppings, contaminated feed and water, equipment, litter, and clothing. It is highly resistant and can survive in the environment for long periods, making it difficult to eliminate once introduced.



Signs

- Sudden onset of illness with birds appearing depressed and weak
- Ruffled feathers and trembling
- Watery or whitish diarrhoea
- Loss of appetite and dehydration
- Swollen or inflamed vent area (around the cloaca)
- Increased mortality, especially in young chicks
- Poor response to vaccines and increased risk of other diseases due to weakened immunity

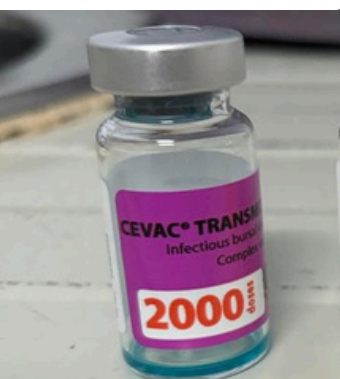
Treatment

There is no treatment for Gumboro disease. Supportive care, including access to clean water, good nutrition, and maintaining comfortable temperatures, can help reduce losses. Antibiotics may be given to prevent secondary bacterial infections, but they do not treat the virus.



Prevention and Control

- With proper vaccination, this disease can be prevented.
- Clean and disinfect poultry houses, equipment, and tools thoroughly.
- Remove and properly dispose of litter after an outbreak to reduce the risk of re-infection.
- Limit visitors and prevent movement between flocks.
- Quarantine new birds before introducing them to the existing flock.



Infectious Bronchitis (IB)

Cause

Infectious bronchitis is caused by the infectious bronchitis virus (IBV), a highly contagious virus that affects chickens of all ages. It mainly targets the respiratory system but can also affect the kidneys and reproductive organs.

Transmission

The virus spreads very quickly through the air (coughing and sneezing), droppings, contaminated feed and water, and equipment. It can also be carried on clothing, shoes, vehicles, and other materials.



Signs

- Coughing, sneezing, and nasal discharge
- Gasping and difficulty breathing
- Watery eyes and swollen sinuses
- Drop in egg production or production of misshapen (an egg with a deformed shape which is not oval), thin-shelled, or soft-shelled eggs
- Watery diarrhoea (especially if kidneys are affected)
- Slow growth and poor weight gain in young birds

Treatment

There is no treatment for infectious bronchitis. Supportive care, such as providing warmth, clean water, and good nutrition, helps birds recover. Antibiotics may be used to control secondary bacterial infections, but they do not kill the virus.



Prevention and Control

- With proper vaccination, this disease can be prevented.
- Improve ventilation and avoid overcrowding to reduce disease spread.
- Clean and disinfect poultry houses, equipment, and vehicles regularly.
- Limit visitors and movement between flocks.
- Quarantine new birds before adding them to the flock.

Avian Influenza

Cause

Avian influenza (AI) is an extremely contagious disease caused by a Type A Orthomyxoviridae virus that affects the respiratory, digestive, and nervous systems of chickens. The common types of the virus are H5N1, H5N8, H7N9, and H9N2. Avian influenza is classified into two types based on the severity of the signs and symptoms: Highly Pathogenic Avian Influenza (HPAI) and Low Pathogenic Avian Influenza (LPAI). The virus can incubate in the body for up to 14 days before the signs of the disease appear.

Transmission

The virus spreads very quickly through the air (via coughing and sneezing), droppings, contaminated feed and water, and equipment. It can also be carried on clothing, shoes, vehicles, and other materials. Wild birds are the main transmitters of the disease. Although transmission to humans is rare, zoonotic infections have been reported and can be fatal.

Signs

The Highly Pathogenic Avian Influenza (caused by H5N1 and H5N8) is characterised by severe disease and high mortality. The general signs and symptoms observed in the flock include:

- Sudden death of chickens which can reach up to 100% mortality
- Swelling of the head, comb, and wattles
- Coughing
- Sneezing
- Nasal discharge
- Drop in egg production
- Greenish diarrhoea
- Depression
- Decreased eating and drinking
- Purple discoloration or haemorrhage of the head and legs
- Nervous signs such as twisting of the neck, loss of balance, lack of coordination, and tremors



Treatment

There is no treatment for avian influenza. Sick and dead birds should be reported and safely disposed of to stop the spread.



Prevention and Control

- Maintain strict biosecurity by limiting the movement of people and birds, disinfect equipment and housing, and keep wild birds away.
- Buy healthy chicks from trusted sources, vaccinate where permitted, and report any sudden deaths to veterinary authorities immediately.



Fowl Pox

Cause

Fowl pox is caused by a poxvirus belonging to the genus Avipoxvirus. The virus is highly contagious and resistant to environmental conditions. It can remain viable in dried scabs and contaminated surfaces for several months, making it persistent on farms if proper hygiene is not maintained. There are different strains of the virus, and while all cause similar clinical signs, some may be more severe than others. The disease develops slowly, with an incubation period of 4 to 14 days, and affected birds can show signs for several weeks. The disease affects turkeys, and other birds in addition to chickens.

Transmission

The virus is spread through direct contact with infected birds or through abrasions in the skin. It is also transmitted by biting insects such as mosquitoes. Contaminated equipment, feed, or water can serve as sources of infection.



Signs

- Wart-like lesions are seen on the comb, wattles, and eyelids (dry form).
- White or yellow plaques are observed in the mouth, throat, or trachea (wet form).
- Reduced appetite, weight loss, and decreased egg production may be noted.

Treatment

No specific antiviral treatment is available for Fowl Pox. Supportive care is provided and secondary infections are controlled using antibiotics. Good nutrition and hygiene should be maintained to aid recovery.



Prevention and Control

- Maintain strict biosecurity by limiting the movement of people and birds, disinfect equipment and housing, and keep wild birds away.
- Buy healthy chicks from trusted sources, vaccinate where permitted, and report any sudden deaths to veterinary authorities immediately.

Bacterial Diseases

Infectious Coryza

Cause

Infectious coryza is a highly contagious disease caused by the bacterium *Avibacterium paragallinarum* (formerly *Haemophilus paragallinarum*). It affects the upper respiratory tract of chickens, particularly the nasal passages and sinuses. The bacteria incubates for 2-3 days before signs start to appear.

Transmission

Infectious coryza is mainly spread through direct contact with infected birds. It can also be transmitted via contaminated feed, water, equipment, or clothing. Carrier birds that appear healthy can shed the bacteria and infect others.



Signs

- Swelling of the face and wattles
- Swelling under the eyes
- Nasal discharge and sneezing
- Difficult and noisy breathing
- Drop in egg production
- Loss of appetite and reduced growth in young birds

Treatment

Diagnosis should be confirmed by taking swabs from the nasal passages to the laboratory. The disease is treated with broad-spectrum antibiotics such as sulfonamides or tetracyclines in drinking water. Supportive care should be maintained including: providing clean water, good nutrition, and a stress-free environment.



Prevention and Control

- Maintain strict biosecurity by limiting the movement of people and birds, disinfect equipment and housing, and keep wild birds away.
- Buy healthy chicks from trusted sources, vaccinate where permitted, and report any sudden deaths to veterinary authorities immediately.

Salmonellosis

Cause

Salmonellosis is caused by *Salmonella* bacteria, commonly *Salmonella pullorum* (Pullorum disease) and *Salmonella gallinarum* (Fowl typhoid).

Transmission

The disease spreads through contaminated feed, water, equipment, droppings, and infected eggs. It can also spread from infected parent birds to chicks through the egg (vertical transmission). Salmonellosis is one of the diseases that are zoonotic meaning that the bacteria that causes it can be passed on to humans. Human can contract it by eating infected chicken products that are not properly cooked or by not washing hands after handling infected chickens and equipment. Improper disposal of human waste can proliferate its spread.



Signs

In chickens

- Weakness and drooping wings
- White or greenish diarrhoea
- Poor growth and loss of appetite
- Swollen joints or lameness in older birds
- Sudden death in chicks

In humans

- Diarrhoea
- Abdominal cramps or stomach pain
- Fever, chills and sweating
- Nausea
- Vomiting
- Headache
- General body weakness or fatigue
- Muscle aches
- Loss of appetite

Treatment

For the treatment of salmonellosis in chickens, use antibiotics as prescribed by a veterinarian. Always treat based on laboratory diagnosis.



Prevention and Control

- Maintain strict cleanliness and biosecurity
- Vaccinate parent stock where recommended to reduce vertical transmission and bacterial shedding
- Properly dispose human waste
- Provide clean feed and water
- Disinfect poultry houses and equipment regularly
- Buy chicks from *Salmonella*-free hatcheries
- Dispose of sick and dead birds properly

E. coli Infection (Colibacillosis)

Cause

This disease is caused by the bacterium *Escherichia coli* (E. coli). It often occurs when birds are stressed or when hygiene is poor. E. coli bacteria are found naturally in the environment and in the intestinal tract of humans and animals where they work as good bacteria.

Transmission

The bacteria spread through direct contact with contaminated chickens, feed, water, droppings, dust, and dirty equipment. It can also enter the body through wounds or as a secondary infection that comes after respiratory infections. E. coli can be spread to humans through consuming undercooked meat.



Signs

In chickens

- Loss of appetite
- Ruffled feathers and depression
- Difficulty in breathing
- Swollen abdomen due to internal infection
- Drop in egg production
- Sudden deaths in severe cases

In humans

- Diarrhoea which will become bloody after a day after the beginning of other symptoms
- Fever
- Abdominal cramps
- Nausea
- Vomiting

Treatment

Treat affected birds with antibiotics recommended by a veterinarian and provide supportive care such as clean water and vitamins.



Prevention and Control

- Keep poultry houses clean and dry
- Avoid overcrowding
- Control other diseases that make birds more prone to E. coli
- Provide good ventilation and reduce stress
- Disinfect drinkers, feeders, and housing regularly
- Wash hands before and after handling birds



Mycoplasmosis

Cause

Mycoplasmosis is caused by *Mycoplasma gallisepticum* (chronic respiratory disease) and *Mycoplasma synoviae*.

Transmission

It spreads through the air (coughing and sneezing), direct contact with infected birds, contaminated equipment, and from infected hens to chicks through the egg.



Signs

- Coughing
- Sneezing
- Nasal discharge
- Swollen watery eyes or sinuses
- Difficulty in breathing
- Reduced feed intake
- Reduced egg production
- Carcass degradation causing the meat to be condemned at slaughter
- Swollen joints and lameness in some cases

Treatment

There is no complete cure, but symptoms can be reduced by using antibiotics such as tylosin or tetracyclines under veterinary guidance.

Prevention and Control

- Maintain high biosecurity and good ventilation
- Buy chicks from *Mycoplasma*-free hatcheries
- Separate sick birds from healthy ones
- Reduce stress and avoid overcrowding
- Regularly clean and disinfect poultry houses and equipment



Fungal Diseases

Mycotoxicosis

Cause

Mycotoxicosis in chickens is caused by mycotoxins, which are toxic chemicals produced by certain moulds (fungi) that grow on feed ingredients. Common fungi that produce mycotoxins in poultry feed include *Aspergillus* species, which produce aflatoxins; *Fusarium* species, which produce fumonisins; and *Penicillium* species, which produce ochratoxins. Mycotoxins develop when grains (maize, soya, wheat, or sorghum) are not properly dried, or when feed is stored in warm, humid, or poorly ventilated conditions, causing the feed to become mouldy due to moisture.

Transmission

Mycotoxicosis is non- contagious meaning it does not spread from bird to bird. Chickens get the disease by eating mouldy, contaminated feed and inhaling mouldy feed dust containing spores or toxins.



Signs

Signs depend on the type of mycotoxin and the level of exposure, but common signs in chickens include:

General Signs

- Reduced feed intake
- Poor growth / weight loss
- Weakness and depression
- Ruffled feathers
- Pale combs and wattles
- Diarrhoea
- Reduced egg production and poor eggshell quality
- Poor hatchability
- Increased mortality in severe cases

Specific signs of infection by different toxins include:

- Aflatoxins:
 - Swollen or pale liver
 - Reduced immunity leading to frequent infections
 - Sudden deaths in young chicks
- Ochratoxin:
 - Kidney damage leading to increased water intake and wet litter
- Trichothecenes (T-2 toxin):
 - Mouth lesions
 - Bloody diarrhoea in severe cases
- Fumonisin:
 - Respiratory distress
 - Poor growth

Treatment

There is no cure for mycotoxins once the toxin has entered the body, but you can manage the situation by:

- Removing mouldy or contaminated feed immediately
- Providing mycotoxin binders (adsorbents) in feed, such as:
 - Bentonite
 - Activated charcoal
 - Aluminosilicates
 - Yeast-based binders
- Supportive care:
 - Vitamins (A, D, E, K)
 - Liver tonics
 - Clean, fresh water
 - Antibiotics only for secondary infections (not for the toxin itself)



Prevention and Control

- Dry grains properly before storage.
- Store feed in cool, dry, well-ventilated areas.
- Buy feed in quantities that can be used quickly.
- Do not feed visibly mouldy or caked feed.
- Use mould inhibitors (propionic acid) during storage.
- Include mycotoxin binders in feed, especially in hot/rainy seasons.
- Clean and disinfect feed storage bins regularly.
- In the event of a breakout, early action by removing contaminated feed and giving binders can help reduce further damage.

Protozoan Diseases

Coccidiosis

Cause

Coccidiosis is caused by protozoan parasites of the genus *Eimeria*, which invade and damage the intestinal lining of chickens. Several species of *Eimeria* can infect poultry, each affecting different parts of the intestine.

Transmission

The disease spreads when chickens ingest infective oocysts (parasite eggs) from contaminated feed, water, litter, soil, or equipment. Oocysts are shed in the droppings of infected birds and become infective after developing in warm, moist conditions, making poor hygiene and wet litter key risk factors. It takes about 2–4 days for the oocysts to develop into infectious spores. Once ingested, these spores multiply inside the bird's intestines and produce new oocysts, which are then shed in the droppings, continuing the cycle. During this process, the remaining coccidia damage the lining of the digestive tract, leading to illness. It can be spread by vermin especially rodents and by shoes.



Signs

- Bloody, watery diarrhoea
- Loss of appetite and poor growth
- Pale combs and wattles due to anaemia
- Ruffled feathers and weakness
- Dehydration and weight loss
- Increased mortality in severe cases

Treatment

Coccidiosis can be treated with anticoccidial drugs such as sulfonamides, which are added to the drinking water. Sulfonamides are administered this way because infected birds often stop eating due to inappetence. Supportive care, such as providing clean water and good nutrition, also helps the birds recover.

Prevention and Control

- Keep litter dry and clean to reduce oocyst development.
- Clean and disinfect houses and equipment between flocks.
- Use medicated feed with coccidiostats for prevention, especially in young chicks. Coccidiostats should be discontinued 4–5 days before slaughter to prevent the residues from being consumed by humans. These may cause allergic reaction in humans.
- Vaccinate chicks where available to build immunity.
- Avoid overcrowding and maintain good ventilation to reduce moisture and contamination.

Internal Parasites

Worms

Cause

Worms are one of the most common types of internal parasites that affect scavenging birds such as adult DPPs. They compete with the bird for nutrients and can cause serious health problems if not controlled. They are various species of worms that can live inside the bird's digestive system. The most common types include:

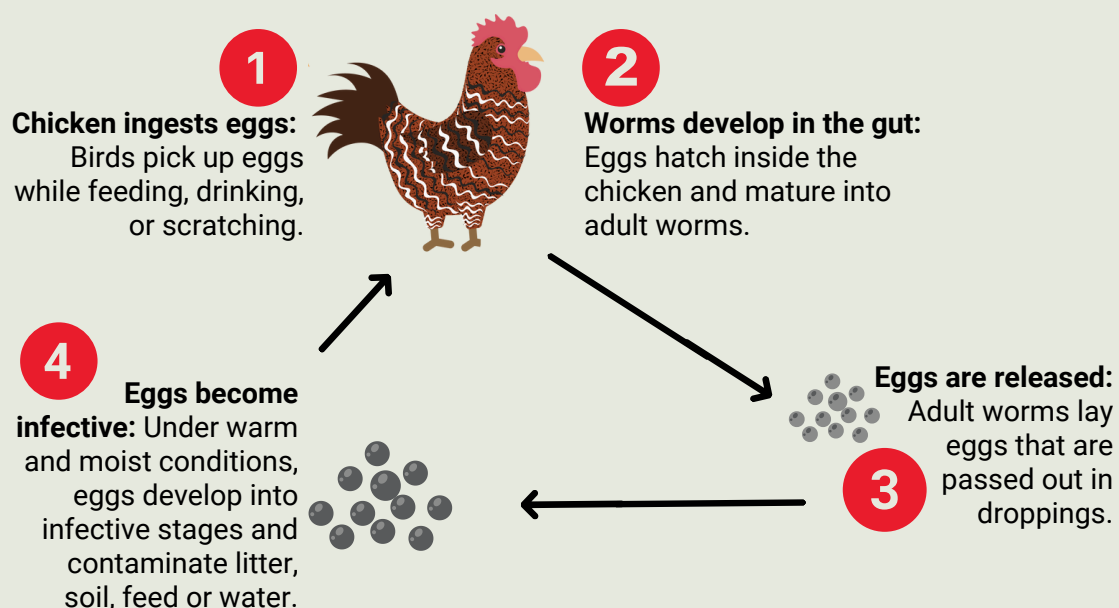
- Roundworms (*Ascaridia galli*) – found in the intestines.
- Ceecal worms (*Heterakis gallinarum*) – found in the ceca.
- Gapeworms (*Syngamus trachea*) – found in the trachea and lungs.
- Tapeworms (*Raillietina* spp.) – found in the intestines.

Transmission

Worms follow a simple yet continuous life cycle which begins when birds ingest worm eggs or larvae from contaminated feed, water, litter, soil, or even insects. Once inside the chicken's digestive system, the eggs hatch into larvae, which then migrate to specific organs such as the intestines, crop, gizzard, ceca, or even the trachea, depending on the worm species.

The larvae mature into adult worms, which reproduce and lay eggs inside the bird. These eggs are passed out through the droppings, contaminating the surrounding environment. Under warm and moist conditions, the eggs become infective and are picked up again by the same bird or other birds. The cycle continues unless broken through proper deworming, strict hygiene, and good management practices.

Worms have different life cycles, but the typical life cycle is as shown below:





Signs

- Weight loss or poor growth despite adequate feeding
- Reduced egg production
- Greenish or yellowish diarrhoea that stick to the fluff and lesser fickle feathers
- Pale comb and wattles due to anaemia
- Loss of appetite, weakness, or dullness
- Coughing or gasping (especially with gapeworm)
- Distended abdomen or poor feather condition
- Worms in the droppings

Treatment

Deworming drugs (anthelmintics) such as piperazine, levamisole, or fenbendazole should be added to drinking water or feed according to the manufacturer's instructions. If your birds are severely infested, treatment of birds may need repeated after 2–3 weeks.



Prevention and Control

- Regular deworming of the flock every 2–3 months, or as recommended by a veterinarian.
- Keep housing clean and dry by removing droppings frequently and replacing litter.
- Rotate ranging areas or allow ground to rest to reduce buildup of worm eggs.
- Control insects and intermediate hosts to break the life cycle of tapeworms.
- Avoid overcrowding and provide clean feed and water to minimize contamination.

External Parasites

Mites and Lice

Cause

External parasites are also common among DPPs. Examples of these external parasites include mites and lice that live on the skin, feathers, or in the environment of birds. Infestation with external parasites cause irritation, blood loss, stress, and reduced productivity. Common types include:

- Red mites (*Dermanyssus gallinae*) – feed on blood, often at night.
- Northern fowl mites (*Ornithonyssus sylviarum*) – remain on the bird continuously and suck blood.
- Chicken body lice (*Menacanthus stramineus*) – feed on dead skin and feather debris.

Transmission

External parasites spread through direct contact with infested birds. They can also be transmitted via contaminated equipment, housing, clothing, or bedding. Wild birds and rodents can act as carriers and introduce these parasites into the flock.



Signs

- Constant scratching, preening, or restlessness
- Feather loss or broken feathers
- Pale comb and wattles due to blood loss (especially with mites)
- Reduced egg production and poor weight gain
- Visible parasites on the skin, around the vent, under wings, or in cracks and crevices of the coop
- In severe cases, anaemia, weakness, and even death may occur.

Treatment

Birds should be dusted or sprayed with an approved insecticidal powder or spray (e.g., permethrin-based products). This treatment should be repeated after 7–10 days to kill newly hatched parasites. Clean and treat the poultry house, including nest boxes, perches, and crevices, where mites often hide.



Prevention and Control

- Regular inspection of birds for signs of parasites including at night.
- Clean and disinfect housing frequently, removing old litter and debris.
- Dust bathing areas with diatomaceous earth or wood ash to help birds control parasites naturally.
- Control wild birds and rodents to prevent introduction of parasites.
- Quarantine new birds before adding them to the flock to ensure they are parasite-free.

Biosecurity

Biosecurity refers to the practices that are put in place to ensure that diseases are not introduced on the farm, diseases do not spread across the flock and that diseases do not go to neighbouring farms. As a rule of thumb: the more layers of biosecurity, the lower the risk of an outbreak. Farmers and Field Service Representatives should observe biosecurity protocols to control diseases.

Biosecurity Measures For Farmers

Farmers can introduce the following measures:

i. Structural Biosecurity (Physical Barriers)

Structural biosecurity refers to the permanent, physical features and design of the farm that help reduce disease risks. These are built-in defences against pathogens and pests. These features form the first line of defence by physically blocking disease entry.

Examples include:

- Perimeter fencing and secure gates to prevent entry of unauthorized people and animals.
- Well-designed poultry houses with proper ventilation, drainage, and rodent-proof construction.
- Concrete floors and washable surfaces to allow effective cleaning and disinfection.
- Footbaths and handwashing stations at entry areas.
- Separation of different age groups and production types in different buildings and farms.



ii. Operational Biosecurity (Day-to-Day Practices)

Operational biosecurity includes the routine activities and practices carried out on the farm to minimize the introduction or spread of disease. These measures depend on people's actions and must be followed consistently. They work alongside structural biosecurity to reduce disease risk in daily operations.

Examples include:

- a. Controlling movement of people, vehicles, and equipment between poultry houses.
- b. Quarantining new birds before introducing them into the main flock.
- c. Separating sick birds from healthy ones.
- d. Cleaning and disinfecting feeders, drinkers, and tools regularly.
- e. Implementing all-in, all-out flock systems to allow thorough cleaning between batches.



A poultry house can be a major source of contamination for incoming flocks if it is not properly cleaned and disinfected. For this reason, BUs must ensure thorough cleaning and disinfection of the poultry house after every production cycle and before the introduction of a new batch of birds.

To support effective cleaning, poultry houses should be constructed using washable and durable materials such as well-plastered walls and concrete floors. These surfaces allow for easy removal of dirt, manure, and pathogens. In addition, poultry house floors should be constructed with a slight slope toward the doorway or drainage point to allow water to flow out easily during cleaning. This prevents water pooling, which can harbour disease-causing organisms.



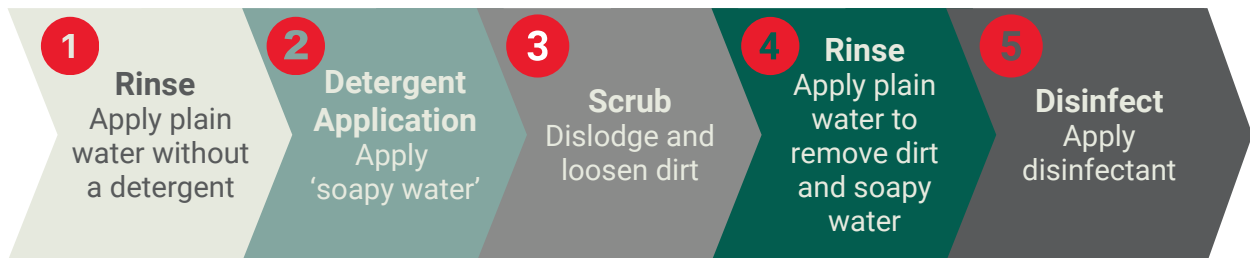
The **clean-out phase** should take place at the end of the production cycle, immediately after all birds have been removed from the poultry house. This phase is critical in preventing disease carryover to the next flock.

The clean-out phase consists of two main stages that ensure effective cleaning: the **dry stage** and the **wet stage**. The **dry stage** is carried out first and focuses on removing all solid organic material. During this stage, all movable equipment such as drinkers and feeders should be removed from the house. Electrical sockets should be safely covered in preparation for the wet stage.



Starting from the back of the poultry house and moving toward the exit, used litter should be collected using a shovel and placed into empty feed bags. The bags should be securely tied at the neck before being removed from the house to prevent spillage during transport, which could become a source of contamination. After the bulk litter has been removed, any remaining litter and dust should be swept out using a hard broom.

The **wet stage** begins shortly after completion of the dry stage. This stage focuses on removing remaining dirt and organic matter and preparing surfaces for effective disinfection. The wet stage starts with initial rinsing, where clean water is sprayed throughout the poultry house using a low-pressure hose. The roof and walls should also be rinsed, paying special attention to areas with accumulated dust and cobwebs.



After rinsing, a detergent wash is carried out by applying water mixed with detergent using a high-pressure hose. The soapy water should be applied generously to all surfaces. Floors and walls are then scrubbed using a hard broom or brush, ensuring that compacted dirt is loosened, especially in cracks, corners, and hard-to-reach areas.



Once scrubbing is complete, all detergent residue should be removed using a low-pressure hose, starting from the back of the poultry house and moving toward the entrance. After this second rinsing, a disinfectant should be applied using a knapsack sprayer or as recommended on the product label. Always follow the manufacturer's instructions regarding dilution rates and contact time to ensure effective disinfection.

This brings us to the next stage, known as the **rest period**. After cleaning and disinfection, the poultry house should be closed and left empty for 10–14 days before the introduction of a new batch of chicks.

The rest period is essential for breaking the life cycles of major disease-causing pathogens. By allowing sufficient downtime, remaining pathogens die off due to lack of hosts and unfavourable conditions, thereby protecting the next batch of birds from disease.

f. Proper waste disposal and safe carcass management i.e. incineration or burial.

g. Correct vaccination procedures

Vaccination is an essential preventative measure that strengthens the immunity of DPPs. When vaccinated birds are later exposed to a disease, their immune system can recognise and fight off the infection more quickly and effectively. Vaccines contain weakened forms of the pathogen. Once administered, the vaccine stimulates the bird's immune system to produce antibodies against that specific disease. These antibodies remain in the body, creating immunological memory so that if the bird encounters the same disease in the future, it can respond quickly and prevent severe illness.

Within the Poultry Multiplication Initiative (PMI), all DPPs are vaccinated at the hatchery as day-old chicks, typically against Newcastle Disease (ND) and Infectious Bronchitis (IB). After this initial protection, BUs and Small-Scale Producers (SSPs) receive a vaccination programme that outlines which vaccines to administer, how, and at what age.

Vaccination in poultry can be carried out through several methods, including eye drops, drinking water, spray, injection, or wing-web application. For example, one of the important vaccines given at BU level is the Fowl Pox vaccine, administered using the wing-web technique.

Steps for Wing-Web Vaccination (Fowl Pox)

Prepare the Vaccine

- Mix the vaccine according to the manufacturer's instructions.
- Use only the diluent provided.

Restrain the Bird

- Hold the bird gently but firmly.
- Extend the wing to expose the thin, featherless skin between the bones of the wing web.

Dip the Applicator

- Use the double-needle applicator provided.
- Dip the needles into the vaccine so that both tips are fully coated.

Puncture the Wing Web

- Insert the applicator straight through the skin of the wing web fold.
- Do not perforate the muscle, bones, or blood vessels.
- Ensure the needles pass cleanly through the web.

Release the Bird

- Allow the bird to move normally.
- Do not wipe the vaccination site.

Check for "Takes" After 7–10 Days

- Look for small scabs or swelling at the vaccination site.
- A scab indicates a successful vaccination.

Depending on the vaccination programme, farmers may need to administer some vaccines through drinking water. The steps for conducting drinking-water vaccination are provided in the insert.

Steps for Administering Vaccines in Drinking Water

Prepare Clean Drinking Equipment

- Wash and rinse all drinkers thoroughly.
- Ensure no soap, disinfectant, or chlorine remains, as these can kill the vaccine.

Withhold Water Before Vaccination

- Remove all drinking water for 1–2 hours (depending on the weather) so that birds are thirsty and ready to drink the vaccinated water.

Prepare the Vaccine Solution

- Use clean, cool, chlorine-free water.
- Add skim milk powder (2 g per litre) to protect and neutralize the chlorine.
- Mix the vaccine into a small amount of water first, then add to the full prepared volume.

Provide the Vaccine Water

- Fill the drinkers with the vaccine solution.
- Ensure all birds have access to the drinkers at the same time.

Allow Birds to Drink Completely

- Birds should drink all the vaccine water within 30–120 minutes depending on the prevailing temperatures. In hot environments, leave the vaccine solution for less than an hour.
- Ensure that all the birds have drunk before removing the drinkers.

Resume Normal Water Supply

- Once the vaccinated water is finished, clean the drinkers and provide fresh, clean water.

Record the Vaccination

- Note the date, vaccine name, batch number, and any observations.
- Keep records for follow-up and future planning.

Factors that Determine Vaccination Success

The effectiveness of any vaccination procedure depends on several critical factors:

- **Maintaining the Cold Chain**

The cold chain refers to keeping the vaccine at the correct temperature—from manufacture, transport, storage, until administration. Vaccines must be stored at 2–8°C. If temperatures go above or below this range, the weakened pathogens may die, rendering the vaccine ineffective. Farmers and FSRs should transport vaccines in a cooler box with ice packs and avoid unnecessary opening of the container.



- **Avoiding Contamination with Chlorine, Heavy Metals, Detergents, or Disinfectants**

Vaccines should never be mixed in metal containers or with chlorinated water, detergents, or disinfectants, as these kill the live organisms in the vaccine. To protect vaccine viability:

- Use distilled water or clean borehole water for mixing.
- Add skimmed milk or a chlorine neutraliser if using water that may contain chlorine.
- Use plastic or wooden mixing utensils.
- Ensure all mixing containers and drinkers are thoroughly rinsed with non-chlorinated water before adding the vaccine.

Even small residues of chemicals can destroy the vaccine.

- **Preventing Exposure to Direct Sunlight**

Live vaccines are extremely sensitive to heat and ultraviolet (UV) light. Exposure to direct sunlight can quickly kill the vaccine organisms. During transportation, vaccine vials should be kept in a non-transparent cooler box. When preparing the vaccine solution, vials should be opened under water and mixing should be done away from direct sunlight, in the shade.



- **Ensuring the Vaccine Is Not Expired**

Expired vaccines lose potency and will not provide adequate protection. Farmers and FSRs must check the expiry date, batch number, and vial condition before use. Expired or damaged vaccines should be safely disposed of.

iii. Procedural Biosecurity (Planning)

Procedural biosecurity refers to the rules, protocols, and management decisions that guide how the farm operates. These practices ensure that biosecurity measures are consistently applied and monitored.

Examples include:

- Record-keeping of flock health, treatments, and cleaning schedules.
- Health monitoring and vaccination programs.
- Emergency response plans for disease outbreaks.

a. Biosecurity measures that should be observed by FSRs

To prevent the spread of diseases while supporting farmers, strict biosecurity measures must be observed by FSRs. Because multiple farms are visited during their duties, careful precautions are required to ensure that pathogens are not transferred from one flock to another.

1. Personal Hygiene and Clothing:

- Clean, farm-specific protective clothing such as overalls, boots, gloves, and headgear should be worn before entering each farm.
- If farm specific clothing is not available, hair nets should be used to cover the hair and shoes.
- Footwear should be disinfected in footbaths both before entry and upon leaving the farm.
- Hands should be thoroughly washed and sanitized before and after handling birds, equipment, or feed.
- Hairnets, gloves and any other disposable protective wear should be put in a plastic bag which will be further be disposed by incineration. These materials are not biodegradable so they should not be buried in the ground.



2. Equipment and Tools:

- Dedicated tools and equipment such as scales, thermometers and pens should be disinfected between visits.
- Unnecessary items that could carry pathogens should not be taken onto farms.

3. Farm Entry Protocol:

- Farms suspected of having disease outbreaks should be visited last or avoided until the risk is reduced.
- After visiting a farm where diseases are expected, no other visits.
- Clothes worn during farm visits (especially after visiting diseased farms) cannot be worn the next day.
- All clothes should be washed with soap and footwear should be disinfected.

4. Vehicle and Motor Cycle Biosecurity:

- Vehicle tyres should be cleaned and disinfected before entering and after leaving farms.
- Vehicles should not be parked close to poultry houses or bird areas.

5. Work Planning

- Farm visits should be planned from “clean to dirty”, meaning healthy flocks are visited before those suspected of disease
- Young flocks should be visited before older flocks.
- Visits to multiple farms in a single day should be avoided if disease transmission risk is high.
- Virtual farm visits can be done to reduce transmission risk.

6. Awareness and Reporting:

- Signs of disease should be observed carefully, and farmers should be advised to record them in the form in Appendix 1.
- Sick or dead birds should not be handled unless necessary, and only when appropriate protective equipment is used.



Record Keeping

Record keeping is an essential part of disease management and overall farm biosecurity. Accurate records help farmers and animal health professionals monitor flock health, identify disease trends, and evaluate the effectiveness of control measures. They also support timely decision-making and can be used as evidence when seeking veterinary assistance or reporting outbreaks.



Number of Sick Birds:

The number of birds showing signs of illness should be recorded daily. Additionally, the signs of ill-health should be recorded as well as they happen. This information helps in detecting unusual increases in disease occurrence and assessing the spread or severity of an outbreak. It also allows for early intervention and helps evaluate the success of treatments.



Number of Dead Birds

Daily records of bird mortalities should be kept, including the dates and numbers. Tracking mortality trends provides valuable clues about the nature and progression of a disease. Sudden spikes in deaths may indicate a serious outbreak that requires immediate veterinary attention.



Actions Taken:

All steps taken in response to disease should be documented clearly, including any treatments administered (with drug names, dosages, and duration), reporting to veterinary authorities, and cleaning or disinfection activities carried out. These records help assess what interventions were most effective and ensure continuity in disease control efforts.



Appendix

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Appendix 1:
Poultry Health Record Sheet

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Appendix 2:
Veterinary and Animal Health
Contact Directory

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Appendix 3:
Checklist of Equipment Needed
for Cleaning a Poultry House

Appendix 1: Poultry Health Record Sheet

Use this sheet to record poultry health information. Fill in details daily to track flock health and support disease management.

Date	Number of Sick Birds	Number of Dead Birds	Signs Observed	Actions Taken (treatment, reporting, cleaning)	Remarks/Outcome

Date	Number of Sick Birds	Number of Dead Birds	Signs Observed	Actions Taken (treatment, reporting, cleaning)	Remarks/Outcome

Appendix 2: Veterinary and Animal Health Contact Directory

Purpose:

In the event of a suspected disease outbreak, farmers and Field Service Representatives (FSRs) must immediately contact a qualified veterinarian or animal health technician. The list below contains relevant contacts for each operational country.

Country	District/Region	Name of Veterinarian/Officer	Phone Number	Alternative Number	Email

Appendix 3: Checklist of Equipment Needed for Cleaning a Poultry House



Dry Stage

- ☐ Empty Feed Bags
- ☐ Shovel
- ☐ A Hard Broom



Wet Stage

- ☐ Low Pressure Hose
- ☐ High Pressure Hose
- ☐ Detergent
- ☐ Disinfectant
- ☐ Hard Broom
- ☐ Clean Supply of Water





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