
Certified Specialist Programme in Poultry Health (Ireland)

Poultry Disease Epidemiology

Aflatoxin mycotoxin

Related terms: mycotoxin, feed contamination

Explanation: Aflatoxins are toxic metabolites produced by *Aspergillus* species that can contaminate poultry feed, leading to immunosuppression, reduced egg production, and increased susceptibility to infectious diseases.

Avian Influenza viral disease

Related terms: H5N1, H7N9, zoonosis

Explanation: A highly pathogenic viral infection that spreads rapidly among poultry flocks, causing severe respiratory distress, high mortality, and potential transmission to humans, requiring strict biosecurity and surveillance.

Biosecurity preventive measure

Related terms: quarantine, sanitation, farm hygiene

Explanation: A set of practices designed to prevent introduction and spread of pathogens in poultry operations, including controlled access, disinfection protocols, and separation of bird groups.

Campylobacteriosis bacterial infection

Related terms: *Campylobacter jejuni*, foodborne illness

Explanation: A gastrointestinal disease caused by *Campylobacter* species, often transmitted through contaminated poultry meat, leading to diarrhoea in humans and serving as an indicator of flock health.

Case Fatality Rate epidemiologic metric

Related terms: mortality, morbidity

Explanation: The proportion of birds that die among those diagnosed with a specific disease, used to assess severity and guide control strategies within a flock.

Clostridial Enterotoxemia bacterial toxin disease

Related terms: *Clostridium perfringens*, necrotic enteritis

Explanation: A toxin-mediated condition caused by overgrowth of *C. Perfringens* in the gut, resulting in sudden death, especially in rapidly growing broilers under stressful conditions.

Clinical Surveillance monitoring method

Related terms: field observation, symptom reporting

Explanation: Ongoing collection of observable disease signs and morbidity data from farms to detect emerging health issues and trigger timely investigations.

Co-Infection multiple pathogens

Related terms: synergism, secondary infection

Explanation: Simultaneous infection of poultry by two or more pathogens, which can exacerbate disease severity and complicate diagnosis and treatment plans.

Contact Tracing epidemiologic tool

Related terms: outbreak investigation, transmission chain

Explanation: The process of identifying and documenting all birds, personnel, and equipment that have interacted with an infected flock to limit further spread.

Control Zone geographic restriction

Related terms: restricted area, disease containment

Explanation: A defined radius around an outbreak where movement of birds, products, and equipment is limited to prevent dissemination of the pathogen.

coccidiosis protozoal disease

Related terms: Eimeria spp., Intestinal parasites

Explanation: An intestinal infection caused by Eimeria species, leading to reduced feed conversion, weight loss, and increased mortality in intensive poultry systems.

Cross-Protection immunological concept

Related terms: vaccine efficacy, heterologous immunity

Explanation: Immunity conferred against one pathogen strain that partially protects against another related strain, influencing vaccine design and deployment.

Cutaneous Lesion Scoring diagnostic method

Related terms: lesion index, necrotic dermatitis

Explanation: A standardized system for evaluating skin lesions on poultry, aiding in the assessment of disease prevalence and severity in field surveys.

Diagnostic Sensitivity test characteristic

Related terms: true positive, assay performance

Explanation: The ability of a diagnostic test to correctly identify infected birds, crucial for early detection and accurate prevalence estimates.

Diagnostic Specificity test characteristic

Related terms: true negative, false positive

Explanation: The capacity of a test to correctly exclude non-infected birds, reducing unnecessary interventions and economic losses.

Direct Transmission pathogen spread

Related terms: contact infection, aerosol

Explanation: Transfer of disease agents from an infected bird to a susceptible bird without an intermediate vector, commonly occurring through droplet or feather contact.

Egg Drop Syndrome viral disease

Related terms: adenovirus, production loss

Explanation: A condition characterized by a sudden decline in egg production and quality, caused by an adenovirus that affects the reproductive tract of laying hens.

Environmental Persistence pathogen survival

Related terms: soil reservoir, fomites

Explanation: The ability of a disease agent to remain viable outside the host for extended periods, influencing outbreak duration and control measures.

Epidemiologic Curve graphical representation

Related terms: outbreak pattern, temporal distribution

Explanation: A visual plot of case numbers over time that helps identify the source, spread dynamics, and effectiveness of interventions during a disease event.

Epidemiologic Triad framework

Related terms: host, agent, environment

Explanation: A model describing the interaction of a susceptible host, a pathogenic agent, and environmental factors that together determine disease occurrence.

Fecal-Oral Route transmission pathway

Related terms: ingestion, contamination

Explanation: The primary route by which many enteric pathogens spread among poultry, involving ingestion of contaminated feed, water, or litter.

Feed Withdrawal management practice

Related terms: pre-slaughter, stress reduction

Explanation: The temporary cessation of feed before processing to reduce gut contents, which can also affect disease dynamics by altering gut flora.

Flock Immunity herd immunity concept

Related terms: vaccination coverage, resistance

Explanation: The level of collective immunity in a poultry population that reduces the likelihood of disease spread, achieved through vaccination or natural exposure.

Fowl Pox viral disease

Related terms: poxvirus, skin lesions

Explanation: A poxvirus infection causing proliferative skin lesions and diphtheritic forms affecting the respiratory tract, controlled by live attenuated vaccines.

Genetic Susceptibility host factor

Related terms: breed resistance, lineage

Explanation: Inherent differences among poultry breeds or lines that influence their vulnerability to specific pathogens, informing breeding strategies for disease resilience.

Heterologous Vaccine vaccine type

Related terms: cross-protection, antigenic drift

Explanation: A vaccine formulated with antigens from a different strain than the circulating pathogen, used when a homologous vaccine is unavailable.

Host-Pathogen Interaction biological relationship

Related terms: immune response, virulence

Explanation: The dynamic processes through which a pathogen invades, replicates, and evades the host's defenses, determining disease outcome and transmission potential.

Incidence Rate epidemiologic measure

Related terms: new cases, population at risk

Explanation: The number of new disease cases occurring in a defined flock during a specific time period, expressed per 1,000 birds, useful for trend analysis.

Infectious Dose pathogen threshold

Related terms: minimum inoculum, exposure level

Explanation: The smallest quantity of a pathogen required to establish infection in a susceptible bird, guiding biosecurity and dosing strategies.

Infectious Period temporal factor

Related terms: contagiousness, shedding

Explanation: The time span during which an infected bird can transmit the pathogen to others, critical for determining isolation duration.

Isolation Unit containment facility

Related terms: quarantine, disease control

Explanation: A dedicated area where infected or suspect birds are housed separately to prevent pathogen spread while diagnostic work is performed.

Latency Period time interval

Related terms: incubation, subclinical phase

Explanation: The interval between infection and the appearance of clinical signs, during which the bird may still shed the pathogen.

Live-Attenuated Vaccine vaccine type

Related terms: attenuation, immunogenicity

Explanation: A vaccine containing weakened but viable pathogens that stimulate robust immunity without causing disease, commonly used for Newcastle disease and fowl pox.

Logistic Regression statistical model

Related terms: risk factor analysis, odds ratio

Explanation: A method for evaluating the relationship between multiple variables and the probability of disease occurrence, aiding in identification of significant risk factors.

Mortality Rate outcome metric

Related terms: death proportion, flock loss

Explanation: The proportion of birds that die from a disease relative to the total population, informing economic impact assessments.

Mycoplasma gallisepticum bacterial pathogen

Related terms: MG, chronic respiratory disease

Explanation: A cell-wall-less bacterium causing chronic respiratory infections, leading to reduced growth, egg production losses, and heightened susceptibility to secondary pathogens.

Nephropathogenic Avian Influenza virus subtype

Related terms: H9N2, kidney lesions

Explanation: A low-pathogenic avian influenza strain with a propensity for causing kidney damage, resulting in decreased feed intake and increased mortality in layers.

Outbreak Investigation response process

Related terms: case definition, source tracing

Explanation: A systematic approach to identify the cause, source, and spread of a disease event, involving data collection, laboratory testing, and control recommendation.

Pathogenicity Index virulence measure

Related terms: LD50, disease severity

Explanation: A quantitative assessment of a pathogen's ability to cause disease, often expressed as the lethal dose required to kill 50 % of exposed birds.

Penicillin-Resistant Salmonella antimicrobial resistance

Related terms: multidrug resistance, treatment failure

Explanation: Strains of Salmonella that have acquired resistance to penicillin-class antibiotics, complicating therapeutic options and increasing public health concerns.

Performance Indicators management metrics

Related terms: feed conversion ratio, lay rate

Explanation: Quantitative measures used to evaluate flock health and productivity, where deviations may signal underlying disease problems.

Phylogenetic Analysis genetic study

Related terms: sequence alignment, evolutionary relationships

Explanation: The examination of pathogen genetic sequences to determine lineage, track transmission pathways, and detect emerging variants.

Poultry Disease Surveillance monitoring system

Related terms: reporting network, early warning

Explanation: Ongoing collection and analysis of health data from poultry farms to detect trends, emerging threats, and inform policy decisions.

Prevalence population measure

Related terms: existing cases, disease burden

Explanation: The proportion of birds within a flock that are infected at a given point in time, providing a snapshot of disease impact.

Prophylactic Vaccination preventive strategy

Related terms: immune priming, herd protection

Explanation: Administration of vaccines to healthy birds before exposure to a pathogen, aiming to reduce incidence and severity of disease outbreaks.

Quarantine restriction practice

Related terms: isolation, movement control

Explanation: The temporary separation of new or suspect birds from the main flock to monitor for signs of disease before integration.

Rapid Diagnostic Test field assay

Related terms: point-of-care, lateral flow

Explanation: A quick, often immunochromatographic, test that provides results within minutes, enabling immediate decision-making during an outbreak.

Re-emergence disease phenomenon

Related terms: resurgence, endemic

Explanation: The return of a previously controlled or low-incidence disease, often due to lapses in biosecurity, vaccine failure, or pathogen evolution.

Reference Laboratory diagnostic center

Related terms: confirmatory testing, standardization

Explanation: A specialized facility with advanced capabilities for definitive identification of pathogens, providing authoritative results for surveillance programs.

Reservoir Host carrier species

Related terms: asymptomatic, wildlife

Explanation: An animal species that harbors a pathogen without showing disease, serving as a source of infection for domestic poultry.

Reverse Zoonosis transmission direction

Related terms: anthroponosis, human-to-animal

Explanation: The spread of pathogens from humans to poultry, a concern for certain viral and bacterial agents in intensive production settings.

Risk Assessment evaluation process

Related terms: hazard analysis, probability

Explanation: Systematic analysis of the likelihood and consequences of disease introduction, informing mitigation strategies and resource allocation.

Salmonella Enteritidis foodborne pathogen

Related terms: egg contamination, zoonosis

Explanation: A serovar of Salmonella frequently associated with contaminated eggs, causing gastroenteritis in humans and indicating flock health issues.

Sampling Strategy methodology

Related terms: random sampling, stratified design

Explanation: The planned approach for selecting birds, litter, or environmental specimens to obtain representative data on disease presence.

Seroconversion immune response marker

Related terms: antibody titre, exposure

Explanation: The development of detectable antibodies in a bird's serum following infection or vaccination, used to assess immunity levels.

Serotype antigenic classification

Related terms: O antigen, variant

Explanation: A subdivision of a bacterial species based on distinct surface antigens, critical for epidemiological tracking and vaccine selection.

Shedding pathogen excretion

Related terms: viral load, environmental contamination

Explanation: The release of infectious agents from an infected bird via feces, respiratory secretions, or skin, contributing to transmission dynamics.

Spillover Event cross-species transmission

Related terms: zoonotic jump, wildlife reservoir

Explanation: The occurrence where a pathogen moves from its natural host into poultry, often leading to novel disease emergence.

Standardized Case Definition diagnostic criterion

Related terms: surveillance protocol, uniformity

Explanation: A set of specific clinical and laboratory criteria used consistently across investigations to identify cases of a particular disease.

Statistical Power study attribute

Related terms: sample size, detection probability

Explanation: The likelihood that a study will correctly detect a true association between risk factors and disease occurrence, influencing research design.

Stochastic Model simulation tool

Related terms: randomness, epidemic forecasting

Explanation: A mathematical model incorporating random variation to predict disease spread under uncertain conditions, useful for scenario planning.

Susceptible-Infected-Recovered (SIR) Model epidemiologic framework

Related terms: compartmental model, disease dynamics

Explanation: A classic model dividing a bird population into susceptible, infected, and recovered groups to simulate outbreak progression and intervention impact.

Swab Sample specimen type

Related terms: oropharyngeal, cloacal

Explanation: A collection method using a sterile swab to obtain material from bird mucosal surfaces for laboratory testing of respiratory or enteric pathogens.

Synanthropic Species human-associated wildlife

Related terms: pigeons, rats

Explanation: Animals that thrive in human-dominated environments and may act as vectors or reservoirs for poultry diseases.

Temporal Cluster time-based grouping

Related terms: epidemic curve, outbreak period

Explanation: A concentration of disease cases occurring within a defined time frame, suggesting a common exposure source or rapid transmission.

Transmission Coefficient parameter

Related terms: beta, reproduction number

Explanation: A value representing the rate at which a pathogen spreads from infected to susceptible birds, influencing the basic reproductive number (R_0).

Vector-Borne Disease transmission type

Related terms: mosquito, mite

Explanation: Diseases transmitted by arthropods such as mosquitoes or mites, exemplified by avian malaria and certain viral encephalitides.

Virulence Factor pathogenic trait

Related terms: toxin, adhesion molecule

Explanation: A component of a pathogen that enhances its ability to cause disease, including enzymes, toxins, or immune-evading structures.

Viral Load quantitative measure

Related terms: PCR, shedding intensity

Explanation: The concentration of virus particles in a biological sample, indicating infection severity and potential for transmission.

Welfare-Based Surveillance holistic monitoring

Related terms: behavioral indicators, stress markers

Explanation: The collection of data on bird behavior, health, and environmental conditions to detect early signs of disease and improve overall flock wellbeing.

Zoonotic Potential human risk factor

Related terms: spillover, public health

Explanation: The capacity of a poultry pathogen to infect humans, influencing risk assessments and the need for integrated One Health approaches.