



Poultry Extension Collaborative newsletter

A collaboration between Purdue University, University of Maryland,
University of Georgia, and Virginia Tech

Sickness Behavior in Chickens



Sickness behavior is an animal's adaptive response to disease which aids in their recovery. When an animal is infected by a pathogen, an immune response involving immune cell and immune molecule activity is stimulated and sickness behavior results.

Sick chickens are difficult to identify because they rarely show signs of illness before it becomes severe. As a prey species, chickens are stoic and instinctually hide sickness behavior in the presence of a perceived threat, such as humans, as sickness behavior tells predators that the ill chicken may be an easy meal.

What is Normal Chicken Behavior, and What Does it Look Like?

Before we can determine sickness behavior, we must first understand what normal behavior is. Normal (natural) chicken behaviors are those animals display under natural conditions specific to the species, occur in nature, and happen out of their own interest. Expression of natural behaviors indicates an animal is healthy and has good welfare, and changes in their duration or frequency can indicate poor welfare. Natural behavior is influenced by a combination of age, sex, genetics, experience, and environment and varies between individuals.

Understanding normal behavior for your specific birds is important. The expression of some natural chicken behaviors can indicate welfare status, such as preening, dust bathing, foraging, perching, play, aggression, and reproductive behaviors. Chickens are a social species and need to be raised in groups. Social hierarchy is important and helps maintain social balance. Time spent engaging in natural behaviors will vary between breeds and individual chickens.

Normal Chicken Behaviors

Preening is a form of grooming where a bird will run its beak through its feathers to distribute oils and realign the feathers. Allopreening is an affiliative behavior that is preening directed at conspecifics (other chickens) and helps maintain positive social bonds.

Dust bathing is a series of behaviors that includes pecking and scratching at a substrate, sitting and flapping to gather and distribute dust particles, then laying and rubbing or rolling and shaking off the particles. Dust bathing cleans feathers and is thought to aid in the removal of external parasites. It can also be a social activity, in which chickens may dust bathe together.

Foraging is an exploratory behavior that occurs when a chicken scratches or pecks at a potential food source, such as dirt or grass. Chickens are highly motivated to forage and may spend most of their day foraging, even when food is freely available in the feeder. Foraging provides chickens with information about their environment. It is also self-rewarding, as chickens may discover higher quality food items. Chickens are socially motivated to forage and will forage more in the presence of others.



Normal Chicken Behaviors (cont.)

Perching refers to a chicken sitting on surfaces elevated above the ground. Chickens often perch close to the ground and prefer to roost (sleeping while perching) at greater heights. Depending on their environment, perching allows chickens to safely rest and escape ground predators and aggressive peers.



Play can be either a social activity or individual activity and includes several behaviors such as sparring, food-running, and frolicking. Sparring is fighting without intent to injure and may involve jumping with light kicking or pecking and stand-offs. Physical contact during sparring isn't forceful nor does it cause the recipient bird to avoid the other. Food-running is chasing another bird with a piece of feed or large object, and frolicking refers to spontaneous activity such as running, jumping, or wing flapping. Sparring and chasing may become more aggressive after 2-3 weeks of age.

Aggression is an agonistic behavior that occurs when birds make physical contact with one another with the intent to injure. Aggressive behavior can include brief or forceful pecking and scratching or jumping at the other bird, and the recipient bird may attempt to avoid the aggressor or respond in kind. Aggression can also involve threats without physical contact or intent to injure, consisting of birds looking at and circling one another, puffing out their chests, spreading their wings, and elongating their spines. Aggressive behaviors typically occur to establish and maintain social hierarchy (pecking order) or may result from competition over limited resources, such as space or food. Threats serve as a less risky means of maintaining pecking order or competing for resources.

Reproductive behaviors begin when chickens become sexually mature around 4-5 months of age, but may vary by breed, environment, age, and sex. Cockerels and roosters may wing flap, tail-wag, crow, and waltz to attract females or engage in courtship, and receptive hens will crouch. Hens will also display nesting, egg laying, and brooding and mothering behaviors, depending on the environment.



What Does Sickness Behavior Look Like?

Sickness behaviors in chickens include a wide variety of behaviors, which can vary from subtle to clear clinical signs of illness. Sickness behavior can also appear as a reduction in frequency, duration, or intensity of normal behavior.

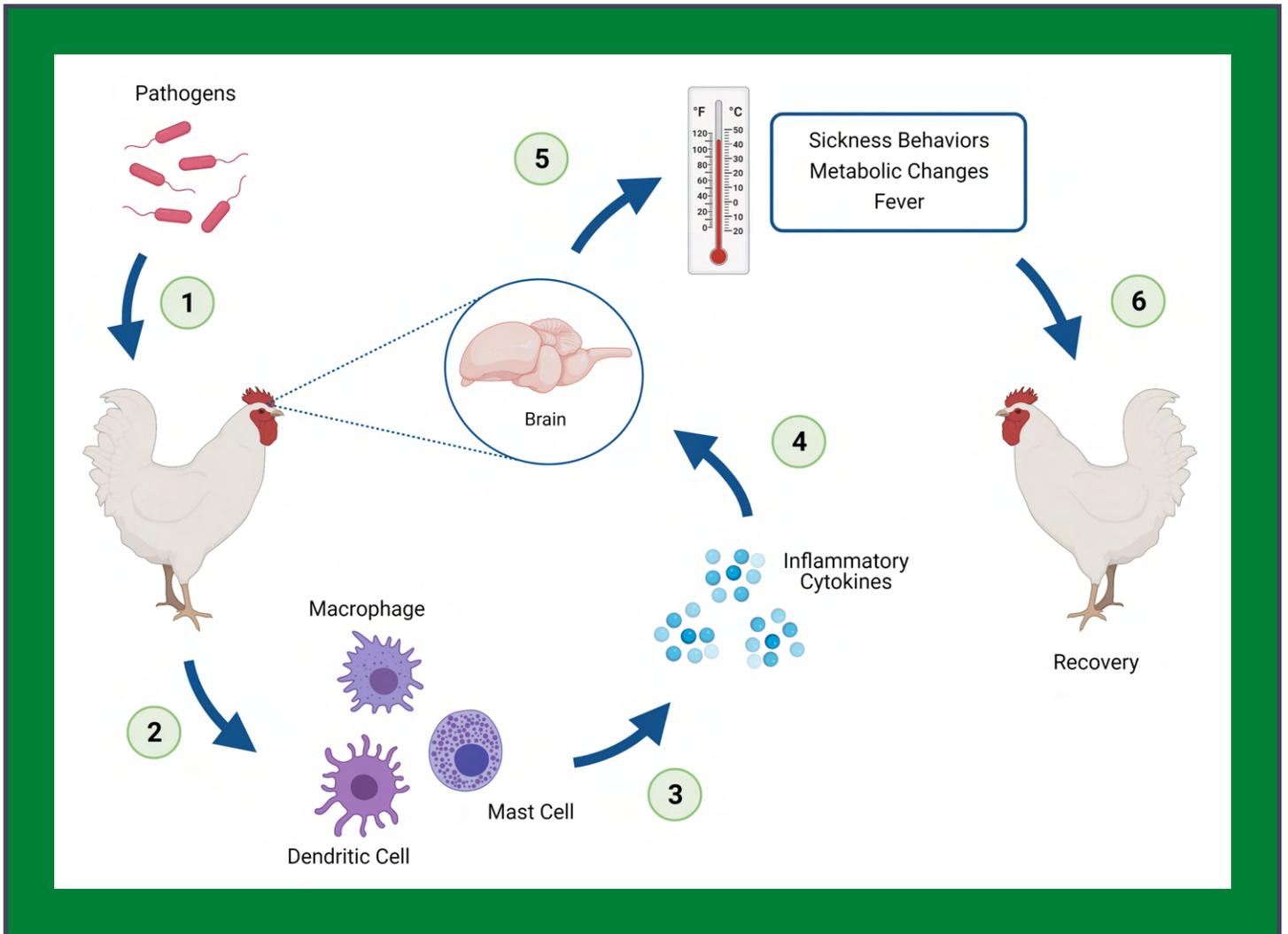
Behavior	You might see:
Dullness or Depression	Reduced interest in the environment and interactions with conspecifics.
Fatigue (Lethargy)	Not standing or moving around as much as normal. More time is spent sitting or resting, often with eyes closed.
Inattentiveness	Reduced or no response to stimuli or stressors, such as human presence, sounds, or motions.
Anorexia	Eating or drinking less than normal.
Isolating	Fewer social interactions with others than usual and may self-isolate by spending more time away from the rest of the flock.
Coughing (Snicking)	Sudden exhalation of air usually paired with vocalization in an attempt to clear the throat, which can indicate respiratory disease.
Hunching	Typically standing, with ruffled feathers, neck pressed into its chest, and head down. Often with drooping wings and closed eyes.



Source: Acetta-Scott, 2015

Source: Adapted from Dar et al., 2019; Matthijs et al., 2017; Weary et al., 2014; Seifi et al., 2012; Cheng et al., 2004; and Mauldin, 1992

How Does Infection Cause Sickness Behavior?



Source: Adapted from Hart and Hart, 2019; Tizard, 2008; and Johnson, 2002; Created in BioRender.com

1. A pathogen infects the animal.
2. Infection stimulates innate immune cells—cells that serve as the body's first line of defense against invaders—at the site of infection. Examples include macrophages, dendritic cells, and mast cells.
3. The stimulated immune cells release protein molecules called cytokines.
4. Cytokines serve multiple roles:
 - a. Cytokines act as messengers between the immune system and the brain. The cytokines travel to the brain through either the bloodstream or nervous system and bind to receptors on brain cells.
 - b. Cytokines can also play a role in inflammation (pro-inflammatory cytokines) and contribute to pain, affecting sickness behavior through the presence of pain.
 - c. Specific cytokines can directly influence certain sickness behaviors. For example, interleukin-1 β can reduce eating behavior (anorexia).
5. The brain responds by inducing physiologic and metabolic changes, such as fever, as well as distinct behaviors that aid recovery, such as fatigue.
6. Fever, metabolic changes, and behavioral changes inhibit pathogen growth and promote recovery.

How Does Sickness Behavior Contribute to Recovery?

Sick animals behave in a way that promotes healing and recovery. Often, this involves prioritizing a different selection of behaviors from typical.

These trade-offs reallocate resources and energy to fighting infection, particularly through the febrile response (fever) which both suppresses and destroys pathogens during infection. Fever is associated with high metabolic costs, and the febrile response is aided by behaviors and metabolic changes that reduce heat loss, increase heat production, and conserve energy.



Other behavioral trade-offs include fatigue, inactivity, and reduced natural behaviors, such as eating. Fatigue reduces the energy and resources needed for metabolism so they can instead be used to activate the immune system and aid in recovery from infections. The conservation of energy permits its use towards immune cell replication and maturation as well as cytokine and antibody release. Reduced activity additionally preserves resources by limiting energy expenditure. Anorexia directly suppresses infection by reducing the nutrients available for pathogens to use toward replication. Behaviors that support long-term health, such as play and reproductive behaviors, may decrease to conserve energy and promote recovery.



Chicken Welfare: What Can We Do?

Sickness management is important to the health and welfare of our chickens.

Identify chickens with behavioral or physiological signs of illness and evaluate the need for treatment. Chickens that are or may become sick should be removed from the flock and isolated in a hospital pen to provide specialized care and prevent the spread of disease to healthy chickens. In a commercial setting, treatment may not be practical but identification will aid in preventing transmission to other flocks or farms.



Establish a relationship with a reliable local veterinarian, call your vet for a diagnosis, and treat your chickens as directed. Chickens whose health is severely impaired and are unlikely to survive due to infection may need to be euthanized.

Prevent sickness in your chickens by knowing what distresses your chickens and how they behave during stressful events. Manage and reduce stressors, as they are linked to suppressed immune function. Practice biosecurity and maintain high hygienic standards when working with or handling your chickens. Consider vaccinations to prevent disease. Quarantine new flock members before introducing them into your flock, to confirm they are healthy and prevent disease transmission into your flock.



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