Stress in birds

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Physiological reaction to stress:

Stress acts on the hypothalamus resulting in the release of corticotrophin releasing factor (CRF). CRF stimulates the anterior pituitary gland to release adrenocorticotrophin hormone (ACTH), which acts on the adrenal gland medulla to release epinephrine, norepinephrine and adrenorphines. These compounds have an effect on energy metabolism (an increase in lipolysis, glycogenolysis, and insulin production, and a decrease in gluconeogenesis and glucose utilization), and blood flow (an increase in blood flow to skeletal muscles, heart muscles, brain, skin and gastrointestinal tract as a result of increased heart rate and contraction and increased blood volume). Energy that could have been used in the production of more meat and eggs in these birds ends up being used to respond to stress.

Causes of stress: A husbandry system can be stressful if it exerts abnormal or extreme demands on the bird. Stresses can be mental, physical or a combination of both.

Family poultry are subjected to **mental stress** (pain, fear, anxiety) during a variety of common activities including:

- Catching
- Being chased by predators
- Running away from vehicles
- Tying and wing restraint,
- Bundling in crates (“tenga”)
- Being on vehicle roof tops for transportation
- Not having adequate food or water

The mental stress associated with these activities may be caused by visual, auditory, social, and/or physical factors.

Birds are subjected to **physical stress** (environmental: heat, cold, wind, strokes, wounds, etc.) through injuries and by actions such as:

 Being caught by the legs and tied in groups

 Holding upside down

 Loading and unloading

 During transport (vehicle movements, windy conditions, change of environment)

Mixed stressors can come from living conditions such as:

 Environmental changes (fluctuations in temperature, lighting schedules or intensity, rains, flooding),

 Changes in the social order in a flock (new entrants from the market or gifts)

 They can also be caused by disease, such as, parasitism (ecto-, haemo-, and endoparasitism, inapparent infections, and exposure to poisons (household insecticides and herbicides, poisonous plants and poisonous animals)

 Crowding

Consequences of stress:

Immunosuppression: All stimuli that provoke stress will cause immunosuppression. Indigenous poultry are particularly susceptible to stress and this may be reflected in their poor responses to vaccination (Newcastle disease, infectious bursal disease). This has been demonstrated by comparing the responses of commercial birds and indigenous chickens and ducks.

Immunosuppressed birds succumb more easily to both infectious conditions (viral diseases and bacterial diseases) and non-infectious conditions (such as worm infestations) than non-immunosuppressed birds. Some of these birds become carriers of various diseases for other healthy birds around them. To be optimal, any disease control and prevention measures should consider the stressors in family poultry. The raising, transportation, marketing, and movement of birds to and from various sites need to be done in a way that minimizes stress for the birds. Vaccination programs need to be appropriately targeted for scavenging poultry, taking into account their interactions with wild birds, other livestock, and humans, but also considering the difficulty and in handling and vaccinating them.