



Welfare considerations for on-farm or backyard slaughter of poultry

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On-farm or backyard slaughter of poultry has some advantages and disadvantages from an animal welfare perspective. In this text, some considerations are discussed in relation to the animals' experience prior to slaughter and some suggestions are provided for humane slaughter.

The (dis)advantages of on-farm or backyard slaughter

The advantage of slaughtering animals on farm or in the backyard is that they do not have the stress of transport to market or the slaughter plant. Poultry are usually slaughtered by exsanguination or by decapitation. All approaches to slaughter have the potential for poor welfare as often there is little or no external oversight or formal training. Animals may experience potential stressors during the time before and at slaughter, such as handling and increased human contact, unfamiliar environments, lack of food and water, varying climatic conditions, and changes in social structure, e.g. separation from original social group. If those potential stressors are managed well, most animals may feel minimal fear at slaughter. However, if those are not managed well, they can result in negative experiences such as fear, dehydration and hunger, fatigue and pain.

Meat quality

The animal's physiological responses to those experiences can affect meat quality. Stress can affect the acidity and water-holding capacity of the muscle. In poultry 'dark firm dry' (DFD) meat results from pre-slaughter stress, for instance extreme cold or rough handling. DFD meat has a higher pH, which means the normal post-mortem setting of meat (rigor mortis) does not occur and the meat looks dark, and is firm and dry. Also, the meat can have a bad taste. The meat is more susceptible to spoiling due to bacteria. DFD meat indicates that the animals experienced stress, injury, disease or fatigue before slaughter.

Restraint

At commercial and on-farm slaughter, birds are suspended upside down, either shackled or in the killing cone. While shackling may improve the efficiency of killing and, in some cases, reduce the time the animal may be subjected to the intense stimuli associated with the period just before slaughter, suspension by the legs can cause great distress.

Some birds may struggle and vocalize when they are inverted, others cope by going into a state of tonic immobility whereby they are completely still. Although the birds seem calm, tonic immobility is associated with great fear. Poultry would usually show this behavior in response to a predator, by playing dead. This TI is used in research to assess their level of fearfulness. This immobility, and the birds' small size compared to other animals may be some of the reasons why inversion of conscious poultry has been widely accepted.

There are other welfare concerns due to being restrained upside down: gravity causes abdominal organs to increase pressure on the heart and respiratory system (because poultry do not have a diaphragm) which increases the work that the heart and respiratory system do. This will feel increasingly more uncomfortable over time. Another stressor for inverted birds is, almost certainly, the psychological experience of being unable to right themselves. However, there has been little research on the extent to which birds are distressed by inversion. In one example researchers evaluated stress in three groups of broilers who were shackled, respectively, for 30 seconds, 60 seconds or 120 seconds. Based on behavioral measures and measurements of corticosterone and lactate, the authors concluded that shackling those birds for more than 60 seconds caused excessive stress (Badanova et al 2007). But in their study, the animals did not undergo other stressors due to transport, crating, and holding at the plant that commercial poultry typically have before being slaughtered. The OIE guidelines (World Organisation for Animal Health, 2009) are that the interval between inversion and stunning should not exceed 60 seconds.

Slaughter with or without stunning

If animals are conscious when their throat is cut they may experience pain, fear, anxiety and distress from the method of restraint and from the cut itself. If it takes the animals a long time to lose consciousness they may feel further distress due to hypotension caused by blood loss. Cutting the throat may cause aspiration of blood into the upper and lower respiratory tracts during breathing.

To avoid unnecessary suffering, poultry and other animals are often made unconscious, i.e., stunned, prior to exsanguination at slaughter. The requirement for stunning prior to slaughter is based on the understanding that (1) animals are sentient beings, thus can experience pleasure and pain, and (2) that neck cutting causes pain and suffering, which can be avoided by pre-slaughter stunning.

From an animal welfare perspective, it is important that a stun results in limited pain and the animal remains unconscious until and after the neck is cut or broken. The bird should be rendered unconscious before it is able to register that it has been stunned. In many species measurements indicate that it takes about 200 milliseconds ($1/5^{\text{th}}$ of a second) for the nervous system to register and interpret pain from the stun, so ideally a stun should be effective within 200 milliseconds.

Different stunning methods

The most common methods of stunning are electrical stunning, captive bolt stunning, percussive stunning, or gas stunning. Both electrical, captive bolt and percussive stunning can achieve immediate loss of consciousness, so within 200 milliseconds. However, animals stunned with electricity regain consciousness within 20 to 60 seconds depending on the species; so they must be killed very quickly. In

contrast, penetrative captive bolt stunning can result in long-lasting or permanent loss of consciousness, so there is less time pressure to kill them as quickly.

Electrical stunning: First, electrical stunning. This method renders animals unconscious by delivering electrical energy to the brain and causing a ‘grand mal’ seizure, i.e. uncoordinated electrical activity, like epilepsy. The amount of electrical energy supplied to the brain (the current) depends on the voltage; this is influenced by the electrical resistance of the tissues in the head. Too low voltage, and it may take longer than 200 milliseconds for the birds to lose consciousness, too high and it may reduce meat quality due to hemorrhaging in the muscle. Recommended levels are 300-400mA for small birds, like chickens, and 400mA for larger birds like turkeys.

Current flow is reduced by poor contact between the electrodes and the head, which can be made worse by dirt on the electrodes or the bird. Poor current flow can result in an ineffective stun and considerable suffering to the bird. Pre-wetting the bird’s head (using a wet sponge) can improve the electrical contact.

Signs of an effective electrical stun:

- Neck arched with eyes fully open;
- No rhythmic breathing immediately after the stun;
- Rigidly extended legs;
- Constant rapid body tremors;
- Wings held close to the body (following initial uncontrolled bursts of flapping).

Check for unconsciousness

It is important to check unconsciousness by the absence of a blink reflex when the cornea (the surface of the eyeball) is touched. If there is a blink reflex, it may be a sign of some brain function returning and it indicates the possibility that consciousness may also be returning. Do not hesitate to repeat the stun or use an alternative method.

Wing flapping after stun: Electrical stunning disrupts the normal co-ordination between brain activity and spinal reflexes, which results in uncontrolled wing flapping and body movement, like leg paddling. Do not be alarmed by this involuntary movement, it is a sign of an effective stun and will continue in the unconscious bird until the spinal cord stops functioning.

Captive bolt: With captive bolt stunning, you apply a severe blow to the head resulting in the nervous tissue is severely damaged and animal becomes unconscious within 15 milliseconds. The bird may also die, but you still need to break the neck or bleed it out. A captive bolt gun may be penetrating or non-penetrating. The positioning is important. It may result in uncontrolled body movement and wing flapping, which it is a sign of an effective stun. This will continue in the unconscious bird until the spinal cord stops functioning.

Signs of an effective concussion stun:

- No rhythmic breathing (check for abdominal movements in the vent area);
- Uncontrolled wing flapping;
- Leg flexion and extension;

- No neck tension;
- No vocalization.

Gas stunning entails loss of consciousness or killing due to anoxia. This means the bird inhales a blend of gases that result in lack of oxygen in the blood and central nervous system. It should be followed by bleeding. This method is not recommended for the on-farm or small-scale slaughter of poultry as welfare and safety hazards are likely to occur without the necessary facilities for precise monitoring of the gas. Also, some gasses like, CO₂ can cause irritation and aversion.

Slaughter methods

Inappropriate slaughter methods include neck crushing, manual concussion, drowning or freezing. Neck crushing with pliers is deemed inhumane because animals die from asphyxiation rather than brain damage or cardiac arrest. Manual concussion could be done by using a rod or bat, however, this it is difficult to perform appropriately and may result in extreme pain and distress if done incorrectly. Drowning or freezing are slow methods and can be extremely stressful.

Three appropriate slaughter methods include exsanguination, or neck cutting, cervical dislocation, breaking the neck, or decapitation.

Neck dislocation may be preferable to neck cutting following the stunning of diseased casualty birds, to avoid the risk of disease spread from spillage of blood and bodily fluids. Neck dislocation kills the bird by a combination of rupturing the spinal cord, which stops breathing, and by disrupting the blood flow to the brain by rupturing the blood vessels in the neck. Neck dislocation without prior stunning has been widely used as a method of killing poultry. However, research findings have suggested that neck dislocation does not consistently concuss the brain and it is unlikely to cause immediate insensibility. Neck dislocation without prior stunning is therefore not recommended for the routine slaughter of poultry and should only be used in an emergency or for the slaughter of very small numbers of birds where better methods are not available.

Decapitation involves severing the head from the neck using an axe or sharp blade. It is not recommended on welfare grounds as brain activity may continue for up to 30 seconds and it is doubtful the bird is rendered immediately unconscious. Decapitation is not an acceptable method of slaughter without prior stunning.

Some information from this text came from the following sources

<https://www.hsa.org.uk/>

<https://www.globalanimalnetwork.org/concepts-animal-welfare-16-livestock-slaughter-and-killing-animals-disease-control>

Martin, Jessica E. (2015). Humane mechanical methods for killing poultry on-farm. PhD thesis. <http://theses.gla.ac.uk/6634/>