Hygiene Protocols for the Prevention and Control of Diseases (Particularly Beak and Feather Disease) in Australian Birds

Boot baths, Gloves and Face Masks

Australian Government

Department of the Environment and Heritage

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Note

This document describes *Boot Baths, Gloves and Face Masks* and has been developed with the involvement and cooperation of a broad range of stakeholders, but the making of this document does not necessarily indicate the commitment of individual stakeholders to undertaking any specific actions. The attainment of objectives and the provision of funds may be subject to budgetary and other constraints affecting the parties involved. Proposed actions may be subject to modification over the life of the document due to changes in knowledge.

Bootbaths

There has been much debate over the efficacy of boot baths. Some say they are ineffective, others that they work and others that, although ineffective, if used after shower in-shower out, they instil a sense of responsibility and awareness of biosecurity in staff. Time constraints within a busy facility, as well as gross organic overload, make boot "baths" at the best a quaint ritual.

There are a number of problems associated with the use of boot baths:

1. Personnel step over them when supervisors are absent;
2. Rubber boots have an irregular porous surface in which microorganisms are present and so disinfectants cannot contact them;
3. The upper parts of rubber boots do not come into contact with the disinfectant and so act as a fomite, possibly transferring potential pathogens to a clean area;
4. If the lower, grossly contaminated parts of boots are not scrubbed to rid them of mud and other detritus, the disinfectant solution is rapidly neutralised by organic overload;
5. The contact time is of the order of a couple of seconds, when most manufacturers of disinfectants stipulate times of at least 10 minutes; and
6. When freshly prepared, bootbaths do reduce bacterial contamination on grossly clean boots, but it is commonplace for the disinfectant solution to be placed in the bootbath at the beginning of each day and left to become a thicker and thicker microbial soup as the day progresses.

Furuta *et al*. (1993), using orthodichlorobenzene solution as a disinfectant, compared boots dipped in a bootbath containing a recommended dilution of disinfectant with control boots and no significant differences were observed between them. Sundheima and Eide (1999) found high levels of bacterial contamination in boot baths. Morley *et al.* (2005) stated that disinfectant boot baths should not be expected to disinfect bootwear, but they may help in reducing the risk for nosocomial infection when used with effective disinfectants. The concentration of disinfectant in the baths should be monitored to ensure effective disinfection.

Amass *et al.* (2000, 2001) found that scrubbing visible manure from boots enhanced the removal of significant numbers of bacteria. However, simply walking through a boot bath did not reduce bacterial counts on the boots. Standing in a boot bath for up to 2 minutes without scrubbing off the manure also did not significantly reduce bacterial counts except when using a cost-prohibitive disinfectant. Scrubbing visible manure off in a water bath was as efficacious as scrubbing manure off in a disinfectant bath as far as reducing bacterial counts. However, scrubbing manure off in a bath of disinfectant contaminated the disinfectant solution and rendered the boot bath ineffective.

They concluded that the use of boot baths might place pigs at risk of infection because microbial contamination was being transported on boots between modules on the farm.

Boot baths are rarely managed correctly, but can be effective. They should be replenished or refilled at regular intervals. Boot baths do remind personnel of the need for hygiene.

For these reasons, boot baths are not recommended, and that, as a minimum hygiene practice, staff entering a facility and modules within a facility change their clothing and boots and wear disposable gloves and head cover in each module, and change on exit, leaving the disposable gloves in a container. Best practice would be to shower in and shower out. They should not take any utensils or equipment into the module - any used there should be dedicated to that module and remain there.

Disposable Gloves

Wearing disposable gloves will be recommended in modules within a quarantine facility. They should be worn at all times during a necropsy.

Repeated exposure to disposable natural rubber latex gloves has been associated with allergic reactions such as skin rashes, asthma and even anaphylactic shock. In addition, some people may be allergic to the cornstarch powder placed in the gloves to facilitate putting them on and off - removing the gloves causes a significant aerosol of cornstarch (NIOSH, 1997).

Refer to the following web sites: Union Safe Site
Workers Health Centre

Once a user is sensitised to latex in gloves, any contact with latex can trigger a reaction. The National Institute for Occupational Safety and Health (USA) recommends that persons allergic to latex wear a medical alert bracelet (NIOSH 1997).

Powderless nitrile gloves are generally the material of choice for a necropsy, especially if gloves are recommended by an authority and there is a risk, however small, that their use might harm an employee. Another advantage is that they do not stick together, a problem with latex gloves.

- Before use, check the gloves for tears or holes.
- Use a glove of the correct size - gloves that are too small restrict movement, are uncomfortable and may tear whereas overlarge gloves may interfere with fine movements and may even slip.
- When working, it may be advisable to wash the gloves frequently with water.
- When a glove is removed, care should be taken to avoid the contaminated exterior contacting the skin.
- Never handle fomites while wearing gloves.
- When doing a necropsy, it is preferable to speak into a recording device, rather than taking hand-written notes or relying on your memory to record your findings later.
- Wash hands thoroughly after removing gloves.

Surgical Face Masks

Suppliers of surgical face masks make the claim that disposable caps and face masks are a "protective barrier from blood and body fluids". The standard for surgical face masks applies to use in health care where it is necessary to keep cross-contamination between the health care worker and the patient to a minimum (not the other way!). The standard does not apply to situations where an additional degree of respiratory protection may be required from the risk of airborne transmission infection from another person to the person wearing the mask.

There are four types of respirator/surgical masks available in Australia – Australian Standards 1715 and 1716:

- P3: full face piece, highly effective
- P2: preferred for protection against viruses, if used correctly. May not be effective at high respiratory rates (hard work). Also international standard P95.
- P1: lowest form of resistance
- Non-approved personal protective equipment surgical mask – seal around side of face is not protective

Standards 1715 and 1716 are available at:

http://www.standards.com.au/catalogue/script/search.asp

A P2 mask is uncomfortable to wear for long periods.

Surgical face masks protect the carcase and other people mainly by diverting the flow of air from breathing straight out and over the carcase to redirecting it away from the carcase. If you cover a carcase with glad-wrap or a piece of transparent plastic before you open the abdominal cavity, you will not be exposed to the aerosol plume that may come up to your face. After that, if there is no breeze coming toward you from the carcase, you are unlikely to be exposed to aerosols from the carcase. For example, if you hold a candle at arm's length, you can blow it out relatively easily, but if you try to suck it out, you have to bring the candle very close to your face and will probably burn your nose. In reality, air flows over your face to go through your mouth and nose, so that a surgical mask, instead of only allowing air to come through the mask material, gives limited protection because the air tends to flow under the fairly poor seal around the face. Further, many masks direct expired air up the face, fogging glasses if worn. Fogged glasses make it impossible to perform a safe necropsy and increase the risk of contamination or injury. Face masks do keep people from touching their face with their fingers, a potent fomite.

Additionally, should either an aerosol or air containing pathogens reach the face, the eyes are unprotected and provide an excellent entry site. This is why full-face masks (P3 standard) are recommended for high-risk situations.

An employer should recommend that a class P2 mask with valve (about $2-3 each), be worn, and that safety glasses be worn.

References

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