

Controlling the spread of disease on farm

Articles on sometimes neglected areas of healthcare on pig farms, Paul Pemberton of Garth Partnership discusses the role of internal biosecurity in health management.

In the previous article, 'Biosecurity part 1 - Keeping the bugs out', methods of trying to keep pig units disease-free were discussed. However, most units will already have numerous disease organisms present. Unless an eradication programme is instigated, the problem faced by the producer is not one of keeping infectious disease out, but of trying to manage disease levels and limit the spread of infectious agents between individuals or groups of animals.

This article will focus on the effective implementation of various practices, many of which are familiar in principle, to minimise the spread of disease within a unit.

All-in, all out

In terms of disease transmission the biggest risk to a pig is from another live pig. 'All-in all-out' is the concept of clearing a building or site of all pigs before bringing new animals in, thus preventing one group of pigs passing on disease to another. In an endemic disease situation it is usually the younger, new entrants to a site that are at risk from an older group already present, but in an acute disease outbreak these roles can be reversed.

The bigger the area that can be completely emptied of pigs, the more effective this management tool will be. For example, clearing a whole finisher site should be more beneficial than clearing just one building within a unit.

Washing down

The effectiveness of 'all-in, all-out' will be reduced if the site is not properly cleaned between batches of pigs. The dreaded task of 'washing down' is familiar to all pigmen because it is well recognised that any physical material left in a pen has the potential to harbour disease which can infect the newly-arriving healthy pigs. An ideal washing protocol goes something like:

- ⊙ Remove gross contamination as soon as possible after the pigs leave
- ⊙ Soak with water plus detergent, ideally overnight. Do not allow to dry
- ⊙ Pressure wash, then rinse away residues if detergents or surfactants are used
- ⊙ Allow to dry
- ⊙ Disinfect (see below)
- ⊙ Rinse
- ⊙ Allow to dry

The importance of drying should not be underestimated - most micro-organisms survive less well and will be more exposed to the disinfectant in dry conditions. Putting animals into pens wet with disinfectant can cause chemical burns. Do not forget to wash above pig height including fans and other structures where cobwebs and dust can harbour disease organisms, particularly respiratory pathogens. Also flush and disinfect the water system, and clean and disinfect feed troughs and any other pen 'furniture' such as toys used for environmental enrichment.

Disinfectants could form the basis of an article on its
follows:

- ⊗ Choose an appropriate disinfectant. Some types are better than others against specific organisms. Consult your vet on this if you are unsure.
- ⊗ Ensure disinfectants are used at the appropriate **dilution** (eg: 1:100) and also at the correct **dose** in relation to the area of floor and walls being treated (eg: 300ml/m²).
- ⊗ Spraying onto wet surfaces will further dilute the product.
- ⊗ Contact time (ie: the time between application and rinsing or drying out) is important although not always clearly stated. Enough diluted product must be applied to prevent drying out before the target contact time is achieved.
- ⊗ Ambient temperature is important. The optimum for most disinfectants is around 20°C. Below this the efficacy is reduced so that, for example, longer contact times are required to achieve the optimum effect.

Hygiene screening can be used to test the effectiveness of your cleaning and disinfection programme. Specially prepared agar slides are brought into contact with cleaned surfaces and incubated in a laboratory. Any bacterial growth demonstrates that there is room for improvement in your procedures. Screening kits are available through Garth from Beeford Laboratories.

Foot dips

Disinfectant foot dips are widely used but often ineffectively. The disinfectant solution may be too dilute, too old (not changed often enough) or too contaminated with organic matter to destroy pathogens. Certain disinfectants are better suited to this purpose than others, so again consult your vet for advice. Even so, dipping muck-covered boots in any disinfectant footbath will achieve little - prior boot cleaning with water and a brush is a vital part of the process.

Implements

Tools and physical objects are known as fomites in the science world and are a well-recognised mechanism for spreading disease. Dipping teething and tailing equipment in disinfectant between litters, changing hypodermic needles between litters, and having separate shovels and brooms for each farrowing room (ideally colour-coded to prevent confusion) are just a few examples of how to limit the spread of infection by fomites.

Staff Hygiene and management

Just as personal hygiene measures are important for external biosecurity, so the same principles apply to minimising the movement of disease within a unit. Changing into clean overalls and hand-washing between handling different groups of pigs can dramatically reduce disease transmission, while assigning specific members of staff to specific areas and jobs on the unit, such as farrowing house management, achieves a similar effect.

Personal hygiene is not only relevant when moving between groups of pigs. Studies by VLA over recent years have found tractor cabs, messrooms and other non-animal areas to have the highest isolation rates of *Salmonella* on farms. These organisms can be picked up from these sites by staff and transmitted to the pigs.

Head between pigs in three ways: by direct contact (eg: nose to nose), via excretions (eg: faeces) or in the air. Of the three, airborne spread is the most difficult to control, but if the sharing of airspace between groups of pigs can be reduced the chance of disease being spread between these groups will also be reduced. Keep pigs of different ages in different airspaces if possible, keep doors between rooms closed, and avoid having ventilation systems that blow air out of one building towards the inlets of another. If complete separation of airspace is not possible, lowering stocking densities and ensuring optimum ventilation will reduce the infection pressure within the airspace and may keep challenge levels below the infective dose.

Animal movements

Moving sick pigs into a new group will put the new group at risk, so do not be tempted to put poor-doers back into a group of younger pigs because they are a similar size. The moving and mixing of pigs has recently been shown to lead to an increase in *Salmonella* excretion, so try to keep this to a minimum. PMWS is also made worse by such practices and it probably applies to other diseases too.

Sick pig management

Remove sick pigs from a pen promptly and place them in a hospital pen as far away from healthy pigs as possible to reduce the infection pressure. Prompt removal of carcasses and euthanasia of terminally ill pigs is advised for the same reason. Deal with hospital pens and scouring litters after healthy pigs have been dealt with.

Waste management

The muck heap is a prime source of potentially infectious material so should be sited as far from pig housing as possible at the edge of the unit, and not on a slope which would allow effluent to run back towards the pigs. It should also be moved off site regularly.

Flies and Vermin

Animals can act as fomites by transmitting almost any disease mechanically for short distances on their bodies. For other pathogens they can be biological carriers. For example, flies have been shown to transmit *Strep. suis* type 2, which primarily causes meningitis, and be carriers of coccidia and worm eggs, while rats are the biological host for *Leptospira*.

Fly control involves the use of pesticides and reducing the availability of feeding material and breeding sites. Effective vermin control requires professional operators or professionally-trained staff. Farm cats are not ideal for this purpose as they have the potential to spread disease themselves.

Summary

Prevention of the spread of disease within a pig unit relies on an understanding of the mechanisms involved. Sources of infection can be broadly categorised into three areas:

- ① Other pigs



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ls, animals, staff)

se routes can be minimised by effective

implementation of the measures discussed in this article, pigs will have to divert less of their resources to fighting disease. This will lead to improved performance, reduced medication costs and higher welfare.

Garth Partnership offers a biosecurity audit covering all aspects of internal and external biosecurity on your unit. For further information on this or to discuss any aspects of this article, please contact the practice.