



Getting Past Our Guard – Hidden Pathways for Disease

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In the pork industry, the thought of disease challenge is always lingering. In his presentation titled “Geeting Past Our Guard – Hidden pathways for disease transmission” Dr. Jeff

Bergemann outlined some of the obscure ways that pathogens can infect a herd. As the Veterinary Services Manager for Zoetis Canada, Dr. Bergemann has extensive experience on the topic, providing a straight-forward approach to how to identify and stop disease transmission.

Dr. Bergemann started the presentation with a review of the disease triangle. For a disease event to occur, you need three points – the susceptible host, the pathogen, and a favourable environment. Jeff highlighted that in swine production, we need to manage host susceptibility (vaccination and health status), maintain an environment that is not favourable for pathogen survival, and reduce the transmission of pathogens between regions. In addition to providing a reminder of five main routes for disease transmission – aerosols, direct contact, fomites, ingestion, and vectors – and some common examples such as sorting boards (fomite) and insects (vector).

Disease transmission

Then comes the answer on how to reduce disease transmission – biosecurity. Dr. Bergemann described the practice of biosecurity as one of the main pillars of the swine industry, as it has allowed for high productivity through disease prevention and elimination. Though biosecurity practices can feel like they are just another hurdle that makes day-to-day life in the barn a little bit more difficult, they ultimately make it a lot more difficult for a pathogen to invade your barn. Reducing the number of pathways into the barn reduces the chances for a pathogen to make it to the host. The major pathways that a pathogen can

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enter a barn are through air, feed and water, pests, fomites such as packages, staff and visitors, and other animals.

Aerosolized pathogens can travel through the air, between animals or even between barns; this mode of transmission is a major concern for diseases such as PRRS, influenza, PED, mycoplasma, TGE, vesicular diseases, and ASF. The main ways that transmission through the air can be prevented is allowing for physical distance between barns and utilization of air filtration. Of course, if there is any concern for zoonotic transmission, masks and other appropriate PPE should be worn.

Continuing on with oral transmission, which occurs when an animal ingests the disease-causing agent by eating, drinking, licking, or chewing. The list of diseases/pathogens that can be contracted by the oral route is extensive yet not exhaustive – colibacillosis, Cryptosporidia, Campylobacter, cysticercosis/teneniasis, Erysipelas, leptospirosis, PCV2, PED, Parvovirus, Rotavirus, Salmonella, Brachyspira, Senecavirus A, and Foot and Mouth disease, to name a few. Interventions to reduce oral transmission include water treatment, heat treatment of feed ingredients, keeping bins closed, timely removal of deads, avoidance of assembly yards, pest control, and separation of sick animals.

Describing direct contact, Jeff reminds that some diseases can be spread through body fluids other than fecal matter, or may be transferred during breeding, in utero, or during farrowing. The list of diseases that can be transmitted through direct contact include (but is not limited to) colibacillosis, Influenza, Campylobacter, PRRS, Erysipelas, leptospirosis, PCV2, ASF, Mycoplasma, PED, Parvovirus, Rotavirus, Salmonella, Brachyspira, Senecavirus A, Foot and Mouth disease, Strep suis, and Pseudorabies. Knowing the source of any animals entering the barn, artificial insemination, avoiding contact with other animals, and pest control are all ways to avoid disease via direct contact.

Regarding fomite transmission, the presentation outlined how the most touched items are often problematic due to contamination with feces or other bodily fluids. These items include feeders and drinkers, footwear, handling equipment (sorting boards, rattle paddles), housing materials, transport surfaces, water, soil, and treatment equipment. The list of disease-causing agents that can be picked up from fomites is largely the same as those listed for oral transmission and direct contact. For the control of disease transmission via fomite, the importance of cleaning and disinfection with consideration of

time and temperature is essential, to limit entry into the barn and farm premises, and being mindful of movement of objects throughout the barn.

Finally, Dr. Bergermann states that transmission via vector (usually insects such as flies, mosquitos, and ticks) is not of as much concern in Canada, and that there are fewer diseases that are commonly transmitted this way. Campylobacter, colibacillosis, PCV2, PRRS, Salmonella, Seneca Virus A, Strep suis, Brachyspira, TGE, and Japanese encephalitis virus have been known to be transmitted through vectors. Though this route is not as concerning as the others discussed, good insect management is key to reducing the risk, and should be completed as part of a good biosecurity program.

Addressing what can be done on a day-to-day basis, Dr. Bergermann suggested being aware of what can come into the barn and how it is likely to enter, and maintaining good biosecurity practices to ensure that pathogens do not make it in. To end, Jeff reminded the audience that 'a pinch of prevention is worth a pound of cure', a sentiment that enforces that it is harder to eradicate an issue than it is to prevent it from arising.

