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## Improved Biosecurity Unmasked *Actinobacillus suis* Infections

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Bunge Meat Industries, Corowa, Australia

The creation of minimal disease herds often follows the establishment of new animals into either newly built or depopulated piggeries and *A suis* is a recognized “emerging” pathogens in these situations.

**Case presentation:** The affected piglets on the study site (A) were the progeny of sows introduced into a newly established facility which had been depopulated, disinfected and then left free of all pigs for 6 weeks. The facility had been purpose-built in 1980 and depopulated of all pigs in early 1996. It was in an isolated location in central New South Wales, Australia and had operated as a farrow-to-finish facility. The facility was then repopulated with 1800 sows from a separate facility in the next state. The reintroduced sows had been observed and partially tested for freedom from swine dysentery, *Mycoplasma hyopneumoniae* pneumonia, atrophic rhinitis, *Actinobacillus pleuropneumoniae* pneumonia, and internal and external parasites, indicating their minimal disease status. Breeding boars and/or semen were obtained from a separate group of breeding stock in southern New South Wales, adjacent to the central Bunge site, located 200 km from site A.

At site A in 1998, abnormally high numbers of deaths were noted among 2 to 3 week-old piglets, just prior to weaning at 3 to 4 weeks-old. The majority of a group of 300 sows that farrowed over a 3-month period had affected litters. In these litters, the proportion of affected preweaned piglets was 3 to 4 per litter of 10 to 15 piglets. The pre-weaning mortality increased to 25 % during this period. Forty piglets in each affected age group at site A were examined by routine methods. Any *A suis* isolate had its toxin genes characterized by specific PCRs. The predominant finding in affected piglets was sudden death with few premonitory signs. Dead piglets were generally found scattered around the farrowing pen, unassociated with the sow. The surviving sow and her piglets and in-contact sows and piglets appeared normal and unaffected. Lesions noted in dead piglets were cyanosis of the extremities, particularly the ears and lower abdomen. There was moderate congestion of the viscera, with focal serosal fibrin tags over the surface of the intestine in some piglets. At the same time, piglets at the

source farm were also noted to have an increasing incidence of arthritis lesions.

At autopsy, *A suis* infections were associated with the increased piglet mortality and arthritis. *A suis* isolates from affected piglets at both sites were positive for the genes *apxICA* and *apxIIICA* by DNA analysis incorporating specific PCR primers, detecting PCR products of 2420 base pairs and 2088 base pairs respectively. All *A suis* isolates were susceptible in vitro to a lincomycin-spectinomycin combination and resistant to tetracyclines, macrolides and penicillins. Following these initial outbreaks, no further cases were identified.

The case history, clinical and pathologic features of *A suis* disease on these Australian farms were typical of overseas reports, particularly the syndrome of sudden death in preweaned piglets, with lameness and joint lesions in piglets reported in some, but not all, outbreaks.

**Discussion:** Besides being a pathogen of young piglets, *A suis* is considered a commensal of the oropharynx and vagina of a percentage of normal adult pigs. However, it had never been isolated previously in Australia, despite 30 years of nation-wide passive surveillance, involving some 20 or so veterinary diagnostic laboratories. Despite this apparent low level of background infection, it is apparent that these first reported *A suis* outbreaks occurred sporadically in various locations, especially those with depopulations and heightened local biosecurity, with later development of immunity. This perhaps indicates a direct effect of national and local biosecurity in unmasking this pathogenic infection.

*A suis* is one of a group of emerging diseases which have attained prominence on pig farms using modern management biosecurity practices that can largely eliminate “traditional” diseases such as enzootic pneumonia and swine dysentery. However, these practices may also lead inadvertently to diminution of maternal antibodies to organisms acquired from their mother or environment early in a piglet’s life, making piglets more susceptible to diseases associated with these early colonisers, such as *A suis*.