Porcine Reproductive and Respiratory Syndrome (PRRS)

**Author:** Dr Mary-Louise Penrith

**Adapted from:**


**Photographs:** Courtesy of Dr Gary Buhrmann (Western Cape Provincial Veterinary Services).

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## EPIDEMIOLOGY

The apparently sudden emergence of PRRS on two continents raised the question of where it could have originated. Pigs are the only species in which PRRS virus is known to cause disease, and so far investigation of a range of species including raccoons, skunks, cats, dogs, mice, starlings and sparrows has shown them not to be susceptible to infection. It is presumed that a wild host must have been involved, but so far none has been identified. Migratory waterfowl have been proposed as vectors of PRRSV spread between farms, due to their migratory nature and their tendency to nest on or near to swine farm lagoons and the fact that PRRSV can survive in water for up to 11 days and in swine lagoon effluent for up to 7 days. Mechanical transmission of the virus by some insect vectors has been demonstrated but there is no evidence that PRRS is an arbovirus.

Pigs become infected by contact with pigs that are shedding virus or their secretions and excretions; virus has been shown to persist for up to 42 days in saliva. Routes of infection under natural conditions are oro-nasal, venereal, transplacental and via wounds, e.g. when fighting and biting. Iatrogenic transmission via contaminated needles and equipment used during procedures such as tail docking, ear notching, tooth clipping and castration is considered important. Mechanical transmission by mosquitoes and flies has been demonstrated. Airborne transmission has been difficult to achieve experimentally over distances greater than 2.5 metres but is considered to be possible in cold damp conditions, as outbreaks have occurred that would be difficult to explain by other means. Similarly, transmission via swill feeding...
has been achieved experimentally by feeding large amounts of infected pork to pigs that had been
starved, but evidence for natural transmission by this means is lacking. The South African outbreaks have
been assumed to have resulted from swill feeding as there does not appear to be any other explanation,
but the origin of the outbreaks could not be traced. If swill was involved it was likely to have consisted of
raw offal because the only tissues in which PRRS virus has been shown to persist for longer periods are
lung, tonsils and lymph nodes. Pigs have been infected by contact with contaminated clothing, equipment
and hands of people working with them and fomites can play a role in within and between herd spread.

Susceptible pigs of any age can be infected but in endemic herds pigs are usually infected in the first
weeks of life. Viraemia usually develops 12 to 24 hours post infection and peaks 7 – 14 days post
infection. It usually wanes and is no longer apparent after 28 days, but may persist for longer, particularly
in congenitally infected pigs. However, recovered pigs remain persistently infected for varying periods of
time with virus that replicates at low levels in tonsils and/or lymph nodes, and these pigs, especially those
that remain persistently infected for protracted periods, are considered an important source of infection for
other pigs because, although they are not necessarily viraemic, infective virus may be shed in saliva.
Introduction of infected pigs into susceptible herds has been demonstrated to be the most important
source of infection, followed by infected semen and fomites or slurry.

PRRS virus is shed in saliva, urine and faeces but the virus is fragile and unable to persist for long in the
environment. It is sensitive to temperature and the higher the temperature the more rapidly infectivity is
lost; even at 4°C 90% of infectivity is lost within one week, although low titres of infectious virus may be
detected for as long as 28 days. Infectivity is rapidly lost at pH levels below 6 and greater than 7.5. Humid
conditions are required for persistence in the environment as the virus is rapidly inactivated by
desiccation.
PRRS is principally a disease of large commercial pig herds and is strongly associated with pig-dense areas where farms are separated by 2 km or less. However, in South Africa smallholder pigs were mainly affected, and low levels of infection have been demonstrated in feral pigs in the USA.