Porcine Reproductive and Respiratory Syndrome (PRRS or Blue Ear) appeared in the UK in 1991 and within 12 months of its arrival, respiratory disease affecting pigs in the immediate post weaning period (i.e. 7-10 days after 25-day weaning) started to become a serious problem for some producers.

This represented a change from the previous picture of respiratory disease which up until then had been largely an older growing pig problem. Investigations have shown that the problem is usually the result of viral infection (Porcine Reproductive and Respiratory Syndrome virus (PRRSv) and Swine Influenza (SI) either separately or together most commonly) with secondary bacterial infection with Haemophilus parasuis, Pasteurella and Streptococci common. Mycoplasma hyopneumoniae (the cause of enzootic pneumonia in growing pigs) is unlikely to play a significant role in this disease process in these young pigs although there is some evidence to suggest that Mycoplasma hyorhinis may be involved in some cases.

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### Fig 1
Weaned pigs losing condition with respiratory disease typical of PRRS induced PWRD

In addition, at the turn of the Century the picture was complicated further by the arrival of Porcine Circovirus Associated Disease (PCVAD) which in the early days manifested as Porcine Multisystemic Wasting Disease (PMWS) which also caused damage to the respiratory tract of young pigs. Since 2009 it has been further complicated by the constant evolution of SI viruses and the advent of the human Pandemic strain which demonstrates a propensity to persist within a continuously producing herd rather than burning itself out in the way previous strains did.

### Fig 2
PMWS caused by Porcine Circovirus can contribute to post weaning respiratory disease

PWRD can be viewed as a variant of and differentiated from the Porcine Respiratory Disease Complex (PRDC) that tends to affect older pigs above 8 weeks although the two syndromes can be linked and flow into each other as different pathogens fade or emerge as pigs age.

### Clinical Signs

Fading, with coughing and sneezing, nasal discharges and tear staining and poor appetite are the major presenting signs, usually affecting pigs approximately 4½ - 5 weeks of age, 7-10 days after weaning. In some cases, the coughing and/or sneezing can be detected earlier, although fading is not usually evident until after weaning.

An episode of this problem will often occur in the wake of a PRRS wave of disease affecting sows and piglets in the farrowing area, suggesting that the major trigger factor may be pigs born with PRRS virus already in them or pigs become infected during the suckling period as a result of spread from the sow, other litters or litter mates. The coughing and sneezing will often be evident in most pigs in a group and the overall effect can be to reduce growth in the 4 weeks after weaning by 25% or more. In severe cases, 10% of pigs will fade and many of these will die, often with secondary disease such as Glässers Disease. (Haemophilus parasuis infection) Those that survive may be left with chronic damage to the respiratory tract associated with pleurisy and pericarditis evident at slaughter.

### Diagnosis

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At post mortem, in early sacrificed cases, there may be little to see in the lungs, although histopathology accompanied by tests to detect viral DNA (PCR testing) will show evidence of lung damage indicative of viral infection. Where flu and PRRS are involved, the damage is complex and a diagnosis may be assisted by a combination of virus isolation and cross sectional blood sampling to show that pigs have become exposed to the virus at the target time. (Cross sectional bleeding involves collecting a number of samples from groups of pigs at different ages e.g. 2 weeks, 4 weeks, 6 weeks and 8 weeks and plotting the reactions). A more recent diagnostic technique to emerge is to detect either virus or antibody to PRRS/SI using saliva samples collected on cotton ropes although this is not easily done in very young pigs.

In more advanced cases secondary bacterial disease causing pneumonia, pleurisy and pericarditis may be detected on gross pathology, histopathology and bacteriology testing.

**Treatment**

Once the problem is occurring, treatment is very difficult and frequently unsuccessful. Use of broad spectrum antibiotics is worthwhile to prevent secondary infection and every attempt must be made to encourage piglets to eat and drink. Aspirin added to the water system for 5 days after weaning can be valuable support to the pigs especially if combined with injectable antibiotics. In feed antibiotics are of little value given the low depressed appetites but water medication with antibiotics can be considered taking care not to interfere with aspirin already added.

The use of porridge presented twice daily. + electrolytes from weaning can help reduce the severity of the cases by at least maintaining feed intake post weaning. However, it is the long term control and prevention which requires application.

**Control**

All efforts are needed to:-

1) Reduce the exposure of piglets to infection.

2) Reduce recycling of disease.

As with all respiratory diseases, stocking rates, group sizes, air quality and age spread are all important in influencing the level of problems.

By reducing stocking rates, provided there is no chilling, competition for feed and water will be reduced and pigs will cope better at weaning. Stuffy, humid air with high contamination levels will favour replication and spread of both the primary viruses and the secondary bacteria.

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**Figure 3 Creating a microclimate for piglets within a flat deck room to provide a better aerial environment**

Older pigs tend to act as a source of infection for younger ones and any policy where different age groups are in contact or older pigs are mixed back with younger pigs (particularly if they have not grown well) will exacerbate the disease and maintain a vicious circle. All in all out management is absolutely vital to control with strict hygiene standards applied by staff when moving between groups of pigs. In outdoor herds, it is common to split weaners into weekly blocks rather than grouping 4 or 8 weeks’ worth of kennels together. Batch farrowing if correctly operated to give a tight farrowing pattern can greatly assist disease control.

**Figure 4 Outdoor weaner kennels in weekly blocks reduces recycling of infection from older to younger pigs**

There is some evidence to suggest that PRRS infection of a proportion of the pigs at or soon after birth is the key to this syndrome. Experience, suggests that, in some cases at least, it is the gilts or their litters which act as the major source of disease in the farrowing area and after weaning.

The key to control seems to be stabilising the breeding herd with respect to PRRS and, in particular, ensuring that gilts are solidly immune to infection by the time they are served. If this is not the case, there is always a risk that the gilts become infected in mid to late pregnancy, risking either transplacental infection of the litter or infection of her own or neighbouring litters after...
The availability of a range of PRRS vaccines now available for use in the breeding herd is a major step in encouraging stability in the breeding herd and reducing "the gilt problem". However, PRRS virus is extremely labile and is constantly changing and clinical experience suggests that efficacy of vaccines can be unreliable in some instances. A range of vaccination regimes for the breeding herd are used ranging from single parity doses (preferably given at 60-70 days' gestation rather than in the farrowing area) double dosing each parity (the so called 6/60 approach ie at 6 days post farrowing + 60 days gestation) to blanket herd vaccination every 3-4 months.

The most appropriate programme will be advised by the veterinary surgeon - if necessary varying away from strict product licence recommendations under the prescribing cascade. Direct vaccination of piglets only to control PWRD is not appropriate as the infection is likely to precede any immunity that arises following such vaccination. Where PRRS is active in older pigs a combined programme of sow and piglet vaccine should be considered.

It should be noted that all PRRS vaccines do not claim to prevent disease - they are designed and licensed to reduce the impact of viraemia and reduce transplacental infection of the virus.

Where the disease is complicated by Swine Influenza virus, control is achieved by management and prevention of recycling between batches. In general, Swine Influenza viruses (of which there are now many strains) are less persistent within a breeding population and, with time, do tend to burn themselves out. However, the human Pandemic strain of SI which acts as a reverse zoonosis can persist in the farm. A specific Pandemic flu vaccine is available in the USA and could be imported under a farm specific Special Treatment Certificate although to date its use has not been widespread in the UK. Polyvalent SI vaccine is available in the UK but does not cover the Pandemic strain specifically. Some clinicians believe that its use can help in the control of Pandemic flu as part of PWRD if applied to sows prior to farrowing. Furthermore, vaccination of sows against Glassers Disease using a commercially available vaccine may also help control the effects of PWRD but is unlikely to be sufficient on its own. PRRS control must be the priority.