Are we underestimating the impact of PCV2

DAVID BURCH* discusses the role of porcine circovirus type 2 (PCV2) in Asian pork production.

Having attended the excellent pig disease review meeting in Chiang Mai, Thailand, I was impressed with the level of research and knowledge on porcine reproductive and respiratory disease virus (PRRSV) that is going on. We also share the problems in Europe and the rest of the world with new strain development, to both the European and American original isolates, and therefore the question of vaccine efficacy. However, have we overlooked the role of PCV2 in the underlying disease and high mortality problems that are still widespread in Asian pig production?

In the UK, we have struggled to get on top of post-weaning multisystemic wasting syndrome (PMWS) before the recent introduction of PCV2 vaccines and this lead to much confusion over the impact of various other infections, such as PRRS and enzootic pneumonia (*Mycoplasma hyopneumoniae*) in the respiratory disease complex that we faced. This also caused much frustration trying to control the disease (see Figure 1).

After months of trying to control mortality, hospitalization/wasting problems with various husbandry, stress-reduction methods and PRRS vaccination of piglets, there was no real change in performance. Although PRRSV is meant to exacerbate PMWS development and severity, it was frustrating that vaccination had such little effect.

Table 1: Effect of EP vaccination on mortality, pigs hospitalised and lung lesion scores based on 20,000 finisher pigs.

	Before	After	Difference
Mortality (%)	6.95	4.15	2.80
Hospitalized (%)	10.58	8.66	1.92
Total (%)	17.53	12.80	4.73 (-27%)
Lung lesion score	11.5	3.7	7.8 (-68%)

On the other hand, vaccinating piglets against *M. hyopneumoniae* did have a beneficial effect (see Table 1). Both mortality and the number of pigs, which were hospitalized (50% of which subsequently died or were destroyed for wasting), improved consistently and lung lesion scores fell quite dramatically.

It shows how important it is to continue to monitor pneumonic lung lesion scores at the slaughter house, to help with vaccination decision making but it did not completely resolve the whole PMWS problem.

It was not until I visited a trial site in the UK, where a colleague was testing a new PCV2 vaccine for piglets (Boehringer Ingelheim's Ingelvac CircoFlex) that the significance of PCV2 in this whole wasting syndrome was clearly demonstrated. In a closely monitored UK trial involving 1500 pigs, carried out to Good Clinical Practice (GCP) standards, the weaning to slaughter mortality was reduced from 14.3% to 4.6% (von Richthofen and others, 2007) and bodyweight was increased by 6.8 kg, which would be good by any standards (see Figure 2).

Piglets were vaccinated at 3 weeks of age before moving to the nursery and finishing unit at 4 weeks of age. A unique feature of this trial was the vaccinated and control pigs were kept together in the same pens and were exposed to identical stresses and levels of infection. The PCV2 viraemia

Figure 1: Typical mortality/cull and hospitalization picture in 2200 head finishing shed.

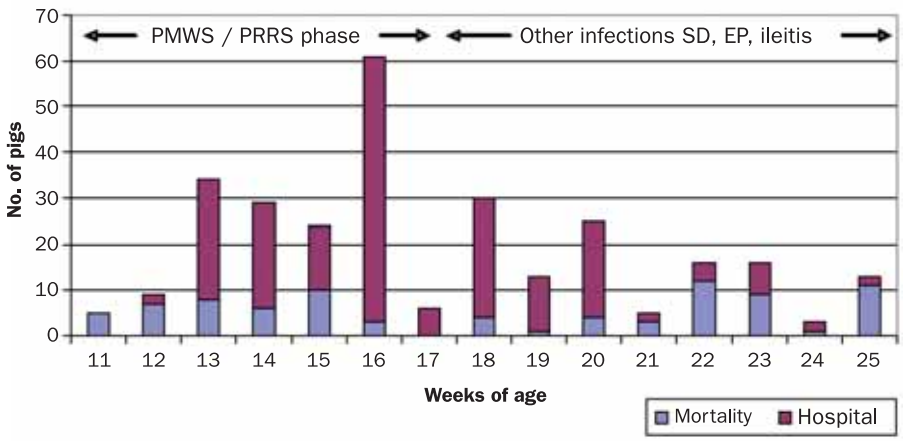
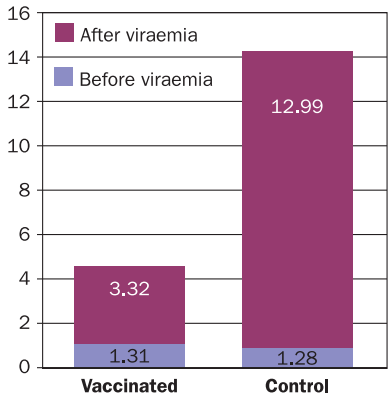


Figure 2: Mortality in vaccinated and control before and after the onset of viraemia.



(virus circulating in the blood) started from about 6 weeks of age and peaked in the control pigs at 9 weeks of age. The vaccinated pigs peaked one week earlier but at a much lower level and then the viraemia started to fall. The single vaccine shot, primes the immune system to respond to the virus when it starts to multiply (
when maternal antibodies start to fade (*refer Asian Pork Magazine August/September 2007 p.40-42*).

The mortality and growth rate of the surviving pigs starts to drop off in the control pigs in comparison with the vaccinated pigs from the onset of the viraemia and continues until the end of the study at about 23 weeks of age, near to slaughter.

The trial was carried out in a herd which was EP and PRRS free, so the impact of the disease and the efficacy of the vaccine was not masked by other infections. It demonstrates the potential severity of PCV2 infections on their own, even in the chronic phase of the epidemic, which we are in, both in Europe and Asia.

This makes me question whether we are underestimating the impact of PCV2 infections in Asia and possibly over emphasising the problem of PRRS? The Americans did this in the early phase of their PCV2 outbreak, but their focus has definitely shifted to PCV2 control and vaccination.

As PCV2 vaccines are starting to be registered now in Asia, it is hoped that their impact on pig production will be as dramatic as in other regions of the world. ■

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