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**Health Quiz**

## NADIS Pig Health – August 2009

### Neonatal Colibacillosis

Neonatal diarrhoea (scour) is a common cause of loss in piglets soon after birth and yet nowadays is one of the easier disease problems faced by the pig farmer to control. There is a range of causes but E.coli infection remains one of the most common, particularly in gilt litters, especially but not exclusively in indoor farms.

#### Cause and Development

E.coli bacteria are normally found in the gut of pigs (and most other mammals). The excretion rate of E coli from the sow increases as she approaches farrowing and the three major sources of infection for the young piglet are:

1. The sow
2. Other infected and particularly scouring piglets in the same or other litters
3. The environment

Most strains of E coli are harmless. However, there are strains that are extremely harmful to the piglet – most of which are classified as Haemolytic E coli (due to their growth characteristics in the laboratory). Each strain is identified by number and in a few cases by name (e.g. Abbottstown).

The balance between the degree of exposure of the piglet at birth and the immunity conferred upon the piglet by the transfer of colostrum from mother will determine whether or not disease is seen.

The effect of these harmful strains of bacteria is to stick to the wall of the intestine and to produce a toxin (poison), which alters the function of the intestine such that there is a loss of fluid into the gut producing scour and dehydration.

It is possible for E coli to combine with other pathogens to cause disease, although this becomes more common in older pigs in the second week of life.

#### Clinical Signs

Neonatal E coli infection presents as a profuse watery scour within three days of age, with severe and rapid dehydration (fig 1). Death can occur rapidly – in some littermates before scour is actually evident. It will often, though not always, occur in whole litters and appear to spread from litter to litter within a house (fig 2).

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**Fig 1: Typical dehydrated pig that died with E. coli infection at 36 hours of age**



**Fig 2: Scour typical of neonatal E. coli disease**



**Fig 3: Post mortem examination of a pig with neonatal colibacillosis reveals a full stomach (clotted milk) and watery intestinal contents**

At post mortem examination there will be inflammation of the small intestine with watery often yellow content. Typically the stomach will be full of milk as the pig continues to suck (fig 3). Diagnosis is confirmed on laboratory testing of gut contents or rectal swabs. Histopathology on affected gut tissue will confirm *E. coli* damage and differentiate other pathogens (e.g. Rotavirus).

N.B *E. coli* is one of the few pathogenic agents affecting baby pigs that will easily be detected on rectal swabs.

### Treatment

Individual cases may be treated with an appropriate oral antibiotic – determined by sensitivity testing, given at the earliest sign of diarrhoea. In an outbreak, strategic medication of all pigs at birth may be necessary. Where one pig in a litter is noticed with diarrhoea it is usually appropriate to treat the whole litter at that time.

Equally important as part of the treatment programme is the provision of electrolytes to reduce the severe dehydration that actually kills many piglets. These must be kept clean and fresh, and in severely affected pigs be actively administered orally e.g. by syringe.

### Control and Prevention

The principles of control revolve around:

1. Reducing spread of infection
2. Reducing reservoir of infection
3. Increasing immunity in sows and piglets

1. The disease will spread by any physical movement of scour between pens and buildings. Use of disinfectant foot dips between pens and rooms is vital – keeping the foot dip fresh, clean and at the correct dilution rate. Control of flies, mice etc is also vital.

Active cross-fostering of piglets is discouraged in the face of an outbreak, and on no account should pigs be moved from room to room, especially where there are age differences.

2. The farrowing pen in which a previous litter has been affected is a reservoir of infection if not thoroughly cleaned. Cleaning should involve the use of detergents to remove the protective grease film (derived from high fat lactation and creep diets), power washing and disinfecting – using a DEFRA approved product at the appropriate dilution rate. The longer the pens can be rested between batches the better. Fumigation of rooms may be an additional technique to employ. Removal of slurry from channels under slats reduces the risk of flies bringing infection back to the pen surface but if performed, must be thorough.

Cleanliness of the sow is also important. The sow should, if grossly contaminated, be washed and dried before entry to a clean pen and she should not spend an excessively long time in the crate before farrowing – 3 to 5 days is



**Fig 4: Vaccination of the gilt and sow prior to farrowing is a reliable method of preventing neonatal *E.coli* disease**

preferable. Legally it cannot be more than 7 days.

In the outdoor environment, burning of old beds, moving of farrowing arcs and avoidance of lying boards will all help control disease, subject to an exemption licence for the burning of bedding from the Environment Agency.

3. Immunity in the sow can be raised by:
  - a. Feedback - an old-fashioned technique now of questionable legality. Scour from the affected litters can be mixed back to gilts and sows in late pregnancy (no earlier than 75 days gestation) for 3 to 4 weeks prior to entry to farrowing house. Typically, small amounts of scour collected on tissues should be offered to late pregnant animals twice weekly. Feedback should cease prior to entry to a clean farrowing pen.
  - b. Vaccination – there are several proprietary vaccines on the market to administer to gilts and sows prior to farrowing. Each has a slightly different protocol and it is vital that the correct protocol is followed if the vaccine is to be effective. They are not consistently interchangeable.

It should be appreciated that the injectable vaccines raise systemic immunity in the sow, which is spread to colostrum and transferred to piglets. As such, they will only tend to protect the piglet in the first 3 to 4 days of life whilst that colostrum bathes the gut lumen, and are largely ineffective for controlling disease associated with *E.coli* infection in older piglets.

Combination vaccines covering Clostridia may be appropriate in some cases, especially in outdoor units.

Vaccines are only effective against the organism to which they are targeted – they will not cover every cause of disease – and rely upon ensuring adequate colostrum intake.

## Costs

An acute outbreak of E.coli enteritis in baby pigs can have devastating consequences. Over a one-month period, mortality due to scour can exceed 10% and surviving piglets can suffer 1kg loss in weaning

weight with a consequent extension of days to slaughter of 10 days. Thus, for a 500 sow unit over one month of an outbreak, the costs can exceed £5,000 in deaths plus £2,000 lost growth, in addition to treatment costs.

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