Infectious Bovine Rhinotracheitis

What is it?

IBR is a highly infectious disease and is a huge burden on the UK livestock injury. In 1998 a study in England 67% of dairy herds were found to be infected; it is widely accepted that even a dairy cow subclinically affected (no obvious clinical respiratory signs or abortion etc) will lose 9.5 litres of milk daily.

Infectious Bovine Rhinotracheitis is caused by a virus. The virus is Bovine Herpesvirus 1. This is important because herpes viruses have characteristics that complicate their management.

Signs of IBR Infection

1. Coughing
2. Milk drop/ depressed yields
3. Sneezing
4. Conjunctivitis
5. Balanopothesitis (inflammation of the penis => breeding bulls)
6. Purulent Nasal discharge
7. Abortion (~5 months + later)
8. Dyspnoea
9. Anorexia
10. Secondary Infections due to immunosuppression

Bovine Herpes Virus 1

This virus causes IBR and because it is a herpes virus it therefore has certain characteristics that need to be considered when managing IBR;

- Herpes viruses require close contact for infection either via aerosol or cows can be infected by mating with bulls or contaminated AI
- They survive poorly in the environment and are easily killed by most disinfectants so hygiene is often an important control measure particularly in young calves.
- Infected animals can show **latent infections** which make eradication more complicated
    - Latent infection is the reason herpes viruses are one of the most widely circulated viruses in all species all around the world

- An infected animal can appear to clear the virus BUT Herpes viruses can essentially hide from the immune system ➔LATENT INFECTION. (A similar virus to herpes simplex 1 in humans which causes cold sores; cold sores will only appear when stressed/ill)

Possible outcome of infection

There are three possible outcomes for a cow infected with IBR;

1. Cow becomes infected; but then successfully clears virus (most likely if vaccinated before infection)
2. Cow becomes infected; appears to clear infection but remains latently infected. (so at times of stress(calving) or illness the virus may become active again and the cow is again infective to other cattle)
3. In severe cases death can be a consequence of infection however this is relatively rare unless infection is complicated with other disease commonly BVD or serious secondary bacterial pneumonia.

IBR is a disease which on its own causes High Morbidity and Low Mortality which means infected cows are severely affected but there are relatively few deaths

Management of IBR Infection

Eradication of IBR is possible and has been achieved in 2006 Norway, Sweden, Finland, Denmark, Austria, Switzerland and the region of Bolzano in Italy are IBR-free. National eradication programs were implemented in Germany, The Netherlands, Belgium, Hungary, the Czech Republic and Slovakia.

In these countries there were national eradication programmes similar in principal to the current BVD program in Scotland and Ireland. Were there was mandatory testing and culling of animals infected with 'wild type' IBR viruses. However such a program is expensive as animals require individual blood sampling and in most of these countries compensation was given for culled stock. There is no such scheme in the UK and a government funded scheme is unlikely.

Therefore any eradication in the UK is down to individual farmers and would require all of the above testing PLUS strict biosecurity measures. More information on such eradication schemes such as the Premium Cattle Health scheme by the SAC is available online.

In the UK it is more common that if an outbreak is detected then to prevent further disease farmers will vaccinate their herd therefore reducing the likelihood of developing further latent carriers of infection.

Vaccination

There are several vaccine types available to aid in controlling disease caused by IBR.

Firstly it must be decided if a MARKER or NON-MARKER vaccine is best to use. The non-marker vaccines are cheaper but the advantage of the marker vaccine is that if any laboratory testing in conducted successfully vaccinated animals can be identified from cattle that are latently infected with 'wild type' IBR infection. NB if at any stage there was a scheme introduced to control IBR then animals dosed with the non-marker vaccine may be unnecessarily be removed from the herd.

Secondly the decision must be made whether to use a vaccine that is LIVE or INACTIVATED.

The live vaccine is best to used in the face of an outbreak as it provides excellent immunity in only a few days (if given intranasally) BUT requires boosting every 6 months

The inactivated vaccine provides the longest standing immunity 12 months but is slowest at reducing the disease seen with IBR

HOWEVER RECENT CHANGES TO THE LICENCE!!

Now the best vaccination protocol is a mixture of the above

ADULT CATTLE (older than 3 months)

1. LIVE im
2. First booster @ 6 months INACTIVATED sc
3. Annual booster every 12 months thereafter INACTIVATED sc

YOUNG CALVES (2 weeks to 3 months of age)

1. LIVE in(intranasal)
2. LIVE im at 3 months of age
3. INACTIVATED at 9 months SC
4. INACTIVATED sc annually there after