

Vaccination programmes for calf to beef farms

Numerous challenges to calf health are encountered in the early stages of the animal's life. When an animal becomes ill, treatment with antibiotics is often needed. The overuse and misuse of antibiotics in livestock is contributing to the rise of antimicrobial resistance in both animal and human medicine.

Antimicrobial resistance (AMR)

What is AMR?

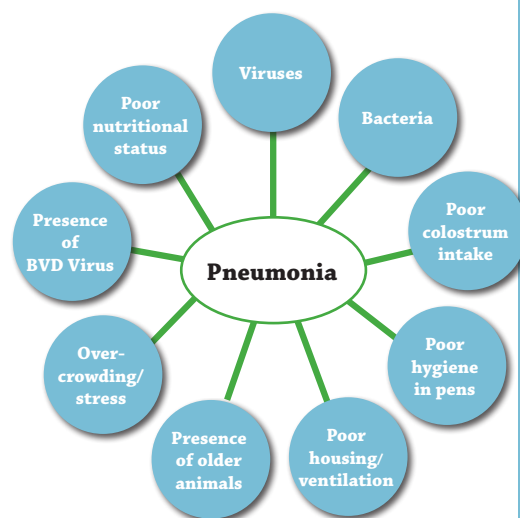
- Bacteria develop resistance to antibiotics thus making the antibiotic ineffective.
- This is a major future risk to current everyday medicines in agriculture and human health.

How can we stop AMR?

- Focus on preventing disease outbreaks – improve biosecurity and implement a vaccination programme.
- Avoid using antibiotics to treat viral infections.
- Use antibiotics for treatment only, use vaccines as a preventative.
- Only use antibiotics as prescribed.

Pneumonia

- Pneumonia is the most common disease associated with housed calves.
- Mortality rates due to pneumonia are approximately 3% in calves in the first 12 weeks of life.
- The cost of treatment, loss in performance and time cost due to pneumonia can heavily reduce farm efficiency and profits.
- Cattle affected by pneumonia earlier in life take two months longer to finish.
- Cattle exposed to pneumonia but not visibly affected take one month longer to finish.
- Pneumonia is a multifactorial disease – often caused by many factors.
- Vaccination is not a fix all; factors such as nutrition, colostrum intake, housing hygiene and ventilation, overcrowding and stress must all be correct.



Pneumonia vaccination

- A range of vaccines are available which cover the most common pneumonia causing viruses and bacteria.
- Vaccines are available in intranasal form to cover the two most common viral forms – Respiratory syncytial virus (RSV) & Parainfluenza type 3 (Pi3) - and can be administered to calves from a young age depending on the vaccine brand used.
- Other vaccines are available in injectable form to cover these two viruses as well as a major bacterial pneumonia form – Mannheimia haemolytica – and can be given to calves from two weeks old.

IBR

- Infectious Bovine Rhinotracheitis (IBR) is a viral disease causing acute inflammation of the upper respiratory tract.
- It can significantly reduce animal performance, resulting in economic losses.
- The virus can lie dormant in the animal's system and flare up at times of increased stress. The animal will then begin to shed the virus, spreading the disease to herd mates.

IBR vaccination

- Intranasal and injectable vaccines are available for IBR and can be administered at the same time as the pneumonia vaccines outlined above – depending on the product used.
- In herds where IBR is widespread, intranasal IBR vaccines can be used from two weeks of age.
- Injectable IBR vaccines can be given from three months of age.

Clostridial diseases

- 5-10% of animals sent for post mortem died due to clostridial disease.
- Cattle between three and 12 months of age are at the highest risk.
- Clostridial diseases is an umbrella term which covers a range of bacterial diseases including blackleg, tetanus, malignant oedema, black disease, botulism, sudden death syndrome, bacterial redwater and enterotoxaemia.
- Clostridia are bacteria that live freely in the soil and are highly infectious but do not spread between animals.
- They may be ingested with feed or water with healthy, robust animals often the first victims.

Clostridial vaccination

- Clostridial vaccines consist of a combination vaccine covering a range of clostridial diseases with a primary course of two injections given 4-6 weeks apart.
Best practice is to ensure that neither the primary or booster vaccine is given in a close timeframe to other vaccines.
- An annual booster injection is then needed to ensure continued immunity.

General vaccination protocol

- Allow purchased calves to settle in their new environment post arrival for 24 hours before receiving first vaccines.
- Ensure that calves are in good health before vaccinating. Vaccines will not be as effective if calves are ill at the time of vaccine administration.
- Minimise animal stress in the period around vaccination; avoid disbudding, castration etc.
- Ensure that all vaccines are stored and used in accordance with the label.
- Use clean equipment including syringes, needles and nasal spray applicators. Change the needle/nasal applicator regularly while vaccinating.
- Apply the vaccine via the route specified on the label.
- Ensure that the animal receives all follow up booster vaccinations to ensure continued immunity.

Sample vaccination plans

Table 1 & 2: Vaccination plans covering pneumonia (RSV, Pi3 & *Mannheimia haemolytica*), IBR & Clostridia

Calf age	Vaccine/Dose	Prevents	Route of administration
3 weeks	Pneumonia	RSV/Pi3/ <i>Mannheimia haemolytica</i> (Pasteurella) injection	Subcutaneous
3 weeks	IBR intranasal	IBR	Intranasal
5 weeks	Clostridia	Clostridial diseases	Subcutaneous
7 weeks	Pneumonia booster	RSV/Pi3/ <i>Mannheimia haemolytica</i> (Pasteurella) injection	Subcutaneous
9 weeks	Clostridia	Clostridial diseases	Subcutaneous
12 weeks	IBR live	IBR	Intramuscular
2 weeks pre housing next risk period	Pneumonia	RSV/Pi3/ <i>Mannheimia haemolytica</i> (Pasteurella)	Subcutaneous
10 months	IBR live	IBR	Intramuscular
14/15 months	Clostridia	Clostridial diseases	Subcutaneous
16 months	IBR live	IBR	Intramuscular

Calf age	Vaccine/Dose	Prevents	Route of administration
1-3 weeks (depending on vaccine brand)	Pneumonia	RSV/Pi3	Intranasal
2 weeks	IBR live	IBR	Intranasal
6 weeks	Clostridial	Clostridial diseases	Subcutaneous
10 weeks	Clostridial	Clostridial diseases	Subcutaneous
12 weeks	IBR live	IBR	Intramuscular
6 months	Pneumonia	RSV/Pi3/ <i>Mannheimia haemolytica</i>	Intramuscular
7 months (at least 2 weeks pre housing)	Pneumonia	RSV/Pi3/ <i>Mannheimia haemolytica</i>	Intramuscular
9 months	IBR live	IBR	Intramuscular
14 months	Clostridia	Clostridial diseases	Subcutaneous
15 months	IBR live	IBR	Intramuscular

More information on the Teagasc DairyBeef 500 Programme can be found at Teagasc.ie

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