Pneumonia in growing beef calves remains a complex and financially damaging disease, but an understanding of the various causative factors can help improve control and reduce reliance on antibiotic treatment.

Matt Pugh from the XL Vets’ practice Belmont Vets, Herefordshire, says: “Now is a good time of year to plan to prevent pneumonia. If you can implement protocols to prevent the disease gaining a foothold in autumn, you will produce more resilient animals for winter and minimise antibiotic treatments.

“Reactive treatment is not ideal anyway for optimum disease control, because permanent lung damage may already have occurred by the time you notice a sick calf, which certainly compromises growth performance.”

Pneumonia outbreaks occur when environmental factors and infectious organisms – viruses, bacteria and mycoplasmas – interact to cause disease.

Mr Pugh says: “The severity of any disease outbreak is often down to environmental factors, stress issues and infectious organisms on individual farms.

“But the more initiating factors which can be identified and corrected before the peak pneumonia season, or managed, through vaccination, for example, the better the chances of reducing performance compromising disease.”

He says the infectious cause of any pneumonia outbreak can be difficult to pinpoint to a single agent.

“For example, in many cases, mycoplasm infections are probably present first in calves. And, while not causing obvious illness, can cause sufficient damage to lungs, allowing other causative infectious agents to establish themselves and trigger disease.

“Consequently, implementing a broad-spectrum vaccination programme, as part of a wider disease prevention plan, certainly makes sense on most units.”

Mr Pugh says most calves die from pneumonia post-weaning, but these deaths are usually a consequence of infection early on in life which often goes unnoticed. The background cough in the shed is not normal, he says, but tells a story of compromised lungs.

This leads to poor feed intake as calves transition through weaning and you can even get bullying by healthier penmates.

Mr Pugh says: “Affected calves typically end up ‘going over the edge’, invariably after having had a few antibiotic treatments, which is exactly what you want to avoid.

“What you want is beef calves free from disease, growing well and being sold off the farm as quickly as possible.”
Case study

WITH more than 20 years’ experience producing broiler chickens, calf rearers Joff and Emma Roberts understand the need to keep growing livestock free from any disease which compromises performance.

Based at Uphampton Farm, Shobden, Herefordshire, the Roberts rear two million broilers/ year.

Mr Roberts says: “Large-scale poultry producers usually know the cost of production and the importance of limiting the impact of disease on feed efficiency.

“The industry is very conscious of the need to reduce antibiotic usage. We are applying similar principles to calf rearing.”

Mr and Mrs Roberts buy-in mixed age groups of continental, Angus, Hereford and black and white dairy cross calves from a variety of sources.

Animals are brought in at an average weight of 55kg at about two weeks of age and reared for sale to finishers, latterly through Livestock Link (since 2015), moving out at an average of 130kg.

Mrs Roberts says: “We have steadily built up the calf rearing operation since 1999, investing in automatic milk feeders and erecting in 2008 a specialist calf rearing shed incorporating Holm and Lalie igloos.

“We have also been experimenting with a freestanding verandah system, which offers mobility flexibility. These allow you to change your farmyard layout to accommodate fluctuating calf numbers.”

So impressed by the calf rearing benefits offered by the iglo system, the Roberts have expanded their operation and now rear 900 of their own calves a year for Livestock Link. They also act as UK agents for the igloos, which originate from Germany.

Mrs Roberts says calf health is absolutely crucial to business importance of limiting the impact of disease on feed efficiency.

Mr Roberts says: “Removal of PI’s is absolutely essential. We have had five in the last year alone and if they had not been removed, the impact could have been disastrous.”

Three days after arrival the calves are vaccinated with Bovilis® Bovipast RSP, which provides protection against the key viral causes of pneumonia, as well as cross- protection against both the A1 and A6 serotypes of M. haemolytica, the predominant bacterial pneumonia pathogen known to affect calves under three months of age.

Animals receive their second dose of vaccine about three to four weeks later.

Mr Roberts says: “Our rationale for vaccination is to prime young calves’ immune systems and make them more resilient to potential pneumonia challenges in early life.

“This helps minimise antibiotic usage for treatment of any clinical cases. Mr Pugh has audited our antibiotic usage and it is only 8.5mg/kg of beef sold off the farm. This is well below the 50mg/kg target level now being set by the industry, so we are convinced vaccination works.

“We only had eight mortalities last year out of 900 calves reared and only two of these were pneumonia related.

“We know our nutritional regime is sound, but the fact we are bringing calves in from various sources means our pneumonia risk is still quite high. We also know some of our calf sources may well have reared animals on waste milk during their first two weeks of life, which is a known source of mycoplasma.

“I am convinced if they did not do that, our antibiotic usage for the treatment of pneumonia would be even less. This may not be achievable and is largely out of our control, but the key request we do make is source farms ensure their calves receive enough high quality colostrum in the first few hours of life. If this is done properly, everything falls into place.”

Calves at Uphampton Farm are fed well. Mrs Roberts says: “Good nutrition is vital. We have refined our milk feeding over the years. Initially, calves receive 1,200g of milk replacer per day in six one-litre feeds for the first 16-17 days on the unit.

“We then drop the rate to 800g per day in two-litre feeds until day 24, before withdrawing milk gradually towards weaning at 24 days. In total, we feed each calf 22-24kg of milk powder, but the high rate in the first two weeks on-farm helps maximise weight gain over this crucial growing period, as well as helping calves become more resilient to any disease challenges. It is the cheapest and best time to grow.”

The Roberts are big believers in feeding nutritionally improved straw ad-lib, both from feed rakes to encourage early rumen development and in concentrate pellets which are trough-fed.

Mr Roberts says: “We have found it gives them a great start, contributes to healthy rumen development and minimises risk of acidosis.”

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REFERENCES

1 2011-2013 VIDA data. Analysis of isolated pneumonia pathogens from calves under six months of age.