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# Livestock MATTERS

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xLvets
Excellence in Practice

## EXCELLENCE IN PRACTICE

# XLVets - We Excel

xLvets
Excellence in Practice

**Invest in Health Don't Pay For Disease**

The members of XLVets have worked hard to create what they see as a model of how practices can work together, by sharing experiences, knowledge and skills. We strive to deliver excellence in veterinary practice to our clients and their animals.

The group comprises of a number of the foremost farm practices in Ireland. With many years of combined experience, we are able to give expert advice on all areas of farm livestock, health and production.

XLVets member practices are dedicated to providing a high quality, cost effective service to their clients, to support long-term growth and future prosperity within the Irish livestock industry.

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**Animal Health Centre**
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Telephone: 0402 33744

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Telephone: 074 937 4127

## XLVets Ireland
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**The Veterinary Hospital**
Arklow Road, Gorey, Co.Wexford

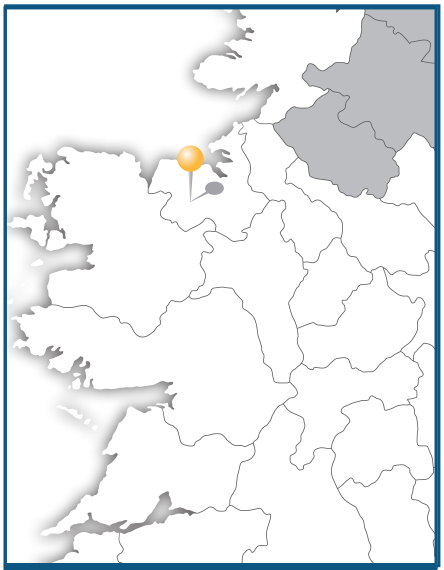
XLVet Ireland Ltd Registered Office at:
Dromsally, Cappamore
County Limerick
Tel: 061 381505



# CONTENTS

# Neonatal Lamb Care

**PAUL BARNES**
**MVB**



**XLVets Practice** | Kilcoyne & Barnes Veterinary
Tubbercurry, Co. Sligo

## The key areas to consider when caring for neonatal lambs are;

1. Shelter
2. Colostrum
3. Fostering

## Shelter

- For flocks lambing indoors, clean dry bedding and preventing drafts are most important to prevent exposure.
- Those flocks that lamb outdoors in sheltered fields, lamb jackets may help to provide additional protection.
- Infra-Red heat lamps or lamb warming boxes with electric fan heaters may be used to help recover weak or hypothermic lambs.

## Colostrum

Colostrum is a vital source of antibodies and energy required by neonatal lambs. Newborn lambs only have fat reserves to maintain lambs for 6 hours, so it is essential to ensure lambs have sucked plenty of colostrum, (200ml/kg in the first 24 hours & 50ml/kg in the first 2 hours). Older lambs will burn fat reserves after 24 hours of starvation; hypoglycaemic and hypothermic lambs should receive glucose solution by intraperitoneal injection and placed in a warming box at 45°C.

- Create a colostrum bank from within flock where possible.
- Have artificial sachets or cow colostrum as back up if required.
- Ensure all lambs get >50ml/kg in the first 2 hours.

## Watery Mouth Disease / E-Coli

Watery mouth is often seen in weak lambs that have received inadequate or poor quality colostrum in housed flocks in unhygienic conditions. Affected lambs will become dull, lethargic and have a poor suck reflex. They will have a wet lower jaw caused by hyper salivation. Lambs become infected with E. coli due to a high environmental challenge encountered at birth and when seeking the teat for their first suck. This challenge will then rapidly multiply in the lambs gut if they have not

received adequate colostrum within the first two hours. Lambs with watery mouth become distended even though they have not sucked and quickly become recumbent, enter a coma and die due to toxins entering the bloodstream via the gut

Treatment is often futile unless got in the early stages; oral antibiotics such as spectinomycin may be given along with intramuscular injections such as amoxicillin, rehydration therapy with electrolytes at 50ml/kg every 6 hours and mild laxatives may also help to promote gut activity.

## Prevention

Improved hygiene is essential to prevent the disease, a clean, dry bed in lambing pens will help minimise risk. Following an outbreak, where possible ewes should be moved to a different shed or the remainder of the flock lambed outside. Lambs may be treated prophylactically with an oral antibiotic within 15 minutes of birth to prevent colonisation of the gut with bacteria. Thorough cleaning and disinfection of lambing pens between ewes, along with collection and disposal of placenta to reduce bacterial challenge will decrease prevalence.

## Navel Ill

Common in intensive flocks with lambs born into a poor environment, with inappropriate navel treatment. Infection of the umbilical cord may be a local infection which causes little or no future problems, or in more severe cases it can ascend internally causing peritonitis or liver abscessation. The infection can then spread internally leading to joint ill or meningitis. Treatment of septic peritonitis or liver abscessation is hopeless and affected lambs should be euthanased for welfare reasons. Prevention is achievable with good hygiene in lambing pens, coupled with dipping lambs navels at birth and again 2-4 hours later when checking lambs have received adequate colostrum. Navels should be fully immersed in a strong iodine or chlorohexidine solution.

## Joint Ill

Septic arthritis caused by bacterial infection in the joints following transmission via the bloodstream is a significant economic and welfare concern. The infection can be picked up from the gut, respiratory system or from untreated navels. The challenge can be reduced by maintaining high standards of hygiene in lambing pens, dipping navels and ensuring good colostrum intakes. Treatment with antibiotic daily for 5-7 days gives a good cure in 90% of cases if treated in early stages. Lambs which do not respond to antibiotic treatment should be euthanased for welfare reasons.

## Fostering

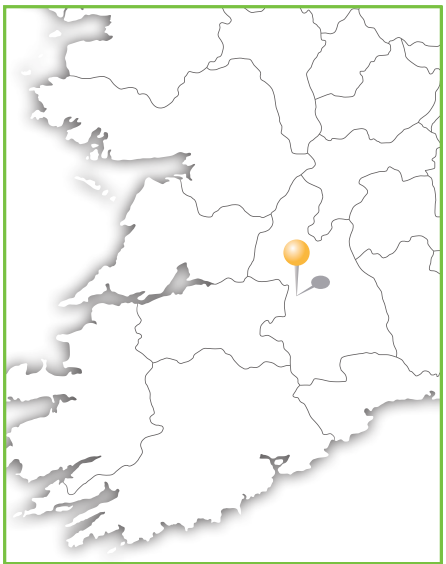
The scanning of pregnant ewes at the appropriate time is hugely beneficial to farmers. Scanning allows farmers to identify the number of ewes that are carrying multiple lambs, therefore giving ample opportunity to prepare for their arrival. Suitable pens with plenty of clean dry bedding should be prepared for lambs to be housed in until they are fostered / weaned. A source of heat should also be readily available.

At lambing, suitable ewes carrying single lambs should identified and watched closely for signs of labour to begin. Clean collection vessels should be on hand to catch as much of the amniotic fluid as possible. This will be used to mask the smell of the lamb you wish to foster, and hopefully result in the ewe accepting both lambs as her own. It goes without saying that attempting to foster a weak or sickly lamb is unlikely to have a satisfactory outcome.

Any lambs which are not fostered will need to be reared on as pet lambs. There are many feeding systems available to manage these surplus lambs, from traditional bottle feeding, to ad- lib bucket feeding or machine feeding. The method of choice will vary with flock size and the facilities available on each farm.

# Factors affecting the quality of semen for successful use of AI on farms

**PADRAIG DUGGAN**
**MVB, CERT DHH**



**XLVets Practice** | Killenuale Vets
Killenuale, Co Tipperary

The successful use of artificial insemination (AI) on farms depends on the inherent fertility, health, nutrition and management of females in the herd.

It also depends on the ability of person performing AI to preserve, store, and deliver an adequate dose of viable semen to the cow at the proper time during the oestrus cycle.

## Factors Affecting AI in Herds

- Healthy cow
- Nutritional management
- Good facilities
- Heat detection
- Timing of insemination
- Correct handling of semen
- Good technique
- Sanitary technique
- Step by step procedure
- Time
- Periodically review your procedure

For the purposes of this article we will concentrate on the correct handling of semen. The main objective in handling semen properly is to conserve the fertile life of sperm until it is deposited in the female. To do this we must minimise the exposure of semen to conditions which may injure the sperm and affect its viability and fertile life.

## Semen Tank Management

The tank is actually a large vacuum-sealed liquid nitrogen refrigerator encased in an efficient insulation system. This insulation system consists of two separate chambers separated by layers of aluminium foil, specially designed paper and a partial vacuum. The vacuum is the most effective property of the tank in terms of insulation. The lid of the tank is a specially designed stopper plugs the tank's neck tube insulating the nitrogen and semen within from outside air. However the tank is not airtight as liquid nitrogen cools by slowly boiling off and releasing nitrogen gas and this must be allowed to escape.

Storage tanks keep semen indefinitely -196°C as long as liquid nitrogen is present and the levels of nitrogen should be regularly monitored to ensure the integrity of the semen stored in the tank.

Modern semen storage tanks are capable of holding liquid nitrogen for 6-9 months but this will vary according to the individual model and how often the tank is opened. While the tanks are well constructed they are susceptible to damage from mishandling, especially when being moved.

It is worthwhile investing in a protective AI storage box to protect your tank and its contents.


Figure 1 Semen Tank stored in polyethylene storage tank with other AI equipment

It is also worth noting that when transporting a tank, it needs to be secured properly and not in the vehicle passenger area. There is a risk of damage to the tank and a great risk of injury to the driver and passengers if liquid nitrogen is spilled inside the vehicle. The nitrogen gas which boils off can quickly displace oxygen leading to suffocation unless ventilation is adequate.

Should the tank in any way be damaged, it is important to transfer semen to another tank as quickly as possible and to later have some of the semen evaluated before extensive use on farm.

An accurate inventory of the contents of the tank and the location of individual straws in the tank should be kept at all times. This is vital not just for accounting purposes, but also to minimise the searching for individual bulls as searching through straws leads to unwanted exposure of the contents of the tank to environmental temperatures.

## Storage of Frozen Semen

With frozen semen, the storage temperature of liquid nitrogen stops life processes, allowing the semen to be stored indefinitely. The critical temperature appears to be below -80°C. The exact reasons for this are unclear but it is known that the structure of ice is more stable below -80°C and very stable below -100°C.

While it is relatively easy to maintain frozen semen at a safe temperature, a moment of carelessness can destroy the quality of the semen.

Exposing straws to adverse high temperatures when searching for individual straws in the tank can have a detrimental effect on semen quality.

Figure 2 shows the temperature gradient that exists in the neck of a storage tank to which goblets are raised for the removal of individual straws. The exposure of straws to these temperatures for longer than 5 to 8 seconds can lead to thermal injury of sperm. This damage is permanent and cannot be corrected by returning the semen to liquid nitrogen.

Note that all straws should be handled using a forceps to prevent damage to semen and to protect your own fingers from liquid nitrogen burns.

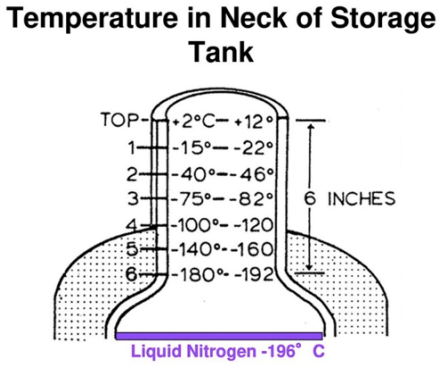



Figure 2 Temperature range in the neck of a semen tank (from Saake, 1974)

## Semen Thawing

It is generally recommended that semen be thawed at 35-37°C for 30-40 seconds. Different AI organisations may have different guidelines for the thawing of semen (and where possible, these should be followed for optimal results).

Semen can be thawed in a water bath in an ordinary thermos flask where temperature is checked using a thermometer (never using your fingers!). Be conscious that semen left in an open flask will be subject to reducing temperature and this can affect semen viability. Many people now use thermostatically controlled baths such as the SuperThaw Flask (see Figure 3) which maintain the water at 35-37°C and reduce shock to the semen.

The duration the straws are left in the bath is dependent on ambient temperatures, but where ambient temperatures are below 20°C, the straws should be left in the flask until just before insemination.

Figure 3 SuperThaw thermostatically controlled flask

## Semen Handling after Thawing

The major concern with warm water thawing is the risk of cold shock to the semen by mishandling post thaw. Cold shock is the irreversible injury to sperm caused by a rapid decrease in semen temperature post thawing as might occur when breeding during cold weather. For this reason it is important that the inseminating gun has been warmed to ~35°C before loading.

Other precautions that are warranted include providing a sheltered area for breeding or ensuring that semen is thawed and loaded into the insemination gun in a warm area.

Sudden drops in temperature for the semen should at all times be avoided.

## Other Handling Tips

Insemination equipment should always be kept clean warm and dry.

- Always use a thermometer to check temperature of water.
- Bring the goblet to within 5-8cm of the top of the flask when removing a straw and replace within 5-8 seconds.
- Shake the straw to ensure that any excess liquid nitrogen is removed from the end of the straw.
- Time the thaw with a watch to avoid guesswork.
- Dry the straw thoroughly as any water at the end of the straw can have an effect on the semen.
- Cut the straw at a 90-degree angle to ensure a good seal with the sheath.

## Semen Deposition

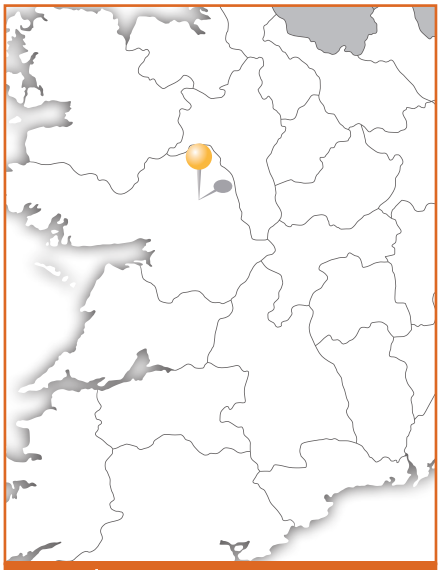
The highest conception rates can only be achieved with proper technique. The highest quality semen in the healthiest cow at the correct time will not result in pregnancy if the AI technique is substandard. The mechanics of successful deposition of semen come from training and practice, and success rates in pregnancy should be regularly reviewed.
Semen must be deposited anterior to the cervix in the body of the uterus. While studies have been carried out on the benefits of depositing semen in each horn of the uterus, most of this work has been inconclusive in its conclusions.

## Finally

Many factors affect the success of any AI programme, and conscientious effort and attention to detail are vital. Knowledge of the risks and pitfalls are vital for good results, and remember that the maintenance of good records is essential to investigate any failures that occur. It is always worthwhile to benchmark yourself against your previous results, or against others performing AI.

# Artificial Insemination in Mares

**ENDA CONNOLE**
**BVSC**



**XLVets Practice** | Geraghty & Neary Veterinary
Mountbellew, Co. Galway

Mares are seasonal polyoestrus breeders - they begin to cycle as the days lengthen and come into season on average every 21 days reaching peak fertility in early June.

Horses are aged from January 1st so early foals are seen to have an advantage over their later born counterparts.

The length of gestation in mares is approximately eleven months which leaves a narrow window for mares to get back in foal and maintain their foaling date.

As spring approaches and foaling season begins our thoughts naturally turn to this seasons mating plans.

Artificial insemination (AI) is a popular and widely used tool in the equine breeding industry. Advances in semen and AI techniques has increased the success rates of AI with a choice of fresh, chilled or frozen semen.

## The advantages of using AI include;

- Ability to serve mares at home rather than travel mares and new-born foals to stud
- Reduced risk from venereal disease
- Biosecurity – bringing mares and foals to stud exposes them to a host of infectious diseases
- Ability to use genetics not available locally
- More mares can be serviced from a stallion
- Mares can be covered with stallions that are competing abroad or no longer living
- There are fertility advantages for some problem mares as the volume of fluid introduced at mating is significantly reduced
- AI is safer than covering mares naturally for both horses and handlers

## Some disadvantages associated with AI are;

- Reduced fertility in some cases
- Additional costs of predicting ovulation accurately, transport of semen etc.
- It is not permitted in the thoroughbred industry
- Tradition, perception
- Requires good communication between vets, clients and studs
- Requires insemination at correct time with correct dose.

## Timing of mating

Mares are typically in season for 2- 6 days and ovulate approximately 24 hours prior to the end of heat. This makes predicting

the optimum time of service difficult. Traditionally semen was believed to survive 48 hours on average in the mare's reproductive tract and the ovulated ovum lasting for approximately 8 hours. Before the availability of veterinary expertise to predict the time of ovulation, mares were typically covered every 2 days whilst in heat. This method was labour intensive, wasteful and dangerous.

Most busy studs using natural service require mares to be presented at the optimum time for service and that one service will suffice. This requires the mare owner to determine the time of optimum service using their vet. Vets typically use ultrasound and digital examination of the mares uterine tract and ovaries to predict when ovulation is likely to occur. Pre-breeding examination should be performed to assess suitability of mare for breeding and stage of cycle should be assessed to determine future examinations pre breeding.

The oestrus cycle can be manipulated with various hormones to increase successful prediction of ovulation.

## If the mare is being inseminated using AI there are three options available;

- Fresh semen
- Fresh chilled semen
- Frozen semen

## Fresh Semen

The semen is collected from the stallion and immediately inseminated into mare (<1hr). This requires the mare to be within a short distance of stud/stallion. Fresh semen lasts up to 72 hours in the mare's uterus (stallion dependent) while the egg lasts 6-8 hours post ovulation. Ideally the mare is inseminated 48-12 hours pre ovulation so sperm is ready and waiting for egg.

This method of AI is very useful in problem mares especially sub fertile mares prone to mating-induced endometritis. It is also a very efficient method of covering a large number of mares booked into a stallion on a particular day. AI with fresh semen should match or outperform natural cover provided correct management (60-70%)

## Fresh Chilled Semen

Semen is collected at stud, extended with nutrients, cooled and transported to the mare in cool boxes. Collection to insemination time should be no greater than 24-36 hours to maintain semen viability. The aim is to inseminate mare 6-12 hours pre ovulation. The window is narrower than with fresh semen as the semen is already 24 hours old.

This is the most common form of AI for studs transporting semen around Ireland and it does allow access to foreign based stallions when the logistics are well planned between the parties. Pregnancy rates with chilled semen are slightly lower than with fresh semen.

## Frozen semen

Semen is collected into straws and frozen in liquid nitrogen where it lasts indefinitely. This method allows for transport and storage of semen anywhere in the world as well as access to competing and deceased stallions. Pregnancy rates with frozen semen are lower than the other methods of AI (50-60%) due to sperm damaged via the freezing and thawing process.

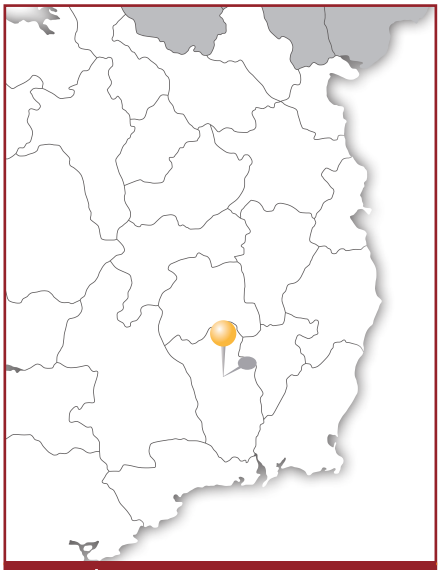
Semen is thawed immediately prior to insemination in a 37°C water bath for 30 seconds. Deep uterine insemination (DUI) is used by the inseminating vet to deposit semen in the uterine horn corresponding to the side of ovulation, between 12 hours pre to 6 hours post ovulation. The use of frozen semen requires most observation and/or manipulation of oestrus cycle due to the short window of semen viability.

## Post AI Care

Mares should be scanned post insemination to check for ovulation, inflammation and the need for further veterinary treatments. Pregnancy scan should be performed 16 days post ovulation.

# Calf Tracker Programme

**KIERAN DEVANEY**
**BVM&S**



**XLVets Practice** | Ormonde Veterinary
Dublin Road, Kilkenny

As dairy farms expand rapidly all over the country it has been noted that with greater numbers and increased attention paid to cow and grassland management, replacement heifers and calves are usually an afterthought until the autumn before they are expected to calve down. In many cases while investment has been made on improving farm infrastructure and housing for cows, calves and heifers are having to make do with existing buildings and often at increased undesirable stocking rates.

In an effort to help farmers refocus attention on replacement management, XLVets with the help of Zoetis and XLVets Skillnet set up the Calf Tracker Programme in 2019. Farmers were selected and during the spring of 2019 replacement heifer calves were set established performance targets.

Colostrum management was assessed, birth weights, growth rates were measured, and any disease or deaths recorded. Farmers were encouraged to continue their usual husbandry and management practices if satisfactory.

One visit is carried out by the vet to collect newborn calf weights and blood samples to measure serum protein levels (an indicator of sufficient colostrum absorption). Feedback is given if the serum protein levels are below normal or in any way variable.

The birth weight is the starting point and from here weights are taken at landmark stages such as weaning, turn out, housing or as often as the farmer wishes or is practical. Heifer calves should be growing at 850-1000g per day to achieve 65% of adult weight for serving at 14-15mths of age. Growth rates without any check in the first 8 weeks are pivotal to getting these calves a good start and on target for breeding.

A good start requires sufficient high-quality colostrum soon after birth, as mentioned previously this is assessed by taking a blood sample and measuring total protein level in the blood. Monitoring of growth rates will demonstrate if calves are on target or if there is any check that may be affecting overall performance. These checks in thrive can be due to disease, management or environmental issues. The Calf Tracker programme requires a partnership of both farmer and vet working closely together gathering information to help maximise calf performance. The vets take bloods, examine and weigh calves while the farmer must record disease incidence and treatment accurately as well as carrying out later checks on weight.

Calf performance can be benchmarked against other calves on farm, calves in other participating farms in the practice and the country overall. This allows

comparison of various management and husbandry practices and whilst every farm is individual there are options for information to be shared between farms and adapted to individual farm set ups. Calves are vulnerable at birth, a fact that is sometimes forgotten with familiarity and in the busyness of spring.

All calves need a good start, and this begins by being born into a clean warm dry environment to a fully vaccinated dam. It can't be over emphasised the value of feeding good quality colostrum as soon after birth as possible. A calf that absorbs enough antibodies from its first feed will cope with much of what the big bad world has to throw at it. Calves from birth should be in a clean dry and draught free environment. When a calf lies in the pen it should sink into the straw to form a nest which insulates it from the cold. Once the temperature in the calves environment drops below 12 degrees then feed consumed is required to keep the calves temperature regulated and not for growth. There should be no damp or wet areas in the calf house. A person should be able to walk in their socks without getting wet feet or hear water squelching beneath the straw. Dampness makes the environment colder and reduces air quality so increasing the risk of pneumonia. Ventilation is important to remove stale air from the shed and so reduce recycling of infectious agents. This is difficult to manage in most calf accommodation as a balance must be struck between keeping the shed dry and ventilated and it not becoming too cold. This is where a deep dry straw bed comes in and consideration should be given to using calf jackets especially for weaker or sick calves. Calf jackets have been shown to increase weight gain by up to 5kg in the first three months of life.

Regular feeding times with clean utensils (I prefer twice daily whole milk feeding for young calves) will stimulate natural reflexes and promote normal digestion. The quality of the milk fed is very important and this should not be compromised upon, nor the volume fed, as these are areas that are under the farmers direct control and if managed to the optimum can only boost calf performance.

Ensure concentrates, clean straw and clean fresh drinking water are available from birth as these are necessary for ruminal development and so future growth and performance. It is well known that a calf fed to optimal levels will grow faster have a greater resistance to disease and so become a more productive cow. It's vital to later productive performance that the calf develops a healthy rumen in the first 8 weeks of life and that disease is managed and prevented.

Changes in feeding regimes with growing calf numbers on farms and the use of different milk replacers with varying constituents and feeding rates require monitoring. This is to establish whether the feeding rate is effective to hit the targeted 0.85-1Kg daily growth rate. The regular weighing and review of weights allows for early adjustment in the group as a whole, as well as selecting individuals that are falling behind in an otherwise thriving group. Weaning should be carried out gradually with a reduction in the volume of milk fed over a period of 7-14 days, the concentration of the milk fed should remain the same during weaning.

The cost of rearing a replacement heifer is approximately 1500 euro which means 30,000 euro to rear 20 heifers. This focuses the mind, the earlier a heifer calves down the greater the lifetime production, thereby paying for the cost of her rearing and generating profit. The healthier a heifer is entering a herd i.e. the less exposure she has had to disease, the longer she will be part of the herd and the higher her productivity. A 2nd lactation cow is 14% more productive than a 1st lactation and a 3rd lactation 22% more productive.

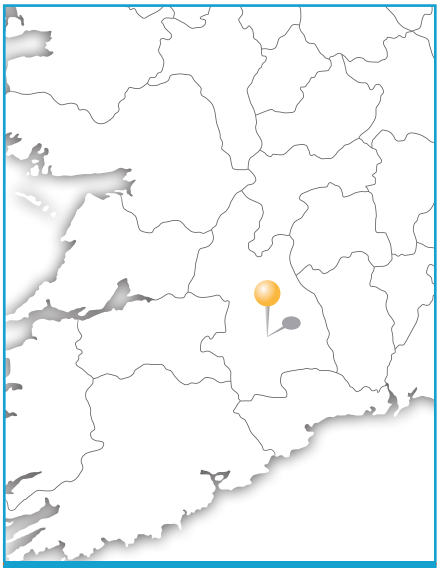
As a herd matures the more productive it will become with less forced culling requiring fewer replacements to be reared. The first 60 days of life are now known to be critical to maximise future productivity and longevity. It has been shown that growth rates of 800g/day in the first 60 days is positively correlated with survivability to second lactation and the greater the daily weight gain in the first 60 days the greater the yield in the 1st lactation. It has also been shown that energy intake pre-weaning and colostrum management have the greatest impact on future performance. Pre-weaning weight gain accounted for 22% of the variation in first lactation yield. Every additional 100g gained daily in the first 60 days results in 225kg of additional milk yield in the first lactation Why can weighing make a difference? - 100g increase in daily live weight gain in the first 2 months = 250kg greater milk production in 1st lactation. - Higher growth rates = lower mortality - Higher growth rates in first 2 months = Higher survival to 2nd lactation. - 70kg bodyweight heavier at calving = 1000 litres of milk difference. It is hugely important in general and as part of the Calf Tracker programme that accurate records of the incidence of disease are kept. The effect on future performance can be dramatic.

Pneumonia is the number one killer of cattle over 1 month of age in Ireland. It has been proven that one case of pneumonia in a replacement heifer with a successful treatment outcome will reduce yield by 4% in the first lactation and 8% in the second. Through the Calf Tracker programme these underperforming heifers can be identified and possibly considered unsuitable for breeding. Information garnered from the 1st year of the programme will allow the farmer and vet make changes to management in 2020 to improve calf health and growth rates and monitor the continued performance of the 2019 calf crop as they reach breeding age and being their journey into the milking herd.

Thank you to Charles Chavasse of Zoetis for his help and guidance with the Calf Tracker Programme and for much of the information provided in this article.

# Calf Health Matters

**MICHAEL O'CONNOR**
**MVB**



**XLVets Practice** | O'Connor Julian Vets
Cashel, Tipperary

Looking after calf health must be a key priority for farmers this spring as the first few weeks in a calf's life have a long-term impact on future herd productivity and farm profitability. Replacement heifer calves are the cornerstone of the future herd and require care and attention now to drive farm efficiency and productivity in the future.

Healthier animals are more productive animals, and calves that are kept healthy and disease free in the first few weeks of life, and been shown to last longer in the herd, and have better lifetime productivity.

## So just how important are the first few months of life?

The first 2 months in the life of a replacement dairy heifer are key to maximise lifetime productivity. Growth during the first 2 months of life is positively correlated with survivability to second lactation as studies have shown that heifers that reached second lactation grew more (0.8kg/d) between 12 and 65 days than those that did not (0.7kg/d). These first two months are crucial, as feed conversion in early life is far more efficient than in older animals. There is little or no compensatory effect in older animals as no effect was found between improved Average Daily Gain after first breeding and survivability to second lactation.

Research has also shown that additional average daily gain during the first 2 months in a calf's life results in additional milk yield in the first lactation. For example, for every additional 100g of ADG during the first two months of life, about 225kg of additional milk yield in the first lactation can be expected.

Also, pre weaning average daily gain accounted for 22% of the variation in first-lactation milk yield in some studies.
So, priorities for calf health in the first 2 months must be feeding, i.e. making sure calves are healthy enough to eat and gain weight, as well as colostrum management as these two issues have the greatest impact on future performance.

## What are the main health challenges in young calves?

Calf Diarrhoea, scour, is the most common disease affecting calves less than one month of age in Ireland. Good colostrum management is key to preventing scour, as are hygiene and cleanliness.

Making sure you follow the simple steps of three litres of the first milking within two hours of life is the best protection possible for young calves. Vaccination of cows in advance of calving will boost the level of protection in colostrum for young calves, but it is vital that calves receive enough, quality colostrum within 2 hours of birth.

Keeping calving pens and calf pens as clean as possible, with adequate disinfection and clean, dry bedding will help prevent the build-up of the bacteria and viruses that cause scour, like Rotavirus and E. coli.

Pneumonia is the most common disease affecting calves after the first week or two of life and can have a really long-term impact on the individual animal and the overall herd.

Studies from Northern Ireland have shown that young calves that have a single case of pneumonia before they are weaned have reduced milk yields in the future. Pneumonia in dairy calves pre-weaning has been shown to reduce first lactation yield by 4% and to reduce second lactation yield by 8%. Also, the number of times a heifer has pneumonia significantly impacts lifetime production as heifers suffering more than 4 cases have an average of 100 days less productive life2 compared with heifers that have been disease free.

The studies show that we really need to reduce the level of pneumonia in young calves to make sure we have healthier animals, with good average daily gain from birth, to ensure we have animals that are able to produce more during their lifetime. Improving on farm efficiency will drive production and profitability. We are all being asked to do more with less, in particular in terms of mitigating against climate changes. If we work towards having healthier herds, which must start with individual animals from birth, we can have more efficient and productive herds.

The goal for rearing replacement heifers must be to have them calve for the first time at 24 months of age or so. Studies have shown that the heifers that calf at 24 months do last longer in the herd, exceeding the average number of lactations that currently stands at around 3.4. lactations per cow. These are the healthier heifers from day one, with good fertility and better average daily gain that achieve their targets. It is the cows that reach 4,5 and 6 lactations in the herd that drive profit, but it is now that we need to be looking after the calves that will be on the fifth lactation in 7 years' time.

Prevention of pneumonia is down to planning and being prepared. Good clean dry calf cubicles are essential as moist damp conditions allow pneumonia viruses to build up. Good ventilation is necessary to allow fresh air in, and stale air escape. Vaccination for calf pneumonia can be very useful to boost calves immunity to the most common viruses, and it is best practice to vaccinate all calves in the same airspace. Talk to your vet about the vaccine that is most suitable for your young calves, and what you can manage best in your herd. There are intranasal vaccines that usually require just a single shot, as well as injectable vaccines, which usually require 2 doses.

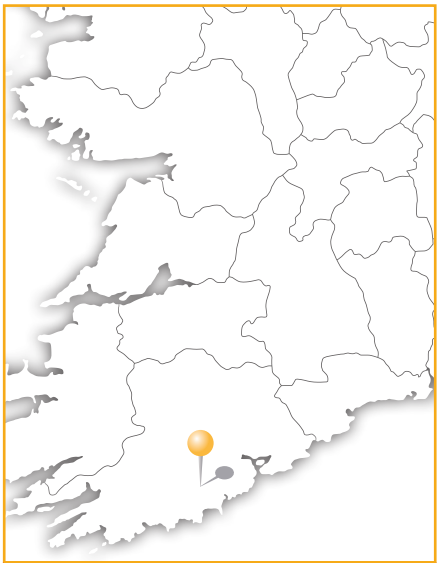
The most important thing to remember when it comes to vaccination is that common things are common, so vaccinate for the most common viruses of RSV and PI3. Also, always follow the instructions on the vaccine with regard to storage, administration and dosage.

Try keep different age groups separately, as older animals may be shedding the most common viruses of RSV and Pi3. The older animals may not show signs, but they can infect younger calves who are more vulnerable to picking up infections.

Remember, heifers that perform best in the first 2 months of life survive longer and produce more milk (and produce more profit) so the next few weeks are crucial to the future of your herd.

# The Vets Role in Compact Calving

**GREG FITZMAURICE**
**DVM, BAGRSC.**



**XLVets Practice** | Riverview Veterinary Group
Bandon Co. Cork

A compact calving period, although a tough and stressful time for all involved, is essential to maximise grass as the cow's main diet, thereby increasing profitability. The recommended aim of compact calving in Ireland is to have 90% of cows calved in a 6-week period. In reality, the average is closer to 60%. To achieve this higher rate requires a partnership, and your vet has an integral role to play.

## Body condition scoring

The herd average should be a B.C.S. of 3. Cows between 2.75 and 3.25 are those who show optimum fertility. Consider milking thin cows once a day until body condition improves. Increased ration may help, but generally it will only increase milk yield. If using a stock bull, his B.C.S. should also be at least 3 to allow him to make it through the rigours of the breeding season.

If you are not comfortable or confident in body condition scoring, your vet will be happy to help.

## Trace mineral profiles

Trace mineral imbalances have been linked with poor fertility in Irish dairy herds. The transition period just before calving and start of lactation is a stressful time that sees a drop in cow's food intake. Due to this, oral supplements alone cannot be guaranteed to maintain adequate trace minerals. Copper, zinc, manganese and selenium are all essential minerals that influence fertility. Blood sampling a group of the calved cows will indicate where the herd is as a whole. Supplementing with injectable trace minerals in the pre-breeding period could improve fertility in your herd by rapidly raising trace mineral stores, which could help to ensure a compact-calving pattern.

## Womb and ovarian health

Early scanning of any cow not seen bulling by day 35 post calving should be considered to identify any problems such as womb infections and ovarian cysts. In particular, cows that had difficult calving's, retained cleanings, milk fever or carried twins should be checked to rule out infection. Early detection allows these cows to be treated by uterine flushing or hormone treatments. Cysts on the ovary can stop cows cycling completely, cause them to be persistently bulling and prevent them from going in calf. Identification of these problems through scanning allows early intervention to maintain a compact calving pattern. Early scanning also identifies cows most suitable for breeding by A.I./sexed semen.

## Bull soundness

On average in Ireland, 20% of stock bulls have been shown to be "sub fertile" and such a bull can ruin a breeding season. Ideally the bull should be tested 2 months prior to the start of the breeding season. If the bull has had any sort of sickness with fever, he could prove sub-fertile 60 days later. Many vets can now perform bull breeding soundness exams (BBSE) on farm and any abnormalities such as low sperm count, poor swimmers, abnormal sperm and infection can be seen. It's said that the bull is half the herd and it is extremely important to know your stock bull is fit

for purpose. Otherwise you could find the following calving season dragging on.

## Heat detection

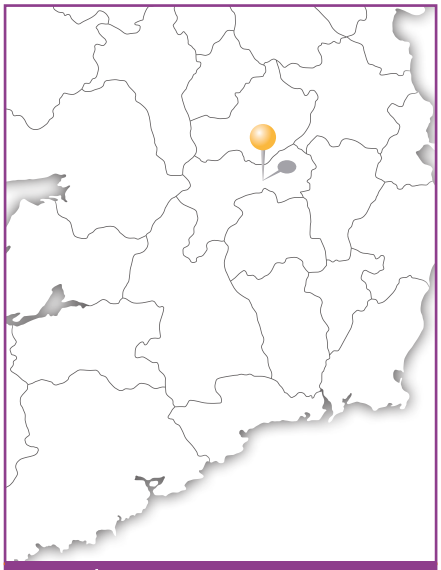
A cow typically takes 30 to 35 days between calving and her first (usually silent) heat. The first detected heat on average is day 45. Each missed heat has been shown to cost in the region of 250 so good heat detection is essential to maintain compact calving and keep costs down. There are a number of methods to improve heat detection, from tail painting and electronic collars to vasectomised bulls. The use of vasectomised bulls, particularly in the second half of the breeding season is a massive benefit as heat activity is dropping, and detection is much more difficult. The use of a chin ball is a necessity, and makes life much easier. It is a relatively straight forward operation, but allow at least 6 weeks before introducing the bull to the cows.

## Early pregnancy scanning

Although cows can be scanned from day 25, a number of these early pregnancies will be lost, around 10%. Generally however, early scanning of cows will be performed on average from 30 days service. This early scanning allows identification of early pregnancies along with problems such as empty cows, sub fertile bulls or A.I. problems and gives time to remedy these issues without causing the calving season to run long. This early scanning also allows your vet to give accurate calving dates, where service dates are unknown or a bull is running with the cows.

# Longitudinal Study on Bull Infertility

**DONAL LYNCH**
**MVB, CERT DHH**



**XLVets Practice** | Slieve Bloom Veterinary
Tullamore, Co. Offaly

The bull is responsible for 50% of the fertility on a farm, however when a bull goes wrong there can be disastrous consequences, sometimes with every female on the farm turning up not in calf. As a result, we need to put some effort to ensure that the bull is in the best position to achieve maximum fertility.

## Potential reasons for poor bull performance include

- Lameness
- Poor nutrition
- Stress
- Small scrotal size
- Injuries of the penis
- Poor semen motility
- Incorrectly developed semen

XLVets have followed a number of bulls that had fertility issues to see how they progressed, this has enabled our vets to give a more informed opinion on the likelihood of a subfertile bull recovering. This will allow farmers to make decisions on how to approach a solution to a problem bull.

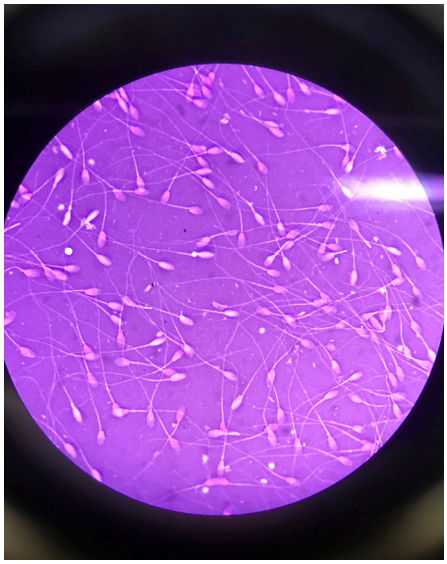
## Examples of the bulls investigated

### Angus bull

An Angus bull on a dairy farm that developed a moderate lameness at the start of the breeding season. The bull was tested and the semen had good motility however when the detail of the individual sperm were examined there were too many defects to allow for normal fertility. The same was the case when the bull was retested over a period of a number of months including 2 months after the lameness resolved. This proves that stress adversely affects semen morphology and that the semen ejaculated today started the cycle of development 10 weeks ago. We need to be aware that if a bull develops a lameness his fertility is going to be negatively affected.

### Hereford bull

A Hereford bull with an infection of one of the glands that produce fluids to carry the sperm. This infection caused defects in the sperm and also affected the motility of the semen. The bull was treated and there was a notable improvement in the condition, however the quality never achieves a standard suitable to work as a stock bull.



### Charolais bull

A Charolais bull with small testicles at 18 months old when tested prior to sale with associated poor semen quality was tested again up to 24 months old and never achieved a scrotal circumference standard to pass a fertility test. Scrotal circumference is determined by genetics and nutrition particularly, nutrition in the first few months of life. We could surmise that this bull did not get a lot of milk from his mother or maybe he was genetically programmed to have small testicles. We know that when a young bull does not meet the standards for scrotal circumference at puberty, he most likely will be inadequate throughout his life.

## Key Points to remember with a stock bull

- Purchase at least 2 months prior to the breeding season
- Fertility test the bull just before the season
- Keep the bull on a steady plane of nutrition during the breeding season
- Monitor the bulls physical ability to serve
- Scan cows early to ensure that the bull is continuing to perform

## Conclusions of our study

Sub fertile bulls respond slowly, if at all to treatment and rest. Young bulls with fertility issues related to poor scrotal performance do not improve with time. Lameness or any other form stress can have a serious adverse effect on bull performance.

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