

Care of the recumbent foal

Part 1

In the first part of a two-part series on care of the recumbent foal, Samantha Feighery RVN, Weipers Centre Equine Hospital, Glasgow, UK, focuses on sepsis, nursing and infection control

Neonatal foals, in their first hours to days of life, are susceptible to illness and injury. This susceptibility is increased in incidences of mares with high-risk pregnancies, eg. placentitis, dystocia, prematurity and failure of passive transfer.

Heart rate	80-120bpm
Respiration rate	20-40bpm
Temperature	37-39°C
Mucous membranes	Appearance, colour, CRT, dry/tacky
Gastrointestinal system	Motility/abdominal distension/reflux/faecal output, frequency/colour/consistency
Urinary system	Monitor for colour, amount, abnormalities (straining/posturing/patent urachus)
Mentation	Normal behaviour - investigation of surroundings, association with the mare, suckling regularly (at least five times an hour)

Table 1: Normal values in the neonatal foal.

COMMON CAUSES OF RECUMBENCY IN FOALS

Sepsis

Sepsis is a leading cause of foal mortality. This is an infectious process caused by bacteria in the bloodstream. It triggers and is associated with systemic inflammatory response syndrome (SIRS). It can develop *in utero* or post partum. Clinical signs are dependent on the organ system affected, the duration and severity of the infection. Clinical signs may include depression, fever, tachycardia, injected mucous membranes, respiratory distress, shock, hypothermia and coma. Foals with sepsis can deteriorate quickly, become dehydrated, recumbent, hypothermic and hypoglycaemic. Risk factors for developing sepsis include failure of passive transfer, improper umbilical care, poor sanitation and maternal illness, eg. placentitis. For a definitive diagnosis, a blood culture is performed. The most common bacteria is *Escherichia coli*.

Perinatal asphyxia syndrome

This is caused by a lack of oxygen before or after parturition and can result in hypoxia/ischaemia in a neonatal foal. The brain, kidney and gastrointestinal (GI) tract are commonly affected. When the damage is isolated to the brain it is called hypoxic ischaemic encephalopathy (HIE). Foals with these conditions will appear normal after birth but, within 48

hours, they can lose affinity for the mare, become unable to suckle, wander aimlessly and potentially develop seizures. Other clinical signs include hyper-responsiveness, depression and bizarre vocalisations (barkers).

This condition should be expected in any foal with a history of:

- Abnormal placentation of the mare;
- Premature placental separation;
- Delivery by Caesarean section;
- Prolonged dystocia;
- Premature delivery;
- Foals that have been resuscitated for any reason.

The clinical presentation is dependent on the degree of hypoxia.

Prematurity

A foal is classed as premature when it is born with a gestational age of less than 320 days. Dysmaturity is when the foal was full term but presents with clinical characteristics of prematurity.

Clinical signs include: small in size, fine/silky hair coat, floppy ears, tendon laxity and incomplete ossification of bones.

These foals may be too weak to stand or it may be necessary to keep these foals recumbent due to the incomplete ossification of the tarsal/carpal bones. Weight bearing in these foals can cause crushing of the tarsal/carpal bones, which can lead to permanent deformities. Premature foals are often unable to regulate their body temperature or glucose levels.

Botulism: 'shaker foal syndrome'

Botulism is a neuromuscular disease that causes weakness and muscle paralysis. It occurs almost exclusively in foals as a result of overgrowth of *Clostridium botulinum* in the intestinal tract following the ingestion of spores. Strong, rapidly growing three-to-four-week-old foals are most commonly affected.

As the disease progresses, the foal is only able to stand for short periods and trembles, leading to collapse and recumbency. Within 24-72 hours the foal is recumbent and will usually die from respiratory arrest.

NURSING THE RECUMBENT NEONATE

Managing a recumbent neonate is very labour and time-intensive and requires proper facilities and 24-hour nursing care. The objective in the caring for a recumbent foal is

to minimise stress. Sick neonates, in particular those in respiratory distress, are susceptible to acute destabilisation ('crashing') by the stress of the procedure. Carers need to monitor their patient's condition, attitude and vital signs very closely and findings need to be recorded on a regular basis, usually every four hours for reasonably stable patients.

Cleanliness/infection control

Ill neonates are even more susceptible to infection so prevention of nosocomial infections is very important. Strict biosecurity/cleanliness must be maintained in the intensive care unit/designated area.

Limited access to the area is advised. Dip pans can be placed outside the stall. Thorough hand washing should take place before and after handling the foal and mare, with gloves and gowns being worn at all times when handling the patients. The stall should be skipped out twice daily and plenty of clean bedding given.

The feeding utensils (milk jugs, dosing syringes) need to be washed and disinfected daily; try to keep them with the same patient throughout its hospitalisation.

The foal may or may not be separated from the mare via a cage. This is dependent on the temperament of the mare and how much equipment is with the foal.

Bedding

Critically ill/recumbent foals should be placed on a soft mattress. It is wise to cover this mattress with a waterproof covering to facilitate ease of cleaning and longevity. If the foal is seizing or potentially moving position, soft mattresses should be placed against the wall to prevent trauma to the foal, particularly if the foal is thrashing.

Warm, dry blankets or vet beds can be placed under and over the foal for warmth and/or absorption. It is useful to place incontinence pads (protective absorbing bedding) underneath the foal's back end to save the changing of the bedding, especially if the foal does not have a urinary catheter placed or has diarrhoea.

Pillows or V-shaped foam padding may be used to help maintain a sternal position. The bedding should be changed every 24 hours or as needed.

Positioning

If possible, it is best to try to maintain the foal in sternal recumbency. This allows for better ventilation. Weak/dummy foals tend to slip into lateral recumbency. It is important to change the foal's position/direction every four hours so each lung gets aerated, and this also may help to prevent the development of decubitus ulcers on bony prominences. It usually takes two people to lift and turn the foal.

When the foal is propped in sternal position, the front legs should be placed out straight in front of it. If they are folded underneath the chest, do not leave them in this position for more than 20 minutes. This can lead to loss of circulation and oedema in limbs. The hind limbs should be flexed with the weight shifted onto one hip.

Foals who are consistently in lateral recumbency can develop

atelectasis (the collapse or closure of part of the lung resulting in reduced/absence of gas exchange) and ventilation-perfusion mismatching. The PaO₂ in foals in lateral recumbency can be 10-20mmHg lower than foals that are in sternal recumbency.

Not all foals can be maintained in sternal recumbency; for example, foals in seizure states or with fractured ribs. Foals with fractured ribs will generally have the broken ribs side placed down.

Musculoskeletal system

The joints of all four limbs should be palpated and assessed daily to detect heat, pain, distension or oedema. Encourage or assist the foal to stand if not contraindicated; this is good for joint and muscle development. Physiotherapy may be performed, including passive range of motion exercises, and massage of large muscle masses can help to stimulate circulation, reduce muscle spasm, assist in relieving contraction and reduce oedema. Physical therapy with premature foals can be very beneficial.

Umbilicus

Immediately post-partum an umbilical clamp is placed or the umbilicus is tied off with umbilical tape. The umbilicus is a potential route for infection and should also be closely monitored daily for signs of pain, swelling, infection, excess moisture and patent urachus. If any of the abnormalities are noted, the vet should be advised.

The umbilicus should be dipped or sprayed with 0.5% chlorhexidine solution (to make a 0.5% solution of chlorhexidine, dilute one part 2% chlorhexidine solution with three parts sterile water).

This can be stored in a sterile universal container labelled with the patient's name/navel dip. A syringe can be used to apply the solution.

Treatment can commence as soon as possible after parturition and should be repeated every six hours for at least the first 24-48 hours if the foal is hospitalised or the stump is dry.

Skin care

A good deal of effort on the part of the nurse is needed to keep the recumbent foal dry and clean in an effort to prevent urine or faecal scald.

The placement of the urinary catheter decreases this risk but introduces an entry path for bacteria.

Use disposable absorbable incontinence pads underneath the foal and ensure plenty of clean towels are available to dry the foal.

If diarrhoea is present, the perineum should be cleaned as needed with warm wet cotton wool and sensitive soap, then dried thoroughly; Vaseline can be applied to avoid scalding and skin irritation.

If the skin irritation is already present a zinc oxide cream (Sudocrem) may be applied to sooth the skin.

Part 2 of this series in next month's issue of Veterinary Ireland Journal will focus on respiratory, nutrition and fluid therapy.