

## Canine Catch-Neuter-Return (CNR) Good Practice Guides

### Post-operative recovery following neuter surgery

#### Learning Outcomes:

1. Explain why it is essential to continue monitoring the dog into the recovery period
2. Describe how to minimise the risks of airway obstruction during recovery
3. Explain why we need to monitor the dog's body temperature during recovery and the ways to manage hypo- or hyper-thermia
4. Summarise the preparation of an appropriate recovery area for a dog following surgical sterilisation
5. Explain why every dog must have a detailed and completed patient record
6. Explain why each dog must have pain assessments performed regularly post-operatively

The end of the surgery is one of the most dangerous times during anaesthesia. When anaesthetic deaths occur, around 40% happen in the recovery period, and so it is essential that dogs are monitored during this period until they are fully conscious.

The risks to the dogs during this time can be minimised by ensuring these five factors:

1. Patent airway
2. Normal body temperature (normothermia)
3. Appropriate recovery area
4. Good communication about the dog
5. Assessment of pain

#### 1. Patent airway

Without a clear airway, the dog will be unable to breathe and could die. The use of an endotracheal tube protects the airway of anaesthetised dogs and the tube should remain in place until the dog has a brisk blink and is about to swallow, at which point it should be quickly but gently removed. Remember to deflate the cuff on the tube prior to recovery. However it is crucial to not leave a recovering dog unattended while intubated, as there is the possibility that the dog could bite the tube and inhale it, and so if no one is available to monitor the dog during this stage, the tube should be removed.



A dog positioned correctly in lateral recumbency for recovery post-surgery



A dog positioned correctly in sternal front end recumbency for recovery post-surgery

For recovery, the dog should be positioned in either lateral recumbency or sternal recumbency at the front end with the neck extended, the tongue gently pulled forward and to the side of the mouth to prevent it blocking the airway or being bitten. This will help to keep the airway clear and prevent aspiration of vomitus. The dog is positioned in lateral recumbency at the back end with the incision site uppermost for easy visualisation of the wound so that any complications can be addressed quickly, as well as preventing discomfort to the dog by applying pressure on the surgical site.

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If vomiting or excess salivation occurs, the patient should be in lateral recumbency and the head should be positioned or held lower than the body to allow the fluid to drain out.

### 2. Normothermia

Anaesthetised dogs are unable to regulate their body temperature and maintain normal body temperature or normothermia. If the dog's body temperature is monitored regularly using a rectal thermometer, every 10-15 minutes until the dog is fully conscious, we can prevent the dog getting too cold or too hot during anaesthesia.

If the dog is too cold, or hypothermic then the dog will metabolise the anaesthetic drugs more slowly and so will take longer to recover. In this situation, we need to intervene to warm the dog. The use of cardboard, rubber mats, or towels for the dogs to lie on will provide comfort as well as help to keep the dog warm.

Hot water bottles can be created with regular water bottles or surgical gloves, which are often called 'hot hands', can be used but be careful that the bottles are not too hot as this may result in thermal burns.



Post surgery dogs being warmed with blankets and bottles of hot water

If you don't have access to hot water, and the dogs are recovering outside, the dogs can be placed in the sun to warm up.

CNR programs are often in tropical climates so there is the risk of the dogs becoming too hot or hyperthermic during recovery. This is as dangerous as hypothermia to dogs and must be addressed quickly to prevent the dog dying of heat stroke. Remove any warming devices if present, and if the dog's temperature continues to rise then active cooling should be initiated. Active cooling involves wetting the dog with cold water, placing a wet towel on the dog for 5 minutes (remove after this time as it can then warm the dog), wrapping ice packs around the dog's lower legs or applying surgical spirit onto the dog's pads. Remember to continue monitoring the dog's temperature and stop active cooling when the dog's body temperature returns to normal.

### 3. Appropriate recovery area

Dogs will be disoriented and uncoordinated when recovering from an anaesthetic so it is important to prepare an appropriate recovery area that is quiet and safe. Obstacles such as rocks or steps, could cause physical harm to the dogs. Urine and faeces should be regularly cleaned up to reduce wound contamination and disease transmission, and doors or fences must be secured around the recovery area to prevent the dogs escaping and potentially getting injured or lost. Dogs should be provided with a comfortable recovery area, rubber mats, hessian sack or cardboard can be used to provide physical comfort. Dogs should not be recovered on wire-bottomed cages or on bare cement floors.



Dogs recovering in a safe, secure, and comfortable environment

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With group recovery, the dogs may step on each other and disrupt their recovery, but often they find the company of other dogs comforting. This is not the case for all dogs, so sufficient space must be provided to allow the dogs to move away if they want to and dogs should be adequately monitored and separated if conflict occurs.

Once the dog is fully conscious and ambulatory, he or she should have access to fresh water, however take care with offering water if other dogs in the pen are still sedated as there is a risk of drowning if sedated dogs lie on the water bowls. Puppies and young dogs should also be offered small amount of food to minimise the risks of hypoglycaemia. All dogs should receive food and water prior to being returned to the streets.

### 4. Communication and record keeping

A designated staff member should be assigned to monitor the dogs during the recovery period. Each dog should have a patient record, and these will remain with the dog throughout the CNR process. The patient record will be updated daily following the clinical assessment of the dog and any complications recorded such as infection. This document can then be viewed by any member of staff to ensure appropriate care is given to each dog post-operatively. These patient records can be used to evaluate mortality or injury rates and to ensure that the current protocols being used are working effectively.

### 5. Assessment of pain

Pain is recognised as a negative welfare state and may inhibit recovery. If a dog is painful post-operatively it will have an increased risk of post-operative infection, self-trauma and wound breakdown, as well as increased aggressive behaviour towards other dogs and the public.



Post surgery dogs licking their wounds – a sign of pain

All of these lead to slower recovery times and therefore longer duration of stay in the kennels. The use of ice packs wrapped in a clean towel and gently held over the surgical incision for 10 minutes can help to alleviate immediate post-operative pain by reducing swelling. Studies have shown that pain is felt more acutely in patients that are sleep-deprived or anxious, further supporting the requirements for a comfortable recovery area with some form of 'bed' to help the dogs rest. All dogs must be regularly assessed for signs of pain during the post-operative recovery period and further pain relief administered if required (see pain assessment section).

#### Checklist:

- ✓ Monitoring must be continued until the dog is fully conscious
- ✓ Never leave a dog alone while intubated
- ✓ Position the dog with neck extended and tongue out to keep airway open
- ✓ Monitor the temperature regularly until fully conscious
- ✓ Prepare a comfortable, quiet, safe recovery area with sufficient space for each dog
- ✓ Offer water once the dog is alert and walking
- ✓ Individual patient record must remain with the dog at all times
- ✓ Pain inhibits recovery and must be regularly assessed and further pain relief administered if required



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### References:

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