**MONITORING PATIENTS UNDER ANESTHESTHETIC DRUGS**

The depth of anaesthesia must be monitored carefully. Animals that are too light will experience pain and may move during the procedure. Animals that are too deep run the risk of experiencing cardiopulmonary arrest. If an animal is too light the anaesthesia should be supplemented, if too deep, animals on gas anaesthesia can be turned down. Animals given injectable anaesthetics cannot be lightened directly. Instead [respiratory](http://www.ahc.umn.edu/rar/anesthesia.html#Preparation) and [cardiovascular](http://www.ahc.umn.edu/rar/anesthesia.html#Fluids) support must be administered until the anaesthetic is metabolized and the animal begins to lighten on its own.

To monitor the depth of anaesthesia, perform the following:

* **Reflexes**- these reflexes disappear as the animal becomes deeper in the following order:
  + **Palpebral**- touching the eyelids causes blinking. The animal is light if it is blinking.
  + **Corneal -**touching the cornea of the eye with a tuft of cotton results in a blink. Once the animal has lost its corneal reflex, it is too deep.
  + **Note**- the palpebral and corneal reflexes in rodents can be highly variable and difficult to interpret. Toe pinch should be used as the primary reflex for monitoring anaesthetic depths in rodents..
  + **Sticking/pinch**- using fingers to pinch the toe or a needle to stick (lightly) the feet will cause a pain response. If the animal withdraws the toe it is not deep enough. If it doesn't, it is not sensing pain. This can be used to test the flank as well.
* **Muscle tone** increases as the depth of anaesthesia decreases, unless the animal is receiving a cataleptic drug like ketamine in the absence of a sedative. Test muscle tone by pulling on the limb or in the case of the epidural, the tail. Rigid tone indicates inadequate depth of anaesthesia.
* **Monitor cardiopulmonary function and body temperature**- As an animal becomes too deeply anesthetized, respiration and cardiac output decrease, resulting in poor blood oxygenation and tissue perfusion and decreased blood pressure and temperature. Likewise, elevations in heart rate and blood pressure may be indications that an animal may be feeling pain and is anesthetized too lightly.
* **Recumbency** is as a result of too much anaesthetic (Xylazine). A low dose of Xylazine (0.05mg/kg) is commonly used for sedation in cattle for standing surgeries on the flank. This does not cause recumbency in most animals; however some animals may react differently based on how they metabolize the drug.
* **Drooping Head** is a sign that the animal is unable to support its head and this is also a sign that there is too much anaesthetic.
* **Eye movement and pupil position** is also something to watch. The more eye movement decreases the deeper the state of anaesthesia. When the pupil is in a ventromedial aspect the anaesthesia is medium and when the pupil is centred anaesthesia is at a deeper state. Dilated pupils mean medium to deep state of anaesthesia.