***Intravenous Regional Anaesthesia of the Lower Limb – Cattle***

* Restrain the animal.
* Clip and disinfect over a convenient prominent superficial limb vein distal to where the tourniquet will be placed.
* Place a rubber tube tourniquet or wide flat rubber band around the limb.
* The band or tubing may be placed in the proximal metatarsal or proximal metacarpal region or above the hock or carpus.
* The tourniquet must be applied tightly.
* Insert a needle (19 gauge (1.1 mm external diameter) 3.6cm long or a 22 gauge butterfly catheter to which the syringe containing lidocaine will be attached into the vein, directed distally
* Aspirate blood to confirm that the needle is properly positioned within a vein.
* Inject the appropriate calculated amount of local anaesthetic solution, e.g. 10-20 ml of 2% [**lidocaine**](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm)hydrochloride for adult cattle.
* Withdraw the needle and massage the injection site for a few seconds to prevent [haematoma](http://wildpro.twycrosszoo.org/S/00Ref/KeywordsContents/h/Haematoma.htm) formation.
* Anaesthesia should be complete in five minutes and persist for 1-2 hours if the tourniquet is left in place.
* Analgesia develops in 10-20 minutes.
  + Check after ten minutes whether full analgesia has been achieved: it is important to check the state of analgesia in the deep tissues prior to beginning a surgical procedure involving these tissues (e.g. digit amputation).
  + It is particularly important to confirm that the caudal aspects of the interdigital cleft are insensitive as this is often the last area to become fully anaesthetised.
  + Sometimes the skin between the digits is not fully anaesthetised; in such cases inject 5 ml of 2% lidocaine midline on the dorsal aspect of the fetlock and 5 ml midline on the caudal aspect between the dew claws.
* [Analgesia](http://wildpro.twycrosszoo.org/S/00Ref/KeywordsContents/a/Analgesia.htm) remains until the tourniquet is removed.
  + Following surgery (up to 45 minutes) release the tourniquet slowly over about ten seconds.
  + Release should not cause any problems if at least ten minutes have elapsed between injection and release of the tourniquet.
* The tourniquet may be left in place for up to1.5 hours without ill effect.

***Use of this block:***

Painful procedures of the distal limb including digit removal and granuloma removal from the digital skin.

***Complications of this technique:***

* Animal may be difficult from the start and may kick making catheter or needle insertion or tourniquet application difficult.
* Difficulty locating the vein.
* Haematoma may occur at the site of injection.
* If the local anaesthetic solution is injected slowly the animal may kick part way through and the needle become displaced from the vein.
* If the tourniquet has not been applied properly the procedure will not produce full analgesia.
* IVRA does not always result in full analgesia of the skin between the digits; an additional injection of 5 ml of 2% lidocaine midline on the dorsal aspect of the fetlock and 5 ml midline on the caudal aspect between the dew claws may be required.
* Failure to take effect.
* Damage as a result of the tourniquet being left on too long although this is rare unless it is left on for more than 1.5 hours.
* Tourniquet removed too quickly can cause systemic drug effects e.g. Collapse due to anoxic waste products re-entering circulation.

***Equipment required:***

* Rubber tubing for tourniquet (e.g. 90 cm long 1.2 cm diameter). **or** a stout flat rubber band.
* Local anaesthetic solution: 2% [**lidocaine**](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm) **without** adrenaline.
* Syringe.
* 19 gauge needles or butterfly needles.

***Expertise level / Ease of Use***

* Simple, rapid to carry out, economical, involves minimal tissue trauma.
* Procedure should only be undertaken by an individual with appropriate clinical training and practical experience; this would usually be a veterinarian or someone with advanced veterinary technician training.

***Cost/ Availability***

* Inexpensive.

***Legal and Ethical Considerations***

In some countries there may be legislation restricting the use of this type of technique to licensed veterinarians. For example in the UK: "*The Veterinary Surgeons Act 1966 (Section 19) provides, subject to a number of exceptions, that only registered members of the Royal College of Veterinary Surgeons may practice veterinary surgery.*"

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Summary of information contained in this document was taken from:

[***http://wildpro.twycrosszoo.org/S/00Man/VeterinaryTechniques/PainRumIndTech/IVRA\_Foot\_Cattle.htm***](http://wildpro.twycrosszoo.org/S/00Man/VeterinaryTechniques/PainRumIndTech/IVRA_Foot_Cattle.htm)