



SOP 6.05 Placement of a short-term jugular catheter in horses

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Purpose

- (1) The objective of this standard operating procedure is to provide guidance to the Charles Sturt University staff on:
 - a. The safe placement of a short-term catheter (≤ 24 hour) into the jugular vein of horses.
 - b. Use of this SOP will enable Charles Sturt University staff to provide tuition to veterinary students on the safe placement of catheters in horses.

Scope

- (2) This procedure applies to any person who is involved in AEC approved teaching or research involving horses or commercial purposes in the veterinary enterprises of Charles Sturt University
- (3) All researchers and teaching staff using animals for scientific purposes must be competent. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'

Recommended instructor to student ratio

- (4) If used to teach the procedure to veterinary or veterinary technology students, a ratio of 1:1 is appropriate; otherwise, this SOP describes the normal clinical placement of a catheter **by a veterinary practitioner**. Despite the instructor student ratio suggested, other students may look on at a safe distance if the horse is in a controlled environment (such as equine stocks) *and* if, in the judgement of the instructor practitioner, it is relaxed in temperament. This process requires an assistant that may be the handler of the horse, or another person and any student may act as an assistant (without risk to the subject) with appropriate guidance.

Details of procedure

Objective:

- (5) The acute (≤ 24 hour) placement of a catheter into the jugular vein in a horse for sampling of blood either in large volumes or several times, and/or for administration of fluids or other intravenous administration of medications.

Alternatives to animal use:

- (6) There are no alternatives as the procedure is required for treatment and/or diagnostic procedures in horses.



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Safety and Risk considerations:

- (7) Some animals resent catheter placement. Signs of resentment include lifting head, tensing neck and moving away from operator. The impact of this can be minimized by ensuring desensitisation of the sites for catheter insertion and suture placement is achieved by subcutaneous injection of lignocaine. Distress can also be minimized using appropriate restraints such as a crush. Risk of injury can be minimised by ensuring that personnel involved are adequately trained in handling and restraint of horses.
- (8) Sharps-related injury, 'needle-stick' to personnel

Equipment:

- Clinical (biohazard) waste bin
- Sharps container
- Clippers
- Clean examination gloves
- One three-way tap and cannula extension line (combination preferred, sterile)
- Saline that has been pre-heparinised at 5000 international units per litre: "hep-saline".
- One 20 ml luer-fit syringe
- Sterile gloves
- One 25G * 18 mm luer-fit injection needle
- One 3 ml luer-fit syringe
- One catheter as required: usually recommended, a 125 to 150 mm 14G catheter with luer lock fitting (such as Angiocath® or Milacath®).
- Sterilised pack containing 300 mm of 1 non-absorbable monofilament suture material (e.g., Vetafil®) and several (around 10) sterile swabs that can be opened by an assistant/handler as needed. Note that suture may also be provided in a standard sterile surgical pack, but sterilised swabs are still required.
- One 18G * 38 mm injection needle (this may also be provided in the sterilised pack)
- Elastoplast® (or similar) 10 cm bandage, at least 1 roll
- Scissors

Procedure:

- (9) The horse should be restrained appropriately. The choice of restraint will be based on an assessment of the behaviour of the individual horse. Horses may require minimal restraint (e.g., halter) or restraint in a crush.



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- (10) Clip a rectangular area along the (left unless specifically required) jugular furrow at least 150 mm wide and 250 mm long, with the most cranial edge to be 150mm caudal to the angle of the jaw.
- (11) Using clean gloves, the area should be scrubbed with generously soaked chlorhexidine scrub solution for at least two minutes.
- (12) Additional swabs with the chlorhexidine scrub solution should be used to clean around the area, starting by rotating the swab around the jugular groove in an elliptical motion, starting in the centre of the prepared site. Rotation is required to prevent the swabs from capturing material from the edge of the preparation site and dragging it back to the centre of the site, now being set up as most aseptic.
- (13) Using a radial pattern, use alcoholic swabs placed just off the site centre on the jugular groove, wipe the surface across the centre to the exact opposite side in a radial pattern. Do the same in the opposite direction, and then continue the process until the entire area has been wiped with alcoholic swabs in a radial pattern, which should take around 6 to 8 swabs. Use one last swab to clean the centre of the site with a wipe.
- (14) Dispose of all the swabs used in the clinical waste bin.
- (15) Flush the catheter extension line with hep-saline to prime and turn the 3-way tap to off.
- (16) Apply sterile gloves.
- (17) Use the 3ml syringe and 25 gauge needle to place a 1 ml subcutaneous “bleb” directly over the jugular vein’s location at the intended site of skin puncture and another two blebs at least 3.5 cm cranial to that bleb, one opposite the other on each side of the jugular vein.
- (18) Dispose of the needle in the sharps container and the syringe in the clinical waste bin.
- (19) Have your assistant open the catheter pack to allow removal of the catheter in a sterile fashion.
- (20) Holding up the jugular vein with one hand, and holding the stylet hub (i.e., the end) in the other, point the catheter along the jugular vein towards the heart and introduce it through the skin in the centre of the lignocaine bleb at around 45 degrees. When the stylet end is through the skin, reduce the stylet angle so that the catheter continues pointing along the jugular groove down toward the heart and slide it into the lumen of the jugular vein.
- (21) When the lumen is catheterised, blood will begin to come out of the end of the stylet. At this point, the stylet hub should be pushed toward the skin surface so that the entire catheter is almost parallel to the skin and jugular vein and then insert the stylet and catheter for a further 20 mm. Then hold the stylet in place and slide the catheter off the stylet into the vein until the catheter hub reaches the insertion site. At this point the stylet is removed.
- (22) The pre-primed extension set and tap should now be attached.
- (23) Take the sterile suture and tie it around the extension set with a surgeon’s knot and ensure equal length tails on both sides. Do not tie sufficiently tightly to collapse the extension tubing. Using the 18G needle pick up a fold of skin over the lower cranial local bleb so the fold is in parallel with the jugular course and push the needle through this fold ensuring that it passes from ventral to the dorsal and does not include skin outside the area of the local bleb. Thread the suture pointing ventral from the knot behind the tubing though the 18 gauge needle going through the sharp end. Push it through until the suture appears out of the needle hub, then remove the needle. Pull this suture through the skin to remove slack. Do the same previous two steps with the 18 gauge needle in mirror image coming from the top. The needle point goes towards the tube again, and the other suture from the extension set is threaded upwards through the 18 gauge needle. Once this needle is removed the two suture ends that



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are going through the skin more or less in a line are tied with a hand tie so that the skin folds in around the extension set. This tie should NOT be tight, but just enough to pull the skin in over. The needle must be disposed of in the sharps container by the operator without recapping.

- (24) Flush the extension set and catheter with hep-saline.
- (25) Place sterile swabs as a pack over the catheterisation site and looped extension set and then bandage the whole in place around the neck with the Elastoplast bandage.
- (26) At completion of use, remove catheter by removing the bandage, cutting the sutures with scissors, and then applying fresh sterile swabs over the insertion site and sliding the catheter out of the vein. The site should then be rubbed to ensure the catheter pathway from the vein to the skin surface is disrupted to avoid bleeding or entrainment of air.
- (27) The catheter site should then be examined for any heat, pain, swelling or discharge: if any are present, the horse is to be examined by a veterinarian.

Drugs, chemicals, or biological agents

- Pot of clean swabs for scrubbing soaked with a chlorhexidine scrub solution
- Pot of clean swabs soaked with alcohol solution (i.e., ~70% ethanol)
- 20 mg/ml lignocaine solution, 5 ml

Impact of procedure on wellbeing of animals

- (28) Laceration or damage to the jugular vein can result in a haematoma formation. No other impact of wellbeing is seen unless excessive volumes of blood are taken (>6-8L in 500kg adult horse)
- (29) If the horse is ill-tempered and/or poorly controlled, the horse may harm itself in trying to escape the stocks or the operator, assistant, handler, or nearby observer.
- (30) Environmental damage, particularly with incorrect sharps disposal

Animal care

- (31) Observe animals for signs of distress and for any bleeding or air leakage at time of catheter removal.

Pain relief

- (32) Not required

Reuse and repeated use

- (33) The purpose of placement of a catheter in the jugular vein is to avoid multiple venepunctures and this single procedure is less invasive than multiple venepunctures.



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Qualifications, experience or training necessary to perform this procedure

All operators

- (34) Competence in handling, restraint and understanding of, and appropriate response to, equine behaviour is essential.

Demonstrator

- (35) Should be familiar with the correct techniques and the anatomy of horses before attempting this procedure.

Students

- (36) Procedures should be clearly demonstrated before students attempt them. Students should be aware of the requirements for sterile technique.

Record requirements

- (37) For use of horses owned by Charles Sturt University, catheter placement will be recorded as outlined in 'SOP6.1 Equine Cumulative use measurement'.

Associated documentation (including pictures if available)

- (36) None required.

Glossary

- (37) None required.

References and relevant links

- (38) Angiocath® is a registered trademark of Becton, Dickinson and Company and Milacath® is a registered trademark of Mila International.