



## AEC SOP 4.15 Collection of blood samples from cattle

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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 collection of a blood sample from bovids. All animals from which samples are obtained should be appropriately and safely restrained, usually in a crush/shute, especially older animals.

### Scope

- (2) This procedure applies to any person who is involved in AEC approved projects involving the collection of a sample of blood from a bovid.
- (3) All researchers and teaching staff using animals for scientific purposes must be competent in handling and restraining cattle, and in obtaining blood samples from cattle. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'

### Details of procedure

#### Collection of a blood sample from the coccygeal (tail) blood vessels.

- (4) Blood samples are taken either from the coccygeal arteries or veins via puncture of the blood vessel from the proximal (cranial) part of the ventral tail. The vessels course ventral to the coccygeal vertebrae and are typically larger and deeper in the cranial tail. The tail is elevated and cleaned with a paper towel or via a digital wipe. (Asepsis is unlikely, thus not required, in this anatomical location.) A needle, attached either to a syringe or a vacutainer, is introduced perpendicular to the cleaned glabrous skin in the midline of the ventral tail between palpated condyles of the coccygeal vertebrae. The blood sample is obtained once within a blood vessel using the suction applied by the vacutainer or by withdrawing the plunger of the syringe. Once sufficient blood is removed, the needle is withdrawn.

#### Collection of blood from a superficial vein, particularly the jugular vein

- (5) Blood samples can be obtained from any accessible superficial vein after appropriate risk assessment. Potential sample sites include, but are not exclusive to, the saphenous, cephalic, ocular, or mammary veins. The most commonly accessed vein is the jugular vein after appropriate restraint, typically with deviation of the head laterally to expose the opposite jugular groove. Head deviation can be with manual restraint, or with the use of a halter. The proximal (caudal) portion of the jugular vein is occluded to distend the blood vessel within the jugular groove. A sharp needle of an appropriate size for the animal is introduced at an angle of approximately 45° to the skin along the line of the distended blood vessel, cranial to the occluded vessel. The skin should be clean and dry, or appropriately disinfected. Once the



## **AEC SOP 4.15 Collection of blood samples from cattle**

needle enters the blood vessel, a blood sample is obtained by withdrawing the plunger of the syringe, or by engaging the vacutainer tube. Once sufficient blood is obtained, the needle is withdrawn, and the head restraint removed prior to release of the animal

### **Collection of blood samples via catheterisation of a superficial vein**

- (6) Catheterisation can be used to obtain multiple blood samples from any superficial vein as described above. Typically, this involves catheterisation of the jugular vein. The animal is restrained appropriately depending on the age of the animal. The vein is located and distended as above. Typically, local anaesthetic is administered into the subcutaneous area over the relevant part of the vein where venepuncture is to proceed. The skin superficial to the catheter insertion site is prepared aseptically. Using gloved hands, the needle and catheter is introduced similarly to that described above, via the anaesthetised part of the skin and subcutaneous tissue. If necessary, a 'cut down' via sharp dissection into the subcutaneous tissue can be used to facilitate ease of passing the needle and catheter into the blood vessel. Once the catheter is within the vessel, the catheter is advanced (either cranially or caudally) over the needle and into the vein as far as the hub of the catheter. The catheter is then fixed in place using suture material or appropriate glue such as 'supaglu'. Usually a short (c.15cm) extension set is fixed to the hub of the catheter, and the end of the extension set with a 'bung' is fixed to the skin in an appropriate place on the animal. The extension set and catheter is filled with heparinised isotonic fluid to prevent blood clotting and to facilitate continuous sampling as necessary without multiple punctures of the skin and vein. Daily assessment of the venipuncture site and the catheter for signs of infection and inflammation should be carried out; and the catheter removed as necessary.

### **Drugs, chemicals, or biological agents**

- (7) Local anaesthetic for catheterisation; otherwise, none is necessary.

### **Impact of procedure on wellbeing of animals**

- (8) Minimal discomfort. Daily monitoring for infection is important for catheter sites.

### **Animal care**

- (9) Transport, handling, and caging will be conducted in accordance with the Australian Animal Welfare Standards and Guidelines for Cattle 2014.

### **Pain relief**

- (10) Local anaesthesia for catheterisation; otherwise, none is necessary.

### **Reuse and repeated use**

- (11) The skin and blood vessel should be penetrated as infrequently as possible to obtain a blood sample. Each animal should have a maximum of two samples per session, and for research



## **AEC SOP 4.15 Collection of blood samples from cattle**

a maximum of two samples per day for up to a week; catheterisation would be the preferred option for obtaining multiple samples.

### **Qualifications, experience or training necessary to perform this procedure**

(12) Demonstrators should have been trained for this procedure.

### **Record requirements**

(13) None required, other than routine daily monitoring sheet recording.

### **Associated documentation (including pictures if available)**

(14) None required.

### **Glossary**

(15) None

### **References and relevant links**

- (16) <https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare/animal-care-and-welfare/livestock/livestock-files/national-model-codes-of-practice-for-the-welfare-of-livestock>
- (17) <https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare>