

## **Collection of Blood- Pigs**

Recommended instructor to student ratio: 1:3

### **Objective**

To collect, by venepuncture, blood samples suitable for laboratory analysis

### **Alternatives to animal use**

Prior demonstration using video.

### **Procedure**

Site and methods for bleeding depend on the age of the animal and the volume of blood required (see table below). The use of small gauge needles 21-20 gauge x 25mm especially in pigs up to 20 weeks of age will minimise the risk of blood leakage from the cranial vena cava to the thorax and potential respiratory distress. 21 gauge x 12 mm needles are recommended in small pigs less than 8 weeks old. 20 gauge needles can be used in pigs from 8-26 weeks, however experienced operators can safely and successfully use 16-18 gauge x 25mm needles in pigs (over 16 weeks of age). Vacuum blood collection tubes are recommended for all sites except the ear vein. The use of a 25mm correct vacuum blood collection needle with a rubber sleeve that covers the stopper-puncturing end is recommended. This will prevent splashing of blood onto the stopper when the evacuated tube is removed. Do not pull needle out of vein with vacuum blood collection tube still attached as this will release the vacuum in the tube. Once collection complete, remove vacuum blood collection tube, then, applying pressure over injection site, remove needle. Bleeding from the cranial vena cava/ caudal jugular site is suitable and recommended when a number of animals have to be bled or multiple bleeds are required. Tail bleeding, ear bleeding and cephalic vein bleeding are more problematic and not recommended where repeated samples have to be taken.

### **Drugs, chemical, or biological agents**

70% alcohol or other suitable antiseptic to clean the skin surface prior to venepuncture

### **Impact on animal wellbeing**

Nil, unless excessive volumes of blood are taken or unless excessive blood leakage to the thorax occurs associated with laceration or damage to the anterior vena cava.

### **Reuse and repeated use**

Where small volumes of blood are removed (10-20mL), weekly or fortnightly sampling on several occasions can be safely undertaken by an experienced operator. For repeat sampling it is important to avoid damaging the vein, using good technique and restraint. Where an animal is inadequately restrained, avoid repeated attempts at venepuncture.

### **Animal Care**

Observe animal for signs of excessive distress.

Pigs should not be bled if the ambient temperature exceeds 30 degrees Celsius, due the risk of heat stress.

### **Pain Relief**

Nil

### **Qualifications and experience necessary**

Demonstrators should be familiar with the correct techniques and the anatomy of the pig before attempting this procedure. Procedures should be clearly demonstrated before students attempt them.

Student should be aware of the requirements for sterile technique.

Age	Site	Position / restraint	Technique
Less than 4- 5 weeks  Can be undertaken up to 8 weeks	Cranial vena cava	Lie flat in dorsal recumbency with neck extended straight, and front legs held back along the chest by an assistant. A V-shaped cradle is recommended. The operator holds the pig's snout with his/her free hand or the pig's head can be restrained under a cross-strut on the cradle, provided access to the cranial vena cava is not impeded and head restraint is secure.	From the cranial point of the sternum, on a line to the base of the ear, locate a craniolateral depression in the skin, approximately 20mm cranial and 20mm lateral to the right of the cariniform cartilage (cranial tip of the sternum) Direct the needle towards, or just lateral to, the midline and going inwards and backwards at an angle of approximately 60° to the skin surface. The needle is directed toward the pig's midline or just lateral to it.  Entry on the pig's right side is recommended to avoid the phrenic nerve. In some small pigs, the vein may lie only 10mm under the skin.
>6 weeks  Always suitable in pigs 8 weeks or older.	Cranial vena cava to caudal jugular vein	Standing square on all four legs, restrained by a snout rope, head slightly forward and slightly raised. The vein should not be occluded, and must be punctured blind. Restrain in an area of the pen apart from other pigs and on a slip-free surface, to avoid movement that will interfere with safety of the procedure.  The operator can work from a position either parallel with the pig (facing forward, working to the left) or from in front of the pig (facing backward). The former position enables better control over the pig movement, overall restraint and safety.	From the right side of the pig. Find the same depression as indicated above, craniolateral to the point of the sternum, on a line between sternum and the base of the ear. Find the base of this depression or a slight bulge just below (ventral to) the deepest part of the depression. The needle is directed inward, upward and backward to puncture the vein. Direct the needle toward, or just lateral to, the dorsal midline of the pig's back. The needle is typically directed at an angle to the skin of between 60° and 90°. In adults, the vein lies deep, and in large adults a 37mm needle may not be long enough. In adult pigs, for a right handed operator, position the left hand on the top of the shoulder blade and aim the needle toward that point.
>14 weeks	Cephalic vein	Standing, restrained by a snout rope. Do not raise the front limb off the ground.	Use a rope or digital pressure to occlude and raise the vein on the cranio-medial surface of the upper front limb. Puncture the vein by directing the needle up the leg.
Adult	Ear vein (low volume)	Standing restrained by a rope	Occlude the vein at the base of the lateral surface of the ear. Vigorous slapping of the ear or rubbing with alcohol swab will raise the vein. Slide the needle towards the tip of the ear. Note that a pig's ear vein may continue to bleed for some minutes after venepuncture is completed.
Adult	Tail vein	Standing, usually restrained in a stall or weigh scale.	The tail is held vertically the needle directed towards the point of the junction of the tail with the body.