



## College of Veterinary Medicine

### Poultry Blood Collection

Edited by **Teresa Y. Morishita, DVM, PhD, Dipl ACPV**  
Poultry Veterinarian and Professor of Poultry Medicine & Food Safety

#### Why Bleed Your Birds?

Phlebotomy (blood collection) can play an important role in determining the cause of morbidity (sickness) and mortality (death loss) experienced in your flock. In addition, flock health monitoring can be achieved by obtaining serum samples. A veterinarian (or flock specialist) can perform such a procedure to provide the samples needed for laboratory diagnostic testing. Three types of blood samples can be used for diagnostic testing: whole blood, plasma, and serum. Whole blood samples are usually used by the veterinarian or flock specialist to examine, by microscopy, the condition of the erythrocytes (red blood cells), leukocytes (white blood cells), and thrombocytes (platelet-type cells). Plasma samples are often used by the veterinarian to obtain the chemical profile of the bird's blood. Serum samples are used by the veterinarian to obtain antibody titer levels present to determine flock exposure to disease agents.

#### What Will You Need to Collect Blood?

- 3 mL syringes (1 mL = 1 cc)
- Needles (the higher the gauge, the smaller the diameter of the needle). The 25 gauge x 1 inch length is preferable for most birds.
- Blood collection vials
- Mini cooler (for transportation of blood samples to the laboratory)



*Needles and syringes commonly used to bleed poultry.*

Blood Vial	Contents	Collection Sample
Red	None / No additives—Blood clots on its own; this allows serum to separate from cells	Serum
Red with grey marbling	Gel separator / No additives—Centrifugation causes the gel to separate insoluble material (cells) from serum	
Green	Heparin-anticoagulant—Contains polysaccharides that inhibit blood clotting by preventing release of coagulating factors	Plasma
Purple	Anticoagulant EDTA (ethylenediaminetetra-acetic acid)—Binds calcium salts in blood by chelation to preserve cells	Whole Blood and Plasma



*Note the colored caps/plugs identifying the type of blood vials.*



Examples of sick birds that have ruffled feathers and appear "depressed."



Example of a hematoma.

### How Much Blood Can One Collect?

The amount of blood that can be safely collected from a clinically healthy bird is 1% of its body weight, in grams. For example, the maximum amount of blood to take from a 500 g bird is 5 mL (5 cc) of blood. In addition, one should collect less blood from birds that are sick.

### Where Are the Blood Collection Sites?

#### *The large vein under the wing (brachial vein)*

- Place the bird on a table, setting it on its side.
- Lift up the wing with one hand and part the feathers along the wing. Water can be used to help keep the feathers separated.
- Place the needle at a slight angle, bevel up against the vein on the underside of the wing. The bevel end is the side of the needle with the angle and the hole. Insert the needle into the vein and slowly withdraw blood.



Separation of wing feathers, exposing the brachial vein (left). Vein puncture and the withdrawal of blood (right).

- Remove the needle and apply pressure to the vein for a few seconds. This will help to minimize the development of large hematomas, which can be common with poultry. Fill the appropriate vial 1/3 to 1/2 of its full volume. Allow the vacuum in the vial to empty the syringe, rather than pushing on the plunger, as this will prevent hemolysis (rupture of red blood cells). This volume is needed to ensure enough blood is collected to obtain an adequate sample.

#### *The vein on the side of the outstretched neck (jugular vein)*

- Place the bird on a table, setting it on its side.
- Stretch out the neck with one hand and part the feathers along the neck. The right jugular vein is usually larger.
- Place the needle at a slight angle, bevel up, against the vein.
- Puncture the vein and slowly withdraw blood.



Exposed jugular vein (left) and withdrawal of blood (right).

- Remove the needle and apply pressure to the vein for a few seconds. Fill the appropriate vial 1/3 to 1/2 of its full volume.

***The vein on the inner leg, above the hock (medial metatarsal vein)***

- Place the bird on a table, setting it on its side.
- Stretch out the leg that is closest to the table with one hand and part the feathers along the hock joint.
- Place the needle at a slight angle, bevel up, against the vein.
- Puncture the vein and slowly withdraw blood.
- Remove the syringe and apply pressure to the vein for a few seconds. Fill the appropriate vial 1/3 to 1/2 of its full volume.



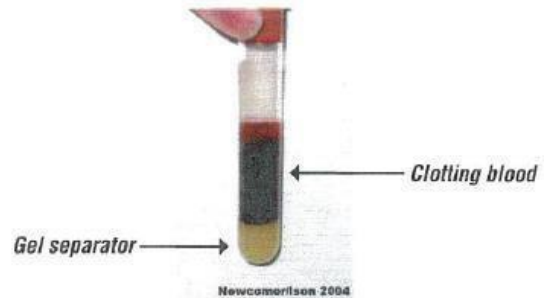
***Withdrawal of blood from the medial metatarsal vein.***



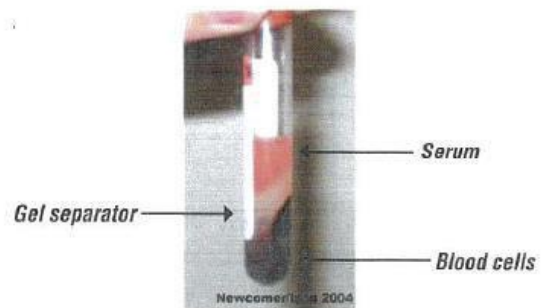
***Filling of EDTA vial by allowing vacuum to empty the syringe.***

**What Should Be Done After the Blood Is Collected?**

To obtain whole blood and plasma, gently mix the drawn blood by inverting the tube a few times. This will ensure proper mixing of the anticoagulant with the whole blood. To obtain serum, place the blood vial on a slanted surface for 10 to 15 minutes to allow for clotting. If a centrifuge is available, the plasma and serum samples can now be spun by centrifugation. If a centrifuge is unavailable, you can let the clot form, then pour off the serum into a sterile tube for laboratory submission. To increase the amount of harvested serum, it is best to use a centrifuge. Vials containing the blood samples (serum, plasma, or whole blood) should be refrigerated and sent to a diagnostic laboratory as soon as possible.



***Vial with gel separator and whole blood before centrifugation.***



***Vial with gel separator after centrifugation. Note the gel separator separates the blood cells from the serum.***

Revised in 2019 from Original Source: Ison, A.J., S.J. Spiegle, and T.Y. Morishita. Poultry Blood Collection. Extension Factsheet, Veterinary Preventive Medicine. The Ohio State University, Columbus, Ohio, #VME-23-05, 2005. Acknowledgments: The authors would like to thank Ms. Crystal Newcomer for the use of her photos. All or part of this fact sheet may be copied without permissions for educational, non-profit purposes. Credit must be given to “Ohio State University Extension” and “Western University of Health Sciences”.