



POULTRY POST MORTEM GUIDE

A post mortem, or necropsy, systematically examines a bird after death to identify likely contributors to illness or poor performance, with laboratory testing used when confirmation is required.

Performing a basic poultry post mortem is a core skill for anyone responsible for bird care and flock management.

Regular post mortem examinations allow early identification of disease, provide valuable context for flock level interpretation, strengthen diagnostic accuracy, improve the ability to recognise normal versus abnormal, and serves as a practical early-warning mechanism on farm.

When to do a post mortem

Post mortems should begin as soon as there is an unexplained change in flock health or performance. Indicators that an investigation (including a post mortem) may be needed, include:

- ▶ Rise in mortality or culling
- ▶ Rise in number of ill birds or if a disease is suspected
- ▶ Unexplained mortality event
- ▶ To assess health programmes and for quality control purposes
- ▶ Changes in other flock health or production indicators that are unexpected (i.e. unrelated to adverse weather events, feed delivery changes, lighting or management adjustments)

Understand what is 'normal' for your flock

Knowing what is normal for your farm, the flock, breed of bird and stage of production will help you to notice when something changes and needs to be investigated. Small changes often precede mortality events, use all available data to detect changes early.

The following parameters provide valuable information on flock health:

▶ Mortality rate

- Know what the normal level of mortalities per day is for the shed or farm

▶ Bird weight

- Track average weight per flock on a weekly or fortnightly basis to monitor for changes

▶ Feed intake

- Track regular feed intake in grams/bird/day or week

▶ Water intake

- Track regular water intake in mLs/bird/day

▶ Production

- Monitor production % and average egg weight

Understand what is 'abnormal' for your flock

In addition to changes in the parameters listed, there are a range of other bird and flock level indicators that can suggest presence of an issue that needs investigating.

Bird-level indicators

- ▶ Behaviour changes (e.g. lethargy, huddling, isolation)
- ▶ Changed mortality patterns (e.g. deaths in a specific age group, shed or system)
- ▶ Changes in appearance (e.g. poor feather condition, unusual comb colour, evidence of diarrhoea, respiratory signs, dirty vents)

Flock-level indicators

- ▶ Unexpected egg production changes (e.g. drops, plateaus or a delayed peak)
- ▶ Unexpected changes in egg quality (e.g. reduced shell quality, internal quality or dirty eggs)
- ▶ Unexpected reduction in feed/water intake
- ▶ Low bird uniformity and uneven development
- ▶ Inappropriate response to health programs
- ▶ A change in quality control measures



What you will need to conduct a post mortem

When mortality is unusually high, or if production has dropped, a post mortem exam should be conducted on freshly deceased or euthanised birds. In the event where a post mortem cannot be conducted immediately, birds can be placed in a refrigerator until such time the process can be completed.

It is not recommended to conduct a post mortem on decomposing animals, or animals with significant changes to pathology such as those which may have been eviscerated by other birds prior to retrieval.

The more birds you conduct post mortems on during an investigation, the higher the likelihood will be that you will start seeing patterns and commonalities between birds which can assist in diagnosis. It will also help avoid focusing on incidental findings which can delay a correct diagnosis.

In addition to a fresh carcass, you will need:

- ▶ Personal protective equipment
- ▶ Supplies: scissors, gloves, knife and/or scalpel, garbage bag
- ▶ Well-lit area with a flat surface
- ▶ Access to soap and water
- ▶ Pen and paper for notes
- ▶ Phone for photos (putting it in a zip-lock bag can help to keep it clean)

If collecting samples for further laboratory testing it is advisable to work with your veterinarian who may suggest you also have:

- ▶ Sampling equipment: sample jars, swabs, esky with cold pack, plastic zip-lock bags, blood tubes
- ▶ Permanent marker
- ▶ Laboratory submission form



How to perform a post mortem

A consistent and systematic method is key to successful post mortem examinations

Before you perform a post mortem:

- ▶ Know what you are wanting to achieve from the post mortem
- ▶ Examine the entire flock from a distance
- ▶ Examine both live and dead birds
- ▶ Examine both healthy birds and sick birds

The post mortem process should include a thorough external and internal examination.

EXTERNAL EXAMINATION

HEAD

- ▶ **Head**
 - Check for any swelling.
- ▶ **Comb**
 - Check for a healthy pink colour pre-mortem (a pale comb post mortem is normal).
- ▶ **Eyes**
 - Check for redness, discharge, cloudiness, or signs of ammonia burn.
- ▶ **Beak**
 - Check the beak shape.
 - Check the beak both internally and externally for lesions or abnormalities such as plaques, ulcers or odorous smells.
- ▶ **Nostril**
 - Check for discharge by applying pressure to the top of the nostril to check for mucus or plaques indicating disease or fungal processes.

BODY

- ▶ **Feathers**
 - Check all over for coverage, cleanliness and condition.
 - Look for signs of stress, feather pecking or parasites.
- ▶ **Wings**
 - Look under the wings, and by parting the feathers across the body for any evidence of mites or lice.
 - Look at the vent region for poultry lice and mites.
 - Look for signs of dehydration including dry skin, elevated scales on the legs and a dry comb.

LEGS & FEET

- ▶ **Legs & feet**
 - Check for straightness.
- ▶ **Footpad**
 - Look for dermatitis and/or manure buildup on the feet or toes.
- ▶ **Achilles tendon and hock joint**
 - Check for hard nodules of inflammation.

CLOACA

- ▶ Look for signs of vent pecking and inflammation to determine early signs of aggression.
- ▶ Check for pasty vents and accumulation of urate deposits (white discharge).

INTERNAL EXAMINATION

HEAD & OESOPHAGUS

▶ Cleft palate

- Examine for excessive mucus.

▶ Trachea

- Identify cartilage rings.
- Check for redness, blood or caseous plugs.
- Inflammation of the trachea may suggest ammonia or dust exposure.

▶ Oesophagus

- Look for lesions, plaques, or necrosis.

▶ Crop

- Should contain mash-like feed.
- Check for fungal smell which would indicate signs of mycosis.

ABDOMEN & THORAX

▶ Keel bone

- Assess the keel bone for straightness and symmetry.
- Deviations may indicate a calcium deficiency or a result of a traumatic event such as a fracture.

▶ Heart

- The heart should feel muscular and firm, not soft or flaccid.
- If the heart is not visible or hidden, this may indicate a pericardial infection (usually from septicaemia).

▶ Air sacs

- Lining the abdominal and thoracic wall.
- Air sacs should mostly be invisible and clear.
- Any opacity or where the air sacs are very stiff indicates infection.

▶ Liver

- The edges of the liver should be well defined.
- Check for spots, inflammation or changes in the texture.
- Yellowing, fragility or an oily texture suggests fatty liver syndrome.
- The liver is the most obvious organ when you lift the breast muscle, it is a deep maroon colour that is squishy, not friable.

▶ Gall bladder and spleen

- Small, uniform colour and shape, and soft located under the liver and it releases bile fluid into the digestive tract.
- Should be dark green.

▶ Spleen

- Small round and soft and a similar colour to the liver.

▶ Fat pad

- Should be 2-3 cm thick, slightly yellow in colour with no fluid accumulation.

▶ Lungs

- Small, pink and attached to the ribs in the upper thoracic cavity.
- They should be bright pink, spongy with no nodules.

GASTROINTESTINAL TRACT

▶ Gastrointestinal tract

- Made up of several different parts.
- For ease of separating from rest of the bird, lay it out on the table or a flat surface.

▶ Proventriculus

- Should not be enlarged or ulcerated.
- Check for caseous plugs or raised pimples.

GASTROINTESTINAL TRACT (CONT)

► Gizzard

- The muscular grinding organ; should have a firm muscular wall.
- Check for ulceration of the internal layer of the gizzard.

► Pancreas

- Located between the ascending and descending loops of the duodenum.
- Should be a pale pink colour with minimal gap between it and the intestines.
- Any separation or regression may indicate disease.

► Intestine

- Contents should progress from mash to liquid to faecal matter, getting darker in colour as it progresses to the cloaca.
- Check that you can see the progression of feed digestion along the intestine of the feed.

► Cecal tonsils

- The chicken's lymph nodes, located at the joint between the ceca and large intestines.
- Chickens have two caeca located where the small and large intestines join and are blind ended.
- Check the caeca for signs of disease.
- The caeca are emptied 1-2 days times a day and the droppings are softer and stickier.

REPRODUCTIVE TRACT

► Oviduct

- To differentiate between the reproductive tract and gastrointestinal tract look for ridges in the oviduct.
- Any inflammation or mucus in the oviduct may signal infection.

► Yolk hierarchy

- Should be obvious to determine the upcoming days of egg development.

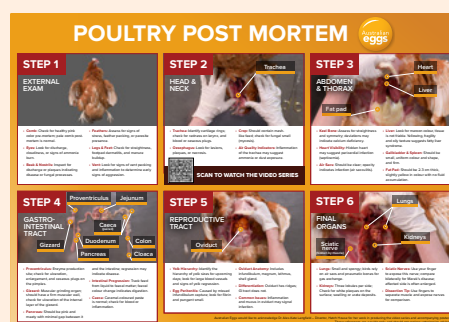
► Ovary

- Only the left ovary develops in the female hen, and it is firmly attached to the back of the abdominal wall above the kidneys.
- Look for large blood vessels and signs of yolk regression.
- Look for fibrin around the yolks and a pungent smell – this could indicate an infection such as salpingitis or egg peritonitis.

Further details on how to undertake a post mortem examination are available in the **Australian Eggs video series** and **Step-by-step poster**.



Scan the QR code to watch the **Post-mortem video series**



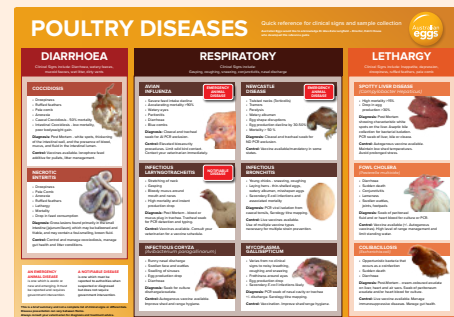
Scan the QR code to download the **Post mortem poster**

What are normal and abnormal post mortem findings?

It is important that you can recognise what everything normally looks like inside a healthy bird. This will help you to know when you are seeing something abnormal on a post mortem examination.

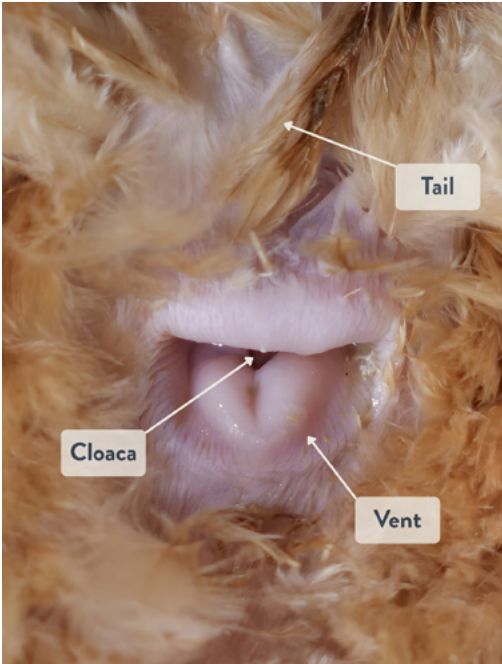
Finding something abnormal on post mortem examination can help you to understand the cause of poor production, disease or mortality. As many diseases can look similar, it is often necessary to share the information you find with your farm veterinarian who can assist with advising what samples to collect and arranging testing at a laboratory.

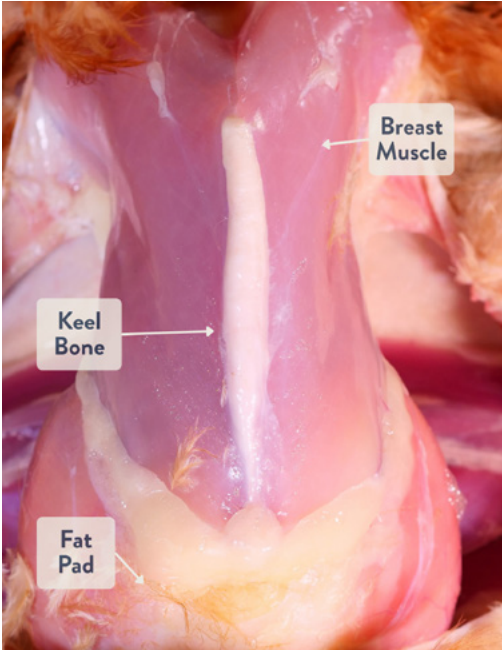
Information on some common poultry diseases are available in the **Australian Eggs poultry diseases poster**.

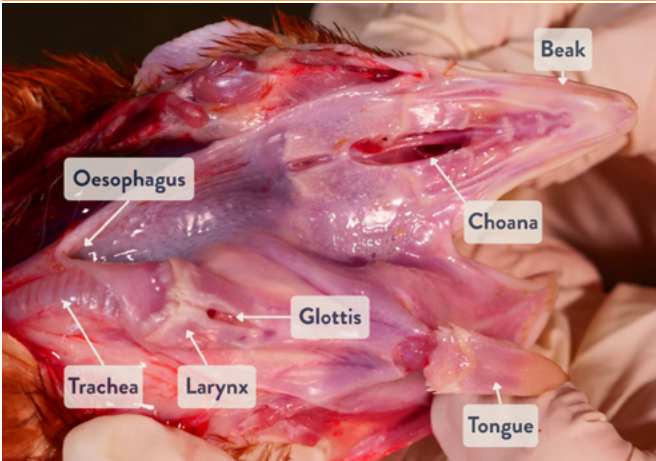


Scan the QR code to download the **Poultry diseases poster**

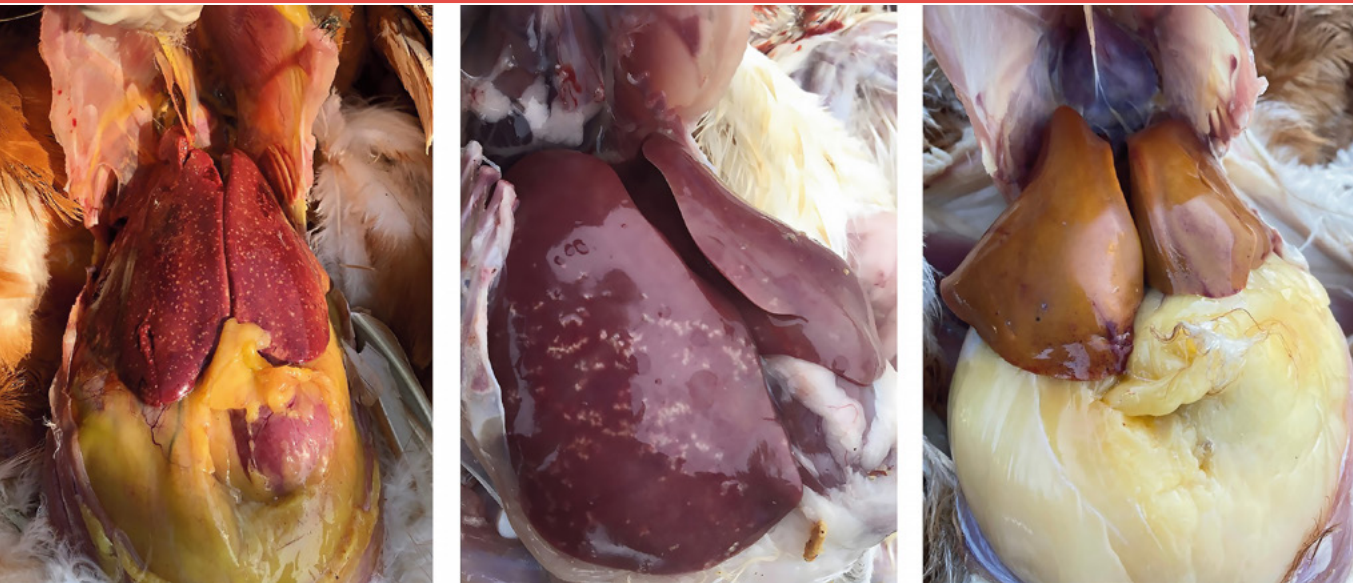
Head (external)	Normal	Abnormal
The abnormal pupil is uneven and distorted. In a live bird, it does not expand or constrict in different lighting. This is indicative of an ocular Mareks Disease lesion. It is often unilateral – happening only on one eye.		

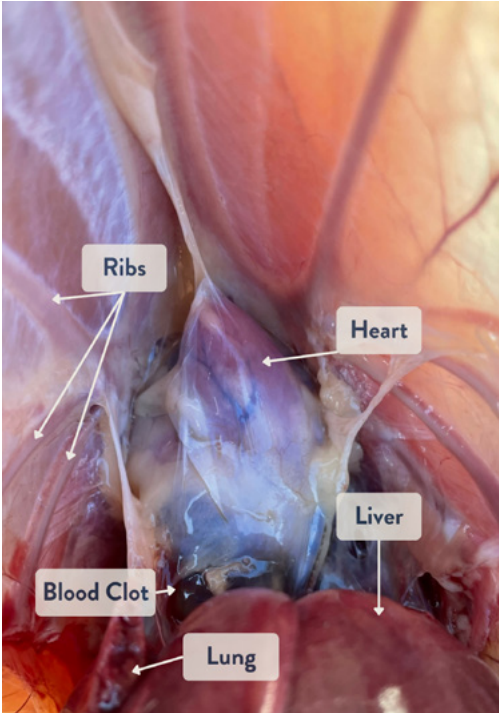
Back end	Normal	Abnormal
The abnormal vent shows signs of feather pecking. It is subtle, but the colour and broken blood vessels and missing feathers are all signs.	 This image shows a normal vent view of a chicken. The cloaca is centrally located, and the surrounding skin is pinkish-red. Labels point to the Tail, Cloaca, and Vent.	 This image shows an abnormal vent view of a chicken. There is a large, dark, swollen area on the vent, indicating a possible infection or injury. The surrounding feathers are missing and the skin is discolored.

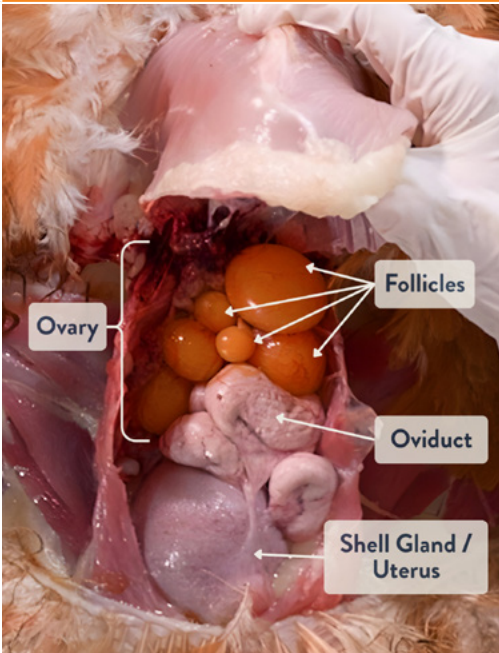
Body	Normal	Abnormal
The abnormal keel bone is not straight but has a curve in it. This is known as keel bone deformity and can be caused by trauma or calcium deficiency.	 This image shows a normal keel bone view of a chicken. The keel bone is straight and the surrounding muscles and fat are healthy. Labels point to the Breast Muscle, Keel Bone, and Fat Pad.	 This image shows an abnormal keel bone view of a chicken. The keel bone is curved, indicating a deformity. The surrounding muscles and fat appear normal.

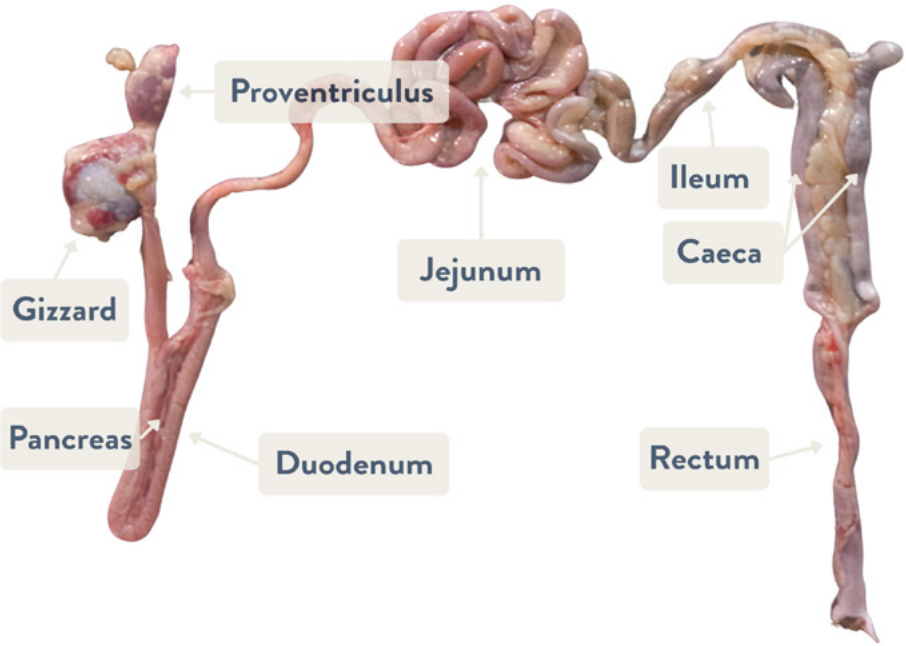
Head & Neck (internal)	Normal	Abnormal
The abnormal dissected trachea shows signs of Infectious Laryngotracheitis in order of severity from top to bottom.		

Abdomen – Liver	Normal
The abnormal pictures show diseases that can affect the liver and how they present differently. The first picture shows signs of spotty liver disease, the middle one shows signs of E. Coli, and the last is fatty liver syndrome.	

Abnormal


Abdomen – Heart	Normal	Abnormal
The abnormal heart shows signs of pericarditis, with the sac around the heart (pericardium) full of white material that is obstructing the view of the heart itself.	 This image shows a normal abdominal cavity. Labels point to the Ribs, Heart, Liver, Blood Clot, and Lung. The heart is clearly visible and not obscured by any material.	 This image shows an abnormal abdominal cavity. The heart is obscured by a thick layer of white material, indicating pericarditis.

Reproductive tract	Normal	Abnormal
In the normal photo, the yolks are large, yellow, and have a visible hierarchy. The abnormal photo has only small white/yellow yolks. Rather than a sign of a disease, this is an out-of-lay bird.	 This image shows a normal reproductive tract. Labels point to the Ovary, Follicles, Oviduct, and Shell Gland / Uterus. The yolks are large, yellow, and have a visible hierarchy.	 This image shows an abnormal reproductive tract. The yolks are small, white/yellow, and there is no visible hierarchy.

Gastrointestinal tract	Normal
The gastrointestinal tract (GIT) is often the first place where signs of disease are exhibited.	 A detailed anatomical diagram of a normal avian gastrointestinal tract. The organs are labeled with white boxes and black text, connected to the corresponding structures by thin white lines. The labels are: Gizzard (pointing to the muscular stomach), Proventriculus (pointing to the glandular stomach), Jejunum (pointing to the coiled small intestine), Ileum (pointing to the terminal small intestine), Caeca (pointing to the two large ceca), Pancreas (pointing to the small gland), Duodenum (pointing to the first part of the small intestine), and Rectum (pointing to the terminal part of the large intestine).
The first photo on the left shows necrotic enteritis caused by <i>Clostridium perfringens</i>, while the next two show birds with a heavy worm burden – in this case they are roundworms.	 Three photographs illustrating abnormal conditions in the avian gastrointestinal tract. The first photo on the left shows necrotic enteritis, characterized by dark, necrotic material in the intestines. The middle photo shows a heavy burden of roundworms (nematodes) in the intestines. The third photo on the right shows a heavy burden of roundworms (nematodes) in the intestines, with the worms visible as thick, coiled masses.

Australian Eggs would like to acknowledge Dr Alex-Kate Langfield – Director, Hatch House for her work in producing the video series and accompanying posters and guide.

These references are a guide only and should not replace veterinarian advice.



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