Dissection and sterile collection of major lymph nodes in cattle[1]

1 Prepared by Dr Lee Cook, Veterinary Officer, New South Wales Department of Primary Industries
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Text under development

In this manual, text placed in square brackets [xxx] indicates that aspect of the manual remains contentious or is under development; such text is not part of the official manual. The issues will be further worked on by experts and relevant text included at a future date.

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AUSVETPLAN — Animal Health Australia
Executive Manager, Emergency Preparedness and Response
PO Box 5116
Braddon ACT 2612
Tel: 02 6232 5522
email: aha@animalhealthaustralia.com.au

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DISEASE WATCH HOTLINE: 1800 675 888

The Disease Watch Hotline is a toll-free telephone number that connects callers to the relevant state or territory officer to report concerns about any potential emergency disease situation. Anyone suspecting an emergency disease outbreak should use this number to get immediate advice and assistance.

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Edition 5
Version 5.0, 2020 (minor update and new format)

Contents

Young Australian beef cattle

1 Introduction

1.1 This manual

1.1.1 Purpose

As part of AUSVETPLAN (the Australian Veterinary Emergency Plan), this resource document has been developed to support personnel to find and remove lymph nodes from cattle in the field or at abattoirs or knackeries..

Together with the other components of AUSVETPLAN, this resource document has been developed to help ensure that an efficient, effective and coherent response can be implemented consistently across Australia with minimal delay.

1.1.2 Scope

This paper provides guidelines for veterinarians who need to find and remove lymph nodes from cattle in the field or at abattoirs or knackeries. In general this will be for tuberculosis diagnosis or culture when it is important that the node be removed intact and uncontaminated (the culture process can take three months and overgrowth with contaminants is a major problem). Specific information is provided about abattoir collection when it is likely that marked differences will occur.

1.1.3 Development

This guidance document has been produced in accordance with the procedures described in the **AUSVETPLAN *Overview*** and in consultation with Australian national, state and territory governments; the relevant livestock industries; nongovernment agencies; and public health authorities, where relevant.

In this document, text placed in square brackets [xxx] indicates that that aspect of the manual remains contentious or is under development; such text is not part of the endorsed document. The issues will be worked on by experts and relevant text included at a future date.

1.2 Other documentation

This guidance document should be read and implemented in conjunction with:

- Other AUSVETPLAN documents, including the response strategies; operational, enterprise and management manuals; and, any relevant guidance and resource documents. The complete series of manuals is available on the Animal Health Australia website.[2]

2 www.animalhealthaustralia.com.au/our-publications/ausvetplan-manuals-and-documents/

Grazing cattle.

- Relevant nationally agreed standard operating procedures (NASOPs)[3]. These procedures complement AUSVETPLAN and describe in detail specific actions undertaken during a response to an incident. NASOPs have been developed for use by jurisdictions during responses to emergency animal disease (EAD) incidents and emergencies.
- Relevant jurisdictional or industry policies, response plans, standard operating procedures and work instructions.
- Relevant Commonwealth and jurisdictional legislation; and, legal agreements (such as the EADRA[4] , where applicable).

1.3 Training resources

EAD preparedness and response arrangements in Australia

The EAD Foundation Online course[5] provides livestock producers, veterinarians, veterinary students, government personnel and emergency workers with foundation knowledge for further training in EAD preparedness and response in Australia.

3 www.animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/nationally-agreed-standard-operating-procedures/

4 www.animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/ead-response-agreement/

5 www.animalhealthaustralia.com.au/emergency-animal-disease-training-program/

2 Preparation and equipment

Lymph nodes can be accurately classified as inconstant. They vary frequently in size, shape and even number, so that any attempt at specifying them is subject to considerable inaccuracy. In cattle this variation is worsened by the very different levels of fat found in different carcasses. Excessive fat can make an otherwise simple job a very complicated one since the nodes can be almost impossible to find in some cases.

Nodes in young animals tend to be relatively larger than those in older animals.

Lymph nodes are frequently visible where they lie in the fat. They usually have a glistening blue-grey appearance, with only a portion of the node visible, the rest being obscured by fat. They do become easier to identify with experience.

2.1 Equipment and techniques

2.1.1 Instruments

Sterilising Equipment:	• Portable gas stove • Matches • Stainless steel instrument tray • Hand held gas burner with wind proof slow flame
Instruments	• 3 or more pairs of sharp scissors and tissue (toothed) forceps • Gross post-mortem gear – Knive – Steel – Rib cutters • Rubber gloves, for working with hot instruments • Buckets for water and disinfectant • Brush • Paper towel • Disinfectant
Containers	• Plastic bags (preferably zip sealing) or 70mL sterile plastic bottles – pre-labelled prior to collection • Portable fridge or esky and ice bricks • Plain vacutainers for blood samples

2.1.2 Technique

Note: Inspectors at abattoirs usually find nodes by slicing them. Thus while their assistance should be welcomed they should be given clear instructions about not slicing nodes.

Sterile technique	• Put instruments in tray of water on stove • Maintain water boiling at all times, and top up tray as needed • Use nearest pair of instruments and replace used sets to the rear of the tray • In the field elevate the carcase if possible to reduce dust contamination

Grossly dissect to the area of the node, or so the node is partially visible, without cutting it. Flame the area thoroughly to sterilise the surface. Do a larger area than you anticipate needing to dissect to allow for problems in finding the node.

Use instruments from the boiling water and dissect the node out, taking care not to cut it. Remove as much fat as possible from the node, but be careful not to drop it. Flame the node lightly and drop it into the sterile container.

Wipe dirty instruments clean (paper towel is ideal) and replace them to the rear of the tray of boiling water.

(It is possible to flame instruments using the burner rather than boiling them. This means they are easier to handle because the handles are not hot, only one pair is needed, and less other equipment is needed. The major disadvantages are that fat burns onto them very thoroughly and the flaming can damage the metal).

Use only one container for each node, except nodes which occur in small groups, such as the anterior/ middle mediastinals or the hepatics.

If you are uncertain about how sterile a given node is, indicate this on the container – it will influence the decontamination used at the laboratory.

2.2 Despatch

Arrange collection with the processing laboratory so that the specimens can be despatched on the same or next day after collection. Special media may need to be prepared several days before the samples are received.

Do not freeze samples unless so instructed by the laboratory staff. Freezing may reduce the number of organisms in the sample but can be done once.

Pack containers inside plastic bags to ensure security in transit and include a note in the top of the esky that specimens are for TB culture.

Use sufficient ice bricks to ensure that specimens are still cold when they reach the laboratory.

2.3 Samples required

Essential	• Medial retropharyngeal (left and right) • Tracheobronchial (bronchial) (left and right) • Mediastinal (anterior and posterior)
Highly Desirable	• Tracheobronchial (bronchial) (cranial (or apical) and medial) • Other thoracic nodes
Desirable	• Mandibular • Parotid • Lateral retropharyngeal (Suprapharyngeal) • (Medial) internal iliac • Mesenteric (sample from duodenum, jejunum and ileum) • Supramammary / scrotal (superficial inguinal)
Other	• Hepatic • Prescapular • Prefemoral (precrural) • Submaxillary

All other major nodes should be sliced thoroughly, including the balance of the mesenterics.

After collection of nodes lungs should be carefully palpated and sliced if necessary.

After collection of nodes liver should be observed and sliced if necessary.

If suspected lesions are found in any node, large nodes may be sectioned and submitted half fresh and half in formalin. Small nodes should be submitted whole with the lesion noted on the container.

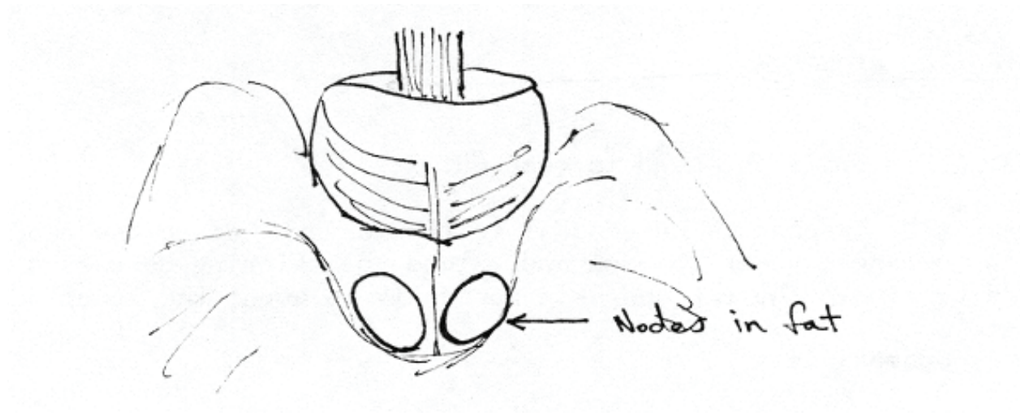
3 Detection and collection of nodes

3.1 Head (easier if the head is removed)

Ensure the trachea is cut caudal to the larynx. Place the head upside down. Skin it to expose the jaw and extend the skinning down each side of the head to remove the ear and skin rostrally to about the level of each eye.

3.1.1 Medial retropharyngeal (essential)

a. Insert a steel or knife into the larynx and pull it rostrally. Anchor the steel into the palate so tension is maintained – this raises the retro-pharyngeal fat. The surface fat can be removed with a knife, prior to flaming, if it is very bloody. Dissect deeply into the fat until the node is found (it may be immediately visible, or up to 70mm deep, depending on the fatness and conformation of the beast).
b. If the head is hanging and the tongue dropped (abattoir), the nodes are readily seen on either side of the tongue, dorso-medial to the hyoid bones. They are sometimes cut accidentally when the tongue is dropped.
c. The nodes can be obtained, but less predictably, using a lateral approach without removing the head. Dissect deeply behind the caudal angle of the jaw, dorsal to the larynx. Each side has to be dissected using a separate incision.



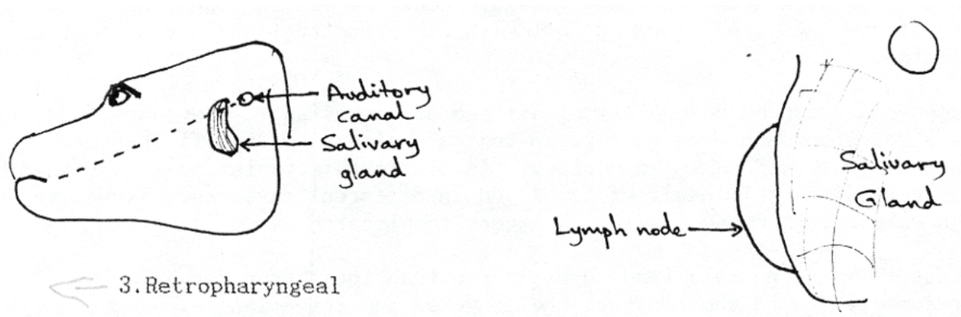
3.1.2 Lateral retropharyngeal (desirable)

(Suprapharyngeal)

If the head is upside down these are situated deeper and lateral to the medial retropharyngeals between the pharynx and the (ventral) straight muscles of the head below the atlas bone (C1) (deeper than the superficial atlantal node).

3.1.3 Parotid (desirable)

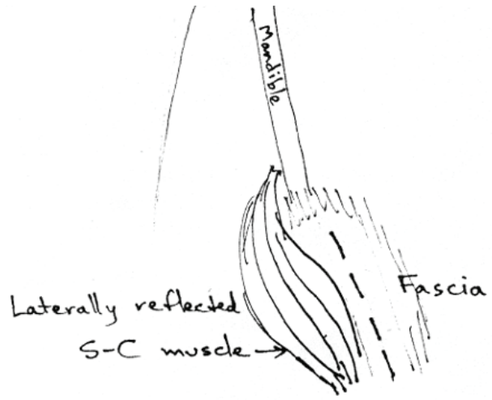
Lies deep under the parotid salivary gland, with about 10% of the node projecting at the cranial edge. Imagine a line from the exposed ear canal to the lateral commissure of the mouth – the node is under the salivary gland in this line with the rostral edge usually visible. This node has a long "tail" extending deeply backwards under the salivary gland towards the ear canal and it is difficult to fully dissect. It can help to remove some of the salivary gland first.



3.1.4 Mandibular (other)

Lies under the fascia immediately under the cranial attachment of the (severed) sterno-cephalic muscle.

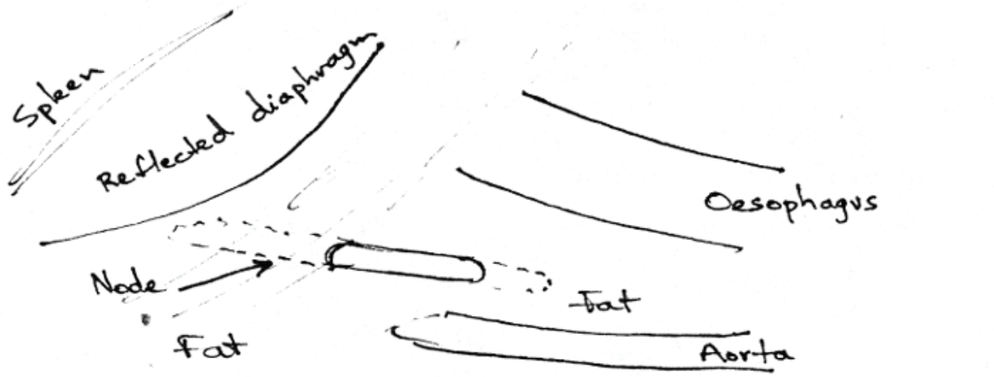
Dissect this muscle from its medial attachment to the underlying fascia and reflect it laterally. Cut through the underlying fascia and the node is more or less apparent depending on fat levels.



3.2 Thorax

3.2.1 Posterior mediastinal (essential)

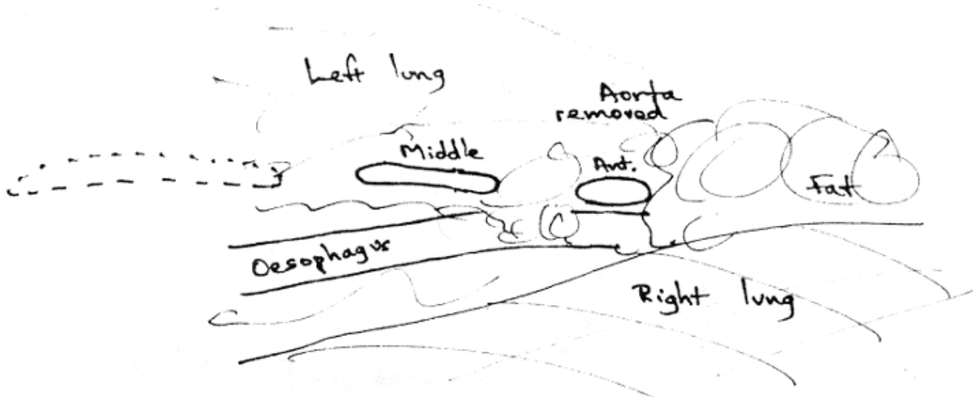
a. To collect it without opening the thorax, the rumen should be moved caudally and the diaphragm opened around the upper half of the thorax. The node occurs in the fat ventral to the aorta and dorsal to the oesophagus and mediastinal attachment of the diaphragmatic lobes of the lungs close to the diaphragm. It is frequently visible in the fat. It may be very long – occasionally up to 200mm.
b. If the heart and lungs are removed (taking care not to cut the posterior mediastinal and leave part of it with the aorta), the node is obvious in the fat between the two diaphragmatic lobes, dorsal to the oesophagus.



3.2.2 Anterior, posterior and medial mediastinal (essential and highly desirable)

a. These can all be readily dissected without removing the lungs if the carcase is lying on its left side and the right thorax opened. If care is taken to reduce blood contamination the nodes can usually be visualised, lying dorsal to the oesophagus. All are long and thin, but have much size variation. They lie dorsal to the oesophagus. Fat animals make visualisation more difficult.

   It is easier to begin with the posterior, closest to the diaphragm. The middle is found just cranial to this, and the anterior further cranial again. The latter is usually near the base of the heart or just cranial to it.
b. If the heart and lungs are removed they are placed on a suitable surface and the lungs separated laterally. The nodes are then located in the same way as specified above. The anterior can be difficult to find or not present at all. There may be several small nodes rather than individual larger ones. Palpate and/or incise the lungs.

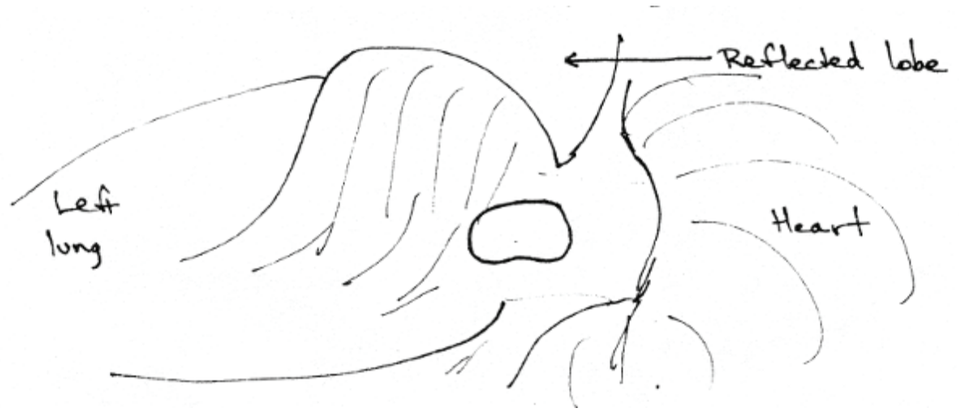


3.2.3 Left tracheobronchial (essential)

This can be very difficult to find depending on the fatness of the beast. It can be very deep (40mm) in the fat, and only 25mm across, and it is of variable but roughly spherical shape.

It is best located by reflecting the left apical lobe cranially and laterally, then dissecting into the fat to the left of the main bronchus into the lung. In poor animals it may bulge in the fat.

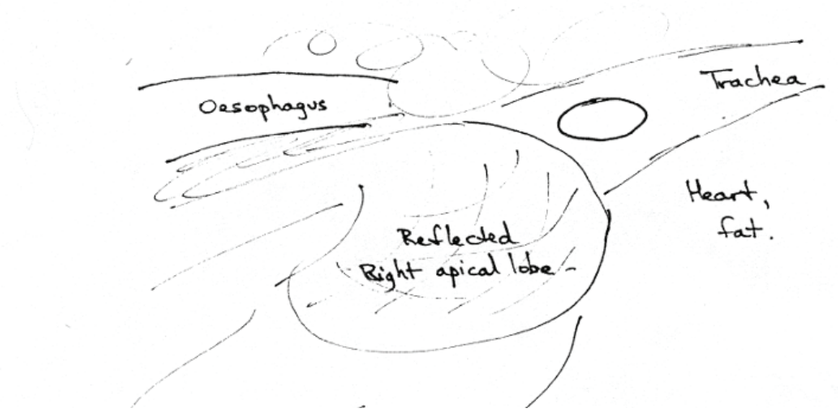
3.2.4 Right tracheobronchial (essential)



There is usually, but not always a right bronchial, but it is smaller and more difficult to locate. Sometimes there is more than one. It can be found by reflecting the right apical lobe, and it usually lies against the trachea just where the main bronchi diverge, but caudal to the right apical bronchus.

3.2.5 Cranial tracheobronchial (highly desirable)

This is located at the base of and cranial to the smaller bronchus which directly enters the right apical lobe.



3.2.6 Medial tracheobronchial (highly desirable)

If present this is located caudal to the bifurcation of the main left and right bronchi.

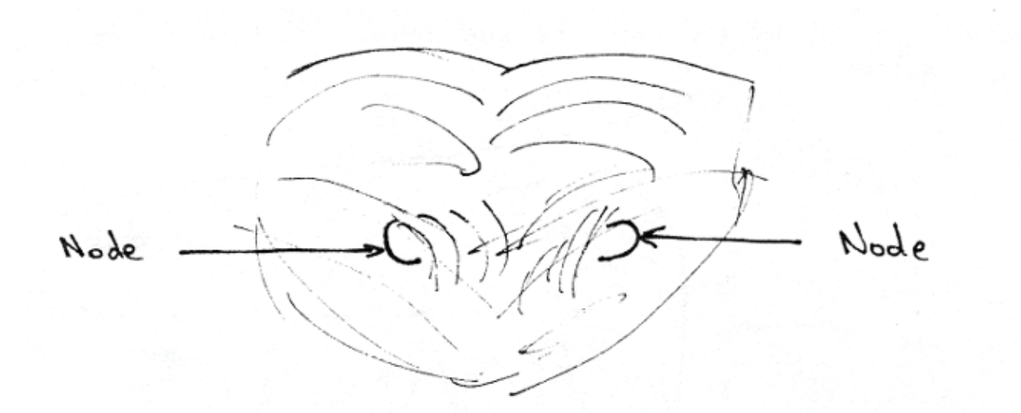
3.2.7 Other nodes (highly desirable)

Any other nodes which can be identified and collected from the thoracic cavity should be included.

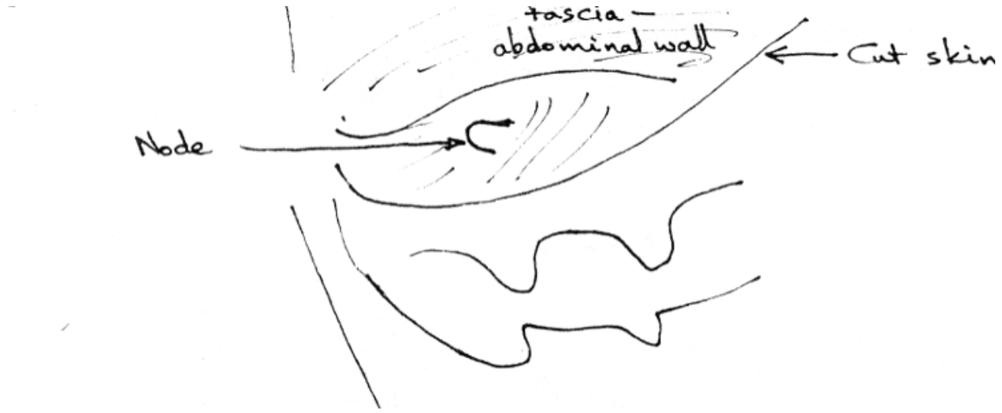
3.3 External body (do nodes on one side of carcase, then other side

3.3.1 Supramammary (desirable)

a. Preferably remove the whole udder, being careful to cut close to the abdominal wall, especially in the caudal section. Place the udder teats down, with the rear facing you. The nodes are located just lateral to the crest visible on each half. They are quite large, relatively thin, and roughly kidney-shaped. Very occasionally they join. There may be additional smaller glands cranial to the main gland.



b. Alternatively one leg of the carcase can be lifted and the caudal end of the udder dissected away from the abdominal wall. The node is often readily visible. Turn the carcase over for the other side, or continue to remove the udder and locate the second node as the udder is separated.

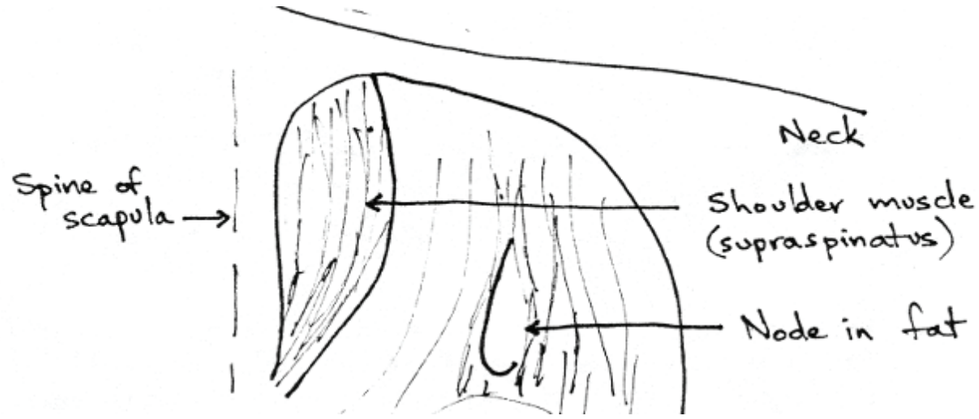


3.3.2 Scrotal (desirable)

In the bull, the superficial inguinal nodes lie in the fat at the neck of the scrotum, caudal to the spermatic cord. They are frequently multiple.

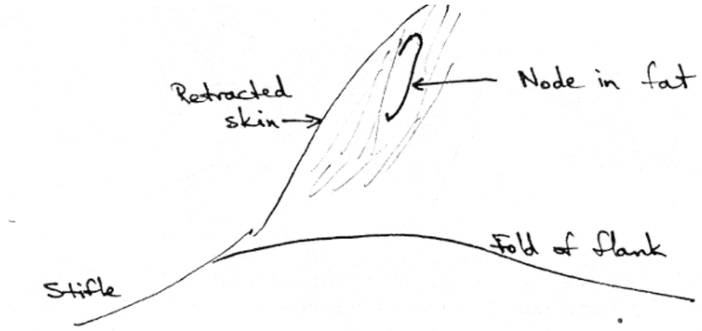
3.3.3 Prescapular (other)

Locate the spine of the scapula and make a long incision parallel to it and 50-80mm cranial to it. This will sever the sheet-like omo-transversarius. The cut should be extended vertically (towards the feet) to sever the brachiocephalicus. These muscles and the underlying fat can be reflected cranially to reveal the large pad of fat (in the reflected tissue) which contains the node. Part of it is usually readily apparent.

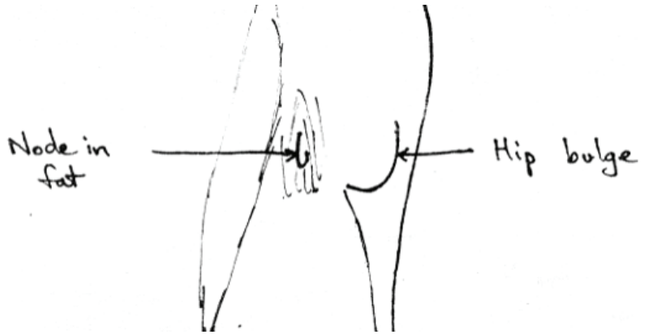


3.3.4 Prefemoral (precrural) (other)

a. Simply cut vertically through the skin just cranial to the patella, and extend the cut dorsally. The node is in fat, and may be difficult to locate. In a freshly dead animal it may help to palpate the node prior to cutting the skin.



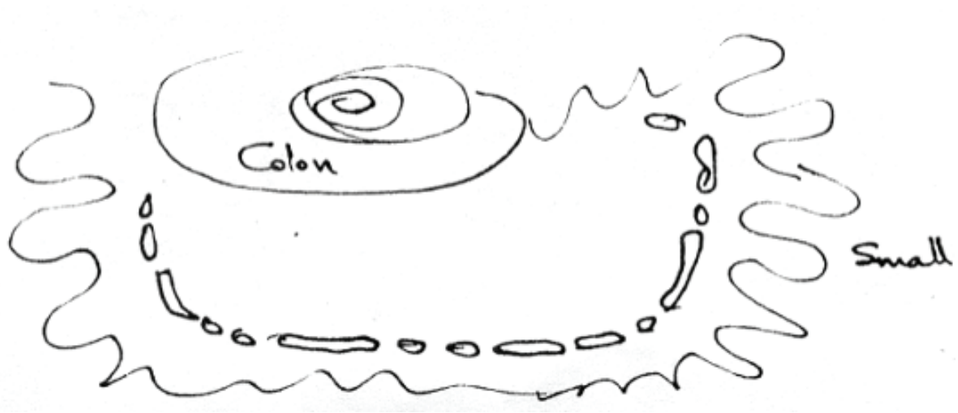
b. If the carcase is hanging (abattoir), inspectors may approach the node from either the inside or outside. It is found in the fat lateral to the visible swelling of the hip (tuber coxae), and can be quite deep.



3.4 Abdomen

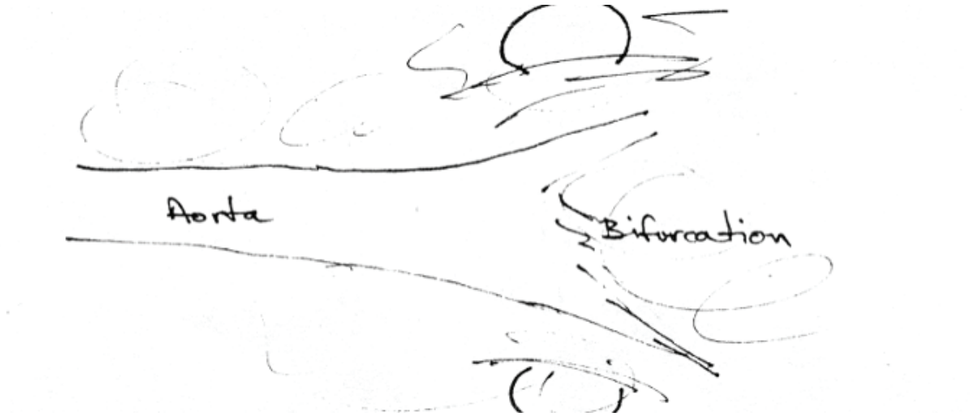
3.4.1 Mesenterics (desirable)

The intestines can be removed (but kept out of the dirt) or examined more or less in situ. In either case, once any section of the mesenteric chain is located, an end can be found and the nodes sampled or sliced along the length after obtaining the optimum visualisation. There is approximately one metre of nodes, and individual nodes can be small or up to 300mm long.



3.4.2 Internal iliacs (desirable)

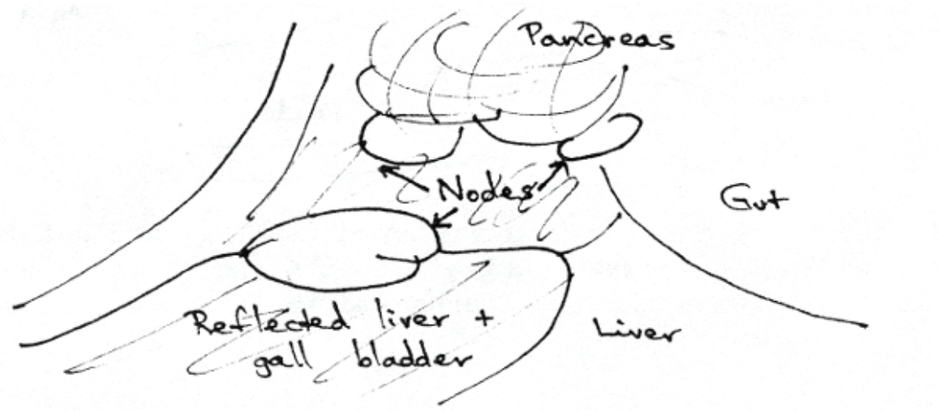
a. In a carcase on the ground, it is best to remove the viscera, but not essential. If the viscera is left in place, and the carcase is on its side, the upper node on each side can usually be found in the fat as described below. It is usually best to turn the carcase over to find the node on the down side.



b. In a hanging carcase (abattoir) these are easily found once the abdominal contents are removed or the carcase split. They are just caudal to (above) the bifurcation of the aorta where it forms the iliac arteries. They are usually closely adherent to the body wall, and partially visible in the fat.

3.4.3 Hepatics (other)

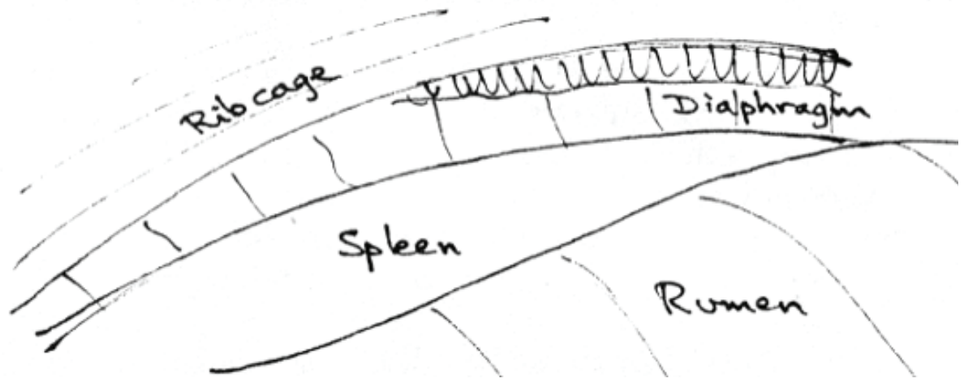
a. By opening the carcase on the right side (left side down) the liver is exposed. After moving the rumen and lifting the liver to expose the gall bladder, usually by pulling or carefully cutting the attaching fascia, the nodes are visible close to the bile duct. They may be almost obscured by the pancreas. Usually there is one slightly larger and several smaller nodes.



b. When the liver is removed at an abattoir, these nodes are frequently severed and left on the viscera.

3.4.4 Spleen (other)

If the carcase is opened on the left side, the spleen can be reached by lifting the ribcage and reaching around the rumen. It need not be flamed if it is untouched prior to taking a 4cm square sample.



Glossary

Standard AUSVETPLAN terms

Animal byproducts	Products of animal origin that are not for consumption but are destined for industrial use (eg hides and skins, fur, wool, hair, feathers, hoofs, bones, fertiliser).
Animal Health Committee	A committee whose members are the chief veterinary officers of the Commonwealth, states and territories, along with representatives from CSIRO Australian Centre for Disease Preparedness (ACDP) and the Department of Agriculture, Water and the Environment. There are also observers from Animal Health Australia, Wildlife Health Australia, and the New Zealand Ministry for Primary Industries. The committee provides advice to the National Biosecurity Committee on animal health matters, focusing on technical issues and regulatory policy. *See also* National Biosecurity Committee
Animal products	Meat, meat products and other products of animal origin (eg eggs, milk) for human consumption or for use in animal feedstuff.
Approved disposal site	A premises that has zero susceptible livestock and has been approved as a disposal site for animal carcasses, or potentially contaminated animal products, wastes or things.
Approved processing facility	An abattoir, knackery, milk processing plant or other such facility that maintains increased biosecurity standards. Such a facility could have animals or animal products introduced from lower-risk premises under a permit for processing to an approved standard.
At-risk premises	A premises in a restricted area that contains a live susceptible animal(s) but is not considered at the time of classification to be an infected premises, dangerous contact premises, dangerous contact processing facility, suspect premises or trace premises.

Cont'd

Australian Chief Veterinary Officer	The nominated senior veterinarian in the Australian Government Department of Agriculture, Water and the Environment who manages international animal health commitments and the Australian Government's response to an animal disease outbreak. *See also* Chief veterinary officer
AUSVETPLAN	Australian Veterinary Emergency Plan. Nationally agreed resources that guide decision making in the response to emergency animal diseases (EADs). It outlines Australia's preferred approach to responding to EADs of national significance, and supports efficient, effective and coherent responses to these diseases.
Carcase	The body of an animal slaughtered for food.
Carcass	The body of an animal that died in the field.
Chief veterinary officer (CVO)	The senior veterinarian of the animal health authority in each jurisdiction (national, state or territory) who has responsibility for animal disease control in that jurisdiction. *See also* Australian Chief Veterinary Officer
Compartmentalisation	The process of defining, implementing and maintaining one or more disease-free establishments under a common biosecurity management system in accordance with OIE guidelines, based on applied biosecurity measures and surveillance, to facilitate disease control and/or trade.
Compensation	The sum of money paid by government to an owner for livestock or property that are destroyed for the purpose of eradication or prevention of the spread of an emergency animal disease, and livestock that have died of the emergency animal disease. *See also* Cost-sharing arrangements, Emergency Animal Disease Response Agreement
Consultative Committee on Emergency Animal Diseases (CCEAD)	The key technical coordinating body for animal health emergencies. Members are state and territory chief veterinary officers, representatives of CSIRO-ACDP and the relevant industries, and the Australian Chief Veterinary Officer as chair.
Control area (CA)	A legally declared area where the disease controls, including surveillance and movement controls, applied are of lesser intensity than those in a restricted area (the limits of a control area and the conditions applying to it can be varied during an incident according to need).

Cont'd

Cost-sharing arrangements	Arrangements agreed between governments (national and state/territory) and livestock industries for sharing the costs of emergency animal disease responses. *See also* Compensation, Emergency Animal Disease Response Agreement
Dangerous contact animal	A susceptible animal that has been designated as being exposed to other infected animals or potentially infectious products following tracing and epidemiological investigation.
Dangerous contact premises (DCP)	A premises, apart from an abattoir, knackery or milk processing plant (or other such facility) that, after investigation and based on a risk assessment, is considered to contain a susceptible animal(s) not showing clinical signs, but considered highly likely to contain an infected animal(s) and/or contaminated animal products, wastes or things that present an unacceptable risk to the response if the risk is not addressed, and that therefore requires action to address the risk.
Dangerous contact processing facility (DCPF)	An abattoir, knackery, milk processing plant or other such facility that, based on a risk assessment, appears highly likely to have received infected animals, or contaminated animal products, wastes or things, and that requires action to address the risk.
Declared area	A defined tract of land that is subjected to disease control restrictions under emergency animal disease legislation. There are two types of declared areas: restricted area and control area.
Decontamination	Includes all stages of cleaning and disinfection.
Depopulation	The removal of a host population from a particular area to control or prevent the spread of disease.
Destroy (animals)	To kill animals humanely.
Disease agent	A general term for a transmissible organism or other factor that causes an infectious disease.
Disease Watch Hotline	24-hour freecall service for reporting suspected incidences of exotic diseases – 1800 675 888.
Disinfectant	A chemical used to destroy disease agents outside a living animal.
Disinfection	The application, after thorough cleansing, of procedures intended to destroy the infectious or parasitic agents of animal diseases, including zoonoses; applies to premises, vehicles and different objects that may have been directly or indirectly contaminated.

Cont'd

Disinsectisation	The destruction of insect pests, usually with a chemical agent.
Disposal	Sanitary removal of animal carcasses, animal products, materials and wastes by burial, burning or some other process so as to prevent the spread of disease.
Emergency animal disease	A disease that is (a) exotic to Australia or (b) a variant of an endemic disease or (c) a serious infectious disease of unknown or uncertain cause or (d) a severe outbreak of a known endemic disease, and that is considered to be of national significance with serious social or trade implications. *See also* Endemic animal disease, Exotic animal disease
Emergency Animal Disease Response Agreement	Agreement between the Australian and state/territory governments and livestock industries on the management of emergency animal disease responses. Provisions include participatory decision making, risk management, cost sharing, the use of appropriately trained personnel and existing standards such as AUSVETPLAN. *See also* Compensation, Cost-sharing arrangements
Endemic animal disease	A disease affecting animals (which may include humans) that is known to occur in Australia. *See also* Emergency animal disease, Exotic animal disease
Enterprise	*See* Risk enterprise
Enzyme-linked immunosorbent assay (ELISA)	A serological test designed to detect and measure the presence of antibody or antigen in a sample. The test uses an enzyme reaction with a substrate to produce a colour change when antigen–antibody binding occurs.
Epidemiological investigation	An investigation to identify and qualify the risk factors associated with the disease. *See also* Veterinary investigation
Epidemiology	The study of disease in populations and of factors that determine its occurrence.
Exotic animal disease	A disease affecting animals (which may include humans) that does not normally occur in Australia. *See also* Emergency animal disease, Endemic animal disease
Exotic fauna/feral animals	See Wild animals

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Fomites	Inanimate objects (eg boots, clothing, equipment, instruments, vehicles, crates, packaging) that can carry an infectious disease agent and may spread the disease through mechanical transmission.
General permit	A legal document that describes the requirements for movement of an animal (or group of animals), commodity or thing, for which permission may be granted without the need for direct interaction between the person moving the animal(s), commodity or thing and a government veterinarian or inspector. The permit may be completed via a webpage or in an approved place (such as a government office or commercial premises). A printed version of the permit must accompany the movement. The permit may impose preconditions and/or restrictions on movements. *See also* Special permit
In-contact animals	Animals that have had close contact with infected animals, such as noninfected animals in the same group as infected animals.
Incubation period	The period that elapses between the introduction of a pathogen into an animal and the first clinical signs of the disease.
Index case	The first case of the disease to be diagnosed in a disease outbreak. *See also* Index property
Index property	The property on which the index case is found. *See also* Index case
Infected premises (IP)	A defined area (which may be all or part of a property) on which animals meeting the case definition are or were present, or the causative agent of the emergency animal disease is present, or there is a reasonable suspicion that either is present, and that the relevant chief veterinary officer or their delegate has declared to be an infected premises.
Local control centre	An emergency operations centre responsible for the command and control of field operations in a defined area.
Monitoring	Routine collection of data for assessing the health status of a population or the level of contamination of a site for remediation purposes. *See also* Surveillance

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Movement control	Restrictions placed on the movement of animals, people and other things to prevent the spread of disease.
National Biosecurity Committee	A committee that was formally established under the Intergovernmental Agreement on Biosecurity (IGAB). The IGAB was signed on 13 January 2012, and signatories include all states and territories except Tasmania. The committee provides advice to the Agriculture Senior Officials Committee and the Agriculture Ministers' Forum on national biosecurity issues, and on the IGAB.
National Management Group (NMG)	A group established to approve (or not approve) the invoking of cost sharing under the Emergency Animal Disease Response Agreement. NMG members are the Secretary of the Australian Government Department of Agriculture, Water and the Environment as chair; the chief executive officers of the state and territory government parties; and the president (or analogous officer) of each of the relevant industry parties.
Native wildlife	*See* Wild animals
OIE Terrestrial Code	OIE *Terrestrial Animal Health Code*. Describes standards for safe international trade in animals and animal products. Revised annually and published on the internet at: www.oie.int/international-standard-setting/terrestrial-code/access-online.
OIE Terrestrial Manual	OIE *Manual of diagnostic tests and vaccines for terrestrial animals*. Describes standards for laboratory diagnostic tests, and the production and control of biological products (principally vaccines). The current edition is published on the internet at: www.oie.int/en/standard-setting/terrestrial-manual/access-online.
Operational procedures	Detailed instructions for carrying out specific disease control activities, such as disposal, destruction, decontamination and valuation.
Outside area (OA)	The area of Australia outside the declared (control and restricted) areas.
Owner	Person responsible for a premises (includes an agent of the owner, such as a manager or other controlling officer).
Polymerase chain reaction (PCR)	A method of amplifying and analysing DNA sequences that can be used to detect the presence of viral DNA.

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Premises	A tract of land including its buildings, or a separate farm or facility that is maintained by a single set of services and personnel.
Premises of relevance (POR)	A premises in a control area that contains a live susceptible animal(s) but is not considered at the time of classification to be an infected premises, suspect premises, trace premises, dangerous contact premises or dangerous contact processing facility.
Prevalence	The proportion (or percentage) of animals in a particular population affected by a particular disease (or infection or positive antibody titre) at a given point in time.
Proof of freedom	Reaching a point following an outbreak and post-outbreak surveillance when freedom from the disease can be claimed with a reasonable level of statistical confidence.
Quarantine	Legally enforceable requirement that prevents or minimises spread of pests and disease agents by controlling the movement of animals, persons or things.
Resolved premises (RP)	An infected premises, dangerous contact premises or dangerous contact processing facility that has completed the required control measures, and is subject to the procedures and restrictions appropriate to the area in which it is located.
Restricted area (RA)	A relatively small legally declared area around infected premises and dangerous contact premises that is subject to disease controls, including intense surveillance and movement controls.
Risk enterprise	A defined livestock or related enterprise that is potentially a major source of infection for many other premises. Includes intensive piggeries, feedlots, abattoirs, knackeries, saleyards, calf scales, milk factories, tanneries, skin sheds, game meat establishments, cold stores, artificial insemination centres, veterinary laboratories and hospitals, road and rail freight depots, showgrounds, field days, weighbridges and garbage depots.
Sensitivity	The proportion of truly positive units that are correctly identified as positive by a test. *See also* Specificity
Sentinel animal	Animal of known health status that is monitored to detect the presence of a specific disease agent.
Seroconversion	The appearance in the blood serum of antibodies (as determined by a serology test) following vaccination or natural exposure to a disease agent.

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Serosurveillance	Surveillance of an animal population by testing serum samples for the presence of antibodies to disease agents.
Serotype	A subgroup of microorganisms identified by the antigens carried (as determined by a serology test).
Serum neutralisation test	A serological test to detect and measure the presence of antibody in a sample. Antibody in serum is serially diluted to detect the highest dilution that neutralises a standard amount of antigen. The neutralising antibody titre is given as the reciprocal of this dilution.
Slaughter	The humane killing of an animal for meat for human consumption.
Special permit	A legal document that describes the requirements for movement of an animal (or group of animals), commodity or thing, for which the person moving the animal(s), commodity or thing must obtain prior written permission from the relevant government veterinarian or inspector. A printed version of the permit must accompany the movement. The permit may impose preconditions and/or restrictions on movements. *See also* General permit
Specificity	The proportion of truly negative units that are correctly identified as negative by a test. *See also* Sensitivity
Stamping out	The strategy of eliminating infection from premises through the destruction of animals in accordance with the particular AUSVETPLAN manual, and in a manner that permits appropriate disposal of carcasses and decontamination of the site.
State coordination centre	The emergency operations centre that directs the disease control operations to be undertaken in a state or territory.
Surveillance	A systematic program of investigation designed to establish the presence, extent or absence of a disease, or of infection or contamination with the causative organism. It includes the examination of animals for clinical signs, antibodies or the causative organism.
Susceptible animals	Animals that can be infected with a particular disease.

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Suspect animal	An animal that may have been exposed to an emergency disease such that its quarantine and intensive surveillance, but not pre-emptive slaughter, is warranted. or An animal not known to have been exposed to a disease agent but showing clinical signs requiring differential diagnosis.
Suspect premises (SP)	Temporary classification of a premises that contains a susceptible animal(s) not known to have been exposed to the disease agent but showing clinical signs similar to the case definition, and that therefore requires investigation(s).
Swill	Also known as 'prohibited pig feed', means material of mammalian origin, or any substance that has come in contact with this material, but does not include: i. Milk, milk products or milk by-products either of Australian provenance or legally imported for stockfeed use into Australia. ii. Material containing flesh, bones, blood, offal or mammal carcases which is treated by an approved process.[1] iii. A carcass or part of a domestic pig, born and raised on the property on which the pig or pigs that are administered the part are held, that is administered for therapeutic purposes in accordance with the written instructions of a veterinary practitioner. iv. Material used under an individual and defined-period permit issued by a jurisdiction for the purposes of research or baiting. [1] In terms of (ii), approved processes are: 1. rendering in accordance with the 'Australian Standard for the Hygienic Rendering of Animal Products' 2. under jurisdictional permit, cooking processes subject to compliance verification that ensure that a core temperature of at least 100°C for a minimum of 30 minutes, or equivalent, has been reached. 3. treatment of cooking oil, which has been used for cooking in Australia, in accordance with the 'National Standard for Recycling of Used Cooking Fats and Oils intended for Animal Feeds' 4. under jurisdictional permit, any other nationally agreed process approved by AHC for which an acceptable risk assessment has been undertaken and that is subject to compliance verification. The national definition is a minimum standard. Some jurisdictions have additional conditions for swill feeding that pig producers in those jurisdictions must comply with, over and above the requirements of the national definition.

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Swill feeding	Also known as 'feeding prohibited pig feed', it includes: • feeding, or allowing or directing another person to feed, prohibited pig feed to a pig • allowing a pig to have access to prohibited pig feed • the collection and storage or possession of prohibited pig feed on a premises where one or more pigs are kept • supplying to another person prohibited pig feed that the supplier knows is for feeding to any pig. This definition was endorsed by the Agriculture Ministers' Council through AGMIN OOS 04/2014.
Trace premises (TP)	Temporary classification of a premises that contains susceptible animal(s) that tracing indicates may have been exposed to the disease agent, or contains contaminated animal products, wastes or things, and that requires investigation(s).
Tracing	The process of locating animals, people or other items that may be implicated in the spread of disease, so that appropriate action can be taken.
Unknown status premises (UP)	A premises within a declared area where the current presence of susceptible animals and/or risk products, wastes or things is unknown.
Vaccination	Inoculation of individuals with a vaccine to provide active immunity.
Vaccine	A substance used to stimulate immunity against one or several disease-causing agents to provide protection or to reduce the effects of the disease. A vaccine is prepared from the causative agent of a disease, its products or a synthetic substitute, which is treated to act as an antigen without inducing the disease.
– adjuvanted	A vaccine in which one or several disease-causing agents are combined with an adjuvant (a substance that increases the immune response).
– attenuated	A vaccine prepared from infective or 'live' microbes that are less pathogenic but retain their ability to induce protective immunity.
– gene deleted	An attenuated or inactivated vaccine in which genes for non-essential surface glycoproteins have been removed by genetic engineering. This provides a useful immunological marker for the vaccine virus compared with the wild virus.

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– inactivated	A vaccine prepared from a virus that has been inactivated ('killed') by chemical or physical treatment.
– recombinant	A vaccine produced from virus that has been genetically engineered to contain only selected genes, including those causing the immunogenic effect.
Vector	A living organism (frequently an arthropod) that transmits an infectious agent from one host to another. A biological vector is one in which the infectious agent must develop or multiply before becoming infective to a recipient host. A mechanical vector is one that transmits an infectious agent from one host to another but is not essential to the lifecycle of the agent.
Veterinary investigation	An investigation of the diagnosis, pathology and epidemiology of the disease. *See also* Epidemiological investigation
Viraemia	The presence of viruses in the blood.
Wild animals **– native wildlife** **– feral animals** **– exotic fauna**	Animals that are indigenous to Australia and may be susceptible to emergency animal diseases (eg bats, dingoes, marsupials). Animals of domestic species that are not confined or under control (eg cats, horses, pigs). Nondomestic animal species that are not indigenous to Australia (eg foxes).
Wool	Sheep wool.
Zero susceptible species premises (ZP)	A premises that does not contain any susceptible animals or risk products, wastes or things.
Zoning	The process of defining, implementing and maintaining a disease-free or infected area in accordance with OIE guidelines, based on geopolitical and/or physical boundaries and surveillance, to facilitate disease control and/or trade.
Zoonosis	A disease of animals that can be transmitted to humans.

Abbreviations

Standard AUSVETPLAN abbreviations

ACDP	Australian Centre for Disease Preparedness
AN	assessed negative
ARP	at-risk premises
AUSVETPLAN	Australian Veterinary Emergency Plan
CA	control area
CCEAD	Consultative Committee on Emergency Animal Diseases
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVO	chief veterinary officer
DCP	dangerous contact premises
DCPF	dangerous contact processing facility
EAD	emergency animal disease
EADRA	Emergency Animal Disease Response Agreement
EADRP	Emergency Animal Disease Response Plan
EDTA	ethylenediaminetetraacetic acid (anticoagulant for whole blood)
ELISA	enzyme-linked immunosorbent assay
GP	general permit
IETS	International Embryo Transfer Society
IP	infected premises

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LCC	local control centre
NMG	National Management Group
OA	outside area
OIE	World Organisation for Animal Health
PCR	polymerase chain reaction
POR	premises of relevance
RA	restricted area
RP	resolved premises
SCC	state coordination centre
SP	suspect premises
SpP	special permit
TP	trace premises
UP	unknown status premises
ZP	zero susceptible stock premises