

AUSTRALIAN VETERINARY EMERGENCY PLAN

AUSVETPLAN

1998

Enterprise Manual

Aviaries and Petshops

AUSVETPLAN is a series of technical response plans that describe the proposed Australian approach to an emergency animal disease outbreak. The documents provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency-management plans.

Agriculture and Resource Management Council of Australia and New Zealand

This Enterprise Manual forms part of:

AUSVETPLAN Edition 2 1996

[AUSVETPLAN Edition 1 was published in 1991]

This strategy will be reviewed regularly. Suggestions and recommendations for amendments should be forwarded to the AUSVETPLAN Coordinator (see Preface).

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PREFACE

The enterprise manuals constitute part of the Australian Veterinary Emergency Plan (AUSVETPLAN Edition 2). AUSVETPLAN is an agreed management plan and set of operational procedures that would be adopted in the event of an emergency animal disease outbreak in Australia. The procedures are outlined in the AUSVETPLAN **Summary Document**. The enterprise manuals are written with specific reference to certain animal industries where a greater than normal risk of harm could be expected from an emergency disease outbreak. This manual covers AVIARIES AND PET SHOPS.

The enterprise manual for AVIARIES AND PET SHOPS is aimed at both government and industry personnel who may be involved in emergency disease preparedness. For government personnel, the manual brings together from many sources operational guidelines, plans of action, or other issues pertaining to a disease emergency either on the premises or in the vicinity of the AVIARIES AND PET SHOPS. For owners or managers, the manual provides guidelines on the strategies that may be adopted for the handling of a suspected emergency disease outbreak in the animals on their premises.

This manual is being released as a final document following full industry/government consultation and has been approved by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

Detailed instructions for field implementation of the strategies are contained in the AUSVETPLAN **Operational Procedures Manuals** and **Management Manuals**. Cross-references to strategies, manuals and other AUSVETPLAN documents are expressed in the form:

Document Name, Section no.

For example, **Decontamination Manual, Section 3**.

The enterprise manuals will be revised and updated from time to time to ensure that they keep pace with the changing circumstances of the particular industry they cover. Comments and suggestions are welcome and should be addressed to:

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INTRODUCTION

This document is a management plan and outline of operational procedures that could be adopted in the event of an emergency disease outbreak in Australian aviaries and petshops. It is to be used by owners and managers of aviaries and petshops as well as government personnel involved in emergency disease preparedness.

This document examines the natures of aviary and petshop enterprises in Australia, suggests how to reduce emergency disease outbreak risk and outlines the probable response to an outbreak. Two situations are considered – when the premises is located in a declared area (DA)¹ but is not the infected premises (section 3), or when the enterprise is under suspicion or is known to be infected (section 4).

This is a guide and must be an open working document regularly updated by public, industry and government input.

1 NATURE OF ENTERPRISE

1.1 Description of enterprise

1.1.1 Aviaries

Aviaries are cages or enclosures in which birds are kept. Birds are kept and bred by hobbyists for personal pleasure and small numbers are sometimes swapped or sold amongst other enthusiasts. On a larger scale, birds are sold by groups of organised people, either direct to the public or to commercial distributors.

Commercial

Commercial aviaries breed birds in bird enclosures called "flights" with natural raising of young by parents or removal (pulling) of the incubating eggs or young chicks to hand-raise chicks. Hand-rearing is almost exclusively with parrot species and then only limited numbers of species are popular and many species are inappropriate for hand-rearing. Some people incubate eggs of valuable parrots and concentrate on hand-raising that is intensive and time consuming. Hand-raised chicks are more valuable for sales; they tolerate being handled to a greater extent and are fearless and familiar with humans.

Private

Private aviaries can range from very small home-built backyard bird enclosures stocked with a range of low priced birds to designer built expansive enclosures housing many pairs or groups of birds of considerable value.

Other

Bird dealers, bird markets and bird clubs provide a major avenue for exchange of birds. Bird dealers may sell illegally introduced birds or their progeny. Bone-fide birds may also have been in contact with illegal birds.

¹The term declared area is used as a general term in this document and includes both restricted and control areas

Bird markets, Sunday markets and fetes can be very large and many hundreds of birds will change hands. They can be operated by people who are not educated to the health and welfare of birds and conditions for animals can be very poor.

Bird Club dealing is more popular in some states than others and is another way of trading in birds.

1.1.2 Petshops

A petshop is a building where any domesticated or tamed animal is sold retail. Petshops vary from single shopfronts that independently buy in stock from suppliers, to franchises operated and owned by the purchaser to chain stores directed and supplied by a central office.

1.2 Legislation and Codes of practice

Commonwealth and State/Territory legislation has been enacted for the purpose of controlling significant animal diseases. The Commonwealth legislation is primarily concerned with preventing the introduction and establishment of disease or of things that may carry disease. Statutory provisions exist in all States/Territories aimed at the control and eradication of disease in animals, and establishing controls over animal movements, treatment, decontamination, slaughter and compensation. Wide powers are conferred on government inspectors, including the power to enter premises, to order stock musters, to test animals and order the destruction of animals and products that are suspected of being infected or contaminated.

NSW

Two Codes of Practice, 'The Care and Management of Animals in Petshops' and 'Code of Ethics for the Keeping and Trading of Birds' are named in Regulations under the Prevention of Cruelty to Animals Act .

Vic

Codes of Practice for petshops and the housing of caged birds are named in the Domestic (Feral and Nuisance) Animals Act and the Prevention of Cruelty to Animals Act respectively.

Qld

There are currently no codes of practice.

WA

There are guidelines for keeping exotic and native birds. They are to be developed into legislation.

SA

The Code of Practice for the Care and Management of Animals in the Pet Trade is named in the Prevention Of Cruelty To Animals Regulations. A Cage Bird Code is under development.

Tasmania

There are currently no codes of practice.

NT

There are no codes of practice but Territory personnel have a license to inspect native birds.

ACT

Codes of Practice for the Care and Management of Animals in Petshops and for the Welfare of Captive Birds are approved under the Animal Welfare Act.

1.3 Emergency diseases of concern

Any unexplained death in animals should be treated potentially as an emergency disease if signs indicate that it may be infectious in nature. Be aware that new diseases arise from time to time and these may cause illness that may or may not look the same as well known diseases. Do not be afraid to call and ask for help. Your local vet, government vet or the National Disease Watch Hotline 1800 675 888 are always there to help you.

1.3.1 Major diseases affecting birds:

Virulent Avian Influenza (fowl plague)

A lethal generalised disease of poultry caused by a specific type of avian influenza virus. Disease outbreaks occur most frequently in chickens and turkeys. Many wild bird species, particularly waterbirds, are also susceptible, but infections in these birds are generally not obvious (subclinical).

Virulent AI also causes severe disease in pheasants, quail, guinea fowl and partridges. Ducks and geese do not show clinical signs. Virus is shed from the respiratory tract and in the faeces. Spread of disease due to close contact in large groups of shedded birds is more important than airborne spread of disease. Illness varies from decreased egg production, diarrhoea, respiratory distress with blue swollen combs and wattles, to sudden death. Domestic birds must be strictly separated from wild birds, which can carry this virus. Water supplies heavily contaminated by wild birds may also harbour this virus. Prevention of AI is by maintaining strict segregation of kept birds from wild birds, ensuring food and water is not contaminated by wild bird droppings and quarantining all new aviary birds to exclude the chance of introducing infectious disease.

Newcastle Disease Virus

A highly contagious lethal viral disease of chickens, turkeys and many other birds. Virus strains vary widely in their virulence. Some strains cause rapid death and are characterised in chickens by respiratory distress and swelling of the head around the eyes.

It can cause devastating mortalities in large or small groups of domestic and wild birds. In some outbreaks the course of the disease is so swift that the first warning is finding hundreds of dead birds. Acute clinical cases show respiratory distress (gaspings, dribbling thick mucus from the beak), circulatory disturbances and severe diarrhoea. Surviving birds can show nervous signs, circling, stargazing and paralysis. Wild birds are a reservoir of disease, some showing no outward signs that they are carrying the virus but shedding it in their faeces. Transmission can be by direct contact, contaminated dust, contaminated food and water and via the egg. Control methods are similar as for virulent avian influenza particularly maintaining strict quarantine of newly acquired birds.

Pacheco's Disease

Pacheco's disease is a parrot herpesvirus that can inflict heavy mortalities on susceptible species. Some South American conures, particularly Nanday and Patagonian conures, can carry Pacheco's virus without showing clinical signs. Australian species of parrots and cockatoos are very susceptible to the virus. Clinical signs are non-specific and can range from sudden death to generalised illness with the liver often being affected. Birds may show diarrhoea, vomiting, loss of appetite, weight loss, discharge from the nose or eyes.

Neuropathic gastric dilatation

The disease affects a variety of psittacine species including cockatoos, conures, macaws, eclectus parrots and cockatiels. Affected birds may show weight loss, passage of undigested

feed in the droppings, regurgitation and concurrent neurological signs. The disease usually occurs sporadically although occasional outbreaks have been reported. The virus has been tentatively characterised as a member of the togaviridae. It is unknown if it is transmitted via the egg.

Reoviruses

Reoviruses in psittacines can cause massive mortalities. Clinical illness includes anorexia, lethargy, weight loss, dyspnoea, nasal discharge and death. Urates are often yellow. Oedematous limbs and unilateral or bilateral paralysis may occur, due to thrombosis or vascular compromise. Combined infections with bacteria or fungi are common. Commercially available poultry reovirus vaccines are ineffective against psittacine reovirus.

Internal Papillomatosis disease

This condition is widespread in North America and Europe and affects a range of psittacine species including macaws, amazon, conures, cockatoos and cockatiels. Papillomas occur on mucosal surfaces of the cloaca and mouth and occasionally occur along the gastrointestinal tract and respiratory tract. Clinical signs depend on the position of the papillomas but include cloacal prolapse, infertility, oral obstruction or respiratory tract blockage. An association with neoplasia of the intrahepatic bile ducts and or pancreatic ducts has also been reported. This condition is transmitted sexually or mechanically. The causative agent has not yet been defined.

Avian encephalitis viruses

There are many insect borne encephalomyelitis viruses that birds may harbour. Birds can be asymptomatic hosts and the virus can infect both humans and animals, two examples being Japanese encephalitis virus, and eastern equine encephalomyelitis (EEE). Both can cause severe illness and death in humans, and EEE can cause high mortalities in pheasants.

Other viruses

Cytomegalovirus-like conjunctivitis has recently been reported in Europe. Coronavirus has been reported associated with diarrhoeal syndromes in budgerigars in North America and sporadic cases with various clinical signs have been associated with adenoviruses in both Europe and North America. Most of the cage and aviary bird viruses about which we know have only been reported in the past 10 years and many cases could go unreported. However the consequences for both aviary and wild bird populations in Australia are serious if such viruses are inadvertently introduced.

1.3.2 Major diseases affecting dogs and cats:

Rabies

An almost invariably fatal viral encephalitis affecting all warm-blooded animals. It has a long and variable incubation and is transmitted by the bite of a rabid animal. The main reservoir hosts include members of the *Canidae* (dogs, foxes). Cats tend to be accidental victims of the disease and if the disease is eliminated from the dog/fox population it also decreases in cats.

Aujeszky's disease

Also known as pseudo-rabies, this disease is caused by a herpesvirus that infects the nervous system and other organs such as the respiratory tract in virtually all mammals except humans and the tailless apes. It is primarily associated with swine, which remain latently infected following clinical recovery.

It can also infect dogs and cats. Signs of this disease include excessive salivation, restlessness, stumbling, breathlessness, howling and self-mutilation from excessive itching,

convulsions and death less than 24-96 hours after onset of clinical signs. It has a low risk of entry to Australia as the incubation period is short (one week or less) and thus the disease should show up in the animal during regular quarantine.

Screw-worm fly

Myiasis caused by larvae of the screw-worm fly is characterised by larvae feeding on **living** tissues in open wounds of any warm-blooded animal host, resulting in debility and some deaths. Larvae feeding cause the wounds to enlarge and this puts the life of the affected animal or human at risk. Death can result from large unattended wounds. The flies prefer warm moist conditions and temperature ranges from 16–30°C.

Transmissible Venereal Tumour

This is an exotic tumour of dogs that can be passed sexually from one dog to another. It is present in Papua New Guinea, Europe, United States, Caribbean, Africa and Asia. It is a tumour of the external genitalia and mucosal surfaces of the mouth, eye, nasal cavity and skin. It is usually an irregular red firm mass with an ulcerated surface. It could enter Australia on dogs from high risk areas of the world, but Australia's routine quarantine inspections of animals minimise the risk of entry.

Tropical Canine Pancytopenia

This is a disease caused by a rickettsia, *Ehrlichia canis*. It is in North and South America, the Caribbean, Africa and SE Asia. It is harboured and spread by a tick. Clinical signs are fever, swollen glands and spleen.

Brucella canis

Canine brucellosis is present in the USA, Mexico, Brazil, Madagascar and Japan. It can cause disease in humans. Signs of disease in male dogs are enlarged glands, inflammation of the sex organs, scrotal dermatitis and swelling, sterility and swelling of the lower limbs (oedema). It causes abortions in female dogs and infection of the uterus with pus discharge (pyometron). It is spread sexually, to young in utero from the mother and from eating afterbirth.

Rift Valley Fever

This disease of cattle, sheep, goats and humans, is caused by a mosquito-borne virus and is characterised by high rates of abortions and high rates of mortalities in young animals. Severe disease can occur in man. Dogs, cats and rodents have low susceptibility to the disease and would most likely develop subclinical infections.

African Horse Sickness

An infectious insect-borne viral disease of horses and mules with other equines such as zebras having a higher resistance to the disease. It is frequently fatal in susceptible horses, with clinical signs and lesions resulting from increased vascular permeability, which results in massive amounts of body fluid flowing into the lungs and chest and collapse of the circulatory system. In nature the virus is transmitted by midges (*Culicoides* spp) causing a seasonal incidence in temperate climates. Dogs can become infected and die from this disease if accidentally fed infected raw horse meat.

Leishmaniasis

This can affect dogs and very rarely, cats. It is a disease caused by a protozoan and is transmitted to animals and man by insects. It is in many countries around the world and has already been reported in Australia. It causes skin and eye problems, severe loss of weight and enlarged liver and spleen.

1.3.3 Major diseases affecting rodents and rabbits:

Haantan virus

Haantan virus is also known as Korean Haemorrhagic Fever. This virus is a serious zoonosis of humans contracted from rodents. It causes severe bleeding (multifocal haemorrhage) and death. Serological surveys have indicated that the virus is exotic to Australia and is not present in our laboratory rodents.

Lymphocytic Choriomeningitis

Lymphocytic choriomeningitis (LCM) is caused by an arenavirus. It is a zoonosis with mice, hamsters and humans the natural hosts. LCM causes severe illness in humans. There are three forms of the disease in mice. The *cerebral form* is characterised by sudden death or subacute illness showing ruffled fur and nervous signs. The *visceral form* can show ruffled fur, conjunctivitis, fluid in the abdomen (ascites), drowsiness and death. *Late onset disease* shows ruffled fur, hunching, weight loss, protein in the urine (proteinuria) and ascites. *Runting and death* occurs in neonates, survivors are smaller than unaffected mice.

Rabbit Calicivirus

RCD is an acute and usually fatal disease of rabbits. It is caused by a calicivirus and is mainly transmitted through the faecal/oral route in the field, but also through all body secretions and excretions in end stage disease. Indirect transmission from contaminated feed and materials has been reported but mechanical transmission by insects and rodents has not been demonstrated. The primary organ affected by the virus is the liver with severe necrotising hepatitis. Coagulation of blood is seen in the heart, lungs and kidney along with severe haemorrhages. Rabbits show a unique age susceptibility to RCD. Rabbits younger than 2 months do not develop disease even though infected with the virus. Infection of older rabbits with RCD usually leads to peracute or acute clinical disease in 1 to 3 days. Peracute cases die suddenly and acutely affected animals are quiet, have increased temperature and respiratory rate, and die 6 to 12 hours after the onset of the disease. A small proportion of rabbits develop nervous signs. The few animals recovering from acute disease may exhibit jaundice and die a few days later.

1.3.4 Major diseases affecting finfish

Angelfish Herpesvirus

This is caused by a herpes-like virus. It has been linked to stress-related sudden deaths in Angelfish from the Amazon. It has not been thoroughly researched.

Goldfish Ulcer disease

'Furunculosis' is caused by a bacterium of which there are three subspecies. Disease in non-salmonid fish is caused by *Aeromonas salmonicida nova*. The disease starts as a skin lesion that progresses to multiple skin lesions and then systemic infection and death.

Lymphocystis

A unique iridoviral infection that results in the growth of pale wart-like masses or individual nodules, principally in the skin of a wide range of fish. Lymphocystis does not occur in salmonids, cyprinids and ictalurids. Mortalities are reported in juvenile fish, and high (80%) mortalities are associated with the virus in aquarium fishes. Transmission is by contact via the gills. Transmission is suspected via copepods, leeches and isopods.

It is in Japan, Africa, Hawaii, South Pacific, Indochina, India, Europe, North America (Baja California, California, Chesapeake Bay, Georgia coast, Gulf of Mexico), Australia, Panama, Baltic Sea, Bering Sea, Irish Sea, North Sea, Scotland, Tanzania, New Zealand.

Rosy barb virus

This disease is caused by a small birna-like virus. The dead fish had necrotic organs and the virus isolated from the dead fish caused the organ damage. It was first detected in a batch of rosy barbs imported into quarantine in Australia from Singapore in 1986.

1.4 Occupational health issues

Rabies is a lethal nervous disease caused by a virus and it can infect any warm blooded animal. It is transmitted via the saliva of animals and is transferred by deep bites. It could also be contracted by saliva contaminating a deep cut or wound.

In a petshop emergency where rabies is suspected in an animal, the manager should ensure that no person, staff or otherwise should handle or come into contact with the suspect animal. The animal should be held in a strong cage away from people until the State/Territory veterinary authorities arrive.

Warm soapy water or other soapy disinfectant easily kills the virus. Suspect bites must be immediately washed and treated. Post bite vaccination is readily available in a medical emergency and is very reliable. For further treatment advice, refer to your general medical practitioner and the **AUSVETPLAN Rabies Strategy**. All implements, cages, materials in that were in contact with a rabid animal should be thoroughly washed with warm soapy water and left to dry completely. They should then be disinfected with an oxidising agent, see Table 2.

Encephalitic viruses - these are viruses that cause viral infection of the brain in humans and are carried by many vertebrate hosts including wild and domesticated birds, mammals and reptiles. Much of the epidemiology of these viruses is unknown although insect (mosquito) transmission of virus from one host to another is important. Smuggled birds (ie pheasants from the Americas) constitute a risk of entry for some of these viruses. Refusal to deal with suspect smuggled animals and normal practice of good insect control and good hygiene in premises is the best preventative for these diseases.

Korean Haemorrhagic fever (Haantan virus) is a serious exotic disease of rats and humans. The virus is transmitted via the urine and saliva of persistently infected reservoir rodent hosts. Three of the six hantaviruses cause human haemorrhagic fever with renal syndrome and similar diseases. Excellent hygiene practices combined with good pest rodent control in petshop and aviary premises is the best preventative if this disease entered Australia.

Lymphocytic Choriomeningitis is another serious disease of rodents and humans. It is distributed throughout the Americas and Europe in the common house mouse *Mus musculus*. It can infect mice, rats, humans, hamsters, guinea pigs and monkey colonies. In the USA it has been a particular problem in hamster and mouse colonies. It can cause three syndromes in man - influenza-like; inflammation of the brain; and rarely, coma and nerve dysfunction. Control as for Haantan virus.

1.5 Inputs

1.5.1 Animals

Animals coming onto premises are the most likely way for disease to enter. Animal inputs include animals introduced from animal breeders, commercial and amateur, from subsidiary

petshops, from the primary breeding premises that may be owned by the proprietor, or birds sold/swapped among enthusiasts. Vertebrate pests such as rodents may also have access to the premises.

1.5.2 Feed

Food coming into premises can sometimes bring in the disease agent. Feed inputs include commercial canned (retorted) and dry pelleted mixtures, commercial dry mixtures of plant and animal proteins (fishfood), plant foods from stockfeed suppliers (hay, lucerne and pelleted combinations) and fruit and vegetables from commercial markets and seed from seed suppliers.

1.5.3 Personnel

Staff who work on the premises handle the range of animals present. They may also keep pets/commercial species of their own and handle these before and after work hours. Delivery staff and animal suppliers also have access to animal areas and these staff may also keep animals at home or on their property. Customers come into contact with the animals for sale and may handle them prior to purchase. Customers also have pet animals/commercial species at home. All these points of contact can possibly transmit disease from animal to human and back to animal.

1.5.4 Equipment

Animal diseases can be transmitted to other animals or humans by contact with contaminated articles such as husbandry equipment.

Housing and cages used for shipping new animals to the premises are brought onto the premises by the animal breeder/supplier. These items come onto the premises and can be a vehicle for contamination of people, shop goods, shop fixtures, vehicles and premises. Feeding bowls and implements may be removed from one premises and used on another or swapped from cage to cage.

Bird raising equipment can become contaminated if not cleaned and disinfected between batches and disease can also be transmitted from bird to bird in the same batch using the same handfeeding tools.

1.5.5 Stores

Animal foods for sale involve a variety of canned, bagged and dry foods for sale. Foods may be packaged on the premises from bulk bags obtained from commercial suppliers ie bird seeds, fish foods. Goods for sale come onto the premises including pet accessories, kennels, aviaries, grooming and health aid products.

Some animal diseases can be transmitted by food, such as handfeeding of parrots or through bagged food, as even the outside of the bag can be contaminated in some cases.

1.5.6 Vehicles

Personal vehicles of the staff, food and goods delivery vehicles and occasionally vehicles owned by customers may have access to the premises.

Vehicles can become contaminated with infected mud or faeces and the interior can also become contaminated with infected dust particles, dirt or animal dander.

1.6 Outputs

1.6.1 Animals

There is a high movement of animals out of the premises after sales to customers. Animals refractory to sale or ordered through another outlet may be moved from one premises to another. Animals that die on the premises must be bagged and removed from the premises. Animals may also be taken home by staff for special care, although this is a rare event. Vertebrate pests may also leave the premises or die on the premises and then have to be removed after pest control methods.

If an animal distribution point such as a Petshop or commercial aviary has diseased animals - the disease can spread rapidly off the premises by normal movements of stock off the premises.

1.6.2 Food waste

Uneaten foods, meat, fish and vegetable matter are bagged and removed from each premises. Some of this waste may be flushed or hosed down urban sewerage systems during washing and disinfection of feeding utensils and bowls.

This means that potentially contaminated foods can go to metropolitan tips for burial or into the metropolitan sewerage system. Pit burial of waste or flushing **disinfected** waste into urban sewerage systems can be considered as a disposal method for most emergency diseases, but not for fish emergency diseases.

1.6.3 Manure and bedding waste

Hay, sawdust, or sand mixed with urine and faeces is usually bagged for disposal and residues flushed/hosed down existing urban sewage systems.

1.6.4 Personnel

Staff, both on premises and delivery staff and customers may leave the premises after handling the animals and mainly in the case of staff, being in contact with animal waste products. Clothing and footwear can be contaminated after this contact.

1.6.5 Vehicles/equipment

Animal crates or cages may be used multiple times without cleaning to carry animals from one shop to another by animal suppliers. Vehicles and cages may be contaminated with animal waste that could pass on infectious diseases to animals travelling in the cages or animals already on the commercial premises.

2 RISK REDUCTION AND CONTINGENCY PLANNING

2.1 Design of the enterprise

2.1.1 Petshops

Petshops are designed according to the space available to the proprietor for rapid and easy cleaning of cages and to enhance public attraction. Most petshops design animal cages so that species are separated into designated areas, the cages can be easily accessed and cleaned and public access to animals is minimised for animal welfare reasons. Public access to animals is necessary for normal sales, as the potential buyer will require close contact with the animal whether it be a bird, puppy, or kitten.

The design of shop premises must be in accordance with normal fire safety controls and not interfere with sprinkler systems and this can prevent disease minimisation features.

Some premises are large enough to create a room designated to one species such as birds or fish. This is advantageous particularly with birds as it keeps noise, dust and dander and possible disease transmission around the premises to a minimum. Petshop bird rooms often use shade cloth and rear access to cages to contain dust away from the retail area. Animals are securely separated from the public, which minimises possible spread of animal disease to or from customers.

2.1.2 Aviaries

Aviaries are designed according to the needs of the species kept. Aviaries in Australia vary in structure, but the two main types are large planted enclosures with dirt floors/ponds for finch/softbill collections or a series of flights with concreted floors to enable easy cleaning for parrot collections.

Recommended building materials are galvanised steel and concrete for easy cleaning and care, but wooden framed aviaries are also popular. Breeders use either made to measure wood breeding boxes or natural logs collected from the field for nesting accommodation.

The use of dirt floors has the disadvantage of easy access of vermin to birds by tunnels and the floor of the cage cannot be disinfected in a disease outbreak. Any wooden or porous materials in the cages also cannot be disinfected. However, branches and natural items are desirable for the health of the birds and can be regularly swapped for fresh new branches or logs after each season. Concrete/tile or linoleum floors have the advantage of being able to be easily cleaned and disinfected.

Professional bird keepers must have a quarantine area at some distance away from the main enclosures for quarantine of new birds, for a minimum of 45 days, and quarantine of suspect or sick birds until they regain full health. This is a mandatory measure for disease risk reduction for both aviaries and petshops.

Professional bird keepers should have on hand a broad spectrum disinfectant, suitable for all families of bacteria, viruses and fungi. They should use it routinely and be aware of cleaning and disinfection principles. See section 4.3.

Egg incubation and hand-rearing facilities

Ideally, people who hand-rear commercially already understand the importance of hygiene and disinfection in their hand-rearing facility. Neonates are particularly prone to a host of serious endemic diseases if strict hygiene is not implemented. This applies to all egg incubation equipment and neonate feeding and housing equipment.

This includes commercial and home-made incubators, ice-cream containers and baskets used for housing neonates, and feeding spoons, bowls, cups syringes, pipettes, eye-droppers and gavage needles.

Disease reduction strategies in the facility include minimising incorrect temperature, humidity and ventilation, and preventing visitors handling and feeding neonates, especially if they keep their own birds.

Professional bird raisers should have on hand a broad spectrum disinfectant, suitable for all families of bacteria, viruses and fungi. They should use it routinely and be aware of cleaning and disinfection principles. See section 4.3.

For disinfection of eggs entering the hand-rearing facility see 2.4.2.

Bird shows and club meetings

Birds are benched at these meetings for examination by club members. This is a high risk practice, as the judge handles many birds from different aviaries and viral and other diseases could easily be passed from one bird to another. Disinfection of clothing and hands between birds in this situation is not possible.

However, records are usually available of birds attending these shows and meetings. Severe outbreaks of Newcastle disease occurring in recent years in northern European countries were traced to hobby fowl meetings, sale and swapping of birds and lack of disease awareness. Accurate record keeping should be encouraged to aid traceback in the event of emergency disease. Clubs should encourage presentations on cleaning and disinfection principles for prevention of bird diseases.

Bird dealers and markets

These points of sale are totally deregulated with minimal or no record keeping. Should an emergency disease be traced to a market it would be exceedingly difficult to perform traceback and locate animals from these sources. The organisers of markets must be encouraged/required to record some details of vendors and their produce to facilitate traceback.

2.2 Procedures for early detection of disease

Daily inspections - each animal or animal group should be inspected for illness or unusual behaviour every day during the pen/cage cleaning or feeding process.

High risk species - virulent avian influenza and Newcastle disease have been pinpointed as the most likely bird diseases to enter Australia. Migratory birds, especially waterbirds are considered the most "high-risk" species.

Vet submissions/necropsies - in the situation where mortalities are unusual or unexplained, the dead animal(s) should be bagged twice in plastic, chilled and sent to be necropsied by a veterinarian. This provides a check on the disease status of the dead animal(s) and protects other animals and staff against spread of serious disease. This practice should be routine for all petshop and aviary owners to enable early detection of serious disease.

2.2.1 Quarantine areas

Animals brought into petshops for sale must be health checked by an experienced person and placed in a special holding area separated from others of the same species. New animals must be watched for any symptoms of illness and if ill, must be quickly quarantined. A separate quarantine area is mandatory for isolating any animal that is ill. If the illness is severe, a veterinarian should be called or the animal taken to a veterinary surgery.

Professional aviary managers should have separate quarantine areas for new and ill birds. This area must be a separate flight away from contact with other birds. Ideally, it should be in another building on the premises. Minimum quarantine for new birds is 45 days. Any sick or suspect aviary birds should be removed from the flight and placed under quarantine.

2.3 Training of staff

Staff are selected on the basis that they have some affinity for animal handling and care. Staff should be trained in multiple species handling, cleaning and disinfection of the equipment and premises and record keeping.

All staff should be trained to be alert to disease or abnormal behaviour in any animal on the premises and quickly separate an animal that is ill. Strict personal hygiene must be maintained in this situation. The cage from which such an ill animal is removed must be destocked, cleaned and disinfected. Animals that were in contact with the affected animal should be placed under surveillance in a new enclosure and watched for further signs of disease.

All staff should be trained in cleaning techniques and the use and dilution of disinfectants according to the manufacturers directions, see Table 2. Careful husbandry and cleaning of the environment is a basic safeguard against any endemic or exotic animal disease.

2.4 Work procedures and staff hygiene

2.4.1 Petshops

Unlike a clinic or laboratory where staff can rotate from cleanest jobs to dirtiest, the first job each morning in a petshop is cleaning the most contaminated areas – the larger animal cages. This must be done first, as the shop must present to customers as clean with no odours. Each animal area is cleaned according to how contaminated it is each morning. This is a considerable disadvantage with regard to spread of disease. Staff must practise strict personal hygiene between each cage that is cleaned.

Puppy, kitten, rabbit and rodent cages need to be cleaned every morning. Some animal areas need only be cleaned once per week, ie bird cages and fish tanks. All major cleaning is carried out before the shop opens, lesser cleaning duties are carried out during the day as customer flow allows. Customer focus must not interfere with cleanliness and disinfection of cleaning implements, hands and clothing. Direct spread of disease from cage to cage and on to customers is the potential risk.

Animal feeding bowls and utensils must be cleaned and washed daily or as necessary. Feeding bowls should be allocated to one group of animals and not rotated to others. The same applies to any toys given to young animals. All toys, bowls and feeding utensils should be cleaned, and washed every day. If an animal batch is sold, bowls and toys must be

disinfected between batches. Aquaria and display aviaries must be cleaned weekly, and between batches for birds. The same applies to bowls and implements for these species.

Air flow within the petshop is important. Forced ventilation particularly of the bird areas is necessary to control dust, dander and disease. A floor situated venting system is ideal. The vents for the extraction fans are located below the bird cabinets to allow feathers and dust to be withdrawn as they drift downward. Floor extraction also aids in removing cold air from the shop rather than warm air, which is removed from ceiling, mounted extraction fans.

Aquaria have the greatest disadvantage with regard to the introduction of disease. They are usually destocked and cleaned but not disinfected between batches. Disease can be spread from batch to batch very easily via contaminated rocks/weeds/left over food or from unsold fish. It is poor practice to do this from a disease point of view, but realistically it gives a stable pH balance and temperature stable environment for incoming fish. Prompt action is therefore required if any fish illness is detected. Aquaria should be destocked, cleaned and no new fish introduced to that batch if serious disease is suspected.

Staff must be trained to practise strict personal hygiene at all times for their own safety, the health of the customers and the different groups of animals in the shop at the one time. Management should provide clearly marked and reputable cleaners and disinfectants for their staff to use on a routine basis.

Disinfection will only be effective if thorough physical cleaning is carried out before using disinfectant. High organic loads rapidly inactivate most disinfectants.

Commonly available recommended disinfectants are household bleach or pool chlorine. (Remember that many commercial cleaning agents are only effective against bacteria and do not kill viruses).

- a) Domestic washing soda, 10 parts in 100 parts hot water or -
- b) Household concentrated chlorine bleach diluted 1 part in 3 parts water to give 2 - 3 % available chlorine. (Warm water will rapidly degrade chlorine).

Only use new bottles of disinfectants as old ones lose their potency. Table 2 provides a comprehensive list of disinfectants.

2.4.2 Aviaries

Aviaries should be inspected and cleaned at least once a week. All build up of faeces and old food should be removed. Sand and grit raked over or replaced if necessary. Between batches of birds and every few months for resident birds, sand and grit should be completely removed, the birds housed temporarily elsewhere and the concrete floors/tiles and aviary wire hosed and scrubbed down with detergent. After cleaning, recommended disinfectants (virucidal agents) are the same as for petshops.

Feeding containers should be rotated and cleaned and disinfected daily and should be stainless steel or plastic as these are nonporous and easily cleaned. Food containers can easily be renewed every day when new green foods are placed in the cage.

Egg incubation and hand-rearing facilities

Egg incubation and hand-rearing areas should be kept scrupulously clean at all times. Surfaces should be non-porous, easy to clean and regularly wiped with a soapy detergent to remove organic load. Bench tops, feeding and handling equipment should be disinfected after the soapy wash with a broad spectrum disinfectant that kills bacteria and viruses and fungi. Household bleach or Virkon® are good disinfectants. See Table 2.

Cleaning and disinfection procedures should be routinely performed on all bird equipment *between* birds *and* between batches of birds. Soiled instruments and containers should not be rotated between birds.

Disinfection of psittacine eggs is not normally performed in hand-rearing facilities. Professional facilities breed their own birds and access all eggs from their own closed flock. Contract incubation of eggs from multiple aviaries is a high disease risk practice.

2.5 Movement conditions review

In **petshops**, animals are moved on and off the premises via carrying containers, some are the property of animal and bird suppliers, others are owned by the shop. Petshop carrying containers must be thoroughly cleaned and disinfected between animals that are moved on or off the premises. This is a minimum requirement to protect against disease risks.

The highest numbers of animals moving off the premises are those sold to customers who often do not have a carrying cage and may buy a new container for the animal prior to leaving the premises.

Petshops should encourage the use of disposable animal carrying containers. The use of cardboard carrying containers is highly recommended and they should be destroyed after use.

Products moved on and off the premises include animal food and other goods for sale. The majority of animal food for sale is bagged off the premises and is removed by the customers after sales. The same applies to petshop goods.

In **aviaries**, birds are moved on and off the premises via carrying containers. These can be temporary or for permanent use. Bird boxes used by aviculturists are inevitably of poor standard and poor hygiene. These permanent containers should be scraped clean of faeces, food and feathers, scrubbed down with detergent and disinfected with household bleach and dried in bright sunlight. Temporary containers are better as they can be easily discarded once a new bird is placed in the quarantine area or a sick bird taken to the avian veterinarian. All permanent carrying containers must be thoroughly cleaned and disinfected after each use.

2.6 Internal quarantine

Always view disease in recently introduced animals suspiciously, even if they are officially out of quarantine.

The petshop proprietor should prefer suppliers who from experience will provide good quality livestock that remain healthy. They should maintain a list of those suppliers who, to their knowledge, run standard disease control, such as psittacosis treatments, vaccination, worming and external parasite control.

2.7 Veterinary services

In the case of both petshops and aviaries, veterinary intervention is a high cost factor and advice is usually sought when normal husbandry methods fail to halt an animal's illness or when a serious illness is recognised.

When any animal is seen to be diseased it must be promptly removed from its pen/cage, the pen/cage destocked, cleaned and disinfected. The affected animal should then be taken to a

quarantine area in the premises and, if necessary to a veterinary clinic. Any in contact animals should be placed under surveillance for disease.

If the treating veterinarian agrees that the diseased animal can return to the premises, the animal must be confined to a separate quarantine area, away from other animals until recovered.

2.8 Disposal methods

Normal council waste disposal methods are used in both petshops and aviaries. Solid materials, such as soiled hay/lucerne, food waste and sand should be wrapped and bagged and sent with normal household waste for council tip burial. Other waste is hosed or washed down existing sewage systems. This method of waste disposal is satisfactory in normal circumstances.

Sewage disposal - the majority of sewage will be low hazard. This is sewage from normal cleaning and husbandry of animals and is flushed direct to the industrial and domestic metropolitan sewage system.

High hazard sewage would be that from cleaning and disinfection during an emergency disease outbreak. The highest risk waste water would be from fish tanks in the case of suspected diseases of fish. Waste water and sludge from cleaning processes in this case would be treated with disinfectant before disposal. In this instance wastewater would be diverted to large lined containers for subsequent disinfection before disposal into the drainage system.

Deep council pit disposal of animal bodies would be the preferred method for any deaths resulting from emergency disease. An alternative would be to use private companies responsible for disposing of infected waste from hospitals. Waste would be collected in plastic lined sealed drums and removed from the premises under contract for incineration.

2.9 Records

Records are an important component in traceback inquiries during a disease outbreak, whether the disease is endemic or exotic. It is crucial that the origin of all incoming animals is recorded so that investigators can visit the original premises and owners can be made aware of any disease risk and investigated for disease.

Petshops and aviculturists should keep a diary of movements in and out of their premises. A simple notation of what birds from whom is all that is required.

In aviaries, most state governments enforce a record keeping system for certain species of native and exotic birds. The Commonwealth government has implemented a national scheme for the registration of exotic birds. The scheme is administered by Environment Australia, Wildlife Protection (formerly known as the Australian Nature Conservation Agency), GPO Box 636, Canberra ACT 2601. These schemes are designed to ensure the legal origins of certain species of birds. Foreign species are required to be registered because of their endangered status, pest potential and attractiveness to smuggling. Some very popular foreign species do not need to be registered. For example, peach face parrots and ring necks are exempted under the national registration scheme and these birds account for the vast majority of exotic birds traded.

The majority of petshops are not licensed as they elect not to trade in registrable species, but most bird dealers would be licensed for a small proportion of the birds they trade. No bird markets would be licensed as the species involved in registration are usually out of their price range.

Although unwelcome by some in the avicultural industry, these systems ensure greater accuracy of records amongst aviculturists and will substantially aid traceback in a disease emergency. Records are also invaluable when disease or illness occurs in a group of animals. Past records of deaths and illness can give important clues to scientists if the disease becomes serious and has to be researched by the relevant State animal health authorities.

2.10 Water supply arrangements

Petshops use metropolitan water supplies. These are contained waters for human consumption and are treated with chemicals before supply to metropolitan and urban areas. The use of this water does not constitute any emergency disease risk.

Aviaries - spread of disease, particularly virulent avian influenza by wild birds, to aviaries due to sourcing of water from drought affected rivers and dams is a risk. Many breeders in commercial and private breeding complexes advocate use of distilled water/collected rainwater or treated supplies. The use of this water does not constitute any emergency disease risk. However, most amateur bird breeders have water containers that are often open to native and feral bird oral/faecal contamination. Aviary owners should be discouraged from permitting wild bird contact with any aviary water supply.

2.11 Wildlife/feral animal control

Disease can spread by both **vertebrate** pests (rodents and birds) and **invertebrate** pests (insects) incubating the disease agent themselves and spreading it to other animals by bites or faecal/oral contamination or by accidentally carrying it from place to place on their bodies (mechanical spread of disease).

Invertebrate pests and vertebrate pests that may gain access to the premises bringing in disease, or may leave the premises carrying disease or may die on the premises after pest control methods and incorrect disposal of the carcasses constitute a risk of spreading disease.

Vertebrate pests are attracted to animal holding areas because of food stores and wastes. Every effort should be made to secure stored food or food placed out for housed animals well away from pest access thus preventing introduction of disease.

Petshops and aviaries must have good pest management practices by utilising sensible animal housing design, (eg concrete flooring, wire or brick rodent barriers, open topped glass aquaria for young or small animals) and other regular pest control methods (baiting, fumigation).

2.12 Media and public relations

The AUSVETPLAN **Public relations manual** contains detailed information on preparedness for media and public relations for emergency disease outbreaks.

In the event of a disease emergency in an individual aviary complex, interest/public fears would be generated from perceived risks associated with bird contact.

An outbreak in a commercial petshop may cause general public fear if they had visited the premises or even another unassociated petshop premises. It may also incite fear about pets in general and lead to senseless abandonment of animals in public areas and at welfare associations.

Media and public relations activities should ensure

- rapid and easily understood information flow to the public
- ensuring information is accurate and relates **only** to animal species and areas affected.
- ensuring co-operation of the petshop/commercial aviary industry by keeping them fully informed about what is happening and how this relates to other industry outlets.
- be factual and avoid speculation or exaggeration about the incident, its origin, threat and cause.

3 RESPONSE PLANS IN A DECLARED AREA

The declaration of areas will not occur for all the diseases discussed in Section 1. The major diseases are listed in Appendix 1.

A **restricted area (RA)** is a relatively small area around an **infected premises (IP)** that is subject to intense surveillance and movement controls. Movement of species involved out of the area will in general be prohibited, while movement into the restricted area would only be by permit. Multiple *restricted areas* may exist within one *control area*. Guidelines for establishing restricted areas are provided in Appendix 1 of each disease control strategy and the OIE animal health code.

A **control area (CA)** will be a buffer between the RA and areas free of disease where restrictions will reduce the chance of the disease spreading further afield. The control area should reduce in size as confidence about the extent of the outbreak becomes clearer (minimum 10 km radius for intensive-raising region and 50 km for an extensive livestock-raising region). In principle, animals and specified product will only be able to be moved out of the control area into the free area by permit.

3.1 Can the enterprise continue to operate if in a declared area?

In the case of **petshops**, where there are many species of animals for sale, the disease outbreak may only be hazardous to one class of animals.

As an example, rabies is mainly relevant to cats and dogs as these are the most commonly kept and handled domestic animals that can bite and spread rabies. It is also relevant to ferrets, rabbits and rodents as these animals are warm blooded, could become infected and they can bite. In a rabies outbreak, petshops in the *restricted* and *control* areas may be under instruction from veterinary authorities to vaccinate their cats, dogs and ferrets and these would be held at the premises for a prescribed post-vaccination period. Subsequent movement and sales of non-affected vaccinated animals (with certificates) out of the area would be at the discretion of the State chief veterinary officer (CVO). Other animals in the petshop not susceptible to the emergency disease would be bought and sold without restriction, ie birds and fish in a rabies incident.

In the event of an emergency disease in **aviaries**, trade in birds is unlikely to be permitted from the *restricted area* (RA) although movements of birds into the restricted area from aviaries in control areas and outside control areas may be permitted under special circumstances. Trade in birds in the *control area* could continue with government veterinary certification of health. Trade in birds outside the declared areas could continue normally.

Eggs and neonates already in a facility in a declared RA would be subject to movement restrictions. Any bird movement into/out of the facility would require a permit for special reasons. Movements of potentially naive or infected animals must be kept to a minimum in the RA during an emergency disease outbreak. The CVO may permit movements out of the RA if the hand-raising facility was totally isolated from the disease, but only under permit with health certification. Animal movement would be easier in a CA, but possibly a permit may be required in some circumstances.

3.2 Minimisation of risks associated with operation

3.2.1 Livestock

Petshops – animals on the premises would be vaccinated against the relevant disease if the case warranted it. Vaccination of dogs, cats and ferrets would be mandatory in a rabies outbreak. In the case of dangerous diseases, such as serious zoonotic rodent diseases, customers may be reluctant to buy stock if an outbreak was confirmed anywhere in Australia. It may be necessary to destock their healthy rodents and only stock species not involved in disease scares.

Aviaries – National policy for NDV or virulent AI is to stamp out any infection by destruction and decontamination. Vaccination is not permitted. In the case of exotic parrot diseases a similar policy is likely, but vaccination (if available) may become an option if the outbreak was widespread and caused devastation among hobby birds, or became threatening to our native species or became endemic in native parrots.

3.2.2 Products

Petshop products and supplies could be traded as in normal circumstances, unless they were suspect in the transmission of disease. In the case of rodent or bird diseases, a type of food product may be suspect in the introduction of disease. In order to prevent any further outbreaks in Australia the entire suspect food stock may have to be removed and destroyed by government veterinary authorities. Similarly, food contaminated by infected animals/birds may have to be destroyed.

3.2.3 Equipment and materials

Hygiene practices with all equipment and materials associated with animal husbandry would have to be of the highest standards.

3.2.4 Personnel

Normal standards of hygiene would apply in a **declared area (DA)**. Normal work routines would depend on the area of the worker's residence and whether or not they owned or had contact with companion animals.

- personnel owning pets and companion animals could go to work normally in the DA if the work place was not an IP, DCP or SP, but pets and companion animals at home would be subject to surveillance.
- if personnel resided on a dangerous contact premises (DCP) or IP with affected/suspected animals they would not be permitted to work in another enterprise with susceptible animals and vice versa.

3.2.5 Vermin and feral animals

High standards of vermin and feral animal control will apply. In the case of rodent or bird diseases, any dead pests found on the premises may have to be submitted to government veterinary laboratories as part of the disease surveillance program in both declared areas and non affected areas.

4 RESPONSE PLANS IN AN INFECTED OR DANGEROUS CONTACT PREMISES

4.1 Can the enterprise continue to operate if declared infected?

A **petshop** declared an *infected premises (IP) or dangerous contact premises (DCP)* is likely to be closed and quarantined until destocked of susceptible species and decontaminated. In the case of rabies, if the premises was declared an IP or DCP, destocking all potentially affected species (those in contact with the affected animal/s) to a quarantine facility for vaccination and monitoring would be a priority for management to enable the return to normal for sales of other species and products, ie birds and fish. Any cats, dogs, ferrets, rabbits or rodents that were not in contact with the affected animal(s) could be removed and quarantined elsewhere at the discretion of the CVO and the owner.

An **aviary/hand-raising facility** declared an IP or DCP is likely to be closed, destocked and decontaminated according to the emergency disease. Destocking would be effective immediately if there was an outbreak of NDV or virulent AI. Selective destocking and a period of quarantine may be appropriate for some other diseases. The enterprise could be reopened after total destocking, decontamination and disinfection then restocking with sentinel birds for a specified quarantine period.

4.2 Elimination of the agent

Destruction and secure hygienic disposal of infected and in-contact susceptible animals with decontamination and disinfection of the premises is the primary option for elimination of a disease agent. Depending on the disease, the type of animal, the exposure to infection and other circumstances, this may not always be necessary.

In the case of rabies, destruction of low value and high risk contact animals may be the best option. Vaccination and an extended period (6 months plus) of high security quarantine and surveillance may be applicable for animals that were not in direct contact with the affected animal(s). The proprietor may have an opportunity to destroy all susceptible stock but retain fish and birds to enable a quick return to operations. Disinfection of rabies virus is simple as the virus does not survive in the environment, is very fragile and is eliminated with warm soapy water.

In the case of bird diseases, if the disease is NDV or virulent AI destocking of all birds is the only option due to international trading and animal health commitments. In the case of other bird diseases removal of affected stock, cleaning and disinfection of cages and quarantine and surveillance of the rest of the aviary may be an option.

In the case of rodent/rabbit/fish diseases, destruction and removal of all the susceptible species with disinfection and decontamination of premises would be the most likely option.

4.2.1 Stamping out/destruction of animals

This would be required for most affected and in-contact animals for most major emergency diseases.

4.2.2 Can any product/animals be salvaged?

Quarantine (usually for an extended period) with strict isolation and hygiene measures may be an option for some animals if the animal had not been directly exposed to the disease and did not represent a risk to human life or of spreading disease. Vaccination may be applicable for certain diseases.

4.3 Decontamination

The first principle of decontamination is physical cleanliness. After a surface has been thoroughly cleaned of organic material thorough cleaning with soapy water/detergent or soapy disinfectant is the next step. Then apply the disinfectant of choice to kill any remaining virus. Organic material and waste must be disposed of safely by incineration or burial.

If dealing with an unknown disease agent and only household cleaners are handy, the following for personal disinfection may be used **provided no other approved disinfectant is available**:

- 1) scrub with soap or household detergent in hot (60°C) water;
- 2) domestic washing soda 10 parts in 100 parts hot water; or
- 3) household concentrated chlorine bleach diluted 1 part in 3 parts water to give 2–3 % available chlorine. *This chemical is not to be used on face, hands or skin.*

During the cleaning process, all waste water and organic material should be directed to a pit for burial/or washed into diverted drains/bins for later decontamination.

Common general disinfectants such as phenolics, quaternary ammonium compounds and iodophores are very effective *anti-bacterials* but have *limited effectiveness against most viruses*. Do not use old, out of date chemicals such as bleach or chlorine compounds because old chemicals break down and have poor disinfection powers. Only use new or recently opened packets. The correct disinfectant for each suspected disease is shown in the tables below. They are taken from the AUSVETPLAN **Decontamination Manual Tables 1 and 5**.

KEY TO TABLES

Category A viruses = Lipid containing virus, large/intermediate size

Best disinfectants = detergents, hypochlorites, alkalis, Virkon®, glutaraldehyde.

Category B viruses = No lipid in virus, small size

Best disinfectants = hypochlorites, alkalis, Virkon®, glutaraldehyde.

Category C viruses = No lipid in virus, intermediate size

Best disinfectants = hypochlorites, alkalis, Virkon®, glutaraldehyde.

Table 1 Disinfectant susceptibilities of emergency viruses

VIRUS FAMILY AND DISEASE	SPECIES AFFECTED	TRANSMISSION	DISINFECTANT CATEGORY #
<i>Birnaviridae</i> . Medium sized, dsRNA, non-enveloped. Infectious pancreatic necrosis	Fish	Ingestion	Category C
<i>Bunyaviridae</i> . Moderate sized, ssRNA, enveloped. Rift Valley fever Nairobi sheep disease	Ruminants, humans, dogs Sheep, goats	Insect vectors Insect vectors	Category A
<i>Caliciviridae</i> . Small sized, ssRNA, non-enveloped. *Vesicular exanthema San Miguel sea lion virus Rabbit calicivirus	Swine Marine mammals Rabbits	Ingestion	Category B
<i>Coronaviridae</i> . Medium sized, ssRNA, enveloped Transmissible gastroenteritis	Swine	Ingestion, contact	Category A
<i>Iridoviridae</i> . Large sized, dsDNA, non-enveloped. *African swine fever	Swine	Ingestion, ticks (Ornithodoros)	Category A
<i>Flaviviridae</i> . Moderate sized, ssRNA, enveloped. Wesselsbron disease Japanese encephalitis	Ruminants Swine, humans	Insect vectors	Category A
<i>Herpesviridae</i> . Large sized, dsDNA, enveloped. Aujeszky's disease Equine herpesvirus Duck plague Pacheco's disease	Swine Equidae Ducks, geese, swans parrots	Contact, ingestion Aerosols, contact venereal Contact, ingestion faeces, pharyngeal and respiratory secretions asymptomatic carriers	Category A

Table 1 Disinfectant susceptibilities of emergency viruses

VIRUS FAMILY AND DISEASE	SPECIES AFFECTED	TRANSMISSION	DISINFECTANT CATEGORY #
<p><u>Orthomyxoviridae.</u> Medium sized, ssRNA. enveloped</p> <p>*Avian influenza</p> <p>Equine influenza</p> <p>Swine influenza</p>	<p>Avian species</p> <p>Equidae</p> <p>Swine</p>	<p>Aerosols, ingestion</p> <p>Aerosols, ingestion</p> <p>Aerosols, ingestion</p>	Category A
<p><u>Paramyxoviridae.</u> Medium sized, ssRNA, enveloped</p> <p>*Newcastle disease</p> <p>*Rinderpest</p> <p>Peste des petits ruminants</p>	<p>Avian species</p> <p>Ruminants, cattle</p> <p>Small ruminant</p>	<p>Aerosols, ingestion</p> <p>Aerosols, ingestion</p>	Category A
<p><u>Picornaviridae.</u> Small sized, ssRNA, non-enveloped.</p> <p>*Foot-&-mouth disease</p> <p>*Swine vesicular disease</p> <p>Duck virus hepatitis</p>	<p>Ruminants, swine</p> <p>Swine</p> <p>Ducks</p>	<p>Aerosols, ingestion</p> <p>Aerosols, ingestion</p> <p>Aerosols, ingestion</p>	Category B
<p><u>Poxviridae.</u> Large sized, dsDNA, non-enveloped</p> <p>Sheep pox</p> <p>Goat pox</p> <p>Lumpy skin disease</p>	<p>Sheep and goats</p> <p>Cattle</p>	<p>Contact, insect vectors</p>	Category A
<p><u>Prions</u> Non-viral. Special definitions apply.</p> <p>Scrapie</p> <p>Bovine spongiform encephalopathy</p>	<p>Sheep, goats</p> <p>Cattle, canines, zoo animals</p>	<p>Contact</p> <p>Contact, ingestion</p>	(Special inactivation necessary)
<p><u>Reoviridae.</u> Medium sized, dsRNA, non-enveloped.</p> <p>African horse sickness</p> <p>*Bluetongue</p> <p>Epizootic haemorrhagic disease</p>	<p>Equidae, dogs</p> <p>Ruminants</p>	<p>Insect vectors</p> <p>Deer</p>	Category C
<p><u>Retroviridae.</u> Medium sized, ssRNA, enveloped.</p> <p>Maedi Visna</p> <p>Pulmonary adenomatosis</p>	<p>Sheep, goats</p> <p>Sheep, goats</p>	<p>Contact</p> <p>Contact</p>	Category B

Table 1 Disinfectant susceptibilities of emergency viruses

VIRUS FAMILY AND DISEASE	SPECIES AFFECTED	TRANSMISSION	DISINFECTANT CATEGORY #
<p><i>Rhabdoviridae</i>. Medium sized, ssRNA, enveloped</p> <p>*Rabies, rabies-like viruses</p> <p>Infectious haemopoetic necrosis</p> <p>*Vesicular stomatitis</p>	<p>All species</p> <p>Fish</p> <p>horses, ruminants and humans</p>	<p>Bites from infected animals</p> <p>Vertical and gill pouches</p> <p>Insect vectors</p>	Category A
<p><i>Togaviridae</i>. Medium sized, ssRNA, enveloped.</p> <p>Eastern, Western and Venezuelan equine viral encephalitis</p> <p>*Classical swine fever</p> <p>Equine viral arteritis</p> <p>Porcine respiratory and reproductive syndrome</p>	<p>Equidae, humans</p> <p>Swine, ruminants</p> <p>Equidae</p> <p>Swine</p>	<p>Insect, humans</p> <p>Contact, aerosols</p> <p>Insect vectors</p> <p>Contact, aerosols</p>	Category A

KEY TO TABLES

Category A viruses = Lipid containing virus, large/intermediate size

Best disinfectants = detergents, hypochlorites, alkalis, Virkon®, glutaraldehyde.

Category B viruses = No lipid in virus, small size

Best disinfectants = hypochlorites, alkalis, Virkon®, glutaraldehyde.

Category C viruses = No lipid in virus, intermediate size

Best disinfectants = hypochlorites, alkalis, Virkon®, glutaraldehyde.

Table 2 Recommended disinfectants and concentrations for inactivation of viruses

Disinfectant group	Form ¹	Strength ²		Contact time ⁴	Applications and virus category
		Usual dilution	Final ³		
<u>Soaps and detergents:</u>	solids or liquids	as appropriate		10 min	Thorough cleaning is an integral part of effective decontamination. Use for Category A viruses.
<u>Oxidising agents:</u>					
Sodium hypochlorite NaOCl	conc. liquid (10-12% available chlorine)	1:5	2–3% available chlorine (20,000 - 30,000 ppm)	10–30 min	Use for virus Categories A, B and C. Effective for most applications, except when in the presence of organic material. Less stable in warm, sunny conditions above 15°C.
Calcium hypochlorite Ca(OCl) ₂	solid	30 g/litre	2–3% available chlorine (20,000 - 30,000 ppm)	10–30 min	
Virkon®	powder	20 g/litre	2% (w/v)	10 min	
<u>Alkalis:</u>					
Sodium hydroxide	pellets	20 g/litre	2%(w/v)	10 min	Very effective against virus Categories A, B & C. Do not use in the presence of aluminium and derived alloys.
Sodium carbonate anhydrous (Na ₂ CO ₃)	powder	40 g/litre	4%(w/v)	10 min	Recommended for use in the presence of high concentrations of organic material.
washing soda (Na ₂ CO ₃ .10H ₂ O)	crystals	100 g/litre	10%(w/v)	30 min	

Table 2 Recommended disinfectants and concentrations for inactivation of viruses

Disinfectant group	Form ¹	Strength ²		Contact time ⁴	Applications and virus category
		Usual dilution	Final ³		
<u>Acids:</u>					
Hydrochloric acid	concentrated acid (10 Molar)	1:50	2%(v/v)	10 min	Used only when better disinfectants not available. Corrosive for many metals and concrete.
Citric acid	powder	2 g/litre	0.2% (w/v)	30 min	Safe for clothes & body decontamination. Especially useful for FMD virus decontamination.
<u>Aldehydes:</u>					
Glutaraldehyde	concentrated solution	as approp.	2%(w/v)	10–30 min	Excellent disinfectant effective against virus categories A, B & C.
Formalin	40% formaldehyde	1:12	8%(v/v)	10–30 min	Disinfectant releases irritating, toxic gas.
Formaldehyde gas	Special generation required			15–24 hours	Toxic gas, recommended only if other methods of decontamination cannot be used.

Notes:

1) Commonly used general disinfectants such as phenolics and quaternary ammonium compounds are very effective antibacterials, but have limited effectiveness against Category B and C viruses, and are not included in Table 2.

2) Products effective for decontamination of viruses on the hands and the skin are limited. Virkon® is reported to have low toxicity and to be effective against members of all 17 virus families but it has not been approved for use on skin. Alternatively, citric acid or sodium carbonate may be added to washing water to induce antiviral conditions by lowering or raising the pH as appropriate for the agent to be inactivated.

w/v = weight/volume (ie 2g/100mL)

- 1 usual form supplied
- 2 recommended working strength
- 3 final concentration
- 4 required contact time for inactivation of disease agents

4.3.1 Products, implements, materials

In a **petshop** there will be both food, implements and goods for sale that may be unaffected by the disease outbreak. If the disease is airborne, such as NDV or AI, the outside of nonporous packages could be wiped down with disinfectant and sold at a later date. In the case of rabies, only those materials actually in contact with the affected animal need be cleaned. The CVO or delegate will determine the action appropriate to the circumstances of each case. Goods may be destroyed and the owner may be compensated if the cost of cleaning the goods outweighs their commercial value.

In an **aviary** there will be food, implements and materials for bird keeping. The same applies as above. Those goods may be cleaned and disinfected for later use if this is satisfactory and their value exceeds destruction costs.

4.3.2 Discharges

In the case of fish diseases organic material/water discharge from cleaning and disinfection must not be washed down normal waste water outlets. These washings will have to be diverted to pits/bins and disinfected with appropriate disinfectant.

4.3.3 Vehicles

Vehicles on the IP or DCP that have been used for animal transport will require cleaning and disinfection. Other vehicles should be parked at a distance from the premises and only approved people have access to potentially contaminated areas. If a vehicle is suspected to be contaminated on a DCP or IP it should be cleaned and disinfected according to Tables 1 and 2.

4.3.4 Personnel

If personnel resided at a DCP or IP with affected pets or companion animals, then they would not be able to attend animals in a petshop/aviary premises which is not affected by disease and has no exposed animals. Similarly, people working at an IP or DCP petshop/aviary may have to make special arrangements for care of their pet/companion animals at home.

4.4 Tracing requirements

Tracing of animal movements will usually be required when a premises is designated a DCP or IP. Animals sold to customers in the weeks/days preceding the outbreak will need to be tracked and inspected for health. Animals may have been incubating, but not showing signs of the disease, when they left the premises. All animals traced from the DCP or IP would be quarantined for a period determined by the CVO according to the incubation period of the disease, and all in-contact animals would be subject to the same quarantine restrictions.

4.5 Proof of freedom

During the disease outbreak the DCP and IP will be under legally enforceable quarantine which will prevent or severely restrict the removal and introduction of animals. When the premises has completed decontamination and disinfection, sentinel groups of animals may be stocked with strict monitoring by clinical examination and diagnostic sampling. When completed the premises will be removed from quarantine but surveillance may be continued for a period of time determined by the CVO according to the disease.

After the period of surveillance is finished the premises will be declared free from disease and all restrictions will be lifted, normal business can resume.

4.6 Media and public relations

In the event of a disease emergency in an individual aviary complex, or an outbreak in a commercial petshop premises public concerns may be exaggerated.

Media and public relations activities should ensure

- rapid and easily understood information flow to the public
- ensuring information is accurate and relates **only** to the affected premises, the DCP or IP.
- ensuring co-operation of the petshop/commercial aviary industry by keeping them fully informed about what is happening, where and when and how this relates to other industry outlets.
- rapid dissemination of **positive** information regarding control and containment of the disease and lifting of quarantine restrictions on the IP and DCP's.
- See **Veterinary Practices Manual**.

APPENDIX 1 List of AUSVETPLAN diseases

African horse sickness
African swine fever
Aujeszky's disease
Avian influenza
Bluetongue
Bovine spongiform encephalopathy (BSE)
Sheep and goat pox
Classical swine fever (hog cholera*)
Equine influenza
Foot-and-mouth disease
Lumpy skin disease
Newcastle disease
Peste des petits ruminants
Rabies
Rift Valley fever
Rinderpest
Scrapie
Screw-worm fly
Swine vesicular disease
Transmissible gastroenteritis
Vesicular exanthema
Vesicular stomatitis
Bee diseases:
 braula fly (*Braula coeca*)
 tracheal mite (*Acarapis woodi*)
 tropilaelaps mite (*Tropilaelaps clarae*)
 varroa mite (*Varroa jacobsoni*)

* this term is not used in AUSVETPLAN

APPENDIX 2 Summary role statements for key personnel

Role descriptions for positions within the direct administrative control of the relevant government department are given in the **Control Centres Management Manual**. In addition, the manager's position described below is for a coordinator within the facility, aviary or petshop in the event that the facility becomes a suspected infected premises, or that staff within the facility are suspected of being contaminated, as a result of visiting an infected premises.

Manager of aviary/petshop

Skills

Full knowledge of the facility and its operations.

Ability to direct operations necessary for assisting the infected premises operations team (IPOT).

Line relationships

Responsible for liaison with the IPOT site supervisor (appointed by the LDCC controller) on the infected premises.

Responsible for all aviary/petshop personnel on the premises.

Responsible for liaison with other aviary/petshop personnel as required.

Roles and responsibilities

Ensure that the site supervisor is given the full cooperation of the aviary/petshop staff.

Ensure that all aviary/petshop staff are adequately briefed on the disease outbreak and their responsibilities.

Client and media liaison spokesperson

Skills

Knowledge of the facilities client base and current commitments.

Line relationships

Responsible to the facilities management for scheduling of services.

Roles and responsibilities

Arrange for the cancellation or rescheduling of services as required by LDCC.

Provide advice to clients on alternative arrangements for services.

Ensure that clients arriving at the premises are properly redirected.

Provide advice to the local media, as appropriate, on the implications of the outbreak for the facilities operations.

NB Media enquiries about all other aspects of the outbreak and campaign must be referred to the LDCC PR unit.

APPENDIX 3 Key telephone numbers

If you are suspicious of an emergency disease:

- ring and report it immediately
- do not leave messages
- you *must* speak to a government veterinarian at one of the following contact points

1 Your local District Veterinary Officer phone number _____

if you cannot contact him/her, ring

2 Your Regional Veterinary Laboratory phone number _____

if you cannot make contact, ring

3 24-hour Disease Watch Hotline (freecall) phone number **1800 675 888**

(mobile phones Australia-wide will connect with NSW Agriculture)

if you cannot get voice contact, ring

4 Your State/Territory Chief Veterinary Officer phone numbers as of Sept 98

AUSTRALIAN CAPITAL TERRITORY

CVO

ACT Veterinary Officer

ACT Veterinary Services Telephone (02) 6207 2357

PO Box 726 Facsimile (02) 6207 2361

JAMISON CENTRE ACT 2614

NORTHERN TERRITORY

CVO

Chief Veterinary Officer

Department of Primary Industry and Fisheries

GPO Box 990 Telephone (08) 8999 2131

DARWIN NT 0801 Facsimile (08) 8999 2089

NEW SOUTH WALES

CVO

Chief Veterinary Officer

Division of Animal Industries, NSW Agriculture

Locked Bag 21 Telephone (02) 6391 3717

ORANGE NSW 2800 Facsimile (02) 6361 9976

QUEENSLAND

CVO

Executive Director

Animal and Plant Health Service, Department of Primary Industries

GPO Box 46 Telephone (07) 3239 3546

BRISBANE QLD 4001 Facsimile (07) 3239 3558

SOUTH AUSTRALIA**CVO**

Chief Veterinary Officer

Department of Primary Industries and Resources

GPO Box 1671

Telephone

(08) 8207 7970

ADELAIDE SA 5001

Facsimile

(08) 8207 7852

TASMANIA**CVO**

Chief Veterinary Officer

Department of Primary Industry & Fisheries

PO Box 46

Telephone

(03) 6336 5289

KINGS MEADOW TAS 7249

Facsimile

(03) 6336 5374

VICTORIA**CVO**

Chief Veterinary Officer

Agriculture Victoria

475-485 Mickelham Road

Telephone

(03) 9217 4247

ATTWOOD VIC 3049

Facsimile

(03) 9217 4322

WESTERN AUSTRALIA**CVO**

Chief Veterinary Officer

Division of Animal Industries

Agriculture WA

Telephone

(08) 9368 3535

Locked Bag 4

Facsimile

(08) 9367 6248

BENTLEY DELIVERY CENTRE WA 6983

GLOSSARY

Agent	The organism that causes the disease.
ANEMIS	<i>Animal Health Emergency Information System.</i> A system for the collection, assimilation, actioning and dissemination of essential disease control information using paper documentation and a computer data base.
AUSVETPLAN	A series of documents that describes the Australian response to emergency animal diseases linking policy, strategies, operations, coordination and counter-disaster plans.
Chief veterinary officer of Australia	The nominated senior Commonwealth veterinarian in Agriculture, Fisheries and Forestry – Australia who manages Australia's international animal health commitments and the Commonwealth's response to an emergency animal disease incursion.
Chief veterinary officer	The senior veterinarian of each State or Territory animal health authority who has responsibility for animal disease control in that State or Territory.
Control area	A bigger area than a restricted area (possibly initially as big as the state) where restrictions will reduce the chance of the disease spreading further afield. The control area may reduce in size as confidence about the extent of the outbreak becomes clearer but must remain consistent with OIE codes . In principle, animals and specified product will only be able to be moved out of the control area into the free area by permit.
Cost-sharing agreement	Commonwealth/States cost sharing agreement for the eradication of certain emergency animal diseases.
Dangerous contact animal	An animal showing no clinical signs of disease but which, by reason of its probable exposure to disease, will be subjected to disease control measures.
Dangerous contact premises	Premises that contains a dangerous contact animal(s).
Declared area	A defined tract of land for the time being subject to disease control restrictions under emergency disease legislation. Types of declared areas include restricted area; control area; infected premises; and dangerous contact premises.

Disposal	Sanitary removal of animal carcasses and things by burial, burning or some other process so as to prevent the spread of disease.
Emergency animal disease	Includes exotic animal diseases and endemic diseases that warrant a national emergency response
Enterprise	<i>see</i> risk enterprise.
Exotic animal disease	A disease affecting animals that does not normally occur in Australia. Also called foreign animal disease.
Foreign animal disease	<i>see</i> exotic.
Forward command post	A field operations centre, subsidiary to a Local Disease Control Centre.
Infected premises	A defined area (which may be all or part of a property) in which an emergency disease or agent exists, is believed to exist.
Job card	A written list of tasks to be carried out by an individual in the early stages of an emergency response.
Local disease control centre	An emergency operations centre responsible for the command and control of field operations in a defined area.
Movement control	Restrictions placed on movement of animals, people and things to prevent spread of disease.
National disease control headquarters	A centre established in Canberra from which national disease control actions are coordinated in an animal disease emergency.
Phases of activation and deactivation	<i>see</i> Stages of activation
Quarantine	Legal restrictions imposed on a place, animal, vehicle or other things limiting movement.
Rehabilitation	Process of adjustment to circumstances prevailing in the aftermath of an emergency disease outbreak.
Restricted area	A relatively small declared area (compared to a control area) around an infected premises that is subject to intense surveillance and movement controls. Movement out of the area will in general be prohibited, while movement into the restricted area would only be by permit. Multiple restricted areas may exist within one control area.
Ring vaccination	Vaccination of susceptible animals around a focus of infection to provide a buffer against the spread of disease.

Risk enterprise	Livestock-related enterprise with a high potential for disease spread or economic loss.
Role description	Statement of functions of a position within the overall operation.
Sentinel animals	Animals of known health status monitored for the purpose to detect the presence of a specific emergency disease agent.
Stages of activation and deactivation investigation	Investigation, alert, operational, stand-down.
investigation	exists when a report assessed as being a low probability of an emergency disease is being investigated by animal health authorities.
alert	exists when a high probability that an emergency disease is present or is confirmed in another State.
operational	when the CVO determines that an animal disease emergency exists in the State, and operations to contain control or eradicate the disease are implemented.
stand-down	when the CVO determines that an animal disease emergency no longer exists.
Stamping out	Eradication procedures based on quarantine and slaughter of all infected animals and animals exposed to infection.
State disease control headquarters	The emergency operations centre that directs the disease control operations to be undertaken in the State.
Surveillance	A systematic examination and testing of animals or things to determine the presence or absence of an emergency disease.
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, are warranted; or, an animal not known to have been exposed to a disease agent but showing clinical signs requiring differential diagnosis.
Suspect materials or things	Materials or things suspected of being contaminated by an emergency disease agent.
Suspect premises	Premises containing suspect animals that will be subject to surveillance.
Tracing	The process of locating animals, persons or things which may be implicated in the spread of disease.

Vector	A living organism (usually an insect) which transmits the infectious agent from one susceptible animal to another.
Vector control area	An area in which the containment, control or reduction of specified vector populations is conducted.
Zoning	The process of defining disease free and infected areas in accord with OIE guidelines, in order to facilitate trade.
Zoonosis	A disease that can be spread between animals and people.

Abbreviations

ARMCANZ	Agricultural Council of Australia and New Zealand
ANEMIS	Animal health emergency information system
AUSVETPLAN	Australian Veterinary Emergency Plan
CCEAD	Consultative Committee on Emergency Animal Diseases
CVO	Chief veterinary officer
DCP	Dangerous contact premises
IP	Infected premises
LDCC	Local disease control centre
NDCHQ	National disease control headquarters
OIE	World Organisation for Animal Health [Office International des Epizooties]
SCARM	Standing Committee on Agriculture and Resource Management
SDCHQ	State disease control headquarters

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