

RECOMMENDED QUARANTINE PROCEDURES

QUARANTINE FACILITY:

A separate quarantine facility, with the ability to accommodate mammals, birds, reptiles, amphibians, and fish should exist. If a specific quarantine facility is not present, then newly acquired animals should be isolated from the established collection in such a manner as to prohibit physical contact, to prevent disease transmission, and to avoid aerosol and drainage contamination. Such separation should be obligatory for primates, small mammals, birds, and reptiles, and attempted wherever possible with larger mammals such as large ungulates and carnivores, marine mammals, and cetaceans. If the receiving institution lacks appropriate facilities for isolation of large primates, pre-shipment quarantine at an AZA or AALAS accredited institution may be applied to the receiving institutions protocol. In such a case, shipment must take place in isolation from other primates. More stringent local, state, or federal regulations take precedence over these recommendations.

QUARANTINE LENGTH:

Quarantine for all species should be under the supervision of a veterinarian and consist of a minimum of 30 days (unless otherwise directed by the staff veterinarian). Mammals: If during the 30-day quarantine period, additional mammals of the same order are introduced into a designated quarantine area, the 30-day period must begin over again. However, the addition of mammals of a different order to those already in quarantine will not have an adverse impact on the originally quarantined mammals. Birds, Reptiles, Amphibians, or Fish: The 30-day quarantine period must be closed for each of the above Classes. Therefore, the addition of any new birds into a bird quarantine area requires that the 30-day quarantine period begin again on the date of the addition of the new birds. The same applies for reptiles, amphibians, or fish.

QUARANTINE PERSONNEL:

A keeper should be designated to care only for quarantined animals or a keeper should attend quarantined animals only after fulfilling responsibilities for resident species. Equipment used to feed and clean animals in quarantine should be used only with these animals. If this is not possible, then equipment must be cleaned with an appropriate disinfectant (as designated by the veterinarian supervising quarantine) before use with post-quarantine animals.

Institutions must take precautions to minimize the risk of exposure of animal care personnel to zoonotic diseases that may be present in newly acquired animals. These precautions should include the use of disinfectant foot baths, wearing of appropriate protective clothing and masks in some cases, and minimizing physical exposure in some species; e.g., primates, by the use of chemical rather than physical restraint. A tuberculin testing/surveillance program must be established for zoo/aquarium employees in order to ensure the health of both the employees and the animal collection.

QUARANTINE PROTOCOL:

During this period, certain prophylactic measures should be instituted. Individual fecal samples or representative samples from large numbers of individuals housed in a limited area (e.g., birds of the same species in an aviary or frogs in a terrarium) should be collected at least twice and examined for gastrointestinal parasites. Treatment should be prescribed by the attending veterinarian. Ideally, release from quarantine should be dependent on obtaining two negative fecal results spaced a minimum of two weeks apart either initially or after parasiticide treatment. In addition, all animals should be evaluated for ectoparasites and treated accordingly.

Vaccinations should be updated as appropriate for each species. If the animal arrives without a vaccination history, it should be treated as an immunologically naive animal and given an appropriate series of vaccinations. Whenever possible, blood should be collected and sera banked. Either a -70°C freezer or a -20°C freezer that is not frost-free should be available to save sera. Such sera could provide an important resource for retrospective disease evaluation.

The quarantine period also represents an opportunity to, where possible, permanently identify all unmarked animals when anesthetized or restrained (e.g., tattoo, ear notch, ear tag, etc.). Also, whenever animals are restrained or immobilized, a complete physical, including a dental examination, should be performed.

Complete medical records should be maintained and available for all animals during the quarantine period. Animals that die during quarantine should have a necropsy performed under the supervision of a veterinarian and representative tissues submitted for histopathologic examination.

QUARANTINE PROCEDURES:

The following are recommendations and suggestions for appropriate quarantine procedures for several animal groups:

PRIMATES

- REQUIRED:**
1. direct and floatation fecals as described above
 2. a minimum of 2 negative tuberculin tests using a tuberculin containing at least 1,500 units/.1 ml (e.g., Mammalian Human Isolate, Coopers Animal Health) or other appropriate regimen as necessary for the species in question (e.g., orangutans, New World primates, etc.)
 3. CBC/sera chemistry panel
 4. culture of feces for salmonella/shigella/Campylobacter
 5. for appropriate species; e.g., Old World monkeys, serology for *Herpesvirus simiae* (Herpes B)

STRONGLY RECOMMENDED:

1. chest radiographs
2. appropriate viral panels (SIV, retrovirus type D)
3. urinalysis

HOOFSTOCK

- REQUIRED:**
1. direct and floatation fecals
 2. TB test whenever possible

STRONGLY RECOMMENDED:

1. CBC/sera profile
2. appropriate serology; e.g., leptospirosis brucellosis, MCF, IBR, BVD, etc. Paired titers whenever possible
3. urinalysis
4. Johnes diagnostics if history of disease in herd of origin
5. Coggins test for equids
6. vaccinate as appropriate (See ZOO AND WILD ANIMAL MEDICINE, ME Fowler)

SMALL MAMMALS/CARNIVORES

- REQUIRED:**
1. direct and floatation fecals
 2. vaccinate as appropriate (See ZOO AND WILD ANIMAL MEDICINE, ME Fowler and upcoming CURRENT VETERINARY THERAPY XI, WB Saunders Co.)

STRONGLY RECOMMENDED:

1. CBC/sera profile
2. urinalysis
3. appropriate serology (FIP, FeLV, FIV)
4. heartworm testing in appropriate species

BIRDS

- REQUIRED:**
1. direct and floatation fecals
 2. evaluate for ectoparasites
 3. appropriate serological tests for psittacosis, and if positive, confirmed by culture

STRONGLY RECOMMENDED:

1. CBC/sera profile
2. fecal culture for *Salmonella* sp.
3. fecal gram stain

REPTILES AND AMPHIBIANS

- REQUIRED:**
1. direct and floatation fecals for parasites followed by appropriate treatment
 2. evaluate for ectoparasites

STRONGLY RECOMMENDED:

1. veterinary examination
2. CBC/blood chemistries
3. Paramyxo-viral titers for all viperids, incoming after being in quarantine for 30 days
4. full post-mortem examination and histopathology on all specimens dying while in quarantine

FISH**GENERAL COMMENTS:**

Quarantine standards for other zoo and aquarium animals cannot always be applied to fish, and adaptations must be made to the proposed procedures as they apply to fish populations. Proper and appropriate fish quarantine is a vital component of any successful health management program for fish. Quarantine procedures must be tailored to individual species and require greater variation than quarantine for other zoo and aquarium animals. It is in the interest of accredited institutions to carry out quarantine procedures that are both effective and practical, leading to improved animal health.

Fish are usually acquired as populations, not as individual specimens, and individual identity may be impractical to establish. Few aquariums have the facilities and/or space to properly maintain large fish

specimens in separate life-support systems, making individual quarantine of these specimens difficult. Aquariums may operate as open or semi-open systems, and specimens acquired from the surrounding waters of these institutions may not benefit from rigid quarantine procedures due to constant introduction of potential disease organisms. Veterinarians may be part of the team supervising the quarantine, but the institution should appoint the staff it feels has the best expertise to supervise and operate the quarantine program. It is appropriate to note that state and federal hatcheries do not often employ veterinarians, yet have well-established and internationally recognized fish health programs of which quarantine is an important factor.

SPECIFIC RECOMMENDATIONS

QUARANTINE FACILITY:

Where appropriate, separate life-support systems (LSS) with the ability to quarantine fishes should exist. The LSS should be operated in such a way as to preclude disease transfer from one system to another and/or introduction into natural waters. Quarantine tanks should have viewing that is adequate to observe the fish for behavior and signs of pathology; the LSS should be adequate to maintain the health of the quarantine population. If an aquarium does not have a separate LSS, it should have the ability to divert flow through the quarantine systems, bypass the common filter, and discharge the water. Disinfection of the discharge water prior to release is advisable. In addition, discharge of this water must comply with federal, state, and local environmental regulations.

QUARANTINE LENGTH:

A quarantine period of 30 days is an adequate standard; however, it must be recognized that certain species or disease problems may require more or less time.

QUARANTINE PERSONNEL:

The institution will appoint the staff it feels has the most expertise to supervise and operate the quarantine program. All equipment (boots, nets, cleaning equipment, etc.) should be confined to the quarantine area. Access to and from the area should be restricted so as to minimize cross-contamination. Precautions must be taken to minimize the risk of zoonotic disease to personnel.

QUARANTINE PROTOCOL:

Each institution must have a written quarantine protocol. During quarantine, appropriate prophylactic measures should be instituted. Complete medical records should be maintained for the specimens during the quarantine period. Fish that die during quarantine, or a representative sample thereof, should be necropsied. Care must be taken that all equipment used with quarantined fish is separate from other systems. (If this is not possible, adequate disinfection procedures must be employed before equipment is used for post-quarantine fish.)

REQUIRED QUARANTINE PROCEDURES:

Because of the great diversity of fish, required quarantine procedures are difficult to establish. The institution should follow the guidelines stated in the above sections to fashion a quarantine program best suited to their needs.

MARINE MAMMALS

All AZA member zoological parks and aquariums should have a quarantine program for new marine mammal arrivals at the institution. A facility should be available which can provide for the isolation of newly acquired marine mammals in such a manner as to prohibit cross-contamination resulting from physical contact, disease transmission, aerosol spread, waste drainage, or the reuse of untreated water. Ocean pens must be located in a way that prevents the spread of any disease from animal to animal through natural water movement and at a distance from other penned animals deemed adequate by the supervising veterinarian. If a receiving institution does not have appropriate isolation facilities, the staff should arrange for quarantine at an acceptable alternate site or only receive animals which do not require quarantine. More stringent local, state, or federal regulations relating to marine mammal quarantine take precedence over these recommendations.

Isolation practices should be instituted based on the prior medical history of the newly arrived animal. Those situations where isolation is recommended would have one or more of the following characteristics:

1. Recently collected (less than 30 days prior to arrival).
2. Recently exposed to a new arrival for which an adequate medical history is not available (less than 30 days prior to arrival).
3. Lack of a documented medical history.
4. Apparent medical problems at the time of arrival.
5. At the direction of the supervising veterinarian.

Quarantine for all species should be under the supervision of a veterinarian and consist of a minimum of 30 days (unless otherwise directed by the staff veterinarian). If during the 30-day quarantine additional marine mammals are introduced into the isolation facility, the 30-day period must begin again for all animals already in quarantine and exposed to the new arrivals.

Attendants should be designated to care only for quarantine animals or to attend quarantined animals only after fulfilling their responsibilities for resident species. Attendants provided with quarantine clothing and washing facilities designed to prevent disease transmission may be allowed to attend to non-quarantine animals after working with quarantined specimens if approved by the supervising veterinarian. Equipment used to feed and clean animals in quarantine should be used only with those animals or should be thoroughly cleaned and disinfected, as designated by the supervising veterinarian, before use with post-quarantine animals.

Institutions must take precautions to minimize the risk of exposure of animal personnel to zoonotic diseases that may be present in newly acquired animals if the attending veterinarian deems that such risk exists. These precautions should include using disinfectant foot baths, wearing appropriate protective clothing, and minimizing physical contact.

During the quarantine period, certain prophylactic measures should be instituted with some species. Individual fecal samples should be collected, if required, at least twice and examined for gastrointestinal parasites. When indicated, treatment should be prescribed by the attending veterinarian. Successful parasiticide therapy may or may not be necessary prior to removal of the animal from quarantine. This determination should be made by the attending veterinarian based on the potential for contagion. Where indicated, the animals should also be evaluated and treated for ectoparasites.

In those species for which vaccines are available and recommended, vaccinations should be given as appropriate for each species. If the animal arrives without a vaccination history, it should be treated as an immunologically naive animal and given an appropriate series of vaccinations. Whenever possible, blood

should be collected and sera banked. Either a -70°C freezer or a -20°C freezer that is not frost free should be available to store sera. Such sera can provide an important resource for retrospective disease evaluation.

Where desirable, the quarantine period may present opportunities to permanently identify unmarked animals. A complete physical examination should be performed during entrance into and prior to exit from quarantine.

Complete medical records should be kept and be available on all animals during the quarantine period. Animals that die during quarantine should have a necropsy performed on them under the supervision of a veterinarian, and representative tissues should be submitted for histopathologic examination.

Following are the recommendations and suggestions for appropriate medical procedures to be performed during or immediately prior to the quarantine period, by animal group:

CETACEANS

- REQUIRED:
1. CBC/serum chemistry panel
 2. Physical examination

STRONGLY RECOMMENDED:

1. Direct and floatation fecal exam
2. Urinalysis
3. Blowhole and stool culture and cytology
4. Blood zinc levels

PINNIPEDS

- REQUIRED:
1. CBC/serum chemistry panel
 2. Physical examination

STRONGLY RECOMMENDED:

1. Direct and floatation fecal exam
2. Urinalysis
3. Morbillivirus titer
4. Leptospira titer
5. Heartworm test (if appropriate)
6. Stool culture and cytology
7. Blood zinc levels

SIRENIANS

- REQUIRED:
1. CBC/serum chemistry panel
 2. Physical examination

STRONGLY RECOMMENDED:

1. Direct and floatation fecal exam
2. Stool culture and cytology

CARNIVORES (Polar bear, sea otter)

- REQUIRED:
1. Direct and floatation fecal exam
 2. CBC/serum chemistry panel
 3. Physical examination
 4. Vaccination for canine distemper, feline panleukopenia, canine parvovirus, and rabies should be current as deemed necessary by the attending veterinarian.

STRONGLY RECOMMENDED:

1. Urinalysis
2. Blood zinc levels