

RECOMMENDED ELEPHANT PRESHIPMENT GUIDELINES
American Zoo and Aquarium Association
Elephant Species Survival Plan

February 2003

Routine health monitoring should be performed on all elephants on an annual basis (see "Guidelines for Comprehensive Elephant Health Monitoring Program"). Animals should be trained to permit sampling and examination. Whenever possible, preshipment testing should be performed within 30-90 days of the anticipated shipping date (note: mycobacterial cultures require 60 days for final results). The following protocol advises that specific baseline laboratory tests be performed for the purpose of evaluating current health status. Additional tests are recommended to increase baseline information to determine their significance to elephant health. The final decision for specific procedures should be made in partnership between the shipping and receiving institutions. Any abnormal findings should be communicated to the receiving institution in a timely manner. For additional information, refer to the Elephant Husbandry Manual, AZA Standards for Elephant Management and Care, and the AAZV Preventive Medicine Recommendations.

Minimum Database:

1. Signalment - age, sex, origin, studbook#, ISIS#; picture of individual (as viewed from the front and sides) should be included in the permanent record.

2. Anamnesis - summary of information regarding previous health screens, medical problems, diagnostic test results, and treatment (complete "Individual Annual Elephant Medical Survey" form and send to SSP Veterinary Advisor – will be available in 2003). A hard copy and disc of the complete medical record should be sent to the receiving institution prior to shipment. In addition, the veterinarian should review the behavioral profile of the individual to be shipped.

Specific areas to be included:

- a. foot/skin conditions
 - b. dental/tusk conditions
 - c. history of colic, diarrhea, GI parasitism (including fecal parasite screens and Salmonella cultures)
 - d. serologic status, if known (EMC, elephant herpesvirus, Leptospirosis)
 - e. vitamin E status, if known
 - f. TB culture (dates and results)
 - g. reproductive history
 - b. musth history
 - c. sedation/immobilization data
3. Complete physical exam by a veterinarian familiar with elephant health problems. This should include a review of all systems.
4. Body weight – actual or estimated using body measurements (1).
5. Blood collection
- a. Complete blood count (CBC), serum chemistry panel.
 - b. Serologic (ELISA) test for elephant herpesvirus – contact Drs. Laura Richman or Richard Montali (2). See Recommendations for EEHV Testing and Transport of Elephants.
 - c. Bank minimum of 10-20 ml serum (duplicate sample for SSP serum bank) – all banked samples should be labeled with species, studbook #, age, sex, and date collected. Use submission form for serum samples sent to SSP serum bank.
6. Fecal analyses

- a. Parasite screen - Fecal samples should be collected every 7 days for a total of 3 weeks; direct, flotation, and sedimentation should be performed on every sample to detect intestinal parasitism.
 - b. Enteric pathogen screen - Aerobic culture of feces for enteric pathogens should include special media for the detection of *Salmonella spp.* Since Salmonella organisms may be shed intermittently, at least 3-5 fecal cultures should be performed (may be done on consecutive days).
 - c. Contact receiving institution with any abnormal results and treatments.
7. TB culture - refer to the current USDA Guidelines for the Control of Tuberculosis in Elephants (2). Protocol can be accessed on the USDA website www.aphis.usda.gov/ac/ElephTBGuidelines2003.html. At this time, annual trunk wash cultures are the only required test, however collection of other samples for research is strongly encouraged.
- a. Samples for cultures must be collected under the direct supervision of a licensed veterinarian.
 - b. Three trunk wash samples should be collected on separate days, ideally within a 7 day period. Trunk swabs are no longer acceptable.
 - c. All samples should be frozen immediately after collection and shipped frozen.
 - d. Ship by overnight express to NVSL (or other laboratory facility offering comparable procedures). Request mycobacterial culture with speciation (use VS Form 10-4 submission form for NVSL).
8. Vaccinations
- a. Tetanus toxoid * – current vaccination (within 12 months) with a commercial equine product is recommended. Follow label instructions for product use (usually 1 ml IM). Data are insufficient at this time to determine adequate protective vaccine doses and titers.
 - b. Rabies vaccine* - current vaccination (within 12 months) with a commercial killed rabies product approved for horses should be considered if the animal resides or will be traveling to an endemic area. Follow label instructions for product use (usually 2 ml IM). Data are insufficient at this time to determine adequate protective vaccine doses and titers.

* Both tetanus and rabies have been reported to occur in elephants (3, 4).

Additional Preventive Health Recommendations:

1. Serological screening for EMC (encephalomyocarditis virus), leptospirosis (multiple serovars), and WNV (West Nile Virus). Although these tests are not species-specific and have not been validated for elephants, they may detect cross-reactive antibodies in exposed animals. The presence of antibodies does not necessarily denote infection/disease. Encephalomyocarditis virus may cause clinical disease and death in elephants (5). Antibodies to leptospirosis have been detected in both Asian and African elephants (6, 7). At the time of this writing, EMC serologic testing was not available. Insufficient data is available at this time to determine the significance of WNV antibodies in elephants; it is important to include the history of exposure and vaccination to WNV when interpreting results.
2. PCR test for elephant herpesvirus – contact Drs. Laura Richman or Richard Montali (8).
3. Serum vitamin E levels – submit heparinized plasma to Dr. Ellen Dierenfeld.
4. Reproductive tract examination – a complete reproductive examination should be conducted to include transrectal ultrasound, semen collection and analysis, cytology and microbial cultures of the lower urogenital tract (to be screened for bacteria, Chlamydia, protozoa, and Herpesvirus). Herpesvirus has been identified in biopsies of vaginal lymphoid patches in an African elephant (9). A high prevalence of uterine leiomyomas has been observed in captive Asian elephants and could be detected via transrectal ultrasound (10). Since both of these conditions have potentially significant effects on reproduction, a careful evaluation is warranted if the animal is being considered for breeding. All elephants (male and female) over the age of 5 years should have

both ultrasound and hormonal assessments performed (testosterone in males; progestins/LH in females). See “Guidelines for Comprehensive Elephant Health Monitoring Program”.

5. Urinalysis – fluid and sediment evaluation of clean voided sample; +/- microbial culture.
6. Foot radiographs – baseline radiographs of all feet are strongly recommended (send copies of radiographs to receiving institution); see Gage for description of technique (11).
7. Ancillary diagnostic tests for tuberculosis – ELISA, etc. recommended for data gathering; see Guidelines for the Control of Tuberculosis in Elephants for current recommendations (2).
8. Other vaccination regimens will depend on regional requirements and exposure risks (consider vaccination for equine encephalitis viruses, Clostridial diseases, Leptospirosis). Insufficient information is available at this time to provide a recommendation for West Nile Virus vaccination of elephants. Contact the SSP veterinary advisor for current information.

2/20/03 mm

Elephant Serum Bank Submission Form
American Zoo and Aquarium Association
Elephant Species Survival Plan

Institution/owner: _____
Submitter: _____
Address: _____

Tel: _____ Fax: _____ Email: _____

ANIMAL INFORMATION

Asian African ISIS# _____ Studbook # _____
Name _____ Age: _____ actual estimate
Sex: male female

SAMPLE COLLECTION INFORMATION

Date of sample collection: _____ Time of collection : _____
Site of sample collection: ear vein leg vein other: _____
Health status of animal: normal abnormal
Fasted: no yes – how long _____
Weight _____ actual estimated
Type of restraint: manual anesthetized/sedated behavioral control
Temperament of animal: calm active excited

Type of blood collection tube:

- no anticoagulant (red-top)
- EDTA (purple)
- heparin (green)
- other: _____

Sample handling: separation of plasma/serum by centrifugation
(check all that apply) stored as whole blood
 frozen plasma/serum
 other – describe _____

TB EXPOSURE STATUS

- Known infected animal
- Known exposure to culture positive source within the past 12 months
- Known exposure to a culture positive source within the past 1-5 years
- No know exposure to a culture positive source in the last 5 years

TREATMENT INFORMATION

Is elephant currently receiving any medication or under treatment? yes no
If yes, please list drugs and doses: _____

Time between blood collection and last treatment: _____

Ship samples overnight frozen with shipping box marked "PLACE IN FREEZER UPON ARRIVAL"

Send completed form with samples to:

Dr. Michele Miller
Disney's Animal Kingdom-Dept. of Vet. Services
1300 N. Savannah Circle West
Bay Lake, FL 32830
(407) 939-7316; email: Michele.Miller@disney.com