Asian Elephant Specialist Group
Elephant Pre-shipment Guidelines for Range Countries

Elephants are susceptible to a number of infectious and parasitic diseases. The following health screening recommendations represent minimum standards to prevent disease transmission when moving elephants from zoo/captive facilities to other captive facilities (including those which are present within the range of wild elephants). Any abnormal findings should be communicated to the receiving institution in a timely manner prior to animal transfer.

While minor problems can be managed at the receiving facility (recurrent parasite problems), consideration should be given to treat major diseases (e.g. tuberculosis) at the home facility if positively diagnosed before transfer. Veterinarians with knowledge of elephants and their diseases should be involved in such decisions.

While the basic standards outlined below are also relevant to captive elephants intended for release to the wild, they address mainly the disease aspects. Numerous other factors beyond the scope of this document must be considered when contemplating re-introduction of elephants to the wild.

MINIMUM DATABASE

A. Facility history of sending institution (to inform receiving institution of possible disease threats)

- History of major infectious or parasitic diseases that have occurred in elephants or related species (other herbivores)
- Mortality history of the main causes of death in elephants or related species (has herpes been detected in the facility?)
- Disease diagnosis and postmortem capacity in the facility (to allow the receiving institution to evaluate whether disease surveillance has been adequate or additional testing should be required)

A sample Facility History Questionnaire is provided below.

B. History of elephant to be transferred

- Origin
  - Where originally obtained (wild caught or captive born – location for both)
  - Transfer history from origin to current facility)
- Age and sex
- Microchip #
- Photograph of individual (minimum 3 – one from the front and both the sides with tail clearly visible in at least one picture).
- Health report - summary of information regarding previous
  - Health screens

- Medical problems
- Diagnostic test results
- Treatment.

Specific areas to be included:

- foot/skin conditions
- dental/tusk conditions
- history of colic, diarrhea, GI parasitism (include fecal parasite screens and pathogenic microbial culture results
- TB trunk wash cultures (dates and results)
- TB serological status (rapid serum test dates and results)
- Reproductive / musth history
- sedation/immobilization history and data

- In addition, the veterinarian should review the behavioral profile of the individual to be shipped.
  - Interactions with other elephants (of same and opposite sex)
  - Any records of aggressive behavior towards other elephants or towards people
  - Type of handling and training the elephant has been used to
  - Response to handlers and to veterinary treatment
  - Current and past use of the elephant (for work, entertainment, etc.)
  - Any stereotypy behavior

A hard copy and disc of the complete medical record should be sent to the receiving institution prior to shipment.

A sample Elephant History Form is provided below

C. Physical examination and medical tests (required prior to the transfer)

1. Complete physical exam by a veterinarian familiar with elephant health problems. This should include a review of all systems. A sample physical exam form and body score chart are provided below.

2. Body weight – actual weight on platform balance or estimated weight using body measurements. Body weight can be estimated in adult Asian elephants by measuring the chest girth immediately behind the front leg and using this formula: **Weight in kg = 18.0 (Heart Girth in cm) – 3336.** The formula is not accurate in young elephants (< 5 years). (Hile 1997).

3. Blood collection
   - Complete blood count (CBC) and serum chemistry panel.
   - Serologic (ELISA) test for elephant herpesvirus if available. Contact Dr. Arun Zachariah in India.

4. Fecal analyses
    - Intestinal parasite screen - Collect 2-3 fecal samples (one sample weekly) and perform direct, flotation, and sedimentation tests.
    - Enteric pathogen screen if any abnormal GI signs.

5. TB testing
    - The intradermal tuberculin test is not accurate and it is not recommended. Culture of respiratory secretions and serological testing are advised.
    - Modified trunk wash (see Abraham 2008; http://www.asesg.org/PDFfiles/Gajah%2028%20Aug%2008.pdf
    - Serological screening using a validated serological test for elephants (such as the ElephantTB Stat-Pak® assay (www.chembio.com). Serial cultures should be collected from elephants that are reactive on this test.

6. Vaccinations

Disclaimer: Vaccination recommendations are empirical. Although scientific studies have recently been conducted for tetanus and rabies vaccines, results may or may not be applicable cross-species or when using products that differ from those studied.

- Tetanus toxoid: Current vaccination (within 12 months) with a commercial equine product is recommended. Follow label instructions for product use (usually 1 ml administered IM). Data are insufficient at this time to determine adequate protective vaccine doses and titers. (Lindsay 2009). In India equine products are not available so human products are routinely used at a dose of 1 ml IM.

- Rabies vaccine: Current vaccination (within 12 months) with a commercial killed rabies product approved for horses should be considered if available. Follow label instructions for product use (usually 2 ml IM). Vaccination with Imrab 3® has induced detectable titers to rabies virus in African elephants (Miller 2009). Every other year vaccination is recommended. Data are insufficient at this time to determine adequate protective vaccine doses and titers. Only dog vaccines are available in India. If a live dog vaccine is used the minimum dose should suffice (follow label directions).

- Other vaccination regimens will depend on regional requirements and exposure risks (anthrax for example). The anthrax vaccination schedule is as follows. Use killed spore vaccine.

Height of elephant in cms	Dose of killed anthrax spore vaccine (mls)
150	1.0
150-180	1.5
180-210	2.0
>210	3.0

Additional Health Considerations

1. Serological screening for EMC (encephalomyocarditis virus). Encephalomyocarditis virus may cause clinical disease and death in elephants. The presence of antibodies does not necessarily denote infection/disease.
2. Urinalysis – fluid and sediment evaluation of clean voided sample; +/- microbial culture.

REFERENCES

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Contacts for further information

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Sample Facility History Questionnaire

Facility:
Address and phone:
Contact person name, cell #/ email address:

1. Disease history

Check the infectious and parasitic diseases that have affected elephants or related species housed in the same facility

☐ Anthrax	☐ Gastric myiasis (Cobboldia)
☐ Elephant herpes virus	☐ Liver flukes
☐ Hemorrhagic septicemia	☐ Protozoa
☐ Foot and mouth Disease	☐ Roundworms
☐ Pox	☐ Tapeworms
☐ Rabies	☐ Trypanosomiasis
☐ Salmonella	☐ Cutaneous filariasis
☐ Tetanus	☐ Lice
☐ Tuberculosis	☐ Ticks
☐ Other (describe):	☐ Other (describe):

2. Mortality history. List the main causes of death in elephants or related species at the facility.

3. Diagnostic and postmortem capacity.

Is there a veterinarian on staff?
If no staff veterinarian, is there a consulting veterinarian?
Are bloodwork or culture performed on sick animals?
Are postmortem examinations performed on animals that die?
Are tissues sent for histopathology?

Elephant Medical History

Elephant name

Facility / Owner

Vaccinations: FMD Y/N Date: Tetanus Y/N Date:

Rabies Y/N Date: Other Y/N (describe) Date:

Exposed to TB positive elephant | Y / N Date:

Diet

Water source

Reproductive status

Females: Cycling ___ Non_ cycling ___ Unk____ Exposed to male Yes / No Bred Yes / No

Males: Active, viable___ Inactive, viable___ Non viable___ Unk___.

Medical problems: Check under Y (within past year) R (resolved)) C (Chronic >3Mo)

General	Y	R	C	Respiratory	Y	R	C	Cardiovascular	Y	R	C
Anorexia				Dyspnea				Anemia			
Ascites				Abnormal discharge				Cyanosis			
Behavior change				Abn respiratory sounds				Hemorrhage			
Pica				Sneezing				Other			
Neoplasia				Other							
Ventral edema											
Digestive	Y	R	C	Musculoskeletal	Y	R	C	Integument	Y	R	C
Colic				Foot abscess				Abscess			
Colic, sand				Fracture				Dermatitis			
Constipation				Hernia				Temporal gland problem			
Diarrhea				Lameness				Wound			
Oral cavity problem				Nail crack				Other			
Parasites				Osteoarthritis							
Tusk disorder				Osteomyelitis							
Other				Other							
Uro-genital	Y	R	C	CNS / Sensory	Y	R	C	Reproduction	Y	R	C
Abnormal discharge				Abnormal mental behavior				Abortion / stillbirth			
Leiomyoma				Ocular problem				Birth			
Urinary tract infection				Otic problem				Dystocia			
Vaginal polyps				Other				Endocrine abnormality			
Other								Musth			
								Other			

Asian Elephant Body Condition Index				
Elephant name		Elephant ID #		
Observer		Date		
Body area	Observation			Score
1.Head: temporal depression *(view from several angles)*	full and convex in outline when viewed from behind, frontal ridge vaguely outlined = 2 points	slightly to moderately concave, frontal ridge defined = 1 point	deeply concave, frontal ridge forms a crater-like rim around the temporal depression = 0 points	
2.Scapula (shoulder blade) *(view from side)*	spinous process not visible, or slightly visible = 2 points	spinous process visible as a vertical ridge with a concavity between the ridge and the posterior edge of the scapula = 1 point	spinous process pronounced and bladeline with the acromial process appearing as a knot = 0 points	
3.Thoracic region (view from side)	ribs not visible, barrel smooth = 2 points	some ribs visible, but the extent and demarcation not pronounced = 1 point	many ribs strongly demarcated with pronounced intercostal depressions = 0 points	
4. Flank area (immediately in front of pelvis) (view from side and behind)		no depression visible, flank bulges outwards in front of the pelvis = 1 point	depression visible as a sunken area immediately in front of the pelvis = 0 points	
5. Lumbar vertebrae (behind ribs and in front of pelvis) (view from behind; an elevated vantage point may be necessary)	not visible, lower back smooth and rounded = 2 points	visible as a ridge; skin slopes away from the top of the ridge; height of the vertebrae does not exceed width = 1 point	visible as a knife-like blade; sides of the spinal ridge are parallel, and the height exceeds the width = 0 points	
6.Pelvic bone (external angle of the ilium) and rump (view from several angles)	not visible (or slightly visible); rump region between ilium and caudal vertebrae filled with tissue (and not forming a depressed zone) = 2 points	visible but not pronounced; the rump is slightly depressed between the ilium and the caudal vertebrae = 1 point	visible but as a jutting bone; rump is a pronounced sunken zone between the ilium and the caudal vertebrae = 0 points	
7.Axillary fat (immediately behind joint of humerus and scapula)	the SQ contains a thick handful of fat, easily seized = 2 points	the SQ contains some fat = 1 point	the skin thin and little tissue palpable beneath = 0 points	
8. Brisket fat (between forelegs at base of neck)	sternum well padded with muscle and fat; bone neither visible nor palpable = 2 points	sternum not visible but palpable = 1 point	sternum both visible and palpable = 0 points	
9.Tail		fat and muscular, not bony feeling = 1 point	thin and bony, feels stringy, individual joints palpable = 0 points	
Total score				
Score:0-5=emaciated, 6-10 = average condition, >10 = fat or very good condition				
(Developed by Dr. V. Krishnamurthy, Dr. C. Wemmer, and John Lehnhardt; Adapted from personal communication, Dr. V. Krishnamurthy, India, 2000. A version of this table appears in Das, D. ed. 2003. Healthcare, Breeding and Management of Asian Elephants.				

Elephant Physical Examination Record

Elephant Name			Age	Sex: M / F		Microchip #
Mahout names						
Eleph Temperament calm nervous aggressive other (describe):						
Exam date				Veterinarian		
Temperature			Pulse		Respiration	
	Normal	Abn	NE	Comments		
General condition						
Behavior						
Appetite						
Feces						
Urine						
Head						
Eyes						
Ears						
Mouth						
Mucous membranes						
Teeth						
Tusks / tushes						
Trunk						
Forelimbs						
Feet and nails - front						
Thorax						
Abdomen						
Hindlimbs						
Feet and nails - hind						
Genitalia						
Skin						
Identifying features						
Scale weight:				**Photos Y / N**		
Est weight in kg = 18.0 (Heart Girth in cm) – 3336.						
= 18.0 ( ) – 3336 =				kg		
Laboratory						
Blood						
EDTA (for CBC)	Y/N					Lab:
Serum (for chemistries)	Y/N					Lab:
Respiratory sample (TB)	Y/N					Lab:
TB Serology Test	Positive	Negative		Photo Y/N		___ initials
Fecal exam	Positive	Negative	Results:			