

Care and Managements of Elephants in temples

Introduction

India has rich biodiversity of flora and fauna. Elephants are to live with pride and self respect in the jungles in company of its own family. On the other hand, elephant is symbolic of our great heritage and culture and has important role to play in the rituals and worship in Hindu religion. It is therefore obligatory for the temple administration to provide all the conditions relating to housing, management, feeding, atmosphere and health cover to these majestic animals for all their sacrifices to live away from nature. Over the decades, elephants in the temples have been wanting attention in housing, feeding, management and health cover. It is believed that several Gods inhabit elephant's body such as Lord Brahma (Creator of Universe) in the forehead, Lord Adityan (Sun God) in the eyes, Lord Agni (Fire God) in the stomach, Lord Krishna in the riding seat, Lord Indra (King of heaven) in the neck, Aswini Devas (Celestial physicians) in the joints and Chandran (Moon God) in the mind and so on.

The main concerns of managerial practices of elephants that need attention are as follows: -

They are chained for 12 to 22 hours a day in stands or stables. Their activity in time based in the day. The choice and quality of food is determined by man, lacking variation and monotonous. The social contacts are minimal and they have stereotypic schedule and life. Animals in musth are kept permanently on chains and the musth period is relatively longer. The social status and skills of mahouts are increasingly low. The use of drugs by mahouts is very common. Accidents are increasingly common.

A recent study on the prevailing status of elephants in temples by an animal welfare organization (CUPA), Bangalore revealed the following: -

- 1) 90% of them were living in enclosures with hard flooring (stone or concrete) and non-natural roof material (concrete).
- 2) 80% of the elephants were provided poor quality of water for drinking and bathing in spite of sufficiently good resources being available
- 3) Poor conditions provided for resting, shade and sleep in majority of locations
- 4) Elephants were usually made to walk on hard surfaces and 77% of them had no continuous training practices. All of them are made to stand for long hours in front of the temple

- 5) 72% of the elephants were given poor quality (not balanced scientifically) food in the form of pulses, carbo-hydrates and roughage
- 6) Routine medical care and treatment was not available and even then the attending veterinarians lacked appropriate knowledge of the health issues
- 7) Most elephants have injuries in the feet, temperamental and behavioural issues and vices due to managerial problems. Elephants are very sensitive animals, conscious of environmental changes and happenings all-around. Rigid and harsh restraint methods and training procedures to keep them under check and control adversely affects its self respect and honour that may lead to man animal conflicts, violence etc.

The aims of this compilation is to document the basics and essentials of housing, management, feeding and health care of elephants to be useful as guidelines to officials and managers in the temples. Expertise has been sourced from subject matter specialists for holistic approach.

Compiled by

Late Dr.V.N.Appaji Rao, M.V.Sc, Ph.D.

General Information on life stages, biological parameters of elephants

Five social classes with different social roles are distinguished with respect to elephants as neonates, infants, juveniles, sub adults and adults. Neonates are the newborn up to the second year of life. Infants are between the age of 2 years to 5 years. Juveniles are between the age of 6 to 10 years. Sub adults are between 11 to 15 years. Adults are older than 15 years and reach the maximum body size.

The optimum age to acquire an elephant for the temple is about 5 to 6 years. Preferably, the animals must be retired at an age of 60 years.

Restraining devices

A variety of devices are used to control elephants. They are cherukol (short stick), valiya kol (long pole), thotti (ankus). The short stick measures 3.4 to 4 feet in length and is about 2 to 2.5 inches thick. The anterior end is rounded and thicker. The mahouts beat the elephant with that end. The stick is made from the branches of a few local trees are used. The mahout must always carry the stick with him while approaching the elephant.

Thotti or hook is 3.5 feet in length and 3 inches thick. One end is rounded and thicker than the rest. To this region, an iron hook is attached. The region above the hook is flat or rounded. The regions above and around the hook are covered with brass. The hook is used to control the animal.

Valiya kol or long pole is 10.5 feet in length and 5.5 inches in thickness. On the rounded end of the pole, a piece of iron projection, of about 1 inch length is present. On the opposite end, a four inch long knife is placed. Sometimes the knife is replaced by a rounded ball, made of iron. The latter inflicts pain but does not cause external injuries. The end which bears the kooru, can cause punctures and open wounds. The valiya kol is meant to be used from a distance i.e. when the elephant does not allow the mahout to come close.

All the above mentioned devices must be used with extreme caution. It requires a lot of experience to understand the appropriate use of these devices. The devices must be used only as a last resort.

Housing

The elephants must be housed on earth or sand flooring in contrast to hard substrates. There should be sufficient shade and must have very good ventilation.

- 1) The animal shall be provided a stable (tethering place) in a clean and healthy environment with sufficient shade to keep elephants during its rest period.
- 2) Each elephant must be ensured a minimum floor area as specified below:-

(i) Weaned Calf (height below 1.50 m)	- 5m x 2.5 m
(ii) Sub-adult elephant (height 1.50 m to 2.25 m)	- 7m x 3.5 m
(iii) Adult elephant (Height above 2.25m) and Cow elephant with un-weaned calf	- 9 m x 6 m

In case of covered sheds, the height of the shed shall not be less than 5.5 m. Corrugated Iron sheets or asbestos when used for roofing should be covered by cooling materials like gunny bags, grass, coconut leaves etc. Proper drainage is a must, in addition to routine clearing of lactate.

Bathing and grooming

A bath is very important to an elephant to clean the body and to help in lowering the body temperature. Mahouts should clean the wounds, sores or swellings during the bath time. It prevents skin and foot infection and improves blood circulation. Elephants that start to work early in the day are washed in the evening. These elephants are given a shower with a hose before work.

Elephants are normally washed in streams or rivers. They are made to lie on one side in the water and ordered to stay still. The mahouts sprinkle water on the elephant and begin scrubbing the body with coconut husk. The entire body has to be scrubbed clean by forward and sideways movements. Nails and the skin around the nails are trimmed. Coir brush or coconut husk is to be used for brushing.

Animals should not be bathed or watered in the same place. Wallowing in water should be encouraged. The bathing area should be free from muddy slush or rocks. At least two mahouts must be present. Mahouts must be aware of movements of limbs of the elephants, otherwise elephant might accidentally crush someone's feet.

The guidelines for bathing an elephant are as follows: -

- 1. The mahout must carry at least a small knife on him, for self-defence. In addition, a stick and hook must be accessible to the mahout at all times. Some elephants may be nervous about entering unfamiliar water bodies. It is up to the mahout to use his ingenuity to get the elephant to the water.**
- 2. The mahout must leave one chain fastened to the elephant's hind leg, like a trail chain, even in water. This makes it easier to anchor the elephant, if it tries to bolt, which could result in serious injury**
- 3. The mahout must have at least one other mahout assisting him while washing the head and tusks, the elephant may try to attack the other mahouts-causing serious injury**
- 4. The mahouts must be aware of the movement of elephant's feet under water. The elephant could accidentally crush someone's feet**
- 5. The mahout must be careful not to get entangled in the chain, when the elephant moves or stands up. This could result in serious injury**
- 6. Washing the belly, while the elephant is lying down, is usually risky. The mahout has to stand between the fore and hind legs of the elephant. He may get trapped between the legs and can drown, if the elephant rises abruptly**

The process of grooming is exhausting for the mahouts. The grooming activities need to be encouraged because the scrub-bath can also be considered as an opportunity for the mahout and cavadi to develop personal bondage in an effective manner between elephant and man. In this regard, it is to be noted that the bathing activity helps this mega-herbivore in following ways: -

- There are lesser chances of skin and foot infection due to the monitoring activities during grooming or scrub-bathing
- Cleans the body from mud, urine stains and dung stains
- Helps in relaxation of the body system because it was observed that the elephants spend lots of time in water while in the wild
- Helps to avoid the external parasites
Both the mahout and cavadi must work together during the bathing and grooming activity in camp elephants
- Improves cutaneous circulation

Estimation of body weight

The live body weight of any elephant can be estimated using the following formulae: -

$$W = 12.8 (Cg + Ng) - 4281 \text{ (or)} \\ 4152 + 14.76 \text{ cg} + 8.84 \text{ ng}$$

Where

W – Weight in Kg

Cg - Chest girth in Cm

Ng – neck girth in cm

Estimation of height

$$H = 21.04 + 1.77 \text{ CF}$$

Where

H – Height in cm

CF – Circumference of front foot in cm

Nutrient requirements

An adult elephant in maintenance requires 140 kcal of metabolisable energy, lactation, gestation and growth increase the energy requirement by 25-50 percent.

Water

An elephant drinks over 100 litres of water at one time and up to 225 litres in a day. When surface water from ponds, lakes, rivers etc is not available elephants dig holes using their trunk and fore feet and drink the water that seeps into the pit.

Forages

Sugarcane / green fodder (grasses)	- 150 to 200 kg
Dried fodder (hay)	- 15 kg
Tree fodder / palm leaves	- 60 kg

Concentrate feed

Ingredients	Adult		Calves
	Work	Rest	
Wheat/rice/ragi	9 kg	5 kg	2.5 kg
Horse gram/oilcake	1 kg	1 kg	500 g
Jaggery	500 g	300 g	500 g
Salt	200 g	100 g	100 g

Note: Since the temple elephants have minimal movements and sedentary life, they can be given concentrate rations as prescribed for 'Rest' animals.

Practical feeding tips

- Tree fodder that could be fed includes branches of peepal, banyan, jack, zizhyus and acacia. In addition bamboo and palm can also be offered. Elephants also relish sugarcane, coconut, pineapple, jackfruit, melons and other wild fruits.
- Fruits should be offered in cut pieces to prevent oesophageal obstruction
- Excessive geophagia can lead to obstructive colic
- Separate container must be used for providing concentrate to each elephant
- To minimize competition and prevent wastage, one hayrack is to be provided for every three elephants
- Feeding routine should be adhered strictly and sudden changes should be avoided

- During cold days concentrate is to be fed in the evening to prevent hypoglycemia
- Forages must be fed fresh before and after periods of work activities.

Chains

Elephants may be tame or docile, but in captivity they require chains. Chains make it easier to fasten an elephant that has bolted or is out of control. They are a precaution against any accidents, damage to property and loss of life. While tethering, one chain is fastened on to one of the hind legs and the other to a tree or solid object. If an elephant is mischievous, one of the hind legs is also fastened to an object in front of the elephant. The chains should not be too tight. The hook on the chain must further be strengthened by using a small piece of plastic rope or fibre. The knots must be strong, so that the elephant is unable to open it with its trunk tip. The same chain can be used as a body chain, while the elephant is walking. One end stays on one of the hind legs and the other goes around the body. The hook on the loose end of the chain, is tied loosely to one of the links. If the chains are fastened too tightly, the elephant will not be able to walk. When the elephant bolts or goes out of control, it makes it possible for the mahout below, to snap the chain. The mahout on top can push the chain down to trail on the ground. On finding a suitable tree or post, the mahouts should try to fasten the chain.

Elephant chains should be strong and flawless. The tethering chains should be $\frac{1}{2}$, $\frac{5}{8}$ or $\frac{3}{4}$ th inches in thickness and 21 feet in length. Hobbles should be 11 feet in length. The rope around the neck is 21 feet long and is doubled while tying around the neck.

In order to prevent injury to skin, we may alternate the legs. In addition, it is ideal to enclose the chain around the foot in a thick (0.5 to 0.8 cm) polypropylene hose pipe, so that the chain will not be in direct contact with the skin.

Norms and Standards for Transportation

- 1) For transportation of the elephant, necessary permission from the Chief Wildlife Warden or any other officer authorized by the Government in this behalf shall be obtained as provided under section 48 A of the Act;

- 2) A valid health certificate from a veterinary doctor to effect that the elephant is fit to travel by road or rail, as the case may be, and is not showing any sign of infectious or contagious disease shall be obtained in the form given in Appendix I**
- 3) In the absence of such a certificate, the concerned shall refuse to accept the consignment for transport**
- 4) The elephant shall be properly fed and given water before loading**
- 5) Necessary arrangements shall be made for feeding and watering the elephant en route;**
- 6) No elephant shall be made to walk for more than three hours at a stretch**
- 7) While transporting elephants by walk during nights, two prominent reflectors shall be placed at the front and hind portion of the elephant**
- 8) No elephant shall be made to walk more than 30 kms a day and any transportation for more than 50 kms shall be carried out in a vehicle**
- 9) Trucks with length less than 12 feet shall not be used for carrying elephants except calves (height below of and 1.50 m)**
- 10) One truck shall not be used to carry more than two weaned calves (height below 1.50 m) or one elephant with one un- weaned calf or one adult/sub-adult elephant (height above 1.51 m)**
- 11) At least 12 hour rest should be allowed to elephants for every 12 hours of journey by trucks**
- 12) Cow elephants in advanced stage of pregnancy should not be transported by trucks**

- 13) While transporting elephants by rail, an ordinary goods wagon should not carry more than three adult elephants or six calves on broad gauge, or not more than two adult elephants or three calves on meter gauge, or not more than one adult elephant or two calves on narrow gauge
- 14) While transporting elephants by truck or train, care shall be taken to maintain constant speed avoiding jerks and sudden stops and ensure shocks and jolts to the minimum
- 15) Each truck or wagon carrying elephant should have at least the two attending are familiar persons including the mahout.
- 16) Sedatives, if necessary, shall be used to control nervous or temperamental elephants only as prescribed by the veterinary doctor

Nutritional Diseases in captive elephants

Rickets

Occurs due to calcium and phosphorous deficiency. Clinical signs include lameness, swollen tibio-tarsal joints of rear legs. One gram of calcium and 0.5 g phosphorus / kg of concentrate feed intake can be offered to correct this condition. The veterinarian may be consulted for the appropriate brand of mineral mixture to treat the condition.

Hypocalcemic tetany

Occurs due to vitamin D deficiency in elephants which are housed indoors. Clinical signs include stiffness, nervous symptoms, eye twitching, uncoordinated movement of trunk and pharyngeal paralysis. Treatment is administration of calcium boro gluconate through the vein in a careful manner by the attending veterinarian.

Anemia

Occurs due to chronic iron deficiency or other constituents of blood. Clinical symptoms include weakness and pale mucous membranes. Administering ferrous sulphate may correct this condition. The attending veterinarian can suggest suitable to treat anaemia based on laboratory tests.

Zinc deficiency

Leads to skin abnormalities. It can occur due to excess calcium supplementation. Feeding of tree barks and tree fodder can correct the deficiency.

Musth in elephants

- **Musth is a physiological phenomena occurring annually in male Asian elephants**
- **Occurs more regularly in well nourished and healthy animals between the age group of 21-80 years**
- **Duration of musth ranges from 3 weeks to 3 months**
- **Moda (or) Juvenile musth is observed in the age group of 15-20 years**

Musth occurs mostly in the cold season, the month of December. Musth period is divided into three phases – pre-musth, mid-musth or violent musth and post-musth. Musth is a very dangerous period for handling. Elephants become aggressive and become out of control and cause damage to life and property. Musth management in captivity, has always been a problem. However, by taking some precautionary measures, it is possible to overcome this problem. Some measures are discussed below.

It is essential to chain or restrict the elephant's movements during musth on account of the violent behaviour. The chains have to be tested for their condition. The musth elephant is chained both by the hind and front legs. One of the fore legs is chained to any tree or a pillar in the front. This arrangement makes it safer for the mahout. He can approach the elephant from behind, to clean the tethering area and also to move the chain from one leg to another.

Elephants may pull and fiddle with their chains during musth. They do not do this when they are not in musth. Therefore, special musth chains must be used. It is ideal to use a chain or fetter with 7/8" diameter links. The chains also must be fitted with "U" shaped clamps with strong screws. There must be a distance of 2 feet, 60 cms between the tethering pole and elephant's hind leg. The chains and fastenings must be double checked.

It is also sensible to keep spare chains for emergency. A circular loop called the thirukanni (a ball and socket like joint) should be present on the chain. This allows the chain to twist without breaking.

During musth, elephants have to be chained for long periods, until it becomes safe for mahouts to handle. Thus the elephant may develop chain sores from prolonged chaining. Mahouts must attempt to move the chains up and down the leg, with a long pole. He must stand behind the elephant to do this. It may not be possible to do so with every elephant, as some may grab the stick or charge at the mahout. So chain sores, during musth, are inevitable. Some elephants on the contrary, remain docile and allow chains to be transferred from one leg to another.

The mahout must check the strength of the tree to which the elephant is to be tethered. The surroundings must be clean and hygienic. The tree must be large enough to provide plenty of shade.

Elephants must be left alone during musth. They are agitated by the slightest noise, from traffic or people.

A water tank, with constant supply of running water, must be provided. It must be placed at a distance reachable to the elephant's trunk. The tank must not be too close to the elephant, as it may destroy it.

The elephant must be showered with water at least once a day, to cool it.

The tethering site must be on a slight incline to facilitate drainage of urine and dung.

The mahout must be present in the vicinity, throughout the musth period.

Pre-musth symptoms

- ❖ Engorgement of temporal glands**
- ❖ Discharge observed at the temporal gland openings. This initial discharge is a dirty brown, viscous fluid, with a strong smell. This fluid may sometimes block the temporal opening or the opening may be too small to allow free flow of fluid. Both these conditions, are very uncomfortable to the elephant. It may scratch the region with a twig or any other sharp object. This may injure the area and cause an abscess. The gland on that side may stop secreting fluid and will have to be operated.**

On noticing signs of discomfort due to blockage, the mahout must assist the flow, by squeezing out the fluid.

- ❖ The perineal region, below the tail, enlarges. This is a very obvious symptom
- ❖ The penis will emerge to its full length and elephant will masturbate frequently. The penis strikes against the stomach, resulting in ejaculation of seminal fluid. Sometimes the penis emerges in to its full length and trails on the ground. The mahouts may have to prop it up with a cloth to prevent abrasions.
- ❖ Urine dribbles constantly
- ❖ Elephant exhibits a tendency to gore any moving or non moving object that catches its attention. There is an intense feeling of vengeance towards mahouts. The assistant mahouts must be careful while approaching the elephant. Many ignorant mahouts are unaware of the danger. They get killed or severely injured, while approaching the elephant during this period.

Mid or violent musth symptoms

Initial phase of violent musth

- ❖ The secretion of fluid is slow and it is viscous in nature
- ❖ Behaviour continues to be unruly. It disobeys commands and will reach violently on hearing mahout's voice
- ❖ The body is stretched, taut and stiff. The trunk is extended forwards as if reaching out for something. The ears are spread out as if listening intently for sounds

Middle phase of violent musth

- ❖ The temporal fluid flows faster (like tear drops) and has a pungent odour like that of gun powder and can be recognized from a distance
- ❖ Some elephants may have a red colour around the temporal region
- ❖ Behavioural continues to be aggressive. The trunk is beaten on the ground as an indication of discontent and anger
- ❖ Tendency to pull more violently at chains and tethers
- ❖ Lack of appetite. Some elephants are offered palatable foods like banana and curd rice during these times

Final phase of violent musth - This phase may last for a month

- ❖ The glands reduce in size and the flow of the musth fluid subsides
- ❖ Normal urination with protrusion of penis
- ❖ The elephant becomes less aggressive and violent and may even start obeying commands

Post Musth – This is the final stage of Musth

- ❖ The gland is regressed and flow of fluid stops completely
- ❖ Urination is normal
- ❖ The behaviour reverts to normal

Mahouts must be continue to be careful while handling. The elephant must have restraining chains on its body, while being moved around, right after musth.

Musth Management

- Must be strongly chained (with pads) with one of its foreleg and opposite hind leg with a strong object
- Left alone, should not be excited
- Provide adlibitum drinking water

HEALTH PARAMETERS

Signs of health in elephants

- ✓ Frequent movements of extremities
- ✓ Free passage of dung and urine
- ✓ Apparently normal feeding and watering activities
- ✓ Free movements of the body
- ✓ Absence of abnormal posture or appearance

Signs of illness in elephants

- ✓ Reduced movements of tail, ears, trunk and legs
- ✓ Less alert
- ✓ Partial closure of eyes
- ✓ Changes in the frequency of urination
- ✓ Changes in watering behavior
- ✓ Development of edema

- ✓ Anorectic
- ✓ Constipation/Diarrhoea

Signs of pain in elephants

- ✓ Frequent trumpeting or screaming
- ✓ Biting the tip of trunk for a long time
- ✓ Pushing against some object like a pillar or wall
- ✓ Frequent sitting and getting up
- ✓ Frequent changing of limbs
- ✓ Being without obedience
- ✓ Charging with making of sounds
- ✓ Attacking the persons
- ✓ Violently behaving
- ✓ Spreading of ears and hissing like sounds
- ✓ More alert/anxious appearance of the eyes and unpredicted movement patterns

Elephants regardless of the type of management may suffer from enteritis and colic conditions. Particularly, it is more apparent with captive elephants reared in temples and elephant camps. The problems are dealt in nut-shell, here.

Sand/mud consumption in elephants

The sand consumption has been reported in both calf-elephant and adult-elephant.

Causes

1. Easy availability of fine sand
2. Nature of instinct for remedy for the relieving of digestive problems
3. Pica due to mineral deficiency
4. Boredom and lack of avenues or opportunities for physical activities
5. Irritation in the gastro-intestinal tract

Symptoms

- **Dullness**
- **Diarrhoea with sand particles in the dung and one can feel the consistency of sand by filtering the dung and examining the filtrate.**
- **Observation (at a distance) of elephant which may be often found digging the earth, with limbs and eating of sand**
- **Encountering of pits with tying of resting places of elephants**

Diagnosis

- **By above signs**
- **Report from mahout**
- **Clinician's observation for a long time about animal's activities**
- **By examination of dung using sieves or filters or with more care and analysis**
- **Seeking of indirect evidence like dug-out pits on earth, sand etc**

Causes of Diarrhoea

- **Hyper secretion of bile**
- **Dietetic causes**
- **Factors causing colic**

Signs of Diarrhoea

- **Excitement and Restlessness**
- **Dullness esp. in later stages**
- **Grinding of teeth and ceases to feed but has no pyrexia**
- **Passing of dry and scanty digesta**
- **Diarrhoea with or without blood in severe worm problem**
- **Certain times, mucus mixed fluid excretion intermittently**
- **Frequently sitting and raising; grooming from side to side**
- **Moving the legs apart**
- **Frequent attempts to defecate but the attempts are often not successful and become the blind attempts**
- **Kicks at the belly frequently and frequent trumpeting**
- **Standing in paroxysms**

Colic (abdominal pain)

Causes

- Eating of large amounts of sand material (pica/natural relief/saltlick consumption)
- Drinking large amounts of cold water especially by the fatigued and exhausted elephants
- Elephant exposed to severe cold and wet seasons
- Unaccustomed type of feed/poor quality feeds
- Over eating of feed materials
- Endo parasitism (fascioliasis, cestodiasis, helminthiasis)

Symptoms of colic:

- ❖ Reduced water intake and loss of appetite
- ❖ Tendency to eat mud, chewing bark from trees
- ❖ Drowsy appearance and motionless for a long time
- ❖ Mucoid coating absent on the dung. It appears rough and dry, from eating dry fodder. Dry fodder does not contain water essential for metabolic activities
- ❖ Stomach rumbles, probably due to improper digestion and gas formation
- ❖ Size of the dung is smaller than usual. It continues to get smaller, as the condition becomes chronic
- ❖ Swellings may be seen on the feet, brisket and the stretch areas of the body
- ❖ The trunk is twisted often, as if to expel mucous or gas. This is accompanied by coughs.

Local remedies

1. On observing initial signs of colic, mahout must coax the elephant to drink more water. This is to prevent dehydration. Salt water is ideal. A few gms of fried Crystalline salt may be added to a bucket of lukewarm water. An adult elephant may be given water containing 150 gms of salt. The quantity must vary according to the elephant's size. Excessive salt is also dangerous.

2. Lemon grass oil (*Cymbopogon flexuosus*) is a natural medicine, sought by elephants themselves in the wild, as well as in captivity. A loaf of bread soaked in 30 ml of oil, can be fed to the elephant.
3. Branches and leaves of murikku (*Erythrina indica*) can be provided.
4. A herbal mixture can be prepared. The ingredients are – Wild ginger, small, green chillies, crystalline salt, garlic and fried mustard seeds. They are ground in to a paste and placed inside the elephant's ration or concentrate feed. This paste induces the elephant to drink water and further facilitating dung expulsion. Mud consumed during early stages is also expelled along with the dung.
5. A mixture of hot ash and human urine, can be used for a hot compress, to treat swellings during colic
6. Asafoetida relieves discomfort caused by accumulation of gases, in the stomach. 75 to 100 gms can be fed along with concentrates i.e. rice, only during the early stages of colic. It should not be administered during chronic stage as it absorbs water from the body. Asafoetida can be administered after novu also. 220 gms of fried and powdered asafetida can be mixed with concentrates on a weekly basis
7. Wild ginger is also a powerful medicine for stomach ailments

Care during colic

Colic if ignored, will lead to a chronic condition called black colic and invariably the elephant would die. During colic, elephants must be given complete rest. The above mentioned remedies must be practiced only under the guidance of an experienced mahout. If the condition continues to persist, mahouts must seek veterinary assistance.

INJURIES OF THE FEET

Scars, ulcers and wounds are easily detectable on the elephant skin, their cause however, is often difficult to diagnose. Scars appear whitish or flesh coloured throughout the life of the animal, because the skin no longer contains dark pigments after wound healing. These scars can be the result of wounds caused by chains, the ankus, knives, calluses induced by lying on hard ground or boils generated by filarial parasites. Injuries to the feet are the most frequent of all medical problems.

Wounds, abscesses, chain scars and split hooves appear more frequently on the hind feet than on the front feet. Grooves appear more or less equally on front and hind. These findings suggest that the hind chains execute more pressure on the skin as is confirmed by direct observations. An elephant pulling on its chains will try to escape forwards and not backwards. In addition, the hind legs stand on wet ground drenched with urine and fouled with faeces more than the front feet.

Bulls appear to have more crack and fissures grooves, more scars, abscesses and wounds on their feet than females. This is probably a result of them being exposed to more rigorous constraining methods and longer periods of standing chained due to musth than females are.

Abnormal postures are caused by false, constantly one-sided chaining and the resulting non-physiological angles of the joints. The result is knocked-knees with unnaturally inverted feet, and often unnaturally formed, very long hooves. In some extreme cases abnormal postures finally result in deformed limbs. The studies probably may reveal that deformed limbs are more frequently in bulls than in cows, and more frequently in animal which are underweight than in animals with normal weight.

Apart from the wounds caused by chains on neck, feet and wrists, these findings suggest that most scars and abscesses are not the result of inflamed calluses or filarial boils. Rather they were caused by mechanical injuries actively administered by the mahout with knife and ankus. Bulls, which are considered to be more aggressive towards humans, possess nearly three times as many stab wounds caused by ankus and knife than the case with femelus.

The indifference which mahouts, elephant owners and other so called elephant friends towards these easily visible and recognizable skin injuries and illnesses is striking.

Foot rot - symptoms

- ❖ The elephant rubs its feet together or rubs its against a tree or hard surface
- ❖ Wounds are visible around the feet. The skin appears rough and coarse around these wounds
- ❖ Pus filled sores or swellings can be seen between the nails. These swellings enlarge and erupt to form wounds

- ❖ **Infected foot or feet can be soaked in medicated water for a while before the application of other medicines. This provides a relief to the elephant. The tethering area must be maintained neatly.**

Foot care in elephants

In general, the nails coated with following recipe is found very useful as per the versions from cavadis and mahouts.

- Resin of Gardenia species (Woody climber) - 100 gms**
- Camphor - 100 gms**
- Garlic - 100 gms**
- Neem oil - 1 L**

Note:

Crush the garlic after peeling and mix it with Gardenia resin, Boil it in Neem oil on slow fire for about half an hour. At the hot condition itself, keep the contents out of fire and add camphor and use this as a stock solution. One litre per animal per month will be adequate for meeting the needs (applications on and around the nail regions and at the insertion points of tushes or tusks).

Since neem oil has excellent lubricant and antiseptic actions as also has a good fly repellent actions. However, mahout should be advised that any cracks in nails or wound in foot-pad region should be brought to the notice of veterinary doctor and this will greatly help in avoiding the development of septicaemic condition involving the foot region. It needs to be emphasized that the foot care measures need to be carried out, more intensively in case of captive elephants at zoological parks or at temples, since they often lack adequate exercise.

In order to facilitate formalin based foot bath, use 1 kg of nicely powdered husk or saw dust placed in a gunny bag and soak it in steaming hot water (80 C) and pour about 50 ml of formaldehyde and now, this can be applied under foot pad by tying around leg, in order to facilitate the hardening of foot pad structures in elephants.

Eyes – Injuries and Diseases

The eyeball of an adult Asian elephant has a diameter of about 40 mm and is therefore nearly identical to that of humans. Upper and lower eyelids, supported by cartilaginous tarsal plates, as well as very long eyelashes guard the eye. The lachrymal gland is replaced by the Harderian gland, which opens on to the nictitating membrane, or third eyelid. This membrane is moved by a cord of the orbital muscle, which is typical in elephants. The lachrymal duct is vestigial and non-functional. At the medial corner of the eye, one can frequently observe a certain amount of fluid. If this amount increases, this develops into a modest to extreme serous exudate, which runs down a groove in the skin from the median corner of the eye and finally ends in a dry mass.

The field of vision of an elephant is impaired by the massive forehead bulges and supra orbital crests, especially with lowered head. Its vision does not differ much to that of a horse and does not decrease in dull light. However, direct sunlight very obviously reduces its vision. The round pupil is generally a mammalian feature of adaptation to shade. The eyes are relatively prominent, i.e. lie far in front at the orbital fossa, which could be a predisposition for traumas in dense bush land.

The elephants are extremely sensitive to strong sunlight. Therefore, working elephants have to stand in the shade during midday.

Keeping of tame elephants on dirty ground, brutal blows on the eyes, false or inadequate nutrition as well as the absence of shade during the hot sun are predisposing and triggering factors for eye diseases, which sooner or later can lead to total blindness.

Glaucoma

Glaucoma is defined as excessive pressure inside the eye. The eye is full of a fluid called the aqueous humor, which is constantly produced and drained away from the eye and supplies nutrition for all interior structures. Glaucoma is caused by a decrease in the amount of fluid that flows out of the eye.

Corneal ulceration

The cornea is the front clear part of the eye and is covered with a clear epithelium. The corneal epithelium is like our skin except that it is clear and smoother. If the corneal epithelium is scratched, scraped or

rubbed off, the resulting defect is called a corneal ulcer. This condition is painful and animals with ulcers often squint and rub at their eyes. A corneal ulcer can be a sight threatening emergency, if it deepens or becomes infected.

Cataracts

A cataract is opacity of the lens of the eye. The lens is behind the iris (the brown or blue part of the eye) and can change its shape allowing animals to see close objects. In front of the lens is a clear fluid, called aqueous humor, and behind the lens is a clear gel, called the vitreous humor. The vitreous helps keep the retina attached. The retina is a layer of cells that functions in a manner similar to the film in a camera.

Wounds, Scars, Ulcers, Abnormalities of the Limbs

The hygienic conditions under which many working elephants are deplorable. Permanent chaining of non-working animals and frequent participation in processions, during which both front feet and hind feet are more or less tightly shackled together, cause skin abrasions and wounds, which generally do not heal well in elephants due to the comparatively poor blood circulation in skin. False mounting of foot chains result in deep abrasion and cut injuries which causes more or less severe inflammations of the deeper tissue layers.

Haemoprotozoa

Trypanosomosis - 'Surra'

The disease surra is common in working elephants in the forest area. Noticed mostly during raining season and is transmitted mechanically by biting flies.

Clinical symptoms

The disease is characterized by rise of body temperature at the onset of disease, anorexia, dullness, restlessness, sleepy mood, reluctance to work, edema on the trunk, neck, brisket, lower abdomen and limbs, dry and harsh skin and sluggish movements. The elephants become very anemic and dehydrated and may be in emaciated condition. Frothy discharge from the eyes was also noticed in some cases.

Bacterial diseases

- 1. Anthrax**
- 1. Salmonellosis**
- 2. Tuberculosis**
- 3. Tetanus**
- 4. Enterotoxemia**
- 5. E. Coli**
- 6. Pasteurellosis**

Tetanus - symptoms

- ❖ **Loss of appetite**
- ❖ **Inability to move jaws freely or open the mouth**
- ❖ **The elephant may draw water in its trunk, but will be unable to squirt it in to its mouth**
- ❖ **The limbs lose their mobility. The elephant is unable to move or fold its limbs**
- ❖ **They may have occasional spasms**
- ❖ **Due to weakness the elephant is unable to stand upright and falls on to the ground**

There is no treatment for this condition. The condition is brought about due to untreated wounds, caused by sharp objects. The only way to save the elephant is to provide a tetanus toxoid injection as soon as an injury is observed.

Arthritis and Paralysis symptoms

- ❖ **Swellings around the knee portion of the foreleg. The swellings are painful and the elephant drags its legs while walking. The swelling may move upwards on to the brisket region.**

The condition is brought about due to uncontrolled use of restraining devices, especially the long pole. A combination of Allopathic and Ayurvedic provide the most effective treatment.

Viral diseases

1. Elephant pox
2. Foot and Mouth disease (FMD)
3. Herpes virus
4. Encephalomyocarditis virus (infectious to humans)
5. Coryza like syndrome
6. Rabies

External parasites

Tick infestation

Treatment

Four species of ticks viz., *Boophilus ammulatus*, *Haemophysalis spinigera*, *Rhipicephalus*, *haemaphysaloides* and *Ornithodoros savignyi* are commonly observed.

Louse Infestation: The elephant louse, *Haematomyzus elephants* cause itching, dryness of the skin and scale formation on neck, ear flap, abdomen and tail tip. Frequent rubbing of the body against trees or other hard objects and striking the tailtip are noticed in severe cases. Dipping of tail tip in 1% sumithion solution or its wash on the parts of the body is effective.

Endoparasites

Fascioliosis

It is caused by *Fasciolo Jacksoni*. It occurs in bile duct. The common clinical signs include digestive disturbance, anaemia, anorexia, edematous swelling and dry skin.

Strongylosis

Elephants are commonly infected with strongyle nematodes

Cestodiasis

Causative agent – *Anoplocephala manubriata*. It is generally found to be more in elephants tethered in permanent campus.

COMMON INJURIES AND FIRST AID

Bleeding injuries

- Cold pack application of ice cubes on bleeding wound leads to contraction of smaller blood vessels, thereby slowing the blood flow
- Apply pressure bandage using clean cloth or preferably surgical gauze and the application of pressure on the bleeding surface of skin will be one of the better ways to control the bleeding.

Maggoted wounds

- Apply turpentine oil, if you sight maggots remove the maggots with a blunt forceps, to the possible extent.
- Then, consult a veterinarian for proper and systematic treatment.

Fresh eye injuries

Apply chloramphenicol opticaps by cutting open the end and squeezing the opticaps.

Fresh wound with cut edges on skin

- Apply povidone iodine solution frequently (4 or 5 times a day) by using a cotton pad for five to seven days.
- However, if the wound is large, approach the veterinarian.

Mosquito bite marks on skin

- Some times, reddish colored bite marks will be seen as if petechiation on skin, especially in the lower abdominal regions.
- Apply povidone iodine solution on these spots to avoid any bacterial infections.

Wound in laminae of the foot

- **Apply 2 % formalin as formalin foot bath over the lesions (For preparation of this, pour 2 ml of the commercially available formaldehyde solution into a vessel with 98 ml of clean and lukewarm water) of the foot.**
- **Application shall be carried out once in two days for three times in a week.**

Nail injuries

- **Apply povidone iodine solution or any other antiseptic solution, over the cut end.**
- **Take care to avoid the contamination of the area by mud or sand.**
- **Antibiotic ointment may also be used, subsequently.**

Cracked nails

If any cracks are noticed on nails, using a small sized metal scrubber, try to even the surface of split nails, thus reducing the dead space in between the nail-cracks.

Itching

- **If there is severe itching of any particular regions, check for the presence of external parasites like ticks or lice. Lice are mostly seen in the internal and external surface of the large ears of the elephants.**
- **Consult a veterinarian for the appropriate treatment.**

Watery dung or excreta with modified consistency

- **Check for internal parasites, whenever you come across watery dung or excreta with modified consistency.**
- **If you encounter any worm, keep them in a clean bottle and reveal it to the attending veterinarian and approach for the appropriate therapy.**

Vaccination

- **Captive elephants should be vaccinated against Anthrax disease annually. According to the regional endemicity, vaccinations against Foot & mouth disease, haemorrhagic septicemia etc. may be carried out as per the advice of the Veterinarian.**

Deworming

- **Deworming should be done once in every 3 – 4 months by using drugs on rotation as per the advice of the Veterinarian. For better results the deworming needs to be carried out on the first day and repeated after 20 days.**

FIRST AID DRESSINGS AND MEDICINES

Absorbent cotton

Non-absorbent cotton

Bandage rolls 6"

Gauze rolls

Potassium permanganate (crystals)

Zinc oxide

Boric acid (powder)

Salicylic acid (powder)

Petroleum jelly

Betadine solution

Tincture of Iodine

Tincture of Benzoin

Icthyol Glycerine paint

Iodine ointment

Turpentine oil

Formaldehyde

Eye drops

Surgical spirit

Topicure spray

Loxexane spray

Iodine spray

Benzyl Benzoate solution

Antiseptic (savlon) lotions, soaps, dettol soap

Towels

Anti-biotic ointments

Dressing bowls, trays

Scissors, forceps, rasp

**Anti diarrhaels
Anti cotics
Analgesics, antipyretics
Antispasmodics**

A separate cabinet may be provided to carefully store the first aid drugs suggested. The mahouts and even temple staff must be knowledgeable on the common ailments of elephants and the remedies.

ACTS WHICH ARE TANTAMOUNT TO CRUELTY TO ELEPHANTS

The following acts shall be considered as acts of cruelty to elephant and is prohibited: -

- 1) Beating, kicking, over-riding, over-driving, over-loading, torturing or treating any elephant so as to subject to it to unnecessary pain or suffering or being an owner permitting, any elephant to be so treated**
- 2) Employing in any work or labour or for any purpose, any elephant, which by reason of its age or disease, infirmity, wound, sore or other cause, if unfit to be so employed, or being owner permitting any such elephant to be employed**
- 3) Wilfully and unreasonably administering any injurious drug or injurious substance to an elephant or uses drugs or intoxicants to control elephants particularly to suppress musth without proper veterinary advice**
- 4) Conveying or carrying whether in or upon any vehicle or not, an elephant, in such a manner or position as to subject it to unnecessary pain or suffering or cause accident**
- 5) Keeping or confining an elephant, in any cage or receptacle, which does not measure the specifications**
- 6) Keeping for unreasonable time, an elephant chained or tethered upon an unreasonable short or unreasonably heavy chain or cord**
- 7) Using an elephant for drawing any vehicle or carrying an load, more than nine hours a day or for more than five hours continuously without a break or rest or exposure to hot climatic conditions without ensuring enough succulent food and electrolytes**
- 8) Failing to provide an elephant, with sufficient food, drinking water or shelter**

- 9) Abandoning an elephant in circumstances, which will render it to suffer pain by reason of starvation or thirst
- 10) Offering for sale any elephant, which is suffering from pain by reason of mutilation, starvation, thirst, over-crowding or other ill-treatment
- 11) Not providing adequate veterinary care to a sick, injured or pregnant elephant
- 12) Cutting the tusks of a bull elephant too short so as to expose horn cord/pulp
- 13) Forcibly weaning away an elephant calf below 2 years of age from its mother
- 14) Using heavy chains and hobbles with spikes or sharp edges or barbed wires for tying elephants
- 15) Using "peti" (belly band on cow elephants in advanced stage of pregnancy
- 16) Using pad and Nundah of improper size on working elephant exposing its spinal cord to injuries
- 17) Marching a sick, injured or pregnant elephant or a young calf over long distance or for a long duration at a stretch
- 18) Marching an elephant on over-tarred roads or otherwise, during the hottest period of the day and for a long duration at a stretch without rest for religious or any other purpose
- 19) Transporting elephants on trucks of inadequate size or trucks with uneven floor, or tying them in an improper manner – subjecting them to severe jerks during journey by truck
- 20) Transporting elephants in trucks for over 12 hours at a stretch
- 21) Transporting elephants through any conveyance without making arrangement for adequate fodder and drinking water during the journey
- 22) Carrying load on an elephant without proper padding
- 23) Making an elephant carry load unevenly balanced on its back
- 24) Making the elephant to stand in scorching sun for long duration, or put the ceremonial gears or decoration for unreasonably long duration, or bursting crackers near the elephants for ceremonial purposes
- 25) Using an elephant in such a manner so as to cause any injury, over-stress or strain to the elephant for tourism purposes
- 26) Using an elephant for sports and games such as tug-of-war, football etc in such a manner so as to cause over stress or strain to the elephant.

Records to be maintained

- 1) Vaccination record
- 2) Disease and Treatment record
- 3) Feeding record
- 4) Work (Temple related activity) register and
- 5) Movement (Transport) Register

Health Check-up

- Regular health check-up and conditioning is a must for captive elephants.
- Periodic health check-up includes the following: -
 - Physical examination
 - Detailed clinical examination, collection of necessary specimen for laboratory investigation in a veterinary institution wherein facilities for serological examination, faecal examination, urine analysis, haematological and biochemical examinations are available.
 - Evaluation of health status by a team of experts and necessary treatment based on the reports.
 - The annual checkup must include serodiagnostic and biotechnological tests to screen for tuberculosis.

This will provide a overall picture on the health status of captive elephants and will facilitate the authorities to formulate suitable preventive and control measures, in a comprehensive manner.

- The health check-up can be conducted at 4 – 5 different centers in the state twice a year having close proximity to the captive elephants and these places should be away from Wildlife sanctuaries and National parks. In this regard, a committee may be constituted comprising of wildlife experts including Wildlife Veterinarians, experts from academic institutions, Temple authorities, Forest departmental personal etc., to carryout check-up and follow-up in the stipulated period of time.
- The centers will be preferably in cool areas thickly populated with trees, open air, clean and whole some water available and also suitable to house mahouts and the camp staff. The specialist veterinarians and wild life authorities will visit these centers for health status evaluation.

- It is also preferable to rest the animals for a period of 15 days every half year to undertake health checkup and conditioning
- During the health checkup camp of elephants the mahouts will also undergo detailed checkup to be in a fit condition to handle the elephants inclusive of screening for tuberculosis.

Recommendations and guidelines from Animal Welfare Board of India on the Care and Management of elephants in temples

- ❖ It is ideal that temples do not possess elephants since they will be under tremendous psychic and managemental stress
- ❖ If it is inescapable and required by rituals, it is the moral and ethical mandate to provide the required care and management and treat it with the dignity it deserves
- ❖ The elephant should be housed preferably on earthen/mud flooring to prevent stress on the feet
- ❖ It would be ideal to house them in nature amidst trees and greenery
- ❖ It should be groomed, cleaned and bathed regularly at fixed timings in the day
- ❖ It should be provided nutritious concentrate and roughage feed as per standards, as well as clean abundant water to drink. The menu may have variation to avoid boredom.
- ❖ It may be brought in to temple premises only as required by rituals. The practice of making the elephant stand in the temple on hard surface without the purpose of rituals and to beg for money for the mahouts should be totally discouraged by the temple administration
- ❖ The elephant may be provided the walk of atleast 5 km a day preferably on earthen surface
- ❖ The restraint devices should be safe and comfortable. Use of polypropylene hose to encase the chains around the feet will prevent friction and injuries to skin
- ❖ The mahouts must be knowledgeable of the standards of care feeding, management and first aid
- ❖ The elephants and mahouts must have comprehensive health checkup twice a year in the special camps, as well as the rest for 15 days
- ❖ The temple staff must regularly visit the elephant and ensure all facilities
- ❖ The elephants may be examined by the Veterinarian atleast twice a month and record its fitness.

Contributors

1. Dr.V.Krishnamurthy (late), Retd. Forest Veterinary Officer (FVO), TN
2. Dr.M.G.Jayathangaraj, Prof. & Health, Dept. of Wildlife Science, Madras Veterinary College (MVC)
3. Dr.S.Ramesh (MVC)
4. Dr.K.S.Subramanian (MVC)
5. Dr.A.Senthil Kumar (MVC)
6. Dr.Pathan Nazrullahkhan (MVC)
7. Dr.S.R.Srinivasan (MVC)
8. Dr.S.Abdul Basith (MVC)
9. Dr.C.Balakrishnan (MVC)
10. Dr.K.Senthil Kumar, FVO, TN
11. Dr.N.S.Manoharan, FVO, TN
12. Dr.N.Kalaivanan, FVO, TN
13. Dr.R.Satyamoorthy, (MVC)
14. Dr.C.Ramani, (MVC)
15. Dr.V.Purushothaman (MVC)
16. Compassion Unlimited Plus Action, Bangalore
17. Dr.Jacob V.Cheeran
18. Dr.K.C.Panickar
19. Shri Ashish Srivastav, IFS
20. Dr.K.Radhakrishna Kaimal
21. Smt Prema Veeraraghavan
22. Pragadeeswaran

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