Appendixes

Recommendations to veterinarians

Knowledge of the techniques which veterinarians use to treat and diagnose the diseases of animals does not differ greatly, whether talking of dogs, cats, swine, horses, cattle, or elephants. Therefore, even a veterinarian with no prior experience of looking after and treating elephants can still help elephants, at least with some preparation first. Before treating an elephant you should make several preparations as follows:

- The veterinarian should gather full details about the specific **location and history** of the elephant in order to plan for travel, for treatment, and for preparing the right drugs and instruments.
- The veterinarian must prepare complete **drugs and instruments** because usually the elephant is far from roads and human settlements and getting to it sometimes requires 5 or 10 kilometres of walking. If something has been forgotten or the drugs and instruments are incomplete, then time is lost and the results are less than they should be.
- The **site for treatment** must have a tying post or a tree so as to immobilize the elephant. The area must be smooth and flat, hard, not slippery, and with no holes or stones which can cause slipping or tripping of the veterinarian when the elephant struggles or becomes uncontrollable.
- The veterinarian should wear very simple, unencumbered clothing for convenience and for avoiding harm should the elephant make a surprise attack during the treatment.
- There should be an **assistant**, such as a mahout or somebody very familiar with the elephant or somebody who can control it, because when the veterinarian is working, the elephant is likely to try to flee or to hurt the veterinarian or nearby people.
- Before the veterinarian enters to inspect or treat the elephant, he must be certain it is under **control and restraint**. There must at least two mahouts or people to assist in controlling the elephant, one person in front, in the case of full-grown elephants. (Beware of the elephant's trunk, tusks, and front legs.) The second person is behind to watch over the tail and the hind legs.

- After the veterinarian has treated the elephant and **before returning home**, if he is unable to return to provide further treatment and inspection, he must give the owner or the mahout the drugs (and instruction on their use) needed for full recovery. The veterinarian should also arrange for the mahout to call him with periodic reports.

Besides these general recommendations, the veterinarian must necessarily know how to approach and work with the elephant.

How to safely approach an elephant

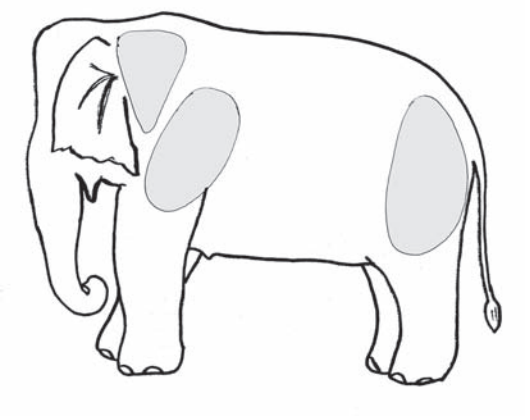
When an elephant is sick, the veterinarian must consider that it is an animal which is large, strong, clever, and agile. An elephant is dangerous and can very easily use various body parts, such as its trunk, tusks, tail, feet, and even its mouth to cause injury or even death to the person treating it.

- If the elephant can be made to couch or to lay on its side during inspection and treatment, that will be much safer.
- Before getting close to an elephant, it is best to signal that you are approaching, such as making a sound or walking in slowly from the side, where the elephant can see you.
- Notice the elephant's behavior before getting close. If it has its ears folded to its head or if it appears to be staring at you, do not approach. If the elephant is moving its ears, swinging its tail, or if it turns its rump to you, that means its mood is normal.
- Do not approach elephants from the front.
- Most elephants have been trained to, and are accustomed to, receive the mahout for mounting on the right side. Therefore, if it is necessary to approach the elephant from the left, ask the mahout if this is possible.
- Do not approach an elephant from a direction where it cannot see you, for example, the side where it has a blind eye or from the rear.
- The safest place to be is on the side, near the elephant's front legs.
- If it is necessary to work from the rear beware of the tail and the hind legs. Working on the front, be aware of the front legs.
- Be as careful as you can be because elephants are big and can move very quickly. When your work is done, withdraw as quickly as possible.
- When approaching an elephant, keep the side of your body towards the elephant.

Techniques for giving medication for veterinarians

You can administer medication using many methods: orally, rectally, intramuscularly, and subcutaneously. Administering eye drops and collecting samples are also done much as with any other animal.

Intramuscular injections can be given in the muscles of the shoulder, the rump, and the top of the neck as pictured.



- Use a needle between 1.25 and 2 inches long; numbers 16, 18, and 20 are all good.
- Clean the area to be injected with a disinfectant.
- With the back of your hand, strike the area four or five times.
- Insert the needle into the muscle.
- Slowly inject the medicine until it is all gone.
- Gently massage the area so as to distribute the medicine.
- Clean the injection site once again with a disinfectant.

Subcutaneous injections are for absorption under the skin, such as the antiparasitc Ivermectin, saline solutions, etc., where the elephant will absorb the drug very slowly. Subcutaneous injections often show swelling in the area injected. Behind the front leg and the side of the neck are the best areas, as pictured.

- Use a needle between 1.25 and 2 inches long; numbers 16, 18, and 20 are all good.
- Clean the area to be injected with a disinfectant.
- With the back of your hand, strike the area four or five times.
- Pull up the skin and insert the needle.
- Slowly inject the medicine until it is all gone.
- Gently massage the area so as to distribute the medicine.
- Clean the injection site once again with a disinfectant.

Intravenous injections are given in the back of the elephant's ear because the skin there is very thin and the vein is very easy to see.

- Use a needle between 1.25 and 2 inches long; numbers 16, 18, and 20 are all good.
- With a disinfectant, clean the area of the vein behind the ear.
- Press the vein very lightly and insert the needle.
- Slowly inject the medicine until it is all gone.
- Gently massage the area so as to distribute the medicine.
- Clean the injection site once again with a disinfectant.

Taking blood samples uses the same methodology as giving intravenous injections, but before sucking the blood into the syringe press on the vein for about 1 to 2 minutes in order to allow enough blood to back up as is desired for the sample.

Table 1: Elephant food

Scientific name	Common name		Part(s) eaten
	English	Thai	
Ananas comosus Merr.	Pineapple	*Saparod*	Fruit and leaf
Arundinaria pusilla A. Chevalier & A. Camus	-	*Yaa peg*	Leaf and stem
Arundo donax Linn.	Spanish reed, Giant reed	*Aw*	Leaf and stem
Bambusa spp.	Bamboo	*Mai phai*	Leaf, stem, shoot
Benincasa hispida Cogn.	Wax gourd, White gourd	*Fak khiow*	Fruit
Brachiaria mutica (Forsk.) Stapf.	Para grass, Buffalo grass	*Yaa khon*	Leaf and stem
Brachiaria ruziziensis Germain and Everard	Ruzi grass	*Yaa rusii*	Leaf and stem
Brassica oleracea var. *capitata* Linn.	Cabbage	*Kalamphlii*	Leaf
Brassica pekinensis Lour.	Chinese cabbage	*Pakadd*	Leaf
Carica papaya Linn.	Papaya	*Malagaw*	Fruit
Centrosema pascuorum Mart. ex. Benth.	Cavalcade	*Thua khawekhaed*	Leaf and stem
Citrullus vulgaris Schrad.	Watermelon	*Taengmo*	Fruit
Citrus nobilis Lour.	King orange, King mandarin	*Som*	Fruit
Cocos nucifera Linn.	Coconut	*Maphraw*	Leaf
Cucumis sativus Linn.	Cucumber	*Taengkwaa*	Fruit
Daucus carota Linn.	Carrot	*Khe-rawd*	Leaf and stem
Digitaria eriantha Steudel	Pangola grass	*Yaa pan-go-laa*	Leaf and stem
Hymenachne pseudointerrupta C. Muell	Del or bamboo grass (India)	*Yaa phlong*	Leaf and stem
Lycopersicon esculentum Miller	Tomato	*Makheua thet*	Fruit
Manihot esculenta Crantz.	Cassava	*Man sampalang*	Stem
Musa sapientum Linn.	Banana	*Gluay*	Fruit and stem

Oryza sativa Linn.	Rice	*Khaaw*	Seed
Panicum maximum Jacq.	Guinea grass	*Yaa ginii*	Leaf and stem
Panicum plicatum Willd.	-	*Yaa gong gai*	Leaf and stem
Pennisetum purpureum Schumach.	Napier grass, Elephant grass	*Yaa naepia, Yaa chang*	Leaf and stem
Pennisetum purpureum x *P. americanum* (hybrid)	Bana grass	*Yaa banaa*	Leaf and stem
Psidium guajava Linn.	Guava	*Farang*	Fruit and leaf
Raphanus satibus Linn.	Chinese winter radish	*Hua pakadd*	Leaf and stem
Saccharum fuscum Roxb.	-	*Kham*	Leaf and stem
Saccharum officinarum Linn.	Sugar cane	*Aoi*	Leaf and stem
Saccharum spontaneum Linn.	Wild sugar cane, Thatch grass	*Pong*	Leaf and stem
Solanum tuberosum Linn.	Potato	*Man farang*	Leaf and stem
Zea mays Linn.	Maize, Corn	*Khaw phood*	Leaf, stem, cob
Calamus spp., Daemonorops spp., etc.	Rattan	*Wai*	Stem
Many species in certain genera of the palm family (except for the rattan group)	Palm	*Ton paam*	Leaf

Table 2: Medicinal plants

Scientific name	Common name		Part(s) used	Indication
	English	Thai		
Internal use				
Acacia catechu Willd.	Black catechu, Cutch	*Som poy*	Pod & leaf	Laxative/purgative
Aegle marmelos (L.) Corr. ex Roxb.	Bael fruit tree, Bengal quince	*Matuum*	Fruit	Antidiarrheal Mood enhancer
Albizia procera (Roxb.) Benth.	Forest siris, White siris	*Thawn*	Bark	Digestive
Coix lachrymal-jobi Linn.	Job's tears	*Deuay*	Root	Anthelmintic
Dillenia aurea Smith	-	*Maa san*	Bark	Tonic
Diospyros mollis Griff.	Ebony tree	*Ma gleu*	Fruit (ripe)	Anthelmintic
Entada pursaetha DC.	Sea bean	*Kheua sabaa*	Seed	Tonic
Ficus benjamina Linn.	Golden fig, Weeping fig	*Sai yoi*	Fruit, flower & bark	Anthelmintic
Harrisonia perforate Merr.	-	*Ton jii*	Leaf, stem & root	Anthelmintic
Ricinus communis Linn.	Castor-oil plant, Castor bean	*Lahoong*	Seed	Laxative/purgative
Scindapsus officinalis Schott	-	*Phluu chang*	Leaf & stem	Tonic
Tamarindus indica Linn.	Tamarind	*Makhaam piak*	Fruit	Laxative/purgative
Tinospora tuberculata Beumee	-	*Boraphet*	Stem	Tonic, digestive
External use				
Bambusa spp.	Bamboo	*Mai phai*	Stem	Blister treatment
Capsicum frutescens Linn.	Chilli	Phrik	Fruit	Anti-infective (skin, eyes) Hot fomentation (ingredient)

Cocos nucifera Linn.	Coconut	*Maphraaw*	Seed (oil)	Fungicide, anti-infective (skin, especially for burns)
Columella tenuifolia Merr.	-	*Yaa pogtaw*	Stem	Hot fomentation (ingredient)
Crinum asiaticum Linn.	Crinum lily, Asiatic poison lily	*Ton plab phleuang*	Leaf	Reduce swelling
Curcuma longa Linn.	Turmeric	*Khamin chan*	Rhizome	Anti-infective (skin, eyes) Hot fomentation (ingredient)
Entada pursaetha DC.	Sea bean	*Kheua sabaa*	Bark & stem	Anti-infective (skin, eyes) Prevent/eliminate insects
Eupatorium odoratum Linn.	-	*Yaa saab seua*	Leaf	Haemostatic
Imperata cylindrica Beauv.	Thatch grass	*Yaa khaa*	Rhizome & root	Anti-infective for eyes
Mimosa pudica Linn.	Sensitive plant	*Mai yarap*	Stem Leaf	Anti-pruritus Anti-infective for skin
Musa sapientum Linn.	Banana	*Gluay*	Fruit (unripe)	Haemostatic (for bleeding from cut tusks)
Pterocarpus indicus Willd.	Narra, rosewood	*Praduu*	Bark	Anti-infective for skin (esp. abscesses, wounds, feet)
Ricinus communis Linn.	Castor-oil plant, castor bean	*Lahung daeng*	Branch	Anti-infective for eyes
Tamarindus indica Linn.	Tamarind	*Makham*	Fruit	With lime, on abscesses
Thunbergia laurifolia Linn.	Blue trumpet vine, Laurel-leaved thunbergia	*Rang jeud*	Stem & leaf	Hot fomentation (ingredient)
Zingiber cassumunar	Cassumunar	*Plai*	Rhizome	Hot fomentation (ingredient)

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