CITES Cheetah Trade Resource Kit

Veterinary Care

This section gives information about providing veterinary care for cheetahs

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1. Regularity of Check-Ups

The health of captive cheetahs should be regularly monitored as part of their everyday care.

Only having a small number of keepers who are normally responsible for each individual cheetah's care helps with this.

The keepers' familiarity with individual animals means they are more likely to notice any potential indicators of ill health such as changes to the cheetah's normal behaviour, or a decrease in appetite.

In addition to normal monitoring, providing regular check-ups by a vet who is experienced in caring for wild animals is also helpful.

Particularly in the early stages post-seizure, regular check-ups (weekly to monthly) would make it more likely that potential problems will be picked up early.

Annual health checks are useful to screen for parasites, to check for potential emerging long-term illnesses, and to give booster vaccinations as required.

2. Exporting Samples to Test for Disease

If blood samples can be collected from the cheetah, the samples should be sent for laboratory analysis to screen for diseases.

Samples should be sent to a reliable, well-equipped laboratory with experience in screening for disease.

If the samples must be sent to another country for analysis, ensure that the appropriate CITES export and import permits are first obtained.

Many countries have a simplified permitting system for facilitating the transfer of diagnostic and/or health/disease screening samples for analysis.

Contact your national CITES authority for further information:

National CITES Authorities | CITES

The following pages on the CITES website also have useful relevant information:

CITES Permit system | CITES

Exemptions and special procedures | CITES

3. Treatment for Parasites

3.1. Endoparasites (deworming)

Regularly check (at least every 3 months) the cheetah's faeces for signs of endoparasites. Endoparasites are internal parasites such as intestinal worms.

Signs that a cheetah has an endoparasite infestation can include: whole worms or segments of worms in the faeces and worm eggs.

Eggs are usually not visible to the naked eye and so the faeces will need to be tested to detect them.

If there is more than one cheetah in the enclosure, then the cheetah under investigation should be fed inert, indigestible marker foods (such as lentils or uncooked white rice) so that the faeces of different individuals can be told apart.

If endoparasites are detected, or suspected, the following anthelmintics have been used to good effect in captive cheetahs (from AZA guidelines):

- Pyrantel pamoate: 3-5mg/kg by mouth. Can be given at this level for 3-5 consecutive days.
- Fenbendazole: 5-l0mg/kg by mouth. Single day treatment most common, but can be given on 3 consecutive days at this dosage.
- Ivermectin: 0.2mg/kg, subcutaneous or by mouth. Use of ivermectin monthly at a dose of 0.1 to 0.2 mg/kg has eliminated ascarids and kept a large captive collection of cheetah ascarid free, as well as being useful as a heartworm preventive
- Praziquantel: 5.5-6.6mg/kg by mouth or subcutaneously for a single treatment. Higher doses may be necessary, especially if treating cestodes such as Spirometra spp.

After treatment with an anthelmintic, the cheetah's faeces should be rechecked and re-tested to ensure the treatment has been effective.

3.2. Ectoparasites (ticks, fleas, etc)

Cheetahs may suffer from ectoparasites such as ticks, fleas, mites, biting flies and mange. The following treatments have been used in captive cheetahs without reported side effects when used at similar dosages to those given to domestic animals (from AZA guidelines):

- Fipronil
- Methoprene
- Imidocloprid
- Lufenuron
- Nitenpyram
- Permethrins
- Ivermectin
- Lime Sulfur

4. Vaccinations

Cheetahs in captivity may be at greater risk of contracting infectious diseases. Some of these can be prevented through vaccinations.

DO NOT USE LIVE VACCINES ON CHEETAHS.

Recommended vaccinations are given in the following table (from EAZA guidelines):

Disease	Name of Vaccine	Age at First Dose	Booster Schedule
Feline herpes virus1 (FHV1) *also known as* Feline rhinotracheitis virus (FRV) Feline parvovirus (FPV) *also known as* Feline panleukopenia virus *or* Feline distemper Feline calcivirus (FCV) Chlaymydia psittaci	Fel-O-Vax®-5 Vaccine Inactivated *Boehringer Ingelheim* or Fevaxyn Quatrifel® Vaccine Inactivated *Zoetis*	9 weeks (or after health has stabilised after seizure)	1st booster: 12 weeks 2nd booster: 16 weeks Then: annually
Rabies	Inactivated/dead vaccine	4-6 months (or after health stabilised after seizure)	1st booster: 12 months Then: every 1-3 years (depending on vaccine used)

5. Anaesthesia

Occasionally it may be necessary to anaesthetise a cheetah. **Cheetahs should not be fed for at least 8 hours before they are anaesthetised. It is also advisable to remove water for several hours beforehand**. This is because cheetahs may vomit as a reaction to the drugs and there is a risk they will inhale the vomit while they are anaesthetised which can cause severe respiratory issues or cause them to drown. Ensuring they have an empty stomach prior to anaesthesia substantially reduces this risk.

Before the anaesthetic is administered, ensure the cheetah is calm.

Have as few people present as possible. Ensure all present are quiet and calm.

If the cheetah is calm the anaesthetic will work better and faster, as any adrenalin will counteract the effect of the anaesthetic.

If there is more than one cheetah in the enclosure, separate the target cheetah from the others before administering the anaesthetic.

Anaesthesia can be administered using a dart gun and pressurised dart, or a pole syringe, depending on how close it is possible to get to the cheetah. Ideally dart within a small area without features for the cheetah to climb on, to ensure the cheetah will not hurt itself by falling when succumbing to the influence of the anaesthetic.

When darting a cheetah, it is best to wait until it is sitting or lying down so that it does not move unexpectedly.

Never dart a cheetah if there is a risk that the dart could accidentally hit another cheetah or a person.

Cheetahs should be closely monitored while anaesthetised. Look for signs that they might be waking up, ensure they are breathing properly, they have a regular heartbeat (and are not hypertensive) and not over-heating.

Normal values are:

Heart rate: 120 – 140 beats per minute
Breathing: 15 – 20 breaths per minute (1 breath includes one intake and one expulsion of air)
Body temperature: 38.5°C

The use of ketamine alone is not recommended. When using ketamine in combination, wait at least 30 minutes after administration before reversing the other drugs.

While the cheetah is waking up after its anaesthesia, it should be kept somewhere safe, ideally a small area without features for the cheetah to climb on, to ensure the cheetah will not hurt itself by falling whilst still unsteady and partly under the influence of the anaesthetic.

Anaesthetic drugs that have been used for cheetahs (from EAZA guidelines):

Drug combination	Dosage	Antagonistic	Notes
Ketamine	2.5 mg/kg	No antagonistic drug	Avoid in cats with known (or suspected) renal disease
Medetomidine	0.05 – 0.07 mg/kg	Atipamezole 0.3 mg/kg	
Ketamine	3.0 mg/kg	No antagonistic drug	Avoid in cats with known (or suspected) renal disease
Medetomidine	0.03 mg/kg	Atipamezole 0.3 mg/kg	
Butorphanol	0.3 mg/kg	Naltrexone 0.3 mg/kg	
Ketamine	2.0 mg/kg	No antagonistic drug	Avoid in cats with known (or suspected) renal disease
Medetomidine	0.02 mg/kg	Atipamezole	
Midazolam	0.1 mg/kg	Flumazenil or Sarmazenil	
Medetomidine	0.035 mg/kg	Atipamezole 0.175 mg/kg	
Midazolam	0.15 mg/kg	Flumazenil 0.03 mg/kg	
Butorphanol	0.2 mg/kg	Naltrexone 0.2 mg/kg	
Ketamine	5 mg/kg	No antagonistic drug	Avoid in cats with known (or suspected) renal disease
Dexmedetomidine	0.02 mg/kg	Atipamezole 0.1 mg/kg	
Ketamine	5-10 mg/kg	No antagonistic drug	Avoid in cats with known (or suspected) renal disease
Xylazine	0.5-1.1 mg/kg	Atipamezole 0.1 mg/kg	
Ketamine	3-4 mg/kg	No antagonistic drug	Avoid in cats with known (or suspected) renal disease
Xylazine	0.75 – 1.5 mg/kg	Atipamezole 0.1 mg/kg and	
Midazolam	0.03-0.04 mg/kg	Flumazenil 0.03 mg/kg or Sarmazenil 0.1 mg/kg	
Tiletamine-zolazepam	3-5 mg/kg	Flumazenil 0.03 mg/kg or Sarmazenil 0.1 mg/kg	Avoid in cats with known (or suspected) renal disease
Tiletamine-zolazepam	1.6 mg/kg	Flumazenil 0.03 mg/kg or Sarmazenil 0.1 mg/kg	Avoid in cats with known (or suspected) renal disease
Medetomidine	0.03 mg/kg	Atipamezole 0.15 mg/kg	
Tiletamine-zolazepam	1.3-1.5 mg/kg	Flumazenil 0.03 mg/kg or Sarmazenil 0.1 mg/kg	Avoid in cats with known (or suspected) renal disease
Medetomidine	0.013-0.15 mg/kg	Atipamezole 0.75 mg/kg	
Ketamine	1.3-1.5 mg/kg	No antagonistic drug	
Tiletamine-zolazepam	1.0-1.3 mg/kg	Flumazenil 0.03 mg/kg or Sarmazenil 0.1 mg/kg	Avoid in cats with known (or suspected) renal disease
Xylazine	0.4-0.52 mg/kg	Atipamezole 0.1 mg/kg	
Ketamine	1.6-2.1 mg/kg	No antagonistic drug	

The use of ketamine alone is not recommended. When using ketamine in combination, wait at least 30 minutes after administration before reversing the other drugs.

6. Analgesia (painkillers)

From AZA guidelines:

Drug(s)	Dosage(s)	Comments
Meloxicam	0.1-0.2 mg/kg PO or IM SID	Oral dose recommended for repeat treatments. 0.2 mg/kg is used as a single loading dose.
Fentanyl	50 mcg/hour SQ osmotic pump 100 mcg/hr patch	Used for short term post-operative analgesia.
Carprofen	1-2 mg/kg PO SID	
Etodolac	6 mg/kg SID	
Butorphanol	0.2-0.4 mg/kg SQ or IM	
Tramadol	2.0-2.5 mg/kg PO BID	Used for short and long-term analgesia.
Morphine	0.1 mg/kg epidurally	Administer 45 min pre-op for rear limb orthopaedic procedures.

7. Euthanasia (humanely ending an animal's life)

Sometimes the cheetah's state of health will be so poor, or its injuries so severe, that it will either not survive or will have to endure a very long period of painful treatment, possibly with a low chance of success.

In such extreme cases, sometimes the most humane course of action for the cheetah is to euthanise it.

Euthanasia is a medical procedure to humanely end an animal's life. As such it should only be employed where other options will cause such significant suffering to the cheetah, that killing it is the more humane option.

If the decision is made to euthanise a cheetah, it should be done so that it causes as little distress to the animal as possible. Humane methods, if performed badly, can become inhumane. Keeping the cheetah calm and performing the procedure quickly and efficiently will minimise the distress the cheetah will suffer.

Regardless of the method used, it is usually preferable to perform euthanasia as a two stage process in large carnivores – first to dart them with an anaesthetic (see *Anaesthesia* on page 6), and then to administer the method of euthanasia. This should minimise any pain or discomfort the cheetah will feel during the procedure.

After administering the method of euthanasia, the cheetah should be carefully checked for signs of life. Particularly with chemical methods, the cheetah may appear lifeless but it should be checked to ensure that both breathing and heart beat have stopped. If not, it may be necessary to repeat the euthanasia procedure.

Humane methods of euthanasia include (from AAZV and AVMA guidelines):

7.1. Chemical Methods

Barbiturate overdose via intravenous injection

A highly effective, rapid method of euthanasia, however the cheetah will need pre-dosing with sedative in order to administer the barbiturate via intravenous injection.

Opioid overdose via intravenous or intramuscular injection

A highly effective, rapid method of euthanasia. A smaller volume of drug needed than for barbiturate and it can be injected into the muscle, meaning it may be easier to administer if the cheetah is not used to intravenous injections and cannot be pre-dosed with a sedative.

7.2. Physical Methods

Shooting

This can potentially be done without being in very close proximity to the cheetah and it also avoids the requirement of sourcing dangerous drugs. However, it must be done extremely carefully to ensure a clean shot to the head, that results in instant death.

8. Common Health Problems in Captive Cheetahs

Disease	What is it?	Affects adults or cubs	Is it contagious?	Symptoms	Causes	Treatment
Metabolic Bone Disease	The development of abnormalities in the animal's bones leading to reduced bone strength	Both, although particularly common in cubs	No	Gait abnormalities Reluctance to move Bone fractures	Poor diet, inadequate balance of nutrients (particularly a low calcium to phosphorus ratio or lack of Vitamin D)	Increase nutrient content of diet – particularly calcium and vitamin D. Can use supplements, although increasing variety in the diet (and including whole carcasses) is preferable
Vitamin A Deficiency	Insufficient levels of vitamin A in the body to support normal functioning	Both although particularly common in cubs	No	Sinusitis Diarrhoea Blindness Conjunctivitis Lack of coordination Convulsions	Diet lacking in Vitamin A	Increase vitamin A content of diet. Can use supplements, although increasing variety in the diet (and including whole carcasses) is preferable
Vitamin A Toxicity	Incredibly high levels of vitamin A in the body which then prevent normal function	Both	No	Skeletal malformation Bone fractures Internal bleeding Enteritis Conjunctivitis Reduced liver and kidney function	Excessive supplementation	Reduce concentration of vitamin A in diet. Give foods low in vitamin A for a short period and stop Vitamin A supplementation. Long-term: increase variation in the types of food given to the cheetah to enable removal of Vitamin A supplements.

Disease	What is it?	Affects adults or cubs	Is it contagious?	Symptoms	Causes	Treatment
Vitamin B1 (thiamine) Deficiency	Insufficient levels of vitamin B1 in the body to support normal functioning	Both although particularly common in cubs	No	Lethargy Vestibular signs Ataxia Paresis Uncoordinated gait Abnormal gait	Diet lacking in Vitamin B1	Increase vitamin B1 content of diet. Can use supplements, although increasing variety in the diet (and including whole carcasses) is preferable
Vitamin D Deficiency (rickets)	Insufficient levels of vitamin D in the body to support normal functioning, often associated with insufficient calcium absorption	Both although particularly common in cubs	No	Gait abnormalities Reluctance to move Bone fractures	Poor diet, consuming inadequate amounts of Vitamin D	Increased nutrient content of diet – particularly increases in calcium and vitamin D. Can use supplements, although increasing variety in the diet (and including whole carcasses) is preferable
Copper Deficiency	Insufficient levels of copper in the body to support normal functioning	Both	No	Lateral head tremors Ataxia Partial collapse Loss of balance Paralysis of hind limbs Staggering gait Respiratory distress (in cubs)	Poor diet with inadequate copper and/or improper calcium : phosphorus ratio (excessive phosphorus can lead to copper depletion)	Increased nutrient content of diet, ensure proper balance of calcium : phosphorus (aim for 1:1 - 2:1 ratio). Can use supplements, although increasing variety in the diet (and including whole carcasses) is preferable

Disease	What is it?	Affects adults or cubs	Is it contagious?	Symptoms	Causes	Treatment
Gastritis	An inflammation of the lining of the stomach. Cheetahs are very prone to gastritis.	Both	No	Chronic vomiting Undigested meat in faeces Diarrhoea Weight loss Abnormal faeces	Stress (leading to an impaired immune response) Microbial infection (usually *Helicobacter spp.*)	Reduce stress levels. If cheetah is being fed horse meat, try reducing this in the diet. Treat microbial infection with a course of antibiotics (tetracycline or amoxycillin and metronidazole). Antibiotic treatment is not enough on its own – it is essential to remove cause of stress or the gastritis will recur
Systemic AA Amyloidosis	A disease where amyloid proteins are deposited in different organs and tissues, particularly the liver and kidneys	Usually adults	No	Weight loss Protein loss in urine Non-regenerative anaemia Ataxia Weakness Vomiting Diarrhoea	Chronic gastritis Stress Genetics	Reduce stress levels Improve diet
Salmonella	Bacterial disease that affects the intestinal tract	Both	Yes Cheetahs with this disease should be immediately quarantined	Diarrhoea Vomiting Haemorrhagic diarrhoea	Infected or old meat Contact with infected cheetahs	Strict hygiene – only feed very fresh meat Supportive treatment (give electrolytes, ensure cheetah does not become dehydrated) Prognosis for cheetahs with this disease is poor and it often results in death

Disease	What is it?	Affects adults or cubs	Is it contagious?	Symptoms	Causes	Treatment
Feline Infectious Peritonitis (FIP)	Viral disease of the intestines – genetic mutation of the common Feline Coronavirus. Often fatal.	Both	Yes Highly contagious Cheetahs with this disease should be immediately quarantined	Vomiting Diarrhoea Transudate effusions into body cavities Dyspnoea Mild pyrexia Changed iris colour Weight loss Lethargy Fever (that does not respond to antibiotics)	Viral infection (transmitted by the faecal-oral route)	Supportive therapy (fluid therapy and diet) Anti-inflammatory drugs Prognosis for cheetahs with this disease is poor and it often results in death
Feline Herpes Virus 1 (FeHV1)	Viral disease causing upper respiratory infections	Both	Yes Highly contagious Cheetahs with this disease should be immediately quarantined until all symptoms have gone	Corneal ulceration Ulcerative rhinitis Conjunctivitis Discharge from eyes and/or nose Wheezing Sneezing Weight loss Pneumonia Excess salivation	Viral infection spread by direct animal-to-animal contact or indirect contact via keepers, flies or shared food containers	Cheetahs should be vaccinated against FHV1 as this will reduce the chance of them contracting the disease and lessen symptoms if they do. L-lysine can be given as a dietary supplement to reduce symptoms. Cub dosage: 120 mg/day. Adult dosage: 2500 mg/day. Antibiotics (eg amoxycillin or doxycycline) can be given to treat/prevent secondary infections.

9. Further Reading

Anaesthesia

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