Recommendations to Veterinarians treating Cheetahs

The Cheetah Conservation Fund (CCF) recommends taking preventative measures with the veterinary care of the cheetah. Many problems may be prevented with appropriate food, housing and care. Stress is the number one cause of illness.

The cheetah’s status and illegal trade

The cheetah is an endangered felid classified as CITES I (vulnerable) with international trade intensely regulated. In the wild, the cheetah remains present in Southern and Eastern Africa with smaller populations in Iran, West and North Africa. The majority of cheetah populations are fragmented, vulnerable and unable to withstand the pressures of illegal harvesting long term (for one animal that makes it into your clinic, five or more have likely died during capture, transport and trade).

It is therefore important to educate potential owners about the alternative possibilities. The cheetah is a wild animal that can be tamed, but is not domesticated. We always recommend domestic animals as pets instead of wild animals. If individuals insist on possessing a cheetah as a pet, they need to be encouraged to obtain them from legal sources to reduce illegal harvesting of wildlife, please help them with the right contacts. It is also important to help the owners optimize the care of animals that are in captivity to avoid unnecessary deaths caused by poor care.

For those animals that were taken from the wild it is important to assess their genetic value based on history and genetic testing (through blood samples), in order to harvest them (semen collection and freezing) and/or allow them to contribute to captive breeding programs.

First Visit

Obtain a complete and thorough history.

Recommended questions regarding the cheetah’s origin:

- Where was the animal acquired?
- Captive or wild born? If wild born/caught…from which location? Knowing from which countries wild cheetahs are being harvested from is beneficial to cheetah survival on earth.
- Please offer to send in blood for genetic analysis to determine the cheetah’s origin and relatedness to others. CCF offers genetic testing for cheetahs at their in-house genetics laboratory.
- Get a history on dam, sire and siblings if possible
- Check for previous identification – microchip, tattoo, etc.

Recommendations to the client on health and housing:

- Vaccination status?
- Evaluate housing (indoor/outdoor? size? substrate? protection from elements? type of fencing)
- Human interaction (How often? How much? Variety of people? Same person?)
- Conspecifics (Other animals sharing the same enclosure? Other cheetahs? Same sex? Mixed sex?)

All these factors can affect the health status. Remember that stress is the number one cause of illness in cheetahs.
Health checks
Perform a thorough physical exam every year.

Suggested anaesthesia protocols

Reversible
3 mg/kg Ketamine
0.03 mg/kg Medetomidine
0.1 mg/kg Midazolam
or
3 mg/kg Ketamine
0.02 mg/kg Dexmedetomidine
+/- 0.1 mg/kg Midazolam
or
35 µg/kg Medetomidine
0.20 mg/kg Buorphanol
0.12 mg/kg Midazolam

Non-reversible
4-6 mg/kg Telazol

Obtain accurate weight, temperature, heart rate, and respiratory rate. It is optimal to get a good baseline for each patient.

Morphologic features of the cheetah
Please record any morphological abnormality; CCF maintains a database of all these traits and would appreciate your contribution to it.

- Examine hard palate for focal palatine erosions (FPE) – these erosions are caused by the mandibular canines wearing away at the hard palate. They can be located on lingual side of the hard palate distal to the maxillary canine. The cavities may have to be cleaned for impacted food matter or possible abscesses. In extreme cases, careful tipping of the lower carnassial can limit the complications. At CCF, we grade FPE cases from I to III, with the option of being perforated and non-perforated. FPE are quite common in cheetahs native to Namibia and can be of serious concern.
- Crowded mandibular incisors this is a common finding in cheetahs. It does not need to be corrected, but should be noted in the medical record.
- Cheetahs often have abnormal vertebrae at the end of the tail (leading to kinked tails), please record this and if possible document with X-ray or pictures.

Oral Cavity
Examine the oral cavity for fractured teeth, and exposed roots, etc. and perform the appropriate dental surgery in order to preserve the teeth. Extractions should only be performed if absolutely necessary.

Body Condition
Adequate body condition should be a lean muscular body. There should be an obvious delineation between shoulder, stomach and pelvic regions. Shoulder bones should be visible. An abdominal tuck without a fat pad is ideal. The pelvis should be visible but not prominent. The thigh muscle ought to be obvious while walking. Ribs will not be visible. Overweight cheetahs are as unhealthy as emaciated ones. An average sized Southern African healthy adult female cheetah should weigh between 35-40kg, male 40-45kg; however an Eastern African cat of the same weight is likely to be severely overweight. There will be variations in build depending on the geographic origins and subspecies of the animal.

Identification
We recommend all cheetahs be identified with a microchip. The implants used for domestic cats and dogs are adequate. The microchip should be scanned each time the animal comes to the vet to ensure its placement. The microchip can be placed subcutaneously between the shoulder blades (which can migrate) or by base of the tail. As a standard, CCF recommends placing the microchip at the level of the base of the tail; on the left side for males and on the right side for females.

**Blood**
Blood is collected easily from the femoral, cephalic, or lateral saphenous veins. A complete blood count, chemistry and blood smear should be performed with every anaesthesia.

**Faecal**
We recommend to either deworm cheetahs routinely or, if possible, to check faeces for parasite eggs every three months at least. Of course, it may be necessary to check more often depending on habitat, habits and parasite control.

The following anthelmintics are considered effective and safe when administered at the dosages listed and are recommended by the Cheetah Husbandry Manual:
- **Pyrantel pamoate**: 3-5mg/kg per os. Can be given at this level for 3-5 consecutive days.
- **Fenbendazole**: 5-10mg/kg per os. Single day treatment most common, but can be given 3 consecutive days at this dosage.
- **Ivermectin**: 0.2mg/kg, subcutaneous or per os. Use of ivermectin monthly at a dose of 0.1 to 0.2 mg/kg has eliminated ascarids and kept large collection ascarid free, as well as being used as a heartworm preventive (Citino, personal communication).
- **Praziquantel**: 5.5-6.6mg/kg per os or subcutaneously for a single treatment. Higher doses may be necessary, especially if treating cestodes such as Spirometra spp. (Citino, personal communication).
- **Sulfadimethoxine**: 50mg/kg SID parenteral or per os, as a coccidiostat.
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- **Sulfadimethoxine**: 50mg/kg SID parenteral or per os, as a coccidiostat.
- **Trimethoprim-sulfa**: 15mg/kg BID or 30 mg/kg SID per os, as a coccidiostat.

**Ectoparasite control**
The following products have been used on/in cheetahs (dosages similar to domestic animals) to control ectoparasites with no apparent side effects:
- **Fipronil**
- **Methoprene**
- **Imidocloprid**
- **Lufenuron**
- **Nitenpyram**
- **Permethrins**
- **Ivermectin**
- **Lime Sulfur**

**Heartworm**
Heartworm testing (feline heartworm antibody test) and prophylaxis should be considered in endemic areas.

Products and doses for prevention and treatment are extrapolated from domestic animals.

**Hormone control**
Using hormones as a contraceptive for cheetahs is rare due to the lack of breeding success in most cheetah facilities worldwide. However if contraceptives are used, it is recommended not to implant female cheetahs due to an increase of cancer associated with the use of Suprelorin implants in females. Therefore, CCF uses Suprelorin ® (Deslorelin 4.7 mg) by Virbac contraceptive implants in their male cheetahs. The implant is easy to insert subcutaneously between the shoulder blades. He implants need to be renewed on an annual basis (using this dose of Deslorelin). For the males, it can also help decrease spraying and aggressive behaviour.
Vaccinations
The cheetah requires feline vaccines as well as rabies. Only KILLED vaccines should be used in the cheetah, since the attenuated vaccines were optimized for domestic cats and are not without risk in other species. CCF recommends vaccinating with a Feline Rhinotracheitis-Calici-Panleukopenia-Chlamydia-Psittaci Vaccine at 6, 9, 12, and 14 weeks of age, then yearly. Rabies vaccines are performed at 4 months and then yearly. Like in other species, you can check rabies and other titres after 3 years and adjust the vaccination schedule based on the results in order to avoid over vaccinating.

FelV/FIV
At CCF, we test yearly for FIV/FelV but we do not vaccinate for either. The results can be achieved using the snap or serologic testing. FelV is quite uncommon in cheetahs. If there is a risk of FelV due to other cats species close to cheetahs (ie. Domestic cats in the areas), FelV vaccines can be given and are assumed to provide good coverage.

Diet
Fresh lean meat is imperative along with appropriate calcium and vitamins. The cheetah’s gastrointestinal tract is not designed to tolerate spoiled or old meat. In the wild the cheetah only eats fresh kills and will not go back to an old carcass. Cheetahs are extremely susceptible to bacterial diseases which have been seen from feeding chicken and other fowl diets. Commercial pro-biotics, like Protexin® can help reduce and prevent gastroenteritis. An ideal diet is not poultry based. Please see the owners’ manual for detailed diet information.

Common Cheetah Diseases

Nutritional Diseases
A fresh raw meat diet with appropriate vitamin supplementation will grow and maintain a healthy animal. The following four diseases are all a result of a poor diet.
Metabolic Bone Disease- symptoms include fractures, reluctance to move, and other gait abnormalities. Radiographs are recommended and it can possibly be corrected with a change in diet
Vitamin A deficiency- often seen in younger animals. Neurologic signs including ataxia and incoordination are observed, but may be mild. Not all cases can be corrected. A post-mortem exam of the brain for prolapse of the cerebellum through the foramen magnum and spinal cord damage may be observed. Liver biopsy should be sent out to check vitamin A levels.
Vitamin B1 (thiamine) deficiency- symptoms may include vestibular signs, ataxia, paresis, incoordination and abnormal gait. Diagnosis obtained from testing whole blood. Great prognosis and complete recovery is possible if treated early.
Copper deficiency- symptoms include ataxia, most often related to a high poultry diet. Check serum for copper levels. Recovery is possible with an early diagnosis.

Gastritis
Gastritis can vary from mild to severe. The primary cause is usually due to stress. Clinical signs include chronic vomiting, weight loss, diarrhoea, and abnormal stool. Definitive diagnosis should be obtained with a gastric biopsy. A visual of the gastro-intestinal tract utilizing an endoscope will assist in the diagnosis. Take biopsies when necessary and check for microbes especially helicobacter. Treatment and prevention involve locating and correcting the cause of the stress.

Renal Disease
Due to a diet high in protein, a significant amount of geriatric cheetahs suffer from renal disease. You can treat as you would a domestic feline. ACE inhibitors (enalapril maleate, benazepril at 0.25 mg/kg) should be started daily once azotaemia is observed. Consistently monitor urine and hydration. Serum chemistries should be checked monthly. Renal insufficiency can commonly lead to renal amyloidosis.
AA Amyloidosis
Cheetahs are highly susceptible and predisposed to AA amyloidosis. They have a high prevalence of systemic amyloidosis in response to inflammation and renal amyloidosis is an increasingly significant cause of morbidity and mortality in captive cheetah populations. Cheetahs are known to shed an infectious form in their faeces. There is no specific way to diagnose or treat clinically. Stress is usually a cause of these factors. Amyloidosis can be observed post mortem using Congo Red dye.

Salmonella
Outbreaks in Salmonella are usually caused by infected meat. Symptoms include haemorrhagic diarrhoea and death. CCF cannot stress the importance of fresh meat.

FIP
Feline Infectious Peritonitis (FIP), a corona virus, may be transmitted from feral or domestic cats to cheetahs, so make sure the enclosure is secure. The virus may be inhaled or ingested and can be transmitted on fomites. Best to familiarize yourself with symptoms of FIP and test abdominal or thoracic fluids with the Rivalta test if concerned. There is no treatment, only palliative therapy.

FHV-1
Feline herpes virus presents itself in a greater clinical severity than it does in domestic cats. It is important to vaccinate with a killed vaccine to prevent this occurrence of FHV-1. It can present itself as an upper respiratory infection, ocular manifestations and also in the form of dermal lesions. We recommend swabbing and doing IHC testing for non-healing lesions. Infection persists for life and individuals may be chronic carriers and/or intermittent shedders. Famciclovir is the anti-viral drug of choice. Pharmacokinetic studies have yet to be done, but the dose is much lower than that of domestic felines. You may start with 125 mg per approx. 40 kg every 12 hours and increase slowly after two weeks with no negative side effects. It would be best to run a haematology and chemistry before increasing the dose.

Diabetes
Diabetes is fairly common in overweight, under-exercised cheetahs. Treat as you would a domestic feline, maintaining adequate glucose levels.

Necropsy
A complete and thorough necropsy should be performed with each deceased cheetah regardless of known cause of death. Two sets of samples should be taken. One set can be sent to the designated pathologist and the other can be stored at your facility for future needs.

Please do not hesitate to contact us if you have any cheetah health concerns or questions. The CCF laboratory can provide genetic testing. As an international laboratory and research facility, we will appreciate any information and samples you submit to us will aid in cheetah research and conservation. It is greatly appreciated.

Thank you for your cooperation and dedication to the field of veterinary medicine.