



Report on:

Conservation Dog Summits for Africa

October 27-29, 2015: Johannesburg

November 2-4, 2015: Nairobi



Made Possible By:

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and
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In Partnership with and Technical Support from:



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Background and Objectives

In Early 2014, numerous organizations and wildlife management authorities in Africa sought financial support to establish new, or expand existing, working dog programs for anti-poaching and anti-trafficking operations. At the same time, as larger numbers of dogs entered the “workforce” in Africa, the challenges of keeping working dogs healthy and effectively working in African contexts became increasingly apparent. Numerous programs faltered, and even well-established and well-resourced programs struggled with disease, dog deaths, and low performance, so a review of conservation-related canine programs was organized to understand the situation and chart a path forward. The specific objectives of the review were to:

1. Understand the challenges that working dog programs face;
2. Identify best practices that minimize risks to dogs and handlers;
3. Highlight training and operational practices that maximize and maintain dog performance and impact;

The review took place in August 2014, and the review report (available [here](#)) outlined numerous recommendations, which covered infrastructure, funding, personnel, and dog and handler selection. Among the other important findings were practitioners’ identification of two overarching issues: canine health, and technical support for handlers and trainers. Every program surveyed responded that they would like to increase their capacity in both veterinary and technical training contexts.

In response to these requests, and to effectively share all the findings of the review, two “Working Dog Summits for Africa” were organized, one in Johannesburg, South Africa, and the second in Nairobi, Kenya. These two venues were chosen because East and southern Africa currently have the greatest concentrations of dog programs, each has different levels of funding and technical capacity, and two separate Summits allowed each to focus on issues pertinent to that region. The objectives of the Summits were to:

1. Share best practices identified in the Review;
2. Increase veterinary capacity in the field, with the explicit goal of keeping working dogs safe and healthy;
3. Establish veterinary readiness, so that programs know when and how to evacuate dogs for veterinary support;
4. Provide training for widely-demanded topics and techniques;
5. Create a professional community of conservation-related working dog programs.

Here, we report on the activities, outcomes, and next steps from the two Summits, which took place from October 27th-29th in Johannesburg, South Africa, and November 2nd-4th in Nairobi, Kenya. The summits were organized and run by Working Dogs for Conservation (henceforth: WD4C) with generous financial support from the Friedman French Foundation, and technical input from WWF, the US Fish and Wildlife Service, The Elephant Crisis Fund and USAID.

Summit Overview

Agendas covered the following (schedules are included in Appendix A):

1. Hands-on training in basic veterinary examinations, preventative care, and injury assessment.
2. Veterinary preparedness and field treatment for specific challenges (e.g. snake bite, orthopedic injuries, severe lacerations).
3. Guidance on evacuation planning and professional veterinary “backstopping” for every program.
4. Training in tracking (including “hot pursuit”) and integration with law enforcement.
5. Training in dog selection, operations and handling for tracking and detection dogs.
6. Overview of project and canine program planning, including dog selection, infrastructure, measures of success.
7. A Look-ahead and broad view on canine-based wildlife law enforcement (including detection and tracking), anti-trafficking (including vehicles, air-, and sea-ports), new and novel targets (including timber, exotic species, disease and other trafficked and emerging targets) and ecological monitoring.

Both summits took place over three days, with two technical days to allow handlers and trainers sufficient time to perform hands-on veterinary and training activities and to rotate among small groups so that every individual had the opportunity to participate in each small group activity. One additional day was dedicated to an overview of canine applications in wildlife work— from ecological monitoring, to anti-poaching activities like patrol and pursuit, and detection of guns and ammunition, to anti-trafficking activities, including stopping the movement of illegal wildlife products like ivory, rhino horn, timber, medicinal plants, and even live animals. Speakers provided a broad overview of existing and future objectives, so that policy makers, planners, funders, and canine program practitioners could take a long view of their programs and plan for threats and activities over the 10+-year lifespans of their dogs. Speakers also highlighted the findings of the Review, including current best practices for canine program infrastructure, staffing, husbandry, training and deployment. Participants agreed that all information should be “open-source”, so it is all shared with participants so that they can incorporate it in their planning and day-to-day operations.

Both Summits were open to all interested parties. Handlers, trainers, conservation practitioners, funders, policy makers and wildlife and law enforcement authorities were all targeted for participation. Participants were not charged attendance or registration fees but were asked to cover their own expenses for travel and lodging. Exceptions were made for individuals that had something important to contribute or whose attendance could lead to a large impact— for example leaders of law enforcement program or wildlife institutions.

Outcomes and Next Steps

Over 120 participants attended the summits, representing 13 different countries. Law enforcement specialists and conservation practitioners were most numerous among the participants, but customs officials, donors, diplomats, and policy specialists were also represented. Participants were asked whether they would like their contact information shared with other participants, and all agreed. This was a very positive and important development, because the collective experience— from geographic to technical—and the range of

perspectives— from local dog-focused to global conservation policy— represents a tremendous resource for the participants to tap. The participants' interest in each other's expertise and willingness to serve as a resource for their colleagues was formalized through agreements at both that a formal network was both necessary and beneficial, and willingness to participate in both pan-African or in networks was unanimous. All agreed that the network should be peer-driven (rather than centralized within a single organization) and, like the Summits, the network should also be open-source, providing technical support, networking, and resources to all participants.

A significant discussion topic was certification, which is a high priority for a diversity of Summit participants for a variety of reasons. Donors expressed interest in having an objective way to vet programs (to ensure that they are ethical and safe) and their potential impacts. Conservation planners' and practitioners' interest in certification reflected their desire to have a framework around which to plan for, fund, and establish programs, and dog trainers and handlers expressed the need for a structure within which to organize their professional development and to help establish goals and benchmarks for their dogs' training. WWF, WD4C and ASCT expressed interest in and willingness to facilitate the establishment of certification systems for all participants.

Participants all reported their intention to continue, refine, and expand their canine programs. One law enforcement team reported that 85% of their contacts with poachers involved dogs at some point in the process. During the Summits and in the interactions following, numerous participants also noted important changes in practice that they planned to or were already implementing. These included¹:

- More frequent and thorough health screening for dogs;
- Collecting and storing health screening data to establish baselines against which to evaluate changes in health metrics (like weight, vigor, and field performance, as well as to collect data on effects of trypanosomiasis prophylaxes on blood values).
- Establishment of evacuation plans and rainy-day funding for dog (and handler) evacuations.
- New protocols for trypanosomiasis prevention;
- And sharing of anti-trypanosomiasis protocols at kennels and in the field during deployments, different prophylaxes, and reporting health outcomes so that the most effective methods can be identified and shared.
- Updated container searching techniques, and strategies for integrating canine searches into at container handling points.
- Based on science and information delivered, two 'hot pursuit' dog units reported that they would be changing their strategies to make it more likely that their dog teams detect and successfully track fugitives.

Looking ahead, all participants expressed interest in continued interaction, both among attending programs, and with outside organizations and expertise, particularly from South Africa, Europe and North America. Suggestions for greater communication among programs,

¹ Some participants asked (and we agreed) that the specific changes to their law enforcement practices be omitted from this report so that it does not facilitate any illegal activities.

study tours between sites, and a “dog-handler olympics,” were all widely endorsed. AWF, WD4C, and WWF all expressed willingness to support this kind of interaction and to facilitate further capacity building and technical support.

Creating formally-recognized structures to oversee Conservation Canine work was strongly endorsed by participants at both workshops. In exploring the idea of such an organization’s geographic scope, national, regional and pan-African approaches were all discussed. In both Nairobi and Johannesburg, the range of capacities within and across countries was acknowledged. In particular, the number of more advanced and better provisioned programs in South Africa was recognized. It was also noted that a peer driven approach to information sharing and capacity building could put significant burdens on the more experienced and longer-standing programs, but participants agreed to take a “wait and see” approach to evaluate the burdens that more experienced programs face in supporting new and less experienced ones.

A second conversation surrounding the scope of creating a formal organization was the breadth of working dog applications. Participants recognized that “working dog” can include herding and livestock guarding, in addition to ecological research and monitoring, and law enforcement. After some discussion it was agreed that because livestock guarding and herding were significantly distinct (in terms of breeds, training, husbandry and practice), they would be considered separate disciplines from those considered at the summits and represented in the organization. Some participants felt strongly that veterinary issues and standards of care should be shared with these disciplines, and others noted that these came at little cost, and that herding and livestock guardian practitioners would likely have meaningful contributions to make, so appropriate avenues of participation with those disciplines should be explored.

Within the context of law enforcement, a distinction was drawn between anti-poaching and anti-trafficking. Another distinction was recognized between detection and tracking, with the former weighted more heavily (though not exclusively) toward anti-trafficking and the latter focused on anti-poaching in and near protected areas. In this case, participants felt that both tracking and detection should be included, since some mixed purpose dogs do both, and because of the overlap in training, handling, and application. Based on this conclusion, it was suggested that the proposed name “Conservation Detection Dog Network for Africa” be changed to “the Conservation Dog Network for Africa”. WD4C, as the organization that proposed the Network, is leading in facilitating its establishment, and as convener of the summits, agreed to this name change.

A key element of the interaction among groups will be information sharing, and it was decided that the most appropriate vehicle would be a website. WD4C agreed to register a domain and facilitate the initial setup and transition to a peer-run and organized site. It was also agreed that the site would include publicly available and some password-protected pages, so that some information could remain confidential and/or shared only among recognized partners.

Many discussions took place within a context of uncertainty over the threats that face dogs in Africa, as well as where, when, and how severe these threats are, and about what treatments and preventative measures are most appropriate and effective. It was noted that the newly assembled network of programs, handlers and dogs offered an unprecedented opportunity to

begin to address these uncertainties, by serving as a study group within which injuries, illnesses, and nutritional issues can be systematically monitored. Other concerns included kennel safety, handler safety and retaliation against successful programs. The participants present at the Summits represent a significant portion of conservation dogs active in Africa (not including livestock guarding and herding dogs), so the group is in position to provide important information about how to make these and subsequent programs more sustainable and effective. This “systematic risk analysis” was recognized as a high priority to be one of the first “network” activities, as it will undoubtedly benefit all the participants.



Credit: adapted from Claudio Murolo, Economist Magazine, Feb 12th 2016

Appendix A: Summit Schedules

Johannesburg Schedule:

	Day 1	Day 2	Day 3
8:00			
8:15			
8:30			
8:45	Welcome and Registration		
9:00			Mozambique Port Dogs, Dave Newton, TRAFFIC
9:15		Roundtable Site Based Programs: Cape Nature (V. Hudson), Limpopo (R. Brunner)	
9:30			Monitoring, how to measure the effectiveness of dogs
9:45			
10:00	Welcome, Overview and Introductions of All Participants	US Army Research Program (S. Lee)	
10:15		Canine Nutrition Arthur Hosseini w Royal Canin	
10:30			
10:45			Small Groups - Veterinary Procedures: Rehabilitation and Long-term Dog care / Training
11:00	Training and Veterinary Overview: Myth and Science - Chris Aycocock, Dr. Chris Kenyon	Canine Health and Care: Panel on Tryps, tick borne disease, snake bites, etc. S. African veterinary perspectives	Specifics: Tracking and Detection Science, Certification Needs
11:15			
11:30			
11:45		Detection on Timber (Birgit)	
12:00			
12:15	Lunch		
12:30	Lunch	Lunch and informal networking meetings	Lunch and Networking
12:45			
13:00	Kennel Care and Design		Feedback, Needs and Looking Ahead: Topics for the future
13:15			
13:30			
13:45	Designing dog programs: Examples from S. Africa and Zambia with Bruce Leslie and Rachel McRobb	Small groups on training and veterinary needs and techniques: Field Trauma, Medicalitons, / Tracking Science, Detection Science	Conference End
14:00			
14:15			
14:30			
14:45			
15:00	Coffee/Tea	Coffee/Tea	
15:15			
15:30			
15:45	Resources for Success and Donor Perspective: Michelle Gadd, USFWS	Small Groups - Technical Training in Veterinary and Training	Small meetings for Networking and follow up
16:00			
16:15			
16:30			
16:45			
17:00	Adjourn		

Nairobi Schedule:

	2 November - Monday Technical information for Handlers and Trainers	3 November - Tuesday Practical and small group information	4 November- Wednesday Program Overviews, Planning and Funding Successful Dog Programs
8:00			
8:15		Breakfast, informal meetings and late arrivals	Breakfast and informal meetings
8:30	Welcome and Registration		Welcome and Overview
8:45			
9:00			SLCS
9:15	Plenary Welcome and Overview (PCoppillo)	Plenary Group: Introduction to Tracking for Conservation Dogs Aycock	
9:30			LEWA- Mike Watson
9:45	Veterinary Overview: Challenges and Considerations		Big Life/Honeyguide
10:00			AWF: Will Powell
10:15	Felix Lancaster: Epidemiology	Small group work Session 2 (opportunity for programs to interact around a 2nd topic)	Virunga
10:30			Virunga
10:45			Virunga
11:00	Chris Kenyon: Clinical Perspective		Virunga
11:15		Reports from Small Groups	Virunga
11:30			Birgit Braun (timber)
11:45			
12:00	Questions, feedback and plenary discussion on husbandry and veterinary issues		Designing successful dog programs: elements of success: Infrastructure, Dogs, Care, Training (MParker & Aycock)
12:15		Lunch and Networking	
12:30			
12:45	Lunch and informal networking meetings		Lunch
13:00			
13:15			
13:30			
13:45		Looking Ahead: Topics for the future (Certification, Intelligence gathering, Sourcing Dogs, Future Training)	Panel Discussion: Resources for Success (Parker, Aycock, US Army, Watson, KIA/KWS)
14:00	Breakout Groups: Tryps, Heat, Ticks, Field trauma		Summary from Trainers/Handlers & the field
14:15			
14:30			
14:45		Coffee/Tea	Coffee/Tea
15:00	Coffee/Tea		
15:15			
15:30			Funding Successful Programs (MUIR or Surrogate)
15:45		Small meetings for Networking and follow up	
16:00	Small Groups and Hands on interaction with dogs and handlers: Veterinary Issues, detection and tracking		Adjourn
16:15			
16:30			
16:45			

Appendix C: Photos

JHB: (Full resolution photos are available in the Summit Resources Folder and [online](#))





NBI:





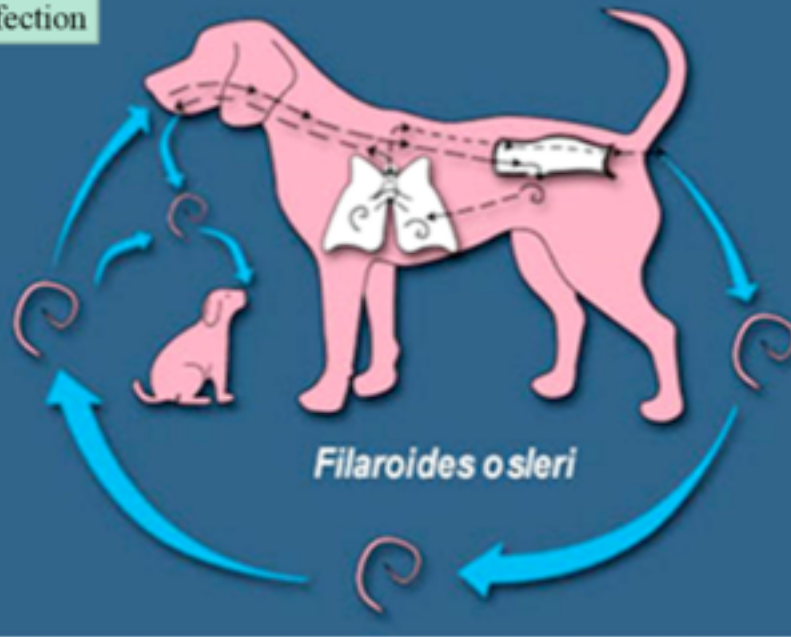
Viral infections

- **Canine Distemper Virus**
 - aka: Hardpad disease
 - Wild and domestic carnivores
 - Impacts several body systems
 - GIT
 - Respiratory tract
 - Spinal cord / brain
 - Symptoms: fever, eye inflammation, nasal discharge, coughing, V+ / Di+, hardening of nose and pads, neurological symptoms
 - 50% fatality rate
 - Despite vaccination, a leading



Throat worm life cycle

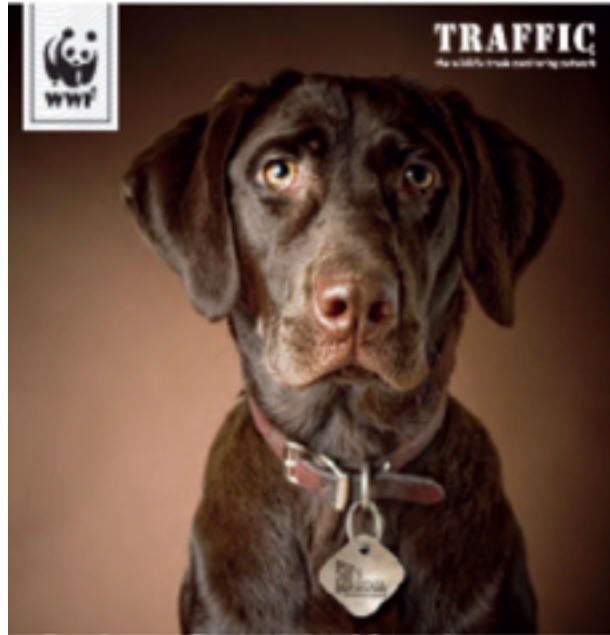
L1 infective,
autoinfection



ACHIEVEMENTS.

- In Manyara Ranch, the dogs have provided crucial information that lead to arrests of all ivory poachers.
- The Tarangire Ecosystem dogs have been called by different partners and tracked over 15 different incidents, 7 involved on elephant poaching, 5 game meat poaching and 4 others.
- Serengeti Dogs have had 90% success in tracking poachers in the Serengeti Ecosystem lead to arrest of 4 Ak 47, magazines 10, and more than 500 rounds, out of 26 different incidents 15 involved on elephant poaching, 5 game meat poaching and 6 others.
- Poaching decline in the park and areas surrounding.
- The deterrent to the community.

90%
SUCCESS



Wildlife Detector Dogs combating illegal wildlife trade

“THE FIVE FREEDOMS”



- Freedom from Hunger and Thirst
- Freedom from Discomfort
- Freedom from Pain, Injury or Disease
- Freedom to Express Normal Behavior
- Freedom from Fear and Distress

Appendix E: Links to Other Resources

- [Review of Conservation Working Dog Programs in Africa](#)
- [Proceedings of Wildlife Detection Dogs Conference \(Hungary 2012\)](#)
- [Training Manual on Wildlife Detector Dogs \(English\)](#)
- [Training Manual on Wildlife Detector Dogs \(French\)](#)

Appendix F: First Aid Kit Inventory

Cerenia tablets (Maropitant; anti nausea/vomiting): Strong anti-emetic. Also anti-inflammatory for stomach/intestines. Not contraindicated if obstruction. Give 1 tablet every 24 hours.

Erythromycin (eye antibiotic ointment): All persistent eye injuries until exam at veterinarian. Apply 2-3 times per day (1 small strip in each eye)

Entederm (topical/skin antibiotic and steroid ointment): Any localized skin "break out", rashes, open wound, allergic reaction.

Epikleanse Ear Flush and Cleaner: If ear symptoms noted (head shaking, scratching at ear +/- head tilt) and/or discharge from ear. Use to clean ear. Fill ear canals and massage, then wipe out excess with clean cloth.

Chlorhexidine antiseptic: To use to clean wounds. May dilute 50/50 with water.

Novox tablets (Carprofen: Non-Steroidal Anti-inflammatory): Always use judiciously. Has systemic side effects affecting stomach, kidneys and liver. ALWAYS GIVE WITH FOOD/FULL MEAL.

Surgical Stapler: Reference First Aid book and video demonstration

Hemostats: Useful surgical instrument for removing seeds, ticks, controlling bleeding.

Lidocaine Jelly: Very useful in pain relief/numbing OPEN wounds. Does not work on intact skin. Example: laceration- Apply jelly before and after cleaning wound (since cleaning and flushing is painful). Use before staples applied to open wound.

Quik Stop Styptic Powder: Used to stop minor bleeding (common when vein is cut during nail trims). May be used on other minor bleeds (ie, tail, ear)

Tramadol (general pain medication): Controlled drug (narcotic). However very safe for general pain control. Not as strong as NSAID but not the side effects. Good for abdominal pain and to add on to NSAIDs for other trauma, musculoskeletal pain and injury.

*Always remember to keep kit as cool and dry as possible

*Certain items must be changed out with frequency if damaged by moisture/heat

*Ideal to have cooler/portable refrigeration for veterinary supplies/drugs

MEDICATIONS/SUPPLIES RECOMMENDED TO ADD TO KIT:

Hydrogen Peroxide: to induce vomiting

Diphenhydramine (2 mg/kg) tablets: For allergic reactions, stings, snake bites

Activated charcoal (granules preferable): prevents absorption of toxins

Rubber exam gloves

Syringes and Needles

Saline eye flush

Waterproof tape + sufficient bandage material (vetwrap, cast padding)

Thermometer (rectal)

Stethoscope

Vaseline

Small flashlight

Pen/small notebook

Super Glue

Sucralfate tablets: Mix with 5-10 mls warm water. After vomiting, stomach ulcer suspect

Isotonic Fluids and IV line: to give subcutaneous fluids

Prednisone tablets (10 mg), Dexamethasone injectable*: severe allergic reactions, shock, snake bites. Only to give under veterinary directive. Many side effects and to only give in very specific situations.

Injectable Hydromorphone, or other injectable pain medication* :For severe pain.

Diazepam (tablet and injectable)

Epinephrine injectable

ANTIBIOTICS RECOMMENDED TO ADD TO KIT:

Metronidazole: (15mg/kg twice daily for 5-7 days) for diarrhea

Doxycycline: (5-10 mg/kg twice daily for 14 days) Tick borne disease, respiratory infections

Amoxicillin/Clavulanic Acid (ie, Augmentin, Clavamox): (15-20 mg/kg twice daily for 7-21 days) All around broad spectrum antibiotic. Good for skin infections, abscesses, oral/tooth infections

Baytril injectable (5%/large animal formulation)

Berenil*: for Babesia, trypanosomiasis. USE ONLY WITH VETERINARY SUPERVISION/DIRECTION.

*Only should be part of kit when veterinary assistance is not available.

Appendix G: Management of Field Emergencies

Basic approach to emergency stabilization is to address the most life threatening problems first: Airway, Breathing, and Circulation. Traumatic injuries occur frequently and range from mild to life threatening. Any trauma warrants a medical assessment.

- I. CPR (Cardiopulmonary Resuscitation)
 - i. To only be administered if there is no sign of breathing or heartbeat
 1. Clear airway: Upper airway obstruction? Heimlich Maneuver
 2. Lay dog on right side (right side down)
 3. Close mouth and blow into nose until chest expands
 4. Push over heart area 4 times
 5. Repeat steps 3 and 4 fifteen times per minute until dog regains consciousness or until 5 minutes have gone by.
- II. Bleeding and Lacerations:
 - a. Arterial vs. Venous?
 - i. Control bleeding:
 1. Least traumatic method:
 - a. Apply direct pressure with gauze or clean cloth
 - b. Apply pressure above wound for arterial or below for venous. If stops after 5 minutes, bandage
 - c. Hemostats may be used to grab large pulsing veins or arteries. Tie square knot over vein with appropriate bandage material.
 - d. Tourniquet if other methods not working.
 - b. How to treat lacerations:
 - i. Clean/Flush all wounds with chlorhexidine/betadine as much as possible. This is painful and muzzle should be applied. Lidocaine jelly can be put into open wound to numb. Apply triple antibiotic ointment when possible.
 1. SEEK VETERINARY CARE if large, full thickness wound, significant bleeding/hemorrhage, any wound close to a joint and/or involving a ligament or tendon.
 - ii. Tail: Can keep re-opening and bleeding for days:
 1. wrap tubular structure at tip *DEMO*
 2. Do not clip hair; can help clot blood
 - iii. Superficial lacerations: can be anywhere. If superficial, stapling may be good option.
 - iv. Ear margins: may use Kwik Stop, crazy glue
 1. Ear will not stop bleeding because of constant movement and centrifugal force from head shaking. Use Kwik stop, corn starch, or cold water/ice and pressure.
 2. Use tubular cloth structure, leaving unaffected ear out *DEMO*
 - v. Pad laceration
 1. Bandage entire pad. Tight vs Loose *DEMO*
 2. May use glue if superficial.
 - c. Penetrating Injuries (ie, Bullet): SEEK VET CARE IMMEDIATELY
 - i. See p. 58-59 regarding types of shot (lead, steel)
 - ii. Watch for signs of peritonitis p. 59
 - iii. Sucking chest wound p. 59-60:
 1. Happens when bullet breaks normal negative pressure of chest cavity making it impossible to lungs to expand

2. Will see air under the skin
3. Push the air out, manually inflate the dog's lungs by blowing into the nose.
4. Use Vaseline to put in gunshot wound then wrap tightly with bandage material. BUT not too tight.

III. Bones: Fractures and Dislocations

- i. Goals are to prevent infection, reduce pain, and prevent bone ends from doing more damage.

****THESE DOGS WILL BE IN PAIN. USE A MUZZLE AND TRY TO REDUCE PAIN BEFORE HANDLING****

Be aware that there may be more serious issues like bleeding and airway issues.

1. Broken back: rear limbs are not moving. May see malalignment of vertebrae. If actual broken vertebrae, very poor prognosis.
 - These symptoms can also be result of spinal shock intervertebral disc disease, which can both be reversible. Paralysis can also be result of toxin or infectious agent.
 - Immobilize if suspected spinal injury.
 2. Broken pelvis: reluctance to walk on one or both rear limbs. Watch urine output; if bloody, or nonexistent, may have ruptured bladder.
 3. Broken humerus, femur: Large bones and may precipitate shock. Cannot splint because against body.
 4. Splintable bones/lower limb: Broken tibia, fibula, radius, ulna, foot, paw
 - a. Control bleeding
 - b. If bones sticking out, clean with antiseptic and push back under skin
 - c. Apply clean bandage, then apply thick cast padding, T-shirt, blanket.
- *DEMO* Robert Jones Bandage:

IV. Collapse/Weakness

- i. **HEAT STROKE/OVERHEATING**: (Hot weather, heavy exercise, insufficient water, high humidity, dogs left in vehicles and/or dog boxes in warm weather.)

****Never leave dogs in a parked vehicle in warm weather or bright sun****

****Always make sure there is plenty of water and shade available****

Symptoms:

Rapid breathing, may vomit

Staggering, collapse

High temperature (104-107f)

*check RECTAL temperature (37.5-39.2C / 100-102.5F is normal)

****In the canine working dog, temperatures can be as high as 105F (40.5C) during work but should return to normal within 30 minutes.**

- a. EMERGENCY: Cool down immediately. Submerge in lake, cool water, ice bath for at least 10 minutes.
 - b. Place in front of fan or air conditioner
 - c. Arrange transport for further care. In all cases of overheating hospitalization is recommended as soon as possible.
- ii. Hypoglycemia: If dogs are running uncontrollably. Carry syrup/honey for replenishing glucose for emergency use.

*NOTE: dogs sweat very minimally. There is not a need to replace electrolytes from just running/working. Too much electrolyte supplementation could unbalance their electrolytes. They will, however, deplete their sugars and snacks should be carried and offered (ie, peanut butter)

- iii. Heart disease: Usually preceded by signs of exercise intolerance, but not always. Certain arrhythmias (irregular heartbeats) can come on quickly.
- iv. Bleeding disorder (cancer; certain immune diseases): check gums for pale color.
- v. Certain endocrine diseases: Addison's disease is a condition in which dogs are not producing cortisol and cannot react to stress. Symptoms are collapse, low heart rate AND low blood pressure.

** COLLAPSE WITH PALE AND TACKY GUMS, EMERGENCY AND NEED TO SEEK CARE ASAP**

V. Gastrointestinal Disorders

- i. Diarrhea: Mild can be normal "stress" response to exercise and excitement, diet change...
 - 1. Can be dangerous if persists, or watery or bloody. If serious bacterial infection, may not resolve with hospitalization.
 - a. Encourage fluids: flavor water with diluted broth +/- subcutaneous fluids.
 - b. Bland diet (chicken/other boiled meat + rice)
 - c. Metronidazole (antibiotic) 500 mg twice daily for 5 days
- ii. Vomiting:
 - 1. Many non-serious causes: "dietary indiscretion", diet change/food allergy, excitement
 - 2. Serious/Emergency causes:
 - a. Foreign body/Obstruction: more frequent vomiting, lethargy. Most cases need surgery to correct.
 - b. Gastric Dilatation +/- Torsion: More common in dogs under stress. Stomach can twist in barrel chested/deep chested dogs. Closes off flow in and out and, if not treated (usually surgically), will cause death. Associated with feeding before heavy exercise. Feed smaller meals and do not exercise right after meal. (discussion re: emergency field care p. 76)
 - c. Gastric Ulcer: vomitus looks like coffee grounds (indicates stomach bleeding)

*can be work/stress related and should be watched for....

Field Treatment for vomiting, if not serious symptoms:

- 1. Cerenia tablet: 1 tablet every 24 hours. Not wrapped in food, on empty stomach.
 - 2. Withhold all food for 24 hours; Give small amounts of water +/- electrolytes every 1-2 hours. May flavor water with dilute broth.
 - 3. Feed cooked rice/bland diet after 24 hours.
3. Dehydration:
- a. Serious complication from ongoing vomiting and/or diarrhea, heavy exercise, heat. Can lead to shock.

Appendix H: Routine Physical Exam Outline

- I. Physical Exam
 - a. Mental State: Normal, bright and alert?
 - i. Dull? Not responsive?
 - b. Oral:
 - i. Gum color and moisture
 1. Capillary refill time (should be < 2 seconds)
 2. Color should be pink
 - ii. Teeth (know normal for your dogs' mouth)
 1. Old tooth fractures are treated differently than acute fractures.
 - c. Nose:
 - i. Discharge (1 nostril or both)
 - d. Eyes:
 - i. Discharge
 - ii. Pupils (dilated, symmetrical)
 - iii. Squinting (corneal ulcer, scratch)
 - e. Ears:
 - i. Debris/discharge: dark (is there head shaking?)
 - ii. Foreign body/object in ear
 - f. Neck and Spine
 - i. Good movement (following toy, food)
 - ii. Areas that are sore/tender?
 - g. Limbs
 - i. Lameness (more following)
 - ii. Swelling
 - h. Paws/Nails
 - i. Nails cut? Any torn?
 - ii. Pads: Cracks, cracks in between pads
 - i. Chest
 - i. Heart rate (normal resting rate 80-100)
 1. <60: Athletic dog at rest? If not, may be dangerously low
 2. >140 at rest
 - a. Could be pain, low blood oxygen (anemia, poor lung function)
 - b. Shock: the heart not pumping properly, not enough circulating blood, anaphylaxis
 - ii. Ribs: painful?
 - j. Abdomen/Belly
 - i. Painful when pressed on?
 - ii. Distended?
 - k. Skin
 - i. Redness or hives
 - ii. Lymph nodes enlarged? DEMO
 - iii. Scratching/licking
 - iv. Parasites

Normal Temperature Range: 37.5-39.2C / 100-102.5F

Appendix I: Snake Bite Protocols

Snake Bite – information, treatment and emergency evacuation plan for working dogs in Luangwa (Shared by the South Luangwa Conservation Society)



Introduction on snake bites

Fatal snake bites are more common in dogs than in any other domestic animals. Snake bite with envenomation is a true emergency. Rapid examination and professional treatment are paramount. Owners should not spend time and effort at first aid other than to keep the animal quiet and limit its activity. In dogs and cats, mortality is generally higher from bites to the thorax and abdomen than bites to the head or extremities.

Types of snake bites

Venomous snakes falls into two classes (1) The Elapines, which include the Cobra, Mamba and Coral snakes and (2) The two families of Viperines, the true Vipers (eg Puff adder) and the Pit Vipers (e.g. rattlesnakes).

Elapine snakes have short fangs and tend to hang on and “chew” venom into their victims. Their venom is neurotoxic and paralyzes the respiratory centre.

Viperines snakes on the other hand have long, hinged hollow fangs; they strike, inject venom (a voluntary action), and withdraw. Many bites by vipers reportedly do not result in injection of substantial quantities of venom. Viperine venom is typically haemolytic, necrotizing and anticoagulant.

Effects

The effect on venom on the physiology of the animal can either be haemotoxic or neurotoxic depending on the type of the snake that has bitten the animal. Haemotoxic effect means it exerts its toxin by disrupting the integrity of blood vessels. The swelling is often dramatic with one third of total blood circulation being lost into tissues in a matter of hours. The toxin further disrupts normal blood clotting mechanisms leading to uncontrolled bleeding. This kind of blood loss induces shock and finally death.

On the other hand, the neurotoxic effect of some snake venom acts principally at the neuromuscular junction. They produce a flaccid paralysis of the voluntary muscles and cause death from respiratory obstruction and or respiratory insufficiency. The dog in this case is presented with neurological signs such as muscle tremors.

Diagnosis

In many instances, when the bite has been witnessed, diagnosis is not a problem. However, if the bite has not been witnessed, the following clinical signs may be observed;

May see one, two, or several small puncture wounds, bleeding, bruising, immediate and extremely painful swelling at the site of the bite, and tissue necrosis (the tissue becomes markedly discoloured within a few minutes and dark bloody fluid may ooze from the fang wounds). The more severe systemic signs may take up to several hours to appear and include hypotension and shock,

lethargy and weakness, muscle tremors, nausea, vomiting, and neurological signs including depressed respiration.

Immediate action

- One person in the team can try to identify the snake if possible but DO NOT waste precious time that would lengthen the time it takes to get help
- Stop activity and try to calm the dog. Slowing the heart rate slows absorption of venom from the bite and slows distribution of the venom in the body
- Cool the dog down, encourage drinking, and make sure crate fan is on and cooling pad is used for dog to lie on
- Loosely immobilize the limb in a functional position if bitten on an extremity
- DO NOT incise the bite wound to aspirate the venom and DO NOT apply a tourniquet
- DO NOT apply ice to the area
- Seek veterinary attention. At this point immediately notify SLCS through Dr Sichande, the CEO, Ops Manager or Unit Leader
- Assess the dog, location of bite, pain level and swelling
- If medical attention is within 30 – 40 minutes get there immediately
- If medical attention is further away (some hours), administer pain medication orally (rimadyl tablet x 1 a 75mg) and broad spectrum antibiotics if possible such as Baytril according to the weight of the dog and a subcutaneous drip.
- If medical attention is 8 hours away repeat the above every four hours.

Note: Fluids improve low blood pressure from cardiovascular shock and maintain/return hydration both of which can maintain organ function.

Volume to administer: Shock dose of fluids around 90ml/kg/hr IV, given in ¼ dose increments.

General rule:

- Large dogs give 1 Lt
- Medium dogs give 500 ml
- IV fluids can be overdosed, shock dose is given over 5-10 minutes
- SQ fluids are hard to overdose, limit is on tightness of skin / comfort

Prevention

Snakes are more likely to bite when they feel threatened, are startled, are provoked or when they have been cornered. Being aware of and ultimately avoiding areas known to be heavily populated by snakes is strongly recommended.

Snakes are likely to approach residential areas when attracted by prey such as rodents. Regular pest control can reduce the threat of snakes considerably. It is also beneficial to know the species of snakes that are common in your local area. Be extra careful when you are working in fields and villages, especially at night.

Basic drugs to be kept on hand in the canine first aid kit for snake bite

Diazepam, Dexamethazone, Heparin sodium, Epinephrine, Procaine penicillin (Megapen), Enrofloxacin (Baytril), rimadyl tablets 75mg, normal saline and ringers lactate fluid, tetanus antitoxin.

SLCS is also exploring the possibility of storing antiserum for the administration only by a veterinarian.

Treating locally

- Treatment of puff adder envenomation should be directed toward preventing or controlling shock, neutralizing venom, preventing or controlling Disseminated Intravascular Coagulation (DIC), minimizing necrosis and preventing secondary infection. Any dog or cat presented within 24 hours showing signs of snake envenomation requires intensive treatment starting with IV fluids to combat hypotension. Intensive fluid therapy should be instituted as soon as possible because irreversible effects of venom begin immediately after envenomation. Normal saline (Sodium chloride) or Ringer's lactate fluid are recommended.
- Supportive treatment may include anticonvulsants (Diazepam)
- The progression of events after puff adder envenomation can be divided into three phases; the first 2 hours, the ensuing 24 hours and a variable period (usually 10 days) afterward. The first 2 hours is usually acute stage in which untreated severely envenomised animals die. If death does not occur during this period, the prognosis is usually favourable. The acute can be prolonged by use of corticosteroids (eg Dexamethasone sodium sulphate). This can only be used to prolong the clinical course to allow more time to institute curative measures as it controls shock and protect against tissue damage. If the animal is active and alert after 24 hours, death due to direct effect of venom is unlikely. The third phase is a convalescence period in which infection (possibly anaerobic) may be of concern. If necrosis has been extensive, sloughing occurs and may be so severe as to involve an entire limb. Tetanus antitoxin should be administered to counter this phase.
- Broad spectrum antibiotics (eg procaine penicillin, baytril) to prevent secondary bacterial infection.
- Blood transfusion may be required in the case of haemolytic or anticoagulant venoms.
- Nonsteroidal anti-inflammatory drugs (NSAIDs) are contraindicated in the early stages (first 24 hours).

Appendix J: Trypanosomiasis

African Trypanosomiasis – information, prevention, treatment and emergency evacuation plan for working dogs in Luangwa



African trypanosomiasis is a haemoprotozoan disease of domestic and wild animals caused by microscopic parasites of the genus *Trypanosoma*. It is transmitted by the tsetse fly (*Glossina* species), which is found only in rural Africa. Trypanosomiasis is curable with medication if caught in time, but is generally acute and fatal in canines if left untreated.

Epidemiology & Risk Factors

There are two forms of trypanosomiasis, Human African Trypanosomiasis (HAT) and African Animal Trypanosomiasis (AAT). HAT affects people only and is commonly referred to as 'sleeping sickness'. In Eastern and Southern Africa it is caused by *Trypanosoma brucei rhodesiense* and in Western and Central Africa *T. brucei gambiense*.

AAT affects a wide range of domestic animals and is commonly referred to as 'nagana'.

It is caused by a variety of different trypanosome species, with *T. congolense* and *T. brucei brucei* the most common species found in dogs. Infections due to both species are normally fatal with *T. brucei* infections more likely to localise in the central nervous system (CNS) causing ocular or neurological symptoms.

Infections are particularly difficult to treat once they reach the CNS. Dogs may also act as a reservoir for HAT and may carry sub-clinical infections with *T. b. rhodesiense*. It is important to note that handlers cannot catch sleeping sickness directly from dogs as the tsetse is required to complete the parasite's life cycle and render it infective to humans.

Disease

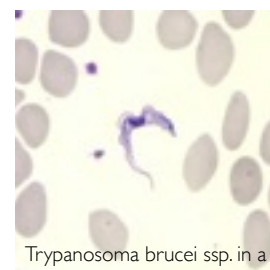
Trypomastigote forms of *Trypanosoma* enter host cells soon after infection, multiply sub clinically, and escape the immune system and spread throughout the body primarily within macrophages. Parasitaemia develops within a few days and peaks two to three weeks post infection, coinciding with clinical disease. Anaemia is a cardinal feature of the disease in which red blood cells are removed from the circulation by the expelled mononuclear phagocytic system.

Dullness, persistent fever, swollen lymph nodes and corneal opacity can also be observed.

There are a number of effective trypanosomicidal agents for dogs including isometamidium (Samorin) and diminazene (Berenil), but a single dose of diminazene diaceturate is effective in eliminating the natural trypanosomiasis infection in canines if given early in the course of disease.

Diagnosis

The diagnosis of AAT is by way of a blood smear collected from the ear (the parasites localise in the small, peripheral vessels so collection from the ear increases the likelihood of detection). For the best results smears should be fixed in methanol for two minutes then stained with Giemsa's solution, diluted 1:20 with buffered water, for 30–60 minutes. If a faster result is required rapid stains such as Diff_Quik may also be used. Serology has



Trypanosoma brucei ssp. in a thin blood smear stained with Giemsa.

poor specificity and antibodies are not produced early in infection so it is not useful. PCR is the gold standard method of diagnosis, but is expensive and only usually available at research organisations (UNZA can do this test).

Prevention & Control for Dogs

There is no effective vaccine or fully effective drug for prophylaxis against AAT in canines. Preventive measures are aimed at providing a form of prophylaxis and minimizing contact with tsetse flies. Local residents are usually aware of the areas that are heavily infested and advice should be taken of where to work and train.

Preventative measures currently being implemented by SLCS and highly recommended are as follows:

- All working dogs at SLCS are given samorin as a prophylaxis every twelve weeks. This is calculated at 0.05mls per kg of a 2% solution
- There may be an option to use prophylaxis for most of the year (perhaps nine months) and then give them a break during the period of lowest tsetse challenge – probably Oct / Nov when it is very hot before the rains. You could try using the lower dose rate of 0.5 mg/kg if side-effects are a concern.
- Rectal temperatures of the dogs are taken twice daily by the handlers (morning and evening) and recorded. Normal temperature ranges between 37.5-39.2 degrees Celsius
- Ensure inside and outside of kennels are inspected daily for tsetse flies
- Inside of kennels should be screened with fine mosquito gauze
- Handlers should not wear dark colours as tsetses are attracted to them (particularly blue and black)
- Inspect vehicles before entering. The flies are attracted to the motion and dust from moving vehicles. Any flies seen need to be netted and destroyed. Note if any flies have taken blood
- Spray mild dettol spray around vehicle daily
- Avoid bushes and heavily wooded mopane areas during the day for training purposes. The tsetse fly is less active during the hottest part of the day but will bite if disturbed
- Use insect repellent. Permethrin-impregnated repellent is somewhat effective. Shoo fly can be bought at Livestock services and Brandline Lusaka and should be sprayed daily on the dogs. If the dogs swim or are watered down they should be sprayed again afterwards.
- A homeopathic spray of diluted tea tree oil works well on both dogs and humans and is less offensive than Dettol and Shoo fly
- The exploration of Scalibor collars should be undertaken
- Advantix should be used on dogs every three weeks to prevent tick bites and other tick borne diseases and the application of tick grease in feet
- Observe the colour of the dogs gums and tongue regularly – anaemia and pale gums is a very prominent sign of trypanosomiasis
- Observe eye colour and be vigilant for corneal opacity
- Record daily behaviour of dogs such as energy levels, excitement during greeting of handlers, sleep patterns. Working dogs tend to conceal their illness more than nonworking dogs and can be hard to detect
- Depression (reduced appetite) should be useful but may be difficult in working dogs which will hide this. Although monitoring for anaemia is also advised, it will not be present in the acute stages and therefore treatment will be difficult once a dog is clinically anaemic. The same applies for corneal opacities. Any dog with a high temperature (>39.0 deg C) should have a blood smear, repeated in 12 hours if negative.

- Any working dog at SLCS who appears unwell with a temperature will have a blood smear taken and tested for parasites at the SLCS clinic.
- SLCS will have blood work done for all dogs on samorin annually, this will enable us to monitor kidney and liver function and check for chronic long term toxicity

Basic drugs to be kept on hand in the canine first aid kit

Imizol for treatment and prevention of babesiosis

Synulox - antibiotic

Baytril 5% - antibiotic

Samorin – 4 x 1 g sachets

Rimadyl – 75mg carprofen tablets

Tramadol capsules

Hydrogen peroxide 10% to induce vomiting

Activated charcoal tablets

Fluids, thermometer, stethoscope, gauze, bandages, vet tape, eye drops, ear drops, savlon, steri strips, wound glue.

Emergency Evacuation plan

(note: this plan is only to be used as an example. Other sites must develop their own plans with relevant local information)

In the case of suspected sleeping sickness which cannot be treated locally because the vet or another such qualified or experienced person is absent the following protocols must be observed:

2. Call one of the following Lusaka based vets immediately - Dr Liza Operacha based at Lusaka Showground's on 097777XXXX(first call) and if you cannot get an answer call Dr Ian Parsons (second call) on 097777XXX. Explain who you are and who you work for and the situation with the dog. Be specific and brief, give details including rectal temperature, colour of gums, colour of eyes, energy levels, if the dog has been eating and so forth. All these details can be obtained from the handlers.
3. If the vet advises you to fly the dog to Lusaka urgently, call Proflight Mfuwe on 097 477 XXX and book the soonest flight for the handler and the dog. The handler will have to travel by ZEGA (DHL freight) and will cost K500 to transport the dog to Lusaka on the same flight. You may need to make a special trip to the airport to book and pay for the flight in order to secure it. Be sure to get to the airport 1 hour and 30 minutes before the flight leaves to give enough time for ZEGA to be arranged.
4. If there are no seats on Proflight, or the dog may possibly not survive till the next available flight, 9J-SLC, SLCS / ZCP plane must be used. The plane will have to take off from Kakumbi and land at Mfuwe Airport and the dog will travel from there.
5. If the dog is in critical condition and Dr Sichande is available he should also fly with the dog and handler to monitor his situation throughout the flight.
6. On landing at Lusaka, you will need to get a taxi to Show Grounds Vet, Dr Liza Operacha, most taxi's know this place and will charge K200. Please budget accordingly and make sure you have enough money. In a situation where you do not have enough or run out, please call Robert Stacey on 097 860 XXXX and he will help you.
7. SLCS would prefer not to have any of our working dogs on steroids for any length of time, please convey this to the vet

8. Dr Operacha may want to keep the dog at the kennels for observation and if not then you should go to Lusaka Back Packers and book an ensuite room there for the dog and for the handler. A taxi will be able to take you there. If any problems you can call a taxi driver who knows these places called Jateyo on 097 861 XXXX.

Treating locally

This must ONLY be done by a qualified or trained person, the wrong dosage of the treatment is very toxic and can kill the dog.

There are some species in Luangwa that appear resistant to samorin as a treatment. We have therefore chosen to use samorin as a prophylaxis and berenil as a treatment.

If samorin has been used as a prophylaxis we recommend a treatment of Dophanil / Berenil (diminazen diaceturate) be used at the following calculations:

Standard 3.5 mg / kg

Dissolve 1 sachet in 12.5 mls sterile water = 7% solution

Administer 0.5 mls / 10 kg

Clear instructions are written on the packet.

If trypanosomiasis has been confirmed and dogs are NOT on samorin as a prophylaxis, samorin can be used to treat the disease at the following dose:

1 g of Trypamidium – Samorin sachet dissolved in 50ml sterile water to give a 2% solution.

0.05 ml / kg

E.g. 10kg dog x 0.05ml / kg = 0.5mls to be administered deep IM Example table of Samorin doses for dogs

It is essential to weigh the dog as the dose had to be correct and cannot be guessed. The drugs have a low therapeutic margin and it is easy to overdose and cause acute toxicity

Weight of dog	Calculating Dose	Dose
10 kg	0.05ml x 10 kg	0.5 mls
12kg	0.05ml x 12 kg	0.6 mls
15kg	0.05ml x 15 kg	0.75 mls
18kg	0.05ml x 18 kg	0.9 mls
20kg	0.05ml x 20 kg	1.0 mls
22kg	0.05ml x 22 kg	1.1 mls
25kg	0.05ml x 25 kg	1.25 mls

which can be fatal. Use the stand on dog scale in the kennel. You may want to counter check by first weighing yourself and then by weighing yourself plus the dog. Subtract your weight from the total to give you the dog's weight.

It may be useful to also note the possible reaction at injection sites. The drug has its long-lasting effect because it produces a granulomatous reaction at the injection site which delays its release. Done repeatedly this could cause lameness and also could make the dogs quite needle shy if it is painful.

If trypanosomiasis cannot be confirmed because the vet is not present but the following symptoms are present, pale gums, pale tongue, milky eyes or red eyes, fever, loss of appetite, low energy levels, swollen lymph nodes, treatment with berenil is still advised.

In addition give 20 mls heptonic orally.

Other veterinary advice has been given including the following:

It is advisable to avoid steroids at all costs as it causes immunosuppression and reduces survival rates in cases of AAT. Supportive treatment with IV fluids is the best approach. If the dog is on fluids, a NSAID like rimadyl or metacam would be better than steroids to make it feel better, but again use these with care if it is dehydrated.

Forced rest cannot be over emphasized after treatment. It will be very easy to assume your dog is recovered and well enough to work. This is not the case and he / she must rest for three weeks at least.

A Case History – Steve January 2015

A 15 month male black Labrador working dog of American origin, who arrived in Mfuwe, Zambia three months previously, developed droopy red eyes after conducting a two night road block with law enforcement officers. No other signs were noticed until this time and the condition was initially thought to be ectropion possibly brought on by exhaustion. Two days of rest were given and ophthalmic drops were administered. The eye condition did not improve with any medication and 4 days later he deteriorated further showing signs of low energy (often masked in a working dogs given their nature to want to work), elevated temperature of 40.8 °C, pale tongue, swollen lymph nodes and corneal opacity, which is a characteristic finding in chronic trypanosomiasis. At no point in the initial stages of red and droopy eyes did we assume suspect trypanosomiasis.

It is worth noting that during the previous two weeks, Steve's breath and teeth became increasingly pungent and was reminiscent of a much older debilitated dog. His faeces were bright yellow. He did not lose his appetite but ate more slowly than usual.

The dog was flown to Lusaka on day 7 of the eye symptom and after clinical examination there was high rise of rectal temperature (40.8 °C), pale mucous membrane, corneal opacity, swollen spleen, swollen lymph nodes, increased drooling and generalized debility. His weight was 29 kg's, lower than what it should be. Preferred weight should be 31 kg's. The dog was tested for the presence of hemoparasites through blood smears stained with the Giemsa stain and examined under a microscope. Microscopic examination revealed a high load of Trypanosoma. Additional blood was sent to the University of Zambia for further testing and t. brucei was confirmed.

Treatment of Steve involved samorin at $0.05 \text{ ml / kg} \times 29\text{kg} = 1.45\text{ml}$ given intra muscularly. Supportive therapy including oral preparation of liver tonic, steroids for anaemia and antibiotics were administered. Improvement was seen within 18 hours and he flew back to Mfuwe with his handler the following day after a second assessment by the vet.

Ongoing treatment of the following was prescribed

- doxycycline 3 capsules per day for 21 days
- sucralfate once per day for ten days
- probiotic powder with food for 21 days

Additional supportive treatment for three weeks included increase food, bone broth to help line the stomach and prevent ulcers during medication.

Steve did not work for three weeks after his treatment of samorin, while his body fully recovered.

Conclusion

Sadly, on 16th January, almost two weeks after Steve became ill, he relapsed and showed signs of neurological disorder. A slight back leg wobble was noticed and he was inappetent and lethargic. He was flown to Lusaka the following morning in a charter plane and admitted at Show Grounds Vet Clinic. Steve was put on steroids but it was suspected the parasites had gone to his spine and brain. He was eating well during this time and his temperatures remained normal. After four days of being seemingly stable, he was taken off steroids and within 24 hrs crashed. He suffered a stroke during the night of the 25th and was euthanized on the 26th. Test results of Steve's brain confirmed *t.brucei*.

A Case History – Ruger January 2015

1. On 28th – 30th January, Ruger, a black Labrador cross shepherd of American origin who arrived in Mfuwe at the same time as Steve, conducted a two day road block in a nearby town.
2. 1st February, he developed a high temperature of 39.8°C noticed at 17.00hrs, after taking routine morning and afternoon rectal temperatures. At 19.00hrs his temperature was still high and after consultations with an advising vet, blood was drawn, stored and samorin was given at 0.05mls per kg of a 2% solution (1.5mls). Ruger had to be sedated as he was very aggressive towards his vet. He was sedated with 2mls dormitor.
3. 2nd Feb, his temperature was 40.6 °C most of the night and it reduced to 38.6 °C on the morning of the 3rd. He vomited on this morning and did not eat and was lethargic.
4. 3rd Feb, his temperature rose again to 39.5 °C and 39.8 °C and he still had no appetite and no energy. His lymph nodes were normal and no other symptoms were observed.
5. 1cc dexaject was given IM.
6. Blood that was drawn before samorin was sent to Lusaka for testing, no parasites were found.
7. The decision to give berenil at the standard dose of 3.5mg per kg was made after consultation with an advising vet and after weighing the dog accurately. 1.4 mls was given deep IM with Ruger muzzled. His temperature was 39.6 °C and he remained depressed and lethargic.
8. 4th February, Ruger's temperature remained at 39.5 °C. He was started on 200mg doxycycline a day for three weeks. His temperature rose to 40.0 during the night.
9. 5th February, due to persistent high temperatures, he was retreated with 1.4mls berenil. His temperature dropped to 38.0 °C late afternoon and over 24hrs he gained energy and ate well.
10. He was closely monitored throughout the day and night and had his handlers sleep in the kennels with him taking his temperature at least six times per day and also during the night.
11. He lost two kg's during this period and so was fed three times a day. As he lost interest in his usual diet of Royal Canin kibbles, he was fed chicken and rice.
12. On 9th February he was considered in the safe zone and went back to light training duties while we monitor him.

Twice daily rectal temperatures are what alerted us to Ruger not being well. Quick action was needed and quick decisions were made after consultations. There was a risk involved in treating with two doses of berenil after already treating with samorin, but the risks of not doing this far outweighed treatment. It is suspected that *t.brucei* needs aggressive treatment. Although no parasites were confirmed, the time in which Ruger became ill so soon after Steve and the very similar symptoms observed make us fairly certain trypanosomiasis was present.

A Case History – Earl September 2015

Earl, a dutch shepherd, aged 1.8 years was delivered to Mfuwe with his sister Chai in June 2015 from the USA. Both dogs were put on samorin as a prophylaxis on 23rd June 2015. They were due

How can your dog be exposed to poison?

During routine inspections, raids and field surveys, via:

- Residues in/on inspected bags that once held poisons (liquid, granule or powder), baits or even poisoned animals
- Accidental contact (lolling tongue) with baited items in buildings or left out in the wild to poison wildlife
- Contact with stored poisons, especially if loosely contained, especially during building searches
- Accidental ingestion of, or contact with, poisoned animals (secondary poisoning)



Prevention and vigilance are key!

Know the different types of products –legally and illegally – used in and near your area to:

- a)poison vermin & pests
- b)poison wildlife (either for hunting/fishing or retaliatory)
- c)treat crops

REMEMBER:

- Some products tend to be favoured to poison certain species
- The same product may go by different names (brand name, chemical name, slang) or go by the wrong name
- Products may be stored in mislabeled containers
- Counterfeit products may be in use

How can you help your dog?

Carry a basic first aid kit

Be ready to act quickly to stabilize your dog then seek veterinary attention ASAP

Be on the lookout for symptoms of exposure at all times, even when they are off-duty

Strychnine

Often used against vermin, this alkaloid agent commonly causes respiratory shutdown/asphyxia.

Symptoms may be seen within minutes or several hours after exposure.

Symptoms

- Spasms with possible arching of the head, neck and back
- Rigid muscles
- Difficulty breathing
- Elevated heart rate
- Elevated body temperature
- Vomiting
-

Treatment

- Activated charcoal
- Gastric lavage

Rodenticides - anticoagulants

Anticoagulant rodenticides interfere with vitamin K production, which is vital in blood clotting. These are slow-acting, and exposure can also be cumulative, so several days may go by before symptoms are observed.

Symptoms

- Vomiting
- Diarrhoea
- Listlessness
- Patches of red/purple/dark blue on the body or gums – signs of internal bleeding

Treatment

- Injection of vitamin K to help restore blood clotting ability

Insecticides

Organophosphorus and carbamate insecticides affect the nervous system. They are fast-acting, with symptoms often observed less within 1 minute of exposure.

Symptoms

- Salivation, excessive tears
- Muscle twitching/convulsions
- Arching of the head back and neck
- Laboured breathing
- Jaws tightly clamped
- Diarrhoea
- Severe vomiting
- Pupil constriction

Treatment

Atropine injection:

- intravenous (quickest, preferred)
- intramuscular (into the muscle)
- subcutaneous (under the skin)

Administering activated charcoal may be warranted

the next dose of samorin on 23rd September:

On around 12th September, one of the handlers noticed a slight reduction in Earl's energy levels and that he tired more easily when working. This was only very slight and hard for anyone but the handlers to notice. His temperature, eating and other habits were all normal.

On the evening of 16th September his temperature was 40.2 °C, he was given a cool bath and his temperature returned to normal. It is worth noting that Earl and Chai's temperatures are generally higher than Ruger at all times.

On the morning of 17th, his night keeper reported his temperature was 40.5 °C and he was not well. He was lethargic, inappetent and had high fever. He greeted me with lots of enthusiasm, jumping etc and then lay down to sleep.

We immediately drew blood and tested both locally for trypanosomiasis and sent samples to UNZA for a LAMP test.

Both samples concluded trypanosoma was present, and confirmed to be *t. congolense*.

The decision was made to treat Earl right away, even before the test results were conclusive as he appeared to be worsening.

He was given berenil at 3.5mg / kg. At the time he weighed 35.85 kg and so was given 1.8mls at a dose of 0.5 mls per kg 10kg.

His temperature at 10.15am – 40.2 °C, 12.30 - , 15.00 - , 16.30 – 38.9 °C, 20.00pm – 38.8 °C
PCV was 24% - very anaemic.

He was also put on doxycycline for a week at 10mg /kg and oral heptonic for five days.

On 18th his temperature was 38.0 °C in the morning and remained at 38.8 °C during the day. He ate well and was closely monitored and his temperature remained normal.

On 23rd he was given samorin as a prophylaxis at the same time as Ruger.

On 28th his blood was taken and PCV was 40%. He was considered recovered.

On 18th we also tested Earl's sister Chai as they have been everywhere together. Her blood was normal, no parasites and PCV 46%.

Chai was given samorin on 18th instead of 23rd and the decision to give the prophylaxis every 10 weeks instead of 12 during peak tsetse season was decided.