



Region 8 Animal Control Newsletter

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Photo courtesy www.forestwander.com

Chaga's Disease, A Potential Threat to Human & Animal Health in Texas

By Edward J. Wozniak DVM, PhD, Regional Public Health Veterinarian

Chaga's disease is a New World vector borne parasitic disease that is caused by the flagellated protozoan, *Trypanosoma cruzi*. The parasite is known to infect a variety of vertebrates including humans, dogs, coyotes, raccoons, armadillos, rodents and other species. The distribution of the parasite is limited from the southern United States throughout portions Mexico, Central America and South America. Because of this, the associated disease is often called American Trypanosomiasis.

In nature, *T. cruzi* is transmitted between hosts by kissing bugs (family Reduviidae; subfamily Triatominae) with some of the most commonly involved genera being *Triatoma*, *Rhodnius*, and *Panstrongylus*. Several species in the genus *Triatoma* are indigenous to the State of Texas and have been shown to be competent vectors of *Trypanosoma cruzi*. Being members of the Order Hemiptera

(true bugs), the development of triatomid bugs is by incomplete metamorphosis, starting from eggs and progressing through several non-winged nymphal stages that typically remain sequestered near their hatching site before maturing into winged adults. Because a blood meal is required for progression through each developmental stage, the young bugs feed several times before reaching adulthood. Young triatomid bugs will feed on a variety of vertebrate hosts and if one or more of these feedings is on a *T. cruzi*-infected parasitemic host, the bug will acquire the infection and be capable of transmitting during subsequent feeding/defecation cycles. Seasonal dispersion of triatomines occurs during the between the months of May and August when the winged adults take flight. Because of the larger size of the adults and their attraction to lighted areas, it is usually during these months that their presence is noticed.^(1,2) Infestation of kennels and other facilities used to house dogs has been shown to be common in much of South Texas and canine losses attributable to Chaga's disease have been documented in Region 8.⁽³⁾

Adult specimens of two common triatomine bugs that can be found in Region 8



Triatoma gerstaeckeri

photo adopted from
flushrush.com



Triatoma sanguisuga

Photo adopted from
stonewaresnake

Being secretive by nature, triatomines derive the common name 'kissing bugs' from their habit of often feeding on the soft tissues around the mouth or eyes while the victim is asleep. Unlike the bite of their cousins, the assassin bugs which are predatory on other insects and can inflict a painful bite on anyone unfortunate enough to pick up or touch one, the bite of the blood feeding triatomine or 'kissing bug' is reputed to be painless. Once attached to a host, the bugs can feed to repletion in as little as 10 minutes. Like mosquitoes, the feeding technique employed by kissing bugs involves the penetration and intake of blood directly from a blood vessel in the host (solenophage feeding). Once engorged with blood, the bugs will often remain in the general vicinity of where the blood meal was taken for several hours.

Unlike many other vector borne pathogens that are acquired directly from the bite of the vector, *Trypanosoma cruzi* is transmitted when an actively feeding or recently fed bug defecates on or near the bite victim and the motile parasite either enters the body through the bite wound or other pre-existing break in the skin, or is unknowingly rubbed into the conjunctiva of an eye or other mucous membrane. In addition to this, some of the other routes by which the pathogen is spread include; transfusion with contaminated blood, organ transplantation, ingestion of raw or undercooked meat from infected animals, ingestion of infected triatomid bugs, and by vertical transmission between mother and fetus.⁽²⁾

Life Cycle of *Trypanosoma cruzi*

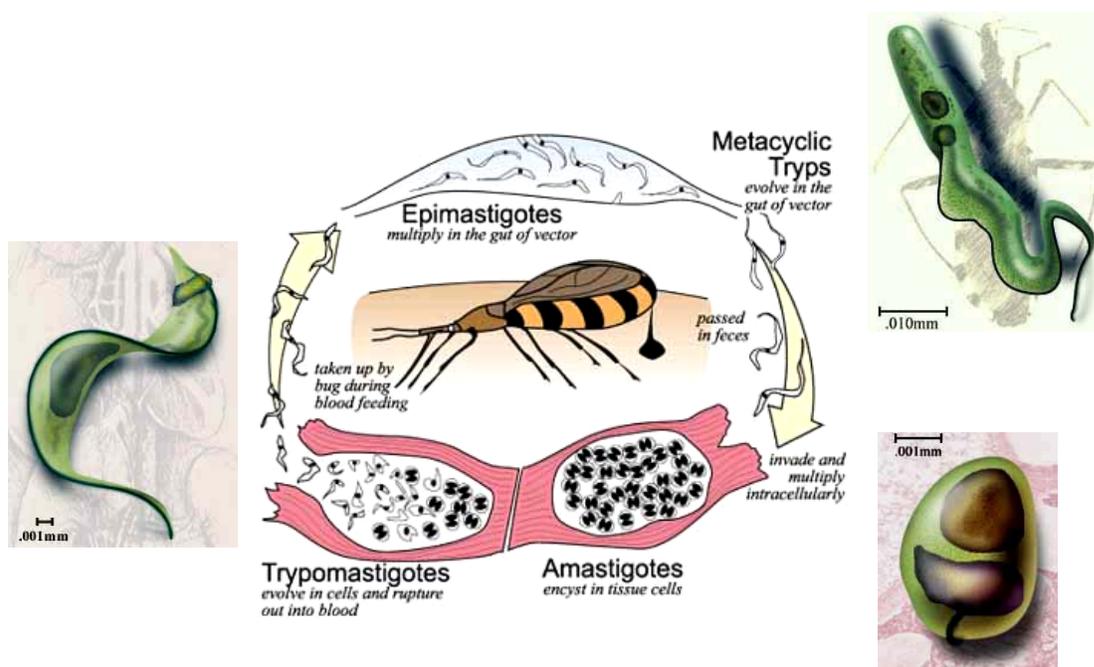


Diagram adopted from Hanford, Zhan, Lu, & Giordano. *Chagas Disease: Clues to the Magnitude of the Problem in Texas*, 2009 Diseases In Nature Conference, Fort Worth, TX.

The symptoms of Chagas disease vary over the course of an infection. Following an incubation period of 1 to 2 weeks, the victim enters into the acute phase of the disease. The symptoms of acute Chaga's disease which are usually mild and can include local swelling at the site of infection, mild fever, lethargy and enlarged lymph nodes. In some cases, most notably in young individuals, the acute phase can be more severe with the patient developing a high fever, markedly enlarged lymph nodes, enlargement of the liver, spleen and heart and meningoencephalitis. After 4–8 weeks, infected individuals usually enter the latent phase of the disease, during which they will often remain asymptomatic. The latent phase can go on for decades before progressing to the chronic phase during the infection again becomes clinically apparent. Progression into the chronic phase of the disease occurs in 20% to 30% of the infected population and is often marked by the development of severe infection-related heart problems characterized by cardiomyopathy with congestive heart failure and/or arrhythmia (right bundle branch block) or intestinal tract changes resulting in the development of megaesophagus or megacolon.^(4,5) With the development of cardiovascular lesions, death can occur, often suddenly.⁽⁴⁾

An ongoing collaborative study between UT Austin and DSHS aims to assess the health risk posed indigenous Chaga's disease in Texas and identify the regions within the State that have a higher risk for transmission. As part of the study, we are collecting triatomine bugs for speciation and testing from different areas throughout the region. If you find any such insects in or around your shelters and can safely capture them without touching them, please collect and hold them in an escape proof container, note the location where collected and contact Dr. Wozniak at (830) 591-4382.

Literature Cited

- 1) Ekkens D. Nocturnal flights of *Triatoma* (Hemiptera: Reduviidae) in Sabino Canyon, Arizona. I. Light collections. *J Med Entomol.* 1981;18:211–27.
- 2) Reisenman CE, Lawrence G, Guerenstein PG, Gregory T, Dotson E, Hildebrand JG. 2010. Infection of Kissing Bugs with *Trypanosoma cruzi*, Tucson, Arizona, USA. *Emerg Inf Dis* 16 (3);400-405.
- 3) Kjos SA, Snowden KF, Olson JK. Biogeography and *Trypanosoma cruzi* infection prevalence of Chagas disease vectors in Texas, USA. *Vector Borne Zoonotic Dis.* 2009;9:41–50.
- 4) Harwood RF, James MT. 1979. *Entomology in Human and Animal health, 7th Edition.* Macmillan Publishing Co., Inc. New York, NY 548 pages.
- 5) Heymann DL. 2004. *Control of Communicable Diseases, 18th Edition.* American Public Health Association, Washington DC pp 557-560.

DSHS ACO Training Course Schedule



Approved Courses conducted by the Department of State Health Services Zoonosis Control Branch¹

Call the number provided or click on contact name for the *course date* for which you would like to register to ask questions about a particular course.

Date	Type	Location	Contact(s)	Phone Number
*Jul 14-15, 2010	Basic	Conroe, TX	Gary Johnson Brittany Singletary Jael Miller	(713) 767-3300
Jul 20-21, 2010	Basic	Fort Worth, Texas	Heidi Rentschler Ron Cornelison	(817) 264-4920
Aug 11-12, 2010	Basic	Wichita Falls, Texas	Debra Perkins	(325) 795-5857
Sep 14-15, 2010	Basic	2408 South 37th St., Temple, TX 76504	Beverlee Nix, D.V.M. Leslie Platz Rebecca Hejnal Melissa Maass	(254) 778-6744
Oct 26-28, 2010	Basic	Tyler, Texas	James H. Wright, D.V.M., M.P.V.M Angela Hopkins	(903) 533-5212
Nov 17-18, 2010	Basic	Sugar Land, TX	Gary Johnson Brittany Singletary Jael Miller	(713) 767-3300

¹These courses serve to meet the training requirements set forth in Texas Health and Safety Code, Ch. 829, Animal Control Officer Training. * Indicates that a course is full.

Internet address for non DSHS

<http://www.dshs.state.tx.us/idcu/health/zoonosis/education/training/nonaco>

Texas Health Service Region 8 Current Reported Animal Rabies Cases 2010

2010	Jan	Feb	March	April	May	June	Totals
Bandera		horse					1
Bexar			Bat(2),skunk	Skunk 4 Bat	Bat 3	Skunk, Cat, Fox	14
Calhoun				skunk			1
Comal		raccoon			Bat	Skunk	3
Gillespie					Raccoon		1
Goliad	skunk			skunk			2
Gonzales		Skunk 2	skunk	Skunk Dog	skunk		6
Guadalupe	skunk	skunk	Skunk 5, bat	Skunk 5 Bat 2		Skunk	16
Lavaca		skunk	bat		Skunk 2 Bat		5
Kerr					Fox		1
Uvalde		dog					1
Victoria						Bat	1
Wilson			skunk	skunk		Cat,Dog	4
Totals	2	7	12	17	10	8	56

Anthrax Confirmed in Uvalde County

Texas Department of State Health Services, Health Service Region 8

With the onset of hot summer temperatures following a spring with abundant rain, it is not unusual to have wild and domestic animal (usually herbivores) deaths attributable to anthrax infection. Anthrax is endemic to the western portion of Health Service Region 8 and the first laboratory confirmed case for 2010 recently occurred in a white tailed deer in Uvalde County. Because of this, clinicians are advised to consider anthrax on their list of differential diagnoses for cases presenting with lesions and histories compatible with those described below.

Natural History

Anthrax is a zoonotic disease caused by *Bacillus anthracis*, a large aerobic gram-positive toxogenic spore forming rod that is indigenous to numerous arid and semiarid regions throughout the World including industrialized nations. Being a spore forming bacterium, *B. anthracis* can lie dormant in the soil for years until the right complex of environmental conditions trigger its emergence. Grazing animals acquire the infectious spores while ingesting grasses and other plants close to the soil. Animals exposed in this manner often become acutely ill and die within hours, shedding large numbers of vegetative bacilli in blood and other body fluid discharges. The vegetative cells sporulate upon exposure to the outside atmosphere and contaminate the surrounding soil. Alkaline soils with abundant calcium are reported to favor the long term survival of anthrax spores. Within the State of Texas, most cases of endemic anthrax occur within a roughly triangular region that lies between the cities of Uvalde, Ozona and Eagle Pass where a combination of favorable soil conditions and vegetation types favor its survival. This area includes portions of Crockett, Edwards, Kinney, Maverick, Sutton, Uvalde, and Val Verde Counties.

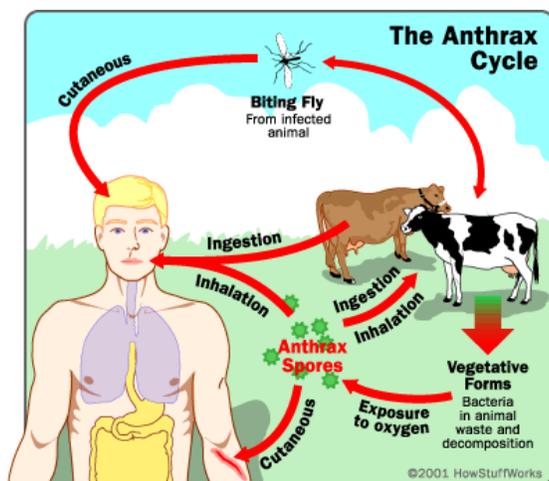


Image adopted from med.mui.ac.ir/.../infectious/infectious1.html

Human Exposure & Disease

People can become exposed to anthrax by direct contact with contaminated tissues, body fluids, hair, wool, or soil associated with infected animals or carcasses. The most common form of disease to result from such an exposure is cutaneous anthrax. Cutaneous anthrax usually begins as a painless pruritic papule that resembles and can easily be mistaken for an insect bite. The incubation period generally ranges from 3 to 10 days post-exposure. Once it forms, the papule enlarges and develops into a distinctive ulcerative lesion within a 24 to 48 hour period and is often surrounded by vesicles. A characteristic eschar with a black necrotic center surrounded by an area of non-pitting perilesional edema appears later and can last for up to 3 weeks. Fluid from the vesicles or a touch prep of the lesion may be Gram stained and cultured using routine media; blood cultures may be useful if the patient is febrile. Because of the route by which it is acquired (e.g., contact), cutaneous anthrax lesions occur most frequently on the upper extremities, face, and neck. The majority of the cases in the US occur in personnel that work directly with animals or animal products such as ranchers, slaughter plant workers, animal hide processors, wildlife biologists, veterinarians, and veterinary technicians.

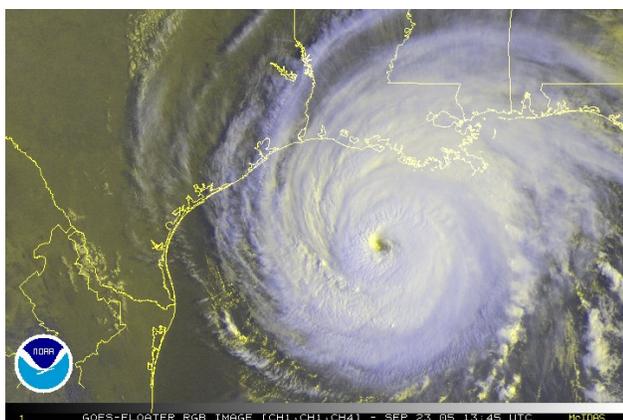
Required Reports, Treatment and Control of Patient

- Report to local health authority: Case report obligatory (Class 2).
- Investigation of contacts and source of infection: Search for history of exposure to infected animals or contaminated animal products and trace to place of origin. A case report and epidemiologic findings should also be forwarded to the Texas Animal Health Commission (800) 550-8242, FAX (512) 719-0719.
- Standard isolation procedures should be employed for the duration of the illness.
- Antibiotic therapy typically sterilizes a skin lesion within 24 hours. Person to person transmission is rare.
- Discharges and contaminated articles should be disinfected by autoclaving or incineration to ensure complete destruction of spores. Alternative chemical disinfection methods include soaking the items in sodium hypochlorite, hydrogen peroxide, ethylene oxide, peracetic acid, glutaraldehyde, or formaldehyde. Cobalt irradiation may also be effective in eliminating spores.
- Specific treatment options: Requires prompt medical intervention and a course of antibiotic therapy.

Recommended Preventive Measures

- Ranchers should wear long sleeved garments and gloves when handling livestock
- Employ sanitary practices such as hand washing with soap and water and laundering clothes immediately after animal exposure.
- Monitor the property regularly for dead animals. Promptly report unexpected deaths or unexpected die offs to a veterinarian.
- Do not attempt to necropsy dead animals in which anthrax is suspected. A diagnosis can be made on and aseptically collected blood sample.
- Vaccinate grazing livestock to prevent additional cases and losses. The vaccine is available from feed stores, through veterinarians and livestock supply representatives.
- Keep pets and children away from dead animals.
- Avoid direct contact with animal bones, horns or shed antlers.
- Move healthy animals off of contaminated pastures during an outbreak.
- The Texas Animal Health Commission regulations require that dead animals resulting from an outbreak along with their bedding and manure are incinerated to prevent additional soil contamination. A waiver of this regulation may be requested when drought conditions prohibit this from being done safely.

How to Prevent or Respond to Snake Bites in Hurricane Ravaged Areas



- After a natural disaster, snakes may have been forced from their natural habitats and move into areas where they would not normally be seen or expected. When you return to your home, be cautious of snakes that may have sought shelter in or around your home. If you see a snake in your home immediately call your local animal control agency. Becoming familiar with the native venomous species in your area is advisable. A free downloadable published article that specifically

addresses this subject can be found at <http://www.southwesternherp.com/pdf-files/Snakes&Hurricanes.pdf>

How to prevent snake bites.

- Be aware that snakes that may be swimming in flood water or resting on overhanging brush. Avoid blind contact with brush or limbs overhanging high water. Snakes will readily take refuge under debris or other objects on the ground. When removing debris, pry the items up with a tool such as rake, or a hoe and always pull the object up towards

you. That way, if you happen to uncover a snake, the object will be present between you and the animal and will serve to protect your legs. Avoid putting your fingers under the edges of any item in contact with the ground. Be aware that even a small piece of debris can effectively conceal large snake. As an example, items the size of an average cereal box can easily conceal a 5 ft rattlesnake!

- If you encounter a snake, back away from it slowly and do not touch it.

WESTERN DIAMONDBACK



PHOTO COURTESY OF DAVID WELLING/ ANIMALS/ANIMALS/ EARTH SCENES

Signs of snake bites.

- If you have to walk in high water, you may feel a bite, but not know that you were bitten by a snake. You may think it is another kind of bite or scratch. The following signs are indicative of a venomous snake bite.
- Depending on the type of snake, the signs and symptoms may include:
 - A pair of puncture marks at the wound;
 - An immediate burning sensation and the rapid development of redness and swelling around the bite;
 - Severe pain at the site of the bite;
 - Nausea and vomiting;
 - Labored breathing (in extreme cases, breathing may stop altogether);
 - Disturbed vision;
 - Increased salivation and sweating;
 - Numbness or tingling around your face and/or limbs;

What to DO if you or someone else is bitten by a snake.

- If you or someone you know are bitten, try to get a digital photograph of the animal from a safe distance (the approximate length of the snake). Alternatively, take careful note of the color, markings, general build and shape of the snake, which can help with treatment of the snake bite.
- Keep the bitten person still and calm. This can slow down the spread of venom if the snake is venomous.
- Seek medical attention as soon as possible.

- Dial 911 or call local Emergency Medical Services (EMS).
 - Apply first aid if you can not get the person to the hospital right away.
 - Lay or sit the person down with the bite at or below the level of the heart.
 - Tell him/her to stay calm and still.
 - If the bite is on a limb, remove any rings or constrictive jewelry.
 - If the bite was on a limb, wrap the bite with a loose fitting clean, dry dressing and immobilize the limb if possible.
- Mark the advancing edge of the swelling with a marker at 15 to 20 minute intervals. This will help the treating physician with determining the bite severity.

What NOT to do if you or someone else is bitten by a snake.

- Do not pick up the snake or try to trap it (this may put you or someone else at risk for a bite). If possible, secure a digital photo of the offending animal from a safe distance (see above).
- Do not apply a tourniquet.
- Do not slash the wound with a knife.
- Do not suck out the venom.
- Do not apply ice or immerse the wound in water.
- Do not drink alcohol as a pain killer.
- Do not drink caffeinated beverages.
- For more information, visit www.bt.cdc.gov/disasters, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY). The primary website for free downloadable article referenced above is <http://download.journals.elsevierhealth.com/pdfs/journals/1080-6032/PIIS1080603206703301.pdf>