For millions of years, invertebrates have played an important role in our ecosystem and in recent years, have taken on the role as a companion animal. It is estimated that ten percent of households in the U.S. own exotics as pets. Comparatively, tarantulas are becoming an increasingly popular addition to this percentage. Tarantulas have a life expectancy of eighteen to twenty years for females, and three to four years for males. This allows owners to become emotionally attached to their eight-legged pets, and yields high demand for vets willing to treat them. Therefore, understanding anatomy, husbandry, and common medical conditions is important for the owner, as well as the veterinarian.

It is important to understand the anatomy of a tarantula for proper handling and to detect an abnormality. There are two major structures, the prosoma and the opisthosoma. The prosoma is analogous to a fused head and thorax. This section contains their digestive system, paired venom glands that exit into fangs, a central nervous system, and musculature to control the limbs. The opisthosoma is analogous to the abdomen. This contains their remaining digestive tract, heart, respiratory system, reproductive organs, and paired spinneret glands which produce their silk-like webbing. How these anatomical structures are arranged play an important part in the many facets that make up invertebrate medicine and care.

Most medical conditions in exotics that are diagnosed by veterinarians are directly related to inadequate husbandry. Temperature and humidity are two key factors. All species typically thrive at room temperature (68-75°F), but a heat mat under thermostatic control can be added for additional warmth. Most direct heating methods are not needed and can reduce humidity to incompatible levels. A water dish should be added for hydration and to maintain appropriate humidity. However, there are important considerations. The tarantula’s lungs are located on the ventral surface of the abdomen, arranged like pages of a book. Providing a shallow dish is critical, as submerging the “book lungs” will result in drowning. A spider’s diet should consist of mainly invertebrates such as crickets, locust hoppers, or mealworms, plus vitamin and mineral supplements. In contrast to mammals, tarantulas do not require calcium supplementation, as spiders do not incorporate calcium carbonate into their exoskeleton. Tarantulas inject intestinal digestive fluid rich with enzymes into their prey to liquefy and drink the contents. It is important to pick up the remaining carcass and maintain good vivarium hygiene, as bacterial or fungal overgrowth could result in secondary infection. Once weekly or monthly feedings are adequate for the tarantula. Owners should monitor body condition, as overweight or thin tarantulas can lead to medical complications.

Many of the same conditions as your household dog or cat are commonly diagnosed in the tarantula. The most common medical disorders include ectoparasites, trauma, dehydration, dysecdysis, anorexia, skin lesions, poisoning, and ataxia. A thorough and detailed history can provide a great deal of information, as many of conditions in invertebrate medicine are directly related to improper husbandry. Proper restraint is critical to ensure the safety of the handler. To perform an exam, place an index finger gently between the prosoma and opisthosoma. The middle finger and thumb are then placed between the legs on each side. The client and veterinarian should note the position of appendages, visible ectoparasites, swelling, discolorations, or discharge. Anesthesia may be required to perform a complete physical exam or diagnostic procedure.
One of the most common disorders in the tarantula is infection. Whether this is bacterial, fungal, or parasitic, the appropriate diagnostics should be performed. Cytology is a helpful tool to determine bacterial, fungal, and protozoal infections. Culture and sensitivity is also a key diagnostic to identify bacteria or fungi harbored in oral or skin lesions. Oral nematodes, a common parasite observed in mouthparts, are a significant disease of captive bred spiders. Common clinical signs include oral discharge, lethargy, and anorexia. Examination via endoscopy will provide magnification of oral discharges allowing visualization of these nematodes. Treatment includes many well-known dewormers such as ivermectin, fenbendazole, and oxendazole. Bacterial or fungal infections can be treated with parenteral or oral antibiotics such as enrofloxacin and trimethoprim sulfonamide (TMS). Topical chlorhexidine placed on a cotton-tipped applicator can also be used to clean the exoskeleton.

Missing appendages, hemorrhage, or open wounds secondary to acute trauma demand the availability of emergency medicine in the tarantula. A fall from even a short distance can cause a break in the exoskeleton. Acute loss of hemolymph, the arachnid equivalent to blood, is a life-threatening emergency resulting in decreased internal blood pressure and shock. A hemolymph transfusion is the gold standard to counteract shock, dehydration, and hemolymph loss. To perform this, an appropriately sized IV cannula should be inserted at a 30 degree angle into the heart, which is found on midline at the opisthosoma. This procedure should be performed under anesthesia. Alternatively, mild damage to the limb can be corrected with tissue glue. A limb amputation may also be performed by removing the affecting limb at the joint. The removed limb will regrow with subsequent molts. Sutures are not recommended because they are ineffective and cause damage to the cuticle.

The tarantula has a unique ambulatory system which relies on hemolymph pressure to move the limbs via hydraulics, due to lack of extensor muscles. Reliance on hemolymph pressure makes dehydration a medical emergency. A dehydrated tarantula will present with their legs pulled inward toward the prosoma and may be too weak to seek rehydration. Thus, medical management is warranted. There are several treatments options for dehydration. If the spider has some ability to move, they may be placed over a shallow dish to ingest water orally. If dehydration is severe, isotonic fluids such as lactated Ringer’s solution or normal saline may be administered into the heart at two to four percent body weight. If the heart is missed, fluids will still be effective, as tarantulas have an open venous and closed arterial system. This means that vessels transport hemolymph to a specific place, but then flows freely between open spaces, bathing the organs.

Emergency medicine is no longer limited to mammals and can be implemented in critical, life-threatening situations of invertebrates as well. Husbandry requirements are the root of most medical conditions in the tarantula. Good vivarium hygiene can decrease secondary bacterial, fungal, or parasitic infections. A safe environment with appropriate housing can eliminate the risk of hypovolemia, loss of hemolymph, from trauma. Finally, adequate humidity and water availability will ensure proper hydration and avoid desiccation. These conditions are only the tip of the iceberg, but with fluid therapy, treatment of hemorrhage and wounds, and proper husbandry, these exotic animals can live a long, healthy life.


