The Exotic Small Mammal and Reptile Emergency
Exotic small mammals (previously referred to as pocket pets) and reptiles can present to the clinic for a variety of different emergency situations. Although exotic small mammals and reptiles are not little dogs and cats, they under many circumstances are treated in a similar manner when it comes to basic stabilization and life-saving techniques.

Special Needs for the Exotic Small Mammal and Reptile Patient
In general, basic equipment used for dogs and cats can be used on many exotic small mammals and reptiles. Most exotic animal patients tend to be very little; therefore pediatric equipment is a must. It is important to have catheters and needles as small as 26g. Small uncuffed endotracheal tubes should be available, and 18g to 14g IV catheters should be converted into ET tubes for very small patients.

It is also important to consider how exotic small mammals and reptiles will be safely housed in the clinic. In some cases, the average metal small dog or cat hospital cage will not be adequate. Species such as rats, hamsters, mice, ferrets, and any small reptile can easily maneuver their way through the cage door front and either get out completely or become stuck or injured. If these cages are going to be used, a plastic cage front that screws onto the metal cage door can be constructed. Plastic cage fronts work great to keep in not only the little animals, but also the heat. Incubators that can provide both heat and oxygen are also essential if exotic small mammals are going to be dealt with in the clinic. Aquariums, incubators, and commercially made plastic reptile cages can also be used to properly house reptile patients. Keep in mind that if equipment such as an incubator will work for a kitten or small puppy, then it will probably also work for most exotic small mammals and reptiles.

What Constitutes An Emergency?
As with dogs and cats, there are many different types of emergencies an exotic small mammal or reptile may present for. An emergency can be broken into 2 different categories, “acute” and “chronic.” An “acute” emergency is one that has happened suddenly, such as trauma (e.g., lacerations, fractures, hit by car, fresh bite wounds, etc.). A “chronic” emergency is a disease process that has been ongoing in the patient, and the client may have just now noticed or the client has been hesitant to have the animal seen. An example of a “chronic” emergency is something like dental disease in exotic small mammals, vitamin C deficiency in guinea pigs, or metabolic bone disease in reptiles. Whether dealing with an acute or chronic emergency, both are equally dangerous and should be taken seriously.

Dealing with the Exotic Small Mammal and Reptile Emergency
It is important for the clinic to have a designated crash cart that includes any emergency equipment that may be needed during a critical situation. The crash cart can be as simple as a tool box on wheels or can be a manufactured commercial cart. The crash cart should be placed in an easy to reach site near an oxygen outlet, light, and exam table. The cart should include specific items such as emergency drugs, various intravenous fluids and catheters, bandage material, endotracheal tubes, an ambu bag, a stethoscope, and any other items that may be necessary when dealing with a critical patient.

When a patient is brought into the clinic, the animal should first be assessed and then dealt with accordingly. The basic ABCs of emergency medicine are used with exotic small mammals and reptiles. Reptiles are generally easy to intubate due to a lack of an epiglottis. Unfortunately, many exotic small mammals (except ferrets) can be difficult or near impossible to intubate (especially when the animal is not breathing). It is important to have small endotracheal tubes available, as many reptiles and small mammals will require a size 3.5mm tube or smaller. Even though intubation may be almost impossible in some species, it is still attempted. After the patient is intubated, oxygen will be given and manual breathing is provided if needed. The number of breaths per minute will depend on the species of exotic small mammal or reptile you are working with. Once breathing is provided, circulation is worked on. This will include giving chest compressions as well as placing an intravenous or intraosseous catheter and starting fluid therapy. An ECG should be placed when possible. Emergency drugs such as epinephrine, atropine, glycopyrrolate, doxapram, lidocaine, etc., should be available and ready to use at any time during a critical situation. When possible, it is helpful to have everything pre-drawn prior to the animal presenting to the clinic. A cheat chart can be hung on the wall for quick reference or a spreadsheet program can be created. Spreadsheets are helpful, as one can be created.
for each major group of animals commonly seen in your practice (e.g., chinchillas, rabbits, lizards, etc.). The spreadsheet should remain simple and contain the common drugs used during emergency situations. Spreadsheet programs are nice because they can be used over and over again. By just inputting the patient’s weight, the program will calculate the proper drug doses for you.

Emergency situations can be very stressful. It is therefore important to have specific people designated to perform the tasks at hand. This should be preplanned prior to ever working on an emergency that day. There are a few options to choose from, and the clinic staff should pick what is appropriate for them. Everyone should be trained in all aspects of emergency care and should rotate specific jobs frequently (e.g., once per week or month). After any emergency situation, it is a good idea for everyone to talk about how things went and discuss what may or may not be helpful in the future. It is also important to discuss what, if anything, could have been done differently. Although it is difficult, try to remain positive. Do not ever point fingers, even if things did not go according to plan. If there are specific concerns about a person’s performance, they should not be discussed in front of the group, but rather privately at a more appropriate time.

Assessing Dehydration
The hydration status of the patient should be evaluated during the physical examination. This is done similarly to a dog or cat. The mucous membranes should be moist and pink. As with dogs and cats, the capillary refill time should be between 1 and 2 seconds. A common sign of dehydration in exotic small mammals and reptiles is dry or tacky mucous membranes. Another sign of dehydration is sunken eyes and lack of skin turgor (skin elasticity). The skin should be tented or pulled upward to assess dehydration. The skin can be gently pinched between the thumb and index finger and tented upright. Once the skin is tented, it should be released and the amount of time it takes for it to return to the original position should be noted. A hydrated animal’s skin will return to the original position almost immediately, whereas a dehydrated animal will have a much slower return. Generally the longer the skin takes to return to normal, the more dehydrated the animal is. Assessing dehydration in reptiles can be more difficult than in exotic small mammals. By far the easiest way to assess the hydration status in a reptile is by looking at the mucus membranes. Skin and eyelid turgor should also be used to assess hydration, but this can sometimes be difficult due to the nature of reptilian skin and scales.

If the animal is found to be dehydrated, fluid therapy should be considered and a percentage of dehydration should be estimated for the animal. Accurately estimating the percentage of dehydration is based on the skin turgor and tenting as well as examining the eyes and mucous membranes. Fluid therapy routes in small mammals and reptiles include oral, subcutaneous, intravenous, and intraosseous (IV and IO fluid therapy can be difficult in some very small exotic small mammals and reptiles) administration. Soaking reptiles in warm water also helps the hydration status in many patients. This can be used in conjunction with subcutaneous fluid therapy. The water temperature should be appropriate for the species being soaked. Vessels used for IV fluid administration in reptiles vary from species to species. In chelonians (turtles and tortoises) the jugular vein is generally the easiest and most common vessel used for catheter placement. In lizards and snakes a tail vein is generally the most common vessel used, although a jugular catheter can be placed, but a surgical cut down must be performed to visualize and place the catheter. Abdominal and lingual vessels are not commonly used. IO catheters can be placed in reptiles when necessary. The distal femur is commonly used in most species (except snakes). Vessels used for IV catheterization in most exotic small mammals include the cephalic and lateral saphenous veins. Due to the size of the vessels, catheterization can be difficult in some of the very small critters. In rabbits the auricular vein can be used, but the cephalic and lateral saphenous should be attempted first. The cephalic and lateral saphenous veins can also be used in ferrets, guinea pigs, and chinchillas. In rats, the lateral tail veins can be used to place an IV catheter as well as the cephalic and lateral saphenous veins. If IV access is not possible due to poor perfusion, an IO catheter can be placed. It is best to use a spinal needle when possible because there is less chance of the lumen getting clogged with a bone core when being placed. A regular hypodermic needle can be used when needed. The IO catheter is usually placed in the proximal femur. Either colloid or crystalloid fluids can be used and should be chosen based on the patient’s condition and biological needs.

Blood Transfusions
Most exotic small mammals and many reptiles weigh anywhere from 30 grams to 6.0 kilograms (although some reptiles can weigh much more than 6.0 kg); therefore keeping tabs on blood loss is crucial. It becomes a concern if a patient loses more than 8–10% of its blood volume. For a 1.0 kilogram patient, this is only 10 mLs. Blood transfusions can be given when necessary. A general rule of thumb is to consider transfusing when the animal’s
but providing proper nutrition is essential. Many reptiles can go a few days to several weeks without eating (depending on the species), functioning normally. Ferrets need to eat frequently, as their GI transit time is very fast and they can become a problem for herbivores, carnivores, and omnivores. The herbivores need to graze frequently to keep the GI tract healthy by performing a complete physical examination and running a complete blood count and biochemistry panel. If there is only a limited amount of blood, the complete blood count should be chosen over the biochemistry. Blood drawn from the donor should be collected in a syringe containing the anticoagulant citrate-phosphate-dextrose-adenine (CPDA). The dilution will depend on the species being worked with. Cross-matching the donor to the recipient should be performed when possible. (Ferrets do not seem to have recognized blood types, therefore cross-matching is not generally performed.) This will help reduce the risk of the recipient cross-reacting with the donor’s blood once it has been given. It is important to always use a blood filter when performing a blood transfusion on any patient. The animal should be observed for signs of a reaction to the transfusion. The heart rate, respiratory rate, and temperature should be checked at least every 15 minutes during and for at least an hour after the transfusion has been given. If a reaction occurs, the same techniques used with dogs and cats are used with exotic small mammals.

The Stabilized Patient
If the animal is able to be stabilized, a physical examination should be performed. For information on how to perform a complete physical examination, please refer to the manuscript in these proceedings called “Master the Art of Small Exotic Mammal Restraint, Physical Examination & Venipuncture.” Performing a PE in reptiles is essentially the same as with exotic small mammals. The major differences include the use of leather restraint gloves and towels, which may be necessary for larger, aggressive reptiles, or the use of snake hooks for aggressive snakes. The oral exam in reptiles is much easier than in exotic small mammals. The mouth is opened by using either tape or gauze strips, a spatula, or a plastic mouth gag. The mouth is examined in the same manner as a mammalian mouth. Upon completion of the physical examination, diagnostics should be taken if possible. Based on the physical examination findings, diagnostics such as a fecal, bloodwork, radiographs, etc., should be obtained if necessary.

Many exotic small mammals are very sensitive to pain. Whether the patient is dealing with a fractured limb or dental disease, it should always be monitored for any signs of pain. Signs of pain may include vocalizations, shaking, anorexia, and a hunched abdominal cavity, to name a few. When this is observed pain management should be considered. Common drugs used for pain management include butorphanol; buprenorphine; oxymorphone; and a variety of NSAIDs such as carprofen, meloxicam, and ketoprofen. Observing pain in reptiles can be more difficult. Most reptiles do not vocalize or shake. Hunching of the coelomic cavity is commonly observed when many reptiles are painful. This is harder to observe in snakes and chelonians. Anorexia and lethargy are common signs of pain as well. Extensive research has not been done on pain receptors in reptiles; therefore many of the drugs used in mammals may not work well in reptiles. Morphine, butorphanol, and meloxicam are commonly used, although butorphanol may not provide appropriate pain management for many reptile species.

One of the most important stabilizing and life-saving protocols used with exotic small mammals and reptiles is fluid therapy, force feeding, and pain management. Fluid therapy is important in all exotic small mammals and reptiles, but especially in the herbivores (rabbits, chinchillas, and guinea pigs). Herbivores need to obtain adequate amounts of fluids to help keep their GI tract hydrated and moving normally. Force feeding is also very important, for the same reasons mentioned above. Pain management is equally important because a painful animal will not eat. This is a problem for herbivores, carnivores, and omnivores. The herbivores need to graze frequently to keep the GI tract functioning normally. Ferrets need to eat frequently, as their GI transit time is very fast and they can become hypoglycemic easily. Many reptiles can go a few days to several weeks without eating (depending on the species), but providing proper nutrition is essential.

Hand or syringe feeding is an essential skill to conquer when working with exotic small mammals and reptiles. There are several different hand feeding formulas that can be offered to herbivores, insectivores, omnivores, and carnivores. Herbivorous animals such as rabbits, chinchillas, guinea pigs, iguanas, and tortoises can be hand or syringe fed such formulas as blended pellets, vegetable baby food, canned pumpkin, or the commercial diet Oxbow Critical Care for Herbivores®. For example, a homemade formula may consist of canned pumpkin mixed with garden vegetable baby food or blended pellets. Homemade formulas such as the one mentioned above are perfectly acceptable to feed as long as they are high in fiber, low in sugar, and otherwise meet the nutritional needs of the
Oxbow Critical Care® is manufactured commercially and consists of a balanced diet that can be used to provide nutritional support to convalescing herbivores. There are 2 techniques that can be used to syringe feed herbivorous patients. The first technique consists of loading a 60cc catheter tip syringe and simply feeding the animal by placing the tip of the syringe into the patient’s mouth. This technique works well with patients that are actively interested in eating. Some patients will actually lick the food from the syringe as it is pushed out. The other technique also consists of loading a 60cc catheter tip syringe with the hand feeding formula, but instead of feeding the patient directly with the 60cc syringe, several 1cc or 3cc doses will be back-loaded from the 60cc syringe. The smaller syringes can be placed directly into the patient’s mouth, with the entire amount of the food in the syringe squeezed into the mouth at one time. This seems really drawn out and tedious (and it really can be!), but for most patients, this technique works the best. If the animal is only fed one small syringe of food at a time, more food actually ends up in the patient and less on the patient, technician, exam table, etc. When necessary, the animal can be tube fed using a soft rubber feeding tube. In some species of small mammals such as rabbits, a nasogastric tube can be placed if needed. An E-tube can be placed in some reptilian patients when needed. This is most commonly done in chelonians. The procedure is very similar to placing an E-tube in an anorexic cat.

Rodents such as mice, rats, and hamsters can also be syringe fed when needed. Due to their size, a regular luer tip 1cc or 3cc syringe is generally used. The most common type of food used for syringe feeding is vegetable baby food such as squash, sweet potato, or other vegetable-based baby foods. If the patient is being uncooperative, a metal feeding tube (usually used in birds) can be placed into the mouth, but not down into the esophagus. The feeding tube (attached to the syringe) works well to help deliver the food by slowly dripping it into the mouth.

Ferrets can also be hand or syringe fed when needed. A 1cc or 3cc syringe is generally used. There are several different diets, ranging from commercial canned diets used in dogs and cats to meat-based baby foods that can be offered. Oxbow Carnivore Care® can also be used for syringe or hand feeding. The diet preference will depend on the clinic and the ferret. Ferrets are generally good about being hand fed, but the metal feeding tube technique described above can also be used when necessary. An E-tube can be placed if necessary.

When omnivorous reptiles such as box turtles and bearded dragons need to be syringe or tube fed, a diet of meat baby food mixed with vegetable baby food is usually the easiest and most nutritious way to provide calories. Omnivorous lizards are generally easy to syringe feed, but box turtles usually need to be tube fed since they often do not eat from the syringe. Carnivorous reptiles such as snakes and monitor lizards can either be syringe or tube fed based on the temperament and willingness to take food. Foods such as Oxbow Carnivore Care,® meat baby food, and blended mice can be used. Techniques are the same as listed above. Insectivores such as chameleons and geckos can often be hand fed food items such as mealworms or silkworms and crickets. When necessary, worms and crickets can be blended into a mash and syringe or tube fed. Commercial insectivore diets can also be used for syringe or tube feeding.

Summary

Many of the same emergency and critical care techniques used with dogs and cats are used in exotic animals as well. It is important for the clinic to have an organized crash cart and equipment small enough to use with exotic animals. During emergency situations, the veterinary staff needs to work as a team to provide care for the patients. If you are seeing exotics in your clinic, it is important to have appropriate hospital cages to safely house small exotics as well as the proper diets needed to provide supportive care.

References/Suggested Readings