

Cannot Find a Vein?

Alternate Routes for Euthanasia

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Bosco, a 10-year-old Boston terrier, waddles toward me with a distended abdomen the size of a volleyball and edema in all his legs. I have traveled alone to euthanize Bosco in his home. I have no veterinary nurse to assist me and no treatment room to hide in. I know that accessing a vein is nearly impossible, so I am not even going to try. I greet Bosco's family, which includes 2 preteen children, and walk over to say *Hello* to Bosco. After briefly examining him, I am certain I will be administering an intracardiac injection of euthanasia solution to provide the most stress-free and painless death possible. Many veterinarians are familiar with performing euthanasia using an indwelling IV catheter; however, a peripheral vein is not always the best or most accessible site. Veterinarians should become proficient in other techniques to ensure that euthanasia is peaceful for the pet, the family, and the practice team members.

Euthanasia may be performed at the veterinary practice or in the pet's home, but regardless of setting, the client and family members should be provided a comfortable space that allows them to be with their pet in his or her final moments.

The most common drugs used immediately before and to perform euthanasia provide sedation, loss of consciousness, and cessation of brain activity, respiration, and heartbeat.

A peripheral vein is the most common administration site for the euthanasia solution, although other administration routes may be more appropriate (eg, intrarenal, intrahepatic, intraperitoneal, intracardiac, oral, intratumor). This overview provides tips for performing euthanasia using each alternate route and offers recommendations for communicating with clients and family members during the procedure.

Most Important:

Sedation is Essential

I believe that providing sedation before euthanasia is the most important step in the euthanasia process. Every pet that undergoes euthanasia benefits from not only the pain relief but also the alleviation of stress. I recommend administering sedation SQ or IM to every patient before attempting to place a catheter.

Clients can give an oral sedative (eg, a benzodiazepine [eg, alprazolam], gabapentin, trazadone) before the scheduled appointment to help alleviate stress. An oral sedative will not

eliminate the need for injectable sedation but may help calm a patient that is stressed when going to the clinic or when unfamiliar people come to the house. Sedation is also essential when using other administration routes.

Best Route of Administration:

The Most Compassionate

During euthanasia, the client and family members must be able to surround their pet. I do not want to intrude on their final moments together, so using a 23-gauge butterfly, I often place a catheter in the pet's lateral saphenous vein, which positions me near his or her hind end.

However, my favorite vein is the accessory cephalic vein on the down limb, which allows me to position the limb caudally and remain out of the family's space when I place the catheter. Other veins (eg, ear, tongue) can be used as an alternate route if the typical peripheral veins are not accommodating.

When veins are not accessible, alternate routes can be used to administer euthanasia solution as long as the pet is unconscious after sedation. Determining the best route depends on the pet's physical condition (eg, presence of edema, circulation, body condition), patient positioning, and disease process. Different drugs and needle sizes are recommended for each route. (See **Table 1**.)

Essential During Euthanasia:

Clear Communication

Veterinarians may find explaining the euthanasia process to clients and family members difficult, but clear communication is an important part of a successful euthanasia. When reviewing the procedure with the family, I include:

- A discussion about sedation and how it makes the pet feel calm and at peace

The client and family members should be provided a comfortable space that allows them to be with their pet in his or her final moments.

TABLE

1**AVMA-Approved Routes of Administration for Euthanasia¹**

Route	Amount ^a	Needle Size	Administration Tips	Notes
Intravenous	1	23-gauge butterfly or indwelling catheter	Saphenous, dorsal pedal, or accessory cephalic are suggested veins because they allow the family to stay near the head of the pet without intrusion.	Death occurs in approximately 2 minutes but is dependent on the distance from the heart, circulation, and heart function.
Intrahepatic	2	1.5- to 2-inch, 21-gauge; a cystocentesis needle can be used in larger breeds	Place the pet in lateral recumbency, find the xyphoid bone, and aim the needle dorsally and cranially.	Death occurs in approximately 5-10 minutes.
Intrarenal	2	1-inch, 22-gauge	Palpate the kidney, gently hold it in place with one hand, and insert the needle through the skin, approximately a quarter inch into the kidney. No flash should be seen.	Death usually occurs immediately or within 1 minute. (The author uses this route for all cats weighing less than 10 lb.)
Intraperitoneal	3-4	1-inch, 22-gauge	Avoid the intestines and bladder. Inject in 2-3 sites to ensure the solution is not administered into a space from which it cannot be absorbed.	Death usually occurs within 25-45 minutes. Set expectations with the client and family members before the procedure to ease their concerns. (The author uses a larger volume of drug because she has noted, anecdotally, that it decreases the time to take effect.)
Intracardiac	2	18- to 20-gauge of the appropriate length based on pet width	Place the pet in sternal or lateral recumbency. Insert the needle at the fifth intercostal space (ie, where the elbow flexes). It may be possible to visualize the heartbeat. Once the needle is in a heart chamber, confirm placement with a flash.	Death usually occurs immediately. Observing the procedure can be upsetting to the client and family members if they are not prepared. Covering hands with a towel or blanket can soften the reaction.
Intratumor	3-4	1-inch, 22-gauge	Inject directly into the tumor. Be prepared to apply pressure to the injection site when the needle is removed to prevent bleeding.	Highly vascular soft-tissue tumors are an excellent access point. Death usually occurs within 20 minutes.

^aAmount displayed in mL of 390 mg/mL pentobarbital per 10 lb body weight

- An explanation of the euthanasia solution and how it works (eg, the solution is a powerful drug that first puts the pet's brain to sleep and then stops respiration and heart function)
- Even if the catheter likely will be placed in a vein in the thoracic or pelvic limb, I usually say, *After he is comfortable from the first medication, I will find the best route to give the second*, which allows me to use a route other than a peripheral vein without causing concern for the client and family members.

The explanation to the family for choosing an alternate route can be challenging. Some veterinarians choose to describe the specific route (eg, heart, peritoneal space), whereas others indicate a general location only (eg, abdomen, a deep-chest vessel that will take the medication straight to the brain). The level of detail is based on the individual client, the pet's condition, and the veterinarian's comfort level. Preparing for this conversation in advance can help the veterinarian feel more comfortable.

Compassionate, Confident Conversation

Once the pet is sedated and ready for the euthanasia solution to be administered, the veterinarian should reassure the owner that the pet is comfortable, explain the procedure and where the solution is being administered, and give the owner a time frame for when

the pet likely will pass. For example, with an intrahepatic administration, say, *He is very comfortable. I am going to give the second medication now in his abdomen. After I give the medication, he will pass in approximately 10 minutes. Just talk to him and tell him how much you love him.* This allows the distraught family members to understand every step of the process and offers them direction on what they can do. Most importantly, I am compassionate and confident in my delivery. They may not remember what I said, but they will certainly remember how they felt at that moment.

Conclusion

Clients trust their veterinarian to be professional and knowledgeable about euthanasia. They rely on the veterinarian to offer the best care and typically are not concerned about the administration route. They want the process to be peaceful for their pet, which is why the entire experience must be stress-free, from when they enter the practice or the veterinarian enters their home to when they leave their pet's remains behind. (See **Resources**.)

Being familiar with all the alternate techniques helps ensure that euthanasia is performed skillfully and compassionately. ■

Reference

1. Leary S, Underwood W, Anthony R, et al. *AVMA Guidelines for the Euthanasia of Animals: 2013 Edition*. Schaumburg, IL: American Veterinary Medical Association; 2013:44.

Resources

- *Treatment and Care of the Geriatric Veterinary Patient*. Gardner M, McVety D. John Wiley & Sons; 2017.
- *Veterinary Euthanasia Techniques: A Practical Guide*. Cooney KA, Chappell JR, Callan RJ, Connally BA. Wiley-Blackwell; 2012.



MARY GARDNER, DVM, is cofounder and chief innovation officer of Lap of Love Veterinary Hospice. She is fanatical about veterinary geriatrics and improving the quality of life for pets during the geriatric phase. Mary has spoken at regional and national conferences on all aspects of end-of-

life care and has coedited a textbook on caring for the geriatric patient.

FUN FACT: Mary's first job was at Arby's, and she is still addicted to their potato pancakes!