

MVMA The Ultimate Good Death Experience
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February 2020

Animal euthanasia has come a long way in the past 15 years. With the increased attention given to the human-animal bond, the emotional complexity of animals, and the recent and welcomed focus on veterinary wellness, the importance of a good death has risen to centre stage. In forward-thinking veterinary practices, the euthanasia appointment is no longer an unpleasant burden in the day, but rather a rare gem of connectedness and intimacy so many of us look for in our professional lives. It provides teams the chance to slow down, to listen to stories, to take deep breaths in quiet reflection in an otherwise chaotic schedule. Euthanasia, while sad and heartbreaking, can lead to rich personal satisfaction when performed well. When love is at the heart of our work, the veterinary profession finds peace, even when life is lost.

Good euthanasia has evolved past the simple ‘one step’ of giving an injection. It orbits around consistent components such as the right timing, compassionate staff, skillful techniques, and loved ones gathered close. The focus has been shifting to ensure the pet’s last moments are comfortable and peaceful, rather than just getting it over with as soon as possible—quality over quickness, in most cases. When it comes to euthanasia, if it’s worth doing, it’s worth doing right, especially since there are no do-overs.

The Influencers

To understand the scope of the ‘good death’ revolution, we need to explore some key game-changing influences that have brought about the shift. The first worth mentioning is the attention paid by the American Veterinary Medical Association (AVMA) and other governing bodies to euthanasia techniques and animal welfare. Numerous revisions have been made to AVMA’s *Guidelines for the Euthanasia of Animals* document, most recently in 2019, with the association’s soon-to-be-released addendum to the 2013 version. These guidelines highlight the value and significance of proper technique choices and the ethical considerations we all must weigh regardless of the species in question. Are they perfect? No, but they are extremely well thought out and closely match peer-reviewed literature. They will improve as research improves and as society dictates.

A second influencer then has to be society’s demand on veterinary professionals to deliver a death worthy of the life itself. It is well understood Canadian pet owners largely view their pets as family members. As evidenced further on in this article, loving pet owners are regularly viewing the euthanasia appointment as a modest funeral. More and more are seeking those special touches that pay added respect for their companion.

As a home-euthanasia specialist, I’ve had many families over the years attend the euthanasia of their pet wearing suits and ties. Even though no one would see them, they dressed up to honour the life and the loss. Jessica Pierce, PhD, bioethicist and purveyor of the good death revolution, advocates for what she refers to as the sixth freedom: the freedom to die a good death. She adds this freedom to the already well-known five freedoms of animal welfare. “A good death is one that is free of unnecessary pain, suffering, and fear; it is peaceful; and it takes place in the presence of compassionate witnesses. It is, above all, a death that is

allowed its full meaning.” The euthanasia of a family pet is significant and for many, will be their first experience with death.

A third major influence was/is the recognition by many in the veterinary profession that death needed to be more meaningful. The kind of experience we are talking about here is one that leaves the entire veterinary team feeling they provided the best medicine possible and supported the client throughout. Approximately 15 years ago, a small number of veterinarians and technicians throughout North America found just how enriching full devotion to the euthanasia experience can be. They shifted their appointments to focus on the bond as much as the act of euthanasia itself.

Early adopters had numerous things in common. They:

- Took time to preplan and provide highly individualized care
- Increased euthanasia appointment times
- Offered home services
- Provided sedation or anesthesia to all pet patients
- Elevated bereavement support

In return for these specialty touches, clients showered them with thank you cards and told other pet owners about the wonderful care they had received. Through eventual collective sharing of their successes in advanced euthanasia work, other veterinary professionals joined in and the modern revolution began. Since 2011, at least seven books have been written focusing entirely on companion animal euthanasia (or contain chapters on the subject), more end-of-life care guidelines are available, and the number of pet bereavement organizations has skyrocketed. Today, there are more and more veterinarians specializing in euthanasia work throughout Canada, many of which provide animal hospice services as well. Animal hospice is a philosophy of care aimed at providing emotional and medical support for the dying pet and caregivers. As of early 2019, the International Association for Animal Hospice and Palliative Care (IAAHPC) touts 20 Canadian members, a number sure to grow in the coming years. The United States has approximately 450 members to date.

The Essentials

Have you ever thought about how much really goes into a euthanasia appointment? If you start to explore all the components of a good death experience, it's no wonder euthanasia appointments are lengthening.

The following acronym is used with permission from the Companion Animal Euthanasia Training Academy (CAETA). It is used by many as a point of reference when deciding if modern best practices were utilized. The goal is to complete everyone, even just a little bit, to help set the stage for a smoother experience.

G = Grief support materials provided

Every client should be given some form of grief literature to look upon after the appointment. It is best given to everyone regardless of the level of grief shown at the

time. The benefit to printed materials is easy referencing, room to journal, and encourages self-care.

O = Outline caregiver and pet preferences

Preplanning is useful to fully appreciate the needs of the client and address the mental/physical health of the patient. Dialogue with clients should be opened up early to provide time for contemplation.

O = Offer privacy before and after death

Clients should be offered privacy before the practitioner proceeds with euthanasia and after death. If time does not permit for one or the other, I advocate for at least giving privacy after so the client may spend time with the body. It is time that can never be recaptured.

D = Deliver proper technique

Learning as much as you can about all technique options will help you deliver the best method the first time. Take your time and know when to move on to another technique if the first one fails. There are 5 different common injection techniques: IV, IC, IH, IR, IP. Intraorgan techniques are quickly becoming the favourite for many veterinarians.

E = Establish rapport

Rapport can be a simple smile to a more involved conversation. The purpose here is to put the client at ease and establish trust. Rapport is best continued throughout the duration of the appointment.

U = Use pre-euthanasia sedation or anesthesia

Providing sleep to the patient before euthanasia is now standard practice and should be occurring during every euthanasia. Sleep eliminates risk of pain or distress during euthanasia, affords closeness with loved ones, and is a buffer to the abrupt loss of life observed without it.

T = Thorough, complete consent

It is easy to overlook the importance of proper documentation outlining expectations of the procedure, body handling, pricing, and legal protection of all involved. Proper consent should always be obtained and records kept for the provincial-mandated time.

H = Helpful and compassionate personnel

Compassion is at the heart of euthanasia work...for the benefit of the client, patient, and veterinary team performing the procedure. Clients benefit from having one established person with them from start to finish. Eg. the euthanasia attendant

A = Adequate time

When you consider how much actually goes into euthanasia, 30 minutes may not be enough time. Sometimes 60 minutes is not enough. Adequate time means reduced rushing and attention given where attention is needed.

N = Narrate the process

Clients appreciate knowing how the appointment will progress, with just the right amount of detail. Signposting and step by step communication styles will help keep clients clear on expectations during euthanasia.

A = Avoid pain and anxiety

At the heart of our work should be a gentle and considerate approach. Many of our patients are already painful and anxious due to their health and concern over their human caregivers (high anxiety is common for both patient and client). Slowing down, using sedatives/anesthetics, and utilizing gentle handling will make for a more relaxed euthanasia.

S = Safe space to gather

Safe space is where the patient is most comfortable, where clients can grieve openly and feel secure, and where the veterinary team can deliver a skilled euthanasia.

I = Inclusion of loved ones

Any and all family, friends, other pets, and extended caregivers should be invited to stay during the procedure. The patient should remain with the client and only be separated if the client wishes it. This includes during venipuncture or delivery of the euthanasia technique itself.

A = Assistance with body care

Assistance with body care simply means the veterinary team addresses the need to care for the body after death. This includes telling the client about crematory options in the area or going so far as to perform cremation in house. The goal is to aid the client in what they want above all else.

The acronym holds the phrase **Good Euthanasia**. Each letter represents one of the 14 essential components of the ideal companion animal euthanasia appointment. This list is to be used as a point of reference for veterinary teams working with caregivers and their pets during this important time. Another key consideration, not included in the list of procedural components, is the emotional health of the veterinary team. All involved personnel are encouraged to practice self-care before, during, and after every appointment.

In addition to veterinarians carrying out the medical act of euthanasia, vital support staff help ensure everything goes well. Empathetic veterinary technicians, veterinary social workers, assistants, receptionists, and grief support personnel work together to ensure the pet is Fear Free and the client is carefully looked after. CAETA advocates for use of what it calls the euthanasia attendant. This person is responsible for guiding the family unit through the appointment from beginning to end. While many people may be involved in the pet's care, one consistent person increases the likelihood that everything flows smoothly.

Home Sweet Home

If you've been watching for change, you're sure to have noticed the increase in specialty mobile euthanasia services around the world. According to the online directory, In Home Pet Euthanasia, nearly 600 mobile services have been listed since 2009 as providing home euthanasia services in the Canada, the United States, and England. Nearly 80 per cent specialize in euthanasia work or the broader field of animal hospice, including euthanasia services. The shift toward home euthanasia is well-founded and necessary for many families. Pets feel safer at home. And for loving owners, being at home for their pet's euthanasia provides them privacy and reduces the challenges of driving and interacting with others while in the midst of grief.

Home euthanasia has proven extremely rewarding work for those who offer it. It's also gaining in popularity, with one service recently reporting its team of veterinarians assists upward of 50,000 pets a year achieve a good death. That's an impressive number and indicates the trend of home euthanasia is here to stay.

Shifting the Hospital Culture Around Death

Like any other progressive movement, advanced euthanasia did not happen overnight. And there are lingering obstacles that continue to stifle necessary change. Number one is the old paradigm that if it's not broke, don't fix it. It can be hard for veterinary teams to make lasting change around euthanasia. Reshaping a hospital's culture takes time and commitment, but it can be done and done well.

Consider the following steps to create lasting change:

- Set aside one month for euthanasia-related discussions
- Get everyone's input on desired improvements

- Create a euthanasia manual and refer to it regularly
- Hold euthanasia rounds to review successes/challenges
- Have multiple team members obtain advanced euthanasia training

These days, the veterinary profession recognizes the value of appropriate self-care. In this respect, self-care with regard to euthanasia work begins long before the appointment. It is becoming standard practice to discuss a veterinary team member's professional limits around euthanasia. North American Veterinary Community's (NAVC's) human-animal bond certification program focuses on this concept in its euthanasia module. It describes how veterinary teams should take time to determine who enjoys (yes, enjoys) euthanasia work, to write down how many euthanasias one can help in a day, week, etc., and how the team plans to practice self-care. Examples include team outings, fun food days, and setting limits on the amount of time worked in a day. The likelihood of compassion fatigue is high if care is not properly taken from the onset of euthanasia-related work.

Where We Go From Here

As far as we've come, there is always room for improvement. New techniques, improved euthanasia education opportunities, and better client support tools are on the horizon. We continue to hone our skills around gentle animal handling and pay increased attention to where we gather for euthanasia. And it's important to mention that while this article has been focused on euthanasia, death is a process, not always just a moment in time. Good death also refers to the meaningful journey leading up to death, be it natural or via active euthanasia. In the words of Benjamin Franklin, "Well done is better than well said." To help the good death revolution flourish, we must act accordingly. A good death is achieved by advocating for, and acting on, what is safest for the pet, what is most meaningful for the caregiver, and what will nourish the veterinary team.

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MVMA 2020 Proceedings

Euthanasia Part 2: Protocols and Techniques; Getting it right the first time
90 Minutes

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A Need for Greater Understanding

While euthanasia is considered a necessary part of veterinary medicine, the skill set needed to proficiently perform it is often overlooked by teaching institutions. Only a small number of veterinary institutions devote lecture time to describe the euthanasia procedure in detail. Most of the time, the euthanasia discussion pertains to the emotional impact of such a decision rather than the medical procedure itself. To be successful, veterinary professionals must understand all that goes into the euthanasia experience including meeting the family's needs and the pharmacology/physiology behind euthanasia.

When euthanasia is necessary, skilled personnel are required to perform the procedure to ensure death is achieved in accordance to the American Veterinary Medical Association's (AVMA) Guidelines for the Euthanasia of Animals. As of 2019, the guidelines state, "Each facility or institution where euthanasia is performed is responsible for training its personnel adequately to ensure it operates in

compliance with federal, state, and local laws. Training and experience should include a familiarity with the normal behavior and anatomy of the species being euthanized and an understanding of the mechanism by which the selected technique induces loss of consciousness and death.” Poorly performed euthanasias complicate the mourning process. With proper education and training in euthanasia, the incidence of bad euthanasias, or dysthanasias, will decrease which is essential for the pet and family. There is no reason for a family to experience a technically challenging euthanasia because of a lack in training by their veterinarian and staff. In 2016, the Companion Animal Euthanasia Training Academy(CAETA) was founded as a training resource for veterinarians, technicians, and anyone wanting to learn best practices.

Pre-euthanasia Sedation or Anesthesia

Inducing a sleep-like state should be considered when euthanizing companion animals in the presence of loved ones. Every veterinary team will have a preferred protocol to use, which should always be adjusted to meet the individual needs of the animal. There are pros and cons to using pre-euthanasia sedation or anesthesia:

Pros: Minimizes fear and anxiety
Allows for closeness before death
Minimizes restraint during euthanasia itself
Relieves pain before death

Cons: May lead to physical distress in critical animals
Can slow down time to death, i.e. horses
Greater expense

Common drugs to use for sedation or anesthesia include alpha-agonists, tranquilizers, opiates, and dissociatives. The pharmacology of these drugs should be well understood, including side effects in the face of ongoing illness typical of the dying process. Typically pre-euthanasia sedatives and anesthetics are used in combination with each other in synergy to deliver the smoothest results. A sedative protocol only contains sedative drugs while an anesthetic protocol only needs one anesthetic drug to be considered an anesthesia protocol. Here are some common cocktails used in canine patients:

Sedation Protocol: dexmedetomidine, butorphanol, acepromazine

Anesthetic Protocol: ketamine, midazolam, butorphanol

Depending on the pet patient’s health status and signalment, it may be advisable to reach for an anesthetic protocol over a sedative. Patients that are high energy, nervous, dyspneic, aggressive, or in severe pain may resist sedation alone and require something stronger to induce sleep. With enough stimulation, animals can awake from sedation, increasing risk of pain and further anxiety during the euthanasia procedure. This is why intraorgan euthanasia methods, such as intracardiac injections, require either very deep sedation or anesthesia itself. The patient must be unaware the injection is taking place. For more information regarding drug protocols in dogs and cats, join the Companion Animal Euthanasia Training Academy (CAETA) closed Facebook group: www.facebook.com/groups/CAETA.euthanasia.forum

Choosing the Right Technique

When choosing a euthanasia technique, veterinarians must choose one that is appropriate for the situation and take all factors into consideration. The method of euthanasia you choose will depend on many things:

1. Comfort with the technique

When a veterinarian has experience with a particular technique, they know what to expect and how to handle the situation if something unexpected happens. All veterinarians should know at least two other methods in case circumstances indicate another technique is needed. Experience is gained with every euthanasia, but if something unexpected occurs, the attending veterinarian and staff should be educated on how to proceed in the animal’s best interest.

2. Supplies

As supplies are prepared, things should be included for a standard euthanasia procedure as well as emergency equipment. For injectable methods, various needle sizes, syringes, catheters, cleaning gauze, etc. needs to be accessible at all times. For physical methods, the equipment must be cleaned and ready for use. Veterinarians are encouraged to keep ample supply of all materials within the euthanasia room, in mobile-supply bags, etc. Depending on the animal being aided, this includes keeping enough inhalants, euthanasia solution, or bullets in stock to avoid the inability to carry out the procedure.

3. The presence of onlookers

Veterinarians know that as long as an animal is sedated or unconscious, most methods of euthanasia are humane. As long as death is as stress and pain-free as possible, and relatively quick, any of the approved methods are acceptable. However, when family members and clients are watching, the least aversive technique available should be chosen for that particular species. This may be an intravenous injection or a small mask with gas anesthesia. As long as it is explained to the client how the procedure will take place and the approximate time frame involved, most clients will be acceptable to the method chosen. Keeping communication open with the client and answering any questions they may have will help decrease their stress. Sometimes the clinician needs to prompt these questions due to the client’s state of mind, as they may not think of things to ask. When a slower method is chosen, such as an intraperitoneal

injection, onlookers should be prepared that death may take a few minutes. When venous access is impossible, due to poor pressures, overlying masses, too small of animal, etc., intracardiac injections are commonly done. In the case of large animals, gunshot is often the most practical method, but the reaction of onlookers must be considered. Clients/family members typically handle the technique very well when they understand why it is done and their animal remains comfortable throughout. Once again, education is important to lessen fears of the unknown.

4. The type and amount of euthanasia solution available

Domesticated animal euthanasia is most commonly carried out using barbiturates or barbiturate-combination drugs. It is considered the most acceptable method, except for those intended for food use. All euthanasia solution labels should be fully understood before use. With proper pre-euthanasia anesthesia, barbiturates are approved for all injectable methods: IV, IC, IP, and intraorgan injections. If pre-euthanasia sedation or anesthesia is not available, barbiturate-combination drugs, such as those with phenytoin sodium, are not approved for IP use. The additive may cause cardiac arrest before the pet goes unconscious thus leading to distress. Potassium chloride must be given IV or IC under complete anesthesia. Factors like this should be understood before euthanasia is performed in any situation.

The amount of solution available is also important. Euthanasia should never be attempted without adequate amounts of solution ready for use. Each drug has a standard dosing protocol for each technique that needs to be strictly followed to achieve proper euthanasia parameters. For example, IP injections using pentobarbital require a dosing of 3 mls per 10 pounds of body mass versus the more standard IV amount of 1 ml per 10#. If improper levels of solution are administered, the animal may recover, causing distress to the animal, family, veterinary staff, and aftercare facility operators. Instances like these lead to distrust by the public and negatively impact the general perception of euthanasia by those considering it for their own pet.

If only a small amount of euthanasia solution is available, a technique should be chosen that requires the smallest volume possible, such as an intravenous injection. Intracardiac injections can be tricky, especially if it is difficult to locate the heart and the solution ends up in the lungs or pleural space. If there is not enough solution, the veterinarian will be unable to complete the euthanasia.

5. The signalment and physical condition of the animal

The signalment and physical condition of the animal being euthanized should always be a factor when choosing the euthanasia technique. Weight, size, disease, species, and even breed all contribute to how well a particular technique can be expected to work. Here are a few examples of differences that veterinarians will encounter:

* Weight - Obesity makes veins harder to see and feel, makes the chest wall thicker, creates large amounts of intraabdominal fat, and may lead to increased dyspnea during sedation/anesthesia. If the patient is an overweight cat, choosing an intravenous injection rather than an intrarenal injection might be advantageous because finding and isolating a kidney can be difficult. The sheer weight of some large animals can make working with them safely almost impossible and methods must be modified to protect staff and the animal itself.

* Size - When one is considering the length of veins, short-legged dog breeds are harder to euthanize than long-legged breeds. Small birds will have smaller, more delicate veins than larger birds, and so on. For obvious reasons, intracardiac injections are rarely, if ever, attempted on large animals. Size will also impact whether an animal can fit into an inhalation chamber, be euthanized with a .22 pistol versus a larger gun, etc.

* Age - Age can affect technique. Young neonates are difficult, if not impossible, to gain intravenous access on. An inhalant agent or IP injection of a barbiturate might be more commonly used in young animals. Young livestock may be easier to euthanize with a physical method due to their softer craniums. An older animal may be naturally weaker and have an underlying disease of some sort, forcing the veterinarian to tailor methods accordingly.

* Disease -The presence of illness, be it heart disease, cancer, renal failure, etc., can affect blood pressure, circulation, perfusion and drug uptake. If the animal has extremely low blood pressure, the veins might be inaccessible. If the heart wall is thickened, or is surrounded by a tumour or a hemopericardium, an intracardiac injection is more difficult. When peripheral edema is present, veins may be virtually impossible to find making it necessary to abandon an intravenous injection altogether. If a small animal has ascites or hemoabdomen, an intraperitoneal injection will be diluted into the abdominal fluid likely leading to a prolonged time of death, and so on.

Another factor to consider is how well the animal will tolerate pre-euthanasia sedation or anesthesia. If the animal in question is having a hard time breathing, a technique should be chosen that allows for rapid euthanasia before the dyspnea worsens. It is hard to watch an animal struggle to breathe while waiting for an intraperitoneal injection to stop the heart. The same is true for seizing animals or any other crisis situation that may present. Drugs and their associated side effects should be well understood before using them.

* Species - In most cases, dogs and cats are euthanized easily by intravenous, intracardiac, or intraabdominal injections. In general, intrarenal injections are easier to perform in cats due to the freely movable left kidney resting outside the retroperitoneal space. Swine can be difficult to control negating the need for pre-euthanasia sedation or anesthesia. Inhalant gases are not recommended for use with reptiles and amphibians.

* Breeds - Different breeds vary in their physical and physiological attributes; leg length, head shape, hair coat, predisposition to disease, etc., all play a role in determining which euthanasia technique is the most appropriate. For example, brachycephalic dogs and cats have a tendency to become dyspneic under pre-euthanasia sedation/anesthesia and also may overheat when outdoors or lying in front of the fire. It can be nearly impossible for an inexperienced veterinarian to locate the jugular vein on a sheep due to its thick wool, and if clippers are not present, a physical method might be required, and so on.

Also critical to consider early on in choosing a technique are the AVMA's Criteria for Euthanasia.¹ Every technique a veterinarian might use must be checked against these 14 criteria. Not everyone can be met, but they should at least be considered as the technique is chosen. It is important the family understand why a particular technique is chosen and exactly what to expect as death occurs. Their physical, spiritual, and emotional needs should be addressed so that the experience is as enriching as possible.³ Details such as where to gather, who should be there, aftercare arrangements, etc. should all be discussed before the time for euthanasia arrives.⁴ The use of pre-euthanasia sedatives and anesthesia should also be discussed. More and more families are requesting their use to help ensure a peaceful passing. Planning ahead will eliminate fear and help loved ones move forward in a healthier manner.

Euthanasia can be performed in various locations, but the most common is in the clinic or at home. Clinic euthanasia is typically chosen due to the strong bond between veterinarian/staff and the family, the presence of support staff, and convenience. Home euthanasia is typically chosen for those families hoping to say goodbye in a more private setting, where pets can remain more comfortable with loved ones gathered close and for easier home burial logistics.

With any of these techniques, take your time and be consistent. If you feel the method you start out with is not going to work, readily move on to another to ensure things continue smoothly for the family and the pet. You will have to decide just how fast to move onto another technique if the first is not working. The following list of techniques are AVMA approved and are considered common techniques for dogs, cats, and some exotics.

Intravenous Injection

Pros

Fast and effective
Standard dosing of euthanasia solution
Sedation not required

Cons

Venous access necessary
Blood pressure concerns
Requires moderate skill

To perform an intravenous injection, you need to find a vein to work with. The accessory cephalic and cephalic veins in the front leg and the medial and lateral saphenous veins in the back leg are most common. Each has its pros and cons. Pick the one that is most appropriate under the circumstances.

Prepare your solution ahead of time if you can. IV injections using a barbiturate require dosing of 1ml per 10 pounds of body weight. If your euthanasia solution is extremely thick, you can dilute it with saline to ease its movement through the needle and catheter. The saline does not negatively affect cardiac arrest time or postmortem side effects. If you insert your euthanasia syringe with needle directly into the vein, make sure to draw back and check for blood. To be safe, you should draw back at least once during venous administration to make sure that your needle is still placed correctly.

Once you have your needle inserted directly into the vein or a catheter placed, inject slowly and steadily to avoid putting too much pressure on your set up. When all of the solution has been injected, and you are certain it all went into the vein, you can remove your needle. Apply pressure to your injection site to stop any bleeding. If you have a catheter placed, you can flush with saline to clear your catheter of the euthanasia solution. When performing an intravenous injection, remember that death occurs very quickly. You should start to see the effects of your injection within 30 seconds or so. Let the family know what they might see before you start injecting. Once death has occurred, remove the catheter and wipe your injection site with the hydrogen peroxide-soaked gauze. Note that catheter placement is not required for IV administration, but the AVMA advises their use when owners are present.

Intracardiac Injection

Pros

Fast and effective
Eliminates venous pressure concerns
Works for all domesticated pets

Cons

General perception as gruesome
Requires advanced skill
Requires anesthesia

The easiest way to give an intracardiac injection is to have the pet lying in lateral recumbency on either their right or left side. I prefer to have a dog lying on its right side because the heart is easier to auscultate from the left and the left ventricle is usually the easiest chamber to inject. The heart in most dogs and cats will reside from the 2nd or 3rd intercostal space (ICS) to the 5th or 6th ICS and from the sternum to about two-thirds of the way up the thorax. In my experience, the heart is usually more cranial and ventral than I think it will be. When auscultating the heart, you need to pinpoint the PMI or Point of Maximum Intensity. On the left side of the chest, this will likely be the point of the aortic valve located in the 4th intercostal space at the level of the shoulder. On the right side, the right AV valve will be the loudest and is also in the 4th intercostal space at the level of the olecranon/elbow. The olecranon is located near the 5th intercostal space so there will be little heart caudal to this point. Use your stethoscope or even your hand to find the Point of Maximum intensity (PMI) on the chest wall. Then, grasp the lower antebrahium and press the elbow up the chest wall to simulate where it would normally be if the pet were standing. A good place to insert your needle is usually just a bit cranial to the point of the elbow. Combining the location of the PMI with this landmark should help you find the heart.

Your patient must be fully sedated and unconscious. It should not react to your injection in any way. Make sure you draw up enough euthanasia solution to stop the heart. You don't want to have to inject a second time unless absolutely necessary. If your patient weighs 40 pounds, draw up at least 6 mls. This way you have a little extra to spare in case you accidentally inject some outside of the heart. Use a larger syringe than is necessary to hold the solution. When injecting into the heart, you have to draw back blood to make sure you are within a chamber and therefore you need a little extra room in your syringe. If giving 6 mls of solution, I will use a 12 ml syringe. If there is pulmonary effusion present, you might miss the heart on your first stick and accidentally draw up some of the fluid. If you have extra room in the syringe, you can gently redirect and try again without having to draw up a new syringe full of euthanasia solution. If you find yourself within an airway, you will draw back air, and again it is nice to have a little extra space available in your syringe.

When performing an intracardiac injection in larger dogs, you will need to use a long needle. My service uses 1.5" to 2" 18 gauge needles for dogs over 20 pounds. As you prepare to enter the chest wall, keep your needle perpendicular to the body. Angling the needle will increase the distance you need to travel before hitting the heart. If you contact a rib during penetration of the chest wall, either start over or gently walk your needle tip off the rib edge and keep going. When you think you are in the heart, draw back on the plunger. If you draw back and get negative pressure, your needle tip is within something solid (e.g., the myocardium, a tumour, etc.). Push the needle in farther if you can and try to draw back again. If you still do not aspirate blood, gently redirect and try again, without removing the needle completely from the chest. Remember that if you let go of a syringe that is inserted into the heart, it may move along with the contractions. Once you see blood in your syringe, you are free to administer your solution.

Intraperitoneal Injection

Pros

Easy to perform
Works in all domesticated pets
No sedation required*

Cons

Longer time to absorb
More solution needed
Possible to accidentally inject organs

An intraperitoneal injection means that the euthanasia solution is given into the peritoneal space, i.e. the abdomen. The solution must therefore miss neighbouring organs or the administration would be considered intraorgan, and without sedation, is considered painful.² Even though pre-sedation is not required for this technique, I always give it. *Sedation is required if using a class III euthanasia solution.

Two areas of injection are the ventral midline caudal to the xiphoid process and low on the right lateral abdomen. The needle should be inserted at an angle slightly toward the head and the syringe plunger pulled to aspirate for negative pressure or air. If no blood or fluid is seen in the syringe, you are free to inject. Because the euthanasia solution is moving into the blood stream through absorption across abdominal organ membranes and serosal linings, it may take longer to achieve cardiac death. Three times the IV dose is required for this technique. If your pet is not pre-sedated and is still conscious after 20-30 minutes, you will need to give more solution. When necessary, massage the abdomen to help the solution absorb.

Intrahepatic Injection

Pros

Simple technique
Works well when other techniques fail
Works in all companion pets

Cons

Requires deep sedation or anesthesia
More solution needed

The liver is large, highly vascular, and is usually easy to palpate. Veterinarians choose intrahepatic injections over intraabdominal injections because of the improved uptake of the euthanasia solution. When an intravenous injection is not viable, an intrahepatic injection can be a great alternative. Like intracardiac injections, intrahepatic injections need to be done under deep sedation or anesthesia.

Choose a needle length that is sufficient for reaching the liver. With small pets, a 1-inch needle should be adequate, but in larger pets, a 1.5" or 2" needle may be necessary. I also recommend giving more euthanasia solution than you would use for an intravenous euthanasia. I generally double the dose because the rate of absorption can be delayed based on how well you place your injection. If you miss the liver, the death may not occur in a reasonable amount of time so having more solution present will help speed things along.

To inject the liver, place your needle in the notch on either side of the xiphoid process and aim cranially about 45 degrees, up under the last rib of your laterally recumbent pet. You can even apply some inward pressure with the syringe or with your free hand to allow the needle to move deeper. There is no need to draw back and check for blood. Keep the needle in the ventral half of the abdomen to avoid the stomach, which is located more dorsally. I like intrahepatic injections because they work well from either the left or right side. Death should occur within about two minutes or so with a well-performed intrahepatic injection, but I usually tell families that their pet may pass immediately or it may take a few minutes.