

Veterinary Practice News

THE INFORMATION
LEADER FOR VETERINARY
PRACTICE AND BUSINESS

April 2022 • Volume 34/Number 4 • VeterinaryPracticeNews.com

Making dollars and sense of **HEARTWORM PREVENTION**

Give puppy-owners options
early to boost compliance

By Michelle Evason, BSc, DVM, DACVIM (SAIM)

Despite high susceptibility to heartworm,
disease is avoidable if puppies
in endemic regions start
on the right preventatives
prior to eight weeks old.

Heartworm, Page 30

WHICH EQUIPMENT PURCHASE OPTION IS RIGHT FOR YOUR PRACTICE?

By Tom Seeko, CExP, FINRA Series 7 and 66

When upgrading your practice with new tech, it can be beneficial to work with professionals who can help maximize your profits and increase your practice's value.

Equipment, Page 18



11 WAYS TO COMBAT FELINE HYPOTHERMIA

By Gary D. Norsworthy,
DVM, DABVP (feline)

The main cause of intraoperative or immediate post-operative death is hypothermia. Fortunately, there are several techniques available to prevent and/or manage the condition.

Hypothermia, Page 40



PHOTO COURTESY GARY NORSWORTHY

Departments In the Middle: The real me Page 2 | Biz Builder: Raising prices Page 10 | Keeping It Real: Client transactions Page 16 | Evidence-based Medicine: Feline OA Page 22 | Dental Pearls: Ergonomics Page 26 | Surgical Insights: Behavioral considerations Page 28 | Off Leash: DVM and MD clash Page: 48



Over the past 10 years, my associates and I have performed more than 1,100 laparotomies on cats with chronic small bowel disease.^{1,2} Our goal has been to biopsy all three sections of the small bowel, the pancreas, and the liver. Approximately 50 percent of these cats are over 12 years of age, about 50 percent of them have neoplasia, and most have a Body Condition Score (BCS) of 2/9 to 4/9. Despite these negative factors, our survival rate is 99.4 percent.

Long ago, I learned to appreciate the fact that the main cause of intraoperative or immediate post-operative death is hypothermia. When the core body temperature falls below 96 F (35.5 C), survival declines dramatically. We now are very proactive in preventing and/or managing hypothermia. The following are techniques we routinely employ.

1) Minimize surgery time

Surgery should not be like speed dating, but it should not be a casual stroll through the park either.

Figure 2A



The IV line is located between two beanies at the head of the surgery table (left). The bean bags are separated to show the fluid line between them (right).

Stay focused on the task at hand. Have the needed instruments and supplies laid out at your fingertips. Let your technicians focus on the vitals and the surgery monitor so you do not have to. Their job is to

alert you when potential problems arise; let them do their job. Be proactive about concentrating on the steps of your surgical procedure. If you are not familiar with the procedure, review before surgery

(not during). Take legitimate shortcuts, such as closing the abdominal wall with a combination of simple interrupted and cruciate sutures, but don't dawdle—the longer the abdomen is open, the more heat leaves the body.

Finally, there are only two parts of the surgical procedure your clients see: the way the hair is clipped and the incision. If there are complications and the hair or the suturing looks sloppy, your client will assume you were also sloppy inside. I love the Ford interlocking suture pattern in the skin, as it is fast, but also cosmetically pleasing. Conversely, I am not a fan of skin staples, even though they can be applied quickly.

2) Warm IV fluids

While giving intravenous fluids during surgery is routine, room temperature fluids (72 F [22 C])

given intravenously contribute to the loss of body temperature. As such, we store our bags of fluids to be given during surgery in an incubator set at 100 F (37 C).

3) Keep fluids warm

A bag of warm IV fluids hung at room temperature cools rapidly. This can be easily prevented by placing an insulated wrap around the bag (Figure 1).

4) Consider transit

Warm fluids that traverse multiple feet of IV line can cool off more than 10 degrees. This can be prevented by running the IV fluid line between two warmed “beanie bags” (i.e. cloth bags filled with beans or other materials), as these can maintain fluid warmth for an hour or more. While you may not be able to do this

Figure 1A



Insulated fluid bag warmers will maintain the temperature of the IV fluids during surgery.

Figure 2B



Figure 3



A cat placed on the ChillBuster Veta warming pad. Warm bean bags covered in towels are lateral to the patient. A bootie is on each foot; these are made for six- to 12-month-old babies. An esophageal probe (red arrow) monitors several parameters including core body temperature. The parameters are displayed on a computer screen mounted at the head of the surgery table.

the entire distance, even warming 60 to 70 percent of the IV line can be very beneficial (Figure 2, page 40).

5) Use a warming device

If your patient is lying on a stainless-steel table, heat loss can be substantial. If you use a conventional heating pad made for home use, there is a significant risk of inducing second- or third-degree burns. I made this mistake many years ago. Most of the skin over the dorsum of my patient ultimately sloughed—this was a medical disaster and a client-relations nightmare.

There are several effective and safe devices made for surgical use. Some are heated pads, while others are forced warm air devices. Our preferred warming pad is pressure activated and easily controlled to prevent burns (Figure 3).

6) Strategic beanie bags

Beanie bags can both cause direct warming and prevent

“There are only two parts of the surgical procedure your clients see: the way the hair is clipped and the incision. If there are complications and the hair or the suturing looks sloppy, your client will assume you were also sloppy inside.”

heat loss. Place them along the laterum of your patient. These bags need to be long enough to reach the thorax and abdomen, but flat enough they are not in the surgeon's way (Figure 3).

The downfall of beanie bags, as mentioned previously, is overheating. To counter this in surgery, we cover them with a plastic wrap (to prevent fluids from penetrating the bag) and with a towel so they are not in direct contact with the patient. However, because it is still possible to induce second- and third-degree burns, we instruct our technicians to lay the heated bag on their forearm for 15 seconds. If it is uncomfortable to human skin, it is too hot.

7) Booties

Footpads have several functions, one of which is heat control. Since dogs and cats do not sweat, much of their temperature regulation is through the footpads. By covering the pads with booties made for newborn babies, one can reduce heat loss (Figure 3).

8) Monitor core body or rectal temperature

Our surgical monitor has an esophageal probe that performs several functions, including monitoring core body temperature. The result is displayed on monitors at the head end of our surgery tables. At a glance, my technician or I can see core body temperature (Figure 3).

Figure 4



A warming pad is placed in the recovery cage. The cat is wrapped in towels warmed in a microwave oven. Warm bean bags are placed next to the towels on both sides of the cat. Warm IV fluids are continued based on the needs of the patient.

one used on the surgery table. The cat is wrapped in a towel which has been warmed in a microwave oven. Warm beanie bags are placed next to the towel (Figure 4).

Healthy surgical habits

These 11 steps are routine for our patients. They have made hypothermia a non-issue during our laparotomies on cats. ●

Gary D. Norsworthy, DVM, DABVP (feline), is the owner of Alamo Feline Health Center in San Antonio, Texas. He has been in private practice for 49 years, including 24 in feline-only practice. Dr. Norsworthy lectures frequently on feline diseases and is the editor and major author of seven feline textbooks. He is a board-certified feline specialist (one of only two in South Texas) and an adjunct professor at the College of Veterinary Medicine, Mississippi State University, and the Western University of Health Sciences. He received the 2020 Distinguished Career Achievement Award by the Texas Veterinary Medical Association.

REFERENCES

1. Norsworthy, G.D., Estep J.S., Kiupel, M. et al. (2013). Diagnosis of chronic small bowel disease in cats: 100 cases (2008-2012). *J Amer Veter Med Assoc* 243(10), 1455-1461.
2. Norsworthy, G.D., Estep, J.S., Hollinger, C., et. al. (2015). Prevalence and underlying causes of histologic abnormalities in cats suspected to have chronic small bowel disease: 300 cases (2008-2013). *J Amer Veter Med Assoc* 247(6), 629-635.

FOOTNOTES

A ThermoGear, Flowery Branch, Ga.

9) Keep the guts inside

During our laparotomies, we run the bowel so we can take our biopsy samples from the optimal locations. This means the bowel is removed from the abdominal cavity. As soon as a biopsy site is identified, the remainder of the bowel is returned into the abdominal cavity. This helps preserve heat and prevents drying of the tissues.

10) Abdominal infusion of warm saline

If core body temperature falls below 97 F (36 C) at the end of surgery, we infuse about 100 ml of normal saline solution that has been stored in an incubator at 100 F (37 C). It is retained in the abdomen when the abdomen is closed. I liken this to having a big drink of hot chocolate on a cold winter day.

Note some of the fluid will leak out of the incision site. If a liver biopsy is taken, there will be some free blood in the abdominal cavity that will mix with the saline. At first glance, it will appear that the cat is hemorrhaging, but do not go back to surgery. The blood-tinged fluid is to be expected.

11) Heat in the recovery cage

To continue the rewarming process, the cat is placed on a pre-heated warming blanket like the