

DHDR Holter Monitor Program - What is a Holter Monitor, why do I need it, when should I do it?

Most Veterinary Cardiologists agree that the Holter monitor provides the earliest detection of occult, or hidden, DCM (Dilated Cardiomyopathy) in dogs. Holtering your dog is a painless, simple, and easy to hook-up. It's a **cost-effective** way to test your dog for heart disease. It can be used when issues arise in conjunction with your cardiologist, or on your own for early knowledge purposes. From pre-breeding and pre-surgical needs to annual adult and senior wellness care, Holter monitoring offers invaluable information regarding possible underlying heart disease. That information is **power**. The power that increases life expectancy through medication.

The Holter monitor records 24 hours of continuous heart rhythm (EKG or ECG) and heart rate (HR), while the dog goes about its normal daily activity in a home environment. The Holter is found to be a far superior test when compared to the 5-minute EKG, simply because of its 24-hour recording time.

The report generated from Holter data details the number of VPCs (Ventricular Premature Contractions), sometimes called PVCs (Premature Ventricular Contractions), present during the 24-hour period. Occult DCM is defined as 50 or more VPCs in 24 hours. Ideally, we are looking

for a VPC score of ZERO or very close to zero. When needed, results can be reviewed by a Veterinary Cardiologist who may recommend further testing, or possible medications, to your Veterinarian.

A birthday month is a great time to Holter your dog! Celebrate each birthday with a Holter report.

Desert Harbor Doberman Rescue uses the Alba Medical DR200 Holter Monitor. ALBA Medical is the largest and most trusted Veterinary Holter Monitoring Company in the world. The DR200 is the company's newest digital model.

DESERT HARBOR DOBERMAN RESCUE

(602) 492-8139

Contact@azdoberescue.org

Holter@azdoberescue.org

DHDR Holter Monitor Program - Overview

- Rent Holter through contact@azdoberescue.org - pick it up or have it shipped. Holter rental is available to active volunteers and adopters at this time.
- Use Holter immediately and ship back or return immediately (rental periods are 4 days). As the renter, you are responsible for getting it to the next person or to "home base" - they may not be able to meet up with you.
 - After data is collected, you will send your information digitally to Alba, using the level of service you prefer. At that time, you either will leverage the information yourself or share it with your cardiologist.
- Included in rental:
 - Holter Monitor, wires, SD card (one and one extra SD card)
 - Large vest (30"-38" girth), belt, and pouch
 - Five new electrodes, Patient Diary, battery
 - Tape, Thundershirt, Holter vest
 - Alcohol wipe and tape removal wipe (do not return)
- Costs:
 - Four days: \$50
 - Shipping to you if you opt not to pick it up: \$14 (you are required to cover cost of properly shipping it back, including insurance)
 - Alba charges \$30-\$80 for analysis of results, depending on what level of service you prefer. This transaction does not involve DHDR.
- Your Responsibilities:



- It is highly recommended that you select a 24-hour Holter period in which you can be home and observing your dog. If you will be separated from the dog, even when still at home (such as taking a shower, doing laundry, etc), even if they are crated, you **MUST** place a cone or type of e-collar on the dog and ensure other dogs can't come into contact with the machine. Not only can you ensure nothing goes wrong with the components, you can ensure none of the equipment is destroyed. If any of the equipment is destroyed, you are responsible for prompt payment to cover the cost of repairs and/or replacement. The best way to ensure you don't have a high-cost situation is to monitor your dog **100% OF THE TIME**. Costs, not marked up, include:
 - Wires: \$70
 - Vest: \$150
 - Broken LCD Screen: \$175
 - Broken Chassis: \$70
 - Entire Machine: \$1,200
- This vest was purchased with the intent to improve Doberman health and not to generate profit. Please adhere to the honor system in not sharing the vest and returning it on time.
- Before returning the vest, please use a lint roller and spot clean. If the vest became dirty (i.e., got mud on it, smells strongly of food, etc.), please wash it (the vest is machine washable).

DHDR Holter Monitor Process: Step by Step

1. Read everything first!
2. Attach electrodes to dog
3. Set up and attach Holter monitor
4. Stop recording
5. Transmit data to Alba Medical

1. Read everything first!

- a. Watch this video:

<https://www.facebook.com/sunsetdobe/videos/10207522759611271>

- b. *Shaving/Clipping is recommended though **not** required to Holter your dog. The biggest issue with not shaving is early electrode detachment due to primary contact with hair instead of the skin. The act of shaving also insures the best possible electrical contact and thus the fully desired recording time. The more active the patient, the better contact we will need with the skin to allow for a complete recording. With thick coats, removing the guard hairs with a number 10 blade may assist in better skin contact yet allow a less obvious shaved box on the dog. Dogs with a thinner coat may very well get away with no*

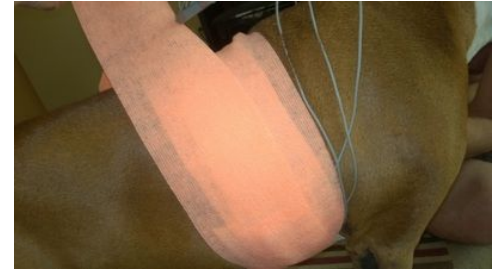
shaving at all. Areas that are shaved typically appear fully coated in about 30 days. Use alcohol and gauze or cotton to degrease the area after clipping or shaving.



2. Attach electrodes to dog

- a. Trim/clip/shave (or don't)
- b. Wipe the general area of electrode placement with alcohol swabs or alcohol on gauze.
- c. Placement is one "clipper length" away from elbow. The video does a much better job of describing how to place. The website explains the following, however this may be a bit confusing for some: *Locate electrode sites by counting forward from the last (13th) rib. Make a dot with a Sharpie or magic marker once you have located the spot. On the dog's left, mark the first electrode site at the space between the 6th and 7th ribs just next to the sternum (the sternum is in the center of the chest and facing the ground). The second electrode will go directly above the first at the costochondral junction, also in the space between 6th and 7th ribs. The third electrode will be placed anywhere behind these (location is not critical). On the dog's right side, mark the first electrode site between the 6th and 7th ribs near the sternum and the second site immediately behind the first.*
- d. Open sealed electrodes packet. Left-over pieces should NOT be saved for use at a later time. These electrodes will dry out and could be non-operational.
- e. Start with the left side, and then move to the right side, placing the electrodes as the video recommends. Hold your hand over the electrodes for a minute to allow them to really solidify. Remember the electrodes should be independent and not touching. Poke at them a bit to be sure they are all secure.
- f. Carefully snap leads to electrodes - be positive the colors are on the same side and same order as the Boxer photo above.

- g. Apply a piece of tape to double-secure each lead to each electrode.
- h. Apply an additional piece of tape over each electrode to the dog's body. Use a Thundershirt, tape, or vet wrap to keep everything tight and in place.
- i. Put the vest on (does not have to be perfect yet).



A note about electrodes:

Electrodes can and do come off, so understanding how they transmit information is helpful. Just because we have lead detachment does not mean the test is invalid. The leads communicate to each other through the chest cavity according to the channels listed above. Remember, we only need one channel operational to produce the Holter report.

- Black lead detached: channel one operational, continue recording and re-attach black lead if possible. The black lead serves double duty in channel two and three.
- Black and white detached: channel one operational, continue recording and re-attach black/white leads if possible
- Black and brown or red detached: no channels recording. One will need to re-attach all electrodes. Depending on time completed, may want to redo entire 24hrs.

If you ever lose ALL the electrodes on one side of the dog, there will definitely not be any signal recorded during that time. Depending on how long the wires were disconnected, the test may need to be repeated. Check electrodes for moist contact; dry electrodes do not transmit information.

3. Set up and attach Holter monitor

- a. Connect the wire bundle to the monitor.
- b. Insert an SD card in the monitor. The SD card slot is inside the battery area.
- c. Put the battery into the monitor and close the housing.
- d. The Holter monitor will start up. Allow it to boot. Press ENTER when prompted. (The Holter may prompt you to erase the card. Erase the card.)
- e. Press ENTER to select NEW PATIENT.
- f. Enter the patient ID (name or number) using the green arrows, selecting enter for another digit. Press EVENT when done. You cannot go back and change. (You can always take the battery out and start over.)(Do not stress about this point. Only one dog gets recorded at a time, so even if all you enter is a single digit, it can be used to identify your dog later.)
- g. Look at the ECG signals on the screen to check for a clean tracing for recording. There should be three, and they should all be between 3-5. Also check that battery life is above 50%.
- h. If all looks good, press and hold EVENT for 3 seconds to begin recording. Write down the time you started in your Patient Diary notes.

- i. Place the Holter Monitor in the plastic bag and secure it in a way that wayward moisture cannot enter. Tape if needed. Then, place it all inside the vest pocket. Press the pocket to the top of the back of the vest, lined up with the electrodes.
- j. Adjust the vest more formally to be sure it is snug.
- k. Wrap the strap/belt around the pocket, which will also wrap around the electrodes.
- l. Record notes about your dog's activities in this 24-hour period in the Patient Diary, or you can also keep notes in an electronic file.

4. Stop recording (AFTER 24 HOURS OF RECORDING)

- a. Remove battery from Holter.
- b. Push SD card in to release it from machine.
- c. Transmit data to ALBA Medical by following transmission instructions. **READ ALL TRANSMISSION INSTRUCTIONS FIRST, STEP 5.**
- d. Remove electrodes from your dog.

5. Transmit data to Alba Medical

For more information: <http://www.albamedical.com/transmitholter.html>

- a. Remove the SD card from the device.
- b. Insert the SD card into your computer/SD card reader. (For convenience, an SD card reader is included in the kit.)
- c. Your ALBA Digital Holter uses a standard SD or CF flash card. When you insert your flash card in a properly installed card reader and look at the files on that card, you will notice there is only one file on each Holter card called "flash.dat". The concept of online Holter transmission is to get us this file (the 24-hour recording), and also the patient demographics and other important information. We use a file transfer company called HIGHTAIL for this file transfer. Please note that the Holter file is too large to email, and this is why we need to use this "Drop Box".
- d. **Regarding Payment to Alba** – We now use a company called Square to hold our credit cards on file, and to charge the cards. If we have your credit card and CCV in the new Square system, you will receive a paid invoice from Square, and the report will be an attachment to the invoice. If we do not yet have your card and CCV in the new system, you will receive an invoice to pay online. After paying online, we

recommend that you click the button that authorizes Square to keep your credit card on file. After you pay the invoice, we will send you a paid invoice with the report attached.

e. Follow Alba Medical's steps:

- **Step One: Go to our "drop box"** Click this link:

<https://spaces.hightail.com/uplink/AlbaMedical>

- **Step Two: Transmit a Holter to ALBA Medical**

You will see a message that says "*Drag files here to share or pick from your computer.*"

- You can "drag" the flash.dat file from your Holter SD card to the box, or you can click "computer" to open a browser. With the browser, find your flash drive (e: or f: or similar) and then choose the file recorded on it (flash.dat).
- Enter your Full Name
- Enter your Email (this is where your report will be emailed to)

- Enter Message= **Your name and phone number (very important)** then dog's Name, Age, Breed, and any notes you want to tell us about the recording period.
- Click "Send." The file will then be sent over to us in a matter of minutes.
- (Tip: If you record your Patient Diary notes in an electronic file, then you can also attach your Patient Diary notes file and send it using this method.)

Please note: **Do not erase the flash card** using "My Computer" or "Windows Explorer". If the flash.dat file is not present, the Holter will not function. Leave your card full. The next time you are hooking up another patient, insert the card, and the Holter will prompt you to erase the card.

ALBA Medical Tech Support **866-ALBA-MED**

While a cardiologist review is always important for a questionable result, this post is helpful in reviewing your results:

<http://boxers101.blogspot.com/2011/08/intrepreting-holter-reports-for-boxer.html>