

Electrocardiogram Options for the US&R Canine

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EKG Options for Use in the Urban Search & Rescue Canine



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The need for an electrocardiogram of a search canine may arise during a deployment. Situations may include auscultation of irregular beats, dropped femoral pulses, toxin ingestion, severe dehydration, hyperthermia, hypothermia, gastric dilatation-volvulus, respiratory arrest, and cardiac arrest.

The EKG units recommended in the FEMA cache list (Life-Pak 12) as well as other units, and automated external defibrillators (AEDs) are adaptable for use in the canines with little to no effort.

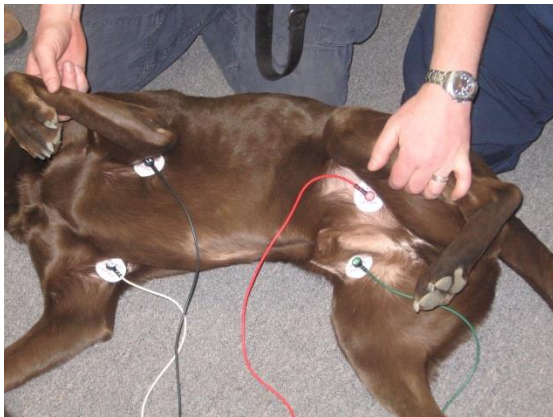
Presented here are two options for acquiring an EKG tracing from canines, as well as a veterinary EKG unit that was purchased with monies from a fund-raiser for the MA TF-1 search canines.



MA TF-1 Search and Rescue Canine UBER is not so sure about this!



The first option we employed was using the human-designed EKG electrode connectors made to stick to the patient and that use a gel for conductivity.

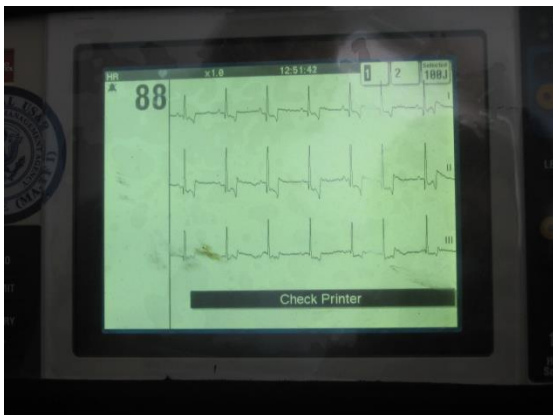


After connecting the leads to the electrodes, the electrodes are placed onto the least-haired areas of the canine:

- 🐾 Left and right axillae
- 🐾 Left and right inguinal

The color coding is the same as for humans. The veterinary saying goes:

- Green and white is always right.
- Read newspapers up front.
- Christmas comes at end of the year.



The result is a diagnostic EKG tracing.

+ Note

Several medics commented on the negative T waves. In the canine, the T wave (repolarization of the ventricles) may be positive, negative, notched, or biphasic.

Alternatively, the human electrode lead connectors may be placed on the paw pads.



Sammy's Hind Paws



Sammy's Front Paws



Sammy seems pretty content with the arrangement, and a diagnostic tracing was obtained

The second option we used was an adaptation of the connection system. The modifications below have been made for enough clips to have 4 for each medical pack.



The snaps were taken from outdated leads

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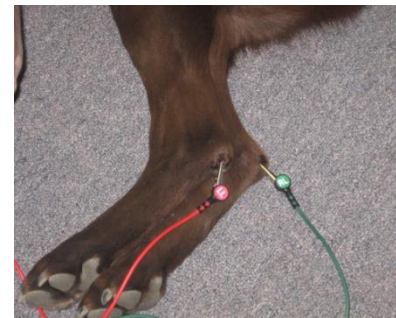


These were soldered onto alligator clips

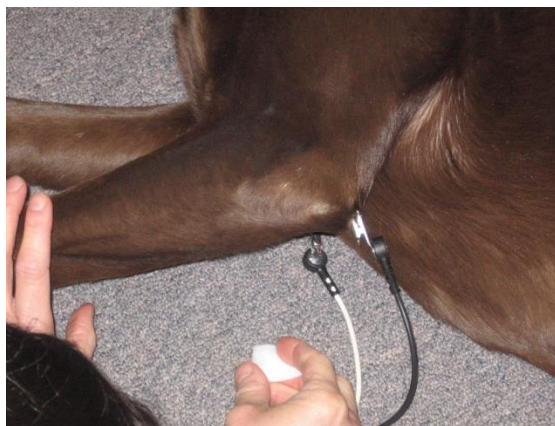
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Then were attached to the EKG leads



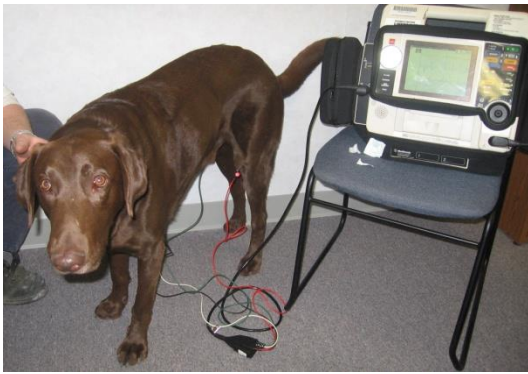
The clips are attached at the posterior cubital joints (elbows) and anterior stifle (knee) or posterior tarsal (ankle) joints. These locations have thickened skin so the canine will be less sensitive to the pinch of the alligator clips. If too harsh, the clips can be fatigued to a looser set point, or the serrated jaws filed down.



Alcohol is commonly used as a conduction medium between the leads and the skin.

Conduction paste or gel may also be used.





UBER seemed comfortable with the clips and patiently stood for the EKG.

A fund-raising event conducted by our local Beverly Rotary allowed us to purchase the Vet Biolog™ II. The following features made this a usable tool for a deployment:



Hand-held

🐾 Measures 134x84x26 mm (5¼x3¼x1”)

Light-weight

🐾 Weighs 270 grams (9.6 ounces)

Battery-operated

🐾 Takes 2 AA 1.5V alkaline cells



ECG may be acquired by

♥ Single lead cable using clips

♥ Thoracic placement using stainless steel disc electrode ‘feet’ on back

ECG may be stored in memory and reviewed as many times as needed



Operates in the following temperatures

⌄ 0° → 40°C (32° → 104°F)

Stores in the following temperatures

⌄ -20° → 70°C (-4° → 158°F)

Operates and stores in the following humidity

⌄ 5% - 85%