

Why would my dog need a pacemaker?

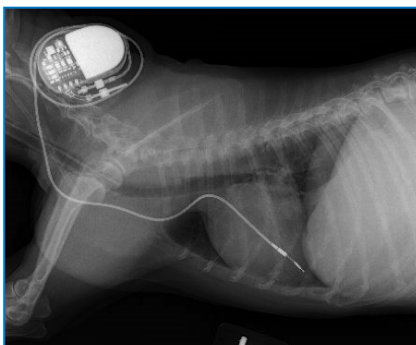
- If your pet's heart rate is too slow and producing clinical signs or symptoms.
 - The most common signs of a slow heart rate are collapse and fainting episodes, exercise intolerance, fast, or rapid breathing and pale gums.
 - Many dogs that require a pacemaker tend to be older. Quite often, the signs appear as if they are caused by aging when, in fact, they are due to a slow heart rate.

How do we determine if my dog needs a pacemaker?

- The first step is to document your pet's heart rhythm. Heart rhythm can be determined from a heart rhythm strip, termed an ECG/EKG, or the placement of a 24-hour Holter which records your dog's heart rate and rhythm over a 24-hour time period.
- Additional diagnostics to determine if your pet is a good candidate for pacemaker surgery are:
 - Full blood work and urine analysis
 - Blood pressure
 - Chest (and possibly abdominal) X-rays
 - Echocardiogram (ultrasound using sound waves)
 - Abdominal ultrasound
- The reason for the tests is that most dogs are geriatric, or elderly, by the time they develop these slow heart rhythms. Our specialists want to ensure no other diseases or complications are present before proceeding with surgery.

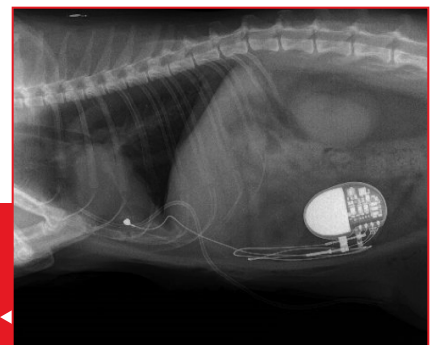
How is a pacemaker inserted?

- Typically, the pacemaker is inserted through a small incision in the patient's neck that allows us access to the jugular (neck or throat) vein. Once we have confirmed with fluoroscopy (continuous X-ray) that the pacemaker lead is properly placed in the right ventricle (or chamber) of the heart, we attach it to the generator and program the pacemaker to meet your dog's specific needs.
- If your dog has skin disease or any other disease that prevents placement in the neck, the pacemaker can and may be placed in the abdomen, or stomach. This is known as an epicardial pacemaker.
- Cats always require placement of pacemakers in their abdomen, as their blood vessels are too small to place a lead directly inside their heart.
- Placing the pacemaker in the abdomen requires specialized equipment, such as a fluoroscopy unit and catheter lab, to view the inside of the heart, and should be performed by a board-certified cardiologist.



► Pacemaker inserted through the jugular vein into the right ventricle of the heart; generator placed underneath the skin in the neck/shoulder region.

◀ Cat with an epicardial pacemaker. The generator is placed in the abdomen and the lead is placed outside the heart.



What should I expect during and after the procedure?

- The procedure itself usually will take 1–2 hours to complete.
- We will take chest X-rays after the procedure to ensure the pacemaker lead is in an ideal position.
- After the procedure, your pet will need to stay overnight for continuous heart rate monitoring to ensure their pacemaker is functioning correctly.
- Most dogs go home the day after their procedure. We will send you home with detailed instructions for care on what to do once your pet is home from surgery.
 - It is important to keep the incision clean and dry. A bandage will be placed over the incision for the first 7–10 days to reduce swelling.
 - Activity should be restricted for 4–6 weeks after surgery to minimize the chance the pacemaker lead gets dislodged. Your dog will need a harness instead of a collar to reduce and prevent pulling on the pacemaker lead in their neck.
- Thankfully, the majority of pacemaker patients do not require any lifelong cardiac medications post-procedure.

How often will my pet need to be re-checked by the cardiologist?

- Re-checks to evaluate pacemaker function and battery life will need to be performed 4–6 weeks following pacemaker placement, and then every 6 months after this.
- Re-checks will need to be performed at Care Center, as we have a specialized computer that can “talk” to your pet’s pacemaker to ensure it is functioning appropriately and alter settings, if needed.

Is there anything my dog should avoid after pacemaker implantation?

- If your dog has a pacemaker and requires a Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) scan, notify your veterinarian.
- Venopuncture (process of drawing blood from veins) of the right jugular vein should be avoided, as this could damage the pacemaker lead.
- Microwaves do not present a danger to your dog’s pacemaker.
- If your dog passes away or is humanely euthanized, the pacemaker will not keep their heart beating or artificially alive.

Pacemaker implantations are performed on felines, but do require a different course of action. For more information on this procedure or if you would like to schedule a consultation with our specialist, please contact us at 513.530.0911.