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## Cardiopulmonary Resuscitation (CPCR)

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Cardiopulmonary cerebral resuscitation (CPCR, formerly abbreviated as CPR) is the treatment required to save an animal (or human) life when suffering cardiopulmonary arrest. The intent of CPCR is to provide sufficient blood flow and oxygen to the brain and vital organs to support life until more advanced medical therapy can be started. Unlike what we see on television, most patients who suffer from cardiac arrest are unable to be saved, even with CPCR. In a study from the University of California at Davis, researchers discovered that long-term survival among feline patients is extremely poor. In this study, only 2.3% of feline patients who received CPCR survived to be discharged from the hospital alive. This closely parallels findings of similar studies in human medicine.

CPCR consists of two parts: **Rescue breathing** and **chest compressions**.

These two techniques combine to keep the lungs supplied with oxygen and to keep blood circulating, carrying oxygen to the other parts of the body such as the brain and vital organs.

*Basic* CPCR is CPCR performed by trained bystanders at the scene of the arrest.

*Advanced* CPCR is CPCR performed by trained teams of professionals.

Basic CPCR is the most important for pet owners, and is described in this section.

All body tissues require a steady source of oxygen. If the source is interrupted for only a few minutes, irreversible damage may be done. If cardiopulmonary arrest occurs, basic CPCR must be initiated at the scene.

Recent research has shown that using only chest compressions was as effective as chest compressions and rescue breathing together. As long as the airway is open, compression of the chest may cause forward flow of blood and may cause adequate movement of air—at least for the first few minutes of arrest. *Therefore, if only one rescuer is available to perform CPCR, it is advisable to perform only chest compressions.*

### **Basic CPCR: Rescue Breathing (If two people are present)**

*Make Certain the Animal is actually Arrested and Unconscious*

Talk to the pet first. Gently touch and attempt to awaken the pet. You could be seriously injured should you attempt to perform CPCR on a pet who was only sleeping heavily and was startled awake.

*Ensure an Open Airway*

Extend the head and neck and pull the tongue forward.

Look in the mouth and remove any saliva or vomitus. If it is too dark to see into the mouth, sweep your finger deep into the mouth and into the throat to remove any vomit or foreign body. Be aware of a hard, smooth, bone-like structure deep in the throat, which is likely to be the hyoid apparatus (Adam's apple). Serious injury could result if you pull on the hyoid apparatus.



#### *Observe for Effective Breathing*

Sometimes an animal will begin to breathe spontaneously when the head is put in the position discussed above (head and neck extended, tongue pulled forward). Watch for the rise and fall of the chest while listening closely for sounds of breathing. If no breathing is evident in 10 seconds, begin rescue breathing.

#### *Begin Rescue Breathing*

Rescue breathing is performed by covering the pet's nose with your mouth and forcefully blowing your breath into the lungs. In cats and small dogs, you must hold the corners of the mouth tightly closed while you force the air in.



In larger dogs, the dog's tongue should be pulled forward and the mouth and lips held shut using both hands cupped around the muzzle. Force air into the lungs until you see the chest expand. Take your mouth away when the chest has fully expanded. The lungs will deflate without help. Air should be forced into the lungs until you see the chest expand.

#### *Give 3 to 5 Full Breaths*

After several breaths are given, stop for a few seconds to recheck for breathing and heart function. If the pet is still not breathing, continue rescue breathing 20 to 25 times per minute in cats or small dogs, or 12 to 20 times per minute in medium or large dogs. Push down on the stomach area every few seconds to help expel the air that may have blown into the stomach. If the stomach is allowed to distend with air, the pressure will make the rescue breathing efforts less effective. Try to coordinate breaths with chest compressions for 2-person CPR.

#### *If Breathing is Shallow or Non-existent*

If you find that breathing is either shallow or non-existent and the pet is still unconscious, continue rescue breathing 10 to 15 times per minute and transport the pet to the nearest veterinary facility.

### **Basic CPR: Chest Compressions (If one or two people are present)**

#### *After Ensuring an Open Airway, Check for a Pulse*

If no pulse is detectable, begin chest compressions.

#### *In Small Dogs or Cats*

Squeeze the chest using one or both hands around the chest. Depress the rib cage circumferentially (see illustration).

Do this 100 to 150 times per minute.

#### *In Large Dogs*

Compress the chest wall with one or both hands, depending on the size of the dog and the size of the rescuer (whatever works best for you). If the dog is on her side, place your hand(s) on the side of the chest wall where it is widest. If she is on her back, place your hand(s) on the breastbone. Depress the rib cage 1.5 to 4 inches, depending on the dog's size. Do this 80 to 120 times per minute.



#### *Coordinate Rescue Breathing and Chest Compressions*

If possible, give breaths during the compressions. If it is not possible, give two breaths after every 12 compressions.

*Continue CPR until*

- You become exhausted and can't continue.
- You get the animal transported to a veterinary facility and professionals can take over.
- The pulse is palpable or heartbeats are felt and they are strong and regular.

In the vast majority of cases, artificial ventilations will continue to be required for a period of time, even though heart function has returned. This is due to the nervous system depression that occurs as a result of the arrest.

**All resuscitated animals should be transported to a veterinary facility for further examination and care!**

*Date Published: 12/31/1994*

*Date Reviewed/Revised: 08/13/2009*