

# CPR IN THE NEWBORN FOAL

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Most informed people today are familiar with CPR (cardiopulmonary resuscitation) in the human being. Those who are not should become so, because lives can be saved with CPR. Many victims of heart attack, drowning and electric shock are alive today because someone knew how to administer CPR.

It is taught in schools, in industry, by organizations such as the Red Cross, and by many medical facilities. Descriptive placards are displayed in many public places, such as swimming pools.

CPR is used when a person's heart has stopped (called cardiac arrest) or when breathing has stopped (respiratory arrest). When the heart has stopped, some degree of blood circulation can be maintained by applying rhythmic hand pressure to the victim's chest. When breathing has stopped, air can be forced into the lungs of a human being by blowing into his mouth while simultaneously pinching off his nostrils.

If the heart and breathing have stopped, both cardiac and pulmonary resuscitation must be applied – and often the victim can be kept alive.

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Newborn foals sometimes require CPR. Therefore it is important to know how to give CPR to a foal, and to understand that it is done differently than it is in a human.

The most common cause of cardiac and/or respiratory arrest in a newborn foal is prolonged or complicated labor by the mare. Usually, the respiratory arrest occurs first. When the foal is deprived of oxygen for too long cardiac arrest follows.

When the foal is in the mare's uterus, it does not breathe. It gets its oxygen supply by way of the placenta and the umbilical cord. The heart is working, of course, and has been since the foal was a tiny embryo.

In a normal foaling, which is a swift procedure in mares, the separation of the foal from the mare usually occurs when the umbilical cord ruptures, after the foal has been born. It is best to allow this to occur naturally.

If the cord is cut or tied off prematurely, the foal may be deprived of a significant amount of blood from the placenta, which would ordinarily drain into the foal's body through the umbilical blood vessels. Sometimes the placenta will be delivered with the foal, although in most cases it remains behind, to drop from the

mare later. In either case, as soon as the foal loses its oxygen source (the mare), its brain is signaled to commence breathing.

Sometimes the umbilical cord is crushed while the foal's head is still inside the mare; or if the foal's head has come out the nose may still be in the water bag. Or, perhaps the foal is coming out hind feet first. In such cases, if the umbilical source of oxygen is interrupted, the foal's brain will be signaled to start breathing. By inhaling fluid, instead of dry outside air, a foal will drown.

If the foal is not breathing, feel the chest behind the elbow. Is there a heartbeat? If there is a heartbeat, you do not need to do cardiac massage. Instead, start respiratory resuscitation as follows.

- 1) Clear the nose of fluids. These may be sucked out with a syringe, but what I usually do is pick up the foal by the hind end and whirl it in a circle a few times. Centrifugal force will expel fluids and mucus in the upper respiratory tract. Now, quickly begin the pulmonary resuscitation.

- 2) Close off one nostril with your hand. Blow into the other nostril. Unlike humans, horses cannot breathe through their mouth, so do not blow into the mouth.

By closing off one nostril and blowing into the other, you will effectively fill the lungs with air. A foal's lungs are approximately the same size as a human's, so unless you are dealing with a tiny pony foal or a miniature horse foal, you don't have to worry about overinflating the lungs. Just take a deep breath and blow all you can into one of the foal's nostrils while pinching off the other nostril.

You should see the chest expand as the lungs fill with air. Then pause as the lungs collapse and expel the air. Repeat this procedure, rhythmically. The rate is the same as you yourself normally breathe. Just breathe in deeply and slowly and breathe out into the foal's nostril.

If the foal starts to cough and sputter, stop for a moment to see if it has begun breathing on its own and, if so, if the breathing is strong and regular.

- 3) If the heart has also stopped, then complete CPR is necessary. This can be done by one person, but it isn't easy. You will need to stuff something up one of the foal's nostrils to close it off while you blow in the other as already described. This will free your hands to do cardiac massage. Obviously it is much better if one person can do the pulmonary resuscitation, while the second person does the following cardiac massage.

- 4) With the foal lying on its right side, place both hands over the lower left chest wall, just behind the foal's elbow. One hand should be on top of the other. The heel of the lower hand contacts the chest wall where the heart is most superficial.

With sharp, but not excessive force, compress the heart and then immediately release the pressure. Repeat at one-second intervals. Violent force can rupture the heart. It only takes a moderate force to compress the heart and pump blood out of it.

In human CPR, the patient lies on his or her back, while similar massage is given to the heart by compressing the chest. In the horse, the chest has a different shape, and therefore the equine patient must lie on its side.

Of course, if you feel the heartbeat start under your hand, and if it is beating regularly, stop the cardiac massage. But, watch carefully in case the heart stops again.

If oxygen is available (and serious breeding farms should have an oxygen tank available, equipped with reducing valve and a length of plastic tubing), then oxygen may be simultaneously given during CPR. To do this, run the plastic tube up the nostril being pinched off, about as far as the distance to the foal's eye. Then go on with the mouth to nostril resuscitation.

To summarize:

Learn CPR for humans. It may save a life and the technique is the same as will be used in a newborn foal except that we do not do mouth-to-mouth resuscitation. Instead, we do mouth-to-nostril resuscitation, closing off the opposite nostril by pinching it with our fingers or by stuffing something up the nostril.

Also, in humans, cardiac massage is performed with the patient lying on his or her back. In foals, the patient must lie on its right side.