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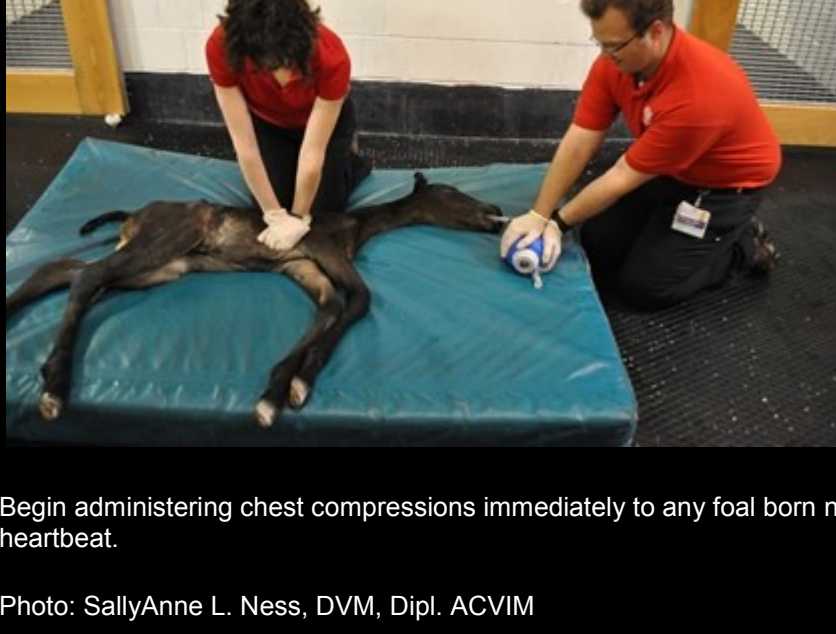
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How to Perform CPR on a Newborn Foal



Begin administering chest compressions immediately to any foal born not breathing and without a heartbeat.

Photo: SallyAnne L. Ness, DVM, Dipl. ACVIM

It's bad news when a foal enters the world without taking a breath. But there's some good news: Many foals born with beating heart and pulse, but who fail to breathe, can be revived via cardiopulmonary resuscitation (more commonly known as CPR). And there's more good news: Both owners and veterinarians can perform CPR on a foal in need. The key is to be prepared in advance and not to wait until it's too late to learn this potentially life-saving skill.

To that end, SallyAnne Ness, DVM, Dipl. ACVIM, reviewed how to perform CPR on newborn foals at the 2015 American Association of Equine Practitioners' Convention, held Dec. 5-9 in Las Vegas, Nevada. Ness is an internal medicine specialist at Cornell University's College of Veterinary Medicine, in Ithaca, New York.

Be Prepared

Ness said many veterinary clinics keep portable neonatal crash kits prepared and handy. These kits should contain the products needed to deliver life-saving oxygen to foals that fail to breathe upon delivery.

She also recommended that veterinarians have on hand the injectable medications that can aid resuscitation when a foal's heart rate gets too low or stops beating—epinephrine (adrenaline) and vasopressin (a hormone that raises blood pressure and helps maintain blood flow to the heart and brain). She also suggested printing a dosing chart ahead of time to prevent errors if medications are drawn up and administered in a hurry.

When the Foal Arrives

Ness said veterinarians and foaling attendants should rapidly assess any foal that fails to move and/or breathe upon delivery. She recommended:

- Placing him in a sternal position (on his abdomen with tucked-under legs) and clearing the airways;
- Identifying any rib fractures and/or congenital deficits;
- Auscultating (listening with a stethoscope) the lungs and heart; a healthy foal's respiration rate should be 20 to 40 breaths per minute and pulse should be 60 to 80 beats per minute, she said;
- Palpating for pulses; and
- Clamping the umbilicus.

This assessment should take less than a minute. She suggested giving several people specific jobs—one team leader, one to listen to the heart and lungs, etc. She also said attendants should be prepared well in advance for high-risk pregnancies or foalings.

The foaling team's job is easy if the neonate's heart is beating and he's breathing properly. If he's not breathing, however, it's time for them to begin attempting resuscitation.

First, rub and dry the foal, she said. Sometimes tactile stimulation helps prompt the foal to breathe. Poking the muzzle and nostrils with straw can also incite a reflex that prompts the foal to take a breath. If he isn't breathing after 10 to 15 seconds, he'll need ventilation.

Ness said intubation is the easiest option and can be approached either through the foal's nasal passages or his mouth. In this instance, the veterinarian will extend the foal's neck and pass an endotracheal tube into the trachea. Then, he or she will inflate a cuff to seal the tube within the trachea and connect an Ambu Bag, which allows the veterinarian to administer breaths to the foal.

Alternatively, veterinarians and foaling attendants can use a non-intubated approach. Ness said in this case, the attendant can use a mouth-to-nose approach. To do this, Ness instructed, "You block the lower nostril (the one closest to the ground as the foal lies) with your hand and blow into the upper nostril." Another non-intubated option is a mask with a self-inflating air pump made specifically for foals. This last option is probably the easiest and safest choice for foaling attendants and nonveterinarians, she added.

Regardless of which option the veterinarian or attendant uses, Ness said the goal is to apply 10 breaths per minute, holding the first inspiration for three to five seconds and then using quick, short breaths after that. She recommended reassessing the foal after 30 to 60 seconds.

Handling Foals Without a Heartbeat

"A foal born not breathing and without a heartbeat for any length of time is unlikely to respond to CPR," Ness said. "But you have nothing to lose doing CPR on a dead foal. It's doing something instead of nothing. Some can come back if the arrest began right at birth."

She recommended beginning chest compressions immediately. The veterinarian should maintain a straight back and locked elbows and place one hand on the other on the widest part of the foal's chest wall. Then, using his back and core muscles, begin applying 100 to 120 compressions per minute, aiming to compress the chest by one-third with each compressions. Ness noted that an easy way to get an appropriate compression rhythm is by mentally singing *Stayin' Alive* by the Bee Gees and compressing along with the beat. Ironically, she laughed, *Another One Bites The Dust* by Queen has a similar beat and could also be used to achieve an appropriate compression rhythm. She recommended having the foaling team take turns performing compressions in two-minute cycles to prevent fatigue.

Ness said the foal should receive 30 compressions for every two breaths. If the animal is intubated, she said the compressor doesn't need to stop. If he's not intubated, the compressor should stop every 30 seconds so breaths can be administered. Additionally, veterinarians can administer epinephrine every four minutes to aid in revival, she said.

When to Stop

Ness recommended continuing CPR until the foal is breathing on his own and has a heart rate over 60 beats per minute. She recommended that foals that do respond positively should still be monitored closely for relapse.

She noted that if a foal fails to respond after 15 minutes, success is unlikely.

Take-Home Message

Knowing CPR and being prepared in advance to administer it to foals in need is essential for both veterinarians and foaling attendants.

"CPR is a rewarding and life-saving procedure that can result in a positive outcome when delivered quickly and with proper technique," Ness relayed.