

ADVICE FOR PET OWNERS

Fading puppy and kitten syndrome: Do you know the signs?

The failure to thrive in newborn puppies and kittens, or neonates, is known as *fading puppy and kitten syndrome*. The syndrome can occur from birth to 9 weeks of age. Affected neonates can decline quickly and die, so immediate detection and treatment are key to survival. Be sure you know what to look for and what to do if you see any warning signs.

Causes

The causes of fading puppy and kitten syndrome are divided into three groups: environmental, genetic, and infectious.

Environmental

- **Hypothermia or hyperthermia**—Puppies and kittens' body temperatures vary with the environment for the first week of life, thus making them easily susceptible to becoming too cold or too hot. They are able to shiver, which helps keep them warm, when they are about 6 days old, and they develop the ability to pant in response to overheating within the first week.

Neonates that are too cold are unable to digest food or nurse. Their heart rates decrease and their circulatory and respiratory systems can collapse. These neonates must be seen by a veterinarian immediately because hypothermia can quickly cause death. Hyperthermia is less common but can occur in hot climates or with inappropriate supplemental heat. Overheated neonates often cry relentlessly.

- **Maternal factors**—Overweight or older dams are more likely to experience neonatal loss.
- **Maternal neglect**—Maternal neglect can be exhibited by a dam's reluctance to lie with and warm the neonates, refusal to permit nursing, or lack of sufficient milk production. Large-breed or barrel-bodied dogs may also step on or clumsily crush puppies.
- **Environmental toxins**—Neonatal skin is thin, and chemicals can be more readily absorbed through the skin in a neonate than in an adult. Breathing chemical fumes is also a concern. So evaluate the bedding material and products used to clean the whelping or queening box. Avoid pine oils and phenols as well as direct contact with bleach or quaternary ammonium (e.g. Roccal—Pfizer Animal Health; Parvosol—Neogen) residue.¹ Use gentle cleaners with little odor, and remove all residue before contact with the neonates.



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Genetic or congenital factors

- **Physical defects**—Abnormalities of the mouth, anus, skull, and heart that are present at birth are relatively common. Swimmer (flat) puppies and kittens can be identified by flattened and widened chests. Pectus excavatum is a severe deformity resulting from intrusion of the breastbone into the chest cavity. Neonates with physical abnormalities should be evaluated immediately.
- **Birth weight**—Kittens have a normal birth weight of 100 ± 10 g (3.5 ± 0.35 oz). Kittens with a birth weight of less than 90 g (3.2 oz) have poor survival rates.² The normal puppy birth weight varies with breed. For example, Pomeranian birth weights are about 120 g (4.2 oz), and Great Danes weigh about 625 g (22 oz).

While pups and kittens may lose a small amount of weight (< 10%) during the first 24 hours of life, after that weight gain should be steady. Pups should gain 5% to 10% of birth weight daily, while kittens should gain 7 to 10 g (0.25 to 0.35 oz) a day. Weigh neonates twice a day, and bring them in for immediate examination if normal daily weight gain does not occur.

Associated with low weight is transient juvenile hypoglycemia (low blood sugar) syndrome, particularly

in toy-breed dogs. Failure to maintain frequent feedings can result in low blood sugar. This can occur for several weeks to months in toy breeds and often arises when the pups are transferred to a new home where feeding schedules are not rigidly followed.

- **Neonatal alloimmune hemolytic anemia in cats**—Cats have two main blood types, A and B. Some kittens' blood types do not match the queen's blood type. Kittens with type A blood that ingest colostrum while nursing from a queen with type B blood absorb antibodies that destroy their red blood cells, which leads to severe illness or death.

Infectious agents

- **Bacterial infection**—Because of their immature immune systems, puppies and kittens are at risk for infection through the placenta, umbilicus, or gastrointestinal or respiratory tract from contaminated environments. Clinical signs of bacterial infection vary but include vomiting, diarrhea, constant crying, fever, failure to nurse, and sloughing of the ear and tail tips and toes.
- **Viral infection**—Many viruses can affect neonates. Canine herpesvirus infection is common in puppies, and signs vary from constant crying to abdominal pain. Canine parvovirus type 1 produces a rapid onset of crying, failure to nurse, vomiting, diarrhea, difficulty breathing, and weakness. In kittens, feline herpesvirus type 1 and calicivirus are most common.³ Coronavirus infections are also common in ill kittens and can cause diarrhea and feline infectious peritonitis.
- **Intestinal parasites**—Because roundworms and hookworms are transmitted through the placenta, most pups are born with these parasites.⁴ Kittens and pups can acquire roundworms through the dam's milk. Hookworms are transmitted to kittens and puppies through the placenta and mammary glands.⁴ In addition, some protozoan parasites cause diarrhea in the young. While rarely fatal, they can contribute to illness and put a neonate at higher risk of additional infection.

Things to look out for

To catch any struggling neonate early, always observe all the neonates' behavior and be on the lookout for key benchmarks. Normal puppy and kitten neonates sleep and nurse. They spend most of their time in a group and cry only briefly.⁵ Neonates that lie away from the group, cry constantly, are restless, or fail to nurse should be examined at once. By the age of 5 or 6 weeks, sleeping alone can be normal.⁶ The amount of activity increases dramatically after the second week of life.

The eyelids separate between 5 and 14 days. Ear canals

open at 6 to 14 days. Other benchmarks include crawling at 7 to 14 days, forelimb support at 10 days, and locomotion at 3 weeks of age.⁶ Teeth appear at about 6 weeks of age, although this can be delayed in toy breeds. These benchmarks are guidelines only and can vary dramatically among breeds and family lines.

What your veterinarian will do

If you see anything of concern, call your veterinarian immediately and schedule an appointment. Your veterinarian may instruct you to bring in the dam and the entire litter for examination. Be sure to bring records of weight gain since birth and any other data you have collected.

Your veterinarian will want to know about the dam's exposure to other dogs or cats during the last third of pregnancy as well as the travel history of housemates. He or she will also ask about the location, temperature, and exposure of the whelping and queening box to other animals. If you have purebred cats, inform your veterinarian of the blood types of the tom and queen, if known. Your veterinarian will also ask about the dam's ease of delivery, appetite, diet, vaccinations, mothering skills, and medications. Family history of neonatal survival can be useful, as can pedigree analysis.

Timely veterinary attention provides the best chances for saving these neonates' lives. Because the exact causes of fading puppy and kitten syndrome are often not immediately apparent, your veterinarian will initially focus on supportive care and diagnostic evaluation. Initial therapy may include providing supplemental warmth, fluids, glucose, nutrition, and sometimes a blood transfusion and oxygen. Medications such as antibiotics or parasiticides may also be needed. Swimmer neonates often respond to physical therapy, and some of the other congenital defects may be corrected with surgery. Intensive treatment of ill neonates is time-consuming yet extremely rewarding.

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