The Neonatal Stage (0-2 Weeks)

Development

The complete neonatal period takes about four weeks. Because so many changes happen during this time, the time frame is generally described in two-week intervals. Once a puppy is born, it's important to check them for defects such as a cleft palate. Also, if there's concern that a puppy has been born prematurely, you can check for the absence of hair on the tops of their feet.

Puppies at this stage should gain weight daily. Weight gain is a helpful indicator of issues with their mother's lactation, or determining if the puppy has a disease or another medical problem. Low birth weights are associated with a higher mortality rate, because the puppy may be at risk of developing sepsis or hypoglycemia.

The umbilicus should dry up and fall off after about three days, and the area should be checked daily for signs of infection or inflammation. Umbilical infection is a common source of sepsis. When your veterinarian checks your puppy's umbilicus, they will also check the abdomen for umbilical or inguinal hernias.

Newborn puppies use their mom and siblings to help maintain their ideal body temperature, as they can't regulate body temperature on their own. Neonates can only bring their temperature about 12 degrees above room temperature, in part because they lack insulating body fat. Your newborn puppy's rectal temperature should be around 95-99°

F. In the second week of life, a puppy's temperature should be around 97-100° F.

If the puppy's body temperature is too low, hypothermia may cause a reduction in feeding, which can lead to hypoglycemia and even death. To encourage regular eating, the pup's body temperature must be corrected. Neonatal puppy bodies lack the ability to shiver and undergo peripheral vasoconstriction-the process whereby the body reduces blood flow to the extremities to keep the core of the body warm. Both abilities develop in the first week of life.

Neonate puppies are born with a sterile gastrointestinal tract that is not colonized with bacteria just after birth, but will be soon afterward. In the first 48 hours after birth, the meconium (soft, yellow/brown stool) is passed. Normal neonate stool is pasty and yellow or tan in color, and variations may indicate problems:

Neonates that are being overfed may develop green or yellow watery stool.

- White stools in neonates may indicate lactose intolerance.
- Foamy yellow stools may indicate the canine herpes virus.

• Blood-tinged stool may indicate sepsis or coccidiosis.

A puppy who does not eat for 24 hours may be able to maintain their blood sugar (glucose levels). After that time frame, puppies' glucose levels will begin to severely decline, which can lead to hypoglycemia. Dehydration is also a big concern with neonate puppies.

Neonates are composed of less than 80% water. During the first two weeks of life, the kidneys are still developing, and pups lack the ability to concentrate urine. During this period, they may need to urinate two to three times more than an adult dog.

Neonates have a lower blood pressure and faster heart rate than older puppies and adults.

It is normal for a neonate's heart rate to be around 200 beats per minute. When a neonate is born, they typically take about 10-18 breaths per minute. After the first day, the neonate breathing rate regulates to normal, which is about 30 breaths per minute.

Around the fifth or sixth day after being born, your puppy should be able to support themselves on their front legs. Around 14-16 days of age, your puppy should be starting to support themselves on their hind legs.

Behavior

Neonates sleep for about 90% of the day. During this time, they are in an what is called activated sleep. An activated sleep strengthens the muscles to allow them to stand. When puppies are born, they can right themselves, withdraw from stimuli, and their anal and urinary release reflexes respond to stimulation (either from a damp swab or by Mom). The sucking and rooting reflex, which is what puppies do to find a nipple/feeding source, also appears at this time. This can look like head bobbing or nudging.

Feeding

Mother's milk or a foster mother's milk are ideal for neonates because of the role it plays in immunity. It helps to protect against harmful gut bacteria promotes good bacteria, which encourages nutrient absorption; supplies hormones; and gives energy. And to understand the importance of feeding in neonates and through the development process, it is important to appreciate the ways in which milk changes to fit the needs of the puppy.

Colostrum is the type of milk that mom first produces. It has a thick and sticky consistency because of its dry matter content. Colostrum provides 95% of the neonates' immunity during the first 24 hours of nursing. Twenty-four hours after birth, the milk begins to change and continues to change over the first week of life until it becomes the milk that puppies will feed on for the rest of the nursing process.

Newborn puppies should be encouraged to nurse within a few hours after birth. During the first week, puppies will nurse about 8 to 10 times a day. After the first week, the frequency begins to decline.

There may be a few complications that come up with nursing, such as rejected, orphaned, or weak puppies. The first thing to do is to make sure the neonate puppy does not have a cleft palate, which can make nursing difficult and may require surgical intervention.

Small or weak puppies may have difficulty getting colostrum due to its thickness. These puppies may need to be offered colostrum through alternative methods, such as offering it in a bottle. When nursing complications arise, they are typically a result of complications with the mom. These include the possibility of the mom rejecting the puppies, the mom is sick, or the mom doesn't have enough milk. If nursing complications arise, the ideal next option would be to let those puppies nurse from a mom with puppies of a similar age. If no foster mom is found, a modified plan includes commercial or homemade puppy milk replacer.

If a puppy was not able to ingest colostrum from a new mom, immunity may be provided by injecting a puppy with sterile serum from a dog that has been fully vaccinated. When the weaker or smaller puppies are nursing, sometimes the stronger and larger puppies may push them out of the way, leading to malnourishment, which can cause restlessness, increased vocalization, and enlarged abdomens.

If this is happening, it may be helpful to make sure the smaller puppies feed first and get their fill. If mom is not able to produce enough milk, it may be helpful to supplement the milk supply with a formulated option so puppies are still able to meet their nutrient requirements.

If mom is not around at all for feeding (commonly seen in shelters or when litters are dumped), pet parents can again use a commercial milk replacer specific for puppies.

When feeding milk replacer, it is better to err on the side of caution and underfeed, rather than overfeed. Overfeeding can cause diarrhea, which may lead to dehydration. While you may be tempted to use cow or goat milk, it is not recommended because it is not nutritionally balanced for dogs. Chat with a veterinarian before starting a milk replacer, so they can help you determine how much to offer.

Health Conditions

A nursed puppy also inherits mom's immunity—if mom is fully vaccinated, and the puppies have received colostrum in the first 16 hours of life. However, puppies that have had complications with nursing or have physical defects may have additional concerns such as hypothermia, dehydration, and sepsis. Puppies that did not receive

any colostrum may be at risk to develop gastrointestinal tract issues caused by various bacteria. If Mom has not been vaccinated or a puppy has not received any form of immune system support, they may be at risk for additional viruses.