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## What role does nutrition play for a healthy and happy mom?

Appropriate nutrition in support of reproduction is important for:

- ensuring a successful conception and pregnancy;
- providing the mother (also referred to as the dam or bitch) with the best ability to deliver all her puppies; and
- providing the mother the best ability to nurse her pups so they can thrive from birth and through weaning.

The various stages of reproduction – heat (estrus), pregnancy, lactation, and weaning–create unique stresses for the body. Each stage has nutritional concerns that should be addressed to maximize the health of the parents and the puppies.

## Can nutritional issues cause problems around pregnancy?

Good nutrition sets the stage for successful breeding and pregnancy. Parents that are malnourished (either over- or underweight) may suffer reproductive consequences that could directly impact one or more puppies.

Obesity is the most common nutrition-related problem in pregnant dogs. Obesity can cause increased intervals between estrous cycles, decreasing lifetime reproductive capacity. Obesity can also decrease the number of eggs released at ovulation, resulting in smaller litter sizes. Obesity increases the risk of dystocia (difficulty delivering puppies).

Finally, obesity can decrease milk production during lactation, negatively impacting puppy health and growth. An overweight or obese dog should lose weight before breeding. There are no specific nutritional requirements (other than meeting nutrient requirements for healthy adult dogs) for the mother during her heat cycle.

## How should I feed my dog during her pregnancy?

Dogs are typically pregnant for 63 days, plus or minus a day. The pregnancy is divided into trimesters and a healthy, well-nourished mother will gain about 15 to 20% beyond her weight at breeding. Avoid overfeeding or under-feeding.

Over-feeding can result in obesity at the end of pregnancy, increasing the risk of difficult or prolonged labor and extra stress on the puppies. Under-feeding during pregnancy can result in embryo loss, abnormal fetal development, spontaneous abortion (or stillbirths), small litter size, and low birth weights in some puppies. Puppies that have low birth weights may not be able to thrive.

During the first two trimesters of pregnancy, the mother's nutritional requirements are the same as those for a young adult dog. It is important that the dog does not lose weight or body condition during this time. Consult your family veterinarian for help in monitoring and for guidance on adjusting food portions as needed. It is equally important that a dog not become overweight or obese due to over-feeding in the first and second trimester. Meal feeding is the best way to control body condition and weight gain during pregnancy.

During the third trimester, after about day 40 of gestation, puppies experience a rapid burst of growth, and this phase is also the greatest burden on the mother. The highest energy requirement for the mother occurs between weeks 6 and 8 of gestation. Her daily energy (Calorie) needs may be 30% to 60% higher than normal adult maintenance levels, depending on the size of the litter.

The challenge during the third trimester, especially in the final weeks before birth, is that the mother's abdomen is expanding with puppies, leaving little room for food in the gastrointestinal tract. A highly digestible puppy food or growth formulation is recommended during the third trimester. Multiple small meals will provide the mother with the ability to maintain adequate nutrient and calorie intake.

## I have heard that lactation requires even more energy than pregnancy. Is this true?

Yes, the mother's energy requirements increase after delivery and during lactation. At her highest energy need, 3 to 5 weeks after whelping, she may require 2 to 4 times the Calories of a non-pregnant, healthy, adult dog. The mother's energy requirement will decrease and return to normal by about 8 weeks after whelping—around the time when puppies are completely weaned off the mother's milk.

Once the puppies are born, the mother will have more space in her stomach, so she can increase her food intake. However, the puppy food must be energy dense or she will not physically be able to eat enough to sustain milk production or maintain her weight and body condition. During lactation, it is best to feed a commercially prepared puppy food from a reputable company. Periodic assessments of the mother's body condition provide opportunities to fine-tune her daily portions.