

## BASIC INFORMATION

### Description

An unspayed (intact) female dog is referred to as a *bitch*. Infertility in the bitch is present anytime there is a failure to conceive and become pregnant or when a pregnancy does not proceed to normal whelping (birth of live pups). A normal estrous (heat) cycle is necessary for a successful pregnancy.

### Causes

Many different factors can affect the fertility of a bitch, including the following:

- Lack of a normal heat cycle can occur due to malnutrition, stress, generalized diseases, previous removal of the ovaries, ovarian cysts, or certain genetic problems. Sometimes the ovaries are normal and active but no obvious, external signs of heat occur (called a *silent heat*). Lack of exposure to other cycling bitches may also affect the heat cycle.
- The most common reason for many breeding problems in normally cycling bitches is improper breeding management, especially mistimed or an inadequate number of breeding episodes. Ovulation timing can help increase the chances of a successful breeding and is accomplished by running a series of blood tests measuring levels of progesterone or luteinizing hormone (LH).
- An infection of the uterus can create an unfavorable environment for survival of the sperm after breeding. Canine brucellosis is a specific uterine infection that can cause infertility.
- Some bitches have inadequate thyroid hormone levels or lack adequate amounts of LH or progesterone, which adversely affect their heat cycle.
- A number of congenital defects of the genital tract, especially of the vagina, can cause pain or prevent successful penetration by the male.
- Some animals have abnormal sexual organs that do not develop appropriately or enough to allow heat cycles. An example of this is the male pseudohermaphrodite, a dog that has the external appearance of a female but contains abdominal testicles and therefore will show no signs of heat (estrus).

### Clinical Signs

An abnormal heat cycle may be noted. The bitch may refuse to breed. Abnormal vaginal discharge can indicate a possible infection of the vagina or uterus. Sometimes no clinical signs are detected, yet the female fails to become pregnant or the puppies are not carried to full term.

### Diagnostic Tests

If the heat cycle is normal, the male dog may be the problem and should have its fertility assessed. (See handout on **Infertility in Male Dogs**.) A general health screening with a physical examination and laboratory tests is also indicated for the bitch. Testing is done for brucellosis. A sample may be collected from the vagina during early signs of heat to check for a bacterial infection. If infection is present, it is treated with appropriate antibiotics. Increasing the chance of a successful breeding by pinpointing the best time to breed can be done by measuring progesterone levels and doing vaginal cell analysis.

If a normal heat cycle is not occurring, then husbandry and nutritional factors must be evaluated. A thyroid function test is also performed when the heat cycle is absent.

## TREATMENT AND FOLLOW-UP

### Treatment Options

Management strategies may include providing optimal nutrition, parasite control, and adequate preventive medicine, as well as a sanitary environment. Correction of any congenital vaginal abnormalities may allow a natural breeding. Correction of problems detected with various diagnostic tests, such as low thyroid function, infection of the genital tract, or lack of heat cycles, may involve, respectively, thyroid supplementation, antibiotics, or the use of hormones to induce a heat cycle.

A bitch that is positive for brucellosis poses a health risk to all other dogs in the household or kennel, and if complete eradication of the disease is desired, then euthanasia of the infected bitch is necessary. Brucellosis can also be transmitted to humans, especially if they are young, old, or immune suppressed. Individual bitches with brucellosis that are not exposed to other dogs may be treated with spaying and long-term antibiotics.

Optimizing the time of breeding by employing proper breeding practices may correct the infertility problem. Artificial insemination using chilled semen may be needed to ensure a pregnancy. A chromosome test may help define a sexual developmental problem, and affected dogs should be removed from the breeding program.

### Follow-up Care and Prognosis

Prognosis depends on the cause of the infertility. Approximately one half of infertility problems can be corrected by combining vaginal cell analysis with measurement of progesterone levels and initiation of better management strategies. Elimination of any genital bacterial infections also improves success. Brucellosis and genetic sexual developmental problems are usually irreversible.