



# PYOMETRA

**Pyometra** is an infection of the lining of the uterus. It is a serious, potentially life-threatening disease that can affect any non-desexed female dog or cat.

## What causes pyometra?

Pyometra is established as a result of hormonal changes. Following oestrus ("heat"), progesterone levels remain elevated for 8-10 weeks and thicken the lining of the uterus in preparation for pregnancy. If pregnancy does not occur for several oestrus cycles, the lining continues to increase in thickness until cysts form within it. The thickened, cystic lining secretes fluids that create an ideal environment in which bacteria can grow. Additionally, high progesterone levels inhibit the ability of the muscles in the wall of the uterus to contract.

The risk of pyometra is also increased by the use of progesterone-based drugs. In addition, oestrogen will increase the effects of progesterone on the uterus. Drugs containing both hormones are used to treat certain conditions of the reproductive system.

**How do bacteria get into the uterus?** The cervix is the gateway to the uterus. It remains tightly closed except during oestrus. When it is open, bacteria that are normally found in the vagina can enter the uterus rather easily. If the uterus is normal, the bacteria are unlikely to survive. However, when the uterine wall is thickened and cystic, perfect conditions exist for bacterial growth. And because the muscles of the uterus cannot contract properly, the bacteria cannot be expelled.

## When does pyometra occur?

Pyometra can occur in any female dog or cat. However, middle-aged and older dogs are at greatest risk. After many years of oestrus cycles without pregnancy, the uterine wall undergoes the changes that promote this disease.

The typical time for pyometra to occur is about 1-2 months after your pet's last oestrus ("heat").

It's possible for a *stump pyometra* to occur in the small part of the uterus left behind after desexing, but this is rare. Normally pyometra is only a disease of non-desexed dogs and cats.

## What are the symptoms?

The symptoms depend on whether or not the cervix is open.

If it is open, pus will drain from the uterus through the vagina to the outside. The pus may be yellow, brown or red in colour. It is often noted on the skin or hair under the tail or on bedding and furniture where the dog has laid. But your dog may lick it up before you see it. Fever, lethargy, loss of appetite and depression may also be present.

If the cervix is closed, pus that forms is not able to drain to the outside, and so cannot be seen. It collects in the uterus causing it to swell. In some cases, swelling of the abdomen may be seen. The bacteria release toxins, which are absorbed into the bloodstream. These dogs often become severely ill very rapidly. They stop eating, become very listless and very depressed. Vomiting or diarrhoea may be present.

Toxins from the bacteria affect the kidney's ability to retain fluid. Increased urine production occurs, and the dog may drink an increased amount of water. This occurs in both open- and closed-cervix pyometra.

## How is pyometra diagnosed?

We may be suspicious of pyometra based on the symptoms (described above). However, diagnosis can sometimes be difficult, particularly in the closed-cervix form of pyometra where no pus is seen. All of the same symptoms can occur in any number of other diseases. Knowing when the dog was last in season can be helpful.

Blood and urine tests may be ordered to help with the diagnosis. Dogs with pyometra will often have a marked elevation of the white blood cell count and their urine is usually very dilute. However, these abnormalities may also be seen with a variety of other bacterial infections.

Radiographs (X-rays) or ultrasound examination of the abdomen can be helpful in identifying an enlarged uterus and differentiating that from a normal pregnancy. Swabs may be taken from the vagina to help to identify the type of bacteria causing the infection.

## How is pyometra treated?

**Surgical Treatment:** The preferred treatment is to surgically remove the uterus and ovaries. This is called an ovario-hysterectomy ("spay") and is the safest and most effective way of treating pyometra. However, these dogs are quite ill so the surgery is not as routine as the same surgery in a healthy dog. Great care must be taken with the enlarged weakened uterus. It must be removed from the abdomen without allowing any pus to leak out and contaminate other tissues. Intravenous fluids are often needed before and after surgery. Antibiotics are given for 1-2 weeks. Successful surgery will usually have your pet feeling better in no time!

**Medical Treatment** using prostaglandins is available for valuable breeding bitches where desexing is undesirable. Prostaglandins are a group of hormones that reduce the blood level of progesterone, relax and open the cervix, and contract the uterus to expel bacteria and pus. Injections are given daily for 3-5 days. However, the success rate is much lower compared to surgical treatment. They are expensive drugs, not as safe as surgical treatment, and cause a number of side-effects.

- **Side-effects** include restlessness, panting, vomiting, defecation, salivation, and abdominal pain. This occurs within about 15 minutes of an injection and last for a few hours.
- They give no clinical improvement for about 48 hours and severely ill dogs can't wait that long.
- Because they contract the uterus, it is possible for the uterus to rupture and spill infection into the abdominal cavity. This is most likely to happen when the cervix is closed, and can be fatal.
- The success rate for treating open-cervix pyometra is around 80-90%.
- The success rate for treating closed-cervix pyometra is only about 25%.
- The disease will recur within 2 years in 75% of cases
- The chance of subsequent successful breeding even after successful treatment is only 40-80%.

A new drug called *Alizin* has also been tried but appears to have many of the same limitations.

## What happens if neither of the above treatments are given?

The chance of successful treatment without surgery or prostaglandin treatment is extremely low. If treatment is not performed quickly, the toxic effects from the bacteria will be fatal. If the cervix is closed, it is also possible for the uterus to rupture, spilling the infection into the abdominal cavity. This will also be fatal.

## Can pyometra be prevented?

Yes. The good news is that pyometra can be prevented by routine desexing ("spay") of your dog or cat while she is young. We recommend desexing of all non-breeding pets at 5-6 months of age. There are many other advantages of desexing too. Refer to our desexing handouts for more details: "*Should I get my pet desexed?*" and "*Getting your pet desexed*".

## Case Studies:

The following case studies illustrate both extremes in the difficulties of diagnosing and treating pyometra. Both are real cases seen at our hospital in early 2004.

**Tara**, a 6 year old Staffordshire Terrier cross, was brought to us due to bleeding from her back-end. She had been quiet, off her food, and losing weight for about a week. Her last season was 1 month ago.

Alison and Peter both examined Tara. A small amount of red-brown discharge was found at her vulva. She was slightly dehydrated, had an increased temperature and her abdomen (belly) felt tense. We suspected pyometra, and discussed with Tara's owner how this could be confirmed. However, he had wanted to get her desexed anyway and we were pretty confident we knew what the problem was.

So instead of ordering any tests, we admitted Tara to hospital. She was put on antibiotics and intravenous fluids and was desexed the same day. We removed a grossly enlarged pus-filled uterus. There was no leakage of pus into her abdomen.

By the next day she was much brighter, was sent home on antibiotics and made a successful, uneventful recovery.

**Sooty**, a 7 year old Maltese Terrier cross, was brought to us because she was lethargic, panting and hadn't eaten for 2 days. Matt (a locum) examined her and found her to have a high temperature but no other significant symptoms. He started her on antibiotics and asked to recheck her the next day. By then she had improved and was eating, so the antibiotics were continued. Instructions were given to recheck her again in 4 days, or sooner if her owner was worried.

Sooty continued to do well at home but collapsed 2 days later. Peter re-examined her. She was pale and weak, with a high temperature and a very tense belly. Immediate treatment and further investigation was now needed, including IV fluids, blood tests, X-rays and/or ultrasound and 24-hour monitoring in hospital.

We referred her immediately to the Animal Referral Hospital in Strathfield. Ultrasound there revealed a pyometra, which had ruptured and leaked pus into her abdomen. Surgery was performed to remove her uterus and flush out the pus. Sooty had to be hospitalised for a week to treat her peritonitis (infection of the lining of her abdomen). She eventually recovered well.