

STAPH. PYODERMA

The word "pyoderma" is Latin for pus in the skin. It is the medical term used to describe a skin infection. The most common type of skin infection is caused by *Staphylococcus* ("staph") bacteria, usually *Staphylococcus intermedius*. Hence the name "Staph pyoderma."



The infection usually looks like round areas of hair loss, redness and scaling. Sometimes pimple will be seen, but often the skin looks blotchy and red, and the hair coat "moth eaten." There are usually flakes or crusts of dead skin cells around the margins of the reddened areas.

The abdomen and groin are the most frequently infected spots, although staph pyoderma can occur almost anywhere on the body.

A related type of skin infection is acute, moist, superficial dermatitis, commonly known as a "hot spot." Hot spots are very localized areas of skin infection, versus being scattered over a large area. They appear as a moist, raw lesion anywhere from an inch to many inches in diameter.

Hot spots most commonly arise when a dog licks or scratches any area excessively, and they often start with an insect sting or minor injury. Hair may be gummed over the area, making it hard to see, and it may be very painful to the touch. Certain breeds, especially golden retrievers, are particularly prone to hot spots.



Where do these Staph. bacteria come from?

Our world is literally full of bacteria – they are on our skin, floating in the air and likely to be resting on anything we touch. Our skin, and the skin of dogs and cats, usually acts as a barrier to keep unwanted bacteria outside and not inside

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our bodies. If the skin is irritated or damaged by something else, the bacteria that live on the skin grow, multiply and set up housekeeping on and beneath the surface of the skin. Pyoderma is considered to be a secondary disease – a disease which arises because of some other problem, weakening the integrity of the skin or of the immune system.

Common problems which let these bacterial infections get started are:

- o Parasites such as fleas, ticks, mites, or lice. (If your dog takes an oral tick preventive product each month, or 12 week Bravecto, parasites are very unlikely.)
- o Allergies
- o Hormonal diseases – hypothyroidism or hyperadrenocorticism
- o Biting insects such as gnats, mosquitoes, or flies
- o Excessive moisture from swimming, wet bedding, or damp conditions
- o Excessive skin folds, such as on the face, the base of the tail, leg creases or vulvar folds, which trap moisture and harbor bacteria
- o A juvenile immune system – puppies are especially prone to these infections
- o Genetic problems – some breeds seem predisposed to have poorly functioning immune systems

Sometimes we know what the initiating cause of the infection is, either because we find a problem such as fleas on our physical exam or because the owner can tell us something the dog was doing before the infection started, such as swimming, to explain it. Because the skin reacts to a large number of diseases by getting red and itchy, and because there frequently are multiple skin problems going on at the same time, diagnosing and treating staph infection can be challenging.

Another type of skin infection, caused by yeast organisms (*Malassezia*), can occur instead of or along with Staph infections. This is especially common between the toes and in skin folds such as the armpit. Yeast infection often looks greasy or has a yeasty odor to it. We will frequently do a skin scrape or impression smear of the surface of the skin to look for yeast, bacteria and parasites, so we can treat each problem appropriately.

How is pyoderma treated?

When the skin infection or hot spot is mild, we can sometimes use antibacterial soap or apply topical creams or sprays as our only treatment. We will often clip the hair and/or use surgical scrub to clean infected areas. If the infection is deep enough into the skin layers that topical therapy is not sufficient, oral antibiotics or antifungal drugs are then prescribed.

Skin infections tend to be slow to heal, so even mild cases often require three to four weeks of antibiotic therapy. The rule of thumb is to continue the medication until the skin has looked completely normal for at least one week. Stopping the medication too soon frequently leads to relapse, and often to antibiotic resistance as well. Frequent baths with antibacterial shampoos can help prevent relapses.

If the skin infection started as the result of a problem which we can quickly resolve, such as bug bites or swimming in dirty water, the infection usually clears up quickly and easily. If the infection is due to an allergy, seborrhea, or other longer term disease, infection may be difficult to resolve or may reoccur. Frequent rechecks may be needed to keep ahead of the disease and to minimize discomfort.

Sometimes, the infection will not respond to the first antibiotic and a change of medication is needed. In these cases we may recommend a bacterial culture to be done at the lab, to identify the best antibiotic to fight the infection. Just as in humans, antibiotic resistance has become a big problem. Additional medications, for allergies or fleas, for example, may also be warranted.

Treating severe, recurrent or resistant Pyodermas:

If the infection is slow to resolve or other causes are suspected, further investigation may need to be done. Keeping the Staph infection under control depends on solving and treating the underlying cause. Extra tests may include deep skin scrapings to look for mites, allergy medication or testing, fungal cultures, or skin biopsy to look for autoimmune diseases such as Lupus or pemphigus. Blood testing would be advised if hormonal diseases, such as hypothyroidism or Cushing's disease, are suspected.

Allergy is the most common cause of recurrent pyoderma. Steroid medication will treat the allergy that may have gotten the infection started in the first place, but steroids suppress the immune system and can make the infection worse. First we get the infection under control and then we add the steroids if needed. Luckily, we have several newer allergy treatments that make steroid use less necessary than it used to be. Itching can be due to the bacterial infection or to the allergy. Many times the pet becomes a lot more comfortable once the Staph infection is better.

Certain breeds have a much greater tendency toward Staph pyoderma or anatomical issues such as skin folds, which provide the ideal environment for microbial growth. Surgery to remove these folds is sometimes needed.

There have been mixed reports on the use of autogenous staph vaccines, a technique wherein a custom vaccine is developed from the pet's specific bacteria. Finally, although it uses *S. aureus* as the pathogen, the use of Staph phage Lysate, also a type of Staph vaccine, is successful in the treatment of many deep pyodermas, including those caused by other Staph species. This is an injectable medication. Injections are administered twice a week for 10 weeks, to gradually build up a pet's immunity against Staph bacteria. We special-order this product as needed and teach dog owners how to administer the injections themselves.

Bacterial skin culture

There are several species of Staphylococcus bacteria that can cause skin infection in dogs and cats. Most common in dogs is *S. intermedius*, with some cases seen of *S. aureus* and *S. hyicus*. In addition, *S. schleiferi* is increasingly

being found in biopsies. Resistant Staphylococcal infections are becoming more common.

You may have heard of MRSA, or methicillin-resistant *Staph aureus*, which is a big problem in human medicine. These resistant bacteria are very difficult to treat. Dogs also get MRSA, and can carry it to humans and vice versa. *S. intermedius* may eventually become as resistant to antibiotics as some of the human *S. aureus* infections have, which is called MRSI. Veterinary pathologists are tracking and watching these trends carefully as they impact pets as well as people.

In recurrent or chronic pyoderma cases, it is important to do a microscopic culture and sensitivity (MC&S) for treatment of Staphylococcal infections. This means we grow the bacteria on a culture plate and then test it to see which species of Staph it is as well as which antibiotics it is sensitive to and which it is resistant to. Thus we can choose the appropriate antibiotic to use, and we can track trends and resistance patterns in our area over time.

Often, recurrence of pyoderma infection is a result of not only change in sensitivity to antibiotics but also to a change in Staphylococcal species itself. It is not uncommon for a patient with sensitivity to antibiotics and infection by *S. intermedius* to initially respond to an antibiotic, followed by a complete return of previous symptoms. We may get rid of one infection only to have another spring up in its place.

As you can tell, Staph. pyoderma is not always simple to treat. Sometimes the dog becomes allergic to the staph bacteria, as well as being infected by them. Then we can have a primary disease, a secondary Staph infection and a tertiary allergy! In order to save your pet from as much discomfort as possible and minimize your costs for re-treatment and antibiotic resistance, please follow the prescribed treatment protocol and return for your scheduled rechecks. Working together, we will have the best chance to treat your pet as quickly and effectively as possible.