

# Demodicosis

## ABOUT THE DIAGNOSIS

Demodicosis (also known as red mange, or demodectic mange) is a skin condition caused by a microscopic parasite, *Demodex*. This condition is more common in dogs than cats and is not contagious to humans. The mites, *Demodex canis* in dogs and *Demodex cati* and *Demodex gatoi* in cats, are present on the skin of healthy animals; they are transmitted under normal circumstances from the mother's skin to the offspring shortly after birth. The animal's immune system keeps the mite population low enough so they do not cause skin problems. However, if the immune system is weak, the mites can reproduce in high numbers and cause disease. Conditions that cause a weak immune system include inherited immune deficiencies, poor nutrition, internal disease(s) affecting the whole body (cancer, hormonal imbalances, etc.), and certain drugs (chemotherapy, glucocorticoids). The maturation of the immune system during youth (dogs and cats <1 year old) may leave animals with inadequate immunity for a short time (e.g., days to weeks), such that demodicosis develops more frequently in young animals whose immune systems are transiently immature, and the demodicosis then resolves once the immune system is mature and does not return.

Demodicosis is usually diagnosed by performing multiple skin scrapings, which involves gently scraping the surface of the skin to harvest cells and mites for examination under the microscope. *Demodex* mites are too small to be seen with the naked eye. Although mild bleeding may occur where the skin is scraped for these samples, the procedure is superficial and painless. If the skin scraping samples show no mites, skin biopsies may aid diagnosis; small samples of skin are surgically removed (under local or general anesthesia) and sent to a laboratory to be evaluated microscopically for mites and other skin diseases. Excessive grooming in cats often dislodges *Demodex gatoi* mites from the animal's fur, resulting in negative skin scrapings; therefore, the diagnosis of demodicosis may be based simply on a good response to treatment in suspected cases. Because demodicosis usually occurs secondary to an underlying condition, additional tests such as blood tests, x-rays (radiographs), and/or ultrasound generally are needed to identify the predisposing factor(s) and allow treatment of the underlying cause whenever possible.

## LIVING WITH THE DIAGNOSIS

Two forms of demodicosis occur in dogs and cats. **Localized demodicosis** affects one small patch of skin, while **generalized demodicosis** affects more than one area of skin at the same time, potentially including the feet (**demodectic pododermatitis**).

**DOGS:** *Demodex canis* mites live beneath the surface of the skin in the **hair follicles** (sac-like pores where hairs are rooted). Demodicosis is not contagious between dogs or from dogs to humans. Demodicosis is more common and more severe in certain breeds of dogs, suggesting a hereditary predisposition, likely from a genetically-transmitted weakened immune system.

Localized demodicosis affects dogs under 1 year of age. Symptoms include hair loss, redness of the skin, and blackheads (**comedones**—hair follicles plugged with skin secretions) in the affected area. About 1 in 10 cases will worsen from the localized form to the generalized form.

Generalized demodicosis is more serious than the localized form. There are two classifications of generalized demodicosis.

**Juvenile-onset demodicosis** affects animals less than 1 year of age and generally is due to a temporary state of weakened immunity that resolves on its own or with minimal treatment. The second classification, **adult-onset demodicosis**, affects older animals and usually develops secondary to an underlying condition or illness. The mite-infested hair follicles often become infected with bacteria (**folliculitis**), causing bumps and scabs on the skin. Mild itchiness may develop due to the folliculitis. Demodectic pododermatitis may cause lameness (limping). It is common for a superimposed, secondary deep bacterial skin infection to develop. The combination of demodicosis and bacterial infection can trigger intense itchiness, whereas demodicosis alone usually does not. In some cases, the bacterial infection may become quite severe, resulting in skin ulcers and draining sores (**deep pyoderma, cellulitis**) and generalized illness (lethargy, not eating); rarely, this condition may even become life threatening.

**CATS:** Symptoms are similar to dogs. Some cats develop an ear infection (**otitis externa**) as the only symptom. *Demodex cati* lives in the hair follicle and is not contagious between cats. However, *Demodex gatoi* lives on the skin surface and is contagious between cats; infected cats are usually very itchy and groom/lick at themselves excessively.

## TREATMENT

Most dogs (90%) with localized demodicosis will recover without any treatment. However, because some cases will deteriorate to the more serious generalized form, the condition must be monitored closely. Veterinarians sometimes prescribe a topical medication (e.g., skin ointment or cream) to assist healing.

Approximately half of all dogs with generalized demodicosis will also heal without treatment; however, treatment is usually recommended because the progression and outcome cannot be determined at the outset and some individuals may worsen very significantly without medication. It is also important to identify and treat any underlying cause(s). Specific treatment for generalized demodicosis consists of direct application to the skin of medicated dips (available through your veterinarian) over a period of weeks to months. Medicated dips are anti-mange solutions that are poured or sponged onto the affected area(s) of skin while your pet stands in a well-ventilated area with good drainage. Be sure to consult with your veterinarian about the correct way to apply these solutions properly and safely, and follow all labeled instructions, before using medicated dips.

Many dogs and cats with demodicosis can be treated with specific antiparasite oral medications that are usually used for fleas, ticks, or other parasites. This is usually an off-label use but is preferred by many dermatologists because of a lower risk of adverse effects. Be sure to NEVER give any topical product orally if it is designed to be placed on the skin.

Periodic rechecks including follow-up skin scrapings are usually performed every 2 to 4 weeks to help identify whether the mites are being eradicated. The treatment must be continued until 3 consecutive skin scrapings show no mites at all. Because there is a lag period of a few weeks between the beginning of treatment and visible improvement, hairs from infected follicles will continue to fall out during the initial treatment period and the skin condition may actually appear to worsen before it improves.

Other therapies are used in resistant cases that do not respond to the dips. Antibiotics are administered in cases of generalized

demodicosis and in cases of localized demodicosis that have a secondary bacterial infection (**pyoderma**).

Good nutrition and minimizing stress are important for recovery. Neutering is recommended to prevent stress associated with heat cycles (females), reproduction, and mating. Neutering is also recommended in generalized demodicosis because the animal (male or female) may have a hereditary predisposition that could be passed to its offspring.

### DOs

- Have a veterinarian evaluate all cats that have had contact with an infected cat; *Demodex gatoi* is contagious between cats.
- Realize that with treatment, there may be an initial period of worsening before the medication's effects are visible. It is important to understand that this is not a failure of the treatment but simply a reflection of the lag period during which the treatment begins to take effect.
- Discuss with your veterinarian the possibility of seeking a second opinion from a veterinary dermatologist ([www.acvd.org](http://www.acvd.org)) if the demodicosis is not improving as expected.

### DON'Ts

- Never give a topical medication to an animal orally. Most medications meant to be applied to the skin for demodicosis are harmful if swallowed and some may be deadly if ingested.
- Do not wet animals between medicated dips, unless advised to do so by a veterinarian. This means no bathing, swimming, or going out uncovered in the rain, for example.
- Do not miss follow-up appointments, even if your pet's condition has improved; it is important that your veterinarian monitor and/or treat the condition until the pet has completely healed, and this often means going a few weeks after visible cure to ensure that the mites are truly gone.
- Do not use mange medications that are not specifically prescribed for demodicosis by a veterinarian. Most over-the-counter products are ineffective in treating demodicosis and may be toxic to your pet.

### WHEN TO CALL YOUR VETERINARIAN

- Dogs may be very sleepy for 24 hours after being dipped in anti-mange medicated dipping solutions. However, vomiting, diarrhea, lethargy, tremors, wobbliness, or any abnormal behavior may indicate a serious adverse reaction to the dip solution; an antidote is available for dogs, and you should contact your veterinarian immediately if you observe these symptoms in the 24 hours that follow a medicated dip.

### SIGNS TO WATCH FOR

- Skin ulcerations, lethargy, and not eating (call your veterinarian).

### ROUTINE FOLLOW-UP

- Every 1 to 2 weeks for dips and reevaluation.

*Other information that may be useful: "How-To" Client Education Sheet:*

- How to Apply a Cream or Ointment to the Skin

