

# Low Blood Platelets (thrombocytopenia) in Cats

[www.cat-world.com.au/low-blood-platelets-in-cats.html](http://www.cat-world.com.au/low-blood-platelets-in-cats.html)

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## At a glance:



**About:** Medically known as *thrombocytopenia*, low platelets is a condition in which there is a reduced number of blood platelets which are responsible for helping the blood to clot.



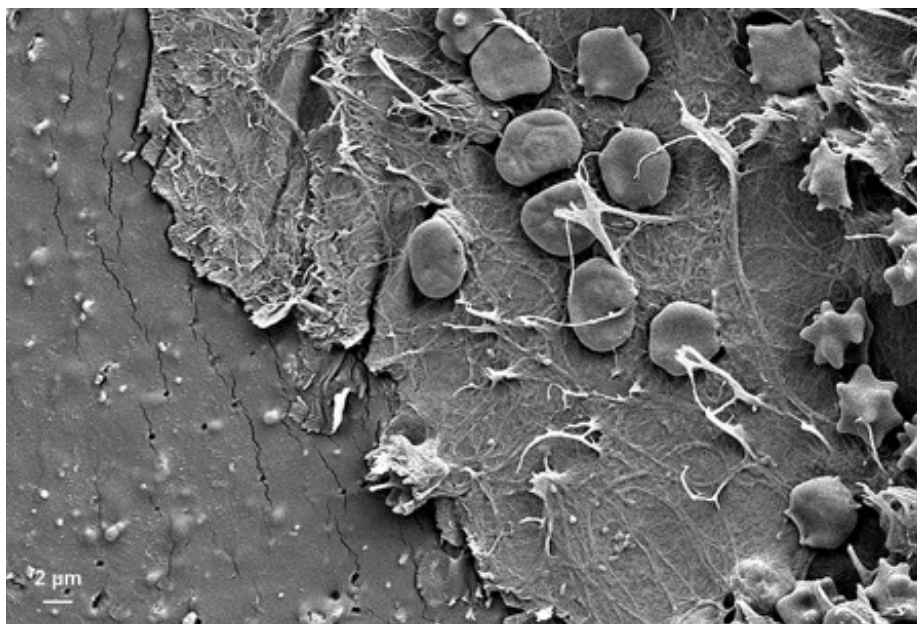
**Causes:** There are a number of causes divided into decreased production, premature destruction, sequestration in the spleen and platelets which are used up faster than they can be produced.



**Symptoms:** Lethargy, blood in the urine and/or stool, red spots in the eyes, gums, and skin and bruising.



**Treatment:** Will depend on the underlying cause. In some cases, there will be no treatment at all, severe cases may require a blood transfusion.



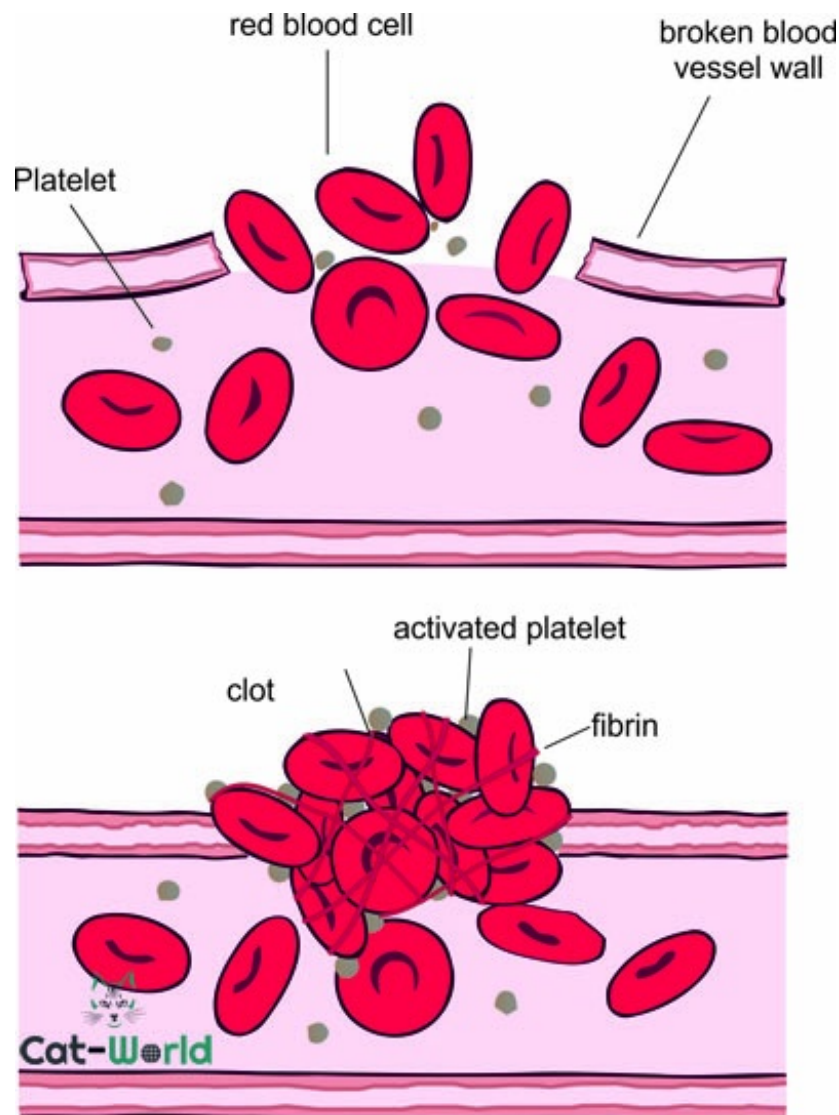
## What are platelets?

Medically known as *thrombocytopenia*, low platelets (PLT) is a decreased number of platelets in the blood. Normal platelet levels should be around 200,000  $\mu\text{L}$  (microlitre).

Platelets (thrombocytes) are disc-shaped, nonnucleated cell fragments which circulate the bloodstream. Their function is to stop blood loss (known as *hemostasis*). There are three mechanisms which work together, stopping the flow of blood.

1. *Platelet adhesion* – When damage to a blood vessel occurs, circulating platelets form a clump over the damaged vessel to block it off.
2. *Coagulation* – Fibrinogen is activated by protein factors in the blood-forming fibrin strands. These strands help to mesh the platelet plug, strengthening it.
3. *Vasoconstriction* – When a blood vessel becomes damaged, vasoconstriction, making the blood vessel smaller which restricts blood loss from the damaged site.

How a blood clot forms:



The bone marrow forms all of the cellular components of the blood. Platelets are produced by cells known as megakaryocytes, these giant cells undergo a process known as fragmentation, releasing platelets into the bloodstream. Platelets circulate in the blood for around seven days before they are destroyed by the macrophages.

Thrombocytopenia can be divided into two types. Primary or secondary.

- **Primary or Idiopathic Thrombocytopenic Purpura** is where there is no known reason for low platelets.
- **Secondary Thrombocytopenia** is associated with other illnesses such as cancer,

*certain drugs or toxins, autoimmune disorders or infection.*

## Causes:

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There are a number of causes of low platelets:

1. Decreased production of platelets
2. Premature destruction of platelets
3. Sequestration in the spleen
4. Platelets are used up faster than they can be produced.

Each category has a number of possible causes.

### ***Decreased production of platelets***

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This is the most common cause of low platelet count in cats. It can occur for a number of reasons, such as diseases affecting the bone marrow. **Leukemia** is a cancer of the blood and bone marrow, as the cancer cells take over the bone marrow, there will be less platelet-producing megakaryocytes. Other causes include **immune-mediated hemolytic anemia**, **vitamin B12 deficiency**, **chemotherapy drugs**, **myelodysplasia syndrome** (bone marrow failure disorders) in which the stem cells in the bone marrow which is responsible for the production of red and white cells as well as platelets begin producing abnormal cells, viral infections such as **feline immunodeficiency virus**, **feline infectious peritonitis**, **feline panleukopenia** and **feline leukemia virus**. The feline panleukopenia vaccine may result in a decrease in platelet production.

### ***Premature destruction of the platelets***

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Accelerated platelet removal may occur due to autoimmune disorders (*immune-mediated thrombocytopenia*) where the cat's own immune system destroys platelets, tumours or infectious agents or some medications including antibiotics, anti-inflammatories, anticonvulsants and cardiovascular can all result in the premature destruction of platelets.

### ***Sequestration in the spleen***

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This organ filters unwanted material from the blood and fights infection. The spleen stores up to 30-40% of platelets. If the spleen becomes enlarged (splenomegaly), it will begin to function abnormally, sequestering a greater number of platelets, up to 90%, and therefore reducing the number of platelets circulating in the blood. Some forms of cancer can lead to an enlarged spleen. The liver may also sequester a number of platelets, however, it's not at the same level as the spleen. Infections (viral, bacterial, parasitic), cancers, cirrhosis of the liver and hemolytic anemia.

### ***Platelets are used up quicker than they can be produced***

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Disseminated intravascular coagulation (DIC) is a condition in which systemic activation of clotting occurs, leading to blood clots forming throughout the body, which can cause blockages in the vascular system as well as using up large numbers of platelets to form the clots, major blood loss can also cause a decrease in platelets.

## Symptoms:

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Many cats with mild thrombocytopenia are often asymptomatic and the condition only comes to light during routine bloodwork.

As the platelets are there to stop bleeding, one of the obvious symptoms of low platelets is **increased bleeding**, either from an external wound (cut or a scratch), during surgery, or nosebleeds, bleeding gums, anal bleeding. This may not always be present.

Other common symptoms include:

- Lethargy
- Blood in urine
- Blood in the stool
- Red spots in the white of the eyes due to retinal hemorrhage
- Red spots on the gums and skin
- Purple areas on the skin (bruising)

Other symptoms may vary according to the underlying cause.

## Diagnosis:

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Your veterinarian will perform a complete physical examination of your cat and obtain a medical history from you. Your veterinarian will want to know the following:

- Any medications your cat is on
- Exposure to toxins
- Vaccination history
- Other symptoms

He will need to run some diagnostic tests to check the platelet count and determine an underlying cause. Some tests may include:

- **Complete blood count** – Which will reveal a low platelet count.
- **Prothrombin time** – This is a test of the blood coagulation rate.
- **Biochemical profile** to evaluate organ function.
- **Blood serum test** to look for antibodies to Rocky Mountain spotted fever.
- **Urinalysis** to check for blood in the urine.
- **Bone marrow aspirate** or **core biopsy** – A needle extracts a sample of bone marrow from the humerus (upper bone in front leg), femur (thigh bone) or pelvis. An increase in the number of megakaryocytes suggest increased platelet use, increased platelet destruction or sequestration in the spleen. Decreased megakaryocytes indicate decreased platelet production. Which may be due to cancer or viral infection.
- **X-ray** or **ultrasound** to evaluate the organs, in particular, the spleen and the liver, assessing the overall size and shape and to look for tumours.
- **Biopsy** – Of spleen or liver mass.
- **FIV** and **FeLV** blood tests.

## Treatment:

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**Primary thrombocytopenia:**

- Mild cases of thrombocytopenia may require no treatment at all.
- Corticosteroids to slow down platelet destruction.
- Transfusion of platelets or whole blood.

**Secondary thrombocytopenia:**

The goal is to find and treat the underlying cause.

- Restrict activity to reduce the risk of injury and/or bleeding for cats with extremely low platelets.
- Transfusion of platelets or whole blood.

Platelets image courtesy of [Zeiss Microscopy](#), Flickr