

# Hypocalcemia

## ***What is hypocalcemia?***

Hypocalcemia means that the level of calcium in the blood is abnormally low. (hypo = below, deficient -emia = blood)

## ***What is calcium and why is it important?***

Calcium is a mineral that is found in small quantities throughout the body. It plays an important role in such diverse and vital functions muscle contraction, transmission of nerve impulses, blood clotting, and bone growth.

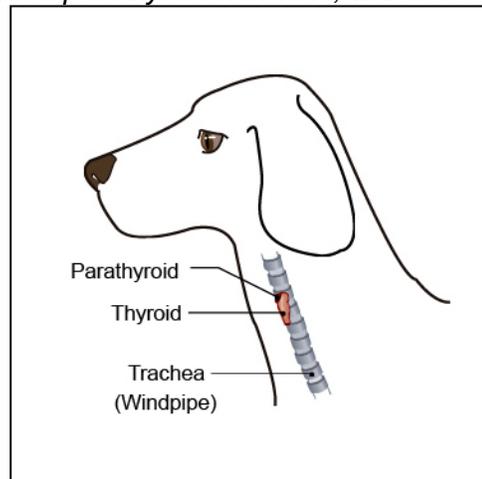
Calcium is present in the blood stream in two forms, and is measured by two different methods. One method measures *total calcium*, while the other measures *free* or *ionized* calcium. Total calcium is simpler to measure, and is often used to provide a preliminary estimate of calcium levels; if hypercalcemia is detected, then ionized calcium is often measured to look at the calcium level more closely.

## ***How are levels of calcium controlled in the healthy animal?***

Calcium levels are controlled by the *parathyroid glands*; these are small glands that are closely associated with the thyroid gland, which is just below the larynx or “voice box”. The parathyroid glands monitor the level of calcium in the blood stream. When calcium levels are too low the glands release a hormone called *parathyroid hormone*, which acts to return calcium levels to normal. One of the many ways parathyroid hormone does this is to work together with Vitamin D to promote calcium absorption from the intestine.

## ***Why is having low calcium bad for my pet?***

Pets with abnormally low calcium levels often show signs of illness such as muscle twitching, loss of appetite, weakness, and listlessness; in severe cases, pets may suffer convulsions or seizures. Low calcium levels can be found with a number of serious conditions including antifreeze poisoning, inflammation of the pancreas, kidney failure, and parathyroid gland failure. In nursing female dogs, heavy milk production can lead to hypocalcemia, and may result in neurological signs.



### ***What further testing is required if my pet has low calcium levels?***

If a blood test reveals your pet has low Total Calcium the result should be confirmed by repeating the test. A test to measure albumin (a blood protein) should be performed at the same time since low albumin levels may alter the interpretation of the Total Calcium result. The pet will also need to be fasted for 12 hours prior to re-testing in order to eliminate any dietary effects on the result.

An Ionized Calcium test may also need to be performed, either as an alternative to repeat testing of total calcium, or as a definitive test to confirm low blood calcium levels.

Once persistent hypocalcemia is confirmed, the challenge is to identify the underlying cause. This will involve blood tests to determine the health of the kidneys, the pancreas, the digestive system, and the parathyroid glands, as well as other tests to look for evidence of antifreeze poisoning, and nutritional problems. Hypocalcemia in a nursing bitch is easily diagnosed in the period just after whelping.

### ***Why is measuring Parathyroid Hormone important?***

Since the parathyroid glands are responsible for controlling calcium levels, the amount of parathyroid hormone in the blood stream is an important way to find out if the



parathyroid glands are working properly. The level of parathyroid hormone also provides important information about possible causes for hypocalcemia.

If the level of parathyroid hormone is low in a pet that is hypocalcemic and there is no evidence of other disease, then *primary hypoparathyroidism* is likely present. This is usually due to a poorly functioning parathyroid gland

### ***Can hypocalcemia be treated?***

Primary hypoparathyroidism can be managed by supplementing the diet with vitamin D and calcium. Hypocalcemia that develops secondary to other conditions usually subsides or improves once the underlying problem is treated.

---

*This client information sheet is based on material written by Kristiina Ruotsalo, DVM, DVSc, Dip ACVP & Margo S. Tant BSc, DVM, DVSc.*

*© Copyright 2004 Lifelearn Inc. Used with permission under license. May 16, 2014*