

## Fatty Liver Syndrome

Cats are carnivores, getting their nutrition from numerous small meals of lean protein throughout the day. Feral cats depend on insects, rodents, small birds, and reptiles as their source of food. There is no reason for a cat in the wild to maintain heavy fat stores for energy. Domesticated cats on the other hand have food bowls filled and their sedentary lifestyle makes them prone to obesity.

When cats become sick for any reason, it is common for them to stop eating. The body switches metabolic modes to start burning fat stores, and it is not in a cat's design to do this properly. The liver, which should break the fat down into lipoproteins for energy, instead becomes infiltrated with fat and begins to fail. This is called hepatic lipidosis. Liver cells erupt and release the enzymes alkaline phosphatase (SAP) and alanine aminotransferase (ALT) into the blood stream. Bilirubin cannot be metabolized and excreted through the bile duct, causing jaundice of the mucous membranes. These enzymes will be elevated on blood tests. A biopsy will confirm the fat deposits in the liver if the cat is a candidate for surgery. Many times they are too sick to risk anesthesia, so an ultrasound-guided fine-needle aspirate of the liver may be taken to provide a definitive diagnosis. Diagnosis can also be based on history, clinical signs and laboratory results if neither of these diagnostic procedures is available. Hepatic Lipidosis can be reversed if treatment is aggressive and instituted before complete liver failure occurs. If anorexia was the only cause of the hepatic lipidosis, then the prognosis for recovery is good. Other underlying disease should be investigated if the reason for anorexia is unknown.

Hepatic lipidosis can occur in any cat that stops eating; although, typically the cat will have been overweight and reduced its caloric intake by one half or more for a period of two weeks. This can be difficult for an owner to realize (especially for free-choice feeders), and sometimes the history of anorexia is unclear.

The goal of treatment is to reverse the starvation state of metabolism. This is accomplished by giving a calculated amount of a high-protein, high-calorie diet to the cat by one of several methods. If the cat tolerates it, force feeding semi-moist canned food can be attempted. Meatballs of the food can be forced down the throat in the same manner that a pill is given. The problem with this technique is that most cats will fight it, the process is slow, most of the food ends up on the floor, and not enough calories are consumed to be effective. Just enough food may be given to keep the cat alive, but the liver will continue to fail in many cases.

Another method of delivering calories is by inserting a nasogastric feeding tube. This usually does not require anesthesia. A small diameter rubber tube is passed through one nostril, down the esophagus, and into the stomach. Liquefied food can be administered through this tube several times a day. An Elizabethan collar is worn to prevent the cat from removing the tube with a paw. Drawbacks of this method are that the food must be watered down, and thus is not calorie-dense. Also, the tube can be vomited up. When this occurs, the cat will chew off the end of the tube that is hanging out of the mouth, and the owner may not be aware. During the next feeding, liquefied food is squirted into the throat instead of the stomach; and there is a risk of aspiration into the

lungs. Sometimes a nasogastric tube is used for a couple of days in order to stabilize the cat before more aggressive therapy can be started.

An esophagostomy / pharyngostomy tube is a better alternative to the nasogastric feeding tube, but it does require anesthesia to place. It is a larger bore tube that can accept blenderized food (more calorie-dense), and it is passed into the esophagus through an incision from the side of the neck. The tube is sutured and bandaged in place and is generally well tolerated. It can be left in place for weeks. This type of tube can also be vomited, so the same risk of aspiration exists as with a nasogastric tube. Also, infection can occur at the incision requiring removal of the feeding tube.

The best type of feeding tube is called a percutaneous endoscopic gastrostomy (PEG) tube. It also requires the cat to be anesthetized for placement. An incision is made through the abdominal wall and directly into the stomach. A balloon-like cuff on the end seals the tube to the stomach wall, preventing leakage of food into the abdomen. Unlike other feeding tubes, it cannot be vomited and the risk of aspiration is much lower. A PEG tube can remain in place for a year or more.

An important consideration to factor in the treatment options for hepatic lipidosis is the length of time it generally takes to reverse the starvation state and heal the liver. This typically requires three to six weeks of tube feeding. Also, the cat must begin eating on its own before supplemental feedings can be stopped. If a tube is surgically implanted, it is advised to leave it in place for several days after the cat begins eating just in case of relapse.

Around 85% of uncomplicated hepatic lipidosis cats will recover when treated aggressively.