Symptoms of Liver Disease

- Vomiting, diarrhea, or evidence of blood in the stool
- Change in appetite
- Change in behavior (aggression, depression, reduced activity, incoordination)
- Lethargy
- Increased or decreased drinking or urination
- Changes in the skin such as redness or scabs
- Jaundice - yellowing of the gums, eyes and ears

Testing recommendations

Testing recommendations made by your veterinarian are based on your pet's breed, age, clinical signs, and history.

- Chemistry Panel, Complete Blood Count
- Chemistry Panel, Complete Blood Count, Thyroid Testing, Urinalysis
- Chemistry Panel, Complete Blood Count, Thyroid Testing, Urinalysis, Blood Pressure, Electrocardiogram

Physiological Age in Human Years

Dog[1]

Current Age (Year)	Human Years			
	0-20 lbs	21-50 lbs	51-90 lbs	Over 90 lbs
1	15	15	15	15
2	24	24	24	24
3	28	28	30	32
4	32	33	35	37
5	36	37	40	42
6	40	42	45	49
7	44	47	50	56
8	48	51	55	64
9	52	56	61	71
10	56	60	66	78
11	60	65	72	86
12	64	69	77	93
13	68	74	82	101
14	72	78	88	108
15	76	83	93	115
16	80	87	99	123
17	84	92	104	
18	88	96	109	
19	92	101	115	
20	96	105	120	

My Next Appointment

Pet: _____

Date: _____

Doctor: _____

Contact Number: _____

Reason for Appointment: _____

_____

_____

_____

_____

_____

ABAXIS

Abaxis is your veterinarian's total on-site laboratory partner, dedicated to helping your vet help your pet! Ask your vet about how you can get your pet's diagnostics in under 12 minutes with only two drops of blood.

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1. Adapted from Eldredge, Debra M, Carlson, Liisa D. et al. Dog Owner's Home Veterinary Handbook, 4th edition, Wiley, Ames, IA, 2007.

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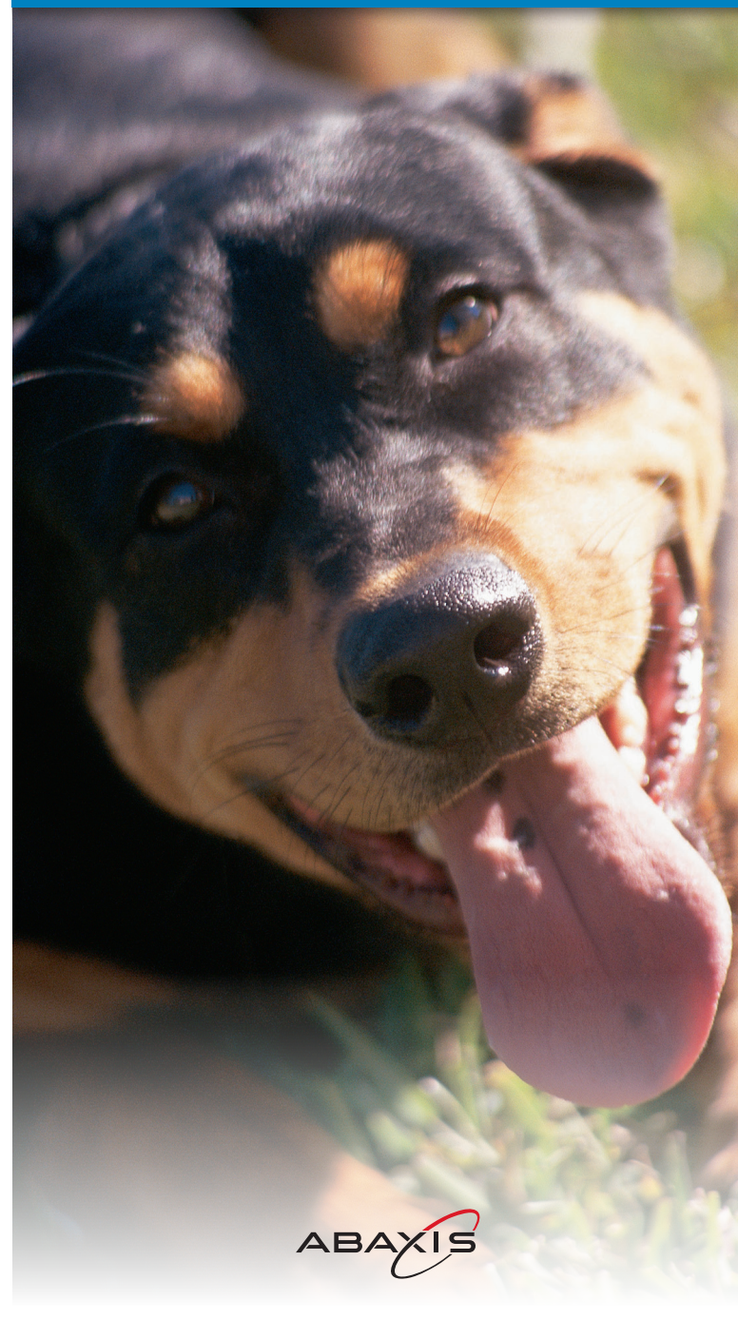
A PET OWNER'S GUIDE TO **LIVER DISEASE**



ABAXIS

The liver processes almost every substance that enters the body. As one of the most complex and vital organs, the liver performs many functions that contribute to the overall health of your pet. Liver functions include removing or metabolizing waste, filter old cells from the body, and activating or removing medications from the body. The liver connects to the body through two separate blood supplies, and is exposed to many factors not encountered by other organs.

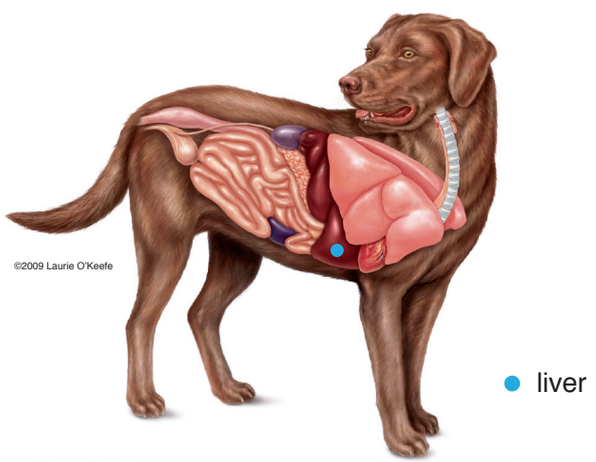
Liver Disease

The liver is very prone to injury and disease which may go unnoticed on a physical examination alone. Liver dysfunction may include such disease states as:

- Hepatitis (liver inflammation)
- Cirrhosis/fibrosis (normal tissue replaced with scar tissue)
- Bile duct obstructions/cholestasis
- Gall bladder inflammation
- Circulatory abnormalities/blood shunting
- Cancer

Testing and monitoring your pet's liver should be performed when there are indications that the liver may not be functioning properly. In many cases, the liver may be ill, without outward signs of disease. This is called sub-clinical disease and often occurs early in the course of the disease, or with mild disease.

Regular testing and monitoring for liver disease should also be done when your pet is prescribed medications for long-term use. If there is pre-existing liver disease, certain medications may worsen the function of the liver. Any medication can have adverse effects on the liver.



Diagnosing liver disease

Each liver disease is different, but most liver diseases require several different tests to accurately diagnose the condition. tests may include:

Complete Blood Count (CBC)
Evaluates the blood cell counts for anemia (low red blood cells), inflammation, infection, and platelet counts.

Chemistry and Electrolyte Panel
Tests specific to the liver can be evaluated as well as total body function.

Bile Acids Study
Elevated bile acid levels confirm the presence of liver disease and may help determine the cause. They also help evaluate liver function.

Blood Coagulation Tests
The liver produces many of the factors involved in the blood clotting system. These tests evaluate the ability of the blood to clot (stop bleeding) in case there is decreased liver function.

Abdominal Radiographs (X-Ray)
Determine the size, shape, and location of the liver to assist with diagnosis.

Abdominal Ultrasound
Real-time sonogram provides detailed images of the liver to evaluate liver texture, circulation, and the entire abdomen for other potential causes of your pet's illness.

Liver Biopsy
A piece of liver tissue is obtained and evaluated microscopically. Although an invasive test, it may be necessary for an accurate diagnosis.

Urinalysis
Examine the urine for concurrent kidney disease, bilirubin crystals, and infection.

Treating and monitoring liver disease

Once liver disease has been diagnosed, it is vitally important to monitor the progression of the disease and see how the liver is responding to treatment. Treatment and monitoring of liver disease depends on the specific diagnosis, and differs for every patient. Your veterinarian will discuss options in the best interest of and specific for your pet.

Monitoring utilizes many of the same testing as diagnosing liver disease.

Follow the recommendations for monitoring your pet to ensure that your veterinarian has a comprehensive picture of your pet's health.

Ensuring liver health with chronic long-term medications

Many medications are metabolized or detoxified in the liver. Liver health must be ensured prior to beginning long-term medications, and monitored while taking these medications. Poor liver function may cause a medication to be less effective, or increase side effects.

Non-steroidal Anti-inflammatory Medications (NSAIDs)
NSAIDs are commonly used medications for conditions such as arthritis, non-infectious/non-allergic inflammation, ophthalmological conditions (some eye diseases), and surgical-associated analgesia. Examples of veterinary NSAIDs include carprofen, deracoxib, firocoxib, and meloxicam.

Most NSAIDs are broken down and processed by the liver, and then removed from the body through the kidneys (urine) or stool.

While your pet is taking NSAIDs long-term, your veterinarian will determine the optimal testing and re-evaluation of your pet to monitor for possible liver or kidney toxicity. Some tests may be required as often as every 3-6 months.

Monitoring your pet's internal organ function should be performed to ensure that long-term NSAID use is not causing organ dysfunction.