



LIVERSHUNT TESTING GUIDE & FORMS & DNA STORAGE PROGRAMME FORMS.



Livershunt (aka portosystemic shunt) the term used to describe the presence of an abnormal blood vessel linking the hepatic portal vein, which drains blood from the small intestine, and the inferior vena cava, one of the major veins of the body.

In the normal animal the hepatic portal vein leads from the intestine to the liver, and the blood does not enter the main circulation until it has passed through the liver. The effect of a shunt is to by-pass the liver so that the blood enters the main circulation without having been processed by the liver. This abnormality can occur in any breed of any species as a one-off non-inherited problem, but the Irish Wolfhound is one of the breeds of dog in which it occurs as an inherited disorder.

In the normal animal bile acids are excreted by the liver into the bile and so into the small intestine to aid the digestion of fats. They are then reabsorbed by the portal vein and passed straight back to the liver to begin the cycle all over again, without ever entering the main circulation. When a shunt is present, large quantities of bile acids are deposited in the main circulation immediately after a meal. The most specific test for a portocaval shunt is therefore to measure bile acids.

It is possible to test puppies between the ages of 6 – 12 weeks to see if they are affected with this condition.

**The submission form for blood samples to be sent to CYTOPATH PO Box 24 Ledbury, Herefordshire HR8 2YD. Tel: 01531 63 00 63
In advance of the test date ask your veterinary practice to contact Cytopath for a self-addressed/prepaid plastic envelopes in which to send the samples.
If there is insufficient time to do this – ensure the samples are adequately packaged and sent to Cytopath at the above address adding the following clearly on the front of the envelope “Biological Substance – Category B, UN3373”**

Arrangements in advance of the test need to be made with your veterinary surgeon as puppies either need to go to the surgery for the test or the vet needs to come to your home. Make sure your vet has the submission forms in advance. Cytopath is supporting the Breed Health Testing Scheme and will test at a cost of £10+VAT for a single test and £19.00 plus VAT for a double Bile Acid Test per puppy. Additional costs will of course vary between veterinary practices.

Single Bile Acid Test.

This is done using a single post feeding blood sample. Puppies are fasted overnight and then fed their usual breakfast meal. Between 90 – 120 minutes after feeding the blood sample is taken.

It is vital that your puppies are clearly identified with a marker pen, i.e. Dog1, Dog2, Bitch1, Bitch2 etc. and each blood sample is clearly matched to the correct puppy.

Make sure that every puppy eats well, even with an observer from the Vet practice; you will know best what is a usual amount for your pups to eat.

Splitting pups into small groups is best as it is easier to watch puppies eat and note the amounts. A normal meal is all that's required; it can be made more appetising with milk if needed.

Ask your vet to give their practice fax number or email address to **CYTOPATH** so the results can be sent straight through to the surgery. Usually results are available within 24 - 48 hours of the samples being received by **CYTOPATH**.

A normal result from a single sample proves conclusively that the puppy does not have a shunt.

If the result is abnormal, the puppy needs re-testing approximately a week later. Please ask your vet to do the double test – see below. This saves a lot of time and the lab does not always remind vets to do this. In the meantime, it is recommended that the puppy be placed on a diet designed for the support of liver function and this can be recommended by your veterinary surgeon, this will help with symptoms if the puppy is affected. Even if the puppy is showing no symptoms it is still beneficial to feed a supportive diet until the results of a re-test are available, as onset of symptoms can be sudden. If the puppy already shows clear signs of illness and surgery is an option, then request a referral to a specialist practise as soon as possible where an ultrasound scan will determine the presence or not of a shunt; in the meantime, your veterinary surgeon can prescribe antibiotics and lactulose that will help alleviate symptoms while waiting for a referral. For enquiries regarding surgery contact Carolyn Burton email: CAB@vetspecialists.co.uk

The Double Bile Acid Test – only required if the first sample is suspected as abnormal. Please use the same testing forms for re-tests.

Puppies are fasted overnight and the first blood sample taken on an empty stomach.
Then a normal meal is given.

120 minutes later (or as near to it as possible) the second blood sample is taken.
All samples must be clearly matched to the puppy they came from.

A substantial increase between the two samples is absolutely diagnostic of a shunt, and cannot be caused by any other condition.

If you encounter any difficulties, please feel free to contact us for help. We are collecting data again to ascertain the level of affected puppies so would appreciate your letting us know if your litter tests clear, or if there is an affected puppy. Email: livershunt@iwhealthgroup.co.uk

Animal Health Trust DNA Storage Program

Taking bloods for Livershunt testing is the ideal time to contribute samples to the DNA storage program which provides samples for health research such as our current Osteosarcoma Study at the Animal Health Trust. If you are happy to do this, simply ask your vet to take spare bloods from each puppy for submission to the AHT. The instructions and paperwork that needs to accompany these samples are on pages 3 and 4 below.



PO Box 24 Ledbury
 Herefordshire HR8 2YD
 Tel: 01531 63 00 63
 Fax: 01531 63 46 83
 email: admin@cytopath.co.uk

PORTOSYSTEMIC SHUNT SUBMISSION FORM

Address Stamp:	Veterinary Surgeon:	Name & Address of Owner:	
	Vet Code:		
Telephone Number:	Details of Litter:	Date of Sampling:	Date Sent:
Fax Number:	Breed:	Name of Dam:	Date of Birth:

Puppies should be identified to the satisfaction of the veterinary surgeon, so that each result can be matched up with the correct individual. Sample tubes must be clearly labelled to correspond with the identifications listed.

Puppy Identification							
1			Dog/Bitch	9			Dog/Bitch
2			Dog/Bitch	10			Dog/Bitch
3			Dog/Bitch	11			Dog/Bitch
4			Dog/Bitch	12			Dog/Bitch
5			Dog/Bitch	13			Dog/Bitch
6			Dog/Bitch	14			Dog/Bitch
7			Dog/Bitch	15			Dog/Bitch

SAMPLE REQUIREMENTS

The sample requirement for this test is 1.5ml clotted blood from each puppy, collected 90 to 120 minutes after feeding.

Please use gel tubes designed for whole blood.

If possible, samples should be separated in the practice and sent as serum. The test is invalid if the puppies have not eaten a reasonable-sized meal before testing. It is therefore essential for certification purposes that the feeding is witnessed by a practice representative, who should sign the declaration below to confirm that this has been done.

Please contact Cytopath on 01531 63 00 63 for any further advice about this test:

I confirm that I witnessed these puppies being fed approximately 90 to 120 minutes before the blood samples were collected, and that each puppy ate a reasonable amount.

Signed: Print Name:

Position in practice:.....



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Note to Veterinary Surgeon: If an affected puppy is identified, please consider giving a cheek swab from the puppy, plus its sire and dam (where possible), to the Research Program seeking a genetic test for this condition. Swab kits can be obtained from livershunt@iwhealthgroup.co.uk and sent directly to the client.

The attached forms (pages 4-6) relate to a DNA blood storage program and require an surplus 1ml of blood to be taken with the client’s permission and the form completed with the details of each puppy and sent in by the owner with the blood samples as directed.