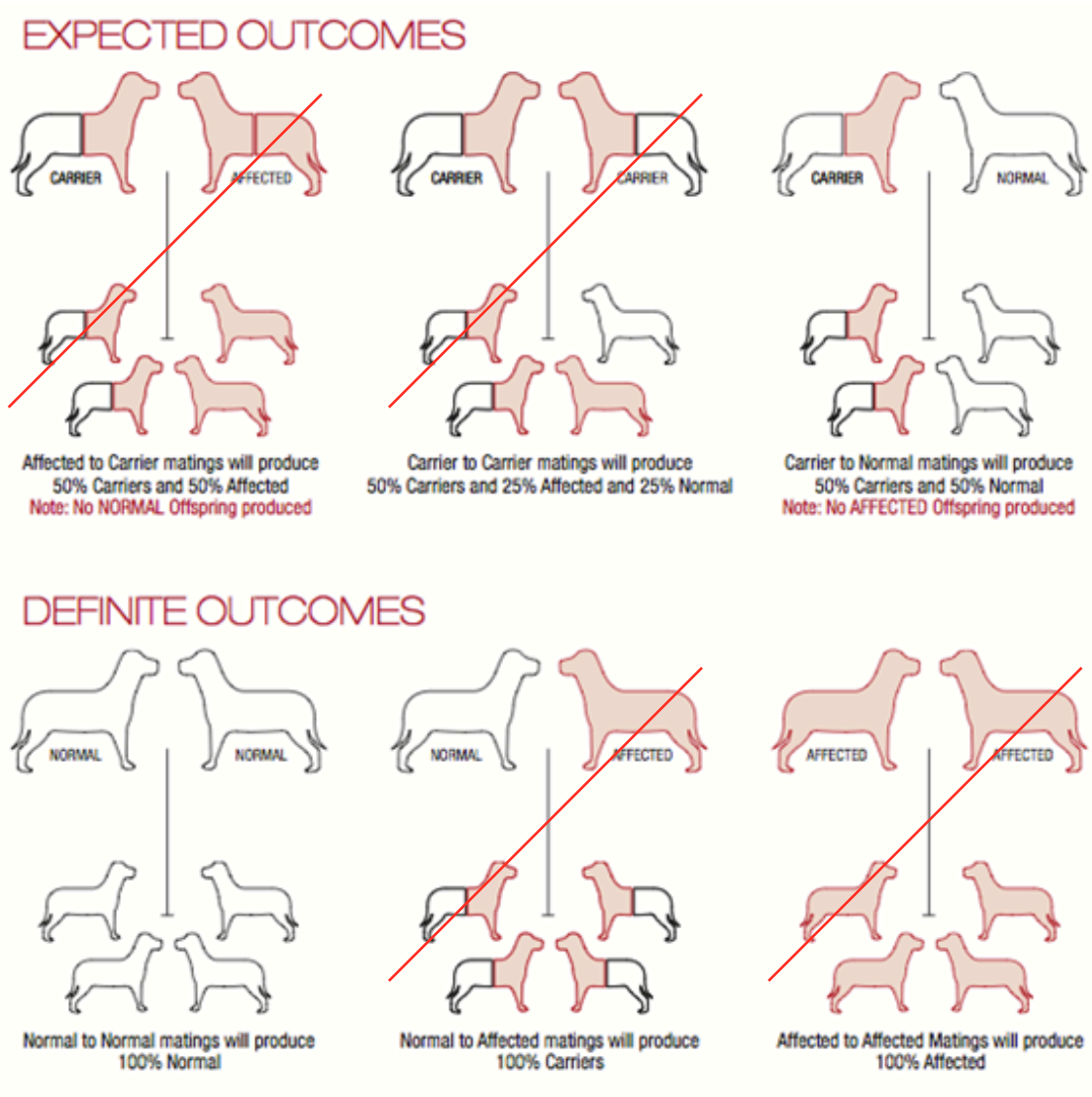
BORDER COLLIE HEALTH TESTS
Compiled by Wessex Border Collie Club

** please message wessexbcc@gmail.com if any information needs updating or is incorrect **

DNA TESTS



SOURCE: http://orivet.com.au/professional-breeders-services/

NOTE: Wessex Border Collie Club's **Code of Ethics** expects members to breed only from normal or carrier dogs - no breeding should ever be done with two carriers or with any affected animals.

** Submissions by owners of scanned DNA certificate to hbs@thekennelclub.org.uk

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CEA/CH - Collie Eye Anomaly/Choroidal Hypoplasia **RECOMMENDED**

Collies share Collie Eye Anomaly (CEA) with several other breeds – it's not just a problem for collies. CEA is more technically known as Choroidal Hypoplasia (CH). It is a recessively inherited eye disorder that causes abnormal development of the choroid - an important layer of tissue under the retina of the eye. Since the choroid layer does not develop normally from the start, the primary abnormality can be diagnosed at a very young age. Regrettably, there is no treatment or cure for CEA.

DIRECTLY RECORDED	OWNER SUBMISSION **	NOT RECORDED
OPTIGEN	GENETIC TECHNOLOGIES	ORIVET
LABOKLIN	ANTAGENE	
	GENINDEXE	
	VAN HAERINGEN	

TNS - Trapped Neutrophil Syndrome **RECOMMENDED**

An hereditary disease where the bone marrow produces neutrophils (white cells) but is unable to effectively release them into the bloodstream. Affected puppies have an impaired immune system and will eventually die from infections they cannot fight. Once thought to be rare, it is now believed that the disease goes undiagnosed for several reasons. First, not very many veterinarians know about the disease to look for it. Second, even when looking, blood counts do not always show lower than normal neutrophil (white blood cell) counts. Finally, because it is an autoimmune-deficiency disease, young puppies present a variety of symptoms depending upon what infections they fall prone to. Thus many cases are not properly diagnosed and have just been thought to be "fading puppies". Making the diagnosis even more difficult is the fact that age of onset varies depending on which infection is involved at the time. Most puppies become ill before leaving the breeder but some do not have symptoms until later. The oldest known survivor was 2 years 8 months. Most affected puppies die or are euthanised by about 4 months of age.

DIRECTLY RECORDED	OWNER SUBMISSION **	NOT RECORDED
OPTIGEN	GENETIC TECHNOLOGIES	ORIVET
LABOKLIN	GENINDEXE	
ANIMAL DNA DIAGNOSTICS	GENOMIA	
	VAN HAERINGEN	

NCL - Neuronal Ceroid Lipofuscinosis **RECOMMENDED**

Neuronal ceroid lipofuscinosis is a type of lysosomal storage disorder that results in accumulation of lysosomal storage bodies in the cells of many tissues of the affected animal. This leads to progressive neurodegeneration (degeneration of brain and eye cells) and results in severe neurological impairment and early death. Affected dogs appear normal at birth, but begin to exhibit symptoms early in life – around 1- 2 years of age. The age of onset and severity of the disease can vary greatly among individuals. The symptoms include progressive motor decline with seizures and loss of coordinated muscle movements, cognitive decline and abnormal behaviour. Visual impairment may occur. Due to the severity of the disease, affected Border Collies rarely survive beyond 26-28 months. There is no treatment or cure at this time.

DIRECTLY RECORDED	OWNER SUBMISSION **	NOT RECORDED
OPTIGEN	UNIVERSITY OF NEW SOUTH WALES	ORIVET
LABOKLIN	GENOMIA	
ANIMAL DNA DIAGNOSTICS	VAN HAERINGEN	
	PINMOORE ANIMAL LABORATORY SERVICES	

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	DAVIS VETERINARY GENETICS LABORATORY (UNIVERSITY OF CALIFORNIA)	
	ANIMAL GENETICS	

MDR1 - Multi Drug Resistance

Multi-Drug Resistance Gene, (MDR) codes for a protein that is responsible for protecting the brain by transporting potentially harmful chemicals away from the brain. In certain breeds, a mutation occurs in the MDR1 gene that causes sensitivity to Ivermectin, Loperamide, and a number of other drugs. Dogs with this mutation have a defect in the P-glycoprotein that is normally responsible for transporting certain drugs out of the brain. The defective protein inhibits the dog's ability to remove certain drugs from the brain, leading to a buildup of these toxins. As a result of the accumulation of toxins, the dog can show neurological symptoms, such as seizures, ataxia, or even death. Dogs that are homozygous for the MDR1 gene (meaning that they have two copies of the mutation) will display a sensitivity to Ivermectin and other similar drugs. These dogs will also always pass one copy of the mutation to all potential offspring. Dogs that are heterozygous (meaning they have only one copy of the mutation) can still react to these drugs at higher doses. Also, there is a 50% chance that a dog with one copy of the mutation will pass it on to any offspring.

DIRECTLY RECORDED	OWNER SUBMISSION **	NOT RECORDED
LABOKIN	GENETIC TECHNOLOGIES	ORIVET
AHT	ANTAGENE	
	GENOMIA	
	ANIMAL GENETICS	

IGS/B12 - Cobalamin Malabsorption/Imerslun-Grasbeck Syndrome

A disorder which causes a dog to be unable to absorb adequate levels of Vitamin B12. Cobalamin or Vitamin B12 is normally taken in through the small intestines, but affected dogs cannot absorb the vitamin and quickly begin to show symptoms of deficiency which typically appear within 6-12 weeks after birth. A puppy is born with a certain amount of Vitamin B12, but after the stored vitamin is depleted, the puppy will exhibit signs of deficiency. Symptoms include anaemia, lethargy, failure to thrive, and lack of appetite. While IGS cannot be cured, the disorder can be managed with regular supplementation of cobalamin.

DIRECTLY RECORDED	OWNER SUBMISSION **	NOT RECORDED
ANIMAL DNA DIAGNOSTICS	DAVIS VETERINARY GENETICS LABORATORY (UNIVERSITY OF CALIFORNIA)	ORIVET
LABOKLIN	GENOMIA	

SN - Sensory Neuropathy

Sensory Neuropathy (SN) is a severe neurological disease caused by the degeneration of sensory and, to a lesser extent, motor nerve cells. The onset of the disease in affected Border Collies is from 2 to 7 months of age and signs include knuckling of the feet, self-mutilation wounds (caused by excessive chewing or licking due to the lack of feeling in the limbs) and a progressive incoordination of gait (ataxia). A progressive loss of sensation occurs in all limbs. Urinary incontinence and regurgitation can occur in the later stages of the disease. Prognosis is poor, with no effective treatment available. As quality of life is severely affected, dogs with SN are euthanised on welfare grounds usually before two years of age.

DIRECTLY RECORDED	OWNER SUBMISSION **	NOT RECORDED
		AHT

NON DNA HEALTH TESTS - PHYSICAL TESTS

BVA/KC Hip Dysplasia Scheme **ONCE**

This condition is primarily of genetic cause, although environmental factors such as obesity during puppyhood may influence whether an animal with the genes coding for hip dysplasia will develop a clinical problem. Current estimates state that more than one hundred genes code for hip dysplasia. It is important to recognise that environmental factors are unable to *cause* hip dysplasia, although they can influence whether an animal with the genes that code for hip dysplasia will develop a clinical problem. There is no evidence to support the concept that excessive exercise during puppyhood can contribute to the development of hip dysplasia. (source: http://www.fitzpatrickreferrals.co.uk/orthopaedic/hip-dysplasia/)

The Kennel Club and BVA have a testing scheme in an attempt to avoid having puppies born with this genetic predisposition. This scheme involves dogs over 12 months of age having their hips x-rayed and sent to the BVA panel of experts for 'scoring'; they produce a score for the joints and angles on each hip to give a score for left and right. The higher the score, the worse the dogs hips are, the lowest possible score is 0:0 = 0 and the highest 53:53 = 106.

Gonioscopy - Glaucoma predisposition **EVERY THREE YEARS**

Primary glaucoma is an inherited condition
Secondary glaucoma is caused by other eye diseases that lead to improper drainage of fluid from inside the eye.
For closed angle glaucoma (but not open angle glaucoma), a screening technique called gonioscopy can identify dogs at risk.

Should be done every 3 years
The examination for goniodysgenesis is called gonioscopy and can be conducted from 6 months of age. Performing gonioscopy requires certain expertise and specialised equipment and it is for these reasons that gonioscopic examinations are not a routine part of the eye scheme and are not available from every member of the BVA/KC/ISDS eye panel. A list of the BVA/KC/ISDS eye panellists is available from the British Veterinary Association or The Kennel Club. However, when telephoning a panellist to book an appointment, owners of the breeds listed above, who wish to have gonioscopy performed should check whether this is available.

BVA/KC/ISDS Eye Scheme - PRA & CEA **EVERY YEAR (BREEDING STOCK)**

Progressive retinal atrophy
PRA is a degenerative disease of the photoreceptors of the eye, inherited via an autosomal recessive gene. Usually the first symptom is night-blindness, especially noticeable when the dog is in unfamiliar surroundings, but eventually the dog goes totally blind. There is no cure. Annual testing for PRA in adult BCs used for breeding is recommended. The eye tests can only be done by a BVA eye specialist. The results are recorded by the Kennel Club and appear on their health database.

BAER Hearing test **Best age to test is around 5 ½ to 6 ½ weeks of age**

A quick and non-invasive diagnosis of deafness in dogs is achieved through Brainstem Auditory Evoked Response (BAER); a test where the electrical activity of the brain in response to an auditory (click) stimulus is recorded and displayed on a computer screen.
BAER testing is a technique that can be used to assess the hearing status of adult animals where there is a concern about deafness, or prior to breeding, and puppies before they go to their new homes.

In a normal-hearing dog, a series of peaks and troughs is produced which is displayed on a screen. BAER testing can identify whether your animals are deaf in both ears (bilateral deafness) or in one ear (unilateral deafness). There is no partial deafness in these cases and the deafness is irreversible and permanent. (source: http://www.aht.org.uk/cms-display/sa_deafness.html)

Puppy Eye test **Best age to test between 6 to 12 weeks of age**

Litter screening is carried out on puppies of 6-12 weeks old, to check for congenital (present at birth), hereditary eye defects such as Collie Eye Anomaly and Multifocal Retinal Dysplasia.
Source: http://www.seadownvets.co.uk/userfiles/file/pdf/BVA%20KC%20Eye%20Testing%20Scheme.pdf

Epilepsy NO TEST AVAILABLE

Epilepsy is a chronic condition that causes repeated seizures (which may be described by terms such as 'fits' or 'funny turns'), and is the most common chronic (long term) neurological disorder in dogs, affecting an estimated 0.6-0.7% of all dogs in the UK alone (around 1 in 130 dogs).
In most cases epilepsy is a lifelong disease. A seizure occurs when there is abnormal electrical activity in the brain which leads to sudden but short-lived changes in a dog's behaviour and/or movement. Some breeds may be more predisposed to epilepsy than others and their prevalence may be higher than others. Epilepsy may run in some families and pedigree studies have demonstrated a hereditary basis for some types of epilepsy in a number of breeds. (source: https://www.thekennelclub.org.uk/health/for-owners/epilepsy/)
Link to PBHF http://www.pbhf-dog.com/fittingdatabase.html