

## Eye Scheme – primary glaucoma

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### What is primary glaucoma?

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Primary glaucoma is a painful and blinding disease associated with high intraocular pressure (high fluid pressure inside the eye). It is an inherited condition and is subdivided into two types: **primary open angle glaucoma (POAG)** and **primary angle closure glaucoma (PACG)/primary closed angle glaucoma (PCAG)**. In both forms, glaucoma results from reduced drainage of the fluid (aqueous humour) that is produced within the eye, resulting in a build-up of intraocular pressure (IOP) which, in turn, leads to pain and blindness. For PCAG/PACG (but not POAG), a screening technique called gonioscopy can identify dogs at risk.

### Breeds at risk – open angle glaucoma

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In the UK, the Petit Basset Griffon Vendeen, Basset Hound and Shar Pei are the breeds currently certified for POAG. The genetic mutation responsible for the disease in these breeds was discovered by geneticists at the Kennel Club Genetics Centre at the Animal Health Trust and a DNA test is available. The DNA test will be invaluable in eliminating the disease from these breeds as there is no predisposing factor that can reliably be screened for by clinical eye examination before the onset of disease. POAG is silent in onset and the usual clinical features of glaucoma are not present initially, or are so subtle as to be easily missed. Whilst tonometry (assessment of IOP) and regular examination of breeds at risk when they are 3 years of age and older may be helpful, it is DNA testing that is essential for disease eradication.

### Breeds at risk – primary angle closure/closed angle glaucoma

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PACG/PCAG is significantly associated with defective development of the drainage angle described as **goniodysgenesis** (gonio = angle, dysgenesis = defective development), or as Pectinate Ligament Dysplasia (PLD) or **Pectinate Ligament Abnormality (PLA)**. Goniodysgenesis is inherited in a complex fashion in several breeds and is assessed using a technique called **gonioscopy**. It was originally believed that the degree of goniodysgenesis did not change after birth and so a 'one-off' test before breeding was advised for dogs of certified breeds. However, recent research has provided evidence of the progression of goniodysgenesis with age in several breeds, namely the Flat Coated Retriever, Welsh Springer Spaniel, Dandie Dinmont, Basset Hound and Leonberger. In consequence, the advice on gonioscopy has been updated for all breeds involved. It is advised that gonioscopy is completed every 3 years, unless any evidence to the contrary emerges. The first test can be performed in dogs from 6 months of age onwards and current advice is that gonioscopy is performed at approximately 1, 4 and 7-8 years of age. Repeat testing should provide much needed longitudinal information about the risk of developing glaucoma in later life and, in conjunction with advice from Breed Health

Coordinators and the Kennel Club Health Team, will enable breed-specific recommendations to be developed.

### Gonioscopy grading

Previously gonioscopy was recorded as either ‘CLINICALLY AFFECTED’ or ‘CLINICALLY UNAFFECTED’. While this is clearly a binary choice, the assessment of PLA/PLD utilising a simple grading scheme is considered more helpful when deciding the breeding strategy to adopt.

PLA/PLD is classified as Grade 0 (unaffected), Grade 1 (mildly affected), Grade 2 (moderately affected) or Grade 3 (severely affected).

### Gonioscopy summary

| Grade | Gonioscopic findings  | Interpretation  |
|-------|---|---|
| 0     | Normal iridocorneal angle (ICA) with no/minimal (0%-<1%) pectinate ligament abnormality (PLA) | Unaffected – normal iridocorneal angle – highly unlikely to develop primary glaucoma                                    |
| 1     | 1-25% of ICA affected by PLA  | Mildly affected – unlikely to develop primary glaucoma  |
| 2     | 26-75% of ICA affected by PLA   | Moderately affected – low risk of developing primary glaucoma<br>Breed specific advice required if breeding considered. |
| 3     | >75% of ICA affected by PLA, and/or severe narrowing of ICA                                   | Severely affected – highest risk of developing primary glaucoma.  |

Breeds currently certified for goniodysgenesis (G) are as follows:

- Basset Hound
- Border Collie
- Dandie Dinmont
- Hungarian Vizsla
- Japanese Shiba Inu
- Leonberger
- Retriever (Flat Coated)
- Retriever (Golden)
- Siberian Husky
- Spaniel (American Cocker)
- Spaniel (Cocker)
- Spaniel (English Springer)
- Spaniel (Welsh Springer)
- Spanish Water Dog

## How do I go about having my dogs examined?

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Performing gonioscopy requires certain expertise and specialised equipment and it is for these reasons that gonioscopic examinations *are not available from every member of the CHS Eye Panel*. A list of the CHS 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.

## How is gonioscopy performed?

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Gonioscopy is generally performed without dilating the pupil. After application of local anaesthetic drops to the eye, a special lens (goniolens) is placed on the surface of the cornea to enable the examination to be completed. The test is then repeated on the other eye. Some dogs require sedation for the procedure to be carried out effectively. The fee for sedation is in addition to the cost of the test.

The panellist who performs gonioscopy on your dog should be able to answer any questions that you may have about the findings. There is a set procedure for appealing against the results of an eye examination should you wish to do so, and the panellist will supply the necessary information, which is also available on the BVA Website entitled **Information for Owners Leaflet**. Appeals must be lodged in writing with the BVA within 30 days of the examination.

## What is the cost of the test?

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Please visit <https://www.bva.co.uk/canine-health-schemes/chs-submission-and-examination-fees/> for all fee information.