



***Health and welfare problems are present in pedigree dog breeds in Australia. These problems arise as a result of deliberate selection for exaggerated physical features or as a result of inherited disease. Sometimes when breeders select for a particular physical feature, they may inadvertently co-select for a linked gene that causes serious health problems.***

Recent changes to breed standards have aimed to moderate certain physical features and move away from exaggerated traits. This may help to reduce the incidence of specific problems.

However, many of the health and welfare problems in some pedigree dogs are linked to the basic conformation of the breed and other aspects of pedigree breeding such as inbreeding. These problems will require a fundamental shift in breeding practices to be eliminated.

While some of the following problems can occur in any breed, cross breed or mixed breed dogs, purebred pedigree dogs are at greater risk and appear to be over-represented clinically. This is mainly due to traditional breeding practices.

## **5 COMMON PROBLEMS IN PEDIGREE DOGS**

(breathing, birthing, walking, eyes, skin)

### **1. DIFFICULTY BREATHING**

Some breeds of pedigree dogs with very short muzzles (termed brachycephalic) can have difficulty breathing due to a disorder known as *brachycephalic airway obstruction syndrome* (BAOS). In these dogs the skull length is reduced, but the amount of soft tissue in the muzzle is not, resulting in the same amount of tissue being squeezed into a smaller area. This characteristic has been deliberately selected in order to conform to the breed standard.

Dogs with BAOS usually have small and narrow nostril openings and elongated soft palates that hang down into the airway, both of which make breathing difficult. BAOS may be progressive with laryngeal and tracheal collapse occurring at later stages. Some dogs require surgery to alleviate their breathing difficulties and to try to improve their quality of life.

#### ***Symptoms***

- Serious difficulty breathing
- High blood pressure
- Low oxygen concentration in the blood

- Fainting or collapsing due to a lack of oxygen
- Facial fold dermatitis (inflammation/infection of the skin due to excessive skin folds on the face)
- Excessive flatulence (as affected dogs habitually gulp and swallow air to try to overcome their breathing difficulties)

#### **Breeds at risk**

- Pekingese, English Bull dog, Cavalier King Charles Spaniel, French Bull dog, Pug, Staffordshire Bull terrier, Shih Tzu, Lhasa Apso, Shar Pei, Boxer and Boston Terrier, among others.

**NB** Recent changes to breed standards have sought to moderate physical features such as muzzle length and nostril size and move away from exaggeration.

Responsible breeders do not breed from animals with serious breathing difficulties.

## 2. DIFFICULTY GIVING BIRTH

Certain pedigree breeds frequently have difficulty giving birth without surgical intervention (termed *obstructive dystocia*). Individuals of these breeds are deliberately selected for a large head, broad shoulders and narrow pelvis simultaneously, which results in a large foetal head:maternal pelvis ratio. This is known as *cephalopelvic disproportion* and means that the pup's head and shoulders are too large to fit through the mother's pelvic canal. Bitches with this problem cannot give birth safely without veterinary assistance in the form of a Caesarean section.

#### **Breeds at risk**

- This problem is common in breeds with large heads and wide shoulders such as English Bulldogs, Pugs, Boston Terriers and Scottish Terriers.

**NB** Recent changes to breed standards have sought to moderate physical features such as head size and shoulder breadth and move away from exaggeration.

## 3. DIFFICULTY WALKING

Certain pedigree breeds have been selectively bred for physical features that can lead to walking difficulties.

**Chondrodystrophia** is a condition in which the cartilage grows and matures abnormally and the long bones fuse faster than normal, leading to stunted growth. *Chondrodystrophic* breeds are actively selected for this abnormality, which results in disproportionately short and curved limbs. These breeds have an increased likelihood of spinal injury, not only due to their excessively long spinal columns and excessively short legs but also because their abnormal cartilage makes them susceptible to ruptured discs (termed *Intervertebral disc disease*). When the spinal disc ruptures it puts direct pressure on the spinal cord, causing extreme pain and potential neurological problems.

#### **Symptoms**

- Severe pain
- Neurological deficits - disruption of normal nerve signals leading to movement problems, including difficulty walking and in severe cases, complete paralysis

#### **Breeds at risk**

- Basset Hound, Dachshund (long, smooth and wire-haired), Miniature Dachshund (long, smooth and wire-haired), Shih Tzu and Lucas terriers, among others. Basset Hounds also have a relatively large and heavy head, which places further strain on their spinal column.

**NB** Recent changes to breed standards have sought to moderate physical features such as the length of the limbs and move away from exaggeration.

Responsible Dachshund breeders do not breed from animals that have intervertebral disc disease and this is recommended by certain Dachshund Breed clubs.

**Hip dysplasia** is the abnormal formation of the hip joint and is probably the most commonly recognised musculoskeletal problem in dogs.

### **Symptoms**

- Lameness
- Progressive degeneration of the hip joint
- Crippling arthritis
- Pain, difficulty walking

### **Breeds at risk**

- German Shepherd, St Bernard, Alaskan Malamute, Bulldogs, Golden Retriever, Rottweiler and Labrador Retriever, among other breeds and particularly large breed dogs.

**NB** Responsible breeders screen dogs for hip dysplasia through the Australian Veterinary Association/Australian National Kennel Council Canine Hip Dysplasia Scheme.

**Elbow dysplasia** is the abnormal formation of the elbow joint.

### **Symptoms**

- Lameness
- Progressive degeneration of the elbow joint
- Crippling arthritis
- Pain, difficulty walking

### **Breeds at risk**

- Bernese Mountain dog, Rottweiler, Labrador Retriever, Golden Retriever, Bull Mastiff, German Shepherd and St Bernard, among other breeds and particularly large breed dogs.

**NB** Responsible breeders screen dogs for elbow dysplasia through the Australian Veterinary Association/Australian National Kennel Council Canine Elbow Dysplasia Scheme.

## 4. SERIOUS EYE PROBLEMS

Pedigree dogs are predisposed to a number of serious eye diseases, many of which are the result of selectively breeding for a particular physical type in order to conform to the breed standard. Three common problems are *corneal trauma and ulceration*, *entropion* and *progressive retinal atrophy*.

**Corneal trauma and ulceration** is an erosion of the outer surface of the eye following injury. Breeds with very short muzzles (brachycephalic) have a high susceptibility for corneal trauma and ulceration. This is because the shorter the nose, the shallower the eye socket, and thus the more prominent the eye. Prominent, bulging eyes are at greater risk of injury and sometimes the eyes can **proptose** (pop out of the eye socket). In these breeds the eyelids cannot close properly over the bulging eye leading to dry eye and potential ulceration.

### **Symptoms**

- Pain & discomfort

- Potential blindness
- Sometimes the affected eye needs to be removed

### ***Breeds at risk***

- All brachycephalic breeds are at risk including the Pug, Shih Tzu and Pekingese

**NB** Recent changes to breed standards have sought to moderate physical features such as eye size and the degree of eye protrusion and move away from exaggeration. Certain breed standards now state that the dog should be free from obvious eye problems.

**Entropion** is a condition where the eyelids fold inwards and rub onto the surface of the eye. This condition occurs frequently in those breeds that have been selected for wrinkled facial features (excessive skin fold about the eyes). These folds also predispose the dog to facial fold dermatitis.

### ***Symptoms***

- Constant rubbing/irritation from the hairs, leading to trauma and ulceration of the eye surface
- Pain & discomfort
- Potential blindness

### ***Breeds at risk***

- Shar Pei, Chow Chow, British Bulldog, Pekingese, Pug, Shih Tzu, Pomeranian and Cocker Spaniel, among many others. Shar Pei pups often require an 'eyelift' surgery in infancy to prevent erosion and ulceration of their eyes. This surgery may need to be repeated at later stages.

**NB** Recent changes to breed standards have sought to moderate physical features and move away from exaggeration. Certain breed standards now state that the dog should be free of entropion and free from obvious eye problems.

**Progressive retinal atrophy (PRA)** is the term given to a group of genetic eye diseases that cause the retina to gradually degenerate. The result is progressive loss of vision and eventual blindness. In nearly all breeds the condition is inherited as an autosomal recessive trait, thus breeding from close relatives greatly increases the risk of inheriting this disease.

### ***Symptoms***

- Progressive loss of vision
- Eventual blindness

### ***Breeds at risk***

- Many breeds of dogs including those in the Gundog, Hound, Non-Sporting, Terrier, Toy, Utility and Working dog groups, but most commonly Cocker Spaniels, Poodles, Australian Cattle Dogs, Silky Terriers and Labradors.

**NB** Responsible breeders screen dogs for PRA through the Australian Veterinary Association/ Australian National Kennel Council Australian Canine Eye Scheme.

Certain pedigree breed clubs in Australia acknowledge predispositions for inherited eye disease in their breeds and proactively engage in sound breeding practices to eradicate these disorders.

## 5. SERIOUS SKIN PROBLEMS

Many pedigree breeds are predisposed toward the development of serious skin problems, many of which are the result of selectively breeding for a particular physical type in accordance with the breed standard requirements. Two examples of serious skin problems are: *excessive skin folds* and *inherited allergies*.

**Excessive skin folds:** many breed standards require that the dog have excessive and wrinkled skin. Unfortunately this excess skin leads to folding and subsequent inflammation and infection.

### **Symptoms**

- Dermatitis (inflammation/infection of the skin)
- Discomfort & irritation
- Pain

### **Breeds at risk**

- Facial fold dermatitis: brachycephalic breeds such as the English Bulldog, Pug, Pekingese, Boston Terrier and French Bulldog (excessive facial folds may also lead to entropion & corneal ulceration).
- Tail fold dermatitis: English Bulldog, Pug
- Lip fold dermatitis: American Cocker Spaniel, English Cocker Spaniel, St Bernard.
- Leg fold dermatitis: Basset Hound
- Labial fold dermatitis: Spaniels, Setters, Golden Retriever, St Bernard, Blood Hounds and Newfoundlands
- General body fold dermatitis/interdigital dermatitis: Shar Pei

**NB** Recent changes to breed standards have sought to moderate physical features and move away from exaggeration. Certain breed standards now state that the skin should not be excessive.

**Inherited allergies:** certain pedigree dog breeds are predisposed to major skin allergies that can severely compromise quality of life.

### **Symptoms**

- Constant and severe itching that often interferes with sleeping and the ability to have a normal life
- Lesions may become infected causing discomfort and pain
- Dogs with skin allergies often have accompanying ear infections (also with an allergic basis) that can become chronic and difficult to treat

### **Breeds at risk**

- West Highland White Terrier, Shar Pei, German Shepherd, Bull Terrier, Pug, English Springer Spaniel, American Cocker Spaniel and Dalmatian among many others.
- Dogs that are selectively bred for extra-long ears that hang over their ear openings (e.g. American Cocker Spaniel, English Springer Spaniel, Basset Hound, Poodle etc) are also predisposed to ear infections as the covered ear canals can become abnormally hot and humid (perfect breeding grounds for bacterial and yeast infections). The Shar Pei is also prone to ear infections due to their excessively narrow ear canals, with some requiring ear surgery to open the canal.

**NB** Responsible breeders do not breed from animals with severe allergies that are known or strongly suspected to have a hereditary basis. Responsible breeders do not breed from mating pairs known to have produced affected offspring in the past.

## SPECIFIC BREED-ASSOCIATED DISEASES

Some diseases can be specific to one pedigree breed only. Two examples include:

**Familial Shar Pei fever (FSF)** is a recessively inherited genetic disease in the Shar Pei. Breeding from close relatives greatly increases the risk of inheriting this disease.

### **Symptoms**

- Fever
- Anorexia
- Severe joint swelling
- Severe pain
- Dogs may not be able to walk at all during severe episodes

**NB** Research is being undertaken overseas to develop a DNA screening test for FSF. Responsible breeders do not breed from affected animals or mating pairs known to have produced affected offspring in the past.

**English Springer Spaniel fucosidosis** is an enzyme deficiency/storage disease with most cases reported occurring in the English Springer Spaniel. This is a recessively inherited disease thus breeding from close relatives greatly increases the risk of inheriting this problem.

### **Symptoms**

- Neurological problems - lack of coordination, tremors, weakness, difficulty eating, difficulty walking, partial blindness, deafness and anxiety
- This is a progressive disease with no treatment currently available

**NB** A DNA test has been developed for fucosidosis and where available, responsible breeders will screen their animals prior to breeding from them. In addition, responsible breeders do not breed from affected animals or mating pairs known to have produced affected offspring in the past.

Certain English Springer Spaniel clubs in Australia have developed and distributed a survey to their breeders to identify the main health problems in English Springer Spaniels with the aim of eventually eradicating these diseases from the breed.

## OTHER COMMON INHERITED DISEASES

### **Heart disorders**

Certain pedigree breeds are predisposed toward heart disorders such as heart valve defects in the Cavalier King Charles Spaniel and other types of inherited heart disease in the Boxer, Rottweiler, Doberman, Great Dane, Golden Retriever, Newfoundland and Irish Wolfhound, among others.

**NB** Responsible breeders and breed clubs/associations in Australia acknowledge any predisposition to heart disease and develop heart screening programs with veterinary cardiologists such as the Boxer Heart Murmur Control Scheme and the Cavalier Heart Clinic Program. Responsible breeders use this information to engage in sound breeding practices to reduce the incidence/eradicate inherited heart disorders in their breed.

## ***Gastrointestinal disease***

Certain pedigree breeds are predisposed toward gastrointestinal diseases such as *Gastric dilation and volvulus* (GDV), particularly large, deep-chested breeds. Breeds at risk include the Irish Setter, Great Dane, German Shepherd, Akita, Weimaraner, Boxer and Basset Hound, among others. GDV is a very painful and potentially fatal medical emergency.

Chest and abdomen conformation are thought to play a major role in GDV. It appears that the chest depth/width ratio is highly correlated with the risk of GDV. Breeds with deep and narrow chests are more likely to develop GDV. Unfortunately, certain breed standards still require that the dog have a very deep and narrow chest. This needs to be rectified by the relevant authorities as soon as possible.

**NB** Responsible breeders acknowledge any predisposition toward GDV in their breed and recognise the relationship between physical conformation and the risk of developing GDV.

## ***Blood disorders***

Certain pedigree breeds are predisposed toward blood disorders such as clotting abnormalities e.g. Von Willebrand's disease and haemophilia, among other conditions.

## ***Kidney disorders***

Certain pedigree breeds are predisposed toward kidney problems. Two categories include:

- Recessively inherited kidney diseases (thus breeding from close relatives greatly increases the risk of inheriting these diseases). Breeds at risk include the English Cocker Spaniel, Brittany Spaniel, Cairn Terrier and West Highland White Terrier, among others.
- Dominantly inherited kidney diseases. Breeds at risk include the Bull Terrier, Dalmatian and German Shepherd, among others.

**NB** Responsible breeders screen their animals for kidney disorders (wherever possible) and use this information to select healthy breeding animals with the aim of reducing the incidence/eradicating the disease.

## ***Neurological disorders***

Certain pedigree breeds are predisposed toward neurological diseases such as *syringomyelia*. Breeds at risk include the Cavalier King Charles Spaniel, Griffon Bruxellois and Pomeranian, among others.

**NB** Extensive research is being carried out by Australian Griffon Bruxellois breeders and United Kingdom Cavalier King Charles Spaniel breeders in conjunction with local and international veterinary authorities in an attempt to eradicate this disease.

## ***Hormonal disease***

Certain pedigree breeds are predisposed toward hormonal disorders for e.g. thyroid hormone disease.

## ***Immune system disorders***

Certain pedigree breeds are predisposed toward immune-system disorders such as immune-mediated anaemia, among other conditions.

## INADVERTENT CO-SELECTION OF LINKED GENES

As a result of selective breeding there is sometimes co-selection of a harmful gene linked to the one that is under selection.

**White coat - deafness:** inherited deafness is a common condition in dogs, especially breeds with a white coat colour and poor pigmentation of the iris and retina. Inherited deafness is thought to be a recessive trait.

### **Breeds at risk**

- Dalmatian, English Setter, English Cocker Spaniel, Bull Terrier, Australian Cattle dog, Whippet, Catahoula Leopard dog, Jack Russell Terrier, Australian shepherds and Border Collies, among other breeds

**Dalmatian spots:** in the Dalmatian it appears that selection for the characteristic black spotting pattern may have inadvertently selected for a linked gene that causes abnormally high urate excretion. High urate excretion is a recessive trait in Dalmatians and has led to a high incidence of *urate bladder stone formation* in this breed. Bladder stones can cause pain and discomfort and may be life-threatening if they cause a urinary blockage. Dalmatians are also predisposed toward skin problems, which are also thought to be associated with their abnormally high urate excretion. These problems are now thought to potentially affect all purebred Dalmatian dogs.

A recent study found that out-crossing Dalmatians to Pointers and then backcrossing to Dalmatians seems to have been successful in ridding the offspring of this problem however, problems with registering the subsequent offspring have provided little incentive for breeders to utilise such sound breeding practices.

**Cocker Spaniel coat colour:** when comparing different coloured Cocker Spaniels, studies found that “dominant-aggressive” behaviour varied greatly between different coloured dogs. Breeders who choose specific colour types to breed may inadvertently select for an aggressive temperament.

**Double dapple coated Dachshunds:** there is a link between Dachshunds with a double dappled coat and blindness and deafness.