

Figure 2. Flexed Lateral view (45°)

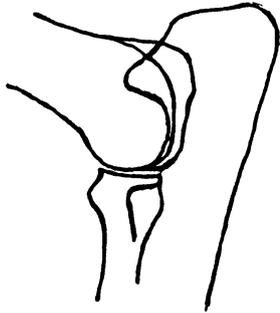
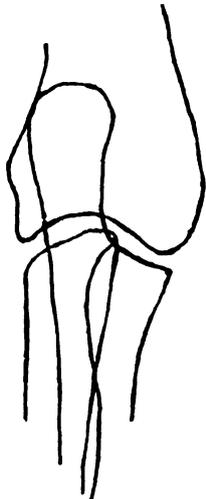


Figure 3. Neutral Lateral View (85-120°)



## What is the IEWG? (International Elbow Working Group)

The IEWG is a group of veterinary surgeons, radiologists, geneticists and dog breeders who work with all aspects of ED. The group meets annually, delegates from all around the world discussing current knowledge of ED. Several countries operate control schemes for ED, and the IEWG meetings are ideal occasions to exchange results of screening and breeding programmes, as well as to compare diagnostic procedures and treatment strategies.

**The IEWG has developed and agreed to a standard protocol for the radiographic screening of elbows as described in this leaflet.** National health-screening registries are encouraged to follow the IEWG protocol. It has proved to be effective for genetic disease control and allows coordination of data for international study.

Kennel clubs are encouraged to use every means to educate their members of the importance of participating in full-disclosure, family-linked health registries.

The IEWG also disseminates the results of research projects with ED, and provides information on ED at all levels. Only through this coordinated, informed approach will the incidence of ED be reduced, providing important benefits to canine welfare.

### Where can I find out more about ED?

For further information about the work of the IEWG, please look at the website

<http://www.vetmed.ucdavis.edu/iewg/iewg.htm>

or contact the Secretary at: Tel/FAX = 650/941-7848  
12640 La Cresta Dr., Los Altos Hills, CA 94022, USA

A few of the recent publications for further reading:

--Wind, A. (1986) Elbow incongruity and developmental elbow diseases in the dog. JAAHA 22, 711-724 (USA)

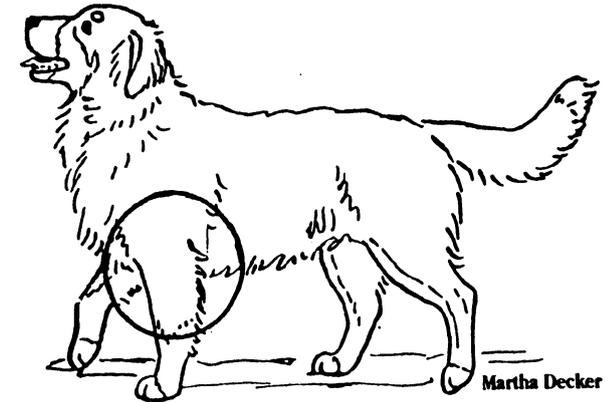
--Grondalen, J., Ungaas, F (1991) Arthrosis in the elbow joint of young rapidly growing dogs: a genetic investigation. JSAP 32, 460-464 (Norway)

--Guthrie, S (1996) Radiographic screening for elbow dysplasia. Veterinary international 8(3), 15-21 (UK)

--Padgett, G., Mostosky, U., Probst, C., et al (1995) The inheritance of osteochondritis dissecans and fragmented coronoid process of the elbow joint in Labrador retrievers. JAAHA 31, 327-330 (USA)

--Read, RA, Armstrong, SJ, Black, AP, et al. (1996) Relationship between physical signs of elbow dysplasia and radiographic score in growing Rottweiler. JAVMA 209,1427-1430 (Australia)

--Swenson, L., Audell, L., Hedhammar, A., (1997) Elbow arthrosis in Bernese



An Information Leaflet for Breeders & Owners

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## What is Elbow Dysplasia?

Elbow dysplasia (ED) describes the abnormal development of the elbow joint. The most common abnormalities(primary lesions) are:

- malformed or fragmented coronoid process of the ulna (FCP)
- osteochondritis dissecans of the humerus(OCD)
- ununited anconeal process of the ulna (UAP)
- incongruity of articular surface (Inc)

Any of these primary lesions can cause irreversible elbow arthrosis (arthritis), which gives rise to pain and lameness. Although the primary lesions occur during puppy growth, the arthrosis is often progressive. Thus, ED may give movement problems throughout an animal's life.

## What Breeds are Affected?

ED is most commonly reported in the Bernese Mtn. Dog, Rottweiler, Labrador Retriever, German Shepherd, Newfoundland, St. Bernard. In **addition, it has been reported** in many other breeds.

## What causes ED?

ED is a polygenic disease (several genes interact), and is a multifactorial condition. Feeding and activity restriction may alter the severity of symptoms in an individual, but they do not prevent the disease, or reduce the ability to pass the disease to offspring. Importantly, it is known that affected dogs are more likely to produce affected puppies, compared with the offspring from normal dogs. Furthermore, the more severe the arthrosis is in the parents, the greater the percentage is of affected puppies (see Table 1).

Parents	Offspring
Affected normal X normal	31%
normal X mild ED	43%
normal X mod/severe ED	48%
ED X ED	56%

Table 1. Incidence of ED in progeny of Rottweilers.

Reference: \* L. Swenson et al; JAVMA, 1/15/97, Elbow Arthrosis in Bernese Mountain Dogs and Rottweilers in Sweden and Benefit/Cost analysis of a Screening and Control Program

## How is ED diagnosed?

The clinical signs of ED are as follows:

- foreleg lameness
- pain on full flexion or extension of the elbow
- stiff or stilted gait, particularly if both elbows are affected, as is often the case.

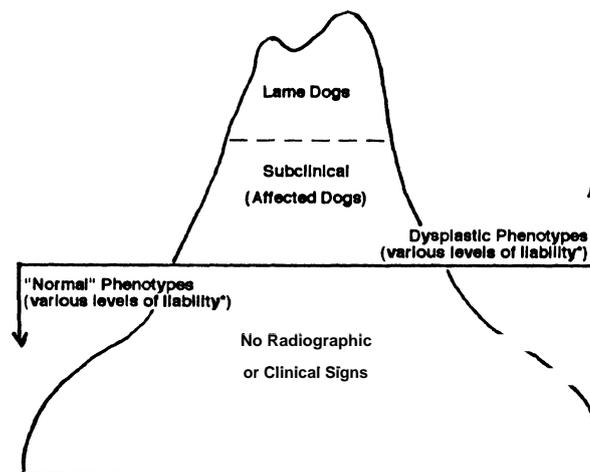
The diagnosis may be confirmed by taking radiographs(x-ray films) of the elbows to look for primary lesions and secondary arthrosis.

## How can we treat ED?

Treatment of individual dogs with lameness due WED is aimed at minimising the dog's discomfort and slowing the progression of the arthrosis. Conservative treatment includes controlled activity, weight reduction and anti-inflammatory medication. Loose fragments can be removed surgically. Treatment is beneficial for many dogs, but the arthrosis tends to progress, irrespective of the treatment used.

## What is subclinical disease?

Lame dogs can be thought of as the tip of the 'iceberg'. Many more dogs do not limp but do have elbow arthrosis or are carriers of ED genes (Figure 1). If these subclinically affected dogs are used for breeding, they usually produce more affected puppies than healthy parents, especially if many of their relatives are affected animals.



Sue Guthrie

Figure 1. The Elbow Disease 'Iceberg'

## How can we reduce the incidence of ED?

Since ED has a significant inherited component, the incidence may be minimised by breeding from unaffected dogs, particularly from families with the lowest incidence of ED. Success depends on having large numbers of related animals participate in screening programmes; having high quality films evaluated by expert readers; and making the information readily available to breeders so that they can select low risk families from which to choose breeding stock.

## What is involved in elbow screening?

The protocol for screening elbows for radiographic evidence of ED is very straight-forward. Screening of susceptible breeds is recommended at a minimum age of 12 months. The potential sire and dam should be evaluated, in addition to as many of their near-relatives as possible.

Radiographs of both elbows should be taken. The minimum requirement is a flexed lateral view (Fig. 2), but most countries require an additional view (Fig. 3 or 4). Films are then submitted to the appropriate screening panel.

## How are the radiographs evaluated?

Radiographs are examined by an expert or a panel of readers, and each dog is classified as either:

- normal: grade 0
- dysplastic: grade I (mild arthrosis)
- grade II (moderate arthrosis)
- grade III (severe arthrosis)

The grade of arthrosis is determined by measuring the size of osteophytes (bony spurs) at several specified sites on the radiograph. Any primary lesions are also noted.

Ideally, dogs with 'normal' elbows should be chosen and at least dogs with grade II or III arthrosis should not be used for breeding. By adhering to this policy, the incidence of ED will decrease in the more affected populations.