



### Chastain Veterinary Medical Group Pet Health Fact Sheet

#### Animal Blood Types

Currently, eight to twelve or more canine blood groups are recognized, depending on which studies one consults. In all cases, these various blood groups are organized and categorized under the DEA system. The acronym DEA stands for Dog Erythrocyte Antigen. Blood groupings, or blood types, among dogs are specified by the letters DEA, followed by some number(s) denoting which DEA system antigens are present on the red blood cells of the dog in question.

Table 1. Eight of the most common canine blood types and their approximate incidence in the United States.

Canine Blood Type	Old Nomenclature	Approx. Incidence
DEA 1.1	A1	40%
DEA 1.2	A2	20
DEA 3	B	5
DEA 4	C	98
DEA 5	D	25
DEA 6	F	98
DEA 7	Tr	45
DEA 8	He	40

For all canine blood group systems other than DEA 1, the red blood cells from a dog can be either positive or negative for that blood type. For example, a dog could be DEA 3 positive or DEA 3 negative. The DEA 1 system is different. It appears to have three separate subgroups: DEA 1.1 (also known as A1), DEA 1.2 (also known as A2) and DEA 1.3 (also known as A3). A dog's red blood cells can be DEA 1.1 positive or negative. Further, DEA 1.1 negative cells can be DEA 1.2 positive or negative.

#### Cross matching and Transfusions in Dogs

In contrast to human beings and domestic cats, dogs do not seem to have any naturally occurring antibodies to other blood types. This has several important clinical implications:

#### Chastain Veterinary Medical Group

Meadow Brook Animal Hospital – 972-529-5033 · Preston Road Animal Hospital – 972-239-1309

<http://chastainvets.info>

Blood cross matching, which is performed to detect antibodies in the recipients blood to antigens in the donor's blood, is less important in the dog, and may not have to be done at all if the recipient dog has never received a transfusion before (which frequently is the case).

An initial blood transfusion into a dog that has never before received a transfusion is unlikely to cause a transfusion reaction.

Antibodies to foreign blood groups may develop in a dog within days of receiving a transfusion. So, if a dog has received a transfusion before, it should be cross matched to insure blood compatibility before receiving a second or subsequent blood transfusion.

In the veterinary literature, most of the emphasis on canine blood typing is placed on the blood groups DEA 1.1 and DEA 1.2. Evidently, these are the two most antigenic blood groups among dogs. Since DEA 1.1 is the single most antigenic blood group, most veterinarians recommend that DEA 1.1 positive dogs be avoided as general use blood donors. Note, however, that DEA 1.1 positive dogs can donate to other DEA 1.1 positive dogs with no problem. DEA 1.1 negative and DEA 1.2 negative dogs are often referred to as "universal donors."

### **Blood Groups in Cats**

Domestic cats have a two antigen blood group system which yields three possible blood types for a cat: A, B, or less commonly, AB. The majority of domestic cats in the United States have type A blood - almost 99% of domestic short hair cats in the USA have type A blood. These percentages vary from country to country however, and probably from region to region within a country as well.

Cat breeds other than the domestic short hair have a much higher occurrence of Type B blood. As the popularity of purebred cats increases, it seems likely that the ratio of cats with Type B blood will also increase.

### **Cross matching and Transfusions in Cats**

There is no universal donor blood type in felines. However, a cat receiving even a very small amount of the wrong blood type can be seriously harmed if that cat is already sensitized to that foreign blood type. This can be of particular importance to British Short hair, Cornish Rex, and Devon Rex cats, where the percentage of Type B cats is much higher (about 50%). The Abyssinian, Himalayan, Japanese Bobtail, Persian, Somali, and Sphinx breeds also have a significant percentage of type B blood individuals.

If a type B queen (mother cat) gives birth to type A kittens, severe reactions can occur in the kittens. Type B cats have strong antibodies against Type A blood. These antibodies are passed in the milk which is very bad for any kittens that are type A. Since type A is the dominant blood type, this means that most of the kittens born will be type A when a type A father breeds with a type B mother. Neonatal isoerythrolysis - destruction of the kitten's red blood cells by the antibodies in the mother's milk- is very likely to occur. In the breeds in which significant percentages of type B blood occur, it is wise to know in advance what the blood types of prospective parents are.

### **Blood Groups in Other Animal Species**

The blood group systems of companion birds, reptiles, small mammals such as rabbits and ferrets have not been extensively studied and their clinical significance remains unknown.

#### **Chastain Veterinary Medical Group**

Meadow Brook Animal Hospital – 972-529-5033 · Preston Road Animal Hospital – 972-239-1309

<http://chastainvets.info>