

The **Great Dane Club of America, Inc.**

CANINE BLOOD TRANSFUSION

Mary Anne Zanetos

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Great Dane Club of America

TRANSFUSION TOPICS

- What are blood types and why are they important?
- What systems are used to classify blood types?
- When is blood transfusion needed?
- What dogs make good donors?
- Why should I know my dog's blood type?

CANINE BLOOD TYPES

Red cells (erythrocytes) in the blood have features which:

- Are unique to dogs
- Can stimulate the immune system to produce antibodies which may be harmful
- Are critical for safe transfusion therapy and blood donation

CANINE BLOOD TYPES

- Dog Erythrocyte Antigens (DEA's) are a group of specific proteins on the surface of red blood cells
- Each DEA is either present or absent, depending on genetic factors
- Every dog possesses a DEA “profile” which is permanent and can be determined via simple tests

CANINE BLOOD TYPES

- When blood products are given, the recipient may react to incompatible DEA's by producing antibodies which destroy blood cells (hemolysis).
- Knowing which DEA's are present in the blood of donors and recipients enables safe transfusion.

CANINE BLOOD TYPES

Blood groups are designated in a format:

DEA X.X

- **The first number indicates the genetic locus for a specific RBC surface protein**
- **The number after the decimal (if any) indicates a particular allele at that locus**

(e.g., DEA 1.1 and DEA 1.2 are different alleles at gene locus 1)

CANINE BLOOD TYPES

6 major blood groups are defined, based on standardized surface antigen tests:

- DEA 1.1
- DEA 1.2
- DEA 3
- DEA 4
- DEA 5
- DEA 7

Other blood groups exist, but these 6 are important in the context of transfusion

CANINE BLOOD TYPES

If a dog is **positive** for a specific DEA:

- Antigen of that blood group is **present** on the red cell surface

If a dog is **negative** for a specific DEA:

- Antigen of that blood group is **not present** on the red cell surface

CANINE BLOOD TYPES

Dogs have no naturally occurring antibodies to DEA 1.1 or DEA 1.2

- If blood **positive** for DEA 1.1 is transfused into a DEA 1.1 **negative** dog, the initial transfusion is tolerated, but the dog begins to produce antibodies against DEA 1.1
- Second/subsequent transfusions with **DEA 1.1** or **DEA 1.2 positive** blood may result in life-threatening hemolytic reactions

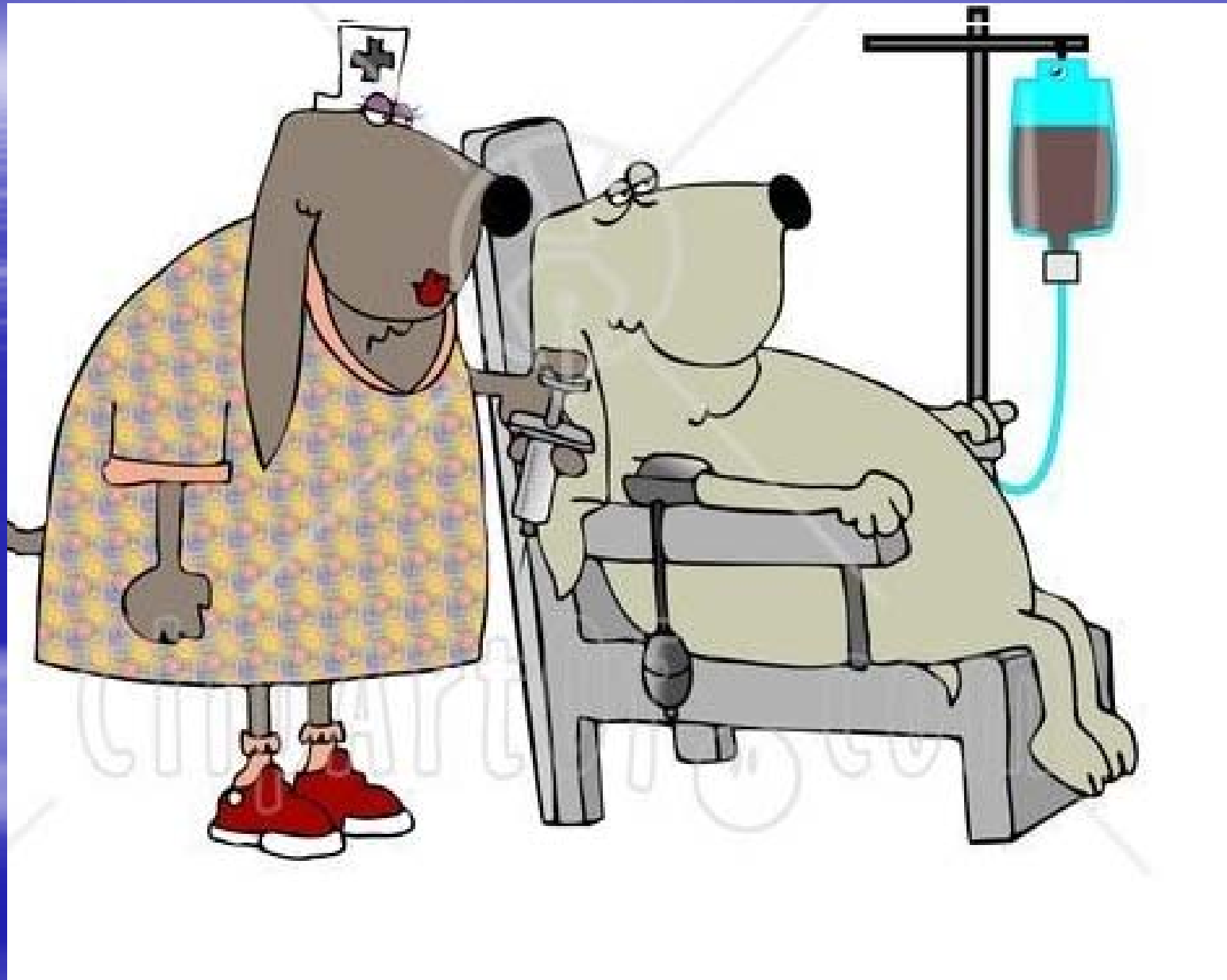
CANINE BLOOD TYPES:

All Breeds

DEA Group	Avg. % Positive	Avg. % Negative
DEA 1.1	42%	58%
DEA 1.2	20%	80%
DEA 3	6%	94%
DEA 4	98%	2%
DEA 5	23%	77%
DEA 7	45%	55%

CANINE BLOOD TYPES

- Information for Blood Recipients



PRE-TRANSFUSION TESTING

- Rapid in-house blood typing uses “card” test which tests DEA 1.1 only
- DEA 1.1 negative dogs can either negative or positive for 1.2 and 1.3
- DEA 1.1 positive dogs: always negative for 1.2 and 1.3

DEA 1.1 Result: →	It will type DEA 1.2	It will type DEA 1.3
Negative	Negative or Positive	Negative or Positive
Positive	Negative	Negative

TRANSFUSION GUIDE

- In cases where the blood type can't be determined, universal blood should be given.
- Dogs positive for DEA 1.1 should receive positive or universally negative blood.
- Dogs negative for DEA 1.1 should **only** receive negative blood.

CANINE BLOOD TYPES

- Information for Blood Donors

CANINE BLOOD TYPES

What is a Universal Donor?

- Must be Negative for DEA 1.1, DEA 1.2 & DEA 3, 5 and 7 and Positive for DEA 4
- Certain breeds (e.g., Greyhounds) have a higher percentage of universal donors

OPTIMAL CANINE DONORS

- **Universal Donor** in good general health
- Suitable disposition
- Between 1 and 8 years of age
- Weight > 50 pounds
- Male or spayed nulliparous female*
- No history of previous blood transfusions*
 - *Eliminates donors possibly exposed to foreign blood groups and who may have developed antibodies that interfere with compatibility testing
- Normal coagulation factors (e.g., von Willebrand, etc.)
- Current on vaccines and on heartworm preventative

DONOR DOGS TO THE RESCUE



HEMI: ANGEL'S HERO



SUPPLEMENTAL MATERIAL

- GDCA Surgical Guidelines
- Hemopet Guide to Blood Products
- Canine Hematology Tests/Normal Values
- Canine Serum Chemistry Tests/Normal Values

Good Bye!

