DISSEMINATED INTRAVASCULAR COAGULOPATHY
(A BLOOD-CLOTTING DISORDER)

BASICS

OVERVIEW
- A bleeding problem in which clotting factors are activated and clotting factors and platelets are used up, leading to bleeding; "clotting factors" are components in the blood involved in the clotting process—the clotting factors are identified by Roman numerals, I through XIII; "platelets" are normal cell fragments that originate in the bone marrow and travel in the blood as it circulates through the body; platelets act to "plug" tears in the blood vessels and to stop bleeding
- A complex blood-clotting defect with enhanced clotting (known as "coagulation") that uses up the body's clotting factors and causes the formed clots to dissolve (known as "fibrinolysis") secondary to severe generalized (systemic) disease
- Commonly known as "DIC"

SIGNALMENT/DESCRIPTION of ANIMAL

Species
- Dogs and cats, more common in dogs

Mean Age and Range
- Depend on the primary, underlying disease

SIGNS/OBSERVED CHANGES in the ANIMAL
- Vary with the primary disease and with disseminated intravascular coagulopathy (DIC)-associated organ dysfunction
- Multiple small bruises (known as "petechiae") and bleeding from sites where blood was drawn or where intravenous (IV) catheters have been placed, bleeding from the moist tissues of the body (known as "mucosa"), or bleeding in body cavities

CAUSES
- Condition in which the stomach dilates with gas and/or fluid (known as "gastric dilatation"), and subsequently rotates around its short axis (known as "volvulus")—condition known as "gastric dilatation-volvulus" or "bloat"
- Heart failure
- Heartworm disease
- Heat stroke
- Breakdown of red-blood cells (known as "hemolysis"), especially caused by the immune system breaking down the red-blood cells (known as "immune-mediated hemolysis")
- Inflammation of the stomach and intestines, characterized by the presence of blood (known as "hemorrhagic gastroenteritis")
- Generalized (systemic) infectious diseases (especially those that cause bacterial toxins to accumulate in the blood [known as "endotoxemia")
- Liver disease, if severe (especially the disease in which fats and lipids [compounds that contain fats or oils] accumulate in the liver in cats [condition known as "feline hepatic lipidosis"])
- Cancer, especially hemangiosarcoma, breast cancer (mammary carcinoma), and lung cancer (pulmonary adenocarcinoma) in dogs and lymphoma in cats
- Nephrotic syndrome (a medical condition in which the animal has protein in its urine, low levels of albumin [a type of protein] and high levels of cholesterol in its blood, and fluid accumulation in the abdomen, chest, and/or under the skin)
- Inflammation of the pancreas (known as "pancreatitis")
- Shock, low levels of oxygen in the blood and tissues (known as "hypoxia"), conditions in which relative levels of acid are increased in the blood (known as "acidosis")
- Low platelet or thrombocyte counts caused by the immune system destroying the platelets (known as "immune-mediated thrombocytopenia"); "platelets" and "thrombocytes" are names for the normal cell fragments that originate in the bone marrow and travel in the blood as it circulates through the body; platelets act to "plug" tears in the blood vessels and to stop bleeding; if they accumulate in a blood vessel, they may lead to a blood clot (known as "thrombosis")
- Trauma
- Venom

RISK FACTORS
- Vary with cause

TREATMENT

HEALTH CARE
- Requires intensive inpatient treatment
- Aggressive treatment of the primary disease is essential
- Maintain tissue blood flow and oxygen levels using fluids, transfusions and oxygen therapy

- Restore depleted clotting factors by blood/plasma transfusions
- Prevent further clotting within a blood vessel (thrombosis)

ACTIVITY
- Is limited by the disease severity

SURGERY
- Related to primary, underlying disease

MEDICATIONS
Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Successful medical treatments are based mostly on experience and traditionally use heparin to effect (as determined by clinical improvement of the patient and blood test results)
- Heparin dosage depends on severity of signs and laboratory test results
- Plasma or blood transfusions often are needed for heparin to be effective
- Low molecular weight heparin: many forms with variable activity are available; fewer complications reported, but very expensive

FOLLOW-UP CARE

PATIENT MONITORING
- Clinical improvement and stopping bleeding are key positive findings
- Daily blood testing is warranted in severe cases to identify positive or negative trends; less frequent blood testing may suffice in milder cases
- Some blood tests (coagulation times and fibrinogen) often return to normal more rapidly than other blood tests (fibrogen degradation products [FDPs] and platelet counts)

PREVENTIONS AND AVOIDANCE
- Related to primary, underlying disease

POSSIBLE COMPLICATIONS
- Vary with underlying cause
- Death

EXPECTED COURSE AND PROGNOSIS
- Animals with the clotting disorder, disseminated intravascular coagulopathy (DIC), have a high rate of death because of the serious nature of the primary, underlying diseases

KEY POINTS
- The associated generalized (systemic) disease is life-threatening
- Disseminated intravascular coagulopathy (DIC) is a serious complication of a severe disease process in the animal