

If at any time you are in doubt about any health situation or **EMERGENCY** you find yourself and your pet in, **CONTACT YOUR VET IMMEDIATELY!**

Bloat in the dog!

There are very few challenges in veterinary medicine that rival an emergency presentation of bloat in the dog. Known by various terms, some more accurate than others, a dog with a bloating stomach has a short time to live without emergency veterinary intervention. Once the stomach is unable to expel gasses produced from fermentation within the stomach, a series of events occur that result ultimately in such intra abdominal pressure that the dog is unable to survive. Circulatory collapse and heart failure ultimately result, after extreme stretching of the stomach wall, constriction of intra abdominal blood vessels, widespread death and destruction of the stomach wall, and release of intestinal toxins.

What is Bloat?

Canine bloat occurs when there is gas production in the stomach and that gas build-up is unable to be expelled via belching or vomiting, or passed through the intestines and out of the dog as flatulence. Some bloat cases occur very rapidly when fermentation of grains in the wet and warm stomach environment create gas. The influence of grain in creating an environment conducive to bloat seems even more plausible in that it is very rare for dogs that consume meat-based diets to develop bloat. Generally, bloat is the extreme dilation of the stomach as a result of gas build-up that cannot escape the stomach.

What types of bloat are there?

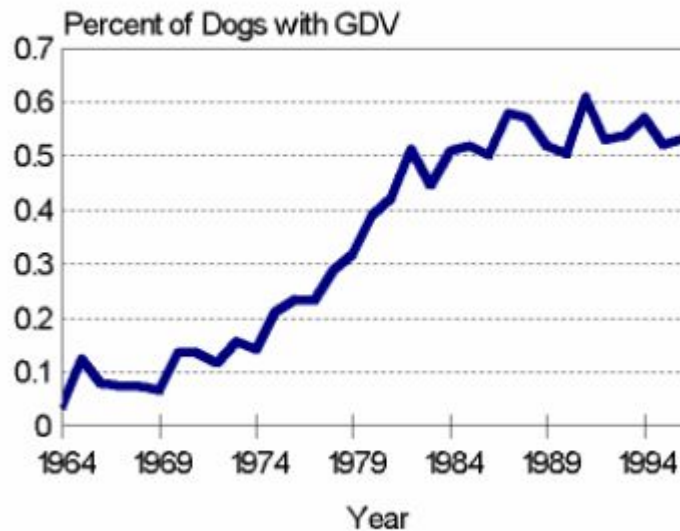
GASTRIC DILATATION... is simply the expansion of the stomach due to the build-up of gas or material in the stomach.

GASTRIC VOLVULUS (TORSION)... is the condition where the stomach rotates (flips on its long axis) and thereby twists the esophagus and small intestine closed so there is no passage of stomach contents or gas in or out of the stomach.

Risk factors of bloat - in relation to body weight.

Dog Breeds	Body Weights	Risk factor of Developing Bloat
Small	Less 10kg	1
Medium	11 - 39kg	17
Large	40 - 49kg	23.5
Giant	50kg+	133.2

Figure 1 - Percent of Dogs with GDV in
Veterinary Teaching Hospitals
1964 - 1996



Source is Veterinary Medical Data Base (VMDB)

NB: these figures above, may correlate with dog owners being more aware of GDV and are responding to this medical emergency sooner, rather than later.

How does Bloat happen?

Scientists have tried for decades to learn about how bloat occurs by setting up bloating conditions in the laboratory with laboratory dogs... and consistently have failed in producing the spontaneous bloating that occurs with canine house pets. The usual history is of a dog of a large breed that has recently eaten a meal of dry dog food and then exercises or engages in some physical activity. On occasion, though, there is no history of physical activity and the dog is suddenly seen trying to retch and vomit unsuccessfully. The dog paces, becomes uncomfortable,



attempts to pass stool and repeatedly makes retching, gagging noises. Salivation is common. At this stage it is impossible to determine what type of bloat is occurring. In the photos above, the fortunate dog had a simple Gastric Dilatation with no torsion or volvulus. Once the stomach contents and gas were eliminated via a plastic stomach tube, and the stomach was flushed and antibiotics administered to prevent further bacterial fermentation and gas production, the surgery was over and the dog recovered rapidly and successfully. With Torsion or Volvulus present, far greater damage occurs to internal blood vessels and stomach tissues, plus the spleen gets caught up in the twisted mess of tissues and becomes starved for oxygen along with the stomach. Eventually the heart is affected due to the major interruptions in blood flow and heart rhythms; plus the pressure on the heart and diaphragm prevents normal cardio-pulmonary function. When the blood supply in the abdomen's major arteries is compromised, blood flow to the heart and the cardiac output decrease, leading to low blood pressure, and eventually, shock.

The production of gas in the stomach sometimes overwhelms the dog's ability to belch it away or pass it through the bowel as flatulence. There are various theories about the gastric chemistry that occurs to produce this sudden buildup of gas. Plus, many dogs that become uncomfortable as the gas builds up will begin to swallow air, compounding their dangerous condition.

Causes

It is thought that the following may be the primary contributors to bloat. To calculate a dog's lifetime risk of bloat according to Purdue University's School of Veterinary Medicine, [click here](#).

- Stress Dog shows, mating, whelping, boarding, change in routine, new dog in household, etc.
- New Activities that result in gulping air
- Eating habits,
 - Rapid eating
 - Eating dry foods
- Dilution of gastric juices necessary for complete digestion by drinking too much water before or after eating.
- Exercise before and especially after eating
- Heredity (especially having a first-degree relative who has bloated)
 - Build & Physical Characteristics
- Having a deep and narrow chest compared to other dogs of the same breed
- Older dogs
- Males
- Being underweight
- Disposition
 - Fearful or anxious temperament
 - Prone to stress
 - History of aggression toward other dogs or people

Symptoms

Typical symptoms often include some (but not necessarily all) of the following, according to the links below. Unfortunately, from the onset of the first symptoms you have very little time (sometimes minutes, sometimes hours) to get immediate medical attention for your dog. *Know your dog and know when it's not acting right.*

- **Attempts to vomit (usually unsuccessful); may occur every 5-20 minutes**
This seems to be one of the most common symptoms & has been referred to as the "hallmark symptom"
- **Doesn't act like usual self**
Perhaps the earliest warning sign & may be the only sign that almost always occurs
- **Significant anxiety and restlessness**
One of the earliest warning signs and seems fairly typical

- **"Hunched up" or "roached up" appearance**
This seems to occur fairly frequently
- **Bloated abdomen that may feel tight (like a drum)**
Despite the term "bloat," many times this symptom never occurs or is not apparent
- Pale or off-color gums
Dark red in early stages, white or blue in later stages
- Lack of normal gurgling and digestive sounds in the tummy
Many dog owners report this after putting their ear to their dog's tummy
- Coughing
- Unproductive gagging
- Heavy salivating or drooling
- Foamy mucous around the lips, or vomiting foamy mucous
- Unproductive attempts to defecate
- Whining
- Pacing
- Licking the air
- Seeking a hiding place
- Looking at their side or other evidence of abdominal pain or discomfort
- May refuse to lie down or even sit down
- May stand spread-legged
- May attempt to eat small stones and twigs
- Drinking excessively
- Heavy or rapid panting
- Shallow breathing
- Cold mouth membranes
- Apparent weakness; unable to stand or has a spread-legged stance
Especially in advanced stage
- Accelerated heartbeat
Heart rate increases as bloating progresses
- Weak pulse
- Collapse

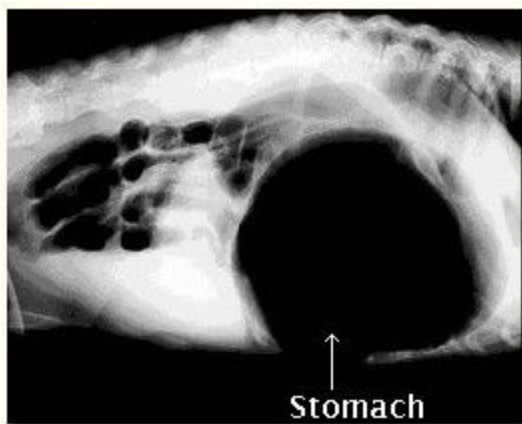
How is Bloat treated?

Treatment needs to be undertaken immediately. Time is a very decisive factor in the success or failure of correcting bloat. Once presented to a veterinarian, a dog with bloat will become the center of attention and all other activities at the animal hospital assume a lesser priority. Supportive medications such as cortisone, antibiotics and intravenous fluids are started immediately. The veterinarian may need to decompress the stomach initially (before surgery) by inserting a large diameter needle into the stomach right through the abdominal wall. An audible hiss is heard as the gas passes through the needle. Once this is performed the doctor administers intravenous anesthetic in very small amounts because the patient in this state of affairs requires very little intravenous anesthetic to facilitate the passing of the endotracheal tube through which the gas anesthetic is administered. Some veterinarians skip the intravenous anesthetic and, via a face mask, administer gas anesthesia such as Isoflurane... once the patient is unconscious the endotracheal tube is passed into the trachea to allow continuous control of anesthesia.

Once anesthesia is at the proper level, a stomach tube (see the photo above) is gently inserted down the esophagus in an attempt to gain entry into the stomach. If there is a Volvulus present and the twisting of the esophagus/stomach junction prevents passing the stomach tube into the stomach, the doctor will need to incise the stomach to dissipate the gas and bring the stomach back to a reasonable state of size and pressure. If no volvulus (twisting or rotation of the stomach on its axis) is present such as in the case presented here, with careful and gentle manipulation by the surgeon within the abdominal cavity the stomach tube can be directed into the stomach and the gas and stomach contents can be drained by gravity out of the dog.

Once the intra-gastric pressure is lowered the presence or absence of rotation of the stomach can be ascertained. Also, if a volvulus is present, the spleen is also involved and often its blood supply becomes

strangulated. Occasionally, the doctor will elect to remove the spleen at this time. The health of the stomach is established... in cases where the gastric dilatation has been present for hours and the pressure is very high, the stomach wall will be very thin and stretched and there may be areas of necrosis (cell death). In the photos above a well vascularized stomach wall is evident...



that a good situation. In severe bloat where the stomach is stretched for long periods, the blood supply is shut down and the stomach wall appears bluish or blackened. This blackish coloration suggests permanent cell death and damage. Any time there is necrosis of the stomach wall the prognosis for a successful resolution of the case is very poor. The massive cell death and absorption of toxins through the stretched stomach wall creates severe cardiovascular damage and blood pressure problems. Once a state of shock begins, the chances of recovery for the patient are slight. Even dogs that survive surgery and seem to be recovering often succumb to endotoxic shock hours and even days after the procedure.

When the stomach contents are emptied through the stomach incision, the stomach wall is finally sutured closed. If a volvulus is present the surgeon will rotate the stomach (and spleen) back into the normal anatomical position. Then the stomach tube is inserted through the mouth into the stomach and additional flushing and antibiotic administration is done. Before closing the abdominal incision the surgeon usually will tack (affix with sutures) the stomach wall against the inner abdominal wall (actually just inside the rib area) to prevent future episodes of gastric dilatation/volvulus. This tacking procedure is excellent insurance against a volvulus happening again.




What can be done to prevent Bloat?

The best suggestions are to feed the dog two small meals a day instead of one large meal. Do not allow the dog to drink large quantities of water at one time... have water available at all times. Do not allow exercise or other vigorous activity for at least two hours after a full meal. Feed a diet composed of more meats and less grain.

If feeding a commercial dog biscuit, wetting down the food prior to feeding as well as feeding from a flat bottom dish, where the puppy/dog is able to lap up the food, (BARF diet experts have suggested dogs should be fed directly off the ground, if fed a commercial diet), as opposed to the usual dog bowl, where the bottom is tapered and the sides deep, which has the puppy/dog eating in a fashion of grab and gulping of food, which will encourage the gathering of air with the food and can lead to a build up of air/gas in the stomach.

It has been observed, those food gulpers, that displayed early symptoms of GDV when fed from a dog bowl, once switched to a flat bottom dish, immediately started to eat slower and smaller amounts in each mouthful, diminishing the risk of air being swallowed and the dog never displayed early signs of torsion again.

Below you will find some of the dog food bowls on the market:

		
Standard dog bowl	Adjustable and elevated dog bowls. Elevated dog bowls are said to reduce GDV risk the above dishes are still quite deep.	Flat bottom dish

Please remember, if you see your dog displaying the above symptoms, the importance of immediate veterinarian assistance cannot be emphasised enough!