

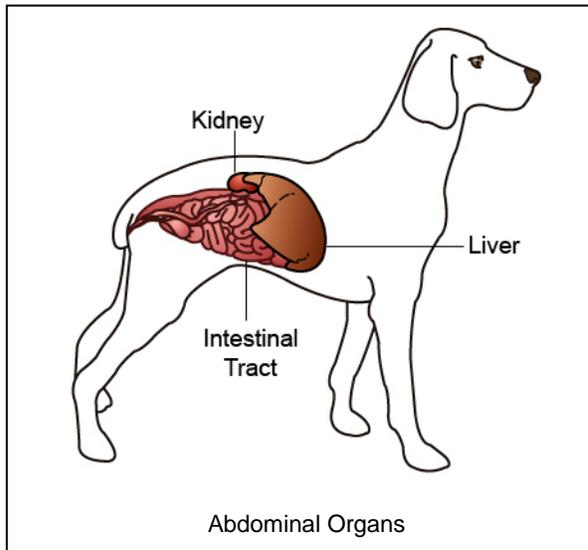
## Testing for Patients Who are Vomiting

### ***What are the causes of vomiting?***

Vomiting is a non-specific symptom of many different diseases and conditions. The frequency and type of material that is vomited along with a history and other clinical signs that your pet is exhibiting may give us clues as to its cause. If, for example, a dog has recently 'raided' the garbage and subsequently begins to vomit, it is likely that he is experiencing a simple bout of 'dietary indiscretion'. However in many cases, the underlying cause is not so clear.

*The following are some of the more common conditions and diseases that can cause vomiting, although it is by no means a complete list:*

Conditions related to the gastrointestinal tract including inflammation, infections, parasites, tumors, ingested foreign material, constipation, and twisted or obstructed bowel will usually be associated with some degree of vomiting.



Endocrine (hormonal) diseases such as severe diabetes (diabetic ketoacidosis), hyperthyroidism, and hypoadrenocorticism (Addison's disease) can produce bouts of vomiting.

Systemic diseases such as chronic kidney failure, liver disease, pancreatitis, and fulminant (overwhelming) bacterial infections may result in episodes of vomiting.

Finally, miscellaneous conditions including the ingestion of toxins or certain household plants, neurological

conditions, heat stroke, pain, fever, and motion sickness, can all cause this symptom.

### ***This list is huge! How can we possibly determine what the cause is with respect to my pet?***

Certain diseases are more common in certain species (dogs versus cats) or breeds, and within certain age groups (puppies and kittens versus adult animals), which may narrow down the range of possibilities. In addition, the specific history, including a list of all drugs or other supplements that your pet has recently received, when combined with the

results of a thorough physical examination, will often narrow the possibilities further. A selected panel of screening tests will allow further refinement of the list, and may sometimes provide a definitive diagnosis.

### ***What screening tests are recommended?***

The screening tests include a complete blood count (CBC), a serum biochemical profile, a urinalysis, and a fecal flotation. In middle aged to older cats, a serum thyroxine (total T4) concentration is also recommended.

### ***Do all of these tests need to be performed if my pet is feeling well other than the occasional bout of vomiting?***

No. If your pet is otherwise bright and alert and the physical examination reveals no significant findings, then all of these tests are probably not necessary. This is especially true if there is a reasonable explanation for the symptom – for example a puppy or kitten with intestinal parasites (worms) or with a recent change in diet will frequently experience vomiting. In this instance, a fecal flotation and appropriate antiparasitic treatment, or a more gradual diet change would suffice.

If the vomiting episodes occur more frequently, if your pet doesn't respond to conservative therapy (for example a bland diet), or if your pet shows clinical signs of being unwell (fever, depression, a sore abdomen), then these screening tests are strongly recommended.

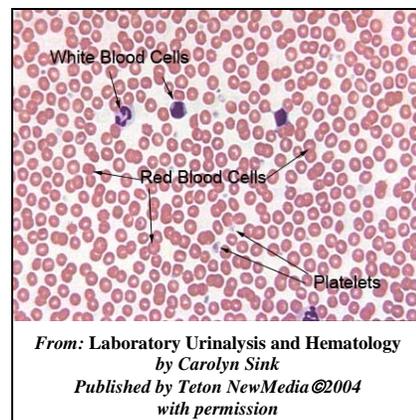
### ***What can these tests indicate?***

*In addition to providing information regarding the possible cause of your pet's symptoms, these screening tests may uncover secondary effects of chronic vomiting such as electrolyte disturbances. In older animals, other underlying conditions that were previously undetected but which warrant medical attention, may also be discovered.*

The **CBC (complete blood count)** requires a single blood sample and provides us with an evaluation of the red blood cells, the white blood cells, and the platelet components of that sample. The total numbers of these cells are evaluated along with specific cellular characteristics.

Because vomiting involves fluid loss, the CBC can tell us if your pet has become dehydrated. Dehydration is indicated by an increase in the packed cell volume (PCV) and total red blood cell numbers in the sample.

Blood loss related to the vomiting may be noted on the CBC. Blood may be present in the vomit because of simple ulceration, or because of intestinal inflammation, or neoplasia. This blood loss is indicated by decreases in the total red blood cell numbers and PCV of the sample. Depending on the site of blood loss, and its duration, features of iron deficiency anemia may be noted.

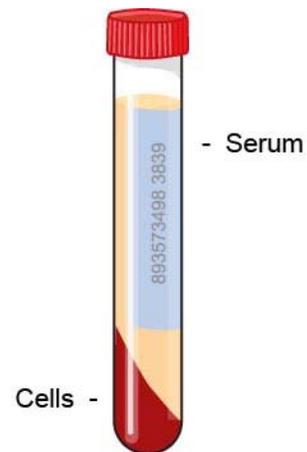


An elevated white blood cell count may suggest underlying inflammation or infection as a cause of the vomiting. Some conditions may be accompanied by increases in specific

white blood cell types; an increase in eosinophils may be noted with parasitism and food allergies, for example. Some viral infections are initially accompanied by severe decreases in the numbers of white blood cells. Such changes are important to document, not only because they help pinpoint a possible cause of your pet's symptoms, but also because they indicate whether specific treatments such as antibiotics are required. .

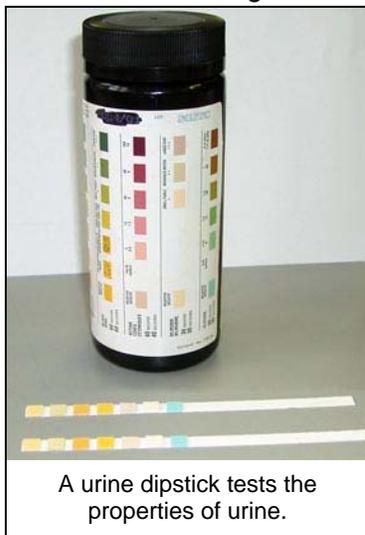
The **serum biochemistry profile** requires a separate blood sample, from which the serum (the liquid portion of blood) is separated from the cellular portion. Serum contains many substances including glucose, lipids (fats), proteins, electrolytes, enzymes, and metabolic waste products. A biochemistry profile allows us to measure all of these components of serum and also provides us with specific values for enzymes directly related to the liver, kidneys, and pancreas.

Changes and patterns of change within the serum biochemistry profile may show that a specific disease is responsible for your pet's clinical signs, whereas biochemistry results within the normal or reference range may make the presence of certain diseases highly unlikely.



Examples of changes suggesting specific diseases include increases in BUN (blood urea nitrogen) and creatinine, which may indicate underlying kidney disease. Similarly, increases in blood glucose may be associated with diabetes mellitus whereas a normal blood glucose value makes diabetes unlikely.

Changes in the electrolyte composition of serum are important not only because they may suggest the presence of certain diseases, such as hypoadrenocorticism or Addison's disease, but also they document any electrolyte imbalances that are a direct result of the vomiting.



A **urinalysis** is essential for the proper interpretation of changes noted on the serum biochemistry profile. These two screening tests should always accompany one another and be taken at the same time.

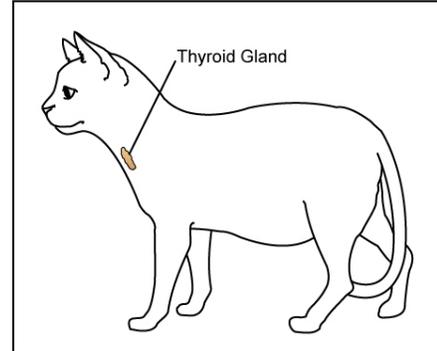
If, for example the serum BUN and creatinine values are increased, and the urinalysis has indicated that the urine is very dilute, then these findings are suggestive of kidney disease. Conversely, the findings of increased serum BUN and creatinine and a concentrated urine sample will indicate dehydration.

The urinalysis will alert us to the presence of red blood cells, white blood cells, glucose, protein, and bilirubin (a pigment associated with liver disease) within the urine sample.

The presence of red blood cells and white blood cells supports an inflammatory or infectious process either within the urinary or genital tracts.

The presence of glucose in a urine sample, if accompanied by the finding of increased serum glucose values, is supportive of diabetes mellitus.

A **fecal flotation** simply requires that a fresh fecal sample be microscopically evaluated for the presence of parasite eggs. Intestinal parasitism is common in puppies and kittens, but any age of animal can be affected.



A **serum thyroxine (total T4)** test is recommended in older cats. This test does not require further blood to be obtained from your cat; the sample taken for the biochemistry profile will suffice. The total amount of thyroid hormone in the sample is determined. A normal result will help to eliminate hyperthyroidism as a cause of your cat's vomiting, whereas increased values are supportive of hyperthyroidism.

### ***Will further testing be required?***

That depends upon the results of the screening tests. It is impossible to predict what changes or conditions may be uncovered with the initial screening tests. However, in most instances, this screening panel will provide either a specific diagnosis or a direction for further investigation.

For example, if the screening tests are suggestive of hypoadrenocorticism (Addison's disease), then we will need to confirm the presence of this condition by an ACTH stimulation test.

*Occasionally no specific changes are found on the screening tests, especially if gastrointestinal disease is suspected, based on the clinical signs that your pet is exhibiting. In this case, we may need to evaluate the intestinal tract via procedures such as radiographs (possibly including a specialized barium series), ultrasound, endoscopy or exploratory surgery to take tissue biopsies.*

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*This client information sheet is based on material written by Kristiina Ruotsalo, DVM, DVSc, Dip ACVP & Margo S. Tant BSc, DVM, DVSc.  
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