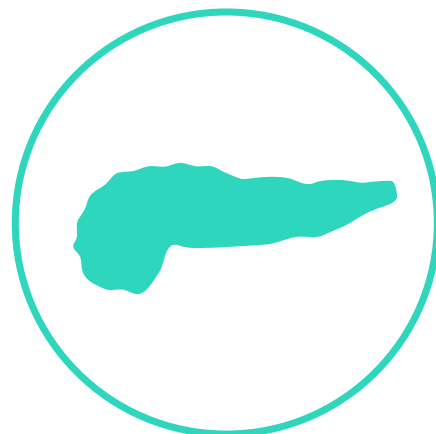


**Pancreatic Disorders**

# ACUTE PANCREATITIS IN DOGS



Pancreatitis is a common disorder of the exocrine pancreas that results from early activation of zymogens within pancreatic acinar cells rather than in the duodenum. These activated enzymes can result in autodigestion, pancreatic inflammation, tissue damage, and a systemic inflammatory reaction.

Acute pancreatitis can be mild to severe, even life-threatening, in presentation. Dogs with acute pancreatitis commonly present with sudden onset vomiting, anorexia, and abdominal pain.<sup>1-3</sup> Other signs and findings can include decreased appetite, lethargy, diarrhea, and dehydration.<sup>4,5</sup>

Dietary modification plays an important role in the successful management of dogs with acute pancreatitis.<sup>5-7</sup>

The main goals are to provide enough calories and nutrients to support recovery while minimizing gastrointestinal (GI) intolerance (i.e., regurgitation and vomiting).

**Key Messages****Nutritional management approaches to consider**

- Nutritional support plays an important therapeutic role in the management of dogs with acute pancreatitis and usually includes enteral nutrition or parenteral nutrition.<sup>7-10</sup>
  - Acute pancreatitis is associated with substantial catabolism, increased metabolic demands and nutritional requirements, and potential tissue necrosis.<sup>11</sup>
  - Feeding may be complicated by ileus, a commonly encountered complication of acute pancreatitis.<sup>11</sup>

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**DID YOU KNOW?**

Early enteral nutrition – within 48 hours of pancreatitis diagnosis – can positively impact outcomes in canine patients with acute pancreatitis.<sup>7</sup>

## Key Messages (continued)

- Although studies in dogs with pancreatitis are limited, data support a benefit to early enteral nutrition,<sup>8,12</sup> which is now strongly recommended over parenteral nutrition or nil per os (NPO; nothing by mouth) for most cases. Nutritional intervention becomes more important with increasing disease severity and should be started even if the patient is still vomiting.<sup>8,12,13</sup>
- Early enteral nutrition helps stabilize the gut barrier, improve enterocyte health and immune function, improve GI motility, decrease catabolism, minimize protein-energy malnutrition, and minimize bacterial translocation.<sup>7,8,12</sup>
- Cell biology experiments have shown that pancreatic necrosis and inflammation are associated with inhibition, not excessive stimulation, of secretions. These studies also suggest feeding may help remove prematurely activated enzymes.<sup>13</sup>
- Fasting is only necessary if a patient has intractable vomiting or is at risk for aspiration pneumonia.<sup>13</sup>
- Dogs with acute pancreatitis that are not vomiting should generally be fed by mouth. If anorectic, a feeding tube can be placed and used until the dog is voluntarily eating.

## Diet characteristics and nutrients of concern

- Diet characteristics and key nutrients of concern include water; electrolytes, especially potassium, sodium, and chloride; fat; protein, particularly free essential amino acids; and digestibility.
- Many dogs with pancreatitis present with some degree of dehydration due to ongoing vomiting and/or diarrhea, making water a critical nutrient.
  - Dogs with mild fluid deficits (about 5%) may be treated with subcutaneous fluids or, if they are not vomiting, they can be managed with oral water intake.
  - Moderately dehydrated dogs should receive appropriate intravenous (IV) fluid and electrolyte replacement. Lactated Ringer's solution appears to provide better outcomes than 0.9% sodium chloride (saline) solution.<sup>5,14</sup>
  - Severely dehydrated dogs need aggressive IV fluid therapy. Maintaining perfusion of the pancreatic microcirculation is critical to treatment and recovery.<sup>6</sup>
- The combination of vomiting, diarrhea, anorexia, and fluid therapy can result in abnormal serum potassium, chloride, and sodium concentrations. Abnormal calcium levels also have been reported.
  - When indicated by testing, potassium chloride can be added to IV fluids with attention closely paid to rate of fluid therapy.
  - The initial dietary therapy should contain levels of potassium, chloride, and sodium above the normal allowances for healthy dogs. These increased levels typically are present in many therapeutic diets indicated for pancreatitis.
- While veterinary studies evaluating different diet types and their effects on the course of pancreatitis are lacking, a highly digestible diet designed for patients with GI disease is generally recommended.

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## Key Messages (continued)

- Dietary fat reduction is a logical consideration in nutritional management of acute pancreatitis,<sup>13</sup> although the link between high dietary fat and naturally occurring pancreatitis is not clear.<sup>7</sup> Many dogs with pancreatitis are hyperlipidemic, which can be managed with fat reduction.<sup>9</sup>
- Dogs with hyperlipidemia should be fed a high-quality, balanced, ultra-low-fat diet (fat content  $\leq$  10% DM or 2 to 3 grams per 100 kilocalories of metabolizable energy [g/100 kcal ME]) to achieve lower serum triglycerides and cholesterol.<sup>4,7</sup>
- Non-hyperlipidemic dogs can be fed low-fat foods ( $\leq$  15% DM or  $<$  3.5 g/100 kcal ME).<sup>4,15</sup> However, if there is no evidence of fat intolerance, an easily digested diet with moderate fat content (4 to 6 g/100 kcal ME) can be fed.<sup>7</sup>
- Nutritional plans for dogs with pancreatitis should provide sufficient protein for recovery and tissue repair.
- Dogs with acute pancreatitis may fully recover and may not exhibit signs of chronic pancreatitis. If a low-fat diet was fed during hospitalization, the dog can be slowly transitioned to the previous or intended maintenance diet.<sup>14</sup> Some dogs may need a low-to-moderate-fat diet for life.

## Feeding management

- For dogs with persistent nausea and vomiting, feeding tube placement may be necessary to help correct their negative energy balance. Enteral feeding is preferred over parenteral feeding because it helps restore intestinal motility, decreases intestinal villi atrophy, and reduces bacterial translocation.
- Feeding tubes (e.g., nasogastric, nasoesophageal, and esophagostomy) are well tolerated, allow convenient delivery of nutrients, and are associated with few complications. However, dogs that continue to vomit can displace their feeding tubes. It is essential that placement be checked before each use.
- An ideal diet for supporting hospitalized dogs with acute pancreatitis is yet to be determined. In most cases, a highly digestible diet that is low in fat, moderate in protein, and low in fiber is recommended.<sup>15</sup>

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