Critical Care Nutrition

Finding the Right Diet Profile for Critical Care Patients

What makes a veterinary patient a candidate for a critical care diet?

1. Is the patient well-nourished but suffering from some sort of physical or limited trauma, with short-term nutritional needs?
2. Is the patient severely malnourished and now has a critical illness on top of that?
3. Is the patient borderline malnourished — somewhere in between 1 and 2?

Establishing their state of nourishment on admittance is critical to developing an appropriate nutrition support plan, which may include one, or a combination of voluntary and assisted feeding approaches.

What are the challenges of feeding critically ill patients?

It might sound obvious, but one of the biggest challenges is that our patients can’t tell us how they feel. We need to be astute observers of body language to assess well-being. We can read diagnostic tests and we can see the symptoms of underlying issues, but the big challenge is determining why they aren’t eating.

Many animals arrive in a hypermetabolic state, meaning their bodies are breaking down lean muscle mass to generate the proteins needed to combat critical illness. Identifying which metabolic changes can be countered by appropriate nutrition will speed recovery. Critical care diets, with their high-fat, high-protein, antioxidant-enriched nutrient profile, can help target undesired metabolic changes — providing fat to supply energy and protein to support the body’s recovery.

What role does the right dietary profile have in patient recovery?

Patients that don’t eat run the risk of prolonging illness during the recovery period. Feeding an inappropriate diet or amount of calories can also have negative ramifications. Beyond high levels of fat and protein, benefits of a critical care diet should include reduced carbohydrates, high energy density, targeted potassium and antioxidant levels, as well as high digestibility and great taste. Caloric intake is not enough on its own — patients require specific nutrients to aid recovery.
Exchanging Viewpoints on Critical Care Nutrition

Assisted Feeding Options for Anorectic Pets

Anorexia and malnourishment are common in critical care patients. Even when willing to eat, these patients often can’t ingest sufficient nutrients and calories on their own. When assisted feeding is required, the clinician has several options to consider.

For critical patients that can tolerate enteral feeding, the least invasive choices are an esophagostomy tube or a nasogastric or nasoesophageal tube. Although the esophagostomy tube requires general anesthesia for placement, the larger tube diameter provides more dietary flexibility, allows for medication dosing, ensures adequate calorie intake, and pets can be discharged with the tube for continued at-home care by owners.

Critical patients that can’t tolerate enteral feeding may require parenteral feeding during early recovery, which can typically only be done at specialized hospitals with nutritionists or criticalists on staff. Our mantra is “if the gut works, use it,” so initiation of tube feeding is started early and typically leads to self-feeding.

Once the enteral tube is placed, clinicians can choose between two methods of assisted feeding:

• **Bolus feeding** provides a specified amount of food every 4 to 6 hours. I recommend first administering water alone through the tube to determine if patients will accept using the tube without risk of vomiting or regurgitation.

• **Trickle feeding** provides continuous rate of nutrition through the tube using a fluid pump. I prefer this method, since most animals seem to tolerate it better than larger volume feedings, especially those with vomiting or regurgitation issues.

With either option, I begin feeding a quarter of the patient’s resting energy requirement on day 1, adding another 25 percent each day until the patient is receiving its full caloric requirement on day 4.

The correct nutrition is as important as the correct methodology. In addition to being complete and balanced for the appropriate life stage, critical care diets should have a liquid or easily blended “tube-friendly” texture. Energy-dense diets are greatly beneficial as well, particularly for patients consuming lower volumes of food. These qualities make Purina® Pro Plan® Veterinary Diets CN Critical Nutrition™ a preferred option in our hospital.

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**Esophagostomy tubes are wide enough to support a variety of diets and medication dosing.**

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A Closer Look at Assessing Each Patient’s Nutritional Needs

Basic patient assessments can provide clues about patients’ recovery and the effectiveness of critical care diets. Recommended assessments include:

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Dogs and cats that are anorectic, critically ill, recovering, or malnourished require a concentrated energy source and a nutrient profile that supports recovery. Following are characteristics for veterinarians to look for in a critical care diet:

**Energy Density**
Sufficient kilocalories should be provided to prevent malnourishment, which can lead to disruption of critical physiologic processes such as immune function, wound repair, and cell division and growth. The recommended formula to determine resting energy requirement (RER) is 70 x (current body weight in kg)0.75. Feeding a diet with a high fat content increases energy density, ensuring adequate energy intake when the amount of food consumed is low.

**Protein**
Recovering patients need support for the healing process, and adequate protein intake helps prevent muscle breakdown while supporting a healthy immune system. Feeding in a range of 7 to 12 g protein/100 kcal provides amino acids needed for protein synthesis and tissue repair. Since critical care diets generally contain higher protein and fat concentrations, this results in a lower carbohydrate food.

**Digestibility**
As important as the correct formulation and flavor of a critical care diet are, digestibility is equally important. The chosen diet should have a protein and fat digestibility of at least 90% to ensure that not only is the patient consuming the calories, but utilizing the nutrients as well.

**Feeding Methodology**
Some patients consume a critical care diet on a short-term basis, while others may require the diet for an extended or life-long period. Ideally, a critical care diet should be formulated for long-term maintenance of adult dogs and cats to provide this flexibility. When patients require feeding via a syringe or feeding tube, a smooth consistency that is easy to blenderize can facilitate assisted feeding.

**Antioxidants**
Many diseases cause oxidative stress. Antioxidants such as Vitamins E decrease oxidative stress and Vitamin A support a healthy immune system during recovery.

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**Body weight**
Are weight changes occurring?

**Body and muscle condition**
What is the body fat and muscle mass status? Is it changing?

**GI tolerance evaluations**
Any vomiting, diarrhea, regurgitation or nausea?

**Blood and urine analysis**
How are the immune system and vital organs (liver, kidneys, heart) responding to illness?

**Mental evaluation**
Are patients cognitively normal and aware of their surroundings?

**Physical evaluation**
Are patients able to swallow or move around on their own?

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**Key Takeaways**
- Critical care patients that don’t eat—or don’t eat well—during the recovery period run the risk of prolonging illness.
- Critical care diets should be energy dense, adequate in protein, enriched with antioxidants, and smooth in consistency for either self- or assisted feeding.
- When assisted feeding is required, veterinarians have the option of using esophagostomy tube, nasogastric or nasoesophageal tubes, and administering the critical care diet via bolus feeding or continuous rate infusion.