

Emaciation and Diarrhea

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- Emaciation and diarrhea can occur concurrently or be separate disease processes
- Wide variety of etiologies and prognoses, so assessment of the entire animal is crucial to guide appropriate case management
- Emaciation – characterized by severe weight loss and poor body condition score (BCS)
 - Use normal species/sex parameters for comparison if available
 - Look for presence or absence of fat stores
 - Consider age and season – BCS of migrating animals can vary significantly by season
 - Rule-out atrophy
 - Disuse
 - E.g. pectoral muscle mass loss in a bird with a broken wing
 - Neurogenic
 - Damage to the nerve innervating a muscle
 - More rapid onset than disuse
- Pathophysiology of starvation:
 - Absence of food leads to utilization of available glycogen stores, followed by triglycerides (fats) and finally proteins
 - Loss of visible fat stores and muscle mass
 - Dehydration and electrolyte depletion from decreased intake
 - Atrophy of gut and enterocyte (intestinal cell) death
 - Secondary infections
 - Weakened immune system
 - Loss of barrier function in gut
 - Bacterial translocation
 - Diseases of malnutrition possible pending chronicity
- Common etiologies for emaciation:
 - Malnourishment from poor or decreased/absent food sources
 - Natural phenomena
 - Human-inflicted
 - Gastrointestinal disorders
 - E.g. congenital abnormality
 - Parasitism
 - Systemic disease or toxicity
 - Inability to find/apprehend food
 - “Young and dumb,” true orphans
 - Visual, ambulation, neurologic and oral deficits

- Rapid refeeding of emaciated animals can lead to dangerously low levels of K, Mg, P and thiamine and dangerously high plasma levels of Na, which can lead to fluid overload (hypervolemia)
 - Period of starvation that puts a patient at risk varies by age, presence of concurrent disease and natural history
 - Few definitive cases in animals in general, most in cats
 - However, the condition should not be disregarded and precautions should be taken for identified at-risk patients
- Clinical signs can manifest within hours-days of feeding and include:
 - Cardiac arrhythmias, dyspnea, weakness, seizures, edema, vomiting, diarrhea and death
- Diagnostic testing
 - In-house bloodwork
 - Blood glucose
 - CBC/chemistry
 - Serum chemistry values (e.g. K, Na, P) **will often be normal prior to feeding** and should not be relied on to determine the risk of refeeding syndrome
 - Fecal exam
 - Crop swab
 - Lead levels
 - Radiographs
 - Ophthalmic exam
- Management
 - Treat the underlying issue if possible
 - Chronic injuries and visual deficits carry a poor prognosis in most cases
 - Slow rehydration
 - Critical for gastric function
 - Maintenance rate fluid with thiamine supplementation initially to avoid overload
 - Gastric protectants
 - Proton pump inhibitors (e.g. omeprazole)
 - Histamine blockers (e.g. famotidine)
 - Recent evidence to support histamine blockers lose efficacy in dogs over time
 - Broad spectrum antibiotics may be indicated in severe cases
 - Prophylactic antifungal therapy for at-risk avian species.
 - Thermal and oxygen support
 - Emaciated animals are generally anemic so the oxygen carrying capacity of the blood is reduced
 - Iron supplementation under the direction of a veterinarian
 - Iron can enhance bacterial growth if an active infection is present
 - *Slow* reintroduction of food after rehydration

- Many reported protocols, consult with veterinarian for specifics for each case.
 - Example:
 - Start with 25-50% of resting energy requirement (RER) using *actual* body weight
 - Use Kcal calculator as energy requirements vary by taxa
 - Monitor output and clinical presentation; if animal tolerating food well, increase calories by 10-25% per day for the next several days until full RER reached
 - Maintain on 100% RER for several days
 - Initiate incremental increases in calories over several more days until maintenance energy requirement (MER) achieved
 - Diet composition will vary by species but easily digestible meals should be used initially
 - Commercial or homemade balanced slurries followed by a slow transition to whole foods once MER reached and the animal is determined to be clinically stable
 - Monitor blood values if possible throughout
 - Note: Animals will generally lose or gain only a small amount of weight (from rehydration) for the first several days of stabilization
- Monitoring
 - Food intake
 - Weight
 - Absolute and trends
 - Fecal output
- Diarrhea - Abnormal increase in water content
 - Consistency and color will vary by species and diet
 - Differentiate feces from urates/urine in birds
 - Some changes are almost always concerning in any animal
 - Liquid consistency
 - Black, tarry stool (melena)
 - Digested blood from upper gastrointestinal bleed (e.g. stomach or small intestine)
 - Frank hemorrhage (hematochezia)
 - Blood from lower gastrointestinal bleed (e.g. colon)
 - Types:
 - Inflammatory: Damage to the intestinal lining from microbes or parasites
 - Osmotic: Too many solutes in the gastrointestinal tract
 - E.g. overeating; feeding lactose to a weaned animal
 - Secretory: Increase in fluid secretion and/or decrease in absorption
 - Often bacterial or viral infections, sometimes medications

- Functional: Increased motility
 - Stress, medications
- Common etiologies
 - Stress
 - Pain
 - Systemic disease
 - Gastrointestinal dysfunction or parasites
 - In the wild, healthy animals may function well with stable parasite loads but injury or illness may weaken the host's immune system and exacerbate the effects of the parasite
 - Toxicities
 - Abnormal diet composition or volume
 - Medications
 - Altered motility
 - Dysbiosis of normal intestinal flora
 - Normal variant
- Testing
 - In-house bloodwork
 - CBC/chemistry
 - Fecal exam for parasites
 - Consider possibility of Intermittent shedding
 - Pseudo parasites common
 - E.g. plant material, parasites of prey
 - Fecal Gram stain
 - Use is often limited but may identify abnormalities in bacterial populations, including clostridial overgrowth
 - Lead levels
 - Disease-specific testing if high index of suspicion
 - E.g. parvovirus
- Management
 - Treat the underlying issue if possible
 - Review/alter husbandry as needed
 - Fluid support
 - Excess fluid lost in diarrhea can lead to or exacerbate dehydration
 - Ensures gut function
 - Improves mentation and appetite
 - Anthelmintics and/or antimicrobials as needed
 - Empiric treatment may be needed in some cases
 - Monitoring
 - Mentation and behavior
 - Food intake

- Weight
 - Absolute and trends
- Probiotics
- Anti-diarrheal
 - Imodium
 - Bismuth subsalicylate