Critical Care Nutrition and Gastrointestinal Topics
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GI Bleed

Goals: Maintain hemodynamic stability, large-bore IV access, proactive resuscitation with crystalloids and blood/coagulation replacements, early intervention: endoscopy, angiography, or surgery

Upper GI Hemorrhage	Lower GI Hemorrhage
Variceal: • High mortality, associated with cirrhosis • Airway management, hemostasis • Fluid/blood resuscitation • Antibiotic prophylaxis • IV Octreotide or Terlipressin • Urgent endoscopy • Sengstaken Blakemore tube, if persists (requires a secure airway) • Monitor for encephalopathy Non-variceal: • Prognosis better • Peptic ulcer disease (PUD)/Mallory-Weiss tear /Dieulafoy lesion/Stress-related mucosal damage (stress ulcer)/AVMS • PPI for PUD and stress ulcers	Massive bleeding from upper GI tract may mimic lower GI tract bleeding – ***must rule out!*** Common etiologies: Diverticulosis and angiodysplasia Management and treatment: • Fluid and blood resuscitation • Correct coagulopathy • NGT with aspiration • Colonoscopy/possible endoscopic therapy • Radionuclide studies (detects bleeding rates 0.1 mL/min) • Angiographic therapy • Surgery

Acute Liver Failure

Onset of hepatic encephalopathy within 8 weeks of symptom onset

Causes	Management	Complications
• Toxins (i.e., acetaminophen, divalproex sodium, etc.) • Acute viral hepatitis • Budd Chiari syndrome (hepatic vein thrombosis) • Ischemia/hypoxia r/t shock • Autoimmune hepatitis • Wilson's disease	• Supportive • N-acetylcysteine for acetaminophen toxicity • King's College criteria to predict prognosis • Only cure: liver transplantation	• Encephalopathy/cerebral edema and permanent brain injury-lactulose, dialysis • Acute kidney injury • Coagulopathy: ↑INR ↓platelets and fibrinogen • Respiratory failure • Hypoglycemia • Hyponatremia • High risk for infections

Decompensated Chronic Liver Failure

Causes	Management	Complications
• Primary possible causes: hepatitis, alcohol, or NASH • Infection • Bleeding • Encephalopathy	• Calculate daily MELD for mortality predictor • Symptom and complication management	• Encephalopathy • Vasodilatory state/hypotension • Volume overload • Hepatopulmonary syndrome • Portopulmonary hypertension • Upper GI bleeds • Hepatorenal syndrome • Infection • Coagulopathy and thrombocytopenia

Acute Pancreatitis

Two of the following: 1) acute onset upper abdominal pain, 2) serum lipase and/or amylase >3 times upper limit of normal, 3) image findings with contrast CT scan

Causes	Management	Complications
• Gallstones • Alcohol • Hypertrigylceridemia	• Urgent ERCP for gallstones • Fluid resuscitation • Pain control • Surgery • Antibiotics if suspect infection	• Necrosis • Infections • ARDS • Splenic vein thrombosis • Abdominal compartment syndrome

Nutritional Support

Daily Caloric Requirement	Daily Protein Requirement	Daily Carbohydrate Requirement	Daily Lipid Requirement
• 25-30 kcal/kg/day (minimal stress) • 30-40 kcal/kg/day (moderate to severe stress)	• 1.2-2 g/kg/day	• 3.5-5 g/kg/day (3.4 kcal/day)	• 1 g/kg/day (9.3 kcal/day)

Malnutrition	Refeeding Syndrome
• 40% of ICU patients • Increased morbidity and mortality • Poor wound healing and increased risk for infection • Serum albumin is poor marker • Indices of adequate nutrition: prealbumin and transferrin measured weekly	• Chronically malnourished or starved patients at highest risk • Seen with initiation of feeds, especially if too much at one time • Develops: hypophosphatemia, hypokalemia, hypomagnesemia • Prevention: 1. Close monitoring and replacement of electrolytes 2. Caloric repletion should be slow (~20 kcal/day)

Enteral Feeds	Parenteral Feeds
• Preferred • Advantages: 1. Preserves GI structure and function 2. Reduces translocation of bacteria 3. Decreases risk for acquired infections 4. Increases blood flow to GI tract • Disadvantages: 1. Aspiration risk 2. Inability to achieve targeted nutritional goals d/t interruption of feeds • Contraindications: 1. Bowel perforation/obstruction/ischemia 2. High-dose pressors 3. High-output fistula • Route: Naso-enteric tube (gastric or postpyloric) • Enteral tube feed formulas: wide variety, typically 1-2 kcal/ml, adjust feeds according to patient-specific needs	• Initiated when the gut is unavailable and patient is at risk for malnutrition • Central or peripheral intravenous food delivery • Advantages: 1. Reduced aspiration risk 2. More reliable nutrition delivery 3. Option when gut does not work effectively • Disadvantages: 1. Expensive 2. Increased line infections/sepsis 3. Metabolic derangements 4. Bone disorders • Route: Intravenous