

muscle contractile function, and muscle mass are less well studied. In a study of 160 dieting older adults without liver disease, intentional weight loss was associated with decreases in lean mass and bone mineral density; but this was mitigated by resistance training.⁽²³⁹⁾ Given the evidence supporting the role of adequate protein intake in the preservation of overall nitrogen balance (see the “Protein Intake” section), we advise caution when recommending weight loss in patients with decompensated cirrhosis or known sarcopenic obesity.⁽⁶⁾ If weight loss through caloric restriction must be prescribed in patients with cirrhosis for clinical reasons (e.g., to reduce NASH progression, for transplant listing), we recommend (1) ensuring adequate protein intake (1.2–1.5 g/kg/day) and (2) combination with an exercise program.

Guidance Statements:

28. If medically required, weight loss should be undertaken under the supervision of a multidisciplinary team.

28a Particular caution should be applied to prescribing weight loss in a patient with decompensated cirrhosis.

28b Intake of target protein and physical activity are required to reduce the loss of muscle contractile function and muscle mass that can occur with weight loss.

Nutritional Intake in the Hospitalized Setting

Existing meta-analyses of nutritional supplementation in hospitalized patients with cirrhosis have not been able to demonstrate an impact on mortality.^(240,241) However, a subgroup analysis of three studies evaluating oral nutritional supplementation alone demonstrated a benefit in mortality in hospitalized patients with cirrhosis (risk ratio, 0.40; 95% CI, 0.18–0.90).⁽²⁴¹⁾ The benefit of oral supplementation is further supported by an RCT of patients hospitalized with severe acute alcohol-associated hepatitis in which enteral versus oral supplementation did not offer a benefit in mortality but adequate oral intake (defined as ≥ 22 kcal/kg/day)—regardless of mode of administration—reduced mortality by 67% (0.19–0.57) compared with patients who consumed < 22 kcal/kg/day.⁽²⁴²⁾ One study conducted at a single Veterans Affairs medical center demonstrated that a cirrhosis-specific nutrition education intervention targeted to physicians and dietitians involved in caring for inpatients with cirrhosis resulted in increased nutritional intake and reduction in 90-day hospital readmissions.⁽²⁴³⁾ We recommend

that all hospitalized patients with cirrhosis receive formal consultation by a registered dietician within 24 hours of admission or, if not possible, with the RFH-NPT.⁽²¹³⁾ Barriers to oral intake (e.g., fasting time, HE, nausea) should be promptly identified and addressed. In patients who screen positive for malnutrition in whom barriers have been addressed and who are unable to meet their nutrition targets through oral intake alone, enteral nutrition should be considered within 48–72 hours of hospital admission.^(244,245) One common barrier is prolonged periods of fasting that result from frequent *nil per os* (NPO) orders for procedures; strategies to minimize this fasting period or frequency of NPO orders (e.g., prebedtime snack, early-morning snack if the procedure will be in the late afternoon, consider advancing diet rapidly when there is no indication for NPO status) should be implemented.

In the intensive care unit (ICU) population, limited cirrhosis-specific data are available to guide energy targets. Indirect calorimetry is the gold standard for determining total energy requirements in this setting. However, given the limited availability of indirect calorimetry in many hospital settings, predictive or weight-based estimations of energy needs may be used, recognizing the potential underestimation of energy needs in light of the dynamic metabolic requirements and fluid overload in patients with cirrhosis who are acutely ill.⁽²⁴⁴⁾ In patients who are critically ill, it is generally recommended to use higher protein goals, targeting 1.2–2.0 g/kg/day.^(244,246,247) Again, the literature is not clear whether these recommendations are based on dry or ideal body weight; therefore, we recommend using ideal body weight for pragmatic purposes.

For hospitalized patients with cirrhosis who are unable to meet energy needs through oral intake alone, enteral feeding should be considered (time course has not been established in the literature); for those who are critically ill and unable to maintain volitional intake, enteral feeding should be initiated within 24–48 hours of ICU admission. A meta-analysis of 21 RCTs comparing early versus delayed enteral nutrition in all patients who are critically ill (including those with cirrhosis) demonstrated a significant reduction in mortality (relative risk, 0.70; 95% CI, 0.49–1.00) and infectious morbidity (relative risk, 0.74; 95% CI, 0.58–0.93) among those receiving early enteral nutrition versus delayed enteral nutrition or standard of care.⁽²⁴⁴⁾ In one RCT of 136 patients with severe alcohol-associated hepatitis randomized (1:1) to intensive enteral nutritional support versus oral supplementation, enteral feeding had to be discontinued early in 49% of patients and was associated with three (4%) serious adverse events