

Nutrition and Medicine, 2006
Tufts University School of Medicine
Nutrition and Acute Illness:
Lecture Outline

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- I. The protein-calorie nutrition and acute illness interrelationship
 - A. Acute illnesses cause systemic inflammatory response
 - B. Systemic inflammation causes hyper metabolism and hyper catabolism
 - C. Resulting malnutrition has adverse physiologic and clinical consequences
 - D. Aggressive nutritional support can mitigate some of these adverse consequences

- II. Hyper catabolism (i.e., increased protein degradation)
 - A. Protein synthetic rate (anabolism) not commensurate with increased proteolysis: net loss of protein
 - B. Proportional to severity of physiologic stress
 - C. Urinary urea nitrogen is major route of excess nitrogen excretion: serve as a proxy measure of catabolic rate
 - D. Loss of body cell mass disproportionately large due to excessive catabolism

- III. Hyper metabolism (i.e., increased energy expenditure)
 - A. Parallels increase in catabolism but, proportionately, the increase is smaller

- IV. Mediators of hyper catabolism/metabolism
 - A. Sympathetic nervous system, some hormones (e.g., catechols, insulin/glucagon, glucocorticoids); some cytokines (e.g., gamma interferon, interleukins 1, 2, & 6, tumor necrosis factor)

- V. Prevalence of PCM in acutely ill patients
 - A. Several surveys indicate 20-50% prevalence

- VI. Adverse effects of PCM
 - A. Ten percent (10%) unintentional loss of usual body weight = 15-20% loss of total body protein = the magnitude of loss at which widespread impairments in physiologic systems are observed
 - B. Essentially all these adverse effects of PCM reversible with aggressive nutritional support
 - C. Adverse clinical outcomes also associated with substantial PCM; these may also be mitigated by diligent attention to nutritional needs

- VII. “Aggressive Nutritional Support”: This can be roughly defined as using whatever means is necessary to provide sufficient nutrition to meet the ill patient’s needs
 - A. Types of aggressive support: oral supplementation or appetite stimulants; enteral tube feeding (usually gastromy or jejunostomy tubes); and parenteral nutrition. Optimal patient care requires that you understand the advantages and disadvantages of each of these modalities!