Nutritional Support in Intensive Care Unit Patients: Nurses Role

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Learning Objectives

• To identify the need for early assessment.
• To initiate nutritional support promptly.
• To identify various nutritional assessment methods.
  - ASPEN
  - American Society for Clinical Nutrition suggestion
• To understand the difference between enteral nutrition and parenteral nutrition.
  - Types of formulas
  - Enteral vs. Parenteral feeding

Malnutrition- A Serious Problem

- It is estimated that 39 to 50% of the total hospitalized critically ill patients are at significantly increased risk of malnutrition.
- The combination of critical illness and malnutrition is known to be associated with greater mortality and morbidity.
  - Increased length of stay
  - Poor functional capacity and quality of life
  - Increased risk of pressure ulcers
- The treatment costs associated with malnutrition are estimated to be greater than $1 billion annually.

Contributing Factors

- Critical illness
- Lack of proper and timely assessment, identification, prevention, and treatment
- Lack of communication among nurses, CNS, physicians, and dietitians
- Frequent diagnostic testing
- Medications
- GI disturbances
- Insufficient nutritional monitoring,
- Inadequate use of supplements Tube feedings or Total Parenteral Nutrition (TPN)

Early Screening

- Critical Care Nurses, Clinical Nurse Specialists (CNS) and others are well positioned to intervene to significantly reduce malnutrition in ICU.
- Clinicians to:
  - Perform early screening, assessment, prevention, and treatment to significantly reduce malnutrition in ICU.
  - Provide education and collaborate with physicians and other disciplines for the implementation of system-level interventions to ensure that all adult patients admitted to the ICU are screened and identified for suboptimal nutritional states.
- NO SCREENING = MALNUTRITION GOES UNDETECTED

Screening Leads to Nutritional Care

- Early assessment:
  - Complete nutritional screening within 24 hours after admission or as soon as after a post traumatic event (JACHO, 2016)
  - A multifactorial assessment including:
    - Review of patient
    - Review of medical and psychosocial histories
    - Physical examination to identify clinical signs and symptoms
    - Anthropometrics and biochemical data
    - Examination of the intake of energy and nutrients.
- Proper assessments enable the clinician to:
  - Identify patients who are malnourished or at risk
  - Determine individual need of nutrition
  - Select appropriate method of nutrition support
  - Provide a method of coping with nutritional problems
  - To be able to follow the recommendations of hospital approved dietary agencies.
Challenges in Assessment

- In critically ill patients:
- D/t patients on Ventilators or sedation:

It is difficult to obtain:
- Accurate history of dietary intake
- Weight loss/gain
- Fluid imbalance
- Presence of edema
- Hemodynamic instability
- Muscle and fat-wasting

Evidence-Based Nutritional Assessment Tools

- Are developed to successfully assess and treat malnutrition
- There are several traditional, validated nutritional assessment tools available:
  - For hospitalized patients:
    - SGA
    - NRS-2002
    - Subjective Global Assessment
  - For critically ill patients:
    - NUTRIC (Nutritional Risk in Critical Care)
    - MEP-NUT (Multi-Ethnic Nutritional Screening Tool)

Tools: A closer look

Which one should I choose??

NUTRIC Score (0-10) based on:
- Age
- APACHE II
- SOFA
- Comorbidities
- Days in hospital pre ICU
- IL-6

High NUTRIC Score associated with worse outcomes (mortality, ventilation)
High NUTRIC Score benefit the most from nutrition
Low NUTRIC Score : harmful?

About ASPEN

- American Society for Parenteral and Enteral Nutrition (ASPEN) publishes Evidence-Based Practice standards on all components of enteral and parenteral therapies.
- As per ASPEN guidelines, early enteral nutrition (EN) is the recommended method of nutritional support for critically ill patients.
- According to ASPEN's Enteral Practice Recommendations:
  - Patients' age,
  - Existing comorbidities
  - Current nutrition risks
  - Nutrient requirements, and
  - Available enteral access need to be assessed before starting enteral nutrition.
ASPEN Guidelines

According to ASPEN:

A: Initiate Enteral Feeding
At: Traditional nutrition assessment tools (albumin, prealbumin, and anthropometry) are not validated in critical care. Before initiation of feedings, assessment should include evaluation of weight loss and previous nutrient intake prior to admission, level of disease severity, consulted conditions, and function of the gastrointestinal (GI) tract. (Grade: F)

Rationale: In the critical care setting, the traditional protein markers (albumin, prealbumin, transferrin, retinol binding protein) are a reflection of the acute phase response (increases in vascular permeability and reprioritization of hepatic protein synthesis) and do not accurately represent nutrition status in the ICU setting. Anthropometrics are not reliable in assessment of nutritional status or adequacy of nutritional therapy.

Criteria to Start Nutrition in ICU

- completion of fluid resuscitation,
- Stabilize patients critical conditions such as vital signs, CVP, and pulse oxygenation
- stable presser agents (low dose)
- stable serum lactate and base excess levels.

- Once a patient has undergone fluid resuscitation and vasoactive medications and are stable condition, enteral nutrition may be safely started.

Nutritional Management

- Enteral nutrition should be started in ICU patients when oral intake is not expected to be advanced within 24 to 48 hours.
- Enteral nutrition is the preferred route for nutrition.
  - maintain gut integrity
  - Decreased length of stay
  - Reduced infections and complications.

Enteral Feedings: Factors to Consider

- Fluid status
- Presence or absence of organ failure
- Source of macronutrients
- Micronutrients
- Malabsorption.

American Society for Clinical Nutrition

- Suggestions
  - For critically ill surgical patients without contraindications to enteral nutrition:
    - ASCN recommends early (within 48 hours) enteral nutrition.
    - For critically ill medical/surgical patients without contraindications to enteral nutrition, the suggestion is to start early enteral nutrition.
    - Feeding should be initiated at a rate of 10 to 30 mL/hour (standard formulation) for up to six days and then incrementally increased to the target rate.

Trickle Feeding in ICU

- A low-dose or trophic enteral nutrition benefits the patients with less gastrointestinal complications compared with early full dose caloric feedings.
- The timing of early nutrition: the feeding should start within 24 to 48 hours of intubation or any post traumatic event to improve the outcome.
Enteral Formulas

- Polymers: High Nitrogen
- Concentrated
- Contains whole proteins: hydrolyzed, glucose (amended)
- Examine: charcoal
- Nutrition: Nutrition
- (HN, PN, Enteral), (TN, RN) and Parent

More FAQs in Gastroenterology

More FAQs in Specific Nutrition

Contraindications for Enteral Nutrition

- Severe gastrointestinal bleeding or ischemia
- Short bowel syndrome
- Significant malabsorption
- High-output fistulas
- Bowel obstruction or ileus
- Inability to gain gastrointestinal access.

Enteral vs. Parenteral Nutrition

Enteral
- Used in patients who have some digestive and absorptive capability but are unable to eat
- Enteral route is preferred method of feeding
- Common routes: NG, G Tube, J Tube
- Nausea
- More physiologic
- Less expensive
- Complications: aspiration, nausea, vomiting, and metabolic complications.

Parenteral
- Solution consists of amino acids, dextrose, electrolytes, vitamins, minerals, fat, Insulin, and more
- Delivery of all nutrients by the intravenous route
- Used when GI tract is not functional or when complications: aspiration, nausea, vomiting, and metabolic complications.
- Complications: damage to veins, pneumonitis, and sepsis.

Conclusion

- Nurses in critical care settings need to be trained to properly utilize the most appropriate assessment tools.
- Critical thinking and competency is required to achieve better patient outcome.
- Interprofessional collaboration and communication is vital
- Be proactive.

Reference


Questions