Pediatric Parenteral Nutrition

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Nutritional Assessment

- Screen for malnutrition
- Identify patients at risk
- Monitor nutrition support regimen
Nutritional Assessment Tools

- Physical Exam
- Medical/Dietary History
- Anthropometric Measurements
- Laboratory Studies
Indications for TPN

- Inability to absorb nutrients
- Severe malnutrition
- Severe catabolic states
- Chemotherapy, radiation and BMT
- Complete bowel rest
Calories

- Maintenance
- Increased requirements
- Optimal protein utilization
Fluids

- Maintenance
- Increased fluid requirements
- Decreased fluid requirements
Carbohydrate

- Dextrose provides 3.4 kcal/g
- Initiation/advancement
- 40-60% non-protein calories
Protein

- Amino acid provides 4 kcal/g
- Non-protein vs. protein calories
- Requirements/dosage
- Adult vs. pediatric amino acid formulations
Fat

- Fat provides 9 kcal/g
- Prevention of EFAD
- Carbohydrate to fat caloric ratio
- Trimix vs. peripheral lipid infusion
- Dosage
Electrolytes

- Daily electrolyte requirements
- Calcium to phosphate ratio
- Medications that may alter electrolyte requirements
Minerals

- Recommended daily parenteral dosage
- Multi-trace element formulations
- Dose modification for hepatic disease
Vitamins

- MVI-Pediatric
- MVI-12
- Disease states that require dose modification
Monitoring

- Height/weight
- Electrolytes
- Glucose
- Triglycerides
- CBC
- LFTs
Complications

- Sepsis
- Line occlusion
- Extravasation
- Rickets
- TPN-induced cholestasis
Immunosuppressive Targets

Resting T cell

- T cell
- OKT-3
- IL-2
- IL-2 R
- Anti-IL-2 R

Activated T cell

- mTOR
- Rapamycin
- MMF
- AZA
- Clonal expansion
- DNA synthesis

Early Activation

- Antigen-Presenting Cell (APC)
- TCR
- Costimulatory signal
- Calcineurin NFAT
- NF-kB
- Steroids
- CsA FK506
- CTLA4-Ig
- Anti-CD40L

Late Activation

DNA synthesis

Clonal expansion

T cell