Overview of Parenteral Nutrition for the Pediatric Patient

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SUPPORTED BY AN EDUCATIONAL GRANT FROM FRESENIUS KABI

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Nikhil Pai	Speaker's Bureau: Takeda, Abbott
Rebecca Pipkorn	None
Timothy Sentongo	None
Justine Turner	Research Funding: Baxter Healthcare
Danielle Wendel	None

Abbreviations

AKI: acute kidney injury ALA: α-linolenic acid ARA: arachidonic acid	**B**MI: body mass index BCAA: branch chain amino acid	**C**IF: chronic intestinal failure CLD: chronic liver disease CRRT: continuous RRT CLABSI: central line associated bloodstream infection CVC: central line catheter
DHA: docosahexaenoic acid DRI: dietary reference intake	**E**AR: estimated average requirement EFA: essential fatty acids EFAD: essential fatty acid deficiency EPA: eicosapentaenoic acid ESRD: end-stage renal	**F**O-ILE: fish oil-based ILE (Omegaven®)
GIR: glucose infusion rate GH: growth hormone	**H**D: hemodialysis HTG: hypertriglyceridemia	**I**FALD: intestinal Failure associated liver disease IGF: insulin-like growth factor ILE: intravenous lipid emulsion I/Os: ins and outs INR: international normalized ratio

Abbreviations – Cont'd

LA: linoleic acid LCT: long-chain triglycerides LFT: liver function test	**M**BD: metabolic bone disease MCT: medium-chain triglycerides MET: metabolic equivalents MMA: methylmalonic acidemia MSUD: maple syrup urine disease MVI: multivitamin	**O**o: olive oil-based ILE OO, SO-ILE: olive soy, oil-based ILE (Clinolipid®)
PD: peritoneal dialysis PICC: peripherally inserted central catheter PIVKA-II: protein induced in vit. K absence PIRRT: prolonged intermittent RRT PN: parenteral nutrition PT: prothrombin time	**R**DA: recommended daily allowance RDR: retinal dose response RRT: renal replacement therapy	**S**UN: serum urea nitrogen SMOF: SO, MCT, OO, FO-ILE SO-ILE: soy oil-based ILE
T:T: triene:tetraene ratio	**U**CD: urea cycle disorders	

Overview

- History of pediatric parenteral nutrition (PN)
- Clinical indications for PN in the pediatric patient
- Administration routes for PN
- Components of pediatric PN
  - Macronutrients
  - Micronutrients
  - Trace elements

Case

- Jerry is a previously healthy 13-year-old male. He was transferred from an outside hospital after undergoing exploratory laparotomy for a complicated perforated appendicitis. Due to extensive lysis of adhesions and inflamed bowel, the decision was made to create an ileostomy 100 cm distal to the ligament of Treitz.
- Since surgery he has been having 75 - 100 mL/kg of ostomy output daily. He will be NPO for at least 1 week while receiving IV antibiotics for his intra-abdominal infection secondary to intestinal perforation.

Question: What is the most appropriate way to provide adequate hydration and nutrition to GE?