

## **NUTRITIONAL CARE GUIDELINES FOR CHILDREN WITH SMA OR NEUROMUSCULAR DISORDERS DURING ACUTE ILLNESS OR FASTING**

**Proactive Nutritional Management** during illness or other catabolic states is critical! As a general guideline, do not allow fasting > 6 hours in SMA type I subjects or infants < 1 year of age with other neuromuscular disorders, or > 8 to 12 hours in SMA type II/III subjects or other neuromuscular patients when they are ill. SMA patients have a secondary fatty acid oxidation defect and can develop significant systemic acidosis with illness. In addition, many children have reflux and delayed gastric emptying which can worsen with illness.

### **In the event of decreased oral intake or refusal to take oral feeds, you can first try the following strategies:**

Oral re-hydration with a clear beverage that contains glucose as well as protein (hydrolyzed protein or amino acids): Resource Fruit Juice Beverage or Boost Breeze are two options (parents can go to [www.resource.walgreens.com](http://www.resource.walgreens.com) and look under before/after surgery medical nutrition tab). Other comparable clear liquid products include Nestle Carnation Instant Breakfast Juice Drink ([www.nestle-nutrition.com](http://www.nestle-nutrition.com)). These clear beverages contain a significant amount of glucose or dextrose, and are optimally diluted 1:1 with water for use in the setting of acute illness. If tolerated, advance to either an oral elemental or semi-elemental formula, like pediatric vivonex or tolerex (double-diluted). These formulas may be better tolerated during illness than regular formulas since as they have lower fat levels and can facilitate gastric emptying.

### **If your child can't or won't tolerate oral intake, or has recurrent vomiting, your next recourse is your local emergency room, where they can consider the following options:**

- 1) Placement of an IV for hydration (and treatment to stop vomiting or treat underlying cause if necessary). This may help your child recover enough to allow reinstatement of oral feeds. If this strategy alone is ineffective, they may need to place a temporary nasogastric (NG) or nasojejunal (NJ) tube, and begin continuous feeds with a formula containing amino acids or protein, as described above.
- 2) If neither oral nor tube feeding are tolerated, supplementation with peripheral parenteral nutrition (PPN) can be instituted via an IV in order to help meet protein, vitamin and mineral requirements. This can help optimize recovery and avoid hyperglycemia, which often occurs when only IV glucose is used. The goal is to provide intake via whatever means necessary to reach estimated full caloric requirements within 4 to 6 hours of presentation, using a combination of the above strategies if necessary.

### **Guidelines for caloric, fluid and protein requirements, and fat intake:**

**Calories:** Children with SMA and neuromuscular disease have reduced lean body mass so metabolic needs may be somewhat less than other children their size or age. We have observed a range from 7 - 11 calories per cm height as a typical daily requirement for maintenance of growth and weight gain. If contractures preclude accurate height measurement, arm span can be used as an alternative.

**Fluids:** Typical maintenance daily fluid requirements are 115 - 135 ml per kg body weight (may be higher with fever or dehydration, since many patients drink inadequately when ill).

**Protein:** 1.0 - 2.0 grams/kg/day total intake should be sufficient in most cases

**Fat:** Total fat from all sources for dietary supplementation during an illness should not exceed 15-20% of total calories. Carnitine supplementation during illness may be helpful in improving energy metabolism in this setting: 50-100 mg/kg/day orally or IV.

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