

VANDERBILT UNIVERSITY

MEDICAL CENTER

Protocol: Pediatric Burn Nutrition Protocol

Category	Clinical Practice
Approval Date	April 5, 2019
Due for review	April 5, 2021

Applicable to	
<input checked="" type="checkbox"/> VUH <input checked="" type="checkbox"/> Children's <input type="checkbox"/> DOT <input type="checkbox"/> VMG Off-site locations <input type="checkbox"/> VMG <input type="checkbox"/> VPH <input type="checkbox"/> Other	
Team Members Performing	
<input type="checkbox"/> All faculty & staff <input checked="" type="checkbox"/> Faculty & staff providing direct patient care or contact <input type="checkbox"/> MD <input type="checkbox"/> House Staff <input type="checkbox"/> APRN/PA <input type="checkbox"/> RN <input type="checkbox"/> LPN	
<input type="checkbox"/> Other:	
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I. Purpose:

Successful burn treatment can be challenged by the metabolic consequences observed patients with severe burns. Metabolic rates of burn patients can exceed twice that of baseline and cause wasting of lean body mass within a few weeks of injury.¹

Adequate nutritional support is an essential component of burn care which can reduce mortality and complications, optimize wound healing, minimizing the effects of hypermetabolism and subsequent catabolism.¹

II. Population:

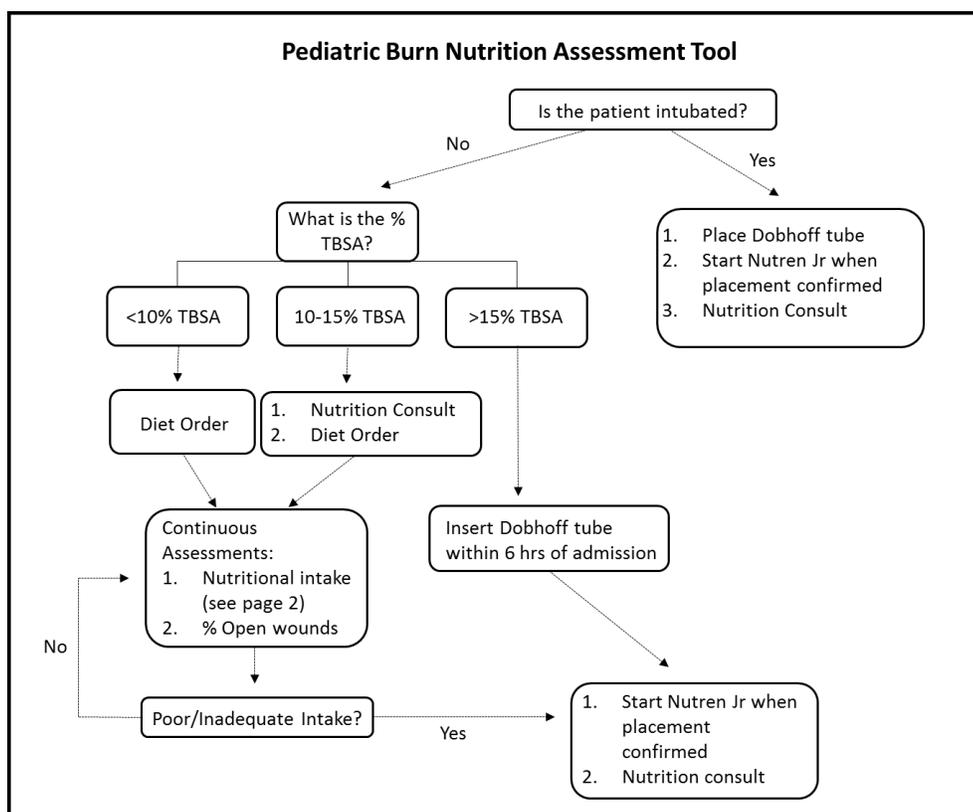
Pediatric burn patients

III. Definitions:

TBSA Depth of Burn

Estimated total body surface area (TBSA) of partial and full thickness burns is needed to calculate fluid requirements. Superficial burns are not included in this calculation. For reference, see Lund and Browder in Pediatric Burn Resuscitation Protocol (BC-P-01).

IV. Assessment:



V. Intervention/Treatment:

UPON ADMISSION

1. All pediatric patients $\geq 10\%$ TBSA will receive a nutrition consult and age appropriate diet order unless NPO or oral intake is contraindicated.
2. All pediatric patients $\geq 15\%$ TBSA will receive a Dobhoff tube (DHT) and an age appropriate diet order unless NPO or contraindicated.

Initiation of Enteral Nutrition (EN):

Enteral nutrition can be started safely within hours of injury in patients of all ages, reducing the accumulated 'calorie deficit' and improving overall nutrition.²⁻⁴

1. DHT is to be placed with first procedure or within 6 hours of admission.
2. EN should begin when the placement of the DHT has been confirmed.
 - **Initiation:**
 - Nutren Jr. 1-2 mL/kg/hr (max 25mL/hr) or 0.5 mL/kg/hr if risk of gut ischemia (vasoactive use or clinical concern of hypoperfusion)
 - **Advance:**
 - 1 year of age or less: 5mL/hr every 4 hrs
 - 2 years of age or older: 10 mL/hr every 4 hrs until goal reached
 - Dietician will establish goal upon assessment
3. EN should be held in the following scenarios:
 - If patient has emesis or tube feeds coming through the decompressing NGT
 - Concern for abdominal compartment syndrome
 - Concern for abdominal trauma

Indications for Total Parenteral Nutrition (TPN):

Enteral nutrition is preferred but if caloric goals are not able to be met with enteral feeds within 72 hours, TPN should be started to prevent worsening of caloric deficits.

Diet orders:

All pediatric patients, including those receiving enteral nutrition, will be ordered an age appropriate diet unless NPO or oral intake is contraindicated.

Age Appropriate Diet Orders	
0-12 months	Infant Diet
1-3 years	Toddler Diet
4-5 years	Preschool Diet
6+ years	Regular Diet

ASSESSMENT

Open Wounds: The percentage of open wound, grafts, donors, and burns should be updated after every operation or with observed changes.

Dietary Intake:

Nutrition – Usual food intake pattern ⁶
<p>Very Poor: Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day.</p>
<p>Probably inadequate: Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take dietary supplement.</p>
<p>Adequate: Eats over half of most meats. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered.</p>

VI. Procedural Considerations:

Procedural Sedation:

Children often require moderate sedation to tolerate wound care. Efforts should be made to minimize the withholding of nutrition. When possible, consider the following:

1. Identify time of future procedure
2. Place NPO orders in accordance with the Procedural Sedation Policy⁷ (CL 30-02.13) rather than “at midnight.”
3. Enteral meds with or without sips of water are fine.

NPO Guidelines	
Clear Liquids	2 hours
Breast Milk	4 hours
Milk and Formula	6 hours
All Solids	6 hours

VII. Nursing Considerations:

Documentation

Children have low tolerance for both under- and overfeeding and thus, it is important that documentation of all PO intake is accurate. Educate patient and family and designate a method of communicating these occurrences.

Restarting Diets

Burn patients are often NPO daily for procedures. Restart diet order or tube feedings as soon as procedure is complete unless contraindicated. **Tube feeding should be restarted at previously tolerated rate.** “Trickle” feedings are not necessary in most patients.

“Normalizing”

Patients should be encouraged to take medications and consume food by mouth as much as possible. This expedites the removal of the DHT and prepares them for home. Patients will most likely be prescribed oral medications upon discharge and should become familiar with this process.

VIII. Vitamin Supplementation

Many micronutrients are beneficial after thermal injury as they support immunity and wound healing. Micronutrient replacement has been associated with decreased mortality following burn injury.⁸ The following vitamins should be ordered upon admission for pediatric burn patients:

% TBSA	Micronutrient	Pediatric Patient (<18 years old)
<30% TBSA	Multivitamin (MVI)	Daily
	Vit C	100-250 mg Daily
≥30% TBSA or 20-29% TBSA with inhalation injury	MVI	<5 yo: 1 mL or 1 chewable tab Daily
		>5 yo: 2 mL or 2 chewable tabs Daily
	Vit C	<20kg: 100ml Daily
		>20kg: 250 mg Daily
	Zinc	110 mg Daily
	Vit A	<40% TBSA: check level, supplement as needed
		≥40% TBSA & <13yo: 2500-5000 IU x 1 dose
>40% TBSA & >13yo: 10000 IU x 1 dose		
Vit D (cholecalciferol)	>40% TBSA: 800 IU Daily	

IX. References:

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4. Moore E, Jones T. Benefits of immediate jejunostomy feeding after major abdominal trauma – a prospective, randomized study. *J Trauma.* 1988;26:874-881.
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7. Vanderbilt University Hospital. (2016.). *Moderate Sedation Guidelines.*
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