State Burn Coordinating Center
STATE OF MICHIGAN

Pediatric Burn Resuscitation

January 2018

Guidelines for Pediatric Burn Resuscitation

PURPOSE

To provide standardized orders and a protocol for the U of M Burn Service regarding pediatric burn patient resuscitation in the intensive care unit. Recommendations are also included for difficult fluid resuscitation and hypotension.

DEFINITION

This protocol applies to all pediatric cutaneous burn patients. Prior to initiating the protocol an assessment of the patient's TBSA burn must be performed including only partial and full-thickness burn injury using the Rule-of-Nines diagram. Obtain the patients weight or close estimate in kg.

RESUSCITATION GUIDELINES

A. First 24 hours post-burn.

B. TBSA < 20%

a. Maintenance IV fluid until patient taking adequate oral intake.

C. TBSA ≥ 20% and Weight < 30 kg

a. Calculate estimated intravenous fluid needs; >10 kg use LR, < 10kg use D5LR
b. 3 ml x weight in Kg x %TBSA
    i. Include pre-hospital fluids in total fluid amount
    ii. Administer half of calculated amount over the first 8 hours post burn (from time of injury)
    iii. Administer remaining amount over the next 16 hours
    iv. Hourly resuscitation rate is titrated to urine output (see below)
c. In addition to burn resuscitation fluid requirements, also infuse maintenance IVF of D5LR ***Do not titrate maintenance fluid**
    i. 4ml/kg/hr for the first 10 Kg of body weight
    ii. 2ml/kg/hr for the next 10 Kg of body weight
    iii. 1ml/kg/hr for the remaining Kg of body weight
d. Target urine output is 1-2ml/kg/hr
    i. If urine output is less the 1ml/kg/hr
    ii. Increase resuscitation fluid infusion by 33%

iii. Monitor urine output on an hourly basis
iv. If urine output remains < 1ml/kg/hr, increase resuscitation fluid infusion by another 33 % and call attending/SBCC
v. If calculated fluid rate is > 6ml/kg/%TBSA, transition to Difficult to Resuscitate guidelines.

e. If urine output is greater than 2ml/kg/hr
   i. Dip urine to exclude glycosuria. If positive, call attending
   ii. Decrease resuscitation fluid infusion by 33%
   iii. Continue to monitor urine output on an hourly basis
   iv. If urine out remains > 2ml/kg/hr for 2 consecutive hours call attending.
f. Place enteral feeding tube within 12 hours of admission for burns > 20%.

D. After 24 hours post injury, for all Pediatric Burns

a. Check serum sodium and potassium every 6 hours on the second day post-injury. Adjust type of fluid by the serum sodium level
b. After 24 hours of crystalloid infusion, if fluid requirement remains high, consider changing to 5% albumin. Changing to 5% albumin will only be done at SBCC/burn attending physician discretion.
c. The goal is to decrease resuscitation fluid rate to one half of the rate infused over the previous 16 hours. IVF rate is estimated based on patient's weight, TBSA burned, response to resuscitation and estimated losses (seek SBCC/Burn attending input on calculating estimated losses)
d. Patients >30 kg, the urine output goal remains 0.5-1ml/kg/hour
e. Patients <30 kg, the urine output goal remains 1-2ml/kg/hour

E. After 24 hours post injury, for Burns > 20% TBSA

a. Start Oxandrolone 0.1 mg/kg BID and beta-blockade with oral Propranolol 1-4mg/kg/day