Pediatric Donor Management

- Until death has been declared, the attending physician or their designee will direct patient care. Upon declaration of brain death, patient medical management will be directed by the Center for Donation and Transplant. The procurement and transplant teams, once consent is obtained from the next of kin, will direct all donor management.
- It is strongly recommended that the procurement team consult the Pediatric Intensive Care physician with any medical problems outside CDT guidelines and emergency issues.
- Pediatric management protocol should be implemented for organ donors weighing 0 – 50 kg. Any weight greater than 50 kg. can be managed according to the criteria in the Adult management protocol.
- The pediatric donor requires special consideration and the following guidelines for medical management are suggested:

I. Hydration: *Maintenance IV solution should be a standard mixture of D5 1/3 NS with 20 MEQ KCL to infuse at a weight dependent rate as follows:*

<table>
<thead>
<tr>
<th>Weight Range</th>
<th>Fluid Rate</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 10 Kg</td>
<td>100ml/kg/day</td>
<td>(equivalent to 1L/Day)</td>
</tr>
<tr>
<td>10 – 20 Kg</td>
<td>1L + 50 ml/kg/Day</td>
<td>(equivalent to 1500 cc/Day)</td>
</tr>
<tr>
<td>&gt;20 – 50 Kg</td>
<td>1500cc + 20 ml/Kg/Day</td>
<td></td>
</tr>
</tbody>
</table>

II. Temperature Regulation:
- *Patient should be maintained at a constant temperature of 98 to 99 F rectal. Placing a Bair hugger/warming blanket on patient, and monitoring patient temperature every hour can accomplish this.*

III. Blood Pressure:
- *Ideal B/P will vary according to patient size and age.*
- *It is recommended to use the discretion of the attending physician to determine the donor’s baseline B/P that is adequate for organ perfusion in children less than one year.*

Baseline indicator for adequate perfusion should utilize the donor's amount of urinary output, rather than the blood pressure alone. The following equation should be implemented to make a determination:

Maintain a systolic blood pressure by a urinary output of 1cc/kg/hr for adequate organ perfusion,

- *A suggested possible range of B/P’s to expect to allow a urinary output of 1cc/kg/hr are as follows.*
<table>
<thead>
<tr>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
<td>&gt; 90</td>
</tr>
<tr>
<td>To age one yr.</td>
<td>&gt; 90</td>
</tr>
<tr>
<td>&gt;than one yr.</td>
<td>&gt; 90</td>
</tr>
</tbody>
</table>

- **If volume depletion** is the cause for decreased urinary output and hypotension (as indicated by a CVP < 5 and a U/O < than 1cc/kg/hr, elevated Na⁺, Cl⁻, and glucose levels) begin fluid resuscitation by delivering:

  A bolus of Lactated Ringers at a rate of 10-20 cc/kg over 10-20 minutes, repeating every ½ hour as necessary for a urinary output of 1cc/kg/hr or a CVP > than 5.

- **If hypovolemia** is indicated with a hemacrit and/or hemoglobin less than (Hct < 20 or a Hgb < 8), transfuse with PRBC's. Transfuse PRBC's as follows:

  Administer 10ml blood/kg slowly over 2 –3 hours. This should raise an Hct by 2 points and an Hgb by 2-3 %.

- **Colloids (25% Albumin)** are indicated when decreased urinary output, hypotension, and CVP < 5 exist in the presence of adequate serum osmolarity and normal Hct and Hgb. The patient should also show signs of third spacing fluids related to previous decreased oncotic pressures. Albumin should be ordered in the 25% concentration as follows:

  Deliver 25% Albumin at 1Gram/kg/25 Grams over 30 min.

  Monitor donors CVP closely during infusion.

- **Inotropes** are indicated when oxygenation, ventilation, heart rate, and intravascular volume is appropriate and myocardial function and systemic perfusion is poor. Start with dopamine, and if not effective, consider epinephrine and then Dobutamine (note: Dobutamine should only be used
when cardiac compromise is present such as a cardiac contusion).
Deliver of Inotropes are as follows:

**Dopamine**
order at 3 mcgs/kg/min and titrate to maintain
a systolic B/P > 90. Delivery of 2.5 to 4 mcgs
is renal dose 5 mcgs and > is vasoconstrictive.

**Epinephrine**
order at 0.1 mcgs/kg/min and titrate by 0.2
mcg increments or a total of 20 mcg/min.

**Dobutamine**
order at 3 mcgs/kg/min and titrate to maintain
a systolic B/P > 90. Titrate by 2.5 mcgs to a
a maximum dose of 12 mcgs.

**IV Electrolyte Balance**

**Diabetes Insipidus:**
- *Diabetes Insipidus can be identified as having a urinary output of
5 cc/kg/hr or greater.*
- *Serum sodium will be > than 145.*
- *Serum osmolality > 292.*
- *Treatment:*
  1. Start aqueous Pitressin (Vasopressin) at 0.5 milliliters/kg/hr
and titrate to a urine output of 2 cc/kg/hr. Titrate drip by
doubling the dose first, then increase by 0.5 increments.
Dosage not to exceed 10 milliliters.
  2. Bolus patient with Lactated Ringers at a rate of 10-20 cc/kg
over 10-20 minutes, repeating every 1/2 hour as necessary for
a CVP > than 5.
- *Hyperglycemia is often present during diabetes Insipidus and should be
corrected to adequately control DI. Treatment would consist of a
Regular Insulin Sliding Scale as follows*

<table>
<thead>
<tr>
<th>Regular Insulin Sliding Scale IVP</th>
<th>Less than 200</th>
<th>200 to 399</th>
<th>400 to 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Nothing</td>
<td>0.05 u/kg</td>
<td>0.10 u/kg</td>
<td></td>
</tr>
</tbody>
</table>
> than 500 mg/dl would require an insulin drip to run at 0.05 units/kg/hr and titrate to alternating accucheck and serum glucose levels every hour.

Hypoglycemia

- *Infants have continuously high glucose needs and low glycogen stores. Hypoglycemia can develop rapidly in the stressed infant and must be corrected immediately to prevent cardiovascular compromise.*

- *Treatment:*
  
  Bolus 10% glucose at 5 to 10 cc/kg slow IVP over 3 to 5 minutes.
  
  Check accuchecks 20 min after administration. Repeat until normal blood glucose level achieved.

Hypokalemia:

- If serum Potassium level is less than 3.4 meq/dl replenish values as follows:
  
  Potassium Chloride 0.5 meq/kg/up to 20 meq.

  OR

  Potassium Phosphate 0.5 meq/kg/up to 22 meq. (use if corresponding phosphate level is low).

Magnesium Replacement:

- *Effects of Epinephrine and levophed can cause magnesium to shift into the cell. Magnesium must also be normal before hypokalemia can be normalized.*
  
  - Replacement is as follows:

    Magnesium sulfate 25mg/kg dilute. Maximum dose up to one gram. Administer slowly over one hour.

  - *Rapid Infusion will cause hypotension*
V Prophylaxis:

Antibiotics

- Antibiotic of choice is Ancef to be administered:

  Ancef 20 mg/kg up to one gram.

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