Organ Donor Management
Recommended Guidelines
PEDIATRIC Brain Death (NDD)

Note: These orders apply to: newborn to 16 years; intended for care provided within a Pediatric/Neonatal Intensive Care Unit. Dosing recommendations apply to children less than or equal to 60 kg, beyond which adult dosing should apply. Contact BC Children’s Hospital PICU 604-875-5213 for any questions. Note: dosages and infusion rates listed below reflect those used at BC Children’s Pediatric ICU.

Date: ________________________(dd/mm/yyyy)                    Time: ________________

- Neurological Determination of Death (NDD) has been performed by at least 2 licenced physicians
- Contact initiated with BC Transplant
- Consent for Organ Donation obtained
- Code Status: Full therapy except cardiopulmonary resuscitation

MONITORING:
- Complete patient height, weight. Record on BCT Physical Assessment Form (available on BC Transplant Website)
  - Height: ___________________ cm  [Actual]  [Estimate]
  - Weight: ___________________ kg  [Actual]  [Estimate]
- Urine output q1h (notify MD if urine output greater than 4 mL/kg/h)
- HR, BP, temperature, pulse oximetry q1h
- Cardiac monitoring
- Arterial pressure monitor continuous (left radial preferred)
- CVP q4h (minimum)
- Hourly Input and Output

PATIENT CARE
- Central venous catheter. RIJ preferred.
- 2 large bore peripheral IVs if no CVC
- Urine catheter
- Maintain head of bed greater than 30 degrees
- Warming blanket to keep temperature above or equal to 35 °C
- NG/OG if feeds contraindicated or not tolerated
- X-ray post gastric sump insertion
- Chest physiotherapy as required
- Routine pulmonary toilet and repositioning

LABORATORY INVESTIGATIONS

Initial Bloodwork, then q6h and PRN:
- ABG
- Serum electrolytes, SCr, Urea, eGFR, Ca, Mg, PO4, Lactate, CBC, glucose
- INR/PTT, AST, ALT, TBil, DBil, ALP, GGT, LDH, Total Protein
- Albumin, Amylase/Lipase, CK, Troponin (I or T)

- Blood Type/Screen (Blood from 2 separate draw times)
- Goal hemoglobin greater than 70 g/L. Discuss with physician and BCT if transfusion is required.
- 4 units packed RBC available on call to OR
- Send blood for tissue typing and serology (use BC Transplant Collection Kit)
- Cultures - all culture baseline then q24h
- Sputum gram stain and culture
- Blood culture x 2
- Urine culture

<table>
<thead>
<tr>
<th>Date (dd/mm/yyyy)</th>
<th>Time</th>
<th>Prescriber’s Signature</th>
<th>Printed Name or College ID #</th>
</tr>
</thead>
</table>

ODHD-ODS.05.12 Rev 03 Date: 06-Aug-2019
LABORATORY INVESTIGATIONS (cont’d)
- Culture all drain sites
- Urinalysis including specific gravity, routine and micro baseline and Q24h
- Urine microalbumin/creatinine (ACR) ratio baseline and prn as requested
- MRSA and VRE screens (also screen all drain sites for MRSA) as per hospital policy

DIAGNOSTICS
- CXR, if not performed in previous 12 hours (and then q24h)
- 12-lead ECG, if not performed in previous 12 hours (while heart is under evaluation), then q24h
- Echocardiogram after declarations, fluids and hemodynamic resuscitation (and repeat as requested by BC Transplant)
- CT of chest as requested by BC Transplant (High resolution – Non contrast)
- Bronchoscopy (as requested by BC Transplant)

NUTRITION
- Continue feeds if already initiated. Initiate unless contraindicated.
- If already initiated continue parenteral nutrition

INTRAVENOUS
- Total fluid intake at _______ mL/h
  (As per standard fluid management protocols – 80% maintenance)
Maintenance IV fluids based on sodium level:

<table>
<thead>
<tr>
<th>Sodium Level</th>
<th>Fluid Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium 145 mmol/L and above</td>
<td>dextrose 5%</td>
</tr>
<tr>
<td>Sodium 130 to 145 mmol/L</td>
<td>dextrose 5%-sodium chloride 0.45%</td>
</tr>
<tr>
<td>Sodium 130 mmol/L or below</td>
<td>sodium chloride 0.9%</td>
</tr>
<tr>
<td><em>OR</em></td>
<td></td>
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</tbody>
</table>

RESPIRATORY
Objective: to optimize lung recruitment for individual patient
- Continue mechanical ventilation as per previous orders *OR*
- Mechanical ventilation as follows:
  - Mode
  - Tidal volume 6 to 8 mL/kg OR pressure limit at _______ (cm H2O) as applicable
  - PEEP 7 to 10 and adjust to meet patient requirements
- Adjust FiO2 to maintain SaO2 greater than or equal to 95% Maintain PaO2 greater than 70 mmHg with minimal effective FiO2.
- Maintain pH 7.35 to 7.45
- Recruitment manoeuvres: Periodic increases in PEEP from 30 cm to 40 cm H2O x 30 seconds q2h, and after all circuit disconnects and suctioning.
- O2 challenge: 100% FiO2 with PEEP 10 (do not reduce PEEP if at a higher level) initial and q6h PRN as requested by BCT.
MEDICATIONS

Hemodynamic Monitoring and Therapy:

**Heart Rate**

<table>
<thead>
<tr>
<th>Age</th>
<th>Normal Rate (b/min)</th>
<th>Normal Value (b/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate (0-3 d)</td>
<td>100-205</td>
<td>100-160</td>
</tr>
<tr>
<td>Infant (1 mo-1 y)</td>
<td>90-190</td>
<td>90-160</td>
</tr>
<tr>
<td>Toddler (1-2 y)</td>
<td>80-140</td>
<td>80-120</td>
</tr>
<tr>
<td>Preschool (3-5 y)</td>
<td>60-130</td>
<td>60-100</td>
</tr>
<tr>
<td>School-age (6-11 y)</td>
<td>50-110</td>
<td>50-90</td>
</tr>
<tr>
<td>Adolescent (12-15 y)</td>
<td>40-100</td>
<td>40-90</td>
</tr>
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**Respiratory Rate**

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<td>40-60</td>
</tr>
<tr>
<td>Infant (1-2 y)</td>
<td>30-90</td>
<td>30-50</td>
</tr>
<tr>
<td>Toddler (2-3 y)</td>
<td>20-70</td>
<td>20-30</td>
</tr>
<tr>
<td>Preschool (4-5 y)</td>
<td>15-60</td>
<td>15-30</td>
</tr>
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<td>10-30</td>
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<td>8-20</td>
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**Reference:** from [https://www.pedscases.com/pediatric-vital-signs-reference-chart](https://www.pedscases.com/pediatric-vital-signs-reference-chart)

Notify physician if outside of general target parameters

**Management of Hypotension:** Target BP: _______________/_________________

- DOPamine __________ mcg/kg/min (2 to 10 mcg/kg/min) IV infusion
- vasopressin __________ milliunit/kg/min (0.3 to 0.7 milliunit/kg/min) IV infusion Max. dose: 40 milliunit/min
- epinephrine __________ mcg/kg/min IV infusion (0.01 to 0.2 mcg/kg/min; caution with doses greater than 0.2 mcg/kg/min)
- Norepinephrine __________ mcg/kg/min IV infusion (0.01 to 0.2 mcg/kg/min; caution with doses greater than 0.2 mcg/kg/min)

**Management of Hypertension:** Target BP: _______________/_________________

**Age-related Treatment Thresholds for Arterial Hypertension:**

- Newborns to 3 months  greater than 90/60
- 3 months to 1 year    greater than 110/70
- 1 year to 12 years    greater than 130/80
- 12 years to 18 years  greater than 140/90

a. Wean inotropes and vasopressor
b. If necessary start:
   - nitroprusside __________ mcg/kg/min (0.5 to 5 mcg/kg/min) OR
   - esmolol __________ mcg/dose (500 mcg/kg/dose) IV bolus over 1-2 min
     Followed by __________ mcg/kg/min (50 to 300 mcg/kg/min) IV infusion

**Diabetes Insipidus**

Defined as urine output greater than 4 mL/kg/h associated with:

- increasing serum sodium greater than 145 mmol/L and/or
- increasing serum osmolarity great than 300 mosM, and/or
- decreasing urine osmolarity less than or equal to 200 mosM

If Diabetes Insipidus present, titrate therapy to urine output less than 3 mL/kg/h

- vasopressin __________ milliunit/kg/min (0.3-0.7 milliunit/kg/min) IV infusion
  Max. dose: 40 milliunit/min
Combined Hormonal Therapy

For organ donor management for NDD, vasopressin and methylprednisolone are ordered in combination PLUS levothyroxine if patient is being considered as a cardiac donor.

☐ levothyroxine 100 mcg IV for 1 dose, then 50 mcg IV q12h (not weight based)

☐ methylPREDNISolone ____________ mg (15 mg/kg/dose) IV q24h
  (Max. dose: 1 gram, rounded to the nearest 20 mg)

*AND*

☐ vasopressin as indicated for hypotension management (see above) and/or treatment of DI (see above)

If not already started,

☐ vasopressin __________ milliunit/kg/min (0.3-0.7 milliunit/kg/min) IV infusion
  Max. dose: 40 milliunit/min

ELECTROLYTE MANAGEMENT

Maintain normal electrolytes per pediatric/neonatal guidelines

Target:

Serum sodium greater than 130 but less than 150 mmol/L

Aim for normal ranges for potassium, calcium, magnesium and phosphate

GLYCEMIC CONTROL

☐ Initiate insulin regular ___________unit/kg/h (0.05 to 0.1unit/kg/h) IV infusion for sustained blood glucose greater than 12 mmol/L.

☑ Maintain blood glucose 7 to 10 mmol/L

☑ Monitor blood glucose q1h

INFECTION SURVEILLANCE AND TREATMENT

Examine patient each shift for new skin lesions suggestive of viral, fungal or bacterial infection

On daily rounds review for potential new infection.

Treat any new suspected or confirmed viral, fungal or bacterial infection and notify BC Transplant

☑ Cultures - all cultures to be done at baseline and then q48h

  • Sputum gram stain and culture
  • Blood culture (Refer to current BCCH Pediatric Blood Culture Guide for appropriate collection quantities)
  • Urine culture
  • Culture all drain sites

  • Influenza test (Flu A/B/RSV) (Tracheal aspirate) all donors (during flu season only typically Dec 1 to Mar 31)
  • HSV/VZV swabs of any potential herpetic lesions, as appropriate

Antifungals and Antibiotics (To be ordered ONLY if lungs are being considered OR as needed for culture/imaging results). Consult with BC Transplant.