



Organ Donor Management Recommended Guidelines PEDIATRIC Brain Death (NDD)

Patient Addressograph

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

General Targets:

- Age-related norms for pulse and blood pressure (BP)
- CVP 6 to 10 mmHg (fluid resuscitation to maintain normovolemia)
- Urine Output 0.5 to 3 mL/kg/h
- Hemoglobin (Hgb): optimal 90 to 100 g/L, lowest acceptable 70 g/L

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
- 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

Date (dd/mm/yyyy) / /	Time	Prescriber's Signature	Printed Name or College ID #
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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:

Sodium 145 mmol/L and above	<input type="checkbox"/> dextrose 5%
Sodium 130 to 145 mmol/L	<input type="checkbox"/> dextrose 5%-sodium chloride 0.45%
Sodium 130 mmol/L or below	<input type="checkbox"/> sodium chloride 0.9%
OR	<input type="checkbox"/> _____

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.

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MEDICATIONS

Hemodynamic Monitoring and Therapy:

Heart Rate			Respiratory Rate	
Normal Heart Rate by Age (beats/minute) Reference: PALS Guidelines, 2015			Normal Respiratory Rate by Age (breaths/minute) Reference: PALS Guidelines, 2015	
Age	Awake Rate	Sleeping Rate	Age	Normal Respiratory Rate
Neonate (<28 d)	100-205	90-160	Infants (<1 y)	30-53
Infant (1 mo-1 y)	100-190	90-160	Toddler (1-2 y)	22-37
Toddler (1-2 y)	98-140	80-120	Preschool (3-5 y)	20-28
Preschool (3-5 y)	80-120	65-100	School-age (6-11 y)	18-25
School-age (6-11 y)	75-118	58-90	Adolescent (12-15 y)	12-20
Adolescent (12-15 y)	60-100	50-90		

Blood Pressure			
Normal Blood Pressure by Age (mm Hg) Reference: PALS Guidelines, 2015			
Age	Systolic Pressure	Diastolic Pressure	Systolic Hypotension
Birth (12 h, <1000 g)	39-59	16-36	<40-50
Birth (12 h, 3 kg)	60-76	31-45	<50
Neonate (96 h)	67-84	35-53	<60
Infant (1-12 mo)	72-104	37-56	<70
Toddler (1-2 y)	86-106	42-63	<70 + (age in years x 2)
Preschooler (3-5 y)	89-112	46-72	<70 + (age in years x 2)
School-age (6-9 y)	97-115	57-76	<70 + (age in years x 2)
Preadolescent (10-11 y)	102-120	61-80	<90
Adolescent (12-15 y)	110-131	64-83	<90

Reference: from <https://www.pedscales.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

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Recommended Guidelines
PEDIATRIC Brain Death (NDD)**

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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

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

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 0.1 unit/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

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