

Physician's Orders for Paediatric Organ Donation: Template

Standard Monitoring

1. List Known Allergies
2. Continuous cardiac monitoring and pulse oximetry
3. Vital signs q1h
4. Document height _____ cm and weight _____ kg, Chest circumference _____ cm, Abdominal girth _____ cm
5. Warming or cooling strategies to maintain T° 36.0 C-37.0 C
6. Urine catheter to straight drainage, hourly intake and output
7. Nasogastric tube to straight drainage; if not using for nutritional support
8. Central venous pressure (CVP) q1h
9. Arterial blood pressure q1h
10. Continue standard eye care

Laboratory Investigations

1. CBC, electrolytes, BUN, Cr, glucose, lactate, Ca, Mg, PO₄, albumin, t-protein, AST, ALT, ALP, amylase, lipase, bilirubin (total and direct), INR, PTT now and q4h
2. CK, CK-MB now and q4-8h
3. Troponin I or T now and q8h
4. ABG q4h, see respiratory section
5. Blood for Group and Screen to Blood Bank; place hard copy of result on chart
6. Blood and urine for toxicology screen unless possibility of overdose ruled out by MD or previously completed
7. Urinalysis now and q24h
8. Central venous oximetry q2-4h; titrate therapy to central MVO₂ ≥ 60%
9. Chest X-ray q4h

Microbiology

1. Daily blood cultures for C&S now and q24h
2. Daily urine cultures for C&S now and q24h
3. Daily endotracheal tube (ETT) cultures for C&S now and q24h
4. Bronchoscopy and bronchial alveolar lavage gram stain and culture x 1 and prn
5. Antibiotics for presumed or proven infection

Hemodynamic Monitoring and Therapy

General targets: age-related norms for heart rate and blood pressure (BP)

1. Age-related hemodynamic parameters:

Age	Heart Rate beats/min	Systolic BP mmHg	Diastolic BP mmHg
Newborn	120 – 160	50 – 70	25 – 45
0 – 3 mos	100 – 150	65 – 85	45 – 55
3 – 6 mos	90 – 120	70 – 90	50 – 65
6 – 12 mos	80 – 120	80 – 110	55 – 65
1 – 3 yrs	70 – 110	90 – 105	55 – 70
3 – 6 yrs	65 – 110	95 – 110	60 – 75
6 – 12 yrs	60 – 95	100 – 120	60 – 75
> 12 yrs	55 – 85	110 – 135	65 – 85

2. CVP 6-10 mmHg
3. Age related thresholds for arterial hypertension (therapies of choice listed below):

Newborn – 3 mos	Greater than 90/60 mmHg
Greater than 3 mos – 1 yr	Greater than 110/70 mmHg
Greater than 1 yr – 12 yr	Greater than 130/80 mmHg
Greater than 12 yrs	Greater than 140/90 mmHg

Cardiovascular

1. 12-lead EKG x 1 and prn
2. Maintain Hgb \geq 70g/L
3. 2D transthoracic echocardiography (see Appendix 1 for worksheet)
 - a) If 2D echo ejection fraction \leq 40% then repeat echocardiography at q8–12h intervals post L-thyroxine initiation

Agents for Hypotension (therapies listed in order of recommended initiation)

1. IV bolus _____ mL (10-20 mL/kg) over 15 minutes prn if SBP less than target value and CVP < 6mmHg; MD to reassess
2. Dopamine at _____ mcg/kg/min to a maximum of 10 mcg/kg/min IV infusion
3. Vasopressin at _____ units/kg/min (0.0003–0.002 units/kg/min) IV infusion
4. Norepinephrine at _____ mcg/kg/min (0.01-0.5 mcg/kg/min) IV infusion

5. Epinephrine at _____ mcg/kg/min (0.01-1 mcg/kg/min) IV infusion
6. Phenylephrine at _____ mcg/kg/min (0.01-0.5 mcg/kg/min) IV infusion

Agents for Hypertension (therapies listed in order of recommended initiation)

1. Wean inotropes or vasopressors if infusing; start antihypertensives for age appropriate target SBP
2. Nitroprusside at _____ mcg/kg/min (0.5-5 mcg/kg/min) IV infusion
3. Esmolol _____ mcg (100-300mcg/kg) IV bolus x1 then _____ mcg/kg/min (50-300 mcg/kg/min) IV infusion
4. Labetalol at _____ mg/kg/hr (1-3 mg/kg/hr) IV infusion

Respiratory

1. Chest x-ray q4h and prn
2. ABG q4h and prn on FiO₂ 1.0; return to maintenance FiO₂ once ABG drawn
3. Bronchoscopy and bronchial alveolar lavage gram stain and culture x 1 and prn (see Appendix 2 for worksheet)
4. Routine ETT suctioning and repositioning as tolerated q2h and prn, head of bed elevated at 35-45 degrees
5. Salbutamol and ipratropium 1-2 puffs inh each q4h + q2h prn for wheezing
6. Mechanical ventilation targets:
 - a) Tidal volume (Vt) 6-8 mL/kg, positive end expiratory pressure (PEEP) 6-10 cm H₂O, peak inspiratory pressure (PIP) ≤ 30 cm H₂O
 - b) Attempt to maintain normalized arterial blood gases; pH 7.35–7.45, PaCO₂ 35–45 mmHg, PaO₂ ≥ 80 mmHg, O₂ sat ≥ 95%
7. Recruitment manoeuvres and challenge arterial blood gases for potential lung donor q4h and prn as tolerated:
 - a) Preoxygenate with FiO₂ 1.0 for 10 minutes
 - b) Sustained inflation with PEEP of 30cm H₂O x 30 sec
 - c) Maintain FiO₂ of 1.0 and return to maintenance ventilatory parameters
 - d) Draw ABG 10 minutes post inflation
 - e) Return to maintenance FiO₂ once complete
 - f) Obtain CXR once completed
 - g) If wheezing: salbutamol 1-2 puffs inh q4h and q2h PRN; ipratropium 1-2 puffs inh q4h and q2h PRN

Fluid and Electrolytes

Targets:

- a) Urine output 0.5–3 mL/kg/hr
 - b) Serum sodium (Na) 130-150 mmol
 - c) Normal ranges for potassium, calcium, magnesium, phosphate
 - d) Blood glucose 6-10 mmol/L
1. D50.9%NaCl or NaCl 0.9% IV infusion for maintenance at _____mL/hr
 2. If Na>145 mmol/L IV maintenance changed to 0.45% NaCl or D5/0.45% NaCl at _____mL/hr
 3. If PO₄<0.80 mmol/L, sodium phosphate _____mmol of phosphate component (0.332 mmol phosphate/kg) IV over 4 hours
 4. If ionized Ca is< 1.1 mmol/L then calcium gluconate _____mg (50mg/kg; max 3g) IV over 1 hour
 5. If Mg < 0.80 mmol/L then magnesium sulphate _____mg(50 mg/kg; max 2.5g) IV over 1 hour
 6. If K<3.7 mmol/L then potassium chloride _____mmol (0.5 mmol/kg; max 60 mmol) IV over 2 hours via central venous line

Glycemia and Nutrition

1. Initiate or continue nutritional support, when possible
2. Initiate standard sliding scale for glucose control
3. Titrate insulin infusion to maintain serum glucose 6-10 mmol/L

Endocrine and Metabolic

1. L-thyroxine _____mcg IV bolus (50-100 mcg) x 1 then _____mcg (25-50 mcg) IV q12h
2. Methylprednisolone IV _____mg (15mg/kg; max 1 g) IV q24h

Diabetes Insipidus

1. Urine output > 4 mL/kg/hr, associated with:
 - a) Rising serum and/or Na \geq 145 mmol/L and/or
 - b) Rising serum osmolarity \geq 300 mOsm and/or
 - c) Decreasing urine osmolarity \leq 200 mOsm

Diabetes Insipidus therapy:

1. Titrate therapy to urine output \leq 3 mL/kg/h

- a) DDAVP 0.25 to 1 mcg IV q6h prn
- b) IV vasopressin infusion at _____units/kg/h (0.0005 – 0.010 units/kg/h) (**note dosing parameter and dosing units different from hypotension therapy**)
- c) If Na>145 change maintenance IV to 0.45% NaCl
- d) IV maintenance bolus to maintain CVP 6-10 mmHg

References

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Nice Sugar Study Investigators. (2009). Intensive versus conventional glucose control in critically ill patients. *The New England Journal of Medicine*, 360 (13), 1283-1297.

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Appendix 1: Echocardiogram Worksheet

**TGLN DONOR # _____

**Health Canada Requirement

Date Format: dd/mm/yyyy

Echocardiogram WORKSHEET

Date: _____ Time: _____

Inotropes (During the Exam) (mcg/kg/min):

Levophed _____	Vasopressin _____
Dobutamine _____	Epinephrine _____
Dopamine _____	Other _____

Pulmonary Pressure: _____ mmHg

T4 Given: Yes No
If yes, amount _____ Time: _____

CVP _____ mmHg

Atrium:

LA Dimension _____ cm ²	RA Dimension _____ cm ²
ASD <input type="checkbox"/> Present <input type="checkbox"/> Absent	
PFO <input type="checkbox"/> Present <input type="checkbox"/> Absent	

Right Ventricle:

Contractility Normal Moderate Hypokinesia Severe Hypokinesia
Tricuspid Regurgitation I II III IV
RVSP/Pulmonary Pressure: _____ mmHg

Left Ventricle:

Ejection Fraction _____ %
Shortening Fraction _____ %
Contractility Normal Moderate Hypokinesia Severe Hypokinesia
Regional WMA anterior apical lateral inferior posterior septal
LVEDD _____ mm
LVESD _____ mm
Septal Thickness _____ mm
Post Wall Thickness _____ mm
Left Ventricular Hypertrophy Present Absent

Aortic Valve:

Normal Sclerotic Stenosis Bicuspid
Aortic Valve gradient _____ AVA _____
Aortic Regurgitation I II III IV

Mitral Valve:

Normal Sclerotic Stenosis Bicuspid
Mitral Regurgitation I II III IV
Mitral Annular Calcification mild Moderate Severe

Any Additional Comments:

Name: _____ Status: _____ Affiliation: _____ Signature: _____

Appendix 2: Bronchoscopy Worksheet

**TGLN DONOR # _____

**Health Canada Requirement

Date Format: dd/mm/yyyy

BRONCHOSCOPY WORKSHEET

Date: _____ Time: _____

Description	LEFT	RIGHT	N/A	Comments
Anatomy:				If abnormal, please describe findings:
Normal Abnormal	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Secretions:			<input type="checkbox"/>	
Bloody Secretions:			<input type="checkbox"/>	
Mild Moderate Severe Reaccumulation after suctioning	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Mucoid Secretions:			<input type="checkbox"/>	
Mild Moderate Severe Reaccumulation after suctioning	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Purulent Secretions:			<input type="checkbox"/>	
Mild Moderate Severe Reaccumulation after suctioning	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Airway Erythema:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If yes, please describe below:
Obvious Aspiration:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BAL Sent:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gram Stain Results:

Any Additional Comments:

Physician who interpreted and reported results: _____

Signature: _____ Status (i.e. resident): _____ Hospital: _____
Name: _____