

Donation after Death Determination by Circulatory Criteria Order Set (Adult)

If patient progresses to death determination by neurologic criteria after this order set is implemented, the *Donation after Death Determination by Neurologic Criteria Order Set (Adult)* should be referenced for additional orders.

Administrative

- Ensure decision to withdraw life-sustaining measures (WLSM) is documented in the patient's chart
- Dr. _____ to consult/assume MRP
- Allergies or hypersensitivities? No Yes: (list) _____
- MRSA screening and clinical management protocol

Monitoring

- Weight: _____ kg actual estimate
- Height: _____ cm actual estimate
- Continuous cardiac/SpO₂ monitoring
- Heart rate, respiratory rate, blood pressure (arterial where possible) q1h and PRN
- Intake and output q1h
- Core temperature (esophageal, rectal, bladder, central venous or arterial catheter) q4h and PRN
- _____

Tubes/Lines

Naso/Orogastric Tube

- If not using for nutritional support, Nasogastric tube or Orogastric tube to straight drainage

Urinary Catheter

- Urinary catheter to urometer

Arterial Line

- Insert arterial line for the purpose of determining death by circulatory criteria, as well as hemodynamic and arterial blood gas monitoring

Interventions

- Warming blanket to maintain core temperature between 35.5 degrees Celsius and 37.0 degrees Celsius
- Apply Lacri-Lube® or alternative ophthalmic lubricant to both eyes q2-4h
- Turn patient q2h
- Head of bed elevated at 35 – 45 degrees (as tolerated)

Laboratory Investigations

Initial Investigations

- Blood for Serology and Human Leukocyte Antigen (Consult with Ontario Health (Trillium Gift of Life Network) [TGLN])
- Ontario Health (TGLN) will provide tubes and arrange specimen transport
 - Draw prior to fluid bolus and/or transfusion if possible

Blood Bank

- Group+Screen (hardcopy result on chart)
- If blood group A or AB subtyping must be requested (Consult with Ontario Health [TGLN])

- Initial labs (as below) to be done q6h and PRN

Hematology and Coagulation

- CBC INR

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Laboratory Investigations Continued....

Chemistry

- Electrolytes Albumin Bilirubin (total and direct), ALT, AST, ALP, LDH, GGT, Lipase
 Creatinine Lactate
 Glucose Magnesium, Calcium, Phosphate

Toxicology

*****Serum and urine toxicology screen for all patients unless possibility of overdose ruled out by MD or previously done*****

- Serum toxicology screen (if indicated by admission history or previous results)
 Urine toxicology screen

Supplemental Laboratory Investigations

- Activated Partial Thromboplastin Clotting Time (aPTT) **NOW** and PRN
 Protein (Total) **NOW** and PRN
 Amylase **NOW** and PRN
 Hemoglobin A1C **NOW**
 Capillary blood glucose monitoring PRN and as per hospital policy/procedure
 Blood Urea Nitrogen (BUN) **NOW** and PRN
 Urinalysis **NOW** and PRN
 If patient known to have Type 1 or Type 2 diabetes-urine albumin to creatinine ratio **NOW** and PRN
 If hospital is unable to perform urine albumin to creatinine ratio test AND patient known to have Type 1 or Type 2 diabetes-urine protein to creatinine ratio **NOW** and PRN

Microbiology, Virology-Blood, urine and sputum cultures must be completed within 24 hours of organ donation consent as per Health Canada requirements.

- Blood Culture and Sensitivity (C+S) (two different sites) **NOW** and PRN
 Sputum C+S **NOW** and PRN (initial sample **NOT** required **IF** BAL C&S completed)
 Urine C+S **NOW** and PRN (minimum of **ONE** urine culture is required by Health Canada for all potential organ donors, regardless of urinalysis results)

Additional Lab Orders

Antibiotics/Antimicrobial Management

- Continue current antibiotics for presumed or proven infection

Hemodynamic Monitoring and Therapy Targets

Blood pressure indices:

- Heart rate greater than or equal to 60 beats/minute and less than or equal to 120 beats/minute
- Systolic blood pressure (SBP) greater than or equal to 100 mmHg and less than or equal to 160 mmHg
- Mean arterial blood pressure (MAP) greater than or equal to 65 mmHg

Note: Maintain Hemoglobin greater than 70 g/L

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Cardiovascular Management

Exact dosing for each medication to be calculated and individualized

Hypotension Management (Use Mean Arterial Pressure (MAP) unless arterial monitoring unavailable or unreliable)

- IV Ringer's Lactate 500ml over 10 minutes PRN if SBP less than 100mmHg or MAP less than 65 mmHg
- Vasopressin IV infusion at 0.1 – 2.4 units/h PRN for SBP less than 100 mmHg or MAP less than 65 mmHg
- Norepinephrine IV infusion at 1 – 30 micrograms/minute PRN for SBP less than 100 mmHg or MAP less than 65 mmHg
- Epinephrine IV infusion at 1 – 20 micrograms/minute PRN for SBP less than 100 mmHg or MAP less than 65 mmHg

Hypertension Management (Use MAP unless arterial monitoring unavailable or unreliable)

Wean inotropes or vasopressors if infusing; start antihypertensives for SBP above 160 mmHg and/or MAP above 90 mmHg

- Hydralazine 10 – 20 mg IV q4h PRN for SBP greater than 160 mmHg and/or MAP greater than 90 mmHg
- Nitroglycerin IV infusion at 5 – 200 micrograms/minute PRN for SBP greater than 160 mmHg and/or MAP greater than 90 mmHg
- Labetalol IV infusion at 1 – 2 mg/min PRN for SBP greater than 160 mmHg and/or MAP greater than 90 mmHg (discontinue if HR below 65)
- Esmolol _____micrograms/kg/min IV bolus (100 – 500 micrograms/kg IV bolus; consider reduced dose in the elderly population) followed by Esmolol 100 – 300 micrograms/kg/minute IV infusion PRN for SBP greater than 160 mmHg and/or MAP greater than 90 mmHg

Mechanical Ventilation Targets

- Tidal volume measurements: Tidal volume (V_t) 6 – 8 mL/kg
- PEEP: Positive End Expiratory Pressure 8-10 cm H₂O
- PIP: Peak Inspiratory Pressure equal to or below 30 cm H₂O

Respiratory Management

- Chest x-ray q12h and PRN (coordinate to perform post-recruitment maneuver-see below)
- Bronchoscopy and Bronchial Alveolar Lavage (BAL): Gram Stain and C+S x 3 (separate samples from each lung and 1 sample for Ontario Health [TGLN] COVID requirements) and PRN (see Associated Ontario Health [TGLN] Document)
- Routine ETT suctioning as tolerated q2h and PRN
- Salbutamol 8 puffs q2 – 4h PRN for wheezing
- Ipratropium 8 puffs q2 – 4h PRN for wheezing

Recruitment Maneuvers

Target to maintain normalized arterial blood gases: pH 7.35 – 7.45, PaCO₂ 35 – 45 mmHg, PaO₂ equal to or above 80 mmHg, O₂ sat equal to or above 95%

- For all potential lung donors: In the following sequence, perform recruitment maneuvers and challenge arterial blood gases (ABG) q6h and PRN (stop if lung donation excluded by Ontario Health [TGLN], recruitment manoeuvres not tolerated or as dictated by patient status)

Perform the following recruitment maneuvers in sequence:

- Pre-oxygenate with FiO₂ of 1.0 for 10 minutes
- Sustained inflation with PEEP of 30 cm H₂O for 30 seconds
- Maintain FiO₂ of 1.0 and return to maintenance ventilatory parameters
- Draw ABG 10 minutes post inflation (while FiO₂ at 1.0)
- Return to maintenance FiO₂ once complete
- Obtain chest x-ray once completed

- If lung recruitments not tolerated – ABG on FiO₂ 1.0 q6h and PRN
- If lung donation excluded by Ontario Health (TGLN) – stop lung recruitment maneuvers and continue ABG and CXR as per unit protocols

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Fluid and Electrolyte Targets

- Urine output 0.5 – 3 mL/kg/h (if urine outputs below 0.5 cc/hr OR urine output above 300cc/hr consult MRP)
- Serum sodium equal to or above 130 mmol/L and equal to or below 150 mmol/L
- Normal ranges for potassium, calcium, magnesium and phosphate
- Blood glucose 6 – 10 mmol/L

Fluid and Electrolytes

Exact dosing for each medication to be calculated and individualized

- Ringers Lactate IV infusion for maintenance at _____ mL/h
- If serum sodium above 145 mmol/L evaluate for Diabetes Insipidus
 - Implement hospital standing order set for electrolyte imbalances **OR** follow below:
 - If serum phosphate below 0.65 mmol/L, then administer sodium phosphate 15 mmol in 100 mL D5W IV as per unit protocol
 - If corrected serum calcium below 2.0 mmol/L or ionized calcium below 1.0 mmol/L, then administer 10% calcium gluconate 1 gram in 100 mL NaCl or D5W IV over 30 minutes (central or peripheral)
 - If serum magnesium below 0.8 mmol/L, then administer magnesium sulphate 1 g in 50 – 100 mL NaCl or D5W IV over 30 minutes (central or peripheral)
 - If serum potassium below 3.9 mmol/L and above 3.2 mmol/L, then administer 20 mmol KCl in 50 – 100 mL NaCl or D5W via central line over 1 hour
 - If serum potassium below 3.2 mmol/L, then administer 40 mmol potassium chloride in 100 mL NaCl or D5W via central line over 2 hours

DO NOT ADMINISTER HYDROXYETHYL STARCH e.g. VOLUVEN

Glycemic and Nutrition Management

- Initiate or continue nutritional support, when appropriate and possible-**all nutritional support to be stopped 6 hours prior to planned WLSM**
- Initiate and titrate insulin infusion to maintain serum glucose 6 – 10 mmol/L

Endocrine and Metabolic Management

Exact dosing for each medication to be calculated and individualized

- For all potential lung donors – methylprednisolone 15 mg/kg (maximum 1g) IV q24h (Stop if lung donation excluded by Ontario Health [TGLN])
- If lung donation excluded by Ontario Health (TGLN) **AND** patient requiring vasopressors then administer hydrocortisone 50 mg IV q6h
- Initiate or continue hospital insulin infusion order set to maintain serum glucose 6-10 mmol/L
- If creatinine clearance below 60 mL/min, kidneys have NOT been ruled out for transplant and IV contrast is planned, give IV 0.9% NaCl 3 mL/kg/h for 3 hours pre-contrast then 1 mL/kg/h for 6 hours post-contrast

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References

Ball, I.M., Hornby, L., Rochweg, B., Weiss, M.J., Gillrie, C., Chassé, M., et al. (2020). Management of the neurologically deceased organ donor: A Canadian clinical practice guideline. *CMAJ*, April 06, 2020 192 (14) E361-E369; DOI: <https://doi.org/10.1503/cmaj.190631>

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