

**Center for Organ Recovery & Education**

 **Donor Management Guidelines**

**Donor Management Goals**

**For All Donors**

* Serum Na 135 – 155 mEq/L
* Mean Arterial BP 60-80 mmHg
	+ Allow MAP >80 in chronic hypertensive donors
* Hemoglobin >7.0 mg/dl
* Urine Output 0.5-3.0 mL/kg/hr
	+ Based on ideal body weight
* PH 7.25-7.45 (or <7.25 if lactic acid WNL)
* Vasopressor agents <1
* Glucose <180 mg/dl

**Organ Specific**

* LVEF >50%
	+ If heart donor
* P/F ratio > 300
	+ If lung donor
	+ \*\*On all donors, utilize lowest FiO2 possible to maintain pulse oximetry >92%

**Standard Care**

Maintain head of bed elevated at 30 degrees  NG low continuous suction

Temperature 36-37C  Lubricate eyes Q 2hrs

Turn patient Q 2hrs

**Hemodynamic Management**

**T4 Protocol** Implement on Brain Dead donors requiring multiple pressors.

***Pre-Treatment*:**

Adequately hydrate (CVP >5)

 NSR or treating arrhythmia

 Normalize electrolytes *(may want to consider placing pediatric ranges here as well)*

 K+ 3.5 - 4.5

 Na+ 135-155

 Ionized Calcium 1.15 – 1.29 mmol/L

***Adults Donors (>45 kg)***

Administer IV boluses of the following in rapid succession:

* 25 grams of 50 % Dextrose (50 ml) \*If Indicated
* 2 grams Methylprednisolone (Solu-medrol)
* 20 Units regular human insulin
* 20 mcg Levothyroxine (T4) \*If indicated

Start IV infusion of 200 mcg Levothyroxine (T4) in 500 ml 0.9 % NaCl (0.4 mcg/ml) at an initial rate of 10 mcg/hr (25mls/hr). Maximum rate not to exceed 30 mcg/hr (75 mls/hr).

Also initiate Vasopressin 0.01 un/min IV when appropriate.

**Hypotension**

* Check volume status by assessing I&O’s: If non-invasive Cardiac output is available, track volume resuscitation by SVV.
	+ \*If SVV <13, no fluid challenge
	+ \* If SVV > 13 fluid challenge may be beneficial
* Consider fluid bolus therapy with Lactated Ringers or plasmalyte.

 CVP < 5mmHg give 1000 ml

 CVP 5-10 mmHg give 500 ml

CVP 11-12 mmHg give Give nothing

* If MAP <60 mmHg persists consider a vasoactive agent

 Norepinephrine 0.1 – 0.5 mcg/kg/min (**First Choice**)

 Epinephrine 2mg/250ml: 0.1-0.5 mcg/kg/min

 Vasopressin 0.04 units/min

**Hypertension**

Consider treating if MAP >95mmHg for 30 minutes

* Titrate down or discontinue vasopressors
* Give Labetalol 10mg IV bolus every 20 minutes until MAP 65-70 mmHg.
* If elevated MAP continues after 2 doses of Labetalol call AOC or ODST
* Esmolol gtt Load 0.5mg/kg/min over 1 minute, then run .05mg/kg/min up to max 0.2mg/kg/min.

**Fluid Replacements**

**Maintenance Fluid**

* Infuse at 125 mls/Hr

Na+ < 150 mEq/L use Dextrose 5% / 0.45% NaCl

Na + > 150 mEq/L use Dextrose 5% / 0.2% NaCl

* Add KCL 20 mEq/L ; Do not add KCL if K+ > 5mEq/L

**Urinary Output**

* Replace all urine output in excess of 250 ml/hr with 0.2% saline and KCL 10 mEq/L
* If urine output > 500 cc/hr or > 250 cc/hr for 2 consecutive hours with urinary SG > 1.005 give DDAVP 2mcg IV q 8hrs prn

**Blood Product Transfusion**

\*Remember to order leuko-reduced blood if possible(Consult AOC prior to giving blood products) Note: Do not transfuse any blood products unless active bleeding.

Hemoglobin <7 transfuse 2 units PRBC

Platelets < 50,000 transfuse 6 units platelets

PT > 18 seconds transfuse 2 units FFP (Check fibrinogen, if low give one ten-pack cryoprecipitate) or Vitamin K 10mg IM

**Adult Electrolyte Management**

**Sodium** Free water replacement (5% Dextrose)

 Na+ 150-155 mEq/L 500 ml IV infuse over 2 hrs

 Na+ 156-160 mEq/L 1000 ml IV infuse over 2 hrs

 Na+ 161-165 mEq/L 1500 ml IV infuse over 2 hrs

 Na+ 166 – 170 mEq/L 2000 ml IV infuse over 2 hrs

**Potassium** K < 2.0 mEq/dL KCl 60 mEq 20 mEq x3 Central Line

K+ 2.1 – 2.7 mEq/L KCL 40 mEq 20 mEq x2 Central Line

 K+ 2.8 – 3.4 mEq/L KCL 30 mEq 20 mEq x1 & 10 mEq x1 Central Line

**Magnesium** Mg < 1.2 mg/dL Magnesium Sulfate 8 gms IV over 4 hrs

 Mg 1.2 – 1.7 mg/dL Magnesium Sulfate 4 gms IV over 4 hrs

**Phosphate** Phos < 1.0 mg/dL Phosphate 30 mmoles IV over 6 hrs

 Phos 1.0 – 2.0 mg/dL Phosphate 15 mmoles IV over 4 hrs

 \*If K > 4, use Sodium Phosphate

**Ionized Calcium** iCa < 1.15 mmol/L Calcium Gluconate 1gm IV over 1 hr (If available)

**Insulin Management**

**Hypoglycemia**

* Treat if glucose < 60
* Give 1 pre-mixed syringe of dextrose (D50). Recheck glucose in 30 minutes and if it remains <75mg/dL repeat dose of D50.

**Hyperglycemia**

* Treat if glucose > 180
* Make sure dextrose is removed from all IV fluids/infusions
* Insulin drip should be maintained through allocation to control hyperglycemia. NOTE: Please follow donor hospital protocol or general hyperglycemia insulin coverage below:

|  |  |  |
| --- | --- | --- |
|   **Baseline Glucose** |   **Bolus** |   **Initial Infusion Rate** |
|  141 - 160 |  --- |  5 units/hr |
|  161 - 180 |  2 units and |  6 units/hr |
|  181 - 200 |  3 units and |  8 units/hr |
|  201 - 250 |  5 units and |  10 units/hr |
|  251 - 300 |  5 units and |  15 units/hr |
|  > 300 |  10 units and |  15 units/hr |

Check glucose 30 minutes after beginning insulin drip and follow the below titration guide.

|  |  |  |
| --- | --- | --- |
|   **Baseline Glucose** |   **Bolus** |  **Titration** |
|  < 60 |  Give 1/2 amp D50 |  Stop infusion. Recheck glucose in 15 min |
|  60 - 80 |  --- |  Stop infusion. Recheck glucose in 15 min |
|    |    |    By 2 units/hr if >100mg/dL lower than last  |
|  111 - 120 |  --- |  No intervention |
|  121 - 140 |  --- |  By 1 units/hr |
|  141 - 160 |  --- |  By 2 units/hr |
|  161 - 180 |  2 units |  By 2 units/hr |
|  181 - 200 |  2 units |  By 4 units/hr |
|  200 - 250 |  4 units |  By 5 units/hr |
|  251 - 300 |  5 units |  By 5 units/hr |
|  > 300 |  5 units |  By 5 units/hr |
|  |  |  |

* Check glucose 30 minutes after starting insulin titration
* If glucose > 140 repeat the above titration steps
* If glucose is within goal, then check glucose every hour. If three consecutive values within target range, then check glucose every 2 hours.
* If glucose level > 120 after “stop infusion” restart insulin drip at ½ the previous rate.

**Renal Contrast Protocol**

When a donor is getting additional tests that require the use of IV Contrast administer the following depending upon fluid status:

 **Stable** / **Hypervolemic**

* If not fluid overloaded: 150 meq of NaHCO3 (three amps) in 1 liter D5W give 3.2 ml/kg for one hour before the study then 1.2 ml/kg/hour for 6 hours posttest; If fluid overloaded give nothing.

 **Hypovolemic** / **Hypotensive**

* Bolus with fluid: Keep U/O > 50-100cc/hr for 12 hours post contrast load

**Antibiotics**

Ancef 1 gm q 8 hrs (If not already on antibiotic coverage).

\*If donor is allergic to Penicillin use Clindamycin 600mg Q 8 Hours

**Lung Management Protocol**

* Head of bed at 30°
* Chest percussion q 4hrs
* Turn and roll donor q 2 hrs
* Suctioning of ETT q 2 hours
* Utilize lowest FiO2 possible to maintain SpO2 >92%

**Brain Dead Lung Protocol**

Baseline ABG - Bronchoscopy (Ages 14 to 60) - Chest Xray

**Normal Treatment** **Atelectasis on Film** **Fluid Overloaded**

**Lung Recruitment**

A) PEEP to 30cm H20 max for 30 sec

B) Then PEEP of 25cm H20 max for 25 sec

C) Keep decreasing the PEEP till you

 arrive between 5 and 8

D) **ABG** 1 hour after getting to PEEP 8

**Lung Recruitment**

A) PEEP to 30cm H20 max for 30 sec

B) Then PEEP of 25cm H20 max for 25 sec

C) Keep decreasing the PEEP till you

 arrive between 5 and 8

D) **ABG** 1 hour after getting to PEEP 8

**Lung Recruitment**

A) Increase PEEP at 20 cm H20 max / 15

cmH20 min as tolerated by Donor for 20 seconds every hour

 B) Change Inhalation: Exhalation (I:E) ratio to an inverse ratio ventilation of 2:1 or 3:1 for 3-5 minutes C) Then increase baseline PEEP by 2 cmH20 minimum and stay at this level (Max TV 10ml/kg ideal body wt)

D). **ABG** in 2-4 hours of instituting protocol

**Vent Settings**

**Donors with presumed fluid overload with P/F Ratio < 350 PaO2/ 100% on AC.**

A) Decrease CVP 4 mm Hg or PA catheter wedge to 10mm Hg (without compromising BP and tremendous increase in vasopressors

B) Change I:E ratio to Inverse ratio of 3:1

C.) or use APRV mode set to High PEEP of 30 cm H20 and low PEEP of 5-8cm H20

D.) or PCV mode. High Peak pressure of max 20-25 cmH2O) and PEEP to 5-8 cm 0.8s

**Vent Settings Tidal Volume** 10 ml per kg of ideal body weight to max of 12ml/kg **Peak airway pressure** maintain <30 cm H2O

**pH** maintain between 7.35-7.45 **PEEP** should be set at 5 to 8 cm H2O **FIO2** remain at 40% if patient tolerates **O2 challenge** -Peep is decreased to 5 FiO2 is increased to 100% for 30 minutes, following ABG, return PEEP & FiO2 to original settings
\* O2 challenge limited to two

**Vent Settings Tidal Volume** 10 ml per kg of ideal body weight to max of 12ml/kg **Peak airway pressure** maintain <30 cm H2O

**pH** maintain between 7.35-7.45 **PEEP** should be set at 5 to 8 cm H2O **FIO2** remain at 40% if patient tolerates **O2 challenge** -Peep is decreased to 5 FiO2 is increased to 100% for 30 minutes, following ABG, return PEEP & FiO2 to original settings
\* O2 challenge limited to two

**Medications**

\*Solumedrol 1 gm IV q 12 hrs

\*Ancef 1 gm IV q 8hrs; if allergic give

 Clindamycin 600 mg IV q 8 hrs

\*Albuterol/Atrovent/Mucomyst

 treatment q 4 hrs

**Medications**

\*Solumedrol 1 gm IV q 12 hrs

\*Ancef 1 gm IV q 8hrs; if allergic give

 Clindamycin 600 mg IV q 8 hrs

\*Albuterol/Atrovent/Mucomyst

 treatment q 4 hrs

**Medications**

\*Ancef 1 gm IV q 8hrs; if allergic give

 Clindamycin 600 mg IV q 8 hrs

\*Albuterol/Atrovent/Mucomyst

 treatment q 4 hrs

\*Lasix 40 or 80 mg IV q 12 hrs

\*Bumex 2mg IV as needed if no results

 from Lasix