



Standard orders

The following are recommendations only and are not intended to replace an integrated approach to clinical judgement.

Patient positioning

A

A1 • Head of bed elevated at 30 °

A2 • Turn and position q2h

Nutrition

B

B1 • Standard tube feeding at 1 kcal/kg/h

B2 • Do not initiate parenteral nutrition. However, do not discontinue if already initiated.

Hydration

C

C1 • Maintain euvolemic status.

C2 • The rate and type of IV fluids may vary according to serum sodium and potassium levels as well as enteral nutrition tolerance. Target homeostasis.

Minimal monitoring required and targeted goals

D

D1 • Cardiac monitor

D2 • Arterial line; document blood pressure (BP) q1h, target:

- Mean arterial pressure (MAP) 65-90 mmHg
- Systolic BP (SBP) 100-180 mmHg
- Heart rate (HR) 60-100 bpm

D3 • Continuous arterial oxygen saturation (SaO₂) monitoring, document SaO₂ q1h, target ≥ 95 %

D4 • Urinary catheter; strictly monitor intake and output, document hourly urine output, target 0.5-3.0 mL/kg/h

D5 • Nasogastric tube to gravity drainage (if unfed)

D6 • Capillary blood glucose levels* q1h, target 6-10 mmol/L

D7 • Body temperature q4h, target 34.0-35.0 °C

* Blood glucose: If capillary blood glucose within normal range and stable, levels may be monitored q2h, then q4h.

Ventilation

E

E1 • Controlled mechanical ventilation

E2 • Tidal volume (TV); 6-8 mL/kg of ideal weight

E3 • Positive end-expiratory pressure (PEEP); ≥ 8 cm H₂O

E4 • If possible, adjust respiratory frequency to obtain arterial PaCO₂ between 35-45 mmHg

E5 • Minimum fraction of inspired oxygen (FiO₂) to maintain SaO₂ ≥ 95 %

Eye care

F

F1 • Keep eyelids closed

F2 • Avoid oily or greasy substances

Prophylaxis

G

G1 • Pharmacological thromboprophylaxis according to standard indications. If contraindicated, use mechanical thromboprophylaxis.

Donor assessment

H

H1 Identifying or retrieval centre*

- Blood group + antibodies + crossmatch (4 units of packed red blood cells in reserve, at retrieval centre)
- Weight / Height
- Urinalysis and urine culture (albumin / creatinine ratio)
- Blood cultures X 2
- Sputum gram stain and culture
- Chest X-ray and EKG
- Albumin / protein

- Glycated Hb
- CK, CK-MB, or Troponin I/T
- Abdominal ultrasound, if requested by Transplant Québec
- Abdominal and thoracic CT scan, if requested by Transplant Québec
- Arterial blood gas, AST, ALT, alkaline phosphatase, total and direct Bilirubin, GGT, amylase, lipase, Na, K, glucose, urea, creatinine, lactate, CBC, PTT, INR, Cl, Mg, Ca, PO₄

Initially

H2 q8h CK, CK-MB, or Troponin I/T q8h x 24h
If patient unstable, continue monitoring CK, CK-MB or Troponin I/T q8h

H3 q12h AST, ALT, alkaline phosphatase, total and direct bilirubin, GGT, LDH, amylase, lipase, Na, K, glucose, urea, creatinine, CBC, PTT, INR, lactate, arterial blood gas

H4 q24h Chest X-ray, EKG, Cl, Mg, Ca, PO₄

H5 q72h Blood cultures X 2, sputum gram stain and culture, urine culture

* Serology, virology, and tissue typing with Transplant Québec's clinical coordinator / advisor's approval.

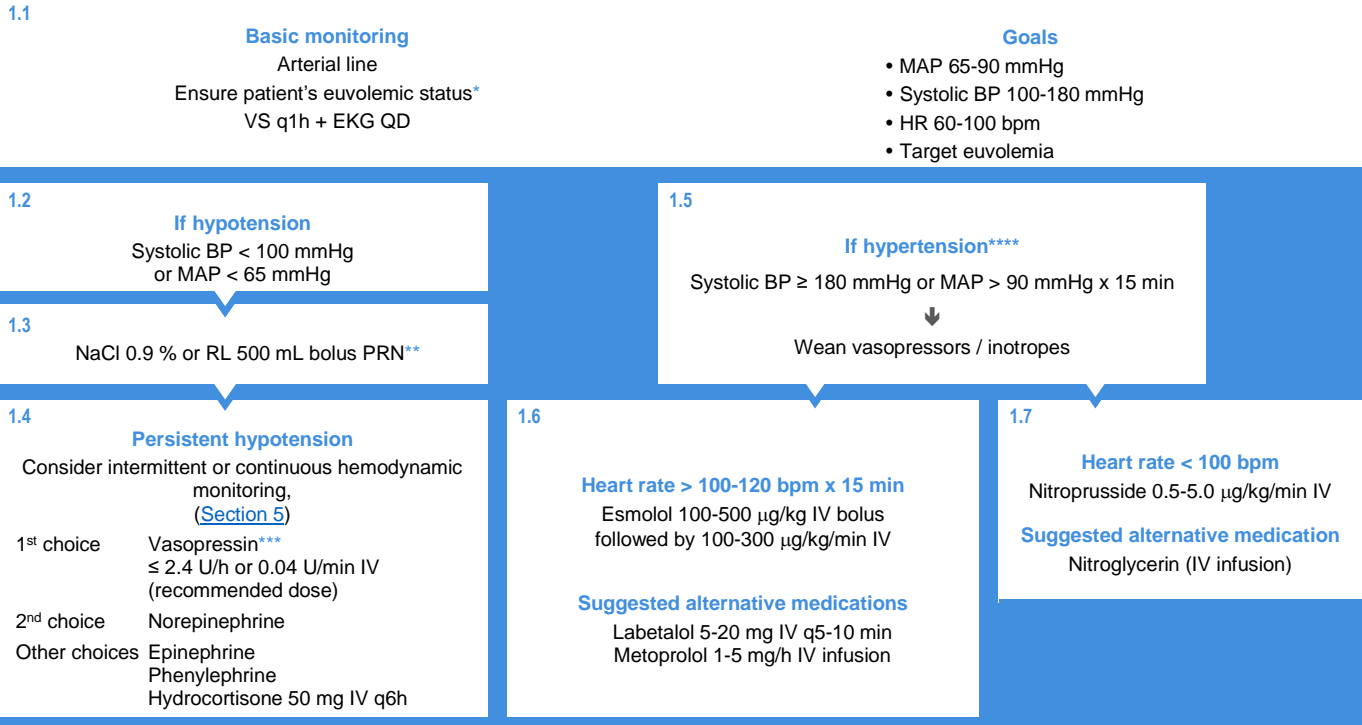


Management criteria and goals

The following are recommendations only and are not intended to replace an integrated approach to clinical judgement.

1

Hemodynamics



* The rate and type of IV fluids may vary according to serum sodium and potassium levels as well as enteral nutrition tolerance and should target homeostasis.

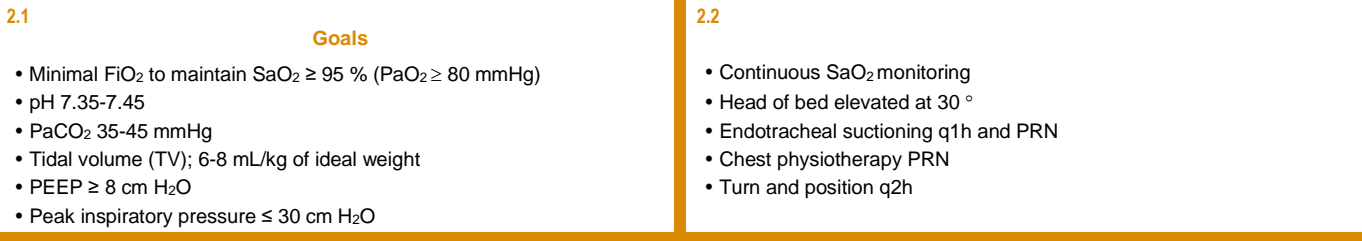
** Prioritize NS or RL for the 1st bolus. If additional boluses are required, albumin 5% may be considered. The administration of hydroxyethyl starch products should be avoided.

*** Vasopressin is the first choice for hemodynamically unstable patients, except if instability is primarily due to left ventricular dysfunction, in which case, norepinephrine is the recommended agent.

**** Important: it is recommended to monitor volume status prior to administering beta blockers.

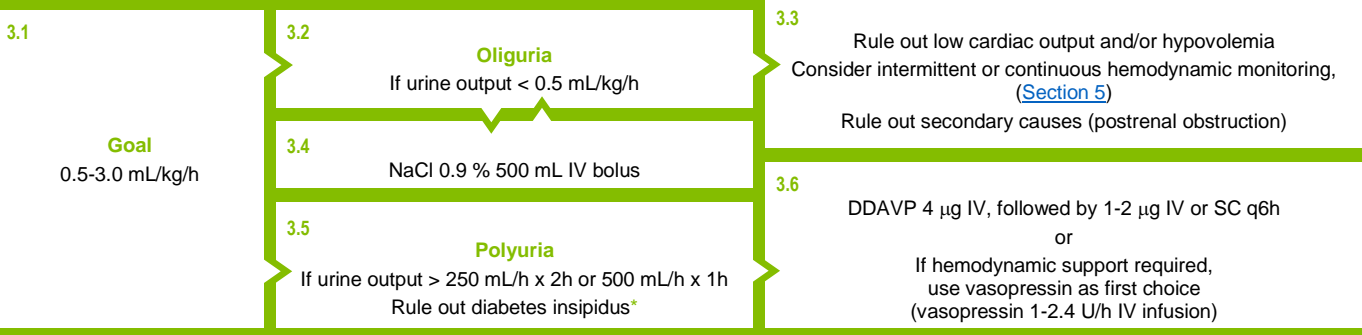
2

Mechanical ventilation



3

Diuresis



* Diabetes insipidus: Urine output > 4 mL/kg/h, Na ≥ 145 mmol/L, serum osmolality ≥ 300 mOsm, urine osmolality ≤ 200 mOsm, urine specific gravity < 1.005



Management criteria and goals (continued)

4

Temperature

<p>4.1</p> <p style="text-align: center;">Goal</p> <p>Core T° 34.0-35.0 °C*</p>	<p>4.2</p> <p>Monitor T° q4h</p>	<p>4.3</p> <p>< 34.0 °C</p> <ul style="list-style-type: none"> • Warming blanket • Cover the head (transfer, transport, or if supplies are not available)
		<p>4.4</p> <p>> 38.0 °C</p> <ul style="list-style-type: none"> • Septic profile • Empiric broad-spectrum antibiotics

* Hypothermia applies to donors whose kidneys are under consideration for retrieval.

5

Cardiac dysfunction

<p>5.1</p> <p style="text-align: center;">Indicated by</p> <p>Echocardiogram with ejection fraction (LVEF) < 50 % or hemodynamic instability</p>	<p>5.2</p> <p>At the discretion of the medical team: initiate hemodynamic monitoring (either continuous or intermittent) including, but not limited to:</p> <ul style="list-style-type: none"> • Targeted echocardiogram* <p>or</p> <ul style="list-style-type: none"> • Other non-invasive procedures for cardiac output monitoring
	<p>5.3</p> <p>Hemodynamic management according to basic management standards (consider employing inotropes)</p>

* Note that targeted echocardiograms are not intended as substitutes for trans-thoracic echocardiograms (TTE).

6

Electrolytes

<p>6.1</p> <p style="text-align: center;">Goals</p> <p>Na 135-155 mmol/L K 3.5-5.0 mmol/L Mg 0.65-1.05 mmol/L PO₄ 0.74-1.52 mmol/L Ca 2.2-2.6 mmol/L</p>	<p>6.2</p> <p>Correct electrolyte abnormalities</p>
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7

Glycemia

<p>7.1</p> <p style="text-align: center;">Goal</p> <p>6-10 mmol/L</p>	<p>7.2</p> <p>Capillary blood glucose* q1h</p>	<p>7.3</p> <p>Insulin infusion PRN</p>
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* Blood glucose: If capillary blood glucose within normal range and stable, levels may be monitored q2h, then q4h.

8

Coagulation and CBC

<p>8.1</p> <p style="text-align: center;">Goals</p> <ul style="list-style-type: none"> • Optimal hemoglobin > 70 g/L • Administer platelets and fresh frozen plasma if clinical signs of hemorrhage or coagulopathy • Blood products should be administered according to clinical criteria similar to routine ICU care. Preventive administration is discouraged • CMV-negative blood is not required 	<p>8.2</p> <p style="text-align: center;">Attention!</p> <p>Communicate with Transplant Québec before administering blood products that may interfere with the following:</p> <ul style="list-style-type: none"> • Tissue typing • Serology and virology
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Appendix (Recruitment)

Organs previously deemed inadmissible for transplant may necessitate recruitment manoeuvres to regain function.

The following are recommendations only and are not intended to replace an integrated approach to clinical judgement.

X

Lung donor

<p>X1 • Perform lung challenge test*</p> <p>X2 • Arterial blood gas \pm q2h and pulmonary recruitment** PRN (according to the lung transplant program, with approval of the intensivist)</p>	<p>X3 • Avoid pulmonary edema</p> <p>X4 • Early bronchoscopy (Gram stain and culture), only if interest from lung transplant program</p> <p>X5 • Chest X-ray QD and PRN</p>
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- ▶ *** Lung Challenge Test**
 - X1.1** • Ventilate with 100% FiO₂, PEEP of 8 cm H₂O and tidal volume of 8 mL/kg of ideal weight
 - X1.2** • Arterial blood gas after 20 minutes (benchmark blood gases)
- ▶ **** Pulmonary Recruitment Manoeuvres** (medical team must refer to clinical coordinator/advisor)
 - X2.1** • Pre-oxygenate with 100% FiO₂ and PEEP of 10 cm H₂O, then apply continuous inspiratory pressure of 30 cm H₂O during 30 seconds without ventilating. *If mean arterial pressure (MAP) drops below 50 mmHg or if drops under 85% for 5 seconds, stop the manoeuvre.*
 - X2.2** • Ventilate for 2 minutes while keeping PEEP at 10 cm H₂O and FiO₂ at 100 %.
 - X2.3** • Repeat alveolar recruitment a second time, as per step X2.1.
 - X2.4** • Ventilate for 1 hour with initial baseline parameters (TV 8 mL/kg of ideal weight), keeping PEEP at 8 cm H₂O.
 - X2.5** • After 1 hour, bring PEEP back up to 10 cm H₂O and FiO₂ to 100 %, then repeat the **Lung challenge test**.

Y

Heart donor

Y1 • Perform an echocardiogram

Y2 • Coronary angiography if requested by the transplant team

Y3 • Administration of N-acetylcysteine (Mucomyst®) or HCO₃ as per hospital protocol, to protect kidneys.

- ▶ **Cardiac recruitment protocol**
 - Y1.1** • Eligible donor \leq 55 years old with initial ejection fraction < 50 %
 - Y1.2** • Ensure that the following parameters are within normal limits:
 - ▶ pH 7.40-7.45:
 - PaO₂ > 80 mmHg
 - SaO₂ > 95 % MAP \geq 65 mmHg
 - ▶ Correct anemia:
 - Hb \geq 70 g/L
 - Hematocrit \geq 30 %
 - Y1.3** • Insulin IV infusion to keep blood glucose level between 6.0 and 10.0 mmol/L
 - Y1.4** • The recruitment protocol will last a minimum of 12 hours (unless cardiac function is normalized beforehand) and a second echocardiogram will be performed afterwards

Reference:

Ball IM, Hornby L, Rochweg B, et al. *Management of the neurologically deceased organ donor: A Canadian clinical practice guideline*. CMAJ. 2020 April 6;192(14):E361-E369. DOI:10.1503/cmaj.190631.

The Transplant Québec team would like to thank everyone who participated in the revision of this document.

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This guide is overseen by Transplant Québec and is revised periodically.

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