1. ECMO setup and Cannulation

* Peripheral femoral cannulation using Silinger technique
* Cannulae: 17F Medtronic Biomedicus (Carmeda coated) femoral arterial and 23F Femoral venous Medtronic Biomedicus (Carmeda Coated)
* Maquet Quadrox-iD oxygenator
* Sorin SCP drive unit used in conjunction with the Sorin Revolution centrifugal pump.
* Custom Medtronic Carmeda coated ECMO Tubing Pack.

1. Anticoagulation

* A 5 000 – 10 000 unit unfractionated heparin bolus is given at time of cannulation to achieve an activated clotting time of >250 seconds
* No maintenance systemic anticoagulation is utilized unless:
  + LV Decompression is required
  + Presence of LV thrombus (identified with transesophageal echocardiography)

1. ECMO Initiation
   * Goal of ECMO flows > 3.5 L/minute
   * Goal PaO2 > 70
2. Hemodynamics

* A right radial arterial line is placed for hemodynamic monitoring
* Goal MAP > 60mmHg
* Goal pulse pressure 10 mmHg
* Vasopressors:
  + Norepinephrine 0-20 mcg/min
  + Vasopressin 0.01-0.04 IU/min may be used if the above not sufficient to achieve goal hemodynamics
  + Inotropic agents may be used to promote left ventricular decompression

1. Targeted Temperature Management:
   * Goal core temperature 33-35C x 28 hours
   * Sedation with propofol and remifentanyl to RASS -5
2. Mechanical Ventilation Settings:

* Lung protective strategy
* Goals (as measured by right radial arterial blood gas):
  + PaO2 > 70
  + PaCO2 < 45
  + Normal pH

1. Left Heart Decompression Strategies: as indicated by transesophageal echocardiogram or low pulse pressure
   * Introduction of intotropic agents
   * Impella device
   * Left ventricular vent
2. Distal Perfusion

* A femoral artery distal perfusion catheter is introduced in all cases if possible
* Continuous limb oximetry monitoring (SenSmart, Nonin Medical Inc.)

1. Ancillary Investigations:

* Immediate invasive coronary angiography for patients without obvious non-cardiac cause
* CT head rule out intra-cranial hemorrhage

1. Prognostication and Withdrawal of Life-sustaining Treatment (WSLT) Practices

* Neurological assessment prognostication is performed at 36-48 hours (after TTM and sedation has been completed), including an assessment of brain death (done by two physicians) which may also include a cerebral nuclear perfusion scan
* The only circumstance in which prognostication for WLST is performed prior to 36 hours is in the setting of clinical and radiological indicators of brain herniation
* A CT head is performed at 48 hours: care is typically withdrawn if evidence of severe diffuse hypoxic/ischemic encephalopathy in combination with unfavourable neurological clinical assessment
* EEG is performed to assess for non-convulsive status or if there is myoclonus
* If CT is normal a MRI is performed. In the absence of abnormalities on these scans, WLST is delayed.
* Consent was pursued for autopsy in all cases in which no clear cause was identified.

1. Organ Donation Assessment:

* A discussion with the family regarding organ donation takes place after decision is made to withdraw care
* If the patient is a candidate,
  + Donation may proceed in the setting of brain death
  + If does not meet criteria of brain death, donation after cardiac death is pursued