ECMO CANNULATION CHECKLIST

Team Lead: CICU Consultant – Verify ECMO Candidacy, Contact CTS
Confirm ASAP: ECMO cannulation location, Patient weight, Indication for ECMO, Planned mode of support (VA/VV) & Cannulation site

Plan

- Is the environment optimal? Clear bed space of unnecessary equipment
- Is more help needed?
- Confirm Cannulation site: (Peripheral - Neck < 30kg, Groin > 30kg vs Central - Post-cardiotomy)
- Previous ECMO cannulation or concerns with vessel anatomy or patency? Review history and recent imaging
- Assess patient's bleeding risk (thrombocytopenia, coagulopathy, recent surgery)

Communicate

- In an emergency, call 5555 and activate a code*: ECMO Activation in (location) bed (number)*
- CICU Consultant to contact CTS Consultant, Cardiology
- ECMO specialist to contact Perfusionist
- CTS to contact OT staff
- CICU resident to obtain ECMO Blood form and collect ECMO Blood Prime from Blood Bank
- Bedside CICU Nurse prepares for procedure

Patient

- Position patient - for neck cannulation: patient's head at the foot of the bed
- IV Access with long extension tubing. IO Needle if no IV access available
- Monitoring: ECG, IA line, CVP (continuous), ETCO2, NIRS etc
- Medication and Resuscitation fluids: Refer to next page
- Discuss with CTS if blood should be available at the bedside if bleeding risk is high
- Consent to be obtained from parents by CTS & CICU

Equipment

- ECMO Specialist brings ECMO cart to cannulation location and begins clear prime, appropriate cannula size based on target flow +/- 1 size up and down, ACT machine and cartridges
- Surgical Headlights. Ultrasound machine to visualize vessels.
- Ensure proper ETT placement and appropriate ICU monitoring before drapes - including ETCO2, Pacemaker, Arterial line for blood sampling etc
- Code Cart and Defibrillator. CPR board/ Zoll if peri-arrest

Time-out

- Core team: CICU Consultant & SR, CTS Consultant & Resident, ECMO Specialist Nurse, CICU Bedside Nurse, Perfusionist, OT Scrub Nurse
- Others: Code nurse, Documentation nurse and members of medical team
- Review roles and confirm cannulation plan with all team members:
- Any specific requirements/complications expected, discuss contingency plan
- Does anyone have any questions or concerns?
- Review crowd/ noise control and optimize environment

ECMO CANNULATION CHECKLIST

ECMO Capable Locations in KKH

- CICU, NICU, MOT, ANGIO SUITE, WARD 46
- All cannulations should occur in these areas only
- Patients cannulated in areas outside the CICU will need to be transported back to CICU post-cannulation with the core team accompanying

Considerations for site of ECMO Cannulation

- Weight < 30kg: Neck
- Weight > 30kg: Femoral

*** 20-30 kg: discuss with CTS: neck vs fem*

*** Discuss potential need for left heart decompression and if central cannulation necessary*

- Central Cannulation: Consider in post-cardiotomy setting → Obtain sternal opening set, in addition to appropriate cannula (kept in OT)

Stabilize patient: Medications

- Resuscitation
  - Fluids: 5% Albumin, Normal Saline (0.9%)
  - Medication: Adrenaline, Bicarbonate, Inotropes/ Vasopressors
  - Others: antibiotics, steroids etc.
- Sedation/ analgesia
  - Fentanyl 5-10 mcg/kg for procedure
  - Rocuronium 1mg/kg
- ECMO Cannulation
  - Heparin 25-50 units/ kg
  - Calcium Chloride 1.5 mmol

Prep Circuit: ECMO Specialist/ Perfusionist

- Cannula
  - Desired/ Estimated flow
  - Size (Refer to ECMO PnP chart)
- Clear Prime
  - Plasmalyte 1L + Bicarb 8.4% 20ml + Heparin 1000unit
  - Albumin 20% 200ml + Heparin 200unit
  - PCT 200ml + Heparin 200unit
- Others
  - Y-connector

Post ECMO Flow Initiation

- **Confirm Cannula Position**
  - Obtain CXR - note position of cannula tip, any adjustment required – discuss with CTS
  - Contact Cardiology for 2D Echo
- **Post-Cannulation Huddle (Core team to be present before leaving CICU)**
  - Discuss desired ECMO flow, ensure no rapid drop in pCO2, ventilator to rest settings
  - Discuss desired ACT/APTT targets for first 24 hours and duration of heparin-free ECMO (if indicated)
  - Discuss specific problems that may be anticipated: e.g. monitor pulse pressure, potential need to decompress left heart, need to decrease SVR with appropriate vasodilators, temperature targets (usual goal: normothermia unless post-ECPR) etc
  - Ensure all cannulas are well secured prior to any movement/ CXR/ procedures
  - Distal perfusion checks/ Circulation monitoring if femoral cannulation
  - Neuromonitoring: NIRS, US Cranium
- **Communication**
  - Update family: To be led by CICU and multi-disciplinary team
  - Discuss need for referrals/ ancillary investigations with multi-disciplinary team when patient has been stabilized
- **Documentation**
  - CTS operative note with size of cannula used, any complications encountered during procedure
  - CICU/NICU note detailing drugs/ resuscitation required peri-procedure