Outside Hospital Referral

- Outside hospital calls for ECMO referral to UW TC should be directed to UWMC Montlake.
  a. Given complex decision making involved, referrals should occur during the day 0700-1900. Referring hospitals can notify ECMO leadership of a referral after hours but decisions to accept are made during these daytime hours.
- TC will page a Montlake ECMO leadership member (Jenelle Badulak, Peter von Homeyer, Aaron Cheng, Mike Mulligan) to speak with referring MD and decide on ECMO candidacy.
- If ECMO candidate, huddle will occur with Montlake incident commander, medical staff supervisor, operations chief, COVID ICU attending and an ECMO leadership member to assess capacity to accept ECMO referral.
- If Montlake capacity is low, ECMO leadership will reach out to PNW ECMO consortium (starting with Seattle ECMO centers: Harborview and Swedish).
- If accepted to Montlake:
  a. ECMO leadership will notify the CTICU attending (ECMO consultant for COVID ICU team)
  b. TC will connect COVID ICU attending and referring doctor for doc-to-doc.
- After the patient arrives on 5E, the patient will be evaluated by the CTICU attending in conjunction with ECMO leadership.
- If decision made for cannulation, ECMO leadership will identify appropriately trained cannulation team (one attending facile with cardiac POCUS to cite wires/cannula in IVC, one cannulator).

In-House Consultation

- The primary team should follow the usual pathway for ECMO consultation for medical respiratory failure, available on OCCAM ECLS Toolkit: call the operator and ask for the ECMO consult attending (CTICU attending).
- The CTICU attending should contact a member of UWMC ECMO leadership (Jenelle Badulak, Peter Von Homeyer, Aaron Cheng, Mike Mulligan) who will have a group discussion to make the decision to proceed with ECMO or not.
- If accepted for cannulation, ECMO leadership will identify an appropriately trained cannulation team (two cannulators, one must be facile with cardiac POCUS to cite wires/cannula in IVC).

Cannulation

- As the majority of critically ill patients with COVID-19 will be located in an isolation pod (COVID ICU), the ECMO team should be mobilized to that location (do not move the patient).
- Preparation of the patient by primary team:
  a. Right IJ and (ideally right) femoral vein open for use (additional central access in other locations)
  b. Deep sedation, neuromuscular blockade
- Cannulation should be performed at bedside with as little equipment and personnel possible to allow a safe cannulation procedure while at the same time protecting staff.
  a. Cannulation configuration: two cannulas (right internal jugular and ideally right femoral vein)
  b. Equipment in the room:
    i. Ultrasound for vascular access, site wires in IVC and site venous drainage cannula at IVC-right atrial junction
    ii. Cardiohelp pump & circuit, clamps, emergency priming line, 1 L crystalloid
CONSULTATION, REERRAL, CANNULATION AND PATIENT MANAGEMENT

iii. Cannulation supplies (in large bag):
   1. heparin bolus
   2. large prep stick x3
   3. laparotomy drape: prep in right IJ, femoral vein, subxiphoid space (for ultrasound)
   4. 6 pack sterile towels x2
   5. sterile trauma shears
   6. skin stapler
   7. ultrasound probe cover x2
   8. Sorin dilator kit
   9. central line kit
   10. 6Fr sheath
   11. amplatz super stiff wires x2 180cm
   12. 4 sterile tubing clamps (NOT chest tube clamps)
   13. ECMO major pack: Asepto syringe, basin, sterile table field
   14. Scalpel
   15. 1L sterile sodium chloride
   16. 4x4 boat gauze x4 or lap sponges
   17. needle driver x2
   18. Clippers
   19. 0 polysorb 5 pack x3
   20. foley holders to secure cannulas (leg band x1 and sticky x3)
   21. 20 Fr return, 25 Fr drainage cannulas
   22. Chlorhex dressings x2
   23. Needle driver x2
   24. NOT IN BAG (need to get): 6 sterile disposable gowns, 6 gloves, 2 hats

iv. Cannulators: put on disposable surgical gown and surgical gloves and PAPR/airborne PPE outside of room (non-sterile), put on second set of sterile disposable surgical gown & surgical gloves once inside the room. Don’t wear plastic PPE gown as base layer (too hot).

   c. Staff in the room for cannulation: follow UWMC Montlake recommendations for procedural PPE

      i. Two cannulating physicians
      ii. Two nurse ECMO specialists to prepare and manage the ECMO circuit and manage medication pumps and give heparin bolus.

Daily Patient Management:

- A 5SA nurse ECMO specialist will be deployed to this care unit to provide ECMO-specific care and usual bedside nursing duties 24/7. This will be coordinated by the ECMO program manager.
- The CT ICU attending will provide daily ECMO consultation for the patient, will round on the patient (without entering room to save PPE, use facetime with specialists’ ECMO iPhone), write daily ECMO management note (including on day of initiation), and is available to the ECMO specialist 24/7.
- The general critical care management of the patient and placement of all orders will remain with the COVID ICU team (except ECMO powerplan- ordered by CTICU attending). The CT ICU attending will be
available for consultation 24/7 and will leave daily ECMO recommendations to COVID ICU team. For more ECMO education: www.coreCMO.com.

- The cardiac/thoracic surgery residents are not currently involved with the care of these patients. If a cannula problem arises that cannot be dealt with by the CTICU attending, he/she will consult the thoracic surgery attending on call.
- DNR will be recommended for patients on VV ECMO with COVID.

**Important ECMO phone numbers:**

ECMO Attending on Call (CTICU attending) *call operator*

**ECMO Leadership:**

1. Jenelle Badulak 215-290-4004
2. Peter von Homeyer 206-307-8125
3. Aaron Cheng 206-719-4080
4. Mike Mulligan 206-369-7541

ECMO Coordinator On Call: 8-6636 (or call operator)

1. Matthew Plourde 203-228-1913
2. Jeff Maggioli 206-999-5320
3. Jenna Nersesyan 253-334-2524