

ECLS Cannulation Location in COVID

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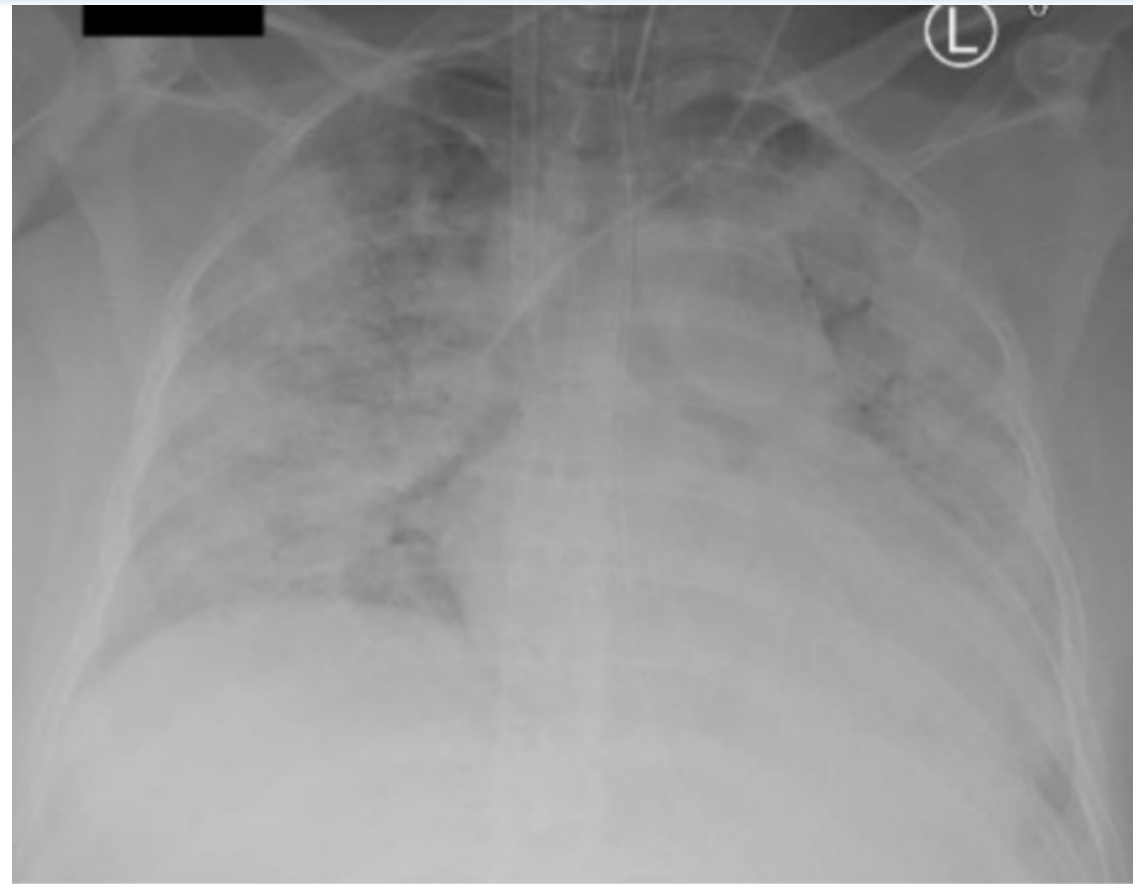
Michael S. Plisco MD FCCP

I have no financial relationships



Objectives

- Where can you cannulate
 - Patients may determine it for you
- PROS and CONS for each location
- Cannulation in COVID at Mercy



ECLS in COVID: Where to Cannulate

Depends on patient

- In house
 - Rescue ECLS
 - Salvage ECLS
 - Crash
- OSH admit
 - CESAR transfer
 - 'Comin in HOT'



Cannulation location options



BEDSIDE



CATH LAB

OR



Operating Room Cannulation



Pro

- CVOR – Knowledge of ECLS
- Lighting
- Better equipment (US/ECHO)
- Anesthesia/TEE
- Infection control/sterile room
- Infection monitoring
- Equipment (back up readily available)
- Bleeding control capability
- Surgical equipment
 - Cut down/vascular repair
- Fluoroscopy available
- Reconfiguration/contingency plan ease

Con

- Infection exposure transferring COVID patient
- Transfer of unstable patient (esp. if crash)
- Need for bed transfer
- Time delays – OR, staff, transport
- Fluoroscopy takes time
- Hard to convince OR staff that CCM are docs

Cath Lab Cannulation



Pro

- Fluoroscopy is right there
- Lighting
- Some extra equipment (wires)
- IF Cardiology manages
 - Homefield advantage
 - Team knowledge of ECLS

Con

- Infection exposure transferring COVID patient
- Transfer of unstable patient (esp. if crash)
- Need for bed transfer
- Time delays – Cath Lab, staff, transport
- Infection control
- No surgical equipment
 - Cut down, vascular repair
- Limited equipment for bleeding control
- No anesthesia
- Roles (who is doing TEE/cannulating)
- Technically difficult to navigate room

Bedside Cannulation



Pro

- Same room pre or post
- Same bed
- Same plan if 'crash'
- Same team pre/post cannulation
- Team knowledge / ECLS / comfort
- Limited infection risk to others
- Limited delay (CCM + CT surgeon)
- CCM familiarity with TTE, US, TEE*
- Family close by

Con

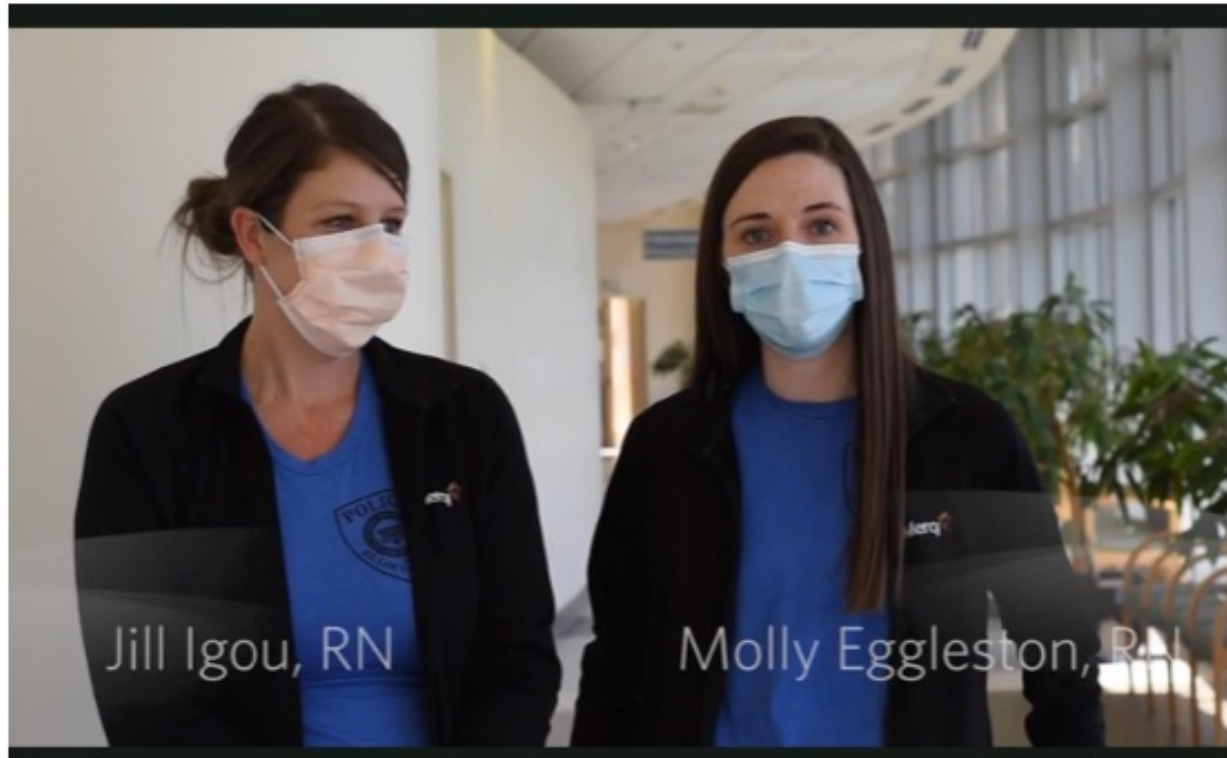
- Smaller space
- Contamination risk (sterility)
- Kinda dark
- Quality of equipment (US/ECHO)
- Bleeding control capability
- Back up equipment (extra stuff)
- Surgical equipment (cut down/repair)
- Difficult for configuration change
- Lack of fluoro ease

Bedside Cannulation: What it takes

- Space
- Stuff
- Staffing

And.....

Champions!



To my
biggest fan!
Keep studying &
we'll get you into
the BEMO program
Jill, RN,
BFF AW

753 (75)
To my
BFF! Besties
for the resties!
♥ Moll's
RN, CES-A

Mercy: Bedside Cannulation

Checklist guided

- Extensive consent process
- Pre-Huddle (Multidisciplinary)
 - CCM/CTS/Perfusionist/CV supervisor/RN/RT
 - Configuration
 - Contingency plan
 - Incidentals
 - RIJ Status – RIJ free vs need to move RIJ to LIJ
 - Flip
 - ECHO to check LV/RV if prone
- Timeout (in room)
 - Verbalize our plan + contingency

- Type of ECLS
- Physicians performing cannulation
- Obtain informed consent
- Obtain blood from blood bank
- Allergies verified
- Pre-cannulation huddle performed
 - Roles and responsibilities identified
- Hand hygiene prior to procedure
- Position patient appropriately
- Ensure access to IVs—for medication, fluid, or blood administration
- Medications
 - Amp of epi
 - Amp of atropine
 - 500 cc Albumin
 - Amp of calcium chloride
 - 10,000 units of heparin
 - Norepinephrine drip (if not already running)
- Skin prep performed (shave bilateral groin, CHG prep)
- Gather needed supplies:
 - Sterile gloves
 - Sterile gowns
 - Sterile towels
 - Kelly clamps/scissors
 - Line and ECLS cart
 - Ultrasound
 - Procedure light
 - Sutures
 - Caps
 - Masks
 - 2 Minor procedure fenestrated drapes
 - Blood tubing
- Timeout performed
- Sterile field maintained
- Sterile dressings applied



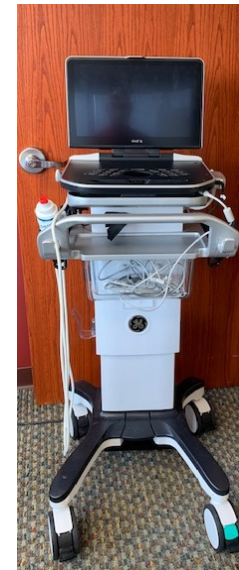
Mercy Cannulation: Space

ECLS: CVICU

- 3 capable rooms*
 - Monitoring system
 - Neg pressure isolation
- Inhouse
 - Timing of the 'move' from COVID unit
- OSH admit
 - Directly to CVICU if ECLS 'imminent'
 - Potential to tie up room if not cannulated



Mercy Cannulation: Stuff



Mercy Cannulation: Staff

In room (10 coworkers)

- RT - Vent
- RN x 2 – Meds/Charting
- Perfusionist
- CCM Fellow (ECHO + Hemodynamics/Vent/Analgo-sedation)
- CCM physician x 2 (Cannulation – Fem/RIJ)
- CT surgeon
- Safety Officer (esp. if crash)

Out of room (3 coworkers)

- Tech – Audio/Video vs Marker/Whiteboard
- RN- Runner at station (get meds/blood)
- Pastoral Care – Family support



Mercy Hospital: Cannulation in COVID



Pre COVID ECLS

- Bedside cannulation
 - Debrief process
 - US/ECHO proficiency (Dr. Venkata)
 - ELSO Cannulation for intensivist

COVID ECLS:

- BEDSIDE Cannulation
 - 19 pt: VV (2 stage R Fem to RIJ)
 - 1 pt: VV → VAV for RVF → VV
 - Complications: 1 aborted, vascular injury
- OR
 - 1 pt: reconfiguration → RECMO
 - Fem-RIJ → RIJ drainage to LIJ to PA return

How long does it take?

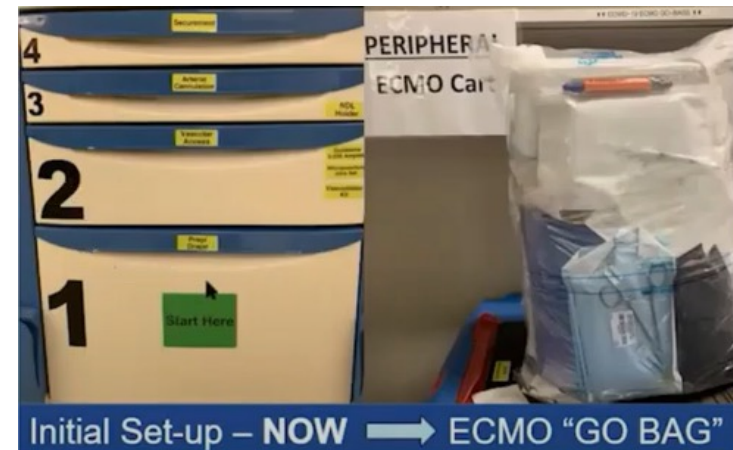
2021 Case

- 1610: Admit from outside Mercy Hospital
- 1610-1710:
 - Evaluation
 - Consent
 - Room prep
 - Rally the team
- 1710-1736: Needle to flow time
- **86 min** - Door to delivery of flow



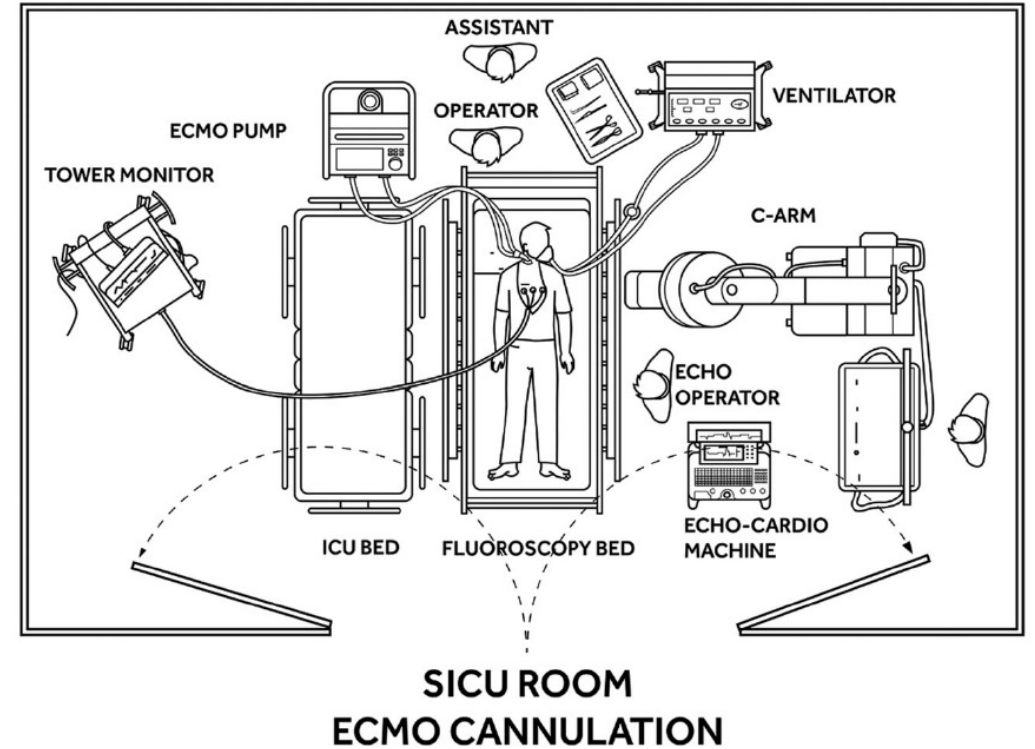
Johns Hopkins: COVID ECLS

- 15pt, bedside cannulation – dual lumen catheter
- ‘GO BAG’
- No major complications



Bethesda Heart Hospital

- 89 pt bedside cannulation
 - Fluoro capable with bed
 - 28 VV at bedside
 - No complications



Acknowledgements

Wash U – Dr. Masood and Dr. Itoh

Mercy ECLS Team

- Robert Longenecker – ECLS coordinator and Chief Perfusionist
- Medical Directors – Dr. Sermadevi and Dr. Venkata
- Perfusionists – Amela, Dan, Karen
- CTS – Drs. Cleveland, Dr. Blucher, Dr. Dox, Dr. Fotouhi
- CVICU staff – Nurses and RT led by Christie McCallister and Jill Igou
- ECLS Specialists
- CCM attendings
- Lab/Radiology/ECHO techs
- PT and OT
- CCM Chairman – Dr. Trottier
- Mercy Admin



ST. LOUIS
SHOCK
SYMPOSIUM

Thank you.



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References

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- Calcaterra D, Heather B, Kohl LP, Erickson HL, Prekker ME. Bedside veno-venous ECMO cannulation: A pertinent strategy during the COVID-19 pandemic. J Card Surg. 2020 Jun;35(6):1180-1185.