TRACHEOSTOMY OF COVID+/ PREVIOUSLY COVID+ PATIENTS:
Team-based care approach: Bedside Open Tracheostomy

Rationale:

- Adopt current, most readily-available and accurate data from centers of experience
- Improve chance of patient ventilator liberation
  - Reduce use of ventilators
  - Reduce use of sedation
- Avoid unnecessary patient transport
- Facilitate safe and efficient transfer out of acute care hospital setting
- Reduce overall healthcare provider exposure

Patient Selection/Scheduling:

- Prolonged intubation – at least 21 days of oral intubation, but ultimately defer to clinical judgment and case-by-case basis to determine timing
- Reasonable expectation of survival
- Relative respiratory status stability and ventilator settings
  - Wean to lowest acceptable ventilator settings to prove physiologic reserve
- Consider patient with known difficult intubation on case by case
- COVID-19 testing/re-testing with 'negative' result – dependent on evolving testing/re-testing availabilities

Location: Negative Pressure Room at bedside (preference for patient's existing room)

Procedural Team:

- Consider continuity of the same team members to improve efficiency/safety/communication
- Minimize team member changes
- Incorporate any new team members with video, simulation, and observation

In Room:

Experienced airway surgeons (2 surgeons)
Anesthesiology (1 anesthesiologist)
Operating Room (OR) staff – 1 scrub tech (ST)
Respiratory staff – 1 respiratory therapist (RT)

Outside of Room:

Anesthesiology (1 anesthetist w/PPE on)
OR/anesthesia staff member (1 anesthesia tech)
Respiratory staff (1 RT w/PPE on)
Patient's primary nurse (RN)
RN Clinical supervisor
Infection Preventionist

DAY BEFORE PROCEDURE:

- Simulation run with planned team members (especially if new member present)
- Provider meeting/call: Primary ICU attending/fellow, anesthesiologist, surgeons (2)
- Discuss patient status/considerations – needed orders and preparation
    - NPO status
    - Meds (ie. pre-sedation) anticipated
    - Labs (ie. T&S, cross) anticipated
    - Blood products anticipated
    - Ventilator changes – pre-procedure in conjunction with pre-sedation
    - VTE chemo-prophylaxis, blood-thinner status
    - COVID retesting status

PRE-PROCEDURE/ROOM SETUP:

- **RN Room Setup Checklist:**
    - Previous Night RN:
        - PDI wipe down siderails/room
        - Remove excess obstacles in room
        - Verify orders/consent
    - Day of RN:
        - Room temperature lowered
        - All room lights on
        - Large biohazard bag empty trash can near door
        - 2 suction setups – one with yankaur
        - New inline suction setup
        - Headboard removed
        - Dedicated functional IV port
        - Cleared bedside table in room for Anesthesia meds
        - PDI wipes in room
        - Confirm with RT etCO2 monitoring setup – etCO2 brick in room
        - Review any needed blood products, meds and physically confirm at bedside
        - Chair available to aid in post-procedure in-room doffing
        - Relocate biohazard instrument box, if available, outside room
- **High-Droplet (Aerosolizing) Exposure PPE - with additional considerations**
    - Cap/Bouffant/Beard cover
    - Goggles/Face Shield
    - N95 mask
    - Appropriate Surgical Gown/body covering
    - Double Non-sterile Gloves (RT, ST, surgeons)
    - Triple Non-sterile Gloves (Anesthesiologist)
    - Shoe covers

- 'Buddy Check' PPE when dressed and remain vigilant to communication difficulties with PPE in place

- **PRE-PROCEDURE CONFIRMATION/HUDDLE OUTSIDE ROOM:**
  - Define roles, review plan with sub-teams first, then full-team
  - Infection Preventionist self-introduction and PPE verification and plan
  - Consider cooling vest strategies for team on provider-by-provider basis

- **Surgeons/ST Sub-team**
  - Ensure all necessary equipment going in room
    - Surgeon 1 – headlight, FOB PVC frame (2 options based on bed size), 2 tarp clips
    - Surgeon 2 – Bovie/closed suction machines (shoulder roll, extra blanket, tarp cover on top), 2 tarp clips
    - ST – preset "mayo table" with all sterile supplies
  - Pack laid out with surgeon and ST inspection

- **Anesthesiology/RT Sub-team**
  - Ensure all necessary equipment going in room
    - Anesthesiologist – drugs and intubation supplies
    - RT – HOB wire frame
  - **Outside Room**:
    - Anesthetist – game plan for outside room pump med and fluid management
    - Anesthesia Cart, Rescue Cart, COVID Cart
    - DART Cart
    - Paper Record

- **Primary RN/Clinical supervisor Sub-team**
  - Monitoring computer for in-room audio/communication
  - Runner

INTRA-PROCEDURE:

1. Initial room entry/setup
   a. Anesthesia, RT to HOB – set up/position monitors (O2 saturation volume) and vent, HOB wire frame positioning, initial patient communication and administration of sedation if patient not already sedated, ETT holder takedown
   b. ST in room and dons sterile gown/gloves immediately
   c. Surgeons plug in headlight, bovie/closed suction machines, position pt/gown removal/bed height and location/Bovie pad placement and plug in
2. Prepping stage
   a. Surgeon preps neck with chloraprep
   b. ST drapes pt with U-drape down to bed; ST arranges instruments (magnetic pads) and throws Bovie/suction to Anesthesia/RT/surgeons for connections

   c. Surgeons pull over plastic tarp cover from HOB to FOB and clip in place to tighten field
   d. ST/Anesthesia cut tegaderm holes for themselves while surgeons don sterile gowns/gloves. Anesthesia removes top-layer gloves prior to entering tarp field.
   e. RT places tegaderm for available portal. Does not cut holes in tegaderm
   f. Surgeons cut tegaderm holes for themselves
3. TIME OUT #1 – brief and surgeon-led
   a. Patient & procedure confirmation
   b. Setup confirmation
4. Procedure
   a. Anesthesia administers drugs
   b. RT works with anesthesia to coordinate halting ventilation at end exhalation while Anesthesia clamps ETT and adds in Hepa filter/etCO2/bronch swivel adaptor after paralysis/all drug administration. When reconnected, RT resumes ventilation
   c. Surgeons palpate anatomy and plan skin incision in the interim
   d. Surgeons - dissection from skin to trachea – vertical skin incision, placement of U-stitch around incision with tagging, subcutaneous dissection with Bovie, if needed, placement of self-retaining retractor
   e. TIME OUT #2 – confirmation of full-team readiness for airway entry
   f. Anesthesia advances ETT deep and hyperinflates cuff, Surgeons/ST remove Bovie from immediate field
   g. Surgeons – dissection from trachea to tube in – cric hook placement, horizontal tracheotomy, tracheal spread –communication with Anesthesia to pull ETT back with balloon up just distal to tracheotomy site, RT stops ventilation and Anesthesia clamps ETT, Anesthesiologist disconnects circuit, Surgeon trach tube (ideally WITH inner cannula and NO obturator) placement into airway with thumb occluding lumen, Surgeon trach tube balloon up, Anesthesia hands Surgeon circuit WITH Hepa filter/etCO2 in place DISTAL to HOB wire frame, Surgeons connect circuit to trach, RT resumes ventilation, team check etCO2 and tidal volumes, Anesthesia oral ETT balloon down and removal of oral ETT, Surgeons tie down U-stitch or further close skin incision and secure trach to skin on each side, Surgeons apply foam trach ties and further site occlusion with Xeroform pants dressing
   h. TIME OUT #3 – full-team further pt assessment confirmations
   i. Surgeons remove Hepa filter/etCO2: Surgeon clamps circuit on pt side and RT removes circuit at ventilator, other Surgeon disconnects circuit to remove Hepa filter/etCO2 and reconnects circuit, Surgeon unclamps circuit on pt side and RT reconnects circuit at ventilator simultaneously
   j. RT verifies vent settings/logistics
5. Cleanup
   a. ST removes all instruments from under plastic tarp cover and collects ALL instruments on “mayo table”
   b. Surgeon removes FOB PVC frame

c. Surgeon/RT/Anesthesia remove HOB wire frame and shoulder roll with aerosolization-minimizing technique
d. Surgeons disconnect headlight, Bovie/closed suction machines, remove Bovie pad
e. Wipe off all of the equipment to be removed from the room
f. Anesthesia/Surgeon unzip ST, RT, and other surgeon
g. 3 unzipped team members doff body PPE in room and exit
h. Anesthesia/Surgeon roll up tarp from FOB to HOB with rolling-under technique and discard in room; place siderails up, lower bed to lowest setting, unzip each other, doff body PPE in room and exit

POST-PROCEDURE/DEBRIEF:

- Ensure one-at-a-time properly-monitored head/facial PPE doffing under direction of infection preventionist/unit safety officer outside room
- DISINFECT eye protection (Goggles/Face Shields) – Gray PDI wipes
- DISCARD head covering and ALL masks
- All Equipment – Anesthesia Tech disinfection & management w/terminal cleaning procedures
- Consideration of CXR
- Post-procedure Handoff with Anesthesia, Primary ICU attending/fellow, Primary RN
- Mandatory DEBRIEF - ALL involved personnel discuss successes and opportunities for improvement

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