The COVID Airway Safety Course

"Under stress we do not rise to the level of our expectations, we fall to the level of our training."

Archilochus

Schedule of day	
● 1-2 facilitators and max 7 learners to maintain social distancing and IPAC protocols (<10)	
● Group 1: 0900-1030 ● Group 2: 1100-1230 ● Group 3: 1300-1430 ● Group 4: 1500-1630	
● Introduction ● Hand Hygiene Drill ● Doffing Drill ● Team roles and Equipment Organization Drill ● Integration Mini Sim Exercise ● Debrief	5 mins 5 mins 15 mins 15 mins 40 mins 10 mins

Conceptual Overview of Workshop

Pedagogy
The urgency of training a large number of airway providers to near-perfect performance standards in the face of COVID demands a different simulation approach. ● Chunking ○ The protected intubation is broken down into a series of micro skills that are individually drilled to a consistent level of competent performance. ○ Microskills are then integrated into a consolidation mini simulation exercise. ● Rapid sequence deliberate practice: ○ Expert performance identified, Excellent mental representations developed, Immediate feedback provided through "freeze," "go" micro debriefs ● Learning pyramid and spaced repetition ○ Learners are taught micro skills in follow along fashion by instructors. ○ Learners then become teachers by leading the group in subsequent repetitions of each micro skill drill.

Course Outline

Introductions and Overview:
5 mins

- Social distancing meet and greet
- Overview of course
- Fiction contract
- Confidentiality contract
- Consent to be filmed

Activity #1
5 mins

Hand washing kata:

"Your soiled hands are a deadly weapon, the best PPE in the world will not protect you from them"

Anonymous

- 2 reps of the COVID surgical scrub (then repeated during doffing drills for spaced repetition)
    - Follow along sequence
        - Palms
        - In between fingers (webs)
        - Back of hands (back webs)
        - Back of fingers (knuckles)
        - Thenar eminence (thumb)
        - Finger tips (tips)
        - Wrists

- Resource
    - The COVID Scrub: https://youtu.be/eW-hmHFo4Oo

Activity #2

15 minutes

Doffing Drills with priority on conserving PPE:
● Drill basic doffing muscle memory ○ Rep #1: Instructor(s) lead(s) group in a follow along “dance” to develop muscle memory without PPE ○ Rep #2 One participant is chosen to lead the second rep with PPE ○ PPE is stewarded by using surgical masks to simulate N95’s and headbands to simulate face shields
Rep #1
Sequence ○ “Hot room” ■ 1st pair gloves off ■ Bouffant ■ 2nd pair gloves off ■ Hand hygiene ■ Gown (keep head up while untying to avoid contaminating chin on chest) ● Untie waist of gown ● Untie neck of gown ● Don’t touch contaminated area, make a ball and dispose ■ Hand hygiene ● In anteroom or hallway ○ Hand hygiene (because touched door handle to leave previous room) ○ Bend slightly forward hinging at hips over the disposal bin ○ Eye protection and mask ■ Face shield off by straps ● Hand hygiene ■ Goggles off by straps ● Hand hygiene ■ Mask off by straps ● Hand Hygiene ● Exit anteroom ○ Hand hygiene ○ If concern for contamination use sanitizer to clean affected area(s) ● Resource ○ Donning and Doffing tips and tricks: https://youtu.be/fGaMwpLrLhk
Rep #2 (Repeat as above with PPE)
Rep #3 (If time add 30 second physiologic HIIT workout stressor prior to doffing)

Activity #3

15 minutes

Preparation Before Entering Negative Pressure Room

Team organization

- Team leader (TL) assigns roles & decides how "Hot Team" communicates with "Cold Team"
    - "Hot Team" in Aerosolizing PPE (keep as small as possible)
        1. "Intubator": Most experienced clinician will vocalize airway plan
        2. "Ventilator": RT
        3. "Medicator": RN/Resuscitation MD
        4. "Hot Runner" RN (will pass equipment from Cold Runner to Hot team member PRN also available to swap out with contaminated team member)
    - "Cold Team" in Droplet PPE
        1. "Charter" RN
        2. "Officer": RN Monitors inspects PPE of any "hot team" member entering isolation room. Supervises anteroom/hallway portion of doffing for "hot team."
        3. "Cold Runner"
- Resource
    - https://youtu.be/TnZTS3VAKWY

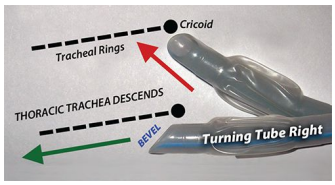
Equipment Organization

All equipment needed for COVID intubation laid out on a procedure table. RT educator familiarizes team with HiOx/Venturi and Inline EtCO2, Suction, Filter. Team discusses who will bring what into "Hot Room" Emphasize everything must go in at once with the "Hot Team."

- Airway Equipment
    - "Hot team" dons Aerosol Precautions
    - "Cold team" dons Droplet Precautions
- Intubator:
    - Verbalizes Airway Plan
    - Brings in Glidescope and Airway Tray
- Ventilator:
    - Prepares and brings in Ventilator, BVM and HiOx mask
- Medicator:
    - Prepares and brings in push dose drugs: RSI drugs and push dose epinephrine
- Medications:
    - Ketamine (0.5-2mg/kg) depending on level of shock
    - Rocuronium (2mg/kg) high dose for rapid onset
    - Push Dose Pressor to manage post procedure hypotension and bradycardia instead of fluid boluses
    - Push dose ketamine for initial post intubation sedation/analgesia (until infusions prepared)
    - Post intubation sedation and pressor infusions
        - Propofol/Midazolam/Fentanyl
        - Norepinephrine
- Resource
    - https://youtu.be/OfnbZwhHq9c

Activity #4

40 minutes

Integration Exercise 2 reps
Rep #1
● Instructor will say “Freeze,” “Start” to correct protocol violations and give real time feedback with a micro debrief. ○ Stem Given: ■ “This is John, he is one of our ER RN’s. He swabbed positive for COVID last week and has been at home under quarantine. He has become progressively SOB and called EMS today. He has been put in our negative pressure isolation room. He has an IV in situ. His vitals are: HR 110, BP 130/90, RR: 36, SaO2 82% on 5L NC, Temp: 37.7 ICU is full. We have to intubate in the ED” ○ Preparation ■ Assign Roles ■ Vocalize Airway Plan ■ Prepare Equipment ■ Donn PPE ■ Enter room in appropriate order bringing all of the equipment at one time ○ In “Hot Room” ■ Pre-oxygenate hypoxic patient ● Nasal cannula-->HiOx mask-->BVM as last resort ■ RSI with glidescope ● Kovaks Pearl: Turn tube right if caught up on anterior cricoid ring    ■ Initiate post intubation care ○ Leaving room ■ Buddy system: Each participant does the “Hot Room” portion of their doffing under the verbal instruction of another “Hot Team” member
Rep #2
Possible incremental stressors ● Physiological stressor: team does 20 seconds HIIT ● Add in recording of patient in respiratory distress ● Intensify vital sign abnormalities ● Verbalize during RSI that tube wont pass until correct maneuvers followed ● Verbalize that unable to pass tube with Plan A to make them go through Airway plan

Debrief 10 minutes
● Delta +/- ● One take away point of each participant

Resources

Course References
● Send to participants as flipped classroom resources 48 hours prior ● Hospital Guidelines ○ SJHC Intubation cheat sheet ○ SJHC steps for Donning and Doffing PPE ○ SJHC Aerosol generating procedures ○ Handwashing Video ○ Protected airway checklist ○ Prebrief protected intubation

"Slow is smooth and smooth is fast"

Scot Weingart

PRINCIPLES* OF AIRWAY MANAGEMENT IN

CORONAVIRUS COVID-19

FOR SUSPECTED/REPORTABLE** OR CONFIRMED CASES OF COVID-19

BEFORE

STAFF PROTECTION

- Hand Hygiene
- Full Personal Protective Equipment***
- Minimize Personnel During Aerosol Generating Procedures****
- Airborne Infection Isolation Room (if available)

PREPARATION

- Early Preparation of Drugs and Equipment
- Meticulous Airway Assessment
- Use Closed Suctioning System
- Formulate plan Early
- Connect Viral/ Bacterial Filter to Circuits and Manual Ventilator
- Use Video Laryngoscopy (Disposable if available)

DURING

TEAM DYNAMICS

- Clear Delineation of Roles
- Clear Communication of Airway Plan
- Closed-loop Communication Throughout
- Cross-monitoring by All Team Members for Potential Contamination

TECHNICAL ASPECTS

- Airway Management by Most Experienced Practitioner
- Tight Fitting Mask with Two Hand Grip to Minimise Leak
- Ensure Paralysis to Avoid Coughing
- Lowest Gas Flows Possible to Maintain Oxygenation
- Rapid Sequence Induction and Avoid Bag-Mask Ventilation When Possible
- Positive Pressure Ventilation Only After Cuff Inflated

AFTER

- Avoid Unnecessary Circuit Disconnection
- If Disconnection Needed, Wear PPE and Standby Ventilator +/- Clamp Tube
- Strict Adherence to Proper Degowning Steps
- Hand Hygiene
- Team Debriefing

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*Principles of Airway Management of COVID-19 may apply to Operating Theatre, Intensive Care, Emergency Department and Ward Settings. Similar principles apply to extubation of COVID-19 patients.
**There are regional and institutional variations on definition of a suspected/reportable case. Please refer to your own institutional practice.
***Personal Protective Equipment according to your own institutional recommendation, may include: Particulate Respirator, Cap, Eye Protection, Long-sleeved Waterproof Gown, Gloves
****Aerosol Generating Procedures: Tracheal Intubation, Non-invasive Ventilation, Tracheostomy, Cardiopulmonary Resuscitation, Manual Ventilation before Intubation, Bronchoscopy, Open Suctioning of Respiratory Tract

References:
1. World Health Organization. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected Interim guidance. January 2020.
2. Center for Disease Control and Prevention. Interim Infection Prevention and Control Recommendations for Patients with Confirmed 2019 Novel Coronavirus (2019-nCoV) or Persons Under Investigation for 2019-nCoV in Healthcare Settings. Februrary 2020.

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