

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
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- Introduction 5 mins
 - Hand Hygiene Drill 5 mins
 - Doffing Drill 15 mins
 - Team roles and Equipment Organization Drill 15 mins
 - Integration Mini Sim Exercise 40 mins
 - Debrief 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

“Safety First, Save Second”

Anonymous

- Flattening the healthcare worker curve speech
- Social distancing meet and greet
- Overview of course
- Fiction contract and introduction to the mocked up isolation room

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>
 - <https://www.youtube.com/watch?v=2YuDWCX3OkM>

Activity #2

15 minutes

Donning/Doffing Drills

- “Cold” PPE is Droplet (Gown, gloves, surgical mask and face shield)
- “Hot” PPE is Aerosol (Gown, gloves, N95 mask, goggles, face shield +/- bouffon)

Donning Order

- 1.) Mask first and perform seal check
- 2.) Goggles
- 3.) Face Shield: Ensure tipped forward to protect face
- 4.) Bouffon: must be on top for easy removal, wear especially if hair danges into face
- 5.) Gown:
 - Cynch up neck so that minimal amount of neck and upper chest are exposed
 - Ensure wrists are covered: most frequently observed breech
- 6.) 2 pairs gloves
 - Double Glove for Hot Team due to likelihood of ++ soiling by respiratory secretions.

Doffing Rep #1 (lead by instructor without PPE)

Sequence adapted to local IPAC guidelines

- “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>

Doffing Rep #2 (Lead by participant with stewarded PPE)

Activity #3

5 mins

Equipment Organization

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

- Pre-oxygenation:
 - Nasal Cannula at up to 6LPM and Tavish up to 15LPM (Do not use BVM as preoxygenation device)
- BVM
 - To be used only as rescue device in case of critical desaturation after failed intubation
 - Must be with 2 person technique and excellent mask seal
- Stethoscope
 - Prohibited in Hot Zone

Major behavioural change needed to not bag and not confirm intubation with stethoscope. Behavioural change is best accomplished through altering the environment not depending on will power. Therefore remove stethoscope from the environment and avoid putting BVM on face at all costs as urge to squeeze bag will be too tempting

- Intubator:
 - Verbalizes Airway Plan
 - Brings in Glidescope and Airway Tray
- Ventilator:
 - Prepares and brings Ventilator, BVM and Tavish mask
- Medicator:
 - Prepares and brings push dose drugs: RSI drugs, push dose epinephrine and flushes
- Medications:
 - Push dose medications only for the Intubation team
 - 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)
 - <https://youtu.be/OfnbZwhHq9c>

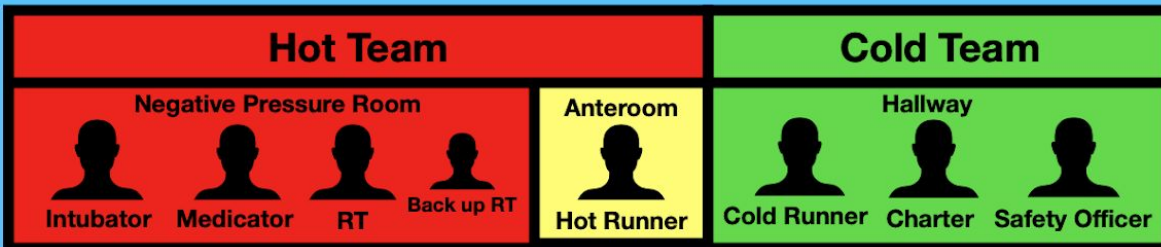
Activity #4

10 minutes

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)
 - “Intubator”: Most experienced clinician will vocalize airway plan
 - “Ventilator”: RT
 - “Medicator”: RN/Resuscitation MD
 - “Hot Runner” RN (Doffing Police “simon says”) passes equipment from Cold Runner to Hot team member PRN, subs in for contaminated team member PRN
 - “Reserve RT”: In full Hot PPE but stationed in cold area
 - “Cold Team” in Droplet PPE
 - “Charter” RN
 - “Safety Officer”: RN
 - Physically blocks the Anteroom entry way before the hot team enters.
 - “Clears” each “hot team” member with a verbal checklist
 - “Bouffon on top, Visor tilted down, Goggles, N95 with seal checked, Gown down up tightly” helps every hot team member tuck gown into sleeves
 - “Cold Runner”
- Team Leader script:
 - I am going to assemble a hot team on my right and a cold team on my left.
 - On my hot team
 - I will be the medicator. I will have you John be my RT and you Jill as my intubator. Jessica you will be the Hot Runner
 - On my cold team
 - I will have you Jennnifer as my charter, Joanna you will be the Cold Runner and Jerry you will be the Donning safety officer
 - Jessica as Hot Runner you have 3 roles including the most important role on the team.
 - 1.) You are the **doffing** police. You will lead each hot team member through their doffing in a “Simon says” fashion. Improper doffing is the highest risk moment for the team. Your supervision means their safety.
 - 2.) You will stay in the Anteroom for the duration of the protected intubation and pass equipment from Cold to Hot zones.
 - 3.) You will be ready to sub in for a contaminated team member
 - Jerry as the Safety Officer you are the **Donning** police. You will station yourself outside of the anteroom door like a bouncer at a bar. You will only allow entry to a Hot Team member once you have completed a systematic verbalized check of their PPE from head to toe. (See script above)
 - Jill could you give us your Plan A/B/C for the intubation and then let’s Donn our respective Hot and Cold PPE.
- <https://youtu.be/TnZTS3VAKWY>

PROTECTED INTUBATION PROTOCOL



ROLE ASSIGNMENT

HOT TEAM

- Intubator (MD Lead)
 - Airway Plan, Video/Tray
- Medicator (MD/RN)
 - Push Dose Drugs
- Ventilator (RT)
 - Ventilator/BVM
 - Back up RT in cold zone
- Hot Runner (MD/RN)
 - Doffing police

COLD TEAM

- Charter: (RN Lead)
 - Intercom operator
- Cold Runner (RN)
 - PRN Rx/Airway
- Safety Officer: (RN)
 - Donning Police

Back up RT in Hot PPE in cold zone. Sub in PRN

HOT PPE: long gloves, Level 2+ gown, N95, face shield, bouffant cap
INTUBATOR/RT: Add Double glove & goggles.

AIRWAY: Pre-ox w/NC + Tavish. BVM w/viral filter +/- PEEP valve, NO ventilations, VL, RSI, discuss plan B/C.

MEDS: Push dose only: Ket/Roc/Epi/Phenyl

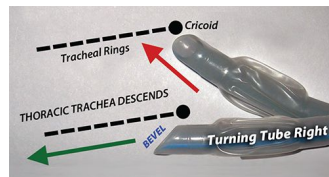
Activity #5

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 is 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 The 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
 - “Simon says”: Hot Team Doffing is lead step by step by the Hot Runner.

Rep #2

Possible incremental stressors

- Add in recording of patient in respiratory distress
- Intensify vital sign abnormalities
- Verbalize during RSI that tube wont pass until correct maneuvers followed
- Plan contamination event to allow team to reorganize itself to get contaminate member out

Debrief 10 minutes

- Delta +/-
- One take away point of each participant

Resources

Course References
<ul style="list-style-type: none">● Send to participants as flipped classroom resources 48 hours prior● Hospital Guidelines<ul style="list-style-type: none">○ 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 Degoing Steps
- Hand Hygiene
- Team Debriefing



*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. February 2020.

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