



VITAL ANAESTHESIA SIMULATION TRAINING

Many of you will be working on the front line helping to care for patients with suspected COVID-19. It is recognised that procedures that aerosolise the virus, such as intubation, are particularly at-risk times for transmission to health care workers. As such, we have developed this simple simulation scenario and intubation checklist to function as a training tool to help rehearse for these intubations and minimise the risk and exposure to you and your colleagues.



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COVID-19 SIMULATION RESOURCES

Intubation for suspected COVID-19 case

| Learning objectives |
|---|
| Utilise VAST COVID-19 intubation checklist to organise team and plan for intubation |
| Correctly don personal protective equipment (PPE) |
| Conduct rapid sequence intubation (RSI), minimising exposure to staff |
| Correctly doff personal protective equipment (PPE) |

| Scenario summary |
|--|
| The purpose of this scenario is to provide a simple simulated scenario to familiarise intubation teams with the processes of intubation of suspected COVID-19 cases |
| Michael Mori is a 48yo male, presented to your Emergency Department with presumed COVID-19. Has had contact with a known case and has been in self isolation for 2-days. He has developed fever and increased shortness of breath. His past medical history is only significant for mild asthma. The scenario is located in a negative pressure room of the ED (if available), otherwise in an area with as little traffic as possible. The patient is unwell, requiring intubation. The anaesthesia provider has been called for assistance with intubation. The intubation team will should consist of the anaesthesia provider an anaesthesia assistant, team leader and 2 other nurses. The scenario should end after intubation has occurred, ventilation established and ongoing care started. In order to conserve personal protective equipment (PPE), participants should be instructed to walk through the process of donning / doffing PPE utilising the cognitive aids, cross checking with a 'buddy', but not actually using the PPE. |

SCENARIO SETUP

| | |
|--------------------|--|
| Location | Emergency department - ve pressure room if available or low traffic area |
| Layout | Awake 'patient' on stretcher inside room All other required equipment outside room |
| Patient | |
| Type | Intubation trainer; wearing surgical mask and nasal prongs |
| Details | Michael Mori, 48-year-old man |
| Position | Lying supine on emergency department stretcher, one pillow under head |
| Equipment on | Monitors are on (ECG, SaO ₂ , BP cuff), 18 gauge IV running with crystalloid IL, nasal prongs at 4L/min O ₂ |
| Other | |
| Standard equipment | Your institution's airway and drug carts 'outside' the patient room |
| Extra equipment | PPE cart Videolaryngoscope, if available Container or plastic bag for dirty equipment Patient monitors (i.e. SimMon) |
| Documentation | PPE donning/doffing posters outside room VAST COVID-19 Intubation Checklist |

BRIEFING INSTRUCTIONS

| Overview of roles | |
|--------------------------|---|
| <i>Participants</i> | Anaesthesia team <ul style="list-style-type: none">- Anesthesia provider- Anesthesia assistant ED Team <ul style="list-style-type: none">- ED Doctor (co-facilitator)- ED Nurse – ante-chamber runner- ED Nurse – outside runner |
| <i>Present at start</i> | ED team waiting for anaesthesia team to arrive |

| Prepare the scenario |
|---|
| Prepare the simulation room and confirm monitoring is synched Place the ED team outside the patient room waiting for the anaesthesia team to arrive <ul style="list-style-type: none">- Hand out briefing cards Provide briefings to: <ul style="list-style-type: none">- The emergency department team (ED doctor and nurses)- The anaesthetic team (anaesthesia provider and anaesthesia assistant) |

| Briefing to the emergency department team |
|--|
| You have been looking after Michael Mori, a 48-year-old patient with presumed COVID-19 infection requiring escalation of care / respiratory support: <ul style="list-style-type: none">- Anaesthesia has been called to assist as members of the intubation team- You are waiting outside the patient room for a team introduction / planning |

| Briefing to the anaesthesia team |
|---|
| You have been called down to the emergency department to assist with an intubation for suspected COVID-19 patient |

| How to start the scenario |
|---|
| Cue the anaesthesia team to rendezvous with the ED team near the patient room |

BRIEFING CARDS (to be printed out and given to the following roles)

ED Doctor (co-facilitator)

You are the ED doctor. You have decided for early intubation of Mr Michael Mori:

- You have a small ICU in your hospital and they are happy to accept him post intubation
- You have asked the anaesthesia providers in your hospital to help with the intubation and you are waiting for them to arrive

When they arrive, complete introductions, provide handover and then proceed through the steps of preparing / performing the intubation

Patient background / handover:

Situation: Michael Mori is a 48-year-old-male with presumed COVID-19. He had close contact with a known case and has been in self isolation for 2-days.

Background

- Prodromal symptoms for 1-2 days and now with a fever, cough and increased difficulty in breathing
- Presented to ED 3hrs ago and has had increasing O₂ requirements / borderline saturations
- **PMH:** Well controlled asthma
- **Medications:** PRN Ventolin
- **Allergies:** Nil
- Examination findings:
 - o End of bed assessment - Alert, anxious, high work of breathing. 90kg
 - o Airway – Own teeth (none loose), Mallampati 2, good mouth opening, neck motion
 - o Breathing – On 4L Nasal prongs, SaO₂ 90%, RR30, bilateral coarse crackles
 - o Circulation – 2 x IV in situ, has been given 1.5L fluid resus, HR 105, BP 110/60
 - o Disability – Alert, appears anxious
 - o Exposure – no other cause of infection found, Temp 38.5
- **Investigations / imaging**
 - o Bilateral infiltrates on CXR
 - o Elevated inflammatory markers

ICU is willing to accept the patient. They have requested that you intubate prior to transfer.

- You have activated the COVID airway team and are awaiting their arrival

Following intubation and post intubation care indicate that you will continue to look after the patient

- Progress the scenario to the final stage by instructing the other team members to doff their PPE

ED Nurse – antechamber runner

You will be the ante-chamber runner

- Provide assistance as required, including scribing the events

ED Nurse – outside runner

You will be the outside runner

- Provide assistance as required

SCENARIO SEQUENCE

| Parameters | Actions | Transition triggers | Additional notes |
|---|---|--------------------------------|---|
| A. Alert, anxious B. RR 30, SaO ₂ 90% on NP 4L/min, Coarse crackles to auscultation bilaterally C. HR 105, BP 110/60 | Team introductions Receive handover Role allocation Recognize need for airborne/droplet protection Confirm airway plan A / B / C / D Prepare drugs and equipment | Organise team and assign roles | Refer to VAST COVID-19 intubation checklist |
| As above | Don PPE in accordance with algorithm Buddy check | Correctly don PPE | CDC PPE cognitive aide |
| <u>Pre-intubation:</u> B. SaO ₂ to 98% with preoxygenation CO ₂ initially then stops when unconscious Patient desaturates to 84% during intubation - Consider BVM <u>Post-intubation:</u> A. ETT at 22cm B. SpO ₂ 96% on 100% O ₂ C. BP 90/50, HR 110 | Enter room in staggered fashion Introduce self to patient and team Confirm patient assessment and monitoring attached Optimise position of patient and haemodynamics Reconfirm airway plan Pre-oxygenate Perform intubation Post intubation confirmation <ul style="list-style-type: none"> - Airway - Breathing - Ongoing care Dispose of used equipment | Perform RSI | |
| Cue the ED Doctor to 'take over care' Have the team move on to perform post extubation doffing of PPE | | | |
| | Remove all PPE in room except mask Remove mask once in ante-chamber | Correctly doff PPE | CDC PPE cognitive aide |
| END scenario when expected actions are complete. | | | |

INTUBATION CHECKLIST FOR SUSPECTED COVID-19

PREPARATION

TEAM

Name check, assign roles & confirm plan:

- Role 1 - Airway (most experienced intubator)
- Role 2 - Drugs / procedures / team leader
- Role 3 - Airway assistant
- Role 4 - Runner / Scribe in *ante-chamber off -ve pressure room*
- Role 5 - Outside Runner
- Verbalise plan:
 - A / B / C
 - Can't Intubate, Can't Oxygenate
- Verbalise clinical deterioration / arrest plan

DRUGS

- IV fluid and giving set
- Modified Rapid Sequence Intubation drugs
- Vasopressors and essential emergency drugs
- Post-intubation infusions and muscle relaxant

EQUIPMENT

- Select breathing circuit, mask, ETT and LMA, filter
- Select videolaryngoscope and blade *if available*
- Sealable box **or** plastic bag for dirty equipment
- Additional airway equipment immediately available
 - The outside runner will access

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Wear changeable scrubs
- Empty pockets & remove non-essential items
- Correctly don PPE; hand hygiene (HH) before each step
(Gown > HH > mask > cap > HH > eye protection > HH > gloves x 2)
- Cross check PPE and mask seal with colleague
- Enter -ve pressure area in a staggered fashion

INTUBATION

OPTIMISE

- Early airway assessment
- Patient position & consider ramping
- Nasal prongs under a surgical mask
- Apply monitoring and arrange equipment
- 2 x IV cannulae with running IV fluids
- Optimize haemodynamics prior to intubation
- Reconfirm plan with team

PRE-OXYGENATE

- 3-5 minutes using <5L/min flow with:
 - BVM (tight seal & HME/viral filter) **or**
 - Mapleson-C (tight seal & HME/viral filter)

MODIFIED RSI

- Use videolaryngoscope *if available*
- Deep muscle relaxation - avoid cough
- Inflate cuff and attach filter before ventilation
- Clamp tube if disconnection required
- Use 2 hand, 2 person rescue ventilation if required
- If Can't Intubate, Can't Oxygenate:
 - to scalpel-bougie-tube technique

KEY PRACTICE POINTS

Practice with simulation improves performance

Aim to minimise staff exposure

Correctly use available PPE



Acknowledgement to Dr Susan Mills and Tarin Booter for their input into this checklist

POST-INTUBATION

AIRWAY

- Place used equipment in a sealable box or plastic bag
- Confirm intubation with ETCO₂ *if available*
- Secure ETT and HME/viral filter; avoid disconnections
- Attach in-line suction *if available*

BREATHING

- Ventilate with lung protective settings:
 - SIMV or PCV, aim for 4 - 8mls/kg Vt
 - Use PEEP, start at 10 - 15 & titrate
 - RR 14-16
 - Start at FiO₂ 100%, wean as soon as possible
- Raise the head of bed to 30-45°

ONGOING CARE

- Commence ongoing analgesia and sedation
- Use vasopressors as required:
 - Aim to limit IV fluid administration
- Insert nasogastric tube (NGT) and urinary catheter
- Confirm ETT and NGT placement with portable CXR
- Ensure patient is paralysed if transferring

PPE

- Correctly doff PPE, using HH after each step:
 - IN ROOM, **all PPE except mask**
(gloves > HH > eye protection > HH > cap > HH > gown > HH)
 - OUTSIDE ROOM (HH > mask > HH > consider shower)

AVOID

- Exposure – only essential / experienced staff in the room
- Procedures that aerosolise the virus:
 - Non invasive ventilation for pre-oxygenation
 - High flow nasal prongs (>6l/min) / high circuit flow
 - Manual ventilation during apnoea – *unless needed*
 - Unplanned circuit disconnections
 - Cough during intubation
 - Use of open suction, t-piece, nebulisers, Entonox
 - Awake fiberoptic intubation – *unless indicated*

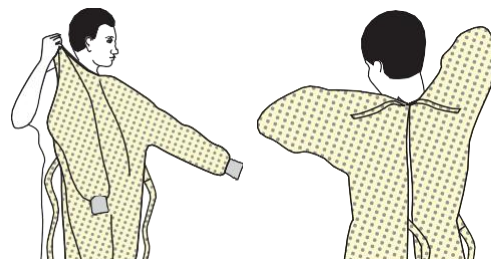
SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

5IFUZQFPG 11 & VTFEXJMMWBSZ CBTFEPO UIF MFWMFG QSFDBVUJPOT SFRVJSFE, TVDIBTTUBOEBSBOEDPOUBDU, ESPQMFU PS BJSCPSOF JOGFDUJPO JTPMBUJPO QSFDBVUJPOT. 5IF QSPDFEVSF GPS QVUUJOH PO BOE SFNPWJOH 11 & TIPVME CF UBJMPSE UP UIF TQFDJmD UZQF PG 11 &.

1. GOWN

† 'VMMZDPWFS UPSTP GSPN OFDL UP LOFFT, BSNT
UP FOEPG XSJTUT, BOE XSBQ BSPVOE UIF CBDL

† 'BTUFO JO CBDL PG OFDL BOE XBJTU



2. MASK OR RESPIRATOR

† 4FDVSF UJFT PS FMBTUJD CBOET BU NJEEMF
PG IFBE BOE OFDL

† 'JU nFYJCMF CBOE UP OPTF CSJEHF

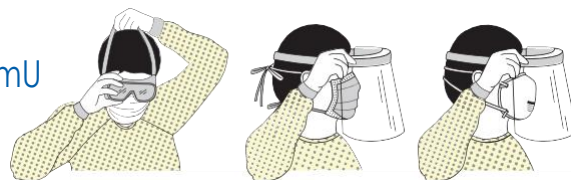
† 'JU TOVH UP GBDF BOE CFMPX DIJO

† 'JU-DIFDL SFTQJSBUPS



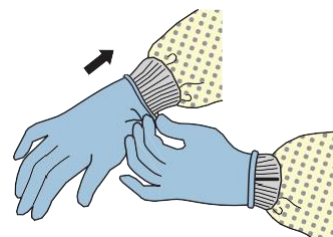
3. GOGGLES OR FACE SHIELD

† 1MBDF PWFS GBDF BOE FZFT BOE BEKVTU UP mU



4. GLOVES

† &YUFOE UP DPWFS XSJTU PG JTPMBUJPO HPXO



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

† ,FFQ IBOET BXBZ GSPN GBDF

† -JNJUTVSGBDFT UPVDIFE

† \$IBOHF HMPWFT XIFO UPSO PSIFBWJMZ DPOUBNJOBUE

† 1FSGPSN IBOE IZHJFOF



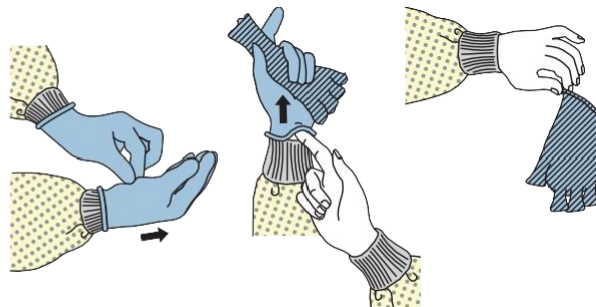
HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

EXAMPLE 1

51FSF BSF B WBSJFUZ PG XBZT UP TBGFMZ SFNPWF 11 & XJUIPVU DPOUBNJOBUIJOH ZPVS DMPUIJOH, TLJO, PS NVDPVT NFNCBSOFT XJUI QPUFOUJBMMZ JOGFDUJPVNTBUFSJBMT. JFSF JT POF FYBNQMF. **Remove all PPE before exiting the patient room** FYDFQU B SFTQJSBUPS, JG XPSO. 3FNPWF UIF SFTQJSBUPS **after** MFBWJOH UIF QBUJFOUSPPN BOEDMPTJOH UIF EPPS. 3FNPWF 11 & JO UIF GPMMXPXJOHTRVFODE:

1. GLOVES

- † OVUTJEF PG HMPWFT BSF DPOUBNJOBUE!
- † *G ZPVS IBOET HFU DPOUBNJOBUE EVSJOH HMPWF SFNPWBM, JNNFEJBUFMZ XBTI ZPVS IBOET PS VTF BO BMDPIPM-CBTFE IBOE TBOJUJFS
- † †TJOH B HMPWFE IBOE, HSBTQ UIF QBMN BSFB PG UIF PUIFS HMPWFE IBOE BOE QFFM PGG mSTU HMPWF
- † J)PME SFNPWFE HMPWF JO HMPWFE IBOE
- † 4MJEF mOHST PG VOHMPWFE IBOE VOEFS SFNBJOJOH HMPWF BU XSJTU BOE QFFM PGG TFDPOE HMPWF PWFS mSTU HMPWF
- † %JTDBSE HMPWFT JO B XBTUF DPOUBJOFS



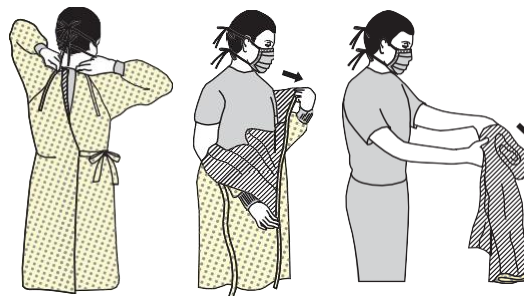
2. GOGGLES OR FACE SHIELD

- † OVUTJEF PG HPHHMT PS GBDF TIJFME BSF DPOUBNJOBUE!
- † *G ZPVS IBOET HFU DPOUBNJOBUE EVSJOH HPHHMT PS GBDF TIJFME SFNPWBM, JNNFEJBUFMZ XBTI ZPVS IBOET PS VTF BO BMDPIPM-CBTFE IBOE TBOJUJFS
- † 3FNPWF HPHHMT PS GBDF TIJFME GSPN UIF CBDL CZ MJGUJOHIFBE CBOEPS FBS QJFDF
- † *G UIF JUFN JT SFVTBCMF, QMBDF JO EFTJHOBUE SFDFQUBDMF GPS SFQSPDFTTJOH. OUIFSXJTF, EJTDSE JO B XBTUF DPOUBJOFS



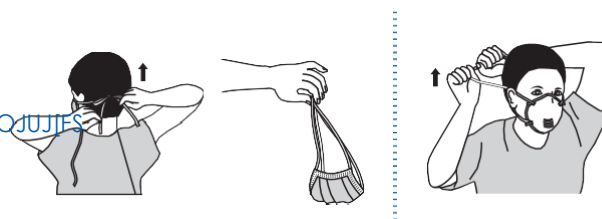
3. GOWN

- † (PXO GSPOU BOE TMFFWFT BSF DPOUBNJOBUE!
- † *G ZPVS IBOETHFU DPOUBNJOBUE EVSJOH HPXO SFNPWBM, JNNFEJBUFMZ XBTI ZPVS IBOET PS VTF BO BMDPIPM-CBTFE IBOE TBOJUJFS
- † 6OGBTUFO HPXO UJFT, UBLJOH DBSFUIBU TMFFWFT EPO'U DPOUBDU ZPVS CPEZ XIFO SFBDIJOH GPS UJFT
- † 1VMM HPXO BXBZ GSPN OFDL BOETIPVMEFST, UPVDIJOH JOTJEF PG HPXO POMZ
- † 5VSO HPXO JOTJEF PVU
- † 'PME PS SPMM JOUP B CVOEMF BOE EJTDSE JO B XBTUF DPOUBJOFS

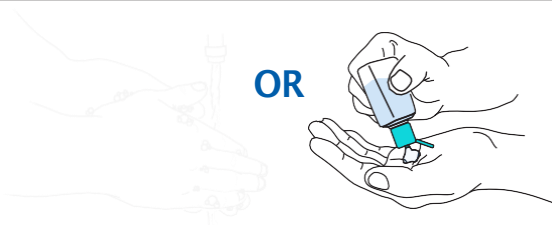


4. MASK OR RESPIRATOR

- † 'SPOU PG NBTLS/SFTQJSBUPS JT DPOUBNJOBUE □%0 /05 506\$)!
- † *G ZPVS IBOETHFU DPOUBNJOBUE EVSJOH NBTLS/SFTQJSBUPS SFNPWBM, JNNFEJBUFMZ XBTI ZPVS IBOET PS VTF BO BMDPIPM-CBTFE IBOE TBOJUJFS
- † (SBTQ CPUUPN UJFT PS FMBTUJDT PG UIF NBTLS/SFTQJSBUPS, UIFO UIF POFT BU UIF UPQ, BOE SFNPWF XJUIPVU UPVDIJOH UIF GSPOU
- † %JTDBSE JO B XBTUF DPOUBJOFS



5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE



