SASA COVID-19 UPDATE

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SASA Recommendations for Airway Management for COVID-19 Patients

This is a living document intended to help planning, preparation and execution of airway management for known or highly suspected COVID-19 patients in the operating theatre but has been kept as flexible as possible to allow implementation in other areas. It may be updated and modified as new information becomes available. A large quantity of resources for COVID airway management is available on OpenAirway. Guidance on preparation and workflow for operating theatres managing COVID cases are available here and guidelines for anaesthesiologists on personal protective equipment (PPE) are here.

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COVID Airway Response Team

Concept

- Team designed around airway management in the operating theatre, but principles must be flexible and nimble enough to be used to support other clinical areas (eg. ICU and wards) should the situation require it.
- Roles well defined, and team trained in all roles
- “Not-Hot” roles available for those who are at higher risk but want to help
- Roles can condense somewhat if staff availability is an issue
- Roles can use staff already in the area with suitable training

Team

Team of 5, of which 3 are in the room (HOT) and 2 are just outside (or at a safe distance). HOT team are in full AGP PPE; not-hot team has one in standard PPE to hand off items, and the runner **not** in PPE to allow them to move around freely. (Adapt this if occurring in ICU/wards where the area may be at increased risk of aerosols)

1. **HOT-1**: Airway 1 - Manages facemask for pre-ox (two-handed), performs intubation, provides ventilation once ETT is secured.
2. **HOT-2**: Airway 2 - Performs normal roles of airway assistant, squeezes bag if performing mask ventilation, secures ETT, performs FONA if required.
3. **HOT-3**: Drugs and Dynamics - Reads checklist, keeps situational awareness, watches patient dynamics on monitor and team dynamics, gives drugs.
4. **NOT-1**: Manages ‘rescue’ equipment, handing it to HOT team as required, and coordinates activities of the runner. Acts as a buddy for the stages of donning and doffing that occur in the not-hot zone.
5. **NOT-2**: Runner, not dressed in PPE (if safe). Manages communication outside of theatre/hot zone and fetches additional equipment if required.

Video demonstrations

- Video tutorial from Infections Diseases Prof Marc Mendelson on how to don standard PPE for close work with COVID positive patients.
- SASA COVID19 video on donning AGP PPE for intubation
- SASA COVID19 video on equipment preparation for intubation
- SASA COVID 19 video on induction and intubation
- SASA COVID 19 video on extubation
- SASA COVID 19 video on doffing AGP PPE after extubation
- Good example of an emergency intubation with the viral filter always kept on the patient-side when connecting and disconnecting. (Note that we would recommend connecting a closed suction system between ETT and fild

COVID Airway Kit

Concept:

- 2 steel trolleys with everything needed for intubation, including team PPE
- HOT trolley goes into the room; has only essential items
- Not-hot “outside” trolley stands outside door with everything else
- All disposables that go HOT are bagged for disposal in room
- Not-hot trolley includes decontamination and cleaning materials
- Everything pre-packed into clear bags with checklists - can “chuck” a bag into the HOT zone if needed in a hurry.
- Not-hot items that are not used can be repacked for the next case.

Intubation bag • OPAs • BVMR with PEEP valve • Filters - HMEF and HEPA • Face masks • ETTs 7.0 and 8.0 • (Subglottic suction tubes if patient going to ICU post intubation) • Bougie • Closed suction systems • Disposable VL (or reusable with appropriate attachments for cleaning) • Tape • Syringe • Scissors • Oxygen tubing • Nipple and nut (“Christmas Tree) oxygen connector	**Rescue bag** • iGel 3 • iGel 4 • Cric kit • 6.0 ETT • Frova
Drug bag • Syringes • Needles • Labels • Non-schedule drugs	**Monitoring** (if out of theatre, add:) • Monitor capable of displaying ECG/NIBP/SpO2/EtCO2 • IBP cable available
PPE • 3 sets of full AGP PPE • 1 set of contact PPE • Donning and doffing checklist • Permanent marker	**Cleaning kit** • Surface disinfectant • Alcohol hand scrub

Procedure

“Cold” Preparation

Occurs after every use in area away from patient care (eg: clintech’s office)
Creates ‘COVID Cart’ that is ready for transport to the area where the patient will be intubated.

Responsible person: _____

Bag Prep

Separate clear plastic bags for each of:

1. Intubation bag
2. Rescue bag
3. Drug Bag
4. PPE Bag

Packed against the checklists, with checklists packed visibly within each sealed bag. Placed on a large, easily-cleanable trolley. Stored in an accessible location, but cognisant of the risk of theft of items, especially the PPE.

Monitoring and Cleaning kit

1. Vital signs monitor with capnography which can be cleaned appropriately, with cables/ connections for ECG, SpO2, NIBP, capnograph and ideally IBP placed on the bottom of the large trolley. (Not required if only providing airway/anaesthesia support in operating theatres).
2. 70% alcohol (or dilute bleach solution) for surfaces and wipes, plus hand sanitizer dispenser

“Hot” trolley

A second easily-cleanable trolley to go into the “hot” zone should be available but free of equipment. Items which are required for the specific case are packed onto this trolley during “warm” preparation.

"Warm" Preparation

Transport

All relevant equipment transported to intubation anteroom (eg: induction room, area outside isolation cubicle), and should include:

1. Both cold-prepped trolleys with kit
2. Patient specific drugs
3. Video-laryngoscope if not already in Intubation Bag
4. Patient specific airway kit if necessary

Pre-Intubation

- Assemble team and assign roles
    - HOT-1 (Airway) ,HOT-2 (Airway assistant), HOT-3 (Dynamics)
    - Not-1 (Equipment), Not-2 (Runner)
- Confirm equipment and plan A, B, C, D
- Don and check PPE, move to hot room with HOT airway trolley
- Not-1 remains in anteroom, in standard PPE
- Runner remains outside, beyond anteroom

See simulation videos here of donning AGP PPE and equipment preparation.



Circuit setup. Mask, closed suction, HMEF or HEPA filter, capnography, Y-connector, circuit. (Note the filter should not be a simple HME, but must have viral filter capabilities. See SASA guidance on breathing systems filters for more information.)

"Hot" Performance

Intubation

Prepare the environment

- Circuit prepared:
  Mask > Closed suction > Viral filter > Pitot/flow/capnography connection > Y-connector > Circle circuit with second viral filter on expiratory limb
- Suction connected to Yankauer at ready
- 360-degree access to patient

Prepare the patient:

- Positioning, monitoring with capnography, IV access
- Pre-O2 with two-handed grip and tight fit to avoid aerosolisation
- HOT-3 asks HOT-1 to state airway plan
- HOT-3 confirms with HOT-2 that all equipment is prepared
- HOT-3 confirms with Not-1 that rescue bag is ready
- Final check: EtO2 > 0.8
- RSI with cricoid as required

Turn O2 off before removing mask, then:

- **Plan A** - VL with ETT preloaded with introducer
  If failure, declare immediately and call for Rescue Bag
- **Plan B** - Place 2nd generation SGA (eg i-gel) and ventilate with minimum necessary pressure, to avoid leaks. Consider flexible intubation through i-gel. If SGA failure:
- **Plan C** - BVM with 2-handed technique and HOT-2 bagging. If failure:
- **Plan D** - FONA

See the intubation simulation video using the checklist here.

Post-intubation

Secure airway and confirm:

- Connect circuit, inflate cuff
- Turn on O2 and manually ventilate
- Verify with equal chest-rise and capnography only

Complete case

- HOT-Airway/Dynamics or Assistance remains to complete case, rest leave
- Extubate with care to avoid coughing (consider plastic sheets over head)
- Turn off gas flow before extubating
- Do not give large recruitment breath
- Extubate to well-sealed anaesthetic mask
- Replace surgical mask as soon as patient is breathing comfortably.
- Follow Doffing guidelines on exit

See the extubation and PPE doffing videos here.

Team Roles & Responsibilities

HOT-1 - Airway 1
Place airway equipment specific to case from Airwat Bag onto Hot trolley Don AGP PPE (and check buddies as time allows) Check order of circuit assembly and confirm filters and suction present Commence preoxygenation with two-handed technique State airway plan and triggers to move through steps Perform intubation Declare failure early if needed Place SGA if needed Hold two-handed mask if BVM required Hold ETT in place until secured after intubation Remain in theatre to complete case and extubate safely Doff PPE with buddy check
HOT-2 - Airway 2
Confirm airway Rescue Bag intact and contents present Don AGP PPE (and check buddies as time allows) Check airway adjuncts and suction Confirm ETT preloaded with introducer and cuff intact Perform cricoid if required Squeeze bag if required Perform FONA if required Secure ETT after intubation Check cuff pressure Doff PPE with buddy check
HOT-3 - Drugs and Dynamics
Confirm drug bag and scheduled drugs available Draw up and label drugs for case and place on hot trolley Don AGP PPE (and check buddies as time allows) Confirm monitoring connected and functioning Challenge HOT-1 to state airway plan Challenge HOT-2 to confirm equipment ready Challenge Not-1 that rescue bag is ready Give drugs Watch monitors and team performance Prompt if needed Assist with documentation Doff PPE with buddy check

NOT-1 - Equipment
Set out PPE and cleaning materials Don standard PPE Buddy check HOT team PPE Pass/toss Airway Rescue Bag if required Ensure no disposables exit hot area Ensure no personnel enter without AGP PPE until between intubation and 20 minutes post extubation Buddy check doffing of PPE
NOT-2 - Runner & Comms
Collect and keep safe all ID badges, pens, phones of team Answer on-call phones and pass messages as required Buddy check donning of PPE Write team names and designations on gowns after donning Fetch additional equipment as required by hot team Buddy check doffing of PPE

Procedure Checklist

Team preparation	✓	Induction & Intubation	✓
Roles allocated (3 HOT, 2 Not)		HOT-3 to HOT-1: State airway plan	
Personal items collected (phones etc)		HOT-3 to HOT-2: Confirm equipment	
Team don PPE		HOT-3 to Not-hot: Confirm Rescue Bag	
HOT-1 AGP PPE buddy check		Confirm EtO2 > 0.8	
HOT-2 AGP PPE buddy check		Push RSI induction agents	
HOT-3 AGP PPE buddy check		Cricoid if necessary	
Names and role on PPE		**O2 OFF** before mask removed	
Equipment preparation	✓	VL intubation with preloaded introducer	
Essential airway devices on hot trolley		HOT-1 states depth of ETT from view	
Other airway devices on outside trolley		(Airway rescue as per plan if needed)	
Drugs drawn up on hot trolly		ETT connected and cuff inflated	
Rescue Bag sealed/checked		**O2 ON** before ventilation	
		Confirmation with capnography	
Patient Prep & Pre-induction	✓	Post-intubation	✓
Patient positioning optimal		ETT secured at stated depth	
Monitoring in place		Ongoing anaesthesia/sedation care	
Check circuit order incl. closed suction		Demobilisation	
Yankhauer suction connected		Team size reduced appropriately	
Start preoxygenation (two-hand seal)		Doffing under buddy supervision	

Watch the SASA COVID19 Induction & Intubation Simulation video

Extubation Checklist

Item	✓
Deep extubation to limit coughing wherever possible	
Consider opiate bolus or infusion	
Confirm spontaneous breathing (with minimal support)	
Transparent plastic sheet over head and chest to limit droplet dispersion	
Theatre team in aerosol-generating procedure PPE	
Suction oropharynx with Yankhauer under plastic	
Loosen endotracheal tube tape/ties	
Ventilator and gas flow **OFF**	
Do **not** give recruitment/extubation breath	
Remove ETT	
Immediate transition to anaesthetic mask with two-handed seal	
Gas flow **ON**	
Confirm good respiration and absence of coughing	
Transition to clean surgical mask	
Carefully remove plastic sheeting and dispose	

Watch the SASA COVID19 Extubation Simulation video

Intubation Bag Checklist

Item	✓
BVMR with PEEP valve	
Oxygen tubing and “Christmas Tree”	
Bacteriological/viral filter (HMEF or HEPA)	
OPAs: 4/5	
Anaesthetic masks: 3/4/5	
ETTs: 6.0/ 7.0/ 8.0	
Closed suction set	
Subglottic suction ETTs: 7.0 and 8.0	
Disposable bougie	
Lubricating gel	
VL (preferably disposable)	
DL (handle and Macintosh 3 and 4 blades)	
Tape to secure ETT	
10 ml syringe to inflate cuff	
ET Tube clamp	
Yankhauer	
Suction tubing	
Scissors	

Rescue Bag Checklist

Item	✓
I-gel 3	
I-gel 4	
Scalpel cric kit	
ETT 6.0	
Frova catheter	

PPE Bag Checklist

Item	✓
3 x disposable gowns	
3 x goggles (or masks with face shield)	
3 x N95 masks (ideally fitted for team)	
3 x pairs of sterile/long gloves	
3 x disposable caps	
Box of non-sterile gloves (ideally several sizes)	
Box of masks with face-shields	
5 x blue aprons	
Permanent marker	
Donning and doffing checklist	

Cleaning Checklist

Item	✓
Alcohol hand sanitiser	
Alcohol (or hypochlorite) surface disinfectant	
Disposable paper towels	
Bowl/dish for reusable item cleaning	
Enzymatic detergent	
Red biohazard bags	