

Airway management and COVID-19 patient -Saudi Anesthesia Society guidelines-

ABSTRACT

The Saudi Anesthesia Society (SAS) in line with the Mission and Vision of the Kingdom of Saudi Arabia to contain the new coronavirus disease (COVID-19) is pleased to develop a statement regarding airway management of suspected/confirmed patients with this virus, to ensure the safe practice in dealing with the patient as well as protecting the medical staff from getting the infection. In this report, we have summarized the guidelines necessary for airway management of suspected/confirmed COVID-19 patient. Since the COVID-19 outbreak is up to date existed, therefore this report is considered as interim guidelines for airway management of the suspected/confirmed patients. The guidelines will be revisited and modified in the future, if necessary.

Key words: Airway; Anesthesia; COVID 19

The Saudi Anesthesia Society (SAS) in line with the Mission and Vision of the Kingdom of Saudi Arabia to contain the new coronavirus disease (COVID-19) is pleased to develop a statement regarding airway management of suspected/confirmed patients with this virus to ensure the safe practice in dealing with the patient as well as protecting the medical staff from getting the infection.^[1]

Objectives

1. To provide updated information about COVID-19.
2. To establish guidelines related to airway management in a patient with suspected/confirmed COVID-19.


3. To recommend Personal protective equipment (PPE) suitable for airborne, droplet and contact isolation precaution.

On 11th February 2020, World Health Organization (WHO) announced “COVID-19” as the name of the new viral disease, Coronavirus Disease (COVID-19) and Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-COV-2).^[2] The roles of environmental contamination in the transmission of COVID-19 are not yet clear. Possible routes of transmission of COVID-19 include direct contact, droplet and airborne (aerosol) transmission.^[1]

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WHO case definitions

The case definitions are based on up to date WHO current definition and information and will be revised as new information is collected. The Ministry of Health in the Kingdom of Saudi Arabia has adopted general rules depending to fight COVID-19 on its own epidemiological situation.

Suspected case

- a. A patient with Acute Respiratory Illness such as fever, cough and shortness of breath, and with no other etiology that fully explains the clinical presentation, and a history of travel to or residence in a country, area or territory that has reported local transmission of COVID-19 disease during the 14 days prior to symptom onset (for updated reporting, see the situation reports at <https://www.who.int/emergencies/diseases/novelcoronavirus-2019/situation-reports/>); OR
- b. A patient with any Acute Respiratory Illness who has been a contact of a confirmed or probable case of COVID-19 during the 14 days prior to the onset of symptoms (see the definition of contact below); OR
- c. A patient with Severe Acute Respiratory Infection such as fever, cough and shortness of breath who requires hospitalization and who has no other etiology that fully explains the clinical presentation.

Probable case

A probable case is a suspected case for which the report from laboratory testing for the COVID-19 virus is inconclusive.

Confirmed case

A confirmed case is a person with laboratory confirmation of infection with the COVID-19, irrespective of clinical signs and symptoms. Technical guidance for laboratory testing can be found at: <https://www.who.int/emergencies/diseases/novelcoronavirus-2019/technical-guidance/laboratory-guidance>.

Contact

A contact is a person who is involved in any of the following within 14 days after the onset of symptoms in the patient:

- Providing direct care for patients with COVID-19 disease without using proper personal protective equipment (PPE)
- Staying in the same close environment as a COVID-19 patient (including sharing a workplace, classroom or household or being at the same gathering)
- Travelling in close proximity with (that is, having less than 1 meter separation from) a COVID-19 patient in any kind of conveyance.

Principles of airway management in suspected/confirmed COVID-19 patient^[3,4]:

1. Preparation/ahead plan:
 - Assign the minimum needed numbers of expert practitioners to minimize exposure
 - Formulate early plans: prepare all medications and airway tools you need in advance and aim to intubate as early as possible
 - A clear sign on the door of the designated OR to minimize exposure
 - Allow time to all staff to apply PPE and barrier precautions with presence of an observer.
2. Full PPE:
 - Hand hygiene
 - Disposable N-95 masks (needs fitting test), goggles, footwear, water-proof gowns and gloves (consider double glove technique) [Figure 1]
 - Power Air Purifying Respirator (PARP): A PAPR should be worn for high-risk aerosol-generating procedures. These respirators also meet centers for disease control and prevention (CDC) guidelines for protection against TB exposure. Reusable respirators that are typically loose fitting hooded or helmeted ♣ Equipped with a battery-powered blower to force air through a particle filter for the wearer to breathe ♣ Capable of reducing airborne exposures at efficiencies that typically exceed the N95, using a high-efficiency particulate air (HEPA) filter [Figure 2].
3. Team dynamics:
 - Clear role to the team members
 - Clear communication of airway management plan
 - Closed – loop communication
 - Cross monitoring by all team members for potential contamination.
4. Transferring:



Figure 1: N95



Figure 2: PARP

- Directly to negative pressure OR: should NOT brought to holding or PACU areas
 - Avoid high flow oxygen: use minimum flow to keep SPO₂ <94%.
 - Ensure availability of high quality HMEF (heat and moisture exchange filter)/HEPA (high efficiency particulate air) filters to be placed in between the facemask and breathing circuits or between facemask and reservoir bag.
5. Airway:
- Airway management should be done by the most experienced practitioner
 - Standard ASA monitoring should be applied before induction of anesthesia
 - Minimize leak from facemask by applying two-hand technique
 - Perform Rapid Sequence Induction (RSI) to avoid bag-mask ventilation
 - Use video laryngoscopy (disposable blade)
 - Positive pressure ventilation only after ETT cuff is inflated
 - Lowest gas flow needed to maintain acceptable oxygenation.
6. Dispose:
- Re-sheath the laryngoscope immediately after intubation
 - Seal all used airway equipments in a double zip-locked plastic bag for disposal or decontamination/disinfection [Figure 3]
 - Avoid unnecessary ETT disconnection from circuit
 - In case of necessity of tube disconnection, PPE should be on, clamp the tube and the ventilator should be on standby mode.
7. Doffing:
- Strict adherence to proper de-gowning and doffing steps



Figure 3: Plastic cover on anesthesia equipment (case in progress)

- Hand hygiene
- Team debriefing
- After doffing avoid touching the face/hair before washing the hands.

In conclusion, adherence to PPE with adequate hand hygiene protocol while dealing with COVID-19 patients is essential for protecting the medical staff. During the outbreak, the priority should go for emergency surgical procedures and one should ideally delay elective/semi-elective cases. Pre-anesthesia clinic during outbreaks will be changed to an online checklist (virtual clinic) and to keep airway and physical examination for the primary anesthesia team. RSI and tracheal intubation and extubation should be performed in the designated negative pressure OR/transferred to negative pressure ICU bed. Fiberoptic intubation should be avoided unless highly indicated. Since the COVID-19 outbreak is up to date existed, therefore this report is considered as interim guidelines for airway management of the suspected/confirmed patients. The guidelines will be revisited and modified in the future, if necessary.

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Conflicts of interest

There are no conflicts of interest.

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