

ences. Relationship with alumni had some spin-off benefits for our residents because this is an online meeting people can attend the meeting regardless their place and position. This increases the rate of participation, the degree of sharing experiences, and hopefully the rate of learning. As the cases are uploaded hours before the actual meeting participants find the opportunity to search and find information, they may need and get more prepared for the morning report meeting. This increases the rate of commenting and entering the discussions. The cases and discussions remain in the group for further elaborations and references.

A salient drawback of this virtual type of morning report is that it is far from normal and natural human face to face communications which are enriched with gesture, body language, expressing more emotions and humanity.

Based on this concrete experience we recommend this type of morning report in the time of COVID-19 pandemic and in similar situations as an alternative or complementary way of conducting morning reports when situation dictates.

### Conflict of interest

The authors declare no conflicts of interest.

### References

1. Greenlaw DSSA, Shapiro D. Principles of Economics 2e. OpenStax. 2017.
2. Pronovost PJ, Berenholtz SM, Dorman T, Merritt WT, Martinez EA, Guyatt GH. Evidence-based medicine in anesthesiology. *Anesth Analg*. 2001;92:787–94.
3. Kirkpatrick D, Kirkpatrick J. Evaluating training programs: The four levels. Berrett-Koehler Publishers; 2006.

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## Safety sequence intubation: the 10 “P’s” algorithm and cognitive aid for airway management in COVID-19 patients



### Sequência de segurança de intubação: o algoritmo 10 “Ps” e ferramenta cognitiva para manuseio de vias aéreas em pacientes com COVID-19

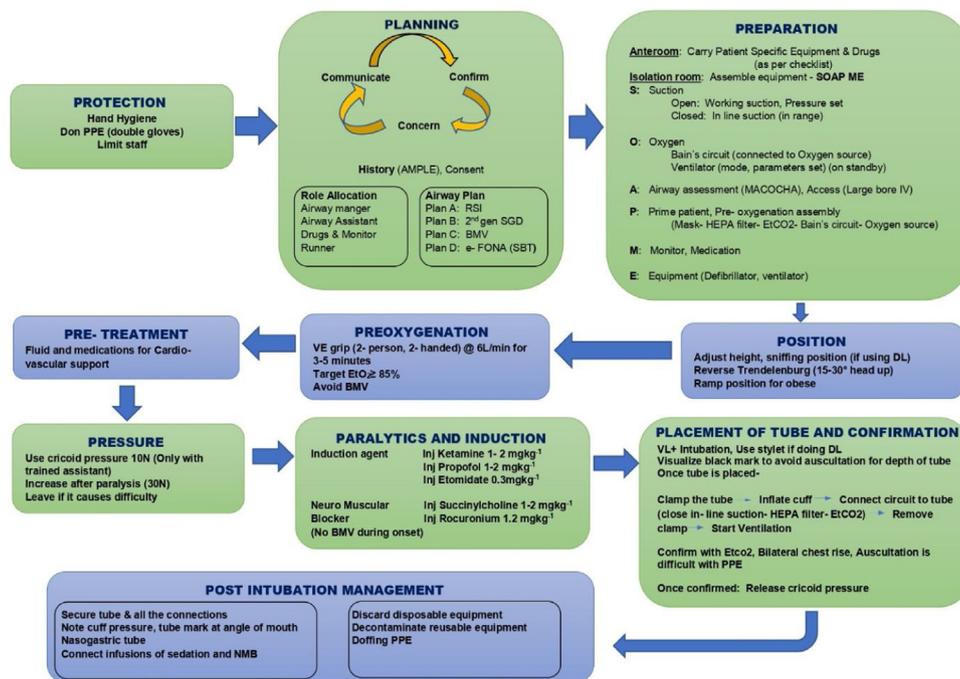
Dear Editor,

The past few months have shown an increasing incidence of transmission of SARS-CoV-2 from patients to health care providers (HCPs). Figures from China’s National Health Commission show that more than 3300 HCPs had been infected as of early March. In Italy, 20% of responding health-care workers were infected.<sup>1</sup> It is important to protect staff from transmission during high-risk procedures like tracheal intubation. The cognitive aid (Fig. 1) formulated suggests the following 10 P’s as a series of steps for safety sequence intubation in Coronavirus Disease (COVID-19) patients, with the intent to simplify the substantial amount of information currently related to COVID-19 in scientific literature.

1. Protection: All aerosol generating procedures (AGPs) are to be done in negative pressure isolation rooms with minimum personnel involved. WHO’s interim guidance published on March 19th, on “Rational use of

personal protective equipment for COVID-19” recommends, AGP-PPE to include respirator N95 or FFP2 standard, or equivalent, gown, gloves, eye protection and apron.<sup>2</sup>

2. Planning: Assign roles and responsibilities, plan the airway management strategy before entering the isolation room. Quick airway assessment of the patient can be done using MACOCHA score.<sup>3</sup> Subsequently airway plan (plan A to plan D) can be tailored by the team to achieve successful intubation in the first attempt. The team members should practice closed loop communication and watch for cross-contamination.
3. Preparation: This step involves preparation of patient specific airway equipment kit and drugs outside the isolation room. Cricothyroidotomy kit can be kept outside with the runner. Once inside the isolation room, check and assemble equipment using mnemonic SOAP ME (Fig. 1).
4. Position: Appropriate positioning of the patient recommends 30-degree head up to improve oxygenation and ramp position in the obese to ease intubation.
5. Pre-oxygenation: An appropriately sized well-fitting mask applied to the patient’s face using 2-person, 2-handed VE-grip for a better seal.<sup>4</sup> The preferable circuit is a closed dual limb circuit or rebreathing circuit like Mapleson’s C (Waters’) or coaxial modification of Mapleson’s D (Bain’s).
6. Pre-treatment: Judicious hemodynamic resuscitation can be undertaken.
7. Pressure: We recommend it to be used only when a trained assistant is available as it can cause difficulty in glottis visualization if not properly applied.



**Figure 1** Cognitive aid/checklist for safety sequence intubation in COVID-19 suspect or confirmed patient. PPE, Personal Protective Equipment; AMPLE, Allergies, Medication, Past history, Last meal, Events; RSI, Rapid Sequence Intubation; 2<sup>nd</sup> gen; SAD, Second Generation Supraglottic Airway Device; BMV, Bag Mask Ventilation; e-FONA (SBT), emergency Front of Neck access (scalpel-bougie-tube); HEPA, High Efficiency Particulate Air; DL, Direct Laryngoscope; VL, Video Laryngoscope; PPV, Positive Pressure Ventilation; NMB, Neuro Muscular Blockers.

8. Paralytics and induction: The purpose is to ensure adequate depth and avoid coughing. Avoid positive pressure ventilation before securing the airway to prevent potential aerosolization of virus present in the airway.
9. Placement of tube and confirmation: Laryngoscopy should be undertaken with the device most likely to achieve prompt first pass successful tracheal intubation. Using a video laryngoscope is recommended. Additional barrier like plastic sheet tent or box may be used. Use a standard failed tracheal intubation algorithm with a cognitive aid if difficulty arises.
10. Post-intubation management: Avoid circuit disconnection – push twist all connections. If the disconnection of circuit is warranted, then always disconnect with filter or apply tube clamp to the endotracheal tube before doing so. Seal all used airway equipment in a double zip-locked plastic bag. Clean the room 20 minutes after tracheal intubation (or last AGP).

Airway management of COVID-19 patients involves specific challenges of risk of infection to HCPs and rapid desaturation of patients during apnea leading to added stress if the patient's airway is not handled smoothly in the first attempt of intubation. The positive impact of cognitive aids and checklists in anesthesia has been investigated by a number of studies.<sup>5</sup> These studies have kept patient's

safety as foremost priority. In conclusion, an adequate balance has to be maintained between the safety of HCPs and management of COVID-19 patients.

### Conflicts of interest

The authors declare no have conflicts of interest.

### References

1. Lancet T. COVID-19: protecting health-care workers. *Lancet*. 2020;395:922.
2. Rational use of Personal Protective Equipment (PPE) for Coronavirus Disease (COVID-19): Interim Guidance; 19 March 2020. Available from: <https://apps.who.int/iris/handle/10665/331498> [accessed 20.4.20].
3. De Jong A, Molinari N, Terzi N, et al. Early identification of patients at risk for difficult intubation in the intensive care unit: development and validation of the MACOCHA score in a multicenter cohort study. *Am J Respir Crit Care Med*. 2013;187:832–9.
4. Fei M, Blair JL, Rice MJ, et al. Comparison of effectiveness of two commonly used two-hand mask ventilation techniques on unconscious apnoeic obese adults. *Br J Anaesth*. 2017;118:618–24.
5. Arriaga AF, Bader AM, Wong JM, et al. Simulation-based trial of surgical-crisis checklists. *N Engl J Med*. 2013;368:246–53.

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