



ANZCA  
FPM

## ANZCA statement on personal protection equipment during the SARS-CoV-2 pandemic (9 April 2020)

*This statement is intended to establish the standard, as defined by ANZCA, in relation to the indications for use of PPE by anaesthesia staff.*

*We have prepared this statement based on the advice of Australian and New Zealand health authorities, including Australia's chief medical officers, the Australian Health Protection Principal Committee (AHPPC), and the Infection Control Expert Group.*

*The character, magnitude and spread of SARS-CoV-2 varies greatly from location to location. Health services and hospitals are encouraged to seek advice from local specialist infectious diseases authorities, where they are available, if they wish to depart from the advice in this statement.*

*The college acknowledges that this statement will require updating as more information becomes available and is, to that extent, a living document.*

### 1. Introduction and general recommendations

The recently discovered severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)<sup>1</sup> is highly infectious and can cause a range of symptoms from asymptomatic carriage to coronavirus disease (COVID-19). The epidemiology and pathophysiology of this disease is still emerging, but it is now declared as a global pandemic. Healthcare workers are at a greatly elevated risk of contracting SARS-CoV-2, and of developing COVID-19. The Australian and New Zealand College of Anaesthetists (ANZCA) acknowledges that there is significant and justified concern from anaesthetists, pain medicine specialists and indeed all clinicians across Australia and New Zealand regarding the appropriate use of personal protection equipment (PPE) during the current COVID-19 crisis.

These concerns principally relate to:

- The "*minimum threshold for PPE use*". In other words – what type of PPE do I need to employ, in what circumstances and for which patients?
- The *adequacy of the PPE supply chain* such that clinicians are confident to treat patients without worrying about compromising their own health and that of others.

Personal Protection Equipment (PPE) refers to any device, garment or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards. In the setting of healthcare, PPE refers to protective clothing, helmets, gloves, face shields, goggles, facemasks and/or respirators or other equipment designed to protect the wearer from injury or the spread of infection or illness.<sup>2</sup> The term "precautions" is generally used to indicate the measures (both behavioural and the PPE) required to protect the healthcare worker.

**The college highly recommends that its members adhere to guidelines on PPE type (contact, droplet or airborne) rather than develop local or regional hybrid models of PPE. Adherence to PPE guidelines involves providing appropriate protection for the whole team, not only the anaesthesia personnel.**

When used, PPE should be used carefully and consistently, particularly maintaining vigilance in avoiding unintended self-contamination while wearing PPE and strict adherence with donning and doffing procedures. Formal training is essential and should be part of the operating room work schedule. Simulation of COVID case management is highly recommended.

N95/P2 masks require formal *fit – testing* to comply with the ISO standard for use.<sup>3</sup> While this may not be attainable or practical in all situations and organisations, the college recommends that the minimum standard should be *fit-checking* by a suitably trained person.

Teams should also factor in wait times for clearing of aerosols by the operating theatre ventilation systems – the recommendation is to wait for 3-5 room air changes after completing any aerosol generating procedure (AGP) with the operating theatre doors closed. Aerosol clearing times should be agreed locally depending on the capacity of the facility ventilation system.

*Adequate supplies of PPE are necessary to ensure maintenance of adequate standards of personal protection for health care workers. The college is unequivocal; staff safety comes first. However, overseas experience shows that stocks are not infinite and consideration should be given to ensuring that the supply is utilised appropriately and judiciously.*

***The conduct of non-urgent elective surgery should cease immediately, in order to conserve valuable supplies of PPE. Please see the Royal Australasian College of Surgeons website for more information.***<sup>4</sup>

The college is well aware that there is no consistent national or international guidance on exactly where the minimum threshold for PPE requirement sits at present. It is clear from feedback that guidance and local practice are highly variable and frequently changing throughout Australia and New Zealand.

We are working with other organisations and societies to ensure that consensus on the use of PPE is reached, in order to mitigate the confusion among clinicians in this uncharted situation.

We appreciate geographic variation in the character and magnitude of the SARS-CoV-2 epidemic and strongly encourage health services or jurisdictions who wish to depart from the national epidemiological and risk assessment to consult their public health units.

**As always, the most effective protection is frequent and effective hand hygiene and actively not touching the face or mucous membranes / conjunctiva.**

**The following sections refer to the stratification of patient risk, the proposed procedure and the hierarchy of PPE type that should be used.**

## 2. Risk stratification

- a. A key component of risk stratification to permit effective healthcare worker protection includes the early identification of high-risk patients, these being: symptomatic patients with COVID-19, and asymptomatic patients at high risk of developing COVID-19 due to epidemiological factors (including close contacts and those with recent international travel). These are defined in the *COVID-19 National Guidelines for Public Health Units* and jurisdictional guidelines<sup>5</sup> and the New Zealand Ministry of Health guidelines.<sup>6</sup> It is acknowledged that the risk screening advice is changing in both countries and clinicians

are advised to access the latest information. There is an increasing prevalence of antigen testing in acute patients which may add a useful stratum of risk assessment but this is not universally available yet.

- b. Consultation with local infectious disease clinicians will guide risk stratification and management of patients whose risk of community acquired transmission is uncertain, for example symptomatic patients without confirmed infection or epidemiological risk factors and or patients who are classified as low-risk who live in geographic settings where apparent clusters of community acquired infection have been identified. It is acknowledged that access to specialist infectious diseases advice is limited in some areas (specifically some of our rural/regional communities). In these circumstances decisions need to be made utilising the most appropriate information available.
- c. Healthcare workers clearly need to be protected from contracting SARS-CoV-2 and in turn avoid infecting vulnerable patients during the pre-symptomatic period.

### 3. Hierarchies of protective measures and PPE

PPE is one component of a hierarchy of protective measures (precautions) for healthcare workers. These differ from measures taken to protect the patient, which are governed by “Infection Control in Anaesthesia apply”, [PS28](#). The broad classification of these measures is specified as follows:

- a. **Standard precautions** (rigorous hand hygiene, cough etiquette) are employed for the routine care of all patients. These are a basic standard when dealing with any patient with which the clinician may have contact.
- b. **Contact precautions** comprise the use of gloves, a theatre scrub suit or protective gown and / or apron.
- c. **Droplet precautions** surgical mask, eye shield or goggle protection, a long sleeve fluid impervious gown and gloves.
- d. **Airborne precautions** N95 / P2 respirator, eye shield/goggle protection, long -sleeved fluid impervious gown, gloves +/- double gloves for primary airway proceduralist and team. Disposable headwear must be used and discarded safely after any case. Local guidelines on treatment of footwear should be followed, as these vary considerably. In certain very high-risk circumstances, the use of powered air purifying respirators (PAPRs) may also be recommended but it is acknowledged that supply may be severely limited.

This hierarchy is incremental and each precaution category comprise the measure in all of the previous categories. Hence, “droplet” refers to the use of standard *and* contact *and* droplet precautions. Airborne refers to the use of standard *and* contact *and* droplet *and* airborne precautions. Droplet precautions are generally employed as the minimum measures and PPE for procedures undertaken in the course of anaesthesia and pain medicine where there is the likelihood for splashing, splattering or spraying of blood or body fluids.

## 4. Aerosol generating procedures (AGPs)

### 4.1 AGPs (See \*\* in Flow chart)

There is broad consensus that the following are classified as AGPs.

- a. Bag and mask ventilation
- b. Tracheal intubation
- c. Tracheal extubation
- d. Ventilation via supraglottic airways (including insertion and removal)
- e. Non-invasive ventilation including CPAP and BiPAP
- f. High flow nasal oxygen therapy
- g. The use of nebulisers
- h. Cardiopulmonary Resuscitation (CPR)
- i. Anaesthesia procedures for women in late first stage labour and second or third stage labour and especially those who are distressed. Secretions from the respiratory tract and faeces are the principle risk to staff and others.
- j. Anaesthesia procedures for highly symptomatic patients who are considered high risk for aerosol generation (e.g. coughing or other signs of respiratory distress)

### 4.2. High risk Procedural/Surgical AGPs (See \*\*\* in Flow chart)

- k. High Risk Procedural AGPs - Diagnostic and therapeutic instrumentation of the airway including bronchoscopy and tracheostomy.
- l. High Risk Surgical AGPs – any surgical procedure involving the upper respiratory tract, such as ear, nose and throat, facio-maxillary or anterior pituitary surgical procedures, where aerosolization of tissue is likely; for example, the use of pulsed lavage, the use of high-speed drills and laser techniques. The risk of transmission from non- respiratory tract blood aerosol, digestive tract aerosol, pulsed lavage and laser work is currently not accurately known but is thought to be lower.

## 5. Recommendations for protective measures and PPE according to SARS-CoV-2 risk status (see flowchart)

### 5.1. Patients at low risk for SARS-CoV-2

Where, after risk assessment, patients are identified to not have any risk factors for SARS-CoV-2, it is safe and appropriate to follow the following precautions:

#### a. Scenarios not involving AGPs

Manage according to existing standards of infection control. Consultations may be undertaken using **standard precautions**. In many situations, including scenarios involving general anaesthesia and or invasive procedures **droplet precautions** are appropriate due to the risk of exposure to bodily fluids and secretions.

**b. Scenarios involving AGPs\*\***

Where AGPs are undertaken as defined in Section 4.1 (a-j), It is safe and appropriate to use **droplet precautions**.

**5.2. Any patients for whom high risk procedural/surgical AGPs\*\*\*\* are undertaken**

Where a high-risk procedural/ surgical AGP\*\*\* as defined in section 4.2 (k-l) is undertaken, particularly a procedure on or in the airway, **airborne precautions** should be used for all patients, regardless of SARS-Cov-2 status.

**5.3. Patients with confirmed or suspected SARS-CoV-2**

The following precautions apply where, after risk assessment, patients are identified as confirmed or suspected SARS-CoV-2:

**a. Scenarios not involving AGPs**

It is safe and appropriate to use **droplet precautions** for non-AGPs, with examples as follow:

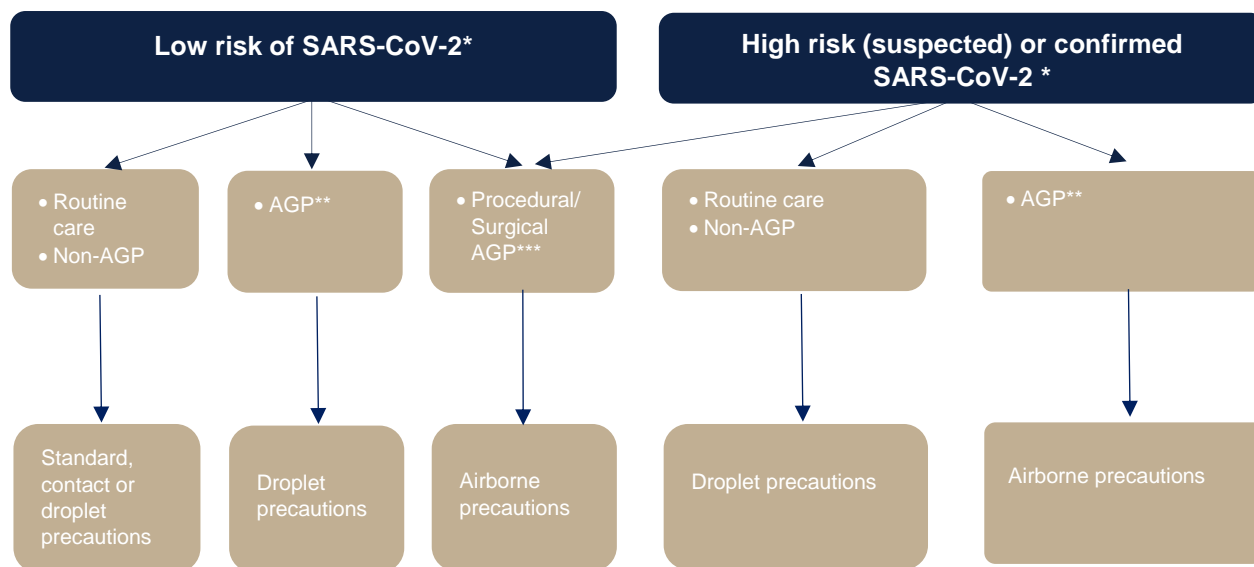
- Regional anaesthesia and local infiltration
- Conscious sedation
- Vascular access (Peripheral intravenous, central venous catheter, arterial)
- During recovery from an AGP after an appropriate period of time has elapsed
- Consultations including pre-operative assessments, pain management consultations and other consultations when located less than 1.5 metres from the patient

The generally accepted requirement to don airborne PPE within 20-30 minutes of an AGP (according to local room ventilation conditions) applies to situations in which unintended conversion to general anaesthesia occurs. In anticipation of this, consideration should be given to using **airborne precautions** in preparation for time critical situations, such as emergency caesarean section, irrespective of the primary mode of anaesthesia.

**b. Scenarios involving AGPs**

It is safe and appropriate to use **airborne precautions**.

## Recommendations for PPE according to SARS-CoV-2 risk status



The measures in this flow chart refer to protection of the anaesthetist. Protection of the patient during invasive anaesthesia procedures (such as central venous catheterisation, neuraxial anaesthesia etc.) are guided by **PS28** "Infection Control in Anaesthesia".

\* Definition of 'Low risk of SARS-CoV-2' and 'Suspected/confirmed SARS-CoV-2' will depend on your location, and should be based on **national case definitions** and guided by local infectious diseases and public health advice

\*\* AGPs: a. bag and mask ventilation; b. tracheal intubation; c. tracheal extubation; d. ventilation via supraglottic airways (including insertion and removal); e. non-invasive ventilation including CPAP and BiPAP; f. high flow nasal oxygen therapy; g. the use of nebulisers; h. cardiopulmonary Resuscitation (CPR);

i. Anaesthesia procedures for women in late first stage labour and second or third stage labour and especially those who are distressed. Secretions from the respiratory tract and faeces are the principle risk to staff and others.

j. Highly symptomatic patients who are considered high risk for aerosol generation (e.g. coughing or other signs of respiratory distress)

\*\*\*High risk procedural/surgical AGPs: l. *High Risk Procedural AGPs* - Diagnostic and therapeutic instrumentation of the airway including bronchoscopy and tracheostomy; m. *High Risk Surgical AGPs* - any surgical procedure where aerosolization of tissue is likely; for example, the use of pulsed lavage, the use of high-speed drills and laser techniques or where there is prolonged exposure to secretions from the airway. The risk of transmission from non- respiratory tract blood aerosol, digestive tract aerosol, pulsed lavage and laser work is currently not accurately known but is thought to be lower.

## 6. Training and preparation

It is well recognised that donning and in particular doffing of PPE carry risks of transmission of infection from patients to healthcare workers. It is essential that each and every one of us has received expert training on the use of PPE and the management of AGPs. This may take the form of watching videos and/or simulation training. There are a number of resource links for this on the college Library Guide pages [here](#).

## 7. Wellbeing and Workforce

Please actively manage your own wellbeing and that of others. Buddy systems, mental health advice access and virtual social events, among other initiatives, may assist us in recognising signs of stress and supporting us to develop coping strategies. There are a number of resource links for this on the college Library Guide pages [here](#).

This is a stressful time for all and we need to stay well to be able to lead our departments and hospitals through this crisis. Workforce constraints will undoubtedly limit the provision of services in places and it is vital that caseloads are reduced and managed and that staff have adequate time and facility to train for managing COVID-19 positive or suspect cases.

## 8. PPE Supplies

We are also aware that the PPE supply is challenging and may be variable in certain areas at times. National and regional bodies are trying to secure and enhance production and supply in both countries.

While the college cannot control that process, we categorically support the need for healthcare workers to be protected from the risk of transmission and are actively consulting with fellows and government to ensure that government strategies are informed by up to date information and in the best interests of our fellows across all regions and sectors. Provision of timely and accurate information about local patterns of disease will improve clinician / institution engagement and help to embed agreed PPE guidelines.

## Further resources

The college has created a COVID 19 section in Library Guides on the college website. This has a wide range of guidelines and advice documents, classified under tabbed categories for ease of searching. It includes advice and guidance on well-being, curated by the Welfare SIG and all of the resources on the site are curated actively to ensure they are up-to-date.

## Acknowledgements

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## Disclaimer

The Australian and New Zealand College of Anaesthetists ("The college") has issued this statement as guidance for its members and also for the wider clinical community and this is based on the best evidence at the time of publication. The college accepts no liability for any harm or adverse outcomes resulting from actions taken on the basis of this statement.

## REFERENCES

1. World Health Organization. (2020), Naming the coronavirus disease (Covid-19) and the virus that causes it. [cited 2020 April 7th ]. Retrieved from: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it)
2. The Food and Drugs Administration, USA. (2020) Personal protective equipment for infection control. [cited 2020 April 7th]. Retrieved from: <https://www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control>.
3. NHMRC (2019). Australian guidelines for the prevention and control of infection in healthcare. Retrieved from: <https://nhmrc.govcms.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019#block-views-block-file-attachments-content-block-1>.
4. Australian Government Department of Health. (2020) Coronavirus disease 2019 (Covid-19). CDNA national guidelines for public health units. [cited 2020 April 7th]. Retrieved from: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm>.
5. Royal Australasian College of Surgeons. (2020) Elective surgery recommendations from specialty societies. [cited 2020 April 7th]. Retrieved from: <https://www.surgeons.org/media-centre/covid-19-information-hub#Elective%20surgery%20recommendations%20from%20specialty%20societies>.
6. New Zealand Ministry of Health (2020) Case definition of COVID19 infection. [cited 2020 April 7th]. Retrieved from: <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-novel-coronavirus-information-specific-audiences/covid-19-novel-coronavirus-resources-health-professionals/case-definition-covid-19-infection>