



**ANZCA**  
FPM

October 16, 2023

Professor Tony Blakely Chair, Royal Commission on COVID-19 by email.  
Sent via: [elizabeth.bush-king@dia.govt.nz](mailto:elizabeth.bush-king@dia.govt.nz)

Dear Professor Blakely,

## **Submission: Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine**

### **Introduction**

The Australian and New Zealand College of Anaesthetists (ANZCA) is the professional organisation for around 6400 specialist anaesthetists (fellows) and 1500 anaesthetists in training, of whom around 1000 work in Aotearoa New Zealand. Anaesthetists are involved in the integrated care of surgical patients from the moment surgery is contemplated through to recovery. Specialist anaesthetists also provide essential care in resuscitation, intensive care, obstetrics, retrieval, disaster response and hyperbaric medicine. ANZCA is working proactively to improve safety and quality for patients in the health sector while training our future workforce.

Our Faculty of Pain Medicine (FPM) is responsible for the training, examination, and continuing education of specialist pain medicine physicians and for the standards of clinical practice for pain medicine in Australia and New Zealand.

The contribution of our specialist anaesthetists and pain physicians following major events and disasters is well recognized. Throughout the COVID-19 Pandemic, anaesthetists were integral to the medical care of those affected and to keeping other patients, (including those requiring planned or emergency surgery), and staff safe.

The New Zealand National Committee of the College would like to provide the Commission with our collated feedback on our experience and the lessons learned, to ensure New Zealand is prepared as best as possible for the next pandemic.

Medical colleges, ANZCA included, provided vital clinical leadership through participation in expert advisory and working groups, and the timely production of internationally informed, updated clinical guidance and local, specific, research. Medical colleges are a crucial resource for those tasked with managing pandemics.

In our submission we also detail the actions ANZCA took in updating and advising the sector as new evidence emerged, ensuring the pastoral care of anaesthetists and trainees, and in the provision of safe healthcare throughout the pandemic.

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### Our experience

#### Early College responses to the challenges of a pandemic, new, and dangerous virus.

As it became apparent that SARS-CoV-2, the highly contagious virus causing COVID-19 was probably spread by aerosols and droplets, provision of anaesthesia, always requiring airway access, was identified as a high-risk medical intervention. Overseas reports of occupational and hospital acquired

infection leading to morbidity and mortality among clinicians and patients prompted urgent and concerted action. New Zealand was fortunate indeed that the incoming ANZCA president was a leading Auckland-based specialist anaesthetist<sup>1</sup>.

In March 2020 ANZCA created a COVID-19 Clinical Expert Advisory Group (CEAG) to provide urgent guidance on how to safely manage patients while protecting anaesthetists and other members of the team. The result was the ANZCA *Statement on Personal Protective Equipment* and its accompanying flowchart –released in April and regularly updated. CEAG also created and curated the resources on COVID-19 for the ANZCA Library Guide.

The College responded quickly to concerns about supply chains and drug shortages. For example, it expedited amending the clinical advice in the *PS51 Guidelines for the Safe Management and Use of Medications in Anaesthesia* to allow for safe ampoule splitting in certain circumstances. The college also moved speedily to develop and approve a COVID-19 airway management emergency response standard.

### In summary

Medical colleges enjoy a high level of trust from their medical communities/members, (often more so than political/government organisations), and so may be able to assist with communication and controlling misinformation.

ANZCA (and other colleges) have substantial international and national networks of experts and leaders in every field and should be regarded as a vital resource to quickly tap into in the future.

Dr Beavis and Dr Roper are available to speak in person with the Commission if required.

### Pandemic preparedness

The most recent (2017) national pandemic preparedness plan was explicitly designed to be flexible to allow for varying levels of severity of a future influenza pandemic. Following the 2009 H1N1 influenza A pandemic response<sup>2</sup>. The plan did not adequately consider the possibility of a non-influenza pandemic. Hospitals, under District Health Boards, were required to have pandemic preparedness plans and contingency procedures in place to manage a flu-type pandemic. Assumptions about transmission, speed of vaccine development and availability of effective antiviral treatments did not hold good for COVID-19, and identifying and rejecting unhelpful assumptions may have cost valuable time.

Anaesthesia is almost exclusively delivered in hospital settings. While Pandemic Plans, Standard Operating Procedures and Infection Control teams were in place, early on, hospitals struggled to implement them. Supply chain issues for personal protective equipment (PPE), the need for different sizing and fit testing for PPE<sup>3</sup>, insufficient staff and leadership suitably trained to effectively implement the exact infection control measures required, and shortages of critical equipment such as ventilators and single use airway management apparatus all created considerable difficulties. Additionally, some supplies of PPE were found to be out of date, and with perished rubber ties. Supply chain models based on just-in-time ordering proved unfit during a time of global shortages, reduced importation capacity and logistics difficulties.

### Facility design

As evidence emerged about the routes and enablers of transmission, design of hospital areas to avoid mixing of infected and non-infected staff and patients, rapid adaptation of split wards, cohorting of staff, dedication of “red” (infected) and “green” (safer) areas and retrofitting of ventilation and positive

pressure environments were all required to be implemented at pace. These modifications were also hampered by supply chain and workforce issues.

The development of screening capability (particularly PCR tests) was key to the implementation of these infection control. Improvement of processes and facilities to prevent infection of immunocompromised haematology and oncology patients who required ongoing treatment despite the emergence of COVID-19 were particularly challenging. Error! Reference source not found.

One positive response to these challenges was the introduction and deployment of innovative and different ways of working, including working from home, virtual meeting capability and telehealth initiatives including pre-surgical assessments in some cases to reduce in-person consultations.

### **Pain Medicine**

Pain medicine services, public and private, also adapted quickly to a new way of working, including telehealth consultations.

Pain clinics needed to adapt to protocols around Covid screening, and for private providers this involved significant costs. Along with reduced patient numbers, this put significant strain on private providers.

As chronic pain and related suffering is influenced by biological, psychological, and social factors, there were effects on patient presentation. Stressors associated with the COVID19 such as isolation, threat of job loss, and receiving vaccines had the potential to exacerbate patient symptoms and suffering. Pain management and rehabilitation programs and services were interrupted, and many patients had very little input during the lockdown, which in turn has delayed recovery.

Since the early days of the pandemic, the phenomenon of Long COVID (LC) has been emerging. It is characterised by persistent symptoms that remain disabling even after the virus has been cleared.

One of the most comprehensive surveys of prevalence globally estimates the prevalence of LC at 43% of survivors. This study also reports the prevalence of significant and persistent pain symptoms to be a total of 30% of survivors, or nearly two thirds of those with LC Recognition of LC, and the need for pain service provision is a learning point from the pandemic<sup>5</sup>.

### **Equity**

The inequitable impacts of COVID-19 on Pacific peoples and Māori have been well documented, and much has been acknowledged on the imperative for the health system to do better “next time”.<sup>6,7</sup> Both Māori and Pacific peoples were over-represented in ICU admission and mortality statistics, particularly in Auckland. The reasons for these are multiple – delays to contact tracing, living in over-crowded housing, culturally essential large community events such as in churches and marae, a higher proportion of essential workers such as those driving busses or working in other essential services rather than isolating/working from home that facilitated transmission, and a younger demographic that had the consequence of initially de-prioritising Māori and Pacific peoples in the vaccine roll out.

Coupled with this, powers under the COVID-19 Public Health Response Act and infection control protocols prevented ideal culturally safe care, particularly those elements relating to not allowing the presence of whānau/family. Anaesthetists, especially those working in Auckland hospitals distressingly witnessed the impact on staff, patients and whānau of these firsthand.

### **The importance of communications**

Clear, credible communication was a vital component of the management of the response. Sources of trusted and empathetic information were essential. At a time of uncertainty, fear, conflicting advice, and

an international media storm that affected everyone, having the College leadership provide the support and resources required to guide fellows and trainees was seen as critical. When combined with the communications from the political leadership, from the Director General of Health, and from the various Ministry of Health teams who scrambled to implement their pandemic plans, having access to anaesthesia-specific advice and support was much needed.

Emergency management style facility and team communications enabled such information as could be relied on to be well disseminated to those in need of clarity. Daily Situation Reports from Regional Public Health Units, ESR, the National Contact Tracing Service, once established, provided trusted near real time data. The wastewater testing and genomics added an extra layer of confirmation that what clinicians were seeing in hospitals was reflective of patterns in the community.

However, clinically, there was a real need for more effective liaison between the “official” sources of information and other stakeholders. ANZCA became a key representative voice that communicated with other Colleges, government (including chief medical officers including in Australia), media, and practitioners. We needed to minimise the number of “representatives”, and ANZCA established itself as the primary source of communication for the stakeholders mentioned. This allowed for clearer and cleaner messaging.

It also informed the vital provision of updated clinical information for practitioners, through the ANZCA website and video meetings and presentations. The ANZCA communications related to COVID-19 from early 2020, detailed in *Appendix 1*, were extensive and well accessed.

Alongside these roles, the College was required to manage business as usual. Training, education, examinations, Continuing Professional Development (CPD), and oversight of professional standards needed to be maintained. Financial assistance to the College from the Australian Government assisted with the loss of College income and the considerable extra work required.

### Impact on workforce

Medical colleges are charged with guiding, connecting, educating, examining, and assessing their specialty workforce. At a time of acute shortages, it is important to recognise the impact that two years of no immigration and accreditation for doctors, difficulties arranging in-person examinations or to provide the usual range of educational opportunities, conferences and meetings had, and continue to have on the workforce. The isolation and travel restrictions exacerbated workforce pressures for a bi-national college that depends on cross-Tasman sharing of examiners to maintain consistent standards.

There were many impacts on ANZCA’s trainees. Trainees were required to fill rosters to cover for ill or isolating colleagues. Due to this enforced leave, they were unable to take annual leave (necessary to prevent burn out) to fulfil the training hours required. (There is a cap on time allowed off for any reason during training, to ensure completion of a minimum number of training hours). In some cases, there was a reduction in the availability of the required training opportunities due to cancelled or rearranged surgical patterns. All these may have longer term impacts on the number of clinicians completing their specialist training in the required time.

Requirements to “stick to work cohorts”, to remain home if sick or isolating if recently in contact with infected people (whether at home or at work), and the required flexibility to work across different areas of the hospital,<sup>8</sup> all contributed to fewer anaesthetists being available to cover rosters – meaning longer working hours per week for those who remained. Providing surge capacity for intensive care units in case of acute increase in demand caused by COVID-19 was one such example of the flexibility required.<sup>9</sup>

Another new (and unforeseen) role for anaesthetists was the provision of sedation for people with needle phobia to enable them to receive their vaccinations against COVID-19. This resulted in many hundreds of additional vaccinations than would otherwise have occurred, many for clinically vulnerable patients undergoing medical procedures.<sup>10</sup>

Anecdotally, very few, if any anaesthetists acquired COVID-19 occupationally. This was probably attributable to prior training and experience with infection control, and the specific drills for 'aerosol generating procedures' that were developed and practised.

From a mental health perspective, fears of the unknown, blanket global reporting of other countries with considerably higher case numbers, distress at witnessing severe illness and death, and reduced ability to deliver whānau-centered, empathic support to relatives, caused moral injury. Those with vulnerable family members who were isolating at home, and those required to work while also providing childcare and home schooling, reported considerable emotional conflict. Concentration of cases in a small number of hospitals, along with early decisions not to move anaesthetists around between hospitals to preserve capacity in the event of surge, meant that some clinicians bore very different workloads from others. *Appendix 2* outlines the results from a survey of anaesthetists looking at staff welfare needs.

ANZCA communications designed to assist the development of strategies to support Clinical Directors to manage psychological distress among their colleagues during the different waves of the COVID-19 pandemic,<sup>11</sup> along with well-established collegial networks and the rapid deployment of innovative connectivity tools (such as WhatsApp groups) contributed to workforce resilience. All the above were critical in managing the risks to staff of PTSD.<sup>12</sup>

The impact of this profound and prolonged stress on the health workforce will no doubt be felt for some considerable time. It is also important to note that these stresses affected all members of the health team: from clinicians to support staff, administrators, procurement, IT specialists, funding and planning staff, and analysts charged with constant and time-critical reporting.

### International collaboration in anaesthesia

It important to acknowledge the importance of the co-ordinated approach through formal Critical Care liaison with the relevant colleges and societies involving Anaesthesia/ICU/Critical Care. This allowed for a unified and standardised approached to issues such as airway management and resuscitation.

A similar co-ordinated approach through a formal Surgical Services liaison with the relevant colleges, involving Anaesthesia, Surgery, Obstetrics & Gynaecology, ICU and Ophthalmology allowed for a unified "voice" to present information to both health services and media, including sharing of information between Australia, New Zealand, Hong Kong, and the UK.

### Research

The anaesthesia clinical and academic community responded impressively; publishing specialty-specific research to fill the voids in understanding every aspect of managing and responding to the pandemic. These included (but were not limited to) establishing risks of transmission,<sup>13</sup> infection control in airway procedures,<sup>14</sup> management of patients requiring ventilation,<sup>15</sup> establishing optimal sedation or airway procedures, to documenting airway incidents<sup>16</sup> and the impacts on trainees and the workforce.<sup>17</sup> All contributed to the development of evidence-based and sound clinical guidelines for the sector<sup>18</sup> This, while working considerable additional hours throughout the pandemic!

Health Library networks – specifically ALIA Health – began disseminating coronavirus/COVID-19-related information to hospital library staff from late January 2020. This took the form of search algorithms which could be used to identify new research literature, as well as emergent websites containing COVID-19-related information such as PPE measures and COVID-19 infection metrics. Most health libraries then responded by publishing this information via internally managed guides and/or via email communication with health personnel. The ANZCA library initially published this information as part of a "living" news item which listed key College, bi-national (for both New Zealand and Australia), anaesthesia-specific and general information<sup>19</sup>. [See example](#).

By late March 2020 this had evolved into a fully-fledged resource guide which, in addition to providing key clinical information, also provided a conduit for newly published research, information on the numerous knowledge hubs created by research journal publishers and links to local, country-specific, and global metrics.

A brief, pragmatic bibliography of New Zealand and Australian COVID-19, anaesthesia related research published in those first crucial years is attached in *Appendix 3*.

## **Recommendations**

*“The clear message is that countries and healthcare systems must learn from this and build a better and more resilient systematic response to deal with future threats.”<sup>20</sup>*

### **Prepare:**

- Redesign of hospital intensive care and operation room facilities to accommodate hazardous patients in isolation.
- Ensure robust supply and distribution chains for essential equipment.
- Use of simulation to train for disaster scenarios.
- Revise guidelines on use and implementation of PPE for all staff managing hazardous patients.
- PPE fit-testing as part of employee on-boarding, and regular re-checks.
- Invest in innovative technology such as remote consults/telehealth in preassessment clinics.
- Develop appropriate protocols to physically and mentally protect and support colleagues deemed clinically “at risk” (including those with family members deemed at risk).
- For medical colleges, in the event of likely long-term disruptions to travel and interaction, it will be important to develop and utilise robust assessment and examination mechanisms for specialist medical trainees and international graduates that do not rely on travel (especially international) or face to face interactions, though this would require big change.

### **Manage:**

- Medical colleges have key roles to play in the responses to pandemics. Awareness of this crucial resource by the ministry should be noted.
- Adoption of public health measures to limit the impact of transmissible disease.
- Re-prioritisation of planned surgery in a constrained economic model.
- Less tolerance of “presenteeism” – in other words “stay home if you’re sick”!
- Fewer face-to-face meetings and better use of IT for communication and education.
- Improved craft-group collaboration (anaesthesia/intensive care unit/emergency department).

### **Recover:**

- Improve health workforce numbers and resilience.
- Foster and improve national and international clinical networks and innovation.
- Implement enhanced interdisciplinary wellbeing and mentor networks.

## References

1. Broadbent A. Global health: New Zealander elected president of world body. ANZCA Bulletin. 2021 Sep 1;30(3):44-5
2. Kvalsvig A, Baker MG. How Aotearoa New Zealand rapidly revised its Covid-19 response strategy: lessons for the next pandemic plan. Journal of the Royal Society of New Zealand. 2021 May 31;51(sup1):S143-66.
3. Low CS, Weinberg L, Ellard LM, Hacking DF, Banyasz D. Pass rate of the BSN Medical ProShield® N95 filtering facepiece using quantitative fit testing in frontline anaesthetists and anaesthesia nurses working on a COVID-19 airway team. Anaesthesia and intensive care. 2021 Jul;49(4):322-3.
4. Weinkove R, McQuilten ZK, Adler J, Agar MR, Blyth E, Cheng AC, Conyers R, Haeusler GM, Hardie C, Jackson C, Lane SW. Managing haematology and oncology patients during the COVID-19 pandemic: interim consensus guidance. Medical Journal of Australia. 2020 Jun;212(10):481-9.
5. Chen C, Hauptert SR, Zimmermann L, Shi X, Fritsche LG, Mukherjee B. Global prevalence of post-coronavirus disease 2019 (COVID-19) condition or long COVID: a meta-analysis and systematic review. The Journal of infectious diseases. 2022 Nov 1;226(9):1593-607.
6. Sonder GJ, Grey C, Anglemeyer A, Tukuitonga C, Hill PC, Sporle A, Ryan D. The August 2020 COVID-19 outbreak in Aotearoa, New Zealand: Delayed contact tracing for Pacific people contributes to widening health disparities. IJID regions. 2023 Mar 1;6:177-83.
7. McLeod M, Gurney J, Harris R, Cormack D, King P. COVID-19: we must not forget about Indigenous health and equity. Australian and New Zealand journal of public health. 2020 Aug;44(4):253.
8. Jones PG, Nicholls BP. Resident medical officers' redeployment experiences in the Adult Emergency Department during the COVID-19 pandemic at Te Toka Tumai Auckland Hospital. The New Zealand Medical Journal (Online). 2023 Feb 17;136(1570):20-9.
9. Litton E, Bucci T, Chavan S, Ho YY, Holley A, Howard G, Huckson S, Kwong P, Millar J, Nguyen N, Secombe P. Surge capacity of intensive care units in case of acute increase in demand caused by COVID-19 in Australia. Medical Journal of Australia. 2020 Jun;212(10):463-7.



10. Day C, Bittner EA. A novel approach for improving COVID-19 vaccine rates: administration during the perioperative period. *APSF Newsletter*. 2022;37(1):17–18.
11. Heath C, Sommerfield A, von Ungern-Sternberg BS. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. *Anaesthesia*. 2020 Oct;75(10):1364-71.
12. Feeley T, Tan MH, Magner C, L'Estrange K, Efrimescu CI, O'Connor E, Lyons B, Crowe S, O'Rathallaigh E, Doyle D, Whelan S. Psychological impact of COVID-19 on staff working in paediatric and adult critical care. *British journal of anaesthesia*. 2021 Jan 1;126(1):e39-41.
13. Irons JF, Pavey W, Bennetts JS, Granger E, Tutungi E, Almeida A. COVID-19 safety: aerosol-generating procedures and cardiothoracic surgery and anaesthesia—Australian and New Zealand consensus statement. *Medical Journal of Australia*. 2021 Jan;214(1):40-4.
14. Hade AD. Correct probability estimates for risk of anaesthetist contracting severe acute respiratory virus coronavirus 2 after aerosol-generating procedures: In reply. *Anaesthesia and Intensive Care*. 2021 Jan;49(1):78-9.
15. Dobos N, Douglas J. Management of severe COVID-19 disease in the ICU. *Australasian Anaesthesia*. 2021 Oct 1:21-33.
16. Endlich Y, Beckmann LA, Choi SW, Culwick MD. A prospective six-month audit of airway incidents during anaesthesia in twelve tertiary level hospitals across Australia and New Zealand. *Anaesthesia and Intensive Care*. 2020 Sep;48(5):389-98.
17. Seglenieks R. Coping in a pandemic: A trainee's perspective. *ANZCA Bulletin*. 2020 Sep 1;29(3):28-9.
18. Lo ST, Yong AS, Sinhal A, Shetty S, McCann A, Clark D, Galligan L, El-Jack S, Sader M, Tan R, Hallani H. Consensus guidelines for interventional cardiology services delivery during COVID-19 pandemic in Australia and New Zealand. *Heart, Lung and Circulation*. 2020 Jun 1;29(6):e69-77.
19. Australian and New Zealand College of Anaesthetists & Faculty of Pain Medicine How ANZCA responded to the COVID-19 pandemic [https://www.anzca.edu.au/resources/college-publications/anzca-bulletin/anzca\\_bulletin\\_winter-2020\\_online-\(1\).aspx](https://www.anzca.edu.au/resources/college-publications/anzca-bulletin/anzca_bulletin_winter-2020_online-(1).aspx)

20. Broadbent A. Anaesthesia post-COVID-19: What needs to change? ANZCA Bulletin. 2020 Jun 1;29(2):25.

## Appendix 1

### COVID-19 pandemic – ANZCA’s response

In the early days of the pandemic, we were observing the chaos overseas including deaths of anaesthetists (Italy, US esp. New York, UK, Spain) and expecting the devastation to eventually hit Australia and New Zealand.

- 13 March – cancelled Annual Scientific Meeting and later other 2020 CME/SIG events
- 18 March – May Vivas for the final fellowship examination postponed.
- NSW Regional Committee election postponed.
- Early issue – the cancellation of non-urgent elective surgery. Media releases:
- [Elective surgery should focus only on patients in greatest need, anaesthetists say](#) (18 March).
- [Medical colleges call for urgent freeze on all non-critical elective surgery](#) (25 March).
- [Medical colleges express grave concerns at Federal Government move to extend private hospital elective surgery deadline](#) (26 March).
- [Medical colleges support resumption of selective elective surgery for low-risk patients](#) (17 April).

### Policy, safety and quality – advocacy

- Formed COVID-19 Clinical Expert Advisory Group (Auckland’s Dr Nigel Robertson (NZ fellow) as chair, Dr Leonie Watterson (NSW fellow) as vice-chair) comprising colleagues with recognised clinical expertise relating to the pandemic, each jurisdiction, Australian Society of Anaesthetists, New Zealand Society of Anaesthetists). First meeting 25 March.
- Developed first version of the PPE statement led by Dr Leonie Watterson. A single bi-national benchmark for best practice. Fourth version of the [PPE statement](#) released in October 2020 incorporating lessons learned from Victoria and the most recent advice from the Infection Control Expert Group (ICEG) which advises the Australian Health Protection Principal Committee
- Established a COVID-19@anzca.edu.au inbox for fellows/trainees’ queries. In the first few months of the pandemic the group considered over 200 queries from fellows and trainees.
- Dr Rod Mitchell (Immediate Past President of ANZCA) established direct lines of communication with Australian government officials, in particular the Deputy Chief Medical Officer, Dr Nick Coatsworth, and Chair of the Infection Control Expert Group, Professor Lyn Gilbert.
- Negotiated with Medicare about the introduction of temporary COVID-19 MBS telehealth item numbers. Initially anaesthetists were left out and while this was rectified fairly quickly, sorting out appropriate item numbers of specialist pain medicine physicians went on for months with lots of practice managers from pain clinics asking what number they were supposed to use.
- In response to concerns about supply chains and drug shortages the college amended *PS51 Guidelines for the Safe Management and Use of Medications in Anaesthesia*, to allow for safe ampoule splitting in certain circumstances.
- 12 August – letter to Greg Hunt (Australian Minister of Health Jan 2017- May 2022) and regional health ministers on “adequacy and timeliness of supply of the right PPE in the right places, fit-testing” of masks is not routinely available in high-risk environments.
- Vaccination communications (see below).

### Communications

- Website content established – news, trainee info and clinical resources.
- Regular (then weekly, now monthly) president's college-wide emails distributed to keep fellows, trainees and SIMGs updated.
- Daily, weekly, and now monthly COVID-19 summary to ANZCA Council and ELT – summary of what fellows/trainees were asking, what they were saying on social media, what was happening in mainstream media.
- *Bulletin* (ANZCA's quarterly magazine) feature spreads – what the college did, experiences of fellows locally/overseas.
- Updates in monthly *ANZCA E-Newsletter*.
- National Anaesthesia Day (October 16<sup>th</sup> in recognition of the first ether anaesthetic in 1846)– video-based #AlwaysReady campaign recognising anaesthetists' agility during the pandemic.
- Dr Rod Mitchell interviewed numerous times in relation to elective surgery, PPE, fit testing etc.
- Wellbeing information always incorporated in our communications including links to our counselling services and other resources.

## Media

Our public advocacy on safety and quality issues relating to COVID-19, such as personal protective equipment (PPE) and aerosol transmission enhanced our reputation in the community and the media. Our media profile continued to grow with college fellows' research and expertise highly sought after in Australia and New Zealand on a range of issues with highlights including:

- **PPE:** Dr Vanessa Beavis and immediate past president Dr Rod Mitchell were interviewed early on in the pandemic by RNZ, ABC Radio and Professor David Story featured in an ABC Four Corners report on frontline medical specialists and health workers. Professor Story was also interviewed by the Nine network's "A Current Affair" program on safety concerns about fake surgical masks.
- **Elective surgery:** Dr Mitchell was interviewed by ABC Radio in Melbourne, Sydney and Adelaide, ABC Radio National and *The Age* and *Sydney Morning Herald* on the need to cancel elective surgery at the height of the first wave of the pandemic because of concerns about infection risk for medical specialists and health workers.
- **Aerosol transmission:** Professor David Story was interviewed by the *Herald Sun* in February 2021 (syndicated to more than 30 Australian News Limited news sites) as Safety and Quality Committee chair about the effect of nebulisers on aerosol transmission following an outbreak of COVID-19 cases at a Melbourne hotel.
- **COVID-19-screening for hospital patients:** Professor Story was interviewed for the *Herald Sun* and syndicated news sites in September about COVID-19 screening for patients.

## Library information

- January 29, 2020 – "living" library news item created with emergent coronavirus-related links ([see archive](#))
- March 3 – "living" library news item expanded to include key college-related information whilst a fully-fledged resource guide was developed.
- March 16 – established a Coronavirus/COVID-19 Resources Guide containing curated evidence-based information for time-poor anaesthetists (led by Leonie Watterson with library staff, esp. John Prentice).
- The Resources Guide was the college's primary conduit for COVID-19-related clinical evidence throughout the pandemic and at its height was being updated multiple times daily. The guide was accessed some 28,869 times from March-June 2020. Late March – Wellbeing resources collated by ANZCA Director of Professional Affairs, ad Chair, Trainee Wellbeing Project Group, Dr Lindy Roberts.
- Late March/Early April – additional CPD resources added (collated by CPD, Dr Leonie Watterson and the chair of the Wellbeing Special Interest Group Dr Greg Downey)

### Events and CPD

- Numerous special interest group and regional CME events moved from face-to-face to online, with some, including the 2020 Perth ASM, cancelled.
- 2021 Melbourne ASM held as a virtual meeting after face-to-face deemed too risky.
- Cancellation of events meant MBA and MCNZ mandatory CPD requirements, had to be provided differently.
- New emergency response standard relating to airway management and essential use of personal protective equipment (PPE) developed in response to the pandemic (April).

### Exams and training

Summary in Summer edition of the *ANZCA Bulletin 2020* – [“Running exams in a pandemic”](#).

- Formed Examination Contingency Planning Group (ECPG), chaired by a past president and Director of Professional Affairs Dr Lindy Roberts. Met weekly for the first few months. Included trainee committee chair, exam sub-committee chairs, a consumer rep. Determined at the first meeting that standards must not lapse.
- Established [COVID-19 webpages for trainees and supervisors](#) to explain these as well as a series of [exam FAQs](#) to answer queries. Introduced exemptions and rules recognising trainees may not be able to adequately prepare for and attend exams (redeployment within hospitals, effects on volume of practice and the cancellation of key courses).
- March 2020– final medical vivas cancelled.
- Late April 2020– trainees surveyed about what they wanted to do re exams. Overwhelming desire by both final and primary candidates to complete the 2020 exams. Workforce progression another issue.
- 12 May – council held an extraordinary meeting and determined the anaesthesia primary and final exams would go ahead in the second half of 2020 (if possible). Also:
  - Recognising training time for trainees whose progression had been interrupted by exam delays.
  - Not penalising those who withdrew from exams.
  - Allowing additional exam attempts for those who withdrew or failed.
- August 2020– written exams go ahead. In-hospital exams held in locked down Victoria (instead of central major city venues) and then suddenly in Auckland due to outbreak (17 August).
- Vivas – online and hybrid in states where there weren’t enough examiners, and they couldn’t travel.
- Formed the Tech-Assisted Examinations Working Group led by Leonie Watterson working with the ANZCA IT and Education teams to safely hold vivas online.
- November final Vivas – rather than usual single venue, exams held over two days at eight sites.
- 19 November – SA suddenly goes into lockdown. Attempts for an exemption failed and six candidates flown to NSW (where one of the NSW area health services didn’t want its consultants to examine the potentially infected SA candidates) and exam rosters redrawn.
- Primary vivas (online) finished on 6 and 8 December.

### Vaccination roll-out

- 1 February 2021– president [wrote to Australia’s Chief Medical Officer Professor Paul Kelly](#).

- 16 February – president wrote to [Australian Technical Advisory Group on Immunisation](#) (cc Australian Chief Medical Officer State and Territory Chief Medical Officers/Chief Health Officers) asking if anaesthetists were considered frontline workers and prioritised for receiving the vaccination.
- 17 February – president wrote to New Zealand's Director-General of Health [Dr Ashley Bloomfield](#) seeking clarification on the vaccination roll-out plan.
- [President spoke to Nick Coatsworth](#) about the safety of the AstraZeneca vaccine.

## Webinars (Zoom)

In addition to online SIG and CME events:

- 6 April 2020- Deputy Chief Medical Officer Dr Nick Coatsworth hosted a webinar on PPE for anaesthetists.
- 5 May 2020 – [NZ COVID-19 NZ Webinar 1](#) with the NZ Chief Medical Officer Dr Andrew Simpson.
- 13 August 2020 – [Exams update with ANZCA President](#) on how ANZA would run exams.
- 11 July 2020 – [Examination process/wellbeing](#) (Greg Downey, Robert O'Brien)

Also ran about 25 exam support webinars (<https://vimeo.com/showcase/exam-support>)

## ANZCA fellows on expert advisory groups

- National COVID-19 Clinical Evidence Taskforce Steering Committee (Dr Vanessa Beavis, President). Met weekly to provide cross-disciplinary consensus on the clinical care of patients with COVID-19. Professor Paul Myles, Associate Professor Nolan McDonnell and Dr Simon Hendel have contributed to the panels of clinical experts that are reviewing the evidence and making recommendations.
- Australian Commission on Safety and Quality in Health Care National Clinical Taskforce (Professor David Story, Chair Safety and Quality Committee).
- Australian Infection Prevention and Control Panel (Dr Phillipa Hore, member and former chair Safety and Quality Committee).
- COVID-19 Victorian Perioperative Consultative group (President, Dr Vanessa Beavis).
- COVID-19 Critical Care Coordination Collaborative (the 5Cs) - presidents of College of Intensive Care Medicine of Australia and New Zealand, Australian and New Zealand Intensive Care Society, Australian and New Zealand College of Anaesthetists, Australian Society of Anaesthetists, New Zealand Society of Anaesthetists, Australasian College for Emergency Medicine, Australian College of Perioperative Nurses, Australian College of Critical Care Nurses.
- Regular meetings/contact with the Director General of Health, Dr Ashley Bloomfield.

## List of COVID-19 communications to all fellows and trainees via Informz (email)

18 March 2020 - [ANZCA exams update \(COVID-19\)](#)

20 March 2020 - [COVID-19 update \(20 March 2020\)](#)

24 March 2020 - [COVID-19: Impacts on training](#)

27 March 2020 - [COVID-19 update \(27 March 2020\)](#)

- 3 April 2020 – [COVID-19 Update: ANZCA Exams](#)
- 7 April 2020 - [COVID-19 update \(7 April 2020\)](#)
- 9 April 2020 - [COVID-19 update: ANZCA Education and Training](#)
- 17 April 2020 - [COVID-19 update \(17 April 2020\)](#)
- 22 April 2020 - [COVID-19 update: Education and training](#)
- 27 April 2020 - [Primary and Final Examinations: Expressions of Interest](#)
- 6 May 2020 - [COVID-19 update: Education and training](#)
- 15 May 2020 - [COVID-19 update \(15 May 2020\)](#)
- 21 May 2020 - [Message from the president - Exams update](#)
- 25 May 2020 – [Final Exam update](#)
- 2 June 2020 - [COVID-19 update \(02 June 2020\)](#)
- 4 June 2020 – [Primary exam update](#)
- 10 June 2020 - [COVID-19 update \(10 June\)](#)
- 10 June 2020 - [Victoria - ANZCA Exams update](#)
- 1 July 2020 - [Message from the president \(1 July\)](#)
- 16 July 2020 - [Message from the president \(16 July\)](#)
- 22 July 2020 - [Exams update \(22 July\)](#)
- 24 July 2020 - [Message from the Chair of primary exams](#)
- 31 July 2020 - [Exams update \(31 July 2020\)](#)
- 10 August 2020 - [Update on ANZCA exams \(10 August\)](#)
- 25 August 2020 - [20.1 final exam viva dates](#)
- 27 August 2020 - [Message from the president \(27 August\)](#)
- 28 August 2020 - [2020 primary examination viva dates](#)
- 10 September 2020 - [Message from the president \(10 September\)](#)
- 24 September 2020 - [Final Exam update 24 September 2020](#)
- 28 September 2020 - [Message from the president \(28 September 2020\)](#)
- 1 October 2020 - [ANZCA SIMG Exam Update](#)
- 8 October 2020 - [Message from the president \(8 October 2020\)](#)
- 4 November 2020 - [Update on the primary exam](#)
- 5 November 2020 - [Message from the president \(5 November\)](#)
- 11 November 2020 - [Update on the final exam medical vivas](#)
- 19 November 2020 - [SA final exam anaesthesia vivas cancelled](#)
- 4 February 2021 - [Message from the Chair of primary exams](#)
- 5 February 2021 - [Message from the Chair of final exams](#)
- 5 February 2021 - [Message from the president \(5 February 2021\)](#)
- 22 February 2021 - [Update from the chair of primary exams \(AUS\)](#)
- 22 February 2021 - [Update from the chair of primary exams \(NZ\)](#)

- 5 March 2021 - [Message from the president \(5 March\)](#)
- 26 March 2021 - [Letter from the Chair of final exam](#)
- 31 March 2021 - [Update from the Chair of final exam \(31 March\)](#)
- 1 April 2021 - [Message from the president \(1 April 2021\)](#)
- 26 April 2021 - [WA Primary exam viva update](#)
- 28 April 2021 - [Update on WA primary exam viva](#)

**Appendix 2**

Results of staff survey about welfare issues 2021

Concern	Strategy
High Workload	<p>Initial stress of getting organised and workload shuffle to accommodate extra tasks now mostly settled for many.</p> <p>Now beginning to see a delayed stress within the COVID-19 preparation group, in response to multiple layers of information, scrutiny, comparison and availability of resource.</p>
PPE	<p>Concerns early on prior to training mostly settled now. Value of multidisciplinary approach to training to support whole theatre team widespread. Good for team bonding. Still an evolving skillset.</p>
Concurrent life events	<p>Staff given time away from work, to deal with life.</p> <p>Comment was made, that facilitation of the needs of families and juggling two frontline workers, was perhaps easier, where those in leadership roles had a need to configure this also.</p> <p>Overseas relatives and friends.</p>
Financial stressors	Awareness
Roster availability if no clinical work	<p>Most departments have set up systems for rotating this with understanding of availability to work from home.</p> <p>In some areas, Private hospital workload such that few are unoccupied.</p> <p>Sense that departments who allow work from home are applying a “Don’t be in unless you need to be” approach.</p>
Dual teams/ Rostering	<p>Some departments have developed two separate teams with no overlap of contact in anticipation of COVID-19 and non-COVID-19 workloads.</p> <p>Most have a designated ICU intubating roster and some alterations of ordinary roster patterns.</p>
Communication	<p>Daily CD/Director of surgery updates. Can chose to ignore if too frequent, but still made available to facilitate inclusion.</p> <p>Early recognition that leaving people wondering, breeds anxiety.</p> <p>Twice weekly Zoom meetings for Q and A within department, SMOs, and trainees.</p> <p>Regional information including OT stats, ICU occupancy and wider district case numbers, was in one department collated by the duty and delivered, daily (pro forma completed).</p> <p>Some have limited frequency from the department to a single comprehensive email, once a day only.</p>



Concern	Strategy
Maintaining Connection	<p>Trainee mentors assigned or encouraged.</p> <p>SMO buddy's, including newly configured arrangements in some departments.</p> <p>Clinical Leadership check-ins, with leaders of key teams – SOT's, SIM, Welfare etc.</p> <p>"WhatsApp" groups configured for both whole anaesthetic department, groups of SMOs, groups of Trainees and in some cases, the whole perioperative group including techs and nurses.</p>
Maintaining Connection with those off in self-isolation	<p>Point of contact established within the department to make regular and frequent check-ins and awareness of the mental health implications of loss of normal routines and contacts.</p> <p>Self-Isolation coordinator set up in one region, to assist if needed with finding accommodation and meal arrangements and keep contact with those in self-isolation. Separate document forwarded.</p>
CME	<p>Zoom is preferred meeting app for many.</p> <p>Teams sign up arranged, but not being used for this by most.</p> <p>"WebEx" also mentioned.</p>
Teaching	<p>Mostly on Zoom. SOT's using to check-in with trainees for five minutes ahead of weekly teaching.</p>
Trainees	<p>Living with major and ongoing uncertainty.</p>
Trainee goodie bag	<p>One department provided a goodie bag to trainees, in recognition of the way they've had to step up to cover for others needing to self-isolate or be off for other reasons.</p>
Channel App	<p>App developed by a doctor to record and track personal well-being of members of a department. 5 questions based on the WHO well-being questions. Started in ICU and ED and being trialled by trainees in one department. Link forwarded by email following the meeting.</p>
Information overload	<p>Separation out of COVID-19 related clinical information from both welfare and lighter moments.</p>
Well-being information overload	<p>Arriving from all sources. Needs filtering for relevance. Most are using a selection, separately filed for browsing. COVID-19 welfare page divided into families, general and professional components.</p> <p>Some active discouragement of lighter moment resources and in some cases removed from department resources.</p>
Welfare distinct from well-being	<p>In-spite of the current abundance of well-being resourced, some colleagues about whom there is most concern about well-being, express</p>

Concern	Strategy
	a reluctance to engage with anything offered. Welfare advocates therefore continue to carry concern for these people and continue to offer support and carry this awareness. Sometimes, with patience, an opportunity where people feel able to accept support, arises.
Distress behaviours	Some have seen extreme anxiety and anger displayed and have needed to manage this within the workplace. A combination of listening, supportive problem solving and a small number of people needing professional assistance.
Administration staff distress	Wide, and in some cases late awareness that admin staff are also experiencing distress.
Psychological support	<p>Pain service psych support realigned to clinical staff in some pain services, followed by availability to link to more formal psych support where needed.</p> <p>Clinical Psychological support moved into the department in some cases.</p> <p>Drop-in clinics 3X weekly, funded at 99c/person/day from the budget. Able to be extended into anaesthesia because of preconfigured similar arrangement in ICU and ED, hence organisational willing.</p>
Occupational health	Little talk about this in most centres as a welfare issue. Removing the conversation remotely beyond the department helpful for some.
PPE training beyond theatre	<p>Anaesthetist on convalescence from surgery, invited to engage in assisting with delivery of community PPE training.</p> <p>Good insights gained about realities and fears shared by primary care health workers.</p> <p>Awareness of how much resource and instruction needed to do PPE well.</p>
ICU Secondment	<p>Several areas have diverted anaesthesia personnel to prepare to assist with ICU workload.</p> <p>This has been driven by necessity in some centres and voluntarily in others.</p>
Regional liaison	<p>Facilitated between smaller centres and regional ICU referral centre.</p> <p>Anaesthesia/ICU/ED facilitation of resource sharing and regional strategy development occurring for rostering and problem solving.</p>
Role Stepping Up	Departments needing to adapt to leadership being moved away to another area during this time and willing for others to step in and adapt.
Wider Well-being role	In one instance, where the SMO well-being lead is also an anaesthetist, longer term welfare strategies are being put in place, to begin to see what longer term welfare BAU will look like.

Concern	Strategy
	<p>Acute support from Psych Med has been configured, as well as engagement with a psychiatrist and psychologist for planning to occur, in an ongoing way.</p> <p>Schwartz rounds<sup>1</sup> are running in Auckland and plans to commence this are also underway.</p> <p>The Health Roundtable licences to use the Mayo Clinic Well-being Index mean that this is currently running for 4 weeks to get a current assessment of the state of the department. This is limited to SMO's only, at present, but could be extended to trainees and nursing. 103 SMOs at the hospital have completed so far.</p>
Wider Perioperative staff awareness	Development in one department of a “bunch” of initiatives, introduced in a stepwise fashion, e.g., Free online yoga. Weekly podcast from TARP – The Auckland Regional Pain Service psychologists. A weekly “Good Egg” award, for someone nominated each week from within the perioperative service, carried forward by sending the next weeks nominations to this week’s winner to determine recipient.
Social events	Weekly wine hosting on Zoom
Return to BAU	What will this look like?

<sup>1</sup> Schwartz Rounds are a type of structured group forum where clinical and non-clinical staff meet regularly to discuss the emotional and social aspects of working in healthcare. Schwartz Rounds provide an opportunity to take 'time-out' to reflect on work in a collegial and safe space.

### **Appendix 3: Bibliography**

1. Armstrong RA, Kane AD, Kursumovic E, Oglesby FC, Cook TM. Mortality in patients admitted to intensive care with COVID-19-19: an updated systematic review and meta-analysis of observational studies. *Anaesthesia*. 2021 Apr;76(4):537-48.
2. Beavis V. College meets the COVID-19-19 challenge. *ANZCA Bulletin*. 2020 Jun 1;29(2):24.
3. Begley JL, Lavery KE, Nickson CP, Brewster DJ. The aerosol box for intubation in coronavirus disease 2019 patients: an in-situ simulation crossover study. *Anaesthesia*. 2020 Aug;75(8):1014-21.
4. Brewster DJ, Nickson CP, McGloughlin S, Pilcher D, Sarode VV, Gatward JJ. Preparation for airway management in Australia and New Zealand ICUs during the COVID-19-19 pandemic. *Plos one*. 2021 May 7;16(5):e0251523.
5. Brewster DJ, Chrimes N, Do TB, Fraser K, Groombridge CJ, Higgs A, Humar MJ, Leeuwenburg TJ, McGloughlin S, Newman FG, Nickson CP. Consensus statement: Safe Airway Society principles of airway management and tracheal intubation specific to the COVID-19-19 adult patient group. *Med J Aust*. 2020 Jun 1;212(10):472-81.
6. Broadbent A. The ABC of reducing postoperative infections. *ANZCA Bulletin* 2020 Mar 1;29(1):50-1.
7. Broadbent A. Anaesthesia post-COVID-19-19: What needs to change? *ANZCA Bulletin*. 2020 Jun 1;29(2):25.
8. Broadbent A. Global health: New Zealander elected president of world body. *ANZCA Bulletin*. 2021 Sep 1;30(3):44-5.
9. Cooper MG, Karu AW, Bowden CD. COVID-19-19 and global health: influences and implications for education and training support in low-and middle-income countries. *Anaesthesia and Intensive Care*. 2020 Jul;48(4):262-5.
10. Dobos N, Douglas J. Management of severe COVID-19 disease in the ICU. *Australasian Anaesthesia*. 2021 Oct 1:21-33.
11. Endlich Y, Beckmann LA, Choi SW, Culwick MD. A prospective six-month audit of airway incidents during anaesthesia in twelve tertiary level hospitals across Australia and New Zealand. *Anaesthesia and Intensive Care*. 2020 Sep;48(5):389-98.

12. Feeley T, Tan MH, Magner C, L'Estrange K, Efrimescu CI, O'Connor E, Lyons B, Crowe S, O'Rathallaigh E, Doyle D, Whelan S. Psychological impact of COVID-19-19 on staff working in paediatric and adult critical care. *British journal of anaesthesia*. 2021 Jan 1;126(1):e39-41.
13. Ferguson MT, R Fernando J, McManus S, Richardson I, Nicholson J, A Story D, Ismail H, Riedel B. Perioperative medicine in Australia and New Zealand: A cross-sectional survey. *Anaesthesia and intensive care*. 2022 Sep;50(5):403-6.
14. Frei DR, Beasley R, Campbell D, Leslie K, Merry A, Moore M, Myles PS, Ruawai-Hamilton L, Short TG, Sibanda N, Young PJ. Perioperative oxygen administration in patients undergoing major non-cardiac surgery under general anaesthesia in Australia and New Zealand. *Anaesthesia and Intensive Care*. 2023 May;51(3):185-92.
15. Froessler B, Malek M, Jila M, Parange A, Kelly TL. The impact of withholding nitrous oxide in labour during the COVID-19-19 pandemic on maternal and neonatal outcomes. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2022 Dec;62(6):910-4.
16. Gorton C. Collecting and preserving COVID-19-19 tweets. *Journal of Health Information and Libraries Australasia*. 2020 Jun 1;1(2):29-32.
17. Hade AD. Correct probability estimates for risk of anaesthetist contracting severe acute respiratory virus coronavirus 2 after aerosol-generating procedures: In reply. *Anaesthesia and Intensive Care*. 2021 Jan;49(1):78-9.
18. Halbert JA, Jones A, Ramsey LP. Clinical placements for medical students in the time of COVID-19-19. *The Medical Journal of Australia*. 2020 Jun 25;213(2):69-.
19. Heath C, Sommerfield A, von Ungern-Sternberg BS. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19-19 pandemic: a narrative review. *Anaesthesia*. 2020 Oct;75(10):1364-71.
20. Irons JF, Pavey W, Bennetts JS, Granger E, Tutungi E, Almeida A. COVID-19-19 safety: aerosol-generating procedures and cardiothoracic surgery and anaesthesia—Australian and New Zealand consensus statement. *Medical Journal of Australia*. 2021 Jan;214(1):40-4.

21. Jones PG, Nicholls BP. Resident medical officers' redeployment experiences in the Adult Emergency Department during the COVID-19-19 pandemic at Te Toka Tumai Auckland Hospital. *The New Zealand Medical Journal (Online)*. 2023 Feb 17;136(1570):20-9.
22. Jones C. ANZCA and FPM in the news: COVID-19-19, elective surgery, research hot topics. *ANZCA Bulletin*. 2021 Dec 1;30(4):6-7.
23. Kanczuk ME, Lightfoot NJ. The time to perform spinal or general anaesthesia in COVID-19-19 positive parturients requiring emergency caesarean delivery: a prospective crossover simulation study.
24. Kvalsvig A, Baker MG. How Aotearoa New Zealand rapidly revised its Covid-19 response strategy: lessons for the next pandemic plan. *Journal of the Royal Society of New Zealand*. 2021 May 31;51(sup1):S143-66.
25. Lawrentschuk N. COVID-19-19 and urology in Australia and New Zealand: uncertain times. *BJU international*. 2020 Sep;126:4-5.
26. Lim WY, Wong P. Supraglottic airways in the management of COVID-19-19 patients. *Anaesthesia, critical care & pain medicine*. 2020 Oct;39(5):589.
27. Litton E, Bucci T, Chavan S, Ho YY, Holley A, Howard G, Huckson S, Kwong P, Millar J, Nguyen N, Secombe P. Surge capacity of intensive care units in case of acute increase in demand caused by COVID-19-19 in Australia. *Medical Journal of Australia*. 2020 Jun;212(10):463-7.
28. Lo ST, Yong AS, Sinhal A, Shetty S, McCann A, Clark D, Galligan L, El-Jack S, Sader M, Tan R, Hallani H. Consensus guidelines for interventional cardiology services delivery during COVID-19-19 pandemic in Australia and New Zealand. *Heart, Lung and Circulation*. 2020 Jun 1;29(6):e69-77.
29. Low CS, Weinberg L, Ellard LM, Hacking DF, Banyasz D. Pass rate of the BSN Medical ProShield® N95 filtering facepiece using quantitative fit testing in frontline anaesthetists and anaesthesia nurses working on a COVID-19-19 airway team. *Anaesthesia and intensive care*. 2021 Jul;49(4):322-3.
30. Ramakrishnan VS, Kim YK, Yung W, Mayur P. ECT in the time of the COVID-19-19 pandemic. *Australasian Psychiatry*. 2020 Oct;28(5):527-9.
31. Robinson AJ, London W, Kotan L, Downing W. A modification to the Maquet Flow-i anaesthesia machine for ICU ventilation. *medRxiv*. 2020 Apr 11:2020-04.

32. Seglenieks R. Coping in a pandemic: A trainee's perspective. ANZCA Bulletin. 2020 Sep 1;29(3):28-9.
33. Shahab J, Begley JL, Nickson CP, Simpson S, Ukori I, Brewster DJ. Confidence in airway management proficiency: a mixed methods study of intensive care specialists in Australia and New Zealand. Critical Care and Resuscitation. 2022 Sep 1;24(3):202-11.
34. Sheridan N, Marane C. Clinical leadership in uncertain times. Australasian Anaesthesia. 2021 Oct 1:323-7.
35. Sneyd JR, Mathoulin SE, O'Sullivan EP, So VC, Roberts FR, Paul AA, Cortinez LI, Ampofo RS, Miller CJ, Balkisson MA. Impact of the COVID-19-19 pandemic on anaesthesia trainees and their training. British journal of anaesthesia. 2020 Oct 1;125(4):450-5.
36. Sutton-Smith L. Planning for a COVID-19-19 crisis. Kai Tiaki: Nursing New Zealand. 2020 May 1;26(4):26-7.
37. Udy A. Qua pote quisque, in ea conerat arte diem: COVID-19-19 and Australian and New Zealand intensive care. Crit Care Resusc. 2020 Jun 1;2:103. ("Let people do what they are good at")
38. Uppal V, Shanthanna H, Kalagara H, Sondekoppam RV, Hakim SM, Rosenblatt MA, Pawa A, Macfarlane AJ, Moka E, Narouze S. The practice of regional anesthesia during the COVID-19-19 pandemic: an international survey of members of three regional anesthesia societies. Canadian Journal of Anaesthesia. 2022;69(2):243.
39. Warren N, Siskind D, Lie D. Electroconvulsive therapy during severe acute respiratory syndrome coronavirus 2 pandemic. Australian & New Zealand Journal of Psychiatry. 2020 Dec;54(12):1224-.
40. Watters DA, Brown W, Hardidge A, Council VP, Group VS, Perioperative Expert Working Group. Victoria's perioperative response to the COVID-19-19 pandemic. ANZ journal of surgery. 2020 Jul;90(7-8):1238.
41. Weinkove R, McQuilten ZK, Adler J, Agar MR, Blyth E, Cheng AC, Conyers R, Haeusler GM, Hardie C, Jackson C, Lane SW. Managing haematology and oncology patients during the COVID-19 pandemic: interim consensus guidance. Medical Journal of Australia. 2020 Jun;212(10):481-9.

42. Weller J, Beavis V, Jamieson K, Lyndon M, Long J. Perioperative leaders' experience of COVID-19-19 in Aotearoa: a qualitative interview study. *The New Zealand Medical Journal (Online)*. 2022 Apr 1;135(1552):101-7
43. Wild CE, Wells H, Coetzee N, Grant CC, Sullivan TA, Derraik JG, Anderson YC. Learning from healthcare workers' experiences with personal protective equipment during the COVID-19-19 pandemic in Aotearoa/New Zealand: a thematic analysis and framework for future practice. *BMJ open*. 2022 Oct 1;12(10):e061413.
44. Young PJ, Psirides A, Streat S. New Zealand's staffed ICU bed capacity and COVID-19-19 surge capacity. *The New Zealand Medical Journal (Online)*. 2021 Nov 12;134(1545):8-10.
45. Van Zundert AA, Endlich Y, Beckmann LA, Bradley WP, Chapman GA, Heard AM, Hefferman D, Jephcott CG, Khong GL, Rehak A, Semenov RA. 2021 update on airway management from the anaesthesia continuing education airway management special interest group. *Anaesthesia and Intensive Care*. 2021 Jul;49(4):257-67.