

Short title: Anaesthetist roles BP

1. Purpose

Governments, health workforce planning agencies and other key stakeholders in Australia and New Zealand have been considering the establishment of new roles in healthcare for some time. ANZCA recognises the need to meet the demands of an aging and increasingly complex patient population, financial constraints and tightening health budgets, and workforce composition and distribution issues.

New models of care, new roles, and extended scopes and complexity of practice have the potential to influence the composition and operation of anaesthesia and perioperative care teams. ANZCA acknowledges its responsibility to contribute to discussions that involve the composition of and roles within the anaesthesia and perioperative care team, and to publicly present the college's policy by way of a position statement. This aligns with ANZCA's mission:

To serve the community by fostering safety and high quality patient care in anaesthesia, perioperative medicine and pain medicine.

This background paper supports ANZCA professional document *PS59(A) Position statement on roles in anaesthesia and perioperative care* by:

- 1.1 outlining the context of the policy discussions on anaesthesia and perioperative roles;
- 1.2 providing an overview of the evidence considered in the development of the position statement; and
- 1.3 providing a note on the literature on alternative anaesthesia providers.

Currently available research looking at the relative safety of anaesthesia providers needs to be treated with caution, and with consideration of the legal, social and health system environment from which it comes. Extrapolating international data into the Australian and New Zealand health systems should be done with due consideration.

2. Background

This section provides background information to the concepts in the position statement.

Defining anaesthesia and perioperative care

Discussions about who provides anaesthesia need to be based on a shared understanding of the nature of anaesthesia and perioperative care.

2.1 Anaesthesia

The ANZCA 2013 Anaesthesia Training Program defines the medical specialty of anaesthesia by establishing the level at which all anaesthetists are expected to be practice in Australia and New Zealand. These are the ANZCA Clinical Fundamentals:

- i. General anaesthesia and sedation
- ii. Airway management
- iii. Regional and local anaesthesia
- iv. Pain medicine

- v. Perioperative medicine
- vi. Resuscitation, trauma and crisis management
- vii. Safety and quality in anaesthesia practice.

Almost all surgical and invasive diagnostic and interventional procedures require some form of anaesthesia, airway management and perioperative care. Frequently, anaesthetists also contribute to care in obstetrics, pain medicine, intensive care medicine, medical imaging procedures (for example, magnetic resonance imaging and computed tomography), emergency care, resuscitation and retrieval, as well as in monitoring and improving safety around the hospital.

In addition, a fellow of ANZCA (FANZCA) fulfils the seven ANZCA roles:

- i. Medical expert
- ii. Communicator
- iii. Collaborator
- iv. Manager
- v. Health advocate
- vi. Scholar
- vii. Professional.

Anecdotal reports indicate that policy-makers may, like patients, have an incomplete understanding of the roles of the specialist anaesthetist (and likely the perioperative team), and therefore an incomplete understanding of the potential benefits and risks of introducing new and/or extended scopes of practice into anaesthesia and the wider sphere of perioperative care.

There has been discussion within the profession that anaesthesia is a confining, rather than a defining term¹ because it is frequently interpreted as meaning “general anaesthesia” alone, and that perioperative care is a more accurate title for the work of most anaesthetists. The name of the profession is beyond the scope of the position statement; however it is important to consider what new or extended scopes of practice mean for anaesthesia and for the wider scope of perioperative care.

2.2 Perioperative care

Perioperative care includes all care from the time a patient is scheduled for a procedure until specialist medical management is no longer needed. The anaesthetist's roles in perioperative care, in addition to intraoperative care, may include but are not limited to:

- 2.2.1 Pre-operative assessment of the patient, including diagnosis of conditions and treatment designed to minimise risks and optimise the patient's outcome.
- 2.2.2 Planning of anaesthesia and postoperative care, including consultation with the patient and family regarding relative risks and benefits of types of anaesthesia.
- 2.2.3 Intraoperative management.
- 2.2.4 Management of recovery including diagnosis and management of emergency conditions.
- 2.2.5 Postoperative care including fluid and electrolyte management and relevant medical management.
- 2.2.6 Pain management, including diagnosis and treatment of acute and chronic pain.
- 2.2.7 Diagnosis and treatment of critically ill patients in post-anaesthetic care unit, adult, paediatric and neonatal intensive care units, cardiac care units the emergency department and the wards.
- 2.2.8 Response to emergencies in the healthcare facility.

3. The current medical anaesthesia workforce

In Australia and New Zealand, the prescribing and administration of anaesthetic drugs is the sole domain of medical practitioners. These doctors can be:

- 3.1 Specialist anaesthetists: who have completed specialist training and hold specialist registration.
- 3.2 Intensive care and emergency medicine specialists.
- 3.3 Non-specialist doctors who practice anaesthesia, either as:
 - 3.3.1 General practitioner (GP) Anaesthetists (Australia only).
 - 3.3.2 Doctors who hold general registration and practice with the collegial support of a specialist anaesthetist (New Zealand).
- 3.4 Doctors undertaking training to become specialist or GP anaesthetists.
- 3.5 Other doctors with the requisite training and experience who are credentialed to do so by the healthcare facility (for example gastroenterologists).

In Australia and New Zealand, a specialist anaesthetist must complete a medical degree (either undergraduate or postgraduate entry), at least two years of prevocational medical education and training and then the (minimum) five-year specialist training program in anaesthesia. Anaesthetists' medical training means that they have an extensive knowledge of basic and applied biological sciences to guide clinical decision-making, and their roles as trainers and supervisors. Anaesthesia has a significant pharmacological component, necessary for the anaesthetist's critical role in preoperative assessment, intraoperative care and postoperative management. Again, this knowledge is developed and consolidated through extensive medical training and experience.

Trainees make an important contribution to anaesthesia services, particularly toward the end of their training when they are able to practise with less intense supervision for up to half their time. On successful completion of training, a trainee gains specialist registration with the Medical Board of Australia or becomes a vocationally registered anaesthetist with the Medical Council of New Zealand. There are specific provisions for international medical graduate specialists (IMGs) seeking specialist registration, vocational registration and/or fellowship (see Regulation 23).

Once qualified as a specialist, anaesthetists must undertake continuing professional development (CPD) which meets the standards of the Medical Board of Australia (which adopts the standard set by ANZCA) or the Medical Council of New Zealand. The outcome of this training and CPD is a highly specialised medical professional with multiple skills and a high degree of expertise.

In-theatre anaesthesia delivery accounts for a little over 55 per cent of an anaesthetist's typical work week (30.6 hours out of a total of, on average, 55.2 hours each week).² Perioperative care and clinical support duties (such as administration, safety and quality activities including continuing professional development, teaching and research) take up almost half of the working hours of specialist anaesthetists.

There are two main groups of non-specialist anaesthetists: medical officers and general practitioners.

- i. Medical officers practice under the supervision of a specialist anaesthetist. These doctors may have several years of experience and training in anaesthesia but will not or cannot progress to FANZCA or an equivalent qualification. IMGs and locums also work in these roles.
- ii. GP anaesthetists with specific training practice in primarily rural and remote Australian areas, either independently or in support of specialist anaesthetists. There are no GP anaesthetists in New Zealand.

4. Drivers for workforce innovation

Increases in the complexity of and demand for services impact directly on the demand for anaesthesia care and anaesthetists. Further, the level of involvement by anaesthetists in patient care is considerable. In Europe between 50 and 60 per cent of all patients admitted to hospital see an anaesthetist for anaesthesia, pain medicine and/or critical care;³ in the UK the figure is around 70 per cent.⁴ As the Royal College of Anaesthetists notes, this means that "...anaesthesia manpower requirements are therefore very sensitive to service developments."

Interest in the opportunity to develop more specialised skills has been signalled by nurses and other health professionals. Models of care in other countries, such as nurse anaesthetist and anaesthesiologist assistant (US), physician assistant (anaesthesia) and operating department practitioner (UK) provide a greater scope of practice than that of the nurses or anaesthesia technicians currently assisting anaesthetists in Australia and New Zealand.

Health sector policy-makers and administrators on both sides of the Tasman are concerned that limited specialist capacity (including anaesthesia capacity) may limit the delivery of healthcare services. One policy response to a workforce supply issue is to look at expanding the workforce through recruitment and retention of specialist anaesthetists, and making the best use of specialist skills by delegating some roles to other providers, thereby developing a more flexible health workforce.^{5,6}

The introduction of new or extended workforce would take time to develop and implement. Recruitment, training and accreditation/registration, policy and legislative changes and administrative considerations will require significant time and resource allocation. As noted above, ANZCA has a key role in ensuring that these discussions include expert advice from the college and its fellowship.

5. New and expanded roles in Australia, New Zealand and internationally

Australia and New Zealand are among a group of countries where anaesthesia is the sole domain of doctors. In this discussion it is important to distinguish between anaesthesia delivered *by a specialist anaesthetist* and anaesthesia delivered *under the delegated responsibility of a specialist anaesthetist*. The latter includes situations in Europe and some US states, whereby an anaesthesia assistant or a nurse anaesthetist administers anaesthesia under supervision. Often this involves a specialist anaesthetist overseeing a number of theatres where non-medical anaesthesia practitioners are working.

Internationally, there is significant variation in the roles, training, registration and supervision of anaesthesia assistants. Scopes of practice also vary considerably; however they are primarily determined by whether the country allows non-medical anaesthesia. In countries where this is the case, the non-medical providers' scope of practice includes tasks such as induction of, maintenance of and emergence from general anaesthesia, and in some cases performing regional anaesthesia blocks.

There are a number of models for provision of anaesthesia ranging from specialist (or specialist-supported) only, medical only, through to non-medical providers either under supervision in a team, or practising autonomously, and with varying scopes of practice to match. Countries have developed and implemented models in response to their specific needs, political and social conditions, professional interests, workforce pressures and opportunities. In essence, the results reflect national solutions for national conditions.

The key differences relate to the degree to which the roles in the anaesthesia team are delegated from the specialist anaesthetist to other healthcare professionals, and the degree to which those providers are a substitute for a specialist anaesthetist.

There is no single model for physician assistants, nurse anaesthetists or anaesthesia assistants. As noted by Ludbrook and Pieschl⁷: "[t]his lends support to the thesis that, should we proceed down this path in Australia (and/or New Zealand), we should look to building our own consistent national model as a priority."

6. Patient safety: Progress and evidence for ongoing improvements

ANZCA's policy position is that anaesthesia is a medical role. The discipline requires medical training, followed by specialist training in an accredited anaesthesia training program and participation in continuing professional development. These programs provide anaesthetists with the skills, knowledge and

experience to prescribe, administer and manage anaesthesia, to provide care in the wider perioperative scope, and to make diagnoses and treat patients accordingly.

Australia and New Zealand report some of the best anaesthesia safety statistics in the world, achieved using a specialist-led model of care where administration of anaesthesia is a medical practice. The 2014 ANZCA publication *Safety of Anaesthesia: A Review of Anaesthesia-related Mortality Reporting in Australia and New Zealand 2009-2011* reports an anaesthesia-related death rate (in four Australian states) of 3.01 deaths per million populations per annum; or using another denominator, 1 death for every 58,039 episodes of anaesthesia care (approximately 9.05 per million episodes).⁸

Differing methodologies make international comparisons problematic; however a meta-analysis of perioperative and anaesthesia-related mortality (anaesthesia sole mortality) assigned a weighted event per million anaesthetic episodes of 25 (21-30 95% confidence intervals) in developed countries in the 1990s and 2000s, compared to the 18.02 per million anaesthetic episodes in the Australian data (2005-2008).⁹ There is evidence linking specialist direction of care to lower 30-day mortality and failure-to-rescue rates, and an observed increase of 2.5 deaths per 1,000 cases when an anaesthetist was not involved in the case, although these data do not distinguish between anaesthetists working alone or as part of a team, and include high risk and acute cases.¹⁰ These data were disputed by Pine et al¹¹ who found no significant association between anaesthesia provider and mortality rates; however these data do not determine whether mortality was attributable to anaesthesia.

The REASON study demonstrated that pre-operative identification of a patient's risk factors, and improved planning and management of postoperative care, may have a significant role to play in improving postoperative outcomes in older patients. The study suggests that these factors may have more of an influence on outcomes than the type of surgery involved.¹²

Data from the NCEPOD study in the UK show a clear association between poor outcomes and inadequate (or absent) preoperative evaluation and management. This is a finding consistently reflected in the association between mortality and inadequate pre- and postoperative care identified in recent ANZCA Triennial Mortality Reports. The safety of anaesthesia in Australia and New Zealand has been achieved in the context of rigorous training and CPD programs and medical-only delivery outcomes as the model of care in these two countries.

7. The anaesthesia and perioperative teams

In general terms, the anaesthesia team comprises the following roles:

- 7.1 Specialist anaesthetist or other medical anaesthetist (GP or medical officer).
- 7.2 Trainee anaesthetist(s) (in training hospitals only).
- 7.3 Anaesthesia assistant(s) as defined in ANZCA professional document *PS08(A) Position statement on the assistant for the anaesthetist*.
- 7.4 Nurses in the OR and PACU.
- 7.5 Other staff as required.

The most important points to highlight are that the anaesthetist does not work in isolation, and that the team is led by a specialist anaesthetist.

The anaesthesia team includes non-medical health professionals who have critical roles in patient care, and in assisting the anaesthetist. ANZCA's professional document *PS08(A) Position statement on the assistant for the anaesthetist* notes that "The presence of a trained assistant for the anaesthetist during the conduct of anaesthesia is a major contributory factor to safe patient management."

This is distinct from the concept of a non-medical provider, who can prescribe and administer anaesthetic drugs, undertake the related technical procedures (such as intravenous cannulation and endotracheal intubation) and who does not hold a medical degree. Such scopes of practice may be common in some

countries. However, there are no non-medical anaesthetists in Australia or New Zealand; nor is there any regulatory framework to enable such a workforce.

Differences exist in the composition and skill sets of the team. In New Zealand, anaesthesia technicians are a regulated health profession under the Health Practitioner Competence Assurance Act 2003, and have a defined scope of practice.¹³ They are a critical part of the anaesthesia workforce and perform many of the roles that alternative providers (for example, physician assistants and anaesthesia nurses) perform in other jurisdictions. Australian anaesthesia technicians are not regulated but perform some of the same functions.

Evidence links effective teamwork to improved patient safety¹⁴; however as in any team, there is a need for clear communication and information sharing, a collaborative environment and task coordination. Good communication within the team assists with smooth handover to the recovery receiving team, and appears to improve the patient experience.¹⁵

The literature is clear that a team approach to perioperative care leads to better patient outcomes than those observed when practitioners work alone, provided that the assistant has undertaken appropriate training in order to provide effective support to the anaesthetist. (See ANZCA professional document *PS08(A) Position statement on the assistant for the anaesthetist*).

The literature indicates that assistants with anaesthesia-specific training results in significantly fewer errors than assistants without such training.¹⁶ Skilled assistance can minimise harm from adverse incidents; conversely, inadequate assistance has been shown to contribute to or fail to mitigate harm.¹⁷

The impact of an effective team can and should extend beyond intraoperative anaesthesia practice to include the whole perioperative period.

There may be tasks normally undertaken by anaesthetists (excluding the provision of anaesthesia itself) that could be undertaken by appropriately trained and supervised health professionals within the perioperative care team.

8. Good practice in the introduction of new and expanded roles

As well as identifying possible alternative or additional models of care, there are numerous reasons to consider change, evidence suggests that the way change is implemented and assessed is important.

Health Workforce New Zealand has noted that specialist doctors are performing tasks that could safely be delegated to non-specialist or non-medical staff. The driving concept is to have doctors working at the top of their scope¹⁸ using alternative providers (less costly staff) to perform routine procedures. This is effectively the model that PAs work under in the USA.

There are limited data about the relative costs and benefits of alternative providers of anaesthesia. There are no studies available on the cost-effectiveness of PAs within anaesthesia. USA studies comparing the cost of anesthesiologist and nurse anaesthetist-led anaesthesia variously found that nurse anaesthesia was more expensive per case based on Medicare billing.^{19,20} Conversely another study, which compared different models of care depending on the risk profile of the patient, found that the most cost-effective approach was for anesthesiologists to anaesthetise all high risk patients; intermediate risk patients cared for by a nurse anaesthetist with anesthesiologist supervision ratio of 1:2, and low risk with a supervision ratio of 1:8.²¹ This provides some limited support for the “top of scope” approach in anaesthesia, but did not include consideration of the cost of developing, implementing, regulating and training alternative providers who could provide this type of care.

The data on the influence of alternative providers in perioperative care are also limited; however evaluation of the PA role in a perioperative care team gives an initial indication that this is an area where new or extended scopes of practice could result in gains in efficiency and productivity while improving patient outcomes. For example there is evidence of a high incidence of adverse events in the post-anaesthesia care unit with frequent need for specialist intervention.²² There is an argument that a physician assistant role could, through continuity of care, improve perioperative planning and care.

Trialling new roles in Australia and New Zealand

PAs have been trialled in both Australia and New Zealand in recent years. The pilot of most relevance to this paper was the trial of a PA as part of the Perioperative Anaesthesia Care Team (PACT) at the Royal Adelaide Hospital.⁷

The PACT comprises specialist medical staff and the PA, and focuses on patients with significant comorbidities, a model based on evidence that involving anaesthetists in perioperative care, particularly postoperative outreach and improving preparation for surgery, would improve outcomes. The trial evaluation found that in particular, the introduction of the two PAs in the PACT at RAH was associated with qualitative evidence of improved efficiency (for example, reduced number of patients returned to the ward prior to theatre); and 31 percent of PACT patients referred to the PA were found to have a medical condition that was not being adequately managed.²³

Following interest in the PA model after the trials, a national meeting was held in October 2010 to discuss the issue. Attendees included representatives from medical specialties, universities, health departments from most Australian states/territories, the Department of Health and Ageing, colleges, and nursing and medical associations.

The key messages arising from the meeting included:

- 8.1 Acknowledgement that workforce challenges exist, and will continue in the future.
- 8.2 The PA pilots in South Australia demonstrated positive results.
- 8.3 A number of groups could see a place for PAs within their healthcare teams.
- 8.4 Concerns that existing healthcare professionals (for example trainees) may be adversely impacted by new roles in the health workforce and corresponding changes to models of care.
- 8.5 A clear statement that any new roles must be supported by a robust system linking education, skill mix, roles and regulation.²⁴

These findings and messages are consistent with the evidence that highlights the need for active oversight and steering, clear roles for team leaders/supervisors and alternative providers, and a legal and regulatory framework that clearly sets out delegation, supervision and scope of practice frameworks. These factors have been identified as critical to successful and effective introduction of physician assistants²⁵, and were also demonstrated in the results of the New Zealand trial of two PAs at Middlemore Hospital.²⁶ These findings can reasonably be expected to be relevant to other new or extended scopes of practice.

New roles and team dynamics

Team composition and dynamics are important determinants of safe, effective, and high quality anaesthesia care. These factors need to be considered when proposing extended scopes of practice, introducing new roles, or delegating tasks currently performed by anaesthetists.

Evidence shows that that communication, shared understanding of roles and responsibilities, a collegial and supportive culture, and the willingness to speak out and to be advised or corrected are critical in an effective anaesthesia team.²⁷ Both technical and non-technical skills are important in ensuring good patient outcomes.

The way new or extended roles are introduced into the anaesthesia team can have a significant effect on how well people perform in those roles, and on the degree to which the change makes a positive contribution. In Scotland, an evaluation of a pilot placing PAs noted found that they worked most effectively, and were most satisfied, where their presence filled a distinct gap in the team.²⁸ The same study found that where other team members were not fully aware of the role of the PAs, or underappreciated the PA's skills, the team did not function well. In addition, the regulatory structures in Scotland did not allow PAs to practise at the top of their scope – they could not order diagnostic tests nor prescribe.

The NHS developed a toolkit²⁹ for the introduction of anaesthesia practitioners (later physician assistant (anaesthesia) or PA(A)s), emphasising the need for planning, preparation and implementation to support PA(A) recruitment and retention. There are some helpful models, supported by evaluation results, which should be used to guide innovation in the anaesthesia team. It is clear that if quality and safety is to be maintained and advanced, new or extended roles in the anaesthesia team will need to be tailored and targeted, and introduced in a collaborative and sensitive way.

The success of the introduction of these PA (A) roles in the UK has been mixed for a variety of reasons and has not been pursued.

9. Summary

There are sound reasons for innovation in roles within the anaesthesia team; however there are also reasons for a measured approach to positive change. Dr Leona Wilson, ANZCA Councillor 2000-12 and President 2008-2010, noted that:

“The anaesthesia care team has to be led by a fully qualified anaesthetist but, having said that, we are open to innovation in the team, as long as the standard of care is at least maintained and preferably improved.”³⁰

ANZCA is ideally placed to lead the discussion on who should provide anaesthesia and to ensure the college and fellows are involved in any innovation in this space. While demand, workforce and cost challenges are considerations, the college’s position emphasises the practice of anaesthesia as a medical specialty with a primary focus on maintaining the currently excellent standards of patient safety and quality of care in anaesthesia. ANZCA does not support substitution of the anaesthesia or perioperative medical roles.

In its 2008 submission to the National Health and Hospitals Reform Commission, ANZCA noted that:

“Anaesthetists are well placed, having both the medical skills and knowledge to drive initiatives to enhance patient care perioperatively (pre- and post-surgery), ideally, in partnership with surgeons and physicians.”

The extension of existing roles and the development of new roles for non-medical anaesthesia providers is controversial. There is, however, evidence to show that non-medical practitioners can complement the role of the specialist anaesthetist, taking on delegated tasks under specialist supervision. The key is concentrating on appropriate task delegation and extension of or development of new roles using robust evidence, relevant skill and patient needs assessments, and a flexible approach.

When considering expanded or new scopes of practice that involve anaesthesia, the key questions are:

- 9.1 What problems are there (considering cost, workforce, throughput, best use of skilled resources)?
- 9.2 What evidence is there to support proposed solutions?
- 9.3 Do the solutions fit the problem from an anaesthesia perspective? Is there potential for unintended consequences of changes to anaesthesia team composition, or flow-on effects on anaesthesia following changes in other parts of the health sector?
- 9.4 Will there be any decrease in patient safety or increase in morbidity or mortality?

When considering the delivery of anaesthesia:

- 9.5 What anaesthesia and perioperative care tasks could be delegated?
- 9.6 What skills, expertise and level of support and supervision would the non-medical provider need to safely and expertly carry out those tasks?
- 9.7 What are the likely impacts (positive and negative) of proposed changes on patient care, the specialist, trainees, other perioperative staff, and the hospital systems and processes?

ANZCA is open to discussion, and to being an expert adviser and sector leader in the development of policy concerning new roles to be developed, and/or consideration of which perioperative roles can be delegated and to whom.

Related ANZCA documents

Regulation 23 Recognition as a specialist in anaesthesia or pain medicine; and eligibility for admission to fellowship by assessment for specialist international medical graduates (SIMGs)

PG07(A) Guideline on pre-anaesthesia consultation and patient preparation

PS08(A) Position statement on the assistant for the anaesthetist

PS42(A) Position statement on staffing of accredited departments of anaesthesia

PS53(A) Position statement on the handover responsibilities of the anaesthetist

PS57(A) Position statement on duties of specialist anaesthetists

PG58(A) Guideline on quality assurance and quality improvement in anaesthesia

ANZCA Continuing professional development program handbook

ANZCA handbook for training

ANZCA handbook for accreditation

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In addition, the following were consulted:

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ANZCA Australian regional and NZ national committees
Faculty of Pain Medicine Board and regional committees
ANZCA Trainee Committee
Acute Pain Special Interest Group (SIG)
Airway Management SIG
Anaesthesia and Critical Care in Unusual and Transport Environments SIG
Anaesthetists in Management SIG
Cardiothoracic, Vascular and Perfusion SIG
Communication in Anaesthesia SIG
Day Care Anaesthesia SIG
Diving and Hyperbaric Medicine SIG
Medical Education SIG
Neuroanaesthesia SIG
Obstetric Anaesthesia SIG
Perioperative Medicine SIG
Regional Anaesthesia SIG
Rural SIG
Simulation and Skills Training SIG
Trauma SIG
Welfare of Anaesthetists SIG
Rebecca Conning, former Senior Policy Adviser

PS59(A) was promulgated in 2013 for a pilot phase, during which further feedback was sought with a view to producing a definitive version. Only minor amendments to the document were considered necessary at the close of the pilot phase in 2015.

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