

Variability of CPR training requirements among New Zealand health professionals

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ABSTRACT

AIM: To audit cardiopulmonary resuscitation (CPR) training and certification requirements of registered healthcare professionals in New Zealand.

METHOD: An enquiry-based policy audit of all regulatory bodies under the Health Practitioners Competence Assurance Act 2003 (HPCA Act 2003), and vocational medical training and recertification providers accredited by the Medical Council of New Zealand (MCNZ).

RESULTS: All the organisations approached ($n=37$) responded to the audit. Six of the 17 health professional regulatory bodies have some form of mandatory CPR certification requirement for initial registration, ongoing registration, or continuing professional development. The Midwifery Council, Dentistry Council, Podiatrists Board, and Pharmacy Council have the most comprehensive requirements. Twelve of the 20 vocational medical colleges specify some form of CPR training. The Royal New Zealand College of Urgent Care is the only one to require annual recertification.

CONCLUSION: This audit revealed a wide variety of CPR training and certification requirements across health professions in New Zealand. Future studies should investigate whether mandating CPR training improves outcomes from cardiac arrest and consider patient, public, and whānau expectations regarding the ongoing certification of healthcare professionals in resuscitation and emergency care.

Cardiopulmonary resuscitation (CPR), as it is known today, was first developed in 1960 when physicians combined chest compressions with rescue breathing and applied this to people in cardiac arrest. CPR aims to temporarily maintain a circulation sufficient to preserve brain function and oxygenation to the heart until a defibrillator and specialised care are available.^{1,2} In New Zealand, five people per day are treated by the ambulance service for out-of-hospital cardiac arrest (OHCA). Of these, only 13% survived to hospital discharge.³ In comparison, data from a large New Zealand hospital showed the incidence of cardiac arrest was 14.75 per 1,000 admissions, with resuscitation attempted in 12% of cases. Of those patients where CPR was performed, 27% survived to discharge.⁴

Health professionals may be called upon to perform CPR in the community and clinical settings. A recent survey of New Zealand podiatrists found that 16% of respondents had used CPR in an emergency, and of these, 50% of the patients had been successfully resuscitated.⁵ Similarly, a survey of

New Zealand physiotherapists found that 19% had used CPR in an emergency with a survival rate of 56%.⁶ While the setting (clinic versus community), number of events, and long-term survival of patients described in these studies are unknown, these rates are somewhat surprising as neither profession is typically involved with the management of cardiac arrest in a hospital setting. Data on the incidence of applying CPR by other allied health professionals in New Zealand is not known. However, these studies suggest that it is not uncommon for health professionals to be called upon to perform resuscitation at some point in their careers.

Evidence supporting the effectiveness of CPR in reducing mortality and morbidity continues to grow.^{1,2,7} The latest resuscitation guidelines from the United Kingdom state that accredited life support courses can also improve patient outcomes.⁷ There is clear evidence, however, that CPR skills and knowledge deteriorate over time.⁸⁻¹⁰ The Australia and New Zealand Committee on Resuscitation (ANZCOR) suggest that "ALS [advanced life support] training programmes include 6 to 8 hours

of instructor-led training time...[and]... frequent manikin-based refresher training... to maintain competence compared with standard retraining intervals of 12 to 24 months”.¹¹

Health professionals have a legal and moral obligation to provide medical assistance whether on duty or not.^{12,13} The Health Practitioners Competence Assurance Act 2003 (HPCA Act 2003) strives to maintain public safety by providing legislative mechanisms to ensure life-long competence for healthcare professionals.¹⁴ Under the HPCA Act 2003, 17 individual regulatory bodies are responsible for ensuring the clinical competence of all registered healthcare professionals in New Zealand. Furthermore, 13 Australasian and seven New Zealand vocational medical training providers are accredited by the Medical Council of New Zealand (MCNZ). Each organisation is governed by their education policies, including initial and ongoing CPR training and certification. Some professional bodies impose and enforce strict regulations, whereas others have no policy on this. It is the variability of these requirements that is the focus of this study.

Aim

To audit CPR training and certification requirements of registered healthcare professionals in New Zealand.

Methods

Study design

An enquiry-based policy audit. Data were collected between March 2021 and July 2021.

Participants

We invited the 17 regulatory bodies of the HPCA Act 2003, 13 Australasian colleges of medicine, and seven New Zealand vocational medical training and recertification providers accredited by the MCNZ to participate in this audit.

Audit questions

We asked each organisation the following four questions: (1) Is CPR certification mandatory for registration with the organisation; (2) Is CPR certification mandatory for ongoing yearly registration (annual practising certificate); (3) Is CPR certification mandatory as part of continual professional development requirements; (4) If CPR training is mandatory, how often is training required.

Procedure

The lead author Daniel Harvey emailed the registrar of each of the 37 organisations and explained the purpose of the audit along with the four questions. If no response had been received, a follow-up email was sent 14 days after the initial contact.

Reporting and analysis

Responses from the 37 organisations were tabulated into the three professional groups of HPCA Act 2003 regulatory bodies, Australasian medical colleges, and New Zealand medical colleges. Given the nature of the questions, responses were categorised as “Yes,” “No,” or “Not Applicable” (N/A). Where the answer required further clarification (i.e., when the requirement was only applicable to a subset of the group’s members), these were included as a footnote to the table.

Results

All 37 organisations approached responded to the audit questions. Table 1 shows the responses received from the 17 regulatory bodies of the HPCA Act (2003). Most of the organisations (11) answered “No” or “N/A” to all four audit questions. Four organisations (Midwifery Council, Dentistry Council, Podiatrists Board, and Pharmacy Council) answered “Yes” to all four questions.

Table 2 shows that the Royal Australasian College of Physicians, Australia and New Zealand College of Anaesthetists, and College of Intensive Care Medicine of Australia and New Zealand were the only organisations where CPR certification was mandatory for fellowship among the Australasian medical colleges. However, the Australasian College of Emergency Medicine and Australasian College of Sports and Exercise Physicians indicated that CPR certification was compulsory for continuing professional development (CPD) requirements. As medical colleges do not issue annual practising certificates, this question did not need to be answered.

Table 3 shows that five of the seven New Zealand vocational medical training and recertification providers described CPR certification as mandatory for fellowship. The Royal New Zealand College of Urgent Care was the only provider to require annual recertification.

Table 1: CPR training requirements for HPCA Act 2003 regulatory bodies.

Regulatory body	Is CPR certification mandatory for registration?	Is CPR certification mandatory for ongoing yearly registration (APC)?	Is CPR certification mandatory as part of CPD requirements?	If CPR training is mandatory, how often is it required?
Chiropractic Board	No	No	No	N/A
Dental Council	Yes	Yes	Yes	Biennially
Dietitians Board	No	No	No	N/A
Medical Sciences Council	Yes*	Yes*	N/A	Biennially*
Medical Radiation Technologists Board	No	No	No	N/A
Medical Council	Yes**	No	No	N/A
Midwifery Council	Yes	Yes	Yes***	Annually
Nursing Council	No	No	No	N/A
Occupational Therapy Board	No	No	No	N/A
Optometrists and Optical Dispensing Board	No	No****	No	N/A
Osteopathy Board	No	No	No	N/A
Paramedic Council	No	No	No	N/A
Pharmacy Council	Yes	Yes	Yes	Triennially
Physiotherapy Board	No	No	No	N/A

Table 1 (continued): CPR training requirements for HPCA Act 2003 regulatory bodies.

Regulatory body	Is CPR certification mandatory for registration?	Is CPR certification mandatory for ongoing yearly registration (APC)?	Is CPR certification mandatory as part of CPD requirements?	If CPR training is mandatory, how often is it required?
Podiatrists Board	Yes	Yes	Yes	Biennially
Psychologists Board	No	No	No	N/A
Psychotherapists Board	No	No	No	N/A

APC = Annual practising certificate; NZRC = New Zealand Resuscitation Council; CORE = Certificate of Resuscitation and Emergency Care.

* Only for anaesthetic technicians who must hold a current NZRC CORE Immediate.

** Certification in advanced cardiac life support at the standard of NZRC CORE Advanced is required for initial general scope registration only.

*** Maternal resuscitation and newborn resuscitation are all part of the recertification programme for midwives.

**** From 1 April 2022, all Optometry and Optical Dispensing Board practitioners need CPR certification before renewing their annual practising certificate.

Table 2: CPR training requirements for Australasian medical colleges

Australasian College	Is CPR certification mandatory for registration or fellowship?	Is CPR certification mandatory as part of CPD requirements?	If CPR training is mandatory, how often is it required?
Royal Australasian College of Medical Administrators (RACMA)	No	No	N/A
Australasian College for Emergency Medicine (ACEM)	No	Yes	Relevant annual and 3-yearly CPD procedural skills requirement
Royal Australian and New Zealand College of Ophthalmologists (RANZCO)	No	No	N/A
Royal Australasian College of Dental Surgeons (RACDS)	No	No	N/A
Royal Australasian College of Physicians (RACP)	Yes *	No	N/A
Royal College of Pathologists of Australasia (RCPA)	No	No	N/A
Royal Australia and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)	No	No	N/A
Australasian College of Sports and Exercise Physicians (ACSEP)	No	Yes	Triennially
Royal Australasian College of Surgeons (RACS)	No	No	N/A
Australia and New Zealand College of Anaesthetists (ANZCA)	Yes**	Yes	Two emergency response activities per triennium
College of Intensive Care Medicine of Australia and New Zealand (CICM)	No	Yes	N/A

Table 2 (continued): CPR training requirements for Australasian medical colleges

Australasian College	Is CPR certification mandatory for registration or fellowship?	Is CPR certification mandatory a s part of CPD requirements?	If CPR training is mandatory, how often is it required?
Royal Australian and New Zealand College of Psychiatrists (RANZCP)	No	No	N/A
Royal Australian and New Zealand College of Radiology (RANZCR)	No	No	N/A

ALS = Advanced Life Support.

* ALS course or equivalent at initial registration only.

** An ALS course is condition of completion in each of the four core units of the training programme.

Table 3: CPR training requirements for New Zealand medical colleges.

New Zealand vocational medical training and recertification provider	Is CPR certification mandatory for registration or fellowship?	Is CPR certification mandatory as part of CPD requirements?	If CPR training is mandatory, how often is it required?
Royal New Zealand College of Urgent Care (RNZCUC)	Yes*	Yes	Annually
The New Zealand College of Public Health Medicine (NZCPHM)	Yes**	No	N/A
The Royal New Zealand College of General Practitioners (RNZCGP)	Yes***	Yes	Triennially
Division of Rural Hospital Medicine (of the RNZCGP)	Yes****	Yes	Triennially
New Zealand Dermatological Society (NZDSI)	No	No	N/A
New Zealand Association of Musculoskeletal Medicine (NZAMM)	Yes*****	Yes	Triennially
The New Zealand College of Sexual and Reproductive Health (NZCSRH)	No	No	N/A

NZRC = New Zealand Resuscitation Council; CORE = Certificate of Resuscitation and Emergency Care; ACLS = Advanced Cardiac Life Support.

* NZRC CORE Advanced every three years, with a 4-hour refresher in the intervening years.

** NZRC CORE Immediate certification for initial registration.

*** Assessed ACLS certificate of at least 6-hours duration not older than 3 years. Thereafter, an ACLS course of at least 4-hours duration every three years.

**** NZRC CORE Advanced, then an ACLS course of at least 4-hours duration every three years.

***** NZRC CORE Immediate.

Table 4: New Zealand Resuscitation Council Rescuer Framework.

Rescuer	Characteristics	People who may be represented	Suggested skills and knowledge	NZRC training
Untrained rescuer	Can send for help and respond under guidance	Adults and children with no training in resuscitation	Recognise unresponsiveness and absence of breathing Know to call 111 Recognise emergency signage Follow instructions to do CPR and use an AED	
Basic trained rescuer	Can initiate basic resuscitation and provide first aid	Workplace first aiders, managers, or those otherwise accountable for first aid in the workplace	As above plus: DRSABCD Simple airway management, including choking First Aid skills	Emergency Care Instructor assessment that uses NZRC guidelines
First responder	Has a duty to respond and is likely to be involved with the initial delivery of resuscitation	Police officers, fire service, security officers, lifeguards, airline crews, volunteers	As above plus: Simple airway adjuncts Suction Bag-mask ventilation Supplementary oxygen	CORE Level 3 (no longer offered)

Table 4 (continued): New Zealand Resuscitation Council Rescuer Framework.

Rescuer	Characteristics	People who may be represented	Suggested skills and knowledge	NZRC training
Health Professional – responder	<p>Holds a formal tertiary qualification in a health-related discipline and is relatively new to their area of practice</p> <p>May encounter resuscitation events in their occupation or workplace with rapidly-available backup by advanced rescuers</p>	<p>Graduate nurses and midwives</p> <p>Graduate anaesthetic technicians</p> <p>Radiographers</p> <p>Other trained support staff in hospitals and community health</p> <p>Dentists</p> <p>Emergency medical technicians</p>	<p>As above plus:</p> <p>Recognition of the deteriorating patient</p> <p>Teamwork</p> <p>Advanced life support for adults and children</p> <p>Understand “shockable” and “non-shockable” rhythms</p> <p>Supraglottic airway adjuncts</p> <p>Awareness of adrenaline and amiodarone in resuscitation</p>	<p>CORE Immediate–Adult</p> <p>or</p> <p>CORE Immediate–Adult and Child</p>
Health Professional – early management	<p>As above plus:</p> <p>Is expected to manage resuscitation events until advanced rescuers arrive</p>	<p>Experienced nurses and midwives</p> <p>Experienced anaesthetic technicians</p> <p>General practitioners in metropolitan areas</p> <p>Paramedics</p>	<p>As above plus:</p> <p>Manual defibrillation</p> <p>Awareness of Waveform capnography</p> <p>Awareness of intra-osseous access</p>	<p>CORE Advanced</p>

Table 4 (continued): New Zealand Resuscitation Council Rescuer Framework.

Rescuer	Characteristics	People who may be represented	Suggested skills and knowledge	NZRC training
Professional – advanced rescuer	As above plus: Is expected to manage and supervise resuscitation events as an advanced rescuer	Hospital nursing supervisors Senior nursing staff in units where resuscitations are common or expected (such as Critical Care Unit or Cardiac Intensive Care Unit) Intensive care paramedics Anaesthetic technicians on resuscitation teams	As above plus: Leading teams Management of peri-arrest conditions Advanced airway management in teams Consider and correct (4Hs, 4Ts) Awareness of prognostication following cardiac arrest Awareness of post-resuscitation care	CORE Advanced
Medical provider	As above plus: Holds a formal qualification in medicine	Registrars and specialists who do not work in emergency medicine, trauma, anaesthesia, or intensive care General practitioners in rural settings Trainee interns	As above plus: A more complex understanding of conditions that lead to cardiac arrest, and post-arrest management	CORE Advanced
Specialist medical provider	As above plus: Specialises in providing resuscitation and emergency care	Doctors working in emergency medicine, trauma, anaesthesia, and intensive care	As above plus skills and knowledge that may include: Advanced airway management Cardioversion and pacing Other advanced specialist skills	CORE Advanced plus extra training not offered by NZRC

CPR = Cardiopulmonary Resuscitation; AED = Automated External Defibrillator; DRSABCD = Danger, Responsive?, Send for help; Open Airway, Breathing?, Start CPR, Attach Defibrillator;
CORE = Certificate of Resuscitation and Emergency Care.

Discussion

This is the first audit to investigate the CPR training requirements among New Zealand registered healthcare professionals. Our results showed considerable variability requirements across the professions. We discuss the implications of this variability in the context of current literature, practice, public expectation, and policy guidelines, and suggest potential changes.

The New Zealand Resuscitation Council (NZRC) is the standard-setting body for resuscitation and first aid in New Zealand. It uses a rescuer framework to distinguish eight types of responders from the untrained rescuer to the specialist medical provider (Table 4). In addition to prescribing rescuer-types for non-health professionals, it differentiates between health professional responders (new graduates and staff with access to rapidly-available backup); health professional early management (expected to manage resuscitation events until advanced rescuers arrive); through to professional advanced rescuers and medical providers (expected to manage and supervise resuscitation events as advanced practitioners or team leaders).¹⁵ The results of this audit appear to be at odds with the NZRC rescuer framework, which states that all health professionals are expected to respond to and manage resuscitation events until advanced help arrives.¹⁵ Our interpretation of this framework is that all responders are current in their CPR training, and especially those patients under the care of health professionals should expect to receive timely and competent resuscitation delivered by certified staff following the latest guidelines.

The MCNZ recently completed a stakeholder consultation process to gain feedback on their statement on a doctor's duty to help in a medical emergency. Doctors have an ethical obligation to respond promptly if asked to attend a medical emergency, which in some situations "may be limited to basic first aid".¹³ If doctors choose not to attend, they must be able to justify their decision.^{12,13} ANZCOR recommends that all health professionals (either on or off-duty) assist in an emergency if requested.¹² Furthermore, research into New Zealand allied health professionals demonstrated that 97% of physiotherapists surveyed and 95% of podiatrists agreed with the statement, "At work, I consider it my duty to perform CPR in an emergency".^{5,6} Although a duty of care for New Zealand health professionals to respond to emergencies exists, there are inconsis-

tencies and disparities in CPR training and certification levels between the various professional bodies.¹⁶⁻¹⁸ There is also an apparent discrepancy that workplaces must have a trained first aider under health and safety regulations, but the same need not apply in a clinical setting.¹⁹

Studies have also demonstrated that CPR skills and knowledge decline within three to six months of formal training sessions.⁸⁻¹⁰ While some organisations have introduced *just-in-time* CPR training in the workplace to provide staff with more frequent opportunities to maintain some technical skills, for example, chest compressions, these sessions typically do not provide an opportunity to develop non-technical skills like scene management and communication.²⁰ These skills are critical, as more than 70% of errors in medicine can be attributed to problems associated with human factors rather than knowledge or technical ability.²¹ A recent study investigating the impact of perceived authority on delivery of care among paediatric resuscitation teams showed that 50% of participants were prepared to follow an incorrect drug order given by a medical superior.²² Most accredited resuscitation courses have for decades, therefore, included scenario-based training in teams to practise both technical and non-technical skills. There is emerging evidence that this training can improve patient safety and reduce morbidity and mortality.²³ Another benefit is that, unlike just-in-time training, these courses are intended to be multi-disciplinary to reflect the real world where doctors and nurses, for example, do not work in isolation during a medical emergency.

The time required to train and upskill all New Zealand health professionals in CPR is not without significant economic and logistical costs, though. The capacity to deliver courses, the cost of training, and the need to cover staff away from work make providing formal CPR training every six to 12 months prohibitive for most organisations. It is also unknown how many more lives would be saved if all health professionals were mandated to complete this training. Most resuscitation training within District Health Boards (DHBs) is provided free of charge, and some health professionals have entitlements to paid leave for CPD. Others have their time, course fees, or both covered by the employer. However, some nurses and allied health professionals do not have these allowances, despite generally being first on-scene to resuscitation events. Furthermore, health professionals working in private or non-DHB settings do not have access to a cardiac arrest team and rely on

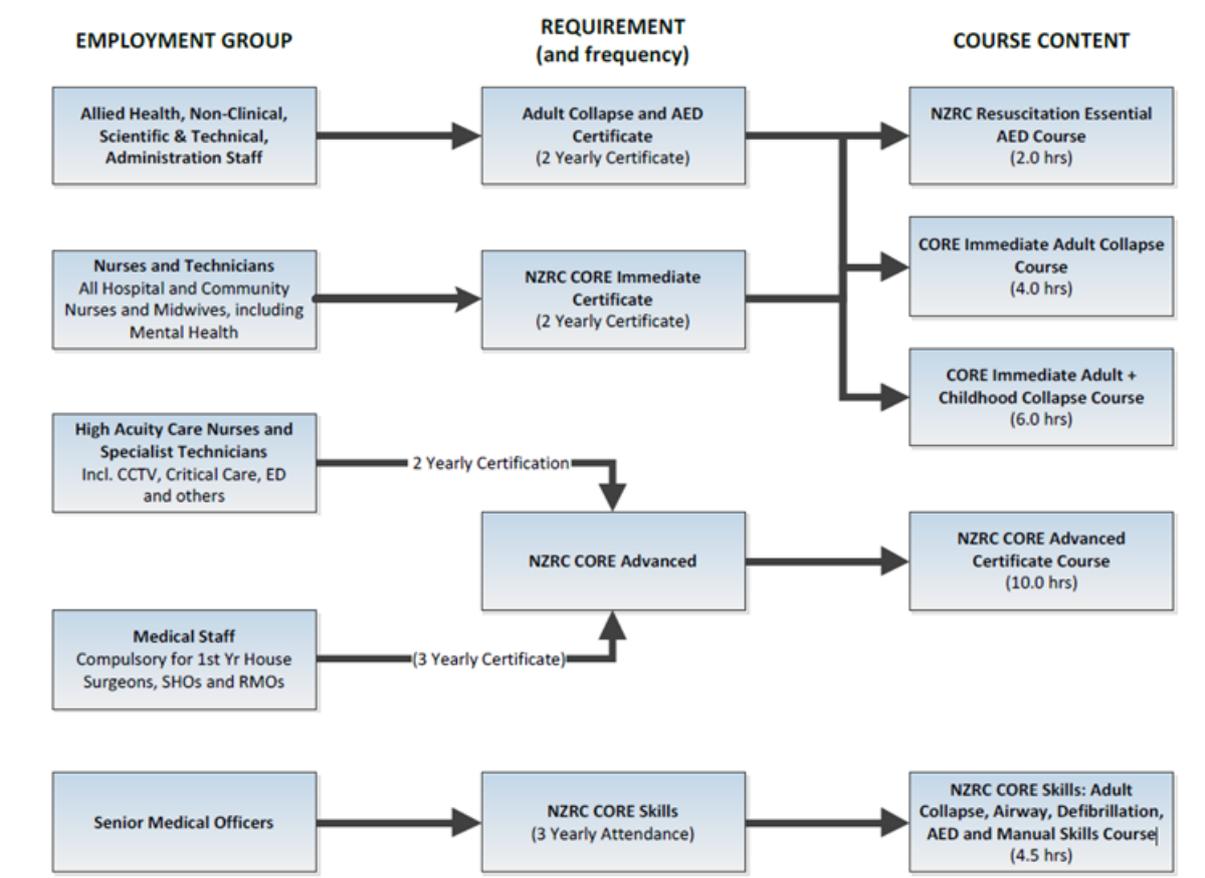
the ambulance service as their primary backup. As the prompt initiation of CPR and early application of a defibrillator have been shown to save lives, it could be that these groups should be prioritised for training.¹⁻⁶ This does not address patient, public, and NZRC expectations that all health professionals should be competent in essential (basic) life support at a minimum, regardless of their work setting.¹⁵

Another reason given for not mandating CPR training is that health professionals working in high-acuity clinical settings such as emergency medicine, intensive care, and anaesthesia encounter a higher cardiac arrest incidence rate than other locations in the hospital and the community. Therefore, they are already well versed in resuscitation protocols. Making these staff take time off work to complete CPR training would be wasteful in terms of human and financial resources. While this may be true, it is not this group of health professionals that we are most concerned about. It is those health professionals with no training requirement and limited backup, or where cardiac arrest is an uncommon

event. Despite this, the Australasian College for Emergency Medicine and Australia and New Zealand College of Anaesthetists still has emergency response/resuscitation CPD requirements for their fellows (Table 2).

In the only New Zealand-based study on in-hospital cardiac arrest, survival was reduced two-fold if the event occurred after-hours.⁴ Possible explanations were a lack of senior medical cover and staffing at these times; cardiac arrest team leadership, teamwork, and skill mix between rostered periods; and the mental and physical demands of shift work. The hospital cardiac arrest team is typically based in acute settings like intensive care and respond to emergencies in other areas. Given that these health professionals interface with and lead those working in low acuity settings, this further reinforces the need for all staff to be competent in resuscitation skills appropriate to their role. Additional training and widening staff's scope of practice, for example, standing orders for nurses to administer drugs, may be appropriate in settings where no cardiac arrest team or medical cover is available onsite.

Figure 1: Waikato District Health Board resuscitation education model.



Despite the inconsistencies among healthcare professions identified in this audit, good examples of best-practice employers delivering CPR training and certification in New Zealand exist. The Waikato DHB has a resuscitation education model based on the NZRC rescuer framework (Figure 1).²⁴ All health professionals and non-clinical staff are trained to a specified level based on their likely exposure to resuscitation events. For example, all nurses and midwives complete a CORE Immediate course biennially, while nurses in acute settings and resident medical officers complete a CORE Advanced course every two or three years respectively, and senior medical officers a CORE Skills update triennially.

The Dental Council of New Zealand has developed the *Medical Emergencies Practice Standard (DCNZ)* to set minimum standards for registered oral health practitioners to effectively manage a medical emergency in dental practice within their training (Figure 2). The council makes it clear that an oral health practitioner has an ethical and legal obligation to attend to a medical emergency, and the public expects “that [they] will be able to assist them in a medical emergency within their training and until an emergency response team arrives.”²⁵ The training is standardised and must be completed biennially. There are eight standards that oral health practitioners must meet, and written guidance describing the actions and behaviours required is provided to enable practitioners to meet them.

These examples of policy and practice highlight current mechanisms to support ongoing proficiency in CPR for healthcare professionals in New Zealand. We believe healthcare regulatory bodies and employers should use these as best practice models of resuscitation training and certification to improve the safety of their patients, staff, and the public. However, the inconsistency of resuscitation training requirements identified in this audit may be limiting this potential benefit. We recommend, therefore, that the regulatory bodies of the HPCA Act 2003 and all vocational medical training and recertification providers accredited by the MCNZ consider mandating initial and ongoing resuscitation training requirements appropriate to their clinical setting. These changes could improve CPR competency among health professionals and lead to better patient outcomes.

Conclusion

This audit revealed a wide variety of CPR training and certification requirements across healthcare professions in New Zealand. Future studies should investigate whether mandating CPR training improves outcomes from cardiac arrest and consider patient, public, and whānau expectations regarding the ongoing certification of healthcare professionals in resuscitation and emergency care.

Figure 2: Dental Council of New Zealand medical emergencies practice standards.

1. You must ensure a concise and relevant medical history is included in the clinical record of every patient and that it is regularly updated.
2. You must successfully complete the minimum level of resuscitation training prescribed for your profession every two years. (*Refer to page 7 for details.*)
3. You must have evidence available of the most recent resuscitation training you have completed.
4. If required to complete a Certificate of Resuscitation and Emergency Care (CORE) Immediate or equivalent course, you must ensure that it contains the modules specified in the table below. (*Refer to page 8 for details.*)
5. You must read Appendices A and B of this practice standard before attending a CORE Immediate or equivalent course.
6. Appendix A: *Medical emergency situations: specific responses*, pg. 12.
7. Appendix B: *Emergency situations: quick reaction guide*, pg. 24.
8. You must have ready access to the equipment specified for your profession that is age-appropriate for your practice and fully operational. (*Refer to page 9 for details.*)
9. You must have ready access to the medicine specified for your profession in dosages that are easy to administer and are not beyond their expiry date. (*Refer to page 10 for details.*)
10. You must have written procedures for managing emergencies where each staff member's role is clearly defined and review these regularly as a team to ensure staff members know and understand their role.

COMPETING INTERESTS

As a member of the executive and a resuscitation training advisor for the New Zealand Resuscitation Council, Dr Webber receives non-financial support and personal fees. He also receives personal fees to deliver resuscitation courses within a university and for private training establishments. All other authors declare that they have no competing interests.

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