SHORT COMMUNICATION

Cardio-pulmonary resuscitation training, knowledge and attitudes of newly-qualified doctors in New Zealand in 2003[☆]

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Summary
Objective: To assess the resuscitation knowledge and confidence of newly-qualified doctors in New Zealand (NZ) in 2003.
Design: Anonymous questionnaires were distributed to all newly-qualified doctors in NZ ($n = 279$).
Participants: Two hundred and thirty-three respondents from hospitals throughout NZ (84% response rate).
Main outcome measures: Resuscitation training received during medical school and use of recommended text (Level 7 of NZ resuscitation manual), confidence in resuscitation skills and core knowledge of basic and advanced resuscitation.
Results: 98.3% of doctors received advanced resuscitation training during their final year of medical school, of these 64.6% had received training in the previous 6 months. The mean knowledge score was 56.6% and 45% of doctors made 'fatal errors'. Eighty-four percentage of doctors had read the Level 7 manual and 72.6% found it very or extremely useful. Those who had read the manual had higher scores and were less likely to make a 'fatal error'. Having attended a cardiac arrest and having received training within the last 6 months improved doctor confidence in resuscitation.
Conclusions: The resuscitation knowledge and confidence of newly-qualified doctors in NZ are sub-optimal, with some doctors displaying dangerous deficiencies. Our results suggest mandatory attainment of an advanced resuscitation certificate, six-monthly practical resuscitation sessions and increased exposure to real resuscitation situations should be implemented to improve undergraduate resuscitation training.
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Introduction

Doctors are expected to be proficient in cardio-pulmonary resuscitation (CPR). Previous studies have shown poor levels of resuscitation training and knowledge in newly-qualified doctors.[1−4] Recommendations have been made that resuscitation teaching should be included in both curricula and assessment at medical school.[5,6] In 1989, Lum and Galletly[7] looked at resuscitation skills of 27 first year postgraduate doctors in NZ. They discovered deficiencies in training and acquisition of skills and found resuscitation curricula to be unstructured.

A series of resuscitation manuals were published in 2001, and revised in 2003, by the NZ Resuscitation Council (NZRC).[8] Resuscitation courses were designed, in association with the manuals, in order to standardise resuscitation training in NZ. The Medical Council of NZ (MCNZ) recommends that all newly-qualified doctors should attain Level 7 of this programme[9] during the trainee intern (TI) year (final year of medical school).[10] However, undergraduate experience in environments where resuscitation may be encountered is variable, and often limited.

This study aimed to determine the resuscitation knowledge, attitudes and confidence of newly-qualified doctors in NZ in 2003.

Methods

A questionnaire was designed based on the Level 7 manual content and review of relevant literature. It was edited by an emergency medicine consultant (Professor Michael Ardagh), the local resuscitation officer (Steve Smith) and was sent to the chairman of the NZRC (Professor Galletly) for endorsement.

The questionnaire covered the following four areas, clinical scenarios were used to introduce questions and answers were single word or short phrases:

(1) Background, demographics and possibility of being only doctor attending cardiac arrests.
(2) Resuscitation training and experience, training received, number of cardiac arrests attended during TI year, use of Level 7 manual and its perceived value, assessed by Likhart scale (1, not at all; 2, a little; 3, moderately; 4, very; 5, extremely).
(3) Confidence in basic skills and management of resuscitation, assessed by a Likhart scale (1, very low; 2, low; 3, average; 4, high; 5, very high).

(4) Theoretical knowledge,[9] maximum score 36.

During resuscitation some errors may be detrimental to the patients' outcome. The following questions were selected to assess essential knowledge required to achieve a successful resuscitation and doctors unable to answer them were identified as having made a 'fatal error':

1. Name three manual airway-opening techniques.
2. What are the shockable rhythms in a pulseless patient? In pulseless ventricular tachycardia (VT) and ventricular fibrillation (VF) survival is dependent on time to defibrillation.[11]
3. What are the potentially reversible causes of pulseless electrical activity (PEA)? With prompt management these conditions can be treated successfully,[12] but not knowing any precludes appropriate treatment.
4. How long would you persist at a failed intubation before reapplying oxygenation? Failure to correct airway obstruction and prolonged attempts at intubation without ventilation will lead to hypoxia and death.

In November 2003, questionnaires were circulated to intern supervisors (consultants responsible for junior doctor training) and medical education officers. Representatives from each hospital were contacted by telephone prior to distribution and 2 months afterwards (if forms had not been returned) to ensure maximum response. The forms were distributed with the assistance of the MCNZ. Doctors completed questionnaires at an induction session during their first month of work. Questionnaires were anonymous and there was no time limit. The forms were distributed without prior warning and participants were not permitted to confer with colleagues or use textbooks.

Questionnaires were coded according to the hospital and checked to confirm the doctor had trained in NZ and graduated in 2003. They were marked and verified independently by two people (CP, SF). Qualitative data were compared using the χ^2-test and the Student's t-test was used to compare quantitative data. $P < 0.05$ was considered significant. Descriptive statistics were used to further analyse the data.

Results

Demographics

Of the 279 newly-qualified doctors commencing work in November 2003, 245 returned com-