



TRAINING AND EDUCATIONAL PAPER

Retention of knowledge and skills in first aid and resuscitation by airline cabin crew[☆]

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Summary The study was conducted to investigate the retention of CPR and AED skills, first aid knowledge and perceived levels of confidence for a sample of 35 cabin crew 12 months after recurrent training. The 35 cabin crew undertook a mock resuscitation scenario using the AED and bag-valve-mask carried in the medical kit. Of the 35 subjects, 33 subjects failed to use the bag-mask correctly, 18 performed chest compressions at the incorrect site, only 13 achieved the correct compression depth, only 20 placed the AED pads correctly, and the average time to first shock was 110 s after commencement of the resuscitation. While theoretical first aid knowledge was high, the participants held low levels of self-confidence in their CPR and AED skills. The results of this study indicate that cabin crew may not have sufficiently high levels of skill to manage a cardiac arrest adequately. This suggests that existing approaches to training of cabin crew require further investigation and modification.

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Introduction

Background to passenger medical incidents

The International Air Transport Association predicts that by 2012 there will be 3 billion passengers travelling by air per year.¹ Between 1/14,000 to 1/50,000 passengers will experience acute medical problems (passenger medical incidents),² resulting from the exacerbation of existing med-

ical conditions such as asthma and cardiovascular disease³. Exposure to the stresses of flight⁴ increases the risk of cardiac arrest, although its overall incidence is less than one percent of all reported passenger medical incidents.⁵

Many airlines have recognised that survival of cardiac arrest is dependant on the early access to Cardio Pulmonary Resuscitation (CPR) and defibrillation with the placement of Automated External Defibrillators (AEDs) on board long-haul aircraft.^{6,7} The Federal Aviation Administration has ruled that Automated External Defibrillators are mandatory equipment for all airlines flying into the United States.⁸

Responsibilities of cabin crew

Cabin crew are expected to be competent in the recognition and initial management of medical emergencies including the provision of CPR and the operation of the AED, as well as

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how to elicit assistance from persons with medical training.⁹ There are currently no agreed international standards for cabin crew training¹⁰ and there is wide variation in its duration and content.¹¹

The aircraft environment

In the event of a passenger medical incident, there can be delays of more than 20 min to several hours before expert assistance is available¹² and the availability of medically trained persons on board cannot be entirely relied upon.¹³ It is therefore important that cabin crew be trained to an appropriate level of proficiency in first aid and resuscitation skills. The competency of cabin crew in these skills has not been studied previously.

This study was undertaken to assess the level of CPR and AED skill within cabin crew of one international airline 12 months after they undertook recurrent first aid training. The airline used the standards for first aid, CPR and AED operation as stipulated by the New Zealand Resuscitation Council Guidelines for 2006.¹⁴

Methods

Selection of research participants

Approval was granted by the University of Otago Human Research and Ethics Committee and the executive of the participating Oceania-based international airline. Cabin crew were difficult to access as potential research participants due to the operational requirements of the airline. For this reason, a sample was obtained from the cabin crew who were already allocated to compulsory annual 2 day recurrent emergency procedures training session. Over a 6-week period, these cabin crew each received invitations to participate as research participants.

All the cabin crew attending the 2 day recurrent session had completed training in CPR and use of the AED and supplemental oxygen therapy 12 months before participating in this study. The training syllabus was based on the New Zealand Resuscitation Council Guidelines and had consisted of a 1 h review of knowledge components of first aid including CPR, followed by classroom-based demonstration and brief practice of CPR. The airline discouraged the use of expired air resuscitation.

Study protocol

A similar approach was taken to a study of the CPR and AED skills of laypersons¹⁵ with the following modifications. The Little Anne Skill Reporter manikin was placed in a simulated aircraft aisle at a cross-over location (where two aisles intersect), which is one location in the aircraft used for resuscitation. An aviation oxygen cylinder and aviation medical kit were placed nearby. Cabin crew had also undertaken training in the use of a silicone resuscitator (bag-valve-mask device). The test scenario included ventricular fibrillation followed by pulseless electrical activity. The data was collected electronically directly from the resuscitation manikin; an approach previously reported as reliable.¹⁶

Use of the test scenario

Each of the research participants were asked to manage the situation as instructed in previous training without any assistance from other cabin crew, and using only the equipment provided. The cabin crew were not prompted or encouraged to use any equipment or undertake any first aid activities and the scenario lasted 10 min.

Video recordings were not permitted due to industry security policy, so a modified validated visual check list was used.¹⁷

Questionnaire

Cabin crew completed a self-assessment of performance and a knowledge quiz consisting of the following three questions which were based on the content of recurrent training.

For each of the situations below describe your first aid management in detail. Please assume the aircraft has reached cruising altitude.

1. A 24-year-old female passenger complains of shortness of breath, wheeze and is very distressed. She is fully conscious, pulse 100, breathing 25 breaths per minute. Her asthma inhaler is empty.
2. A 30-year-old male passenger stands up after a meal service and is seen to collapse into the aisle. He is pale, unconscious, breathing at 10 breaths per minute, pulse 60.
3. A 55-year-old male passenger complains of a heavy feeling in his chest and a pain down his left arm. He is pale, sweaty and fully conscious.

The answers were compared to the expected management listed in the airline first aid manual.

The crew were asked to rate their perceptions of self-confidence in CPR skills, using the AED, first aid knowledge and first aid skills using a 5 point Likert scale. The results of these scores were compared to the performance of each cabin crew member in the CPR and AED assessment and the quiz.

Data analysis

Data were subjected to descriptive statistical analysis and for correlation (Pearson *r*) using SPSS (Version 14.0 of SPSS, Chicago, IL, USA). The data met the assumptions of linearity, normality and homoscedascity.

Results

The demographics of the 42 research participants are presented in Table 1. A total of 42 cabin crew were allocated by airline management to recurrent emergency procedures training and 35 agreed to participate in the research. The seven who did not participate stated that they declined because of exam anxiety relating to the emergency procedures training. None of the participants had a health care background, 12 possessed current first aid certificates and the reminder had allowed their first aid certificates to lapse.

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