'Seeking efficiency in life support refresher training – when, how and by whom?'

Authors: Pawar A¹, O'Donnell A¹, Hardy E¹, Percival H¹, Hulme J^{1,2}, Owen A^{1,3}, Alderman J^{1,3}

- 1) College of Medical and Dental Sciences, University of Birmingham, Edgbaston, Birmingham, UK. B15 2TU
2) Department of Anaesthesia and Critical Care, Sandwell and West Birmingham NHS Trust, West Bromwich, UK. B71 4HJ
3) Department of Anaesthesia and Critical Care, Queen Elizabeth Hospital Birmingham, UK. B15 2TH

Introduction

Survival rates following out-of-hospital cardiac arrest in the UK lag behind other developed countries at 8%. In response, leading health organisations have called for improved cardiopulmonary resuscitation (CPR) and Basic Life Support (BLS) training – a proven means of improving bystander CPR rate. (1, 2) However, CPR skills decay rapidly, even amongst qualified clinicians. (3-7). Refresher training is resource intensive, and may be recurrently needed. The University of Birmingham trains all medical students in BLS during the first year of their studies. (8)

Aims:

- To investigate the nature and rate of students' BLS skill decay
- To develop an efficient method to refresh these skills.

Materials and methods

Study design: Pragmatic Randomised Control Trial

Population: Medical students in years 2, 3 and 4 of their degree course at the University of Birmingham

Method: Medical students were recruited to participate in a pragmatic randomised trial 1-3 years after BLS training. Participants performed BLS on a Laerdal Little Anne manikin and were assessed against current European Resuscitation Council (ERC) BLS guidelines by two examiners. Participants were then randomised into groups, and received rapid refresher BLS training in a 30-minute tutorial using one of three methods:

- One-to-one training from accredited BLS instructor
- Video assisted training with time for self-guided practice
- Written BLS sequence instructions only, with no practice

Participants were then re-examined; assessors were blinded to participants' refresher training group.

Sample size was calculated as 8 participants per subgroup based on prior pilot data (not shown). Pass rates are expressed as percentages, but were compared between groups using 2-tailed Fisher's exact test on the original categorical data.

Discussion and conclusions

Quality of BLS was low prior to refresher training, with just 21% of candidates demonstrating BLS in accordance with ERC BLS guidelines. Our data suggest that BLS skill deterioration occurs within a year of skill acquisition, but that the optimal time to refresh skills may be between 2 and 3 years after initial training.

One-to-one refresher training was superior to both video assisted refresher training and simple written information. There was no significant difference in post-refresher skill performance between the latter two groups.

Taken together, these data suggest that a brief 30-minute one-to-one refresher training session delivered 2-3y after initial training is likely the optimal means of refreshing BLS skills.

This study is limited by small sample size and unequal group allocation, and as such we plan a follow-on pre-post study analysing the impact of introducing this refresher training model at our University.

Results

In total 42 participants were recruited (see **Figure 1**).

Compliance with ERC BLS guidelines was initially 21%. **Table 1** shows breakdown of pre-refresher pass rate by students' year of study. BLS performance was similar between randomisation groups prior to refresher training.

Following refresher training BLS quality improved, with compliance with ERC BLS guidelines rising from 21% to 60% p<0.001) (see **Figure 2**). One-to-one training outperformed the other two modalities, with 100% of candidates refreshed in this way displaying BLS compliant with ERC BLS guidelines (see **Figure 3**).

Table 1: breakdown of pre-refresher training compliance with ERC BLS guidelines by students' year of study

	2 nd year	3 rd year	4 th year
Pre-refresher pass rate	38%	10%	17%

Figure 1: Consort diagram showing flow of participants through study

Figure 2: BLS performance improved following refresher training

Figure 3: Instructor led one-to-one training outperformed other refresher training modalities

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