

**TITLE:** ANESTHESIOLOGISTS' KNOWLEDGE OF ADVANCED CPR

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#### Introduction:

Anesthesiologists assume that their sophisticated life support training during anesthesia residency and subsequent anesthesia clinical practice keep them well versed in the current nationally accepted American Heart Association (AHA) advanced Cardiopulmonary Resuscitation (A-CPR) knowledge and skills. However, when deficiencies were noted in our staff's knowledge and performance of the AHA A-CPR syllabus and knowing that many anesthesiologists do not have training in the current nationally accepted AHA basic CPR techniques,<sup>1</sup> the assumption of anesthesiologists' skill in A-CPR was questioned. To evaluate anesthesiologists' training and performance in A-CPR a survey was undertaken.

#### Methods:

A questionnaire was mailed to the 766 members of a state society of anesthesiologists. In addition to basic demographic data and specific questions about CPR training, nine additional questions, based upon the "Standards"<sup>2</sup> and more current literature,<sup>3,4</sup> were asked in a multiple choice format to assess A-CPR knowledge. The questions covered the use and understanding of the following material: 1)defibrillation, 2)esophageal obturator airway, 3)oxygen-powered mechanical breathing devices, 4)arrhythmias, 5) and 7) drug selection and dose, 6)cricothyrotomy, 8)acid-base balance and therapy, 9)intravenous therapy. Correct answers measured the degree of A-CPR knowledge.

The data were analyzed using t-test for independent samples with  $P < 0.05$  considered significant.

#### Results:

The questionnaire was mailed three successive times with a total of 314 (41%) responses received. Respondents in all three rounds appeared similar and the results of the three rounds of the survey were combined and interpreted as representative of the total surveyed population.

The pertinent demographic information and individual knowledge question scores are listed in Table 1. The total knowledge score versus demographic information is shown in Table 2. Multiple regression analysis of total score indicated that reading the "Standards"<sup>2</sup> was the best predictor of score. Taking an AHA A-CPR course in addition to reading the "Standards"<sup>2</sup> increased prediction of scoring by 21%.

To evaluate the reliability of the responses and scores and estimate the sampling error, the confidence limits were calculated via a normal approximation approach. The 95% confidence limits for the scores listed in Table 2 are  $\pm 4$  per cent.

#### Discussion:

Despite the existence of nationally accepted "Standards"<sup>2</sup> for A-CPR, 26% of anesthesiologists have never read this literature and 79% have never taken an A-CPR course (Table 1). A-CPR knowledge scores in this survey were definitely improved by both review of the "Standards"<sup>2</sup> and course participation (Table 2). For anesthesiologists whose residency training was during the era of popularization of modern CPR

techniques (after 1960) both having read the "Standards"<sup>2</sup> and taken an AHA course improved knowledge score (Table 2).

#### Conclusion:

Although much of the specialty training in anesthesia deals with A-CPR skills, many anesthesiologists do not score well when questioned on accepted A-CPR knowledge and techniques. Participation in A-CPR continuing education may be expected to improve this score as well as the delivery of A-CPR care. Similarly, incorporation of the A-CPR syllabus into residency programs would be expected to improve both knowledge and performance of A-CPR.

#### References:

1. Schwartz AJ, Orkin FK, Ellison N: Anesthesiologists' training and knowledge of basic life support. *Anesthesiology* 50:191-194, 1979
2. Standards for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC). *JAMA* 227 (suppl): 833-868, 1974
3. Advanced Cardiac Life Support (70-034-B). American Heart Association, Dallas, 1975
4. Guidelines for Defibrillation in Infants and Children (ECP 76-509). American Heart Association, Dallas, 1976

Table 1  
Demographic Information & Knowledge Questions Scores

	Total (N = 314) (per cent)
Anesthesia Training Completed After 1960	80
Read Standards <sup>2</sup>	74
Took an AHA A-CPR Course	21
Score (correct)	
Question	
1) (defibrillation)	32
2) (esophageal obturator airway)	86
3) (oxygen-powered mechanical breathing device)	68
4) (arrhythmias)	45
5) (drug therapy)	68
6) (cricothyrotomy)	57
7) (drug therapy)	73
8) (acid-base)	48
9) (intravenous therapy)	87

Table 2  
Knowledge Score Versus Demographic Information

	Total Score (per cent)
Did not read Standards <sup>2</sup>	55
Read Standards <sup>2</sup>	66*
Did not take AHA advanced CPR course	61
Took AHA advanced CPR course	68*
Trained after 1960 and did not read Standards <sup>2</sup>	53
Trained after 1960 and read Standards <sup>2</sup>	66*
Trained after 1960 and did not take AHA A-CPR course	61
Trained after 1960 and took AHA A-CPR course	70*

\*  $P < 0.05$  for difference by t test for independent samples.