



STATE OF SOUTH CAROLINA DEPARTMENT OF EDUCATION

Mick Zais
Superintendent

1429 Senate Street
Columbia, South Carolina 29201

Automated External Defibrillator Study **January 31, 2011**

Re: Proviso 1.83. (SDE: AED Study)

The Department of Education may coordinate a study to determine if training on the proper use of an automated external defibrillator (AED) should be required of all public and private high school instructional and administrative staff. In the event the study is conducted, the department shall report the findings of the study to the Chairman of the Senate Finance Committee and the Chairman of the House Ways and Means Committee no later than January 31, 2011.

AED Study Methods

To meet the terms of Proviso 1.83, a voluntary questionnaire, referred to herein as the AED Study Questionnaire, was sent to public school district nurse representatives, the SC Independent Schools Association, and the SC Christian Schools Association to gain insight on current AED use and training practices in high schools. Responses to the AED Study Questionnaire were received on behalf of 60 public school districts (including the SC Governor's School for Science & Mathematics and the School for the Deaf and the Blind) and 11 private/independent schools. Responses are summarized in Appendix A.

In addition to the AED Study Questionnaire, public school district school nurse leaders were asked to respond to questions regarding whether an AED owned by the school district had actually been used during an emergent event.

Cost estimates associated with AED training for schools were developed using equipment and supply costs available on the Internet, past inquiries regarding training offered through the American Heart Association and the American Red Cross, estimated public high school staffing, and estimated daily rates for substitute pay. Cost estimates do not include replacement costs for equipment and recurring supply costs.

Because information related to private/independent schools is limited, training cost estimates for private/independent schools were not attempted. The number of employees for private/independent high schools is unknown. In the AED Study Questionnaire, a high school was defined according to S.C. Code Ann. §59-1-150 as "any school that serves grades no lower than the seventh and no higher than twelfth." Use of this legal definition may have resulted in a low response from private/independent schools because private/independent schools often serve a wide range of grades.

Discussion Points

- The Chain of Survival for improving outcomes following sudden cardiac arrest includes four steps: (1) early access to emergency care, (2) early cardiopulmonary resuscitation (CPR), (3) early defibrillation, and (4) early advanced cardiac life support as needed. The third step, defibrillation, involves delivering an electrical shock to the heart to restore an effective cardiac rhythm and is recognized as the most critical step in resuscitating a victim of sudden cardiac arrest. Defibrillation can be achieved with appropriate use of an AED.
- While most public high schools in districts that reported data for the AED Study had an AED, some schools did not. One hundred fifty (150) out of 154 public high schools represented by the AED Study Questionnaire respondents had an AED; five (5) of the 11 private/independent schools had an AED.
- With regards to training, three (3) of the 60 public school district representatives reported that all instructional and administrative staffs at high schools in their district are trained to use AEDs, and one (1) private/independent school reported that all of its instructional and administrative staffs are trained. Only six (6) of the public school district representatives noted that their districts have funds available to train all instructional and administrative staffs; four (4) private/independent schools reported having funds to train its staffs.
- “Entities that acquire an AED must require its designated AED users to have current training in CPR and AED use by the American Heart Association, American Red Cross, or National Safety Council” (S.C. Code Ann. §44-76-30). The course fee, course materials, and substitute pay associated with training will cost approximately \$150 per employee. Some school districts reported eliminating professional development days and eliminating staff positions as a means for balancing their budgets. Thus, school districts will need to hire substitutes for employees during training sessions. CPR/AED training certification must be renewed annually or biannually depending upon the training curriculum used; training costs are recurring costs. Training for *public* high school personnel alone could cost over \$2,477,250 ($\$150 \times 16,515 \text{ staff} = \$2,477,250$).
- Some schools have certified CPR/AED instructors on staff. These instructors may be able to offer the training for employees for less than the cost noted previously. Costs associated with the use of staff instructors include training/certification costs for the instructors and recertification as required, substitute pay during instructor certification and employee trainings, mannequins and associated parts, mouth shields, AED training devices, training manuals, and certification cards for employees upon completion of training. Costs for *public* schools will total more than \$1,732,206 if all school districts utilize an employee instructor model (see Appendix B).

- In addition to the training costs noted above, Federal Regulation 1910.1930, known as the Occupational Safety & Health Administration Bloodborne Pathogens Standard, requires that employers make the hepatitis B vaccine available to employees who have occupational exposure. Occupational exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. The Centers for Disease Control and Prevention recommends that health care professionals and emergency personnel receive the hepatitis B series. All employees who are trained and expected to respond during emergency situations as part of their job duties should be offered the hepatitis B series. The cost of the three shot hepatitis B series ranges from \$75 to \$165 per employee which could equate to the need for more than \$2,724,975 to cover costs of hepatitis B immunizations for *public* high school employees (\$165 x 16,515 staff = \$2,724,975).
- Of the 60 public school district representatives that responded to the AED Training Questionnaire, 35 reported having a trained AED user available at all times. Of the five (5) private/independent schools that reported having an AED, four (4) reported having a trained AED user available at all times. Thirty-nine (39) public school districts reported that all instructional and administrative staffs are made aware of the location of the AED upon hire and on an annual basis; three (3) private/independent schools reported that all high school instructional and administrative staffs are made aware of the location of the AED upon hire and on an annual basis.
- Public school district school nurse leaders from 30 school districts responded to questions regarding actual AED use in their respective districts. Of the 30 responses received, four (4) school districts reported a total of five (5) AED uses. One (1) occurred in an elementary school, two (2) in middle schools, and two (2) in high schools. School nurses used the AED in four (4) of the occurrences and an assistant principal in one (1).

Recommendations

- Schools that have an AED on the premises should strive to have a core of trained AED/CPR responders available at all times and make all employees aware of the location of the AED and contact information for the designated responders.

If you have questions regarding this document, please contact Cathy Young-Jones (CYJONES@ed.sc.gov; 803.734.3194), Lynn Hammond (LHAMMOND@ed.sc.gov; 803.734.8076) or Jay W. Ragley (JRAGLEY@ed.sc.gov; 803.734.8043).

Appendix A: AED Study Questionnaire Summary

Public Schools

- Sixty school districts provided a response.
- One hundred fifty out of 154 high schools represented by the responders have an AED.
- AEDs were reported being available at the following times:
 - During the school day (59 districts).
 - Before school events held on school grounds (47 districts).
 - After school events held on school grounds (49 districts).
 - At school sporting events held at the school (54 districts).
 - Four school districts made note that the high school's AED is taken for off-campus sports events.
- Three of the responding school districts reported that all instructional and administrative staffs at high schools in their district are trained to use AEDs.
- Thirty-five school districts reported that a trained AED user is available at all times.
- Thirty-nine school districts reported that all instructional and administrative staffs are made aware of the location of the AED upon hire and on an annual basis.
- Thirty-five school districts employ a certified CPR and AED trainer to provide training for district staff; however, training is not necessarily the employee's primary role.
- Forty-eight noted that their district does not currently have funds available to train all instructional and administrative staff at each high school in CPR and AED use. Six (6) noted having the funds, and six left the question blank or stated that they were unsure.

Private/Independent Schools

- Eleven private/independent schools responded.
Note: In the questionnaire, a high school was defined according to S.C. Code Ann. §59-1-150 as "any school that serves grades no lower than the seventh and no higher than twelfth." Use of this legal definition may in part explain the low response from private/independent schools; private/independent schools often serve a wide range of grades.
- Five reported having an AED.
- Of the five schools having an AED, AEDs were reported being available during the school day, before school events held on school grounds, after school events held on school grounds, and at school sporting events held at the school. One school noted having an AED in the Public Safety Office, in a patrol car, and in the gym.
- One school reported that all instructional and administrative staffs at the high school are trained.
- Five schools reported that a trained AED user is available at all times. Note: Of the five schools that reported having a trained AED user available at all times, one did not have an AED.
- Three schools reported that all high school instructional and administrative staffs are made aware of the location of the AED upon hire and on an annual basis.
- Two schools employ a certified CPR and AED trainer to provide training for staff.
- Four schools reported having funds available to train all instructional and administrative staff.

Appendix B: Training Model Using District Employees as Instructors

(Based on public school data only; costs for private/independent schools will be in addition to the estimations below.)

Description	Estimated Cost
3 instructors for each district (will vary depending upon size of district; some will require more.) 3 X 88 districts = 264 employees to be trained as instructors 264 X \$250 (includes manuals) = \$66,000 Class size maximum = 8 students per instructor	\$66,000
Substitute pay for instructor team during instructor training AHA – 2 days 264 employees (instructors) X 2 days X \$75 = \$39,600	\$39,600
Substitute pay for employees during training 16,515 X \$75 = \$1,238,625	\$1,238,625
CPR Practice Shields Each student will need at least one practice shield. 36 per pkg. @ \$11 16,515 employees / 36 = 459 \$11 pkg. X 459 pkg. = \$5,049	\$5,049
Heartsaver First Aid with CPR & Student Workbook \$13.95 X 20 books X 88 districts = \$24,552 (re-use books)	\$24,552
Heartsaver CPR completion cards costs \$30 per pkg. of 24 cards 16,515 employees / 24 cards = 689 pkg. of cards 689 pkg. X \$30 = \$20,670	\$20,670
AED training devices. The cost of the training devices will vary. Districts will likely want to have AED trainers that are the same brand as the AED that is being used. Costs vary from \$70 to \$400. 2 AED trainers per district. 88 districts X 2 X \$70 = \$12,320 88 districts X 2 X \$400 = \$70,400	\$70,400 (Used highest estimate; does not include replacement costs and supplies)
20 manikins X 88 districts = 1,760 manikins or 352 5-packs of each manikin type; if teaching Adult/Child and Infant, will need manikins for both. Adult/Child 5-pack (CPR Prompt) = \$425 X 352 = \$149,600 Infant 5-pack (CPR Prompt) = \$275 X 352 = \$96,800 Adult & Child CPR Faceshield Lung Bags @ \$6.19 X 1,760 manikins = \$10,895 Infant CPR Faceshield Lung Bags @ \$5.69 X 1,760 manikins = \$10,015	\$149,600 \$96,800 (These costs do not include all replacement costs, supplies, disinfectants, etc.) \$10,895 \$10,015
Total (This cost does not include alcohol swabs, maintenance, equipment replacement, supplies, etc.)	\$1,732,206