SB

151

ALASKA STATE LEGISLATURE

Sponsor Statement

SPONSOR STATEMENT
SB 151

"An Act relating to cardio-pulmonary resuscitation and first aid classes for initial applicants for driver's licenses and permits"

After the events of 9/11 and recent natural disasters, including the tsunami in the Pacific and Hurricane Katrina in New Orleans, it has become clear that disaster preparedness is a priority Alaskans can no longer afford to ignore. SB 151 would take a step in the right direction by requiring that first time applicants for Alaska driver's licenses must attend a first aid or CPR class in order to obtain an Alaska driver's license, thus ensuring that future generations of Alaskans would be able to help in an emergency.

It is my hope that requiring first aid training would lessen the burden for first responders and save lives in the process. In the event of a crisis, more people will have basic first aid skills to use until help arrives. Unfortunately, many Alaskans don't know what to do in life-threatening situations. This bill was inspired by the tragic death of Eric Kalenka, who died after he was stabbed in the leg. It is his father's belief that Eric would still be alive today if his friends had known basic first aid, and had applied pressure to the wounds and elevated them above his heart.

I would appreciate your consideration for SB 151, which could save lives by preparing Alaskans for health emergencies.

25-LS0724\M
Luckhaupt
5/3/07

CS FOR SENATE BILL NO. 151( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - FIRST SESSION

BY

Offered:
Referred:

Sponsor(s): SENATOR ELLIS BY REQUEST

A BILL

FOR AN ACT ENTITLED

"An Act relating to cardiopulmonary resuscitation and first aid training for initial applicants for driver's licenses and instruction permits; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 28.15 is amended by adding a new section to read:

Sec. 28.15.059. Cardiopulmonary resuscitation training for new applicants for driver's licenses and instruction permits. The department may not issue a driver's license or instruction permit to a person who has not previously held a license or permit in this or another state unless the person supplies evidence acceptable to the department as prescribed by regulation that the person has completed cardiopulmonary resuscitation and first aid training in the one-year period immediately preceding the application.

*** Sec. 2.** This Act takes effect January 1, 2008.

25-LS0724\E
Luckhaupt
4/26/07

CS FOR SENATE BILL NO. 151( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - FIRST SESSION

BY

Offered:
Referred:

Sponsor(s): SENATOR ELLIS BY REQUEST

A BILL

FOR AN ACT ENTITLED

"An Act relating to cardiopulmonary resuscitation and first aid classes for initial applicants for driver's licenses and instruction permits and to driver's license testing."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 28.15 is amended by adding a new section to read:

Sec. 28.15.059. Cardiopulmonary resuscitation training for new applicants for driver's licenses and instruction permits. The department may not issue a driver's license or instruction permit to a person who has not previously held a license or permit unless the person completes and signs an affidavit stating that the person has completed cardiopulmonary resuscitation and first aid training in the one-year period immediately preceding the application.

*** Sec. 2.** AS 28.15.081(a) is amended to read:

(a) The department shall examine every applicant for a driver's license. The examination must include a test of the applicant's (1) eyesight, (2) ability to read and understand official traffic control devices, (3) knowledge of safe driving practices, (4)

knowledge of the effects of alcohol and drugs on drivers and the dangers of driving under the influence of alcohol or drugs, (5) knowledge of the laws on driving while under the influence of an alcoholic beverage, inhalant, or controlled substance, (6) knowledge of the laws on financial responsibility and mandatory motor vehicle liability insurance, [AND] (7) knowledge of the traffic laws and regulations of the state**, and (8) knowledge of cardiopulmonary resuscitation and basic first aid**. The examination may include a demonstration of ability to exercise ordinary and reasonable control in the driving of a motor vehicle of the type and general class of vehicles for which the applicant seeks a license. However, an applicant who has not been previously issued a driver's license by this or another jurisdiction shall demonstrate ability and shall present medical information that the department reasonably requires to determine fitness to safely drive a motor vehicle of the type and general class of vehicles for which the applicant seeks a license.

FISCAL NOTE

STATE OF ALASKA
2007 LEGISLATIVE SESSION

Fiscal Note Number: SB151-DOA-DMV-5-3-07
Bill Version: SB 151
() Publish Date:

Revision Date/Time (Note if correction):
Dept. Affected: Administration

Title: "An Act relating to (CPR) and first aid classes for...driver's licenses..."
RDU: Division of Motor Vehicles
Component: Motor Vehicles

Sponsor: Senator Ellis
Requester: Senate HESS
Component No.: 2348

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Personal Services	0.0	0.0	0.0	0.0	0.0	0.0
Travel	0.0	0.0	0.0	0.0	0.0	0.0
Contractual	0.0	0.0	0.0	0.0	0.0	0.0
Supplies	0.0	0.0	0.0	0.0	0.0	0.0
Equipment	0.0	0.0	0.0	0.0	0.0	0.0
Land & Structures	0.0	0.0	0.0	0.0	0.0	0.0
Grants & Claims	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES	0.0	0.0	0.0	0.0	0.0	0.0
CHANGE IN REVENUES ( )	0.0	0.0	0.0	0.0	0.0	0.0

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1003 GF Match	0.0	0.0	0.0	0.0	0.0	0.0
1004 GF	0.0	0.0	0.0	0.0	0.0	0.0
1005 GF/Program Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1037 GF/Mental Health	0.0	0.0	0.0	0.0	0.0	0.0
Other (Specify Type--Do not abbreviate)	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2007) cost: 0.0
Mark this box (X) If funding for this bill is included in the Governor's FY 2008 budget proposal:

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: *(Attach a separate page if necessary)*

This bill will require applicants for an Alaska driver's license or instructional permit to show proof of CPR and first aid training as a prerequisite of issuance.

The DMV does not expect any change in revenue or expense as result of this bill.

Prepared by: Duane Bannock, Director
Phone: 269-5559
Division: Motor Vehicles
Date/Time: 5/3/07 12:00pm
Approved by: Kevin Brooks, Deputy Commissioner
Date: 5/3/07
Agency: Department of Adminstration

Help at Home
ALASKANS TO ALASKA

American Red Cross of Alaska

April 27, 2007

The Honorable Johnny Ellis
State Capitol, Rm 9
Juneau AK 99801-1182

Last year, your Alaska Red Cross taught 35,000 Alaskans how to save a life, connected 4,200 military members with their loved ones, briefed 23,000 service people and their families in available Red Cross services, and provided critical disaster relief to more than 1,050 Alaskans devastated by a disaster.

Dear Senator Ellis:

The American Red Cross strongly supports Cardiopulmonary Resuscitation (CPR) training for new driver's license applicants. We support the enactment of SB 151 because it will increase the number of persons trained in CPR and First Aid in Alaska.

The U.S. Centers for Disease Control (CDC) cites that in 2005 automobile accidents were the number one causes of death in the U.S.; with the majority of motor vehicle-related deaths occurring among 15-24 year olds.

Most motor vehicle deaths occur on rural roads. Bystanders are usually the first to arrive at the scene of an accident and may be the first source of emergency care and response. Emergency Medical Services (EMS) response times may vary and not fall under the 4-6 minutes time frame to provide early CPR, particularly in rural areas of the state when a hospital or emergency services facility may be quite a distance.

Red Cross First Aid and CPR courses include instruction on treating a variety of illnesses and injuries until more advanced medical assistance is available. In First Aid courses, participants learn to treat injuries such as burns, wounds, head, neck and back injuries; and sudden illnesses including strokes and diabetic emergencies. The CPR portion covers practical instruction for responding to breathing and cardiac emergencies, including administering CPR through a series of chest compressions and rescue breaths.

By requiring new drivers to become certified in First Aid and CPR, there is a greater chance of survival after an accident has occurred. By enacting SB 151, the Alaskan legislature will be setting a precedent for a generation of young driver's to learn information that could help save a life.

The American Red Cross of Alaska appreciates your consideration of SB 151. If I may be of service to you to answer any questions on our position, please contact me at 907-646-5414 or by e-mail at mathisjo@usa.redcross.org.

Sincerely,

Joe Mathis, CEO
American Red Cross of Alaska

American Heart Association. | American Stroke Association.
Learn and Live.

Pacific/Mountain Affiliate
3700 Woodland Drive, Suite 700
Anchorage, AK 99517-2555
907.865.5303 (phone)
888.276.0858 (toll-free)
907.865.5310 (fax)
americanheart.org

May 3, 2007

Senator Bettye Davis
Chair, Senate Health, Education
and Social Services Committee
State Capitol, Room 30
Juneau, AK 99801-1182

Dear Senator Davis:

The American Heart Association, whose mission is to reduce disability and death from cardiovascular diseases and stroke, is writing to you in support of SB 151. This important legislation will ensure new Alaskan drivers are trained in the lifesaving skills of cardiopulmonary resuscitation (CPR) and first aid.

Each year, cardiovascular disease and sudden cardiac arrest claim the lives of 325,000 Americans before they reach a hospital. Nearly 80 percent of cardiac arrests occur at home and are witnessed by a family member. Only 6.4 percent of sudden cardiac arrest victims survive because the vast majority of those witnessing the arrest are people who do not know how to perform CPR.

Passage of SB 151 will ensure a significantly greater number of Alaskans are trained and prepared to respond to a cardiac event or other life threatening emergencies.

Thank you, Senator Davis, for your careful consideration of this lifesaving legislation.

Suzanne Meunier
Director of Advocacy

cc: Senator Joe Thomas, Senate HESS Vice-Chair
Senator John Cowdery, Senate HESS member
Senator Kim Elton, Senate HESS member
Senator Fred Dyson, Senate HESS member
Senator Johnny Ellis, Sponsor SB 151

ELSEVIER

Resuscitation 67 (2005) 31–43

RESUSCITATION

www.elsevier.com/locate/resuscitation

Effectiveness of a 30-min CPR self-instruction program for lay responders: a controlled randomized study☆

Bonnie Lynch[a,*], Eric L. Einspruch[a], Graham Nichol[b], Lance B. Becker[c], Tom P. Aufderheide[d], Ahamed Idris[e]

[a] *RMC Research Corporation, 522 SW Fifth Avenue, Suite 1407, Portland, OR 97204, USA*
[b] *University of Washington, Harborview Prehospital Research and Training Center, and University of Washington Clinical Trial Center, Seattle, WA, USA*
[c] *University of Chicago, Chicago, IL, USA*
[d] *Medical College of Wisconsin, Milwaukee, WI, USA*
[e] *The University of Texas Southwestern Medical Center at Dallas, Dallas, TX, USA*

Received 19 November 2004; received in revised form 7 April 2005; accepted 7 April 2005

Abstract

Background: The length of current 4-h classes in cardiopulmonary resuscitation (CPR) is a barrier to widespread dissemination of CPR training. The effectiveness of video-based self-instruction (VSI) has been demonstrated in several studies; however, the effectiveness of this method with older adults is not certain. Although older adults are most likely to witness out-of-hospital cardiac arrests, these potential rescuers are underrepresented in traditional classes. We evaluated a VSI program that comprised a 22-min video, an inflatable training manikin, and an audio prompting device with individuals 40–70 years old. The hypotheses were that VSI results in performance of basic CPR skills superior to that of untrained learners and similar to that of learners in Heartsaver classes.

Methods: Two hundred and eighty-five adults between 40 and 70 years old who had had no CPR training within the past 5 years were assigned to an untrained control group, Heartsaver training, or one of three versions of VSI. Basic CPR skills were measured by instructor assessment and by a sensored manikin.

Results: The percentage of subjects who assessed unresponsiveness, called the emergency telephone number 911, provided adequate ventilation, proper hand placement, and adequate compression depth was significantly better ($P < 0.05$) for the VSI groups than for untrained controls. VSI subjects tended to have better overall performance and better ventilation performance than did Heartsaver subjects.

Conclusions: Older adults learned the fundamental skills of CPR with this training program in about half an hour. If properly distributed, this type of training could produce a significant increase in the number of lay responders who can perform CPR.

Keywords: Age; Bystander CPR; Cardiac arrest; Cardiopulmonary resuscitation; Education; Out-of-hospital CPR; Witnessed cardiac arrest

1. Introduction

Increasing the frequency and effectiveness of bystander cardiopulmonary resuscitation (CPR) are fundamental goals of the American Heart Association (AHA) and other health organizations [1,2]. Although bystander CPR is an effective treatment for cardiac arrest, the proportion of citizens trained to perform CPR is small [3–5]. The typical witness to an out-of-hospital arrest is over 50 years old [6] and the typical learner in lay CPR courses is about 20 years younger [7–9]. Impediments to attending traditional CPR courses, for learners of all ages, include time and logistics [10] and anxiety or other aversive psychological responses to classroom settings [11]. Courses that include much information irrelevant to learning CPR [8,12,13] may also dissuade learners from returning for refreshers. Researchers have sought alternative training formats for potential learners who are reticent

☆ A Spanish translated version of the Abstract of this article appears as Appendix at 10.1016/j.resuscitation.2005.04.017.

* Corresponding author. Tel.: +1 503 223 8248; fax: +1 503 223 8399.
E-mail address: blynch@rmccorp.com (B. Lynch).

0300-9572/$ – see front matter © 2005 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.resuscitation.2005.04.017

to attend CPR courses [4,6,8,10,14,15]. While some shorter self-led, video-based courses have been piloted with good results [4,5,15–18], the materials and methods of video self-instruction (VSI) continue to be refined; for example, the Laerdal Family Trainer™ manikin (Laerdal Medical Corporation, Stavanger, Norway) used in many earlier studies has been discontinued and replaced by a new generation of *Mini Anne*™ manikins. A newly developed instructional video, with a run time of 22 min, is approximately 40% shorter than that in any VSI course previously tested. Ours is the first study of VSI with older laypersons that uses a controlled, randomized design to determine whether this much-abbreviated training can transmit basic CPR skills as well as a traditional Heartsaver course does.

2. Material and methods

2.1. Study design and participant recruitment

The study was conducted in 2004 in Portland, Oregon. The study conformed to the principles of the Declaration of Helsinki and the protocol was approved by Portland State University's Human Subjects Research Review Committee. Informed consent was obtained from both instructors and subjects. Individuals between 40 and 70 years of age were chosen as the target subject population for two reasons: older adults are relatively more likely to live with a high-risk person and therefore are more likely to witness sudden cardiac arrest; and adults beyond age 70 are relatively more likely to suffer from age-related conditions, such as arthritis, bursitis, and visual or hearing impairments that could have a negative effect on learning and performance in the experimental tasks of this study [19]. All subjects were recruited from the Portland area via advertisements in newspapers, flyers in various public sites, and word of mouth from the subjects themselves. Advertisements described the project as a "CPR training study." The only exclusion criteria other than age were participation in CPR training within the previous 5 years and professional status as a healthcare provider (e.g., physician, nurse, EMT). The 5-year criterion was chosen, rather than some shorter interval, to target a population that either had never taken CPR or had missed at least two 2-year CPR renewal cycles and therefore was relatively unlikely to enroll in a traditional course. Subjects were told during telephone screening that they would be paid between $25 and $40 to participate, and that the exact amount would depend on the group to which they were assigned, with different groups requiring different time commitments. Subjects also were told that they would not receive CPR certification and would not be permitted to keep any of the training materials.

Instructors were recruited via e-mail invitations to American Heart Association Community Training Centers in Oregon and southwest Washington. The invitation described the study only in general terms, and during screening, instructors were told that they might serve in any of the following roles: *instructor* (teaching a Heartsaver Adult CPR class); *facilitator* (helping subjects as they learned CPR); *observer* (silently witnessing and documenting subjects' CPR training); and *examiner* (testing subjects' CPR skills). Instructors did not know until they appeared for training what their role(s) would be. The single inclusion criterion was certification to teach Heartsaver CPR. We chose this criterion to ensure that all instructors would be qualified to teach Heartsaver CPR if they were assigned to that intervention, and also to allow a common frame of reference for observations of a layperson's CPR learning experience. There were no exclusion criteria. Instructors each attended training sessions in which general issues such as safeguards to experimental rigor (e.g., not discussing the study with other instructors or with subjects) and ethical treatment of subjects were discussed. Later, separate training sessions for the specific roles were held such that instructors were aware only of information relevant to their own roles. The training sessions lasted 1–2 h, depending on the number of instructors being trained and the complexity of the role. Sessions included scenarios and discussion to ensure that instructors understood and could comply with their roles. Instructors were paid $15 per hour for their participation.

The study employed an experimental design with five groups: one control group (C) that was assessed without any training intervention; one group that took a traditional Heartsaver Adult CPR class (HS); and three groups that participated in some form of self-training intervention: self-training alone (ST), self-training with instructor facilitation (ST-I), and self-training with peer facilitation (ST-P). All interventions are described in detail in the Section 2.4. The hypotheses were that subjects in self-training interventions would demonstrate CPR skills superior to those of the untrained controls and similar to those of Heartsaver-trained subjects. The ST-I and ST-P conditions were included to investigate whether facilitation of self-instruction would provide additional benefit relative to self-instruction alone. Because ST-I and ST-P interventions were exploratory in nature, no specific hypotheses were proposed for differential performance of the three self-training groups.

Several measures were taken to minimize subjects' and instructors' inappropriate exposure to information about the study. The study space included six sound-attenuated offices, five of which were used for self-training and one dedicated to testing; a waiting/reception area; and a separate conference room dedicated to Heartsaver classes. Soft music played in the waiting area to mask any incidental transfer of sound from the training or testing rooms. The waiting area was also furnished with signs to discourage discussion of the study among participants. A study coordinator supervised the waiting area when subjects were present and reminded them when necessary not to discuss any aspects of the study. Both subjects' and instructors' informed consent included an agreement not to discuss the study with others. Study materials and rooms were concealed from view when not in use.

2.2. Self-training kit

The design of the kit was informed by previous research on self-training of CPR [10,15,16], and proceeded under the direction of the American Heart Association's Emergency Cardiovascular Care Basic Life Support Subcommittee. The kit comprised three major components: a 22-min video; an inflatable Mini Anne manikin on which the skills of assessing responsiveness and providing ventilations and chest compressions could be practiced; and a small electronic device called the *CPR Coach*™, which provides real-time audio feedback about the correct rate and depth, and visual and tactile cues about hand placement, for chest compressions. Such audio prompting technology has been shown to affect learning positively when used during practice of chest compressions [4,5,15–18]. The video was developed at the American Heart Association's National Center, Dallas, Texas; and Mini Anne and the CPR Coach were developed by the Laerdal Medical Corporation, Stavanger, Norway. Each of the three components is described in detail below.

2.2.1. Twenty-two-minutes video

A preliminary version of the video was piloted by three independent reviewers, using an average of four users each. The video was then re-edited on the basis of feedback from those pilots.

The video opens with a short retelling of a fictionalized incident by two female actors who portray a heart attack victim and her lay rescuer. The setting is a comfortable, well furnished sitting room, and the emotional tone of the segment is positive. Following this segment, a narrator introduces herself and explains in simple terms that the video will teach the basic skills of CPR. Instruction is limited to the skills of recognizing an emergency (including agonal breathing), calling for help, and performing cycles of ventilations and compressions. The order in which the viewer encounters and practices the skills has been altered (first chest compressions, then ventilations, then the two skills together; then checking for responsiveness/calling 911; and finally, the entire sequence from discovery of the victim to several complete cycles of CPR). Skills are taught in stages, using a watch-while-practicing method. By the end of the video, viewers have had the opportunity to practice 23 cycles of ventilation and compression.

2.2.2. Mini Anne manikin

This device (see Fig. 1) requires the user to inflate a soft plastic apparatus. Once inflated, the apparatus forms a simulated head, neck, and chest cavity. Affixed to the ventral surface of the apparatus is a functional airway that branches to a set of inflatable lungs. The airway is connected at the top to a face similar to those of standard Laerdal manikins. A pliable plastic chest piece covers the lungs. When inflated, this manikin performs similarly to a standard one: the airway remains closed unless the user tilts the head appropriately, and when the user pinches the nose and makes an effective seal over the mouth, the lungs can be inflated to produce visible chest rise. The chest piece includes visually and tactilely distinct nipples, rib lines, and an oval area that shows the location and orientation for placing the heel of the hand (or the CPR Coach; see Fig. 2) for compressions. The inflated chest cavity allows for simulation of chest compression and release. The Mini Anne manikin, like the Laerdal Family Trainer, was designed as an inexpensive CPR training device that could be used at home. However, the Mini Anne more closely simulates the look and feel of the human anatomy, is more compact and cost-effective to produce, and is durable enough to be used many times. Unlike the Laerdal Family Trainer, used in previous studies, the Mini Anne manikin does not have any internal feedback device to signal adequate compression depth. Instead, this function is performed by the hand-held CPR Coach.

2.2.3. CPR Coach

The size and shape of this device allow it to be placed on the matching oval area on Mini Anne's chest. The user then assumes the posture for compressions and applies them directly onto the CPR Coach. When at least 35 kg of downward pressure is applied to it, the CPR Coach emits a single click. A second "unclick" signals that the pressure has been fully released. The initial click also triggers a metronome that peeps to signal the appropriate compression rate of 100/min.

2.3. Experimental protocol

When subjects called to enroll, they were assigned randomly to an intervention according to a scheduling database. Potential subjects who could not be scheduled in any of the time slots allocated to their intervention were not used. Four subjects (1.4% of the total sample) who had been assigned to either ST-I or ST-P had to be reassigned on the day of their session due to lack of an available peer to fulfill the intervention requirements. These subjects were run in the ST intervention and recoded as ST group members accordingly.

Upon their arrival at the study site, subjects first provided informed consent and completed a questionnaire that included demographic items. They then performed the tasks of their respective interventions. Fig. 3 shows the tasks and the corresponding instructor roles (shown in brackets) for each intervention.

2.4. Interventions

2.4.1. Control (C)

These subjects proceeded directly to the CPR skill assessment without training, to provide a benchmark against which to measure the effects of training.

2.4.2. Heartsaver (HS)

These subjects participated in a Heartsaver Adult CPR class taught by one of five instructors. The class size varied from 5 to 17, and the student:manikin ratio varied from 1:1 to

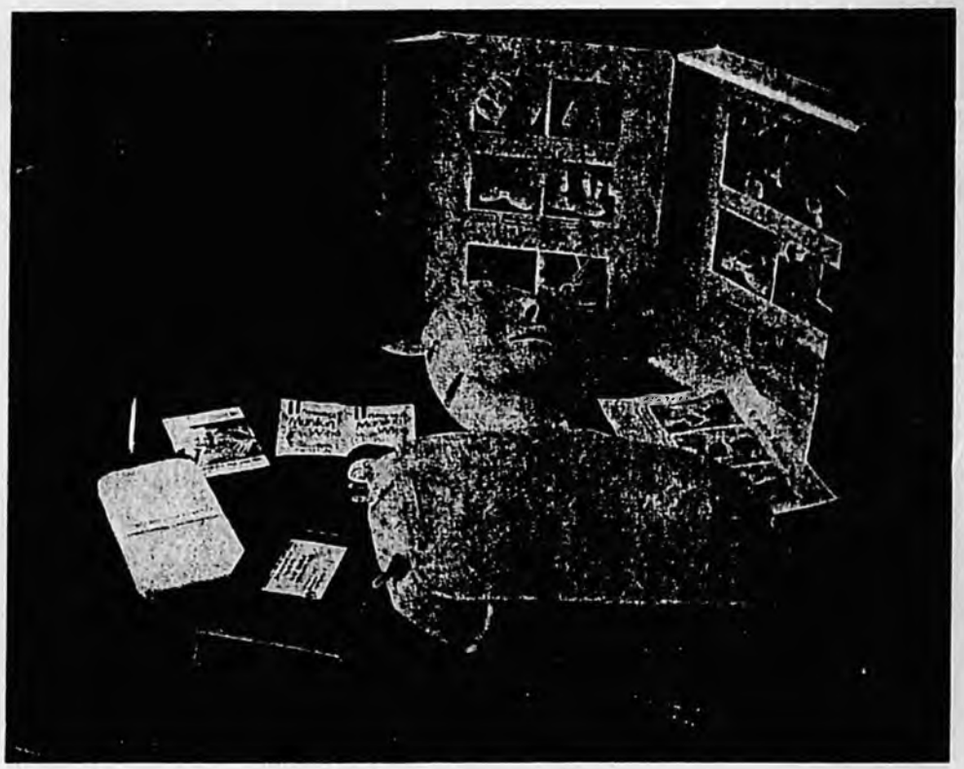

Fig. 1. The training kit, with inflated Mini Anne manikin.

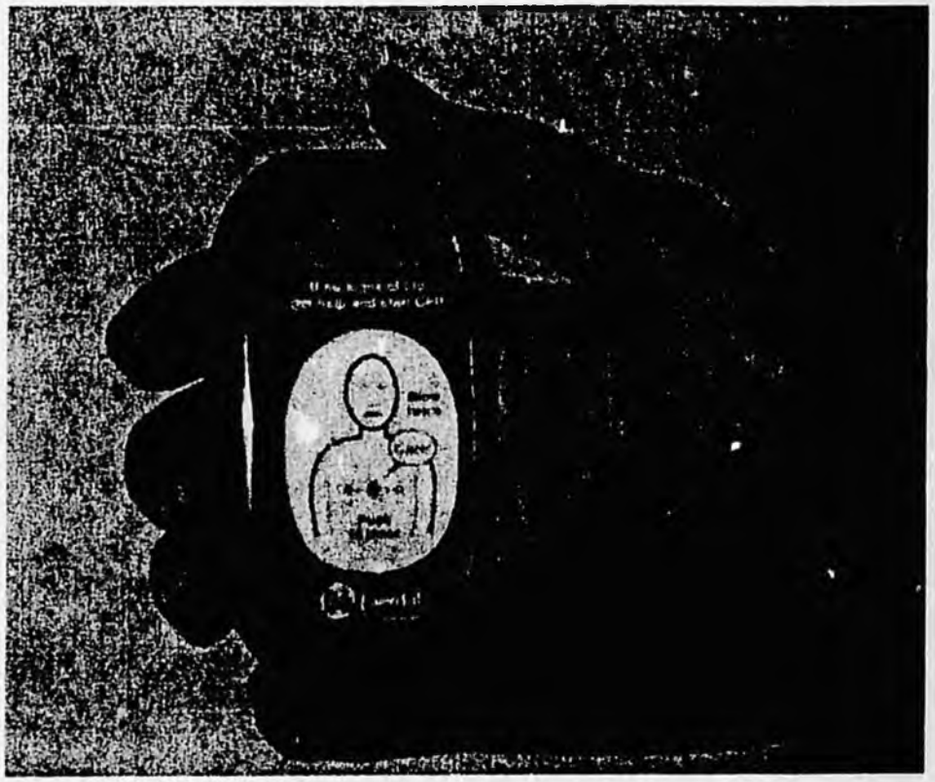

Fig. 2. The CPR Coach.

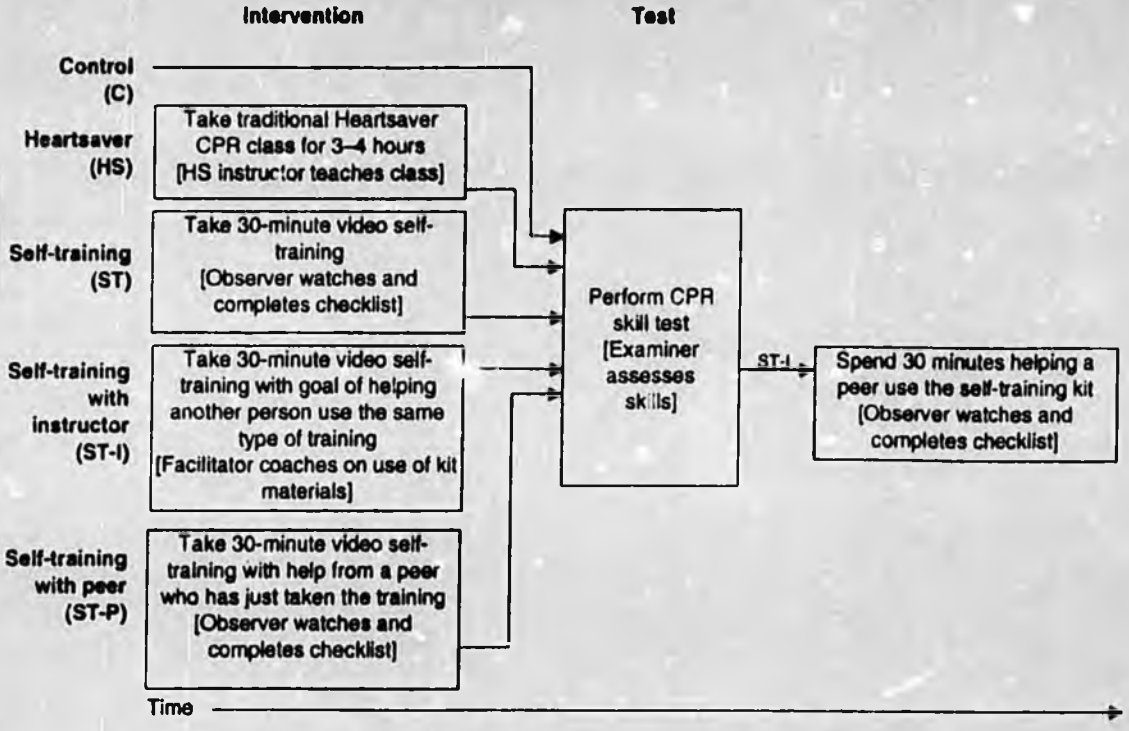

Fig. 3. Critical subject tasks and corresponding instructor roles for each intervention.

4:1. The student:instructor ratios were higher in some cases than AHA guidelines prescribe, but were consistent with common practices, as described by the instructors. Heartsaver instructors were told in their study training to teach the class as they normally would, with the exceptions that students would take their final skills test elsewhere, the materials were to remain in the classroom, and no certification cards were to be distributed. There was no instructor script for this intervention.

2.4.3. *Self-training interventions*

Because it was not known in advance whether the kit would stand alone as an effective VSI course, or whether some level of facilitation or other aid would improve subjects' learning, three variants of the self-training were tested. A Heartsaver-qualified CPR instructor was present in all three self-training sessions, but the instructor's specific role varied as a function of the intervention. All instructors in self-training interventions were provided with scripts for their roles and were asked not to provide any instruction or assistance related to the skills of CPR. Each subject in a self-training intervention had a full training kit. Descriptions of each self-training intervention follow.

2.4.4. *Self-training (ST)*

These subjects individually entered a training room where a study coordinator introduced the subject to the instructor, who was described only as an "observer." The study coordinator gave the subject the training kit and advised her or him that the video would explain everything they needed to know. The study coordinator helped with the television and video playback settings if necessary. Once the video began, the subject was left to pursue the training as the instructor observed silently.

2.4.5. *Self-training with instructor facilitation (ST-I)*

The protocol for this intervention was the same as for ST with the following exception: the instructor informed the subject at the outset of the training session that her or his (the instructor's) role was to facilitate the subject's use of the training kit so that the subject could help another person use the same kit later. During the session, the instructor gave tips such as "Stop the video if you fall behind or you need a rest," or "Go ahead and follow along with what the video is doing." Instructors offered only advice and assistance that was relevant to using the materials in the training kit and that *did not relate directly to the skills of CPR*. Substantive suggestions such as "Try retilting the head," or "Place your hands higher on the chest" were explicitly prohibited.

2.4.6. *Self-training with peer facilitation (ST-P)*

The protocol for this intervention was the same as for ST-I except that the facilitator was another subject who had just participated in the ST-I intervention, and the instructor served only as an observer. The facilitator was instructed to help the learner according to the training that the facilitator had just received. No other instructions or constraints were given regarding the type of help the facilitator should give.

2.5. Skill assessment

The assessment scenario occurred within one half hour, and usually within 10 min, of the training and was identically constructed for all subjects. The test protocol was consistent with the Utstein objective of "demonstrable lifesaving CPR on a manikin in a simulated scenario at the end of the training course" [1] and was similar to that used in other studies [15,16]. Subjects entered the testing room individually where they encountered an examiner, normal office furnishings that included a prop telephone that appeared functional, and a *Laerdal Resusci Anne*™ recording manikin on the floor. The manikin was connected to a Laerdal *PC SkillReporting*™ software via a laptop computer. The examiner recited the following script: "Imagine that this manikin is a real person who just collapsed right before you entered the room. You are the only other person in the room besides her. Do whatever you think is best to help this person. I cannot answer any questions about how to help the person. OK?" The examiner then allowed 3 min for the subject to demonstrate the actions she or he would take. If no action was initiated within 2 min, the examiner concluded the test. If a subject asked questions about what to do, the examiner's scripted reply was, "Just do whatever you think is best to help this person." The examiner gave information about the condition of the victim only if the subject asked after having performed an appropriate action related to that condition and only if the requested information would have been accessible from an actual collapsed victim; for example, if the subject appropriately assessed responsiveness, then asked whether the victim had responded, the examiner said there was no response. Instructor training emphasized the distinction between appropriately answering questions so that the scenario could continue, and providing inappropriate cues or prompts about performing CPR.

Utstein guidelines [1] for teaching Basic Life Support to lay responders stipulate that a simpler "pump and blow" type of CPR should be the norm, and that the following five initial outcomes of training are of interest: assessing responsiveness, calling 911, ventilations to chest rise, chest compressions of adequate depth, and proper hand placement during compressions. With these guidelines in mind, we measured subjects' performance in two ways: The sensored manikin provided data on volume of ventilations, depth of compressions, and hand placement during compressions. Examiners also assessed subjects' performance with a scoring sheet (see Appendix A) similar to the 14-point assessment developed by Brennan et al. [20] and adapted by Birnbaum [21]. However, the 14-point instrument was not appropriate for this study because it includes explicit assessment of sequence and of certain skills, such as pulse-checking and locating the proper compression point, which are either not taught (in the case of pulse-checking) or are integrated with another skill (in the case of locating the compression point) in the program we tested. Our scoring sheet was shortened to include only the five basic skills of CPR mentioned earlier, plus an overall rating of performance. Each of the six ratings was recorded dichotomously for each subject as *adequate* or *inadequate*. The sequence in which the skills were performed was not recorded, and examiners were told that the sequence should not affect their assessment of the adequacy of the skill performance. Examiners' training sessions provided further detailed instructions for using the scoring sheets. The instructions followed those used by Birnbaum [21], and were developed with and approved by the American Heart Association. To help minimize the possibility that examiners would attempt to use the sensored manikin data to influence their own ratings, several precautions were taken: there was no printed readout of the data; examiners were explicitly told not to view the display on the computer monitor; the monitor remained closed except when subject identification numbers were being entered; and manikin recording sessions were not stopped until the subject had left the room (by which time the data were no longer visible in the display).

2.6. Sample size and random assignment

Fig. 4 shows subject progress through the phases of recruitment, screening, and participation. The greatest attrition occurred between the time subjects scheduled their session and the time they were to appear for the session. Of the 446 screened subjects who met eligibility criteria and were scheduled to participate, only 285 (64%) appeared for their scheduled session, despite the fact that they received a reminder postcard (and, in most cases, a telephone reminder) 1 or 2 days before the session. Table 1 shows the demographic characteristics of the 285 subjects who participated.

Fifty eligible instructors were recruited and 27 were used. One instructor withdrew during the course of the study. As Table 2 shows, instructors were more likely than the subjects to be male and younger, and to have higher levels of education. The first 14 instructors who enrolled were assigned randomly to one of the four instructor roles (Heartsaver instructor; facilitator, observer, or examiner). Once these 14

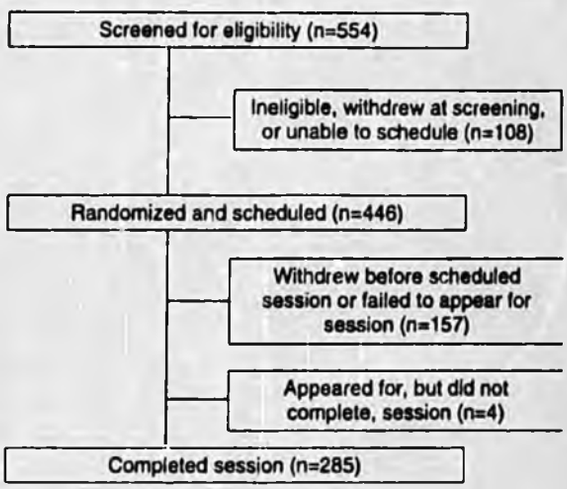

Fig. 4. Subject progress through the phases of recruitment, screening, and participation.

Table 1
Subject demographics

Item	Percent of participants[a]
Age	
Mean 52.7	
Median 53.0	
Sex	
Female	53
Male	48
Race/ethnicity	
White	83
Black	9
Other or multiple races	8
Education level	
Eighth grade or lower	1
Some high school	6
High school diploma or GED	15
Some college	39
Bachelor's degree	23
Master's or higher	16

[a] $n = 285$. Because of rounding, percentages may not total to 100.

instructors had been scheduled, the small number of remaining slots in the schedule made subsequent random assignment unworkable; therefore, the final 13 instructors were assigned by scheduling convenience. Each instructor role was served by more than two instructors, so that instructor effects were minimized. Three instructors served in more than one role, as follows: one observer served on subsequent days as an examiner; one facilitator served on subsequent days as an examiner; and one facilitator served on subsequent days as an observer. None of these instructors served as an examiner for subjects whose training they had witnessed, nor did any examiner know what type of training was occurring on any given day, nor how many types of training the study used. Instructors in all four roles were only given information relevant to their specific role(s).

Table 2
Instructor demographics

Item	Percent of instructors[a]
Age	
Mean 42.8	
Median 42.5	
Sex	
Female	41
Male	56
Race/ethnicity	
White	93
Hispanic	4
American Indian or Alaskan native	4
Education level	
Some college	56
Bachelor's degree	26
Master's or higher	15

[a] $n = 27$. Because of rounding, percentages may not total to 100.

2.7. Statistical analyses

We report results by group below, but because differences in performance of the self-training groups were non-significant across all skills, a separate discussion of ST, ST-I, and ST-P is not warranted. The data were subsequently collapsed and analyzed across the three self-training groups. This collapsed group is denoted *ST-Combined*. A one-way analysis of variance (ANOVA) with Bonferroni adjustments for multiple comparisons was used to analyze for differences between HS and C groups; between HS and ST-Combined; and between C and ST-Combined. In general, power was adequate (≥ 0.80) to detect effects of approximately 0.35 or greater. All probability values are for two-tailed tests with alpha < 0.05 as the criterion for significance. Hedges bias-corrected effect sizes and obtained probability values for each comparison are documented in tabular form in the Section 3.

The examiner's assessment for each subject produced the six dichotomous ratings described earlier. The manikin data included the percentage of ventilations of adequate volume, the percentage of compressions with proper hand placement, and the percentage of compressions with adequate depth.[1] Non-attempts for any skill were scored as incorrect. Results for each skill are displayed graphically as bar charts of group means or mean percentages, with whiskers denoting 95% confidence intervals.

3. Results

Cronbach's alpha, a conservative estimate of reliability for tests with dichotomously scored items, was computed for the quick assessment at 0.81. Fig. 5 shows, for each group, the percentage of subjects whose overall performance was rated adequate by the Examiners. ST-Combined subjects were more likely than C subjects ($P < 0.001$; effect size = 1.17) and HS subjects ($P = 0.031$; effect size = 0.34) to be rated adequate in their overall performance of CPR. HS subjects were more likely than C subjects to receive this rating ($P < 0.001$; effect size = 0.89).

Fig. 6 shows, for each group, the percentage of subjects who assessed responsiveness and Fig. 7 shows the percentage who called 911, as rated by the examiners. ST-Combined subjects were more likely than C subjects ($P < 0.001$; effect size = 1.70) and as likely as HS subjects ($P = 0.057$; effect size = 0.36) to appropriately assess responsiveness. HS subjects were more likely than C subjects ($P < 0.001$; effect size = 1.12) to assess responsiveness. ST-Combined subjects were more likely than C subjects ($P = 0.001$; effect size = 0.52) and as likely as HS subjects ($P = 0.402$; effect

[1] For both ventilation and compression performance, whether rated by the examiner or measured by the sensored manikin, attempts that produced a volume or force at or above the recommended level were considered 'adequate'.

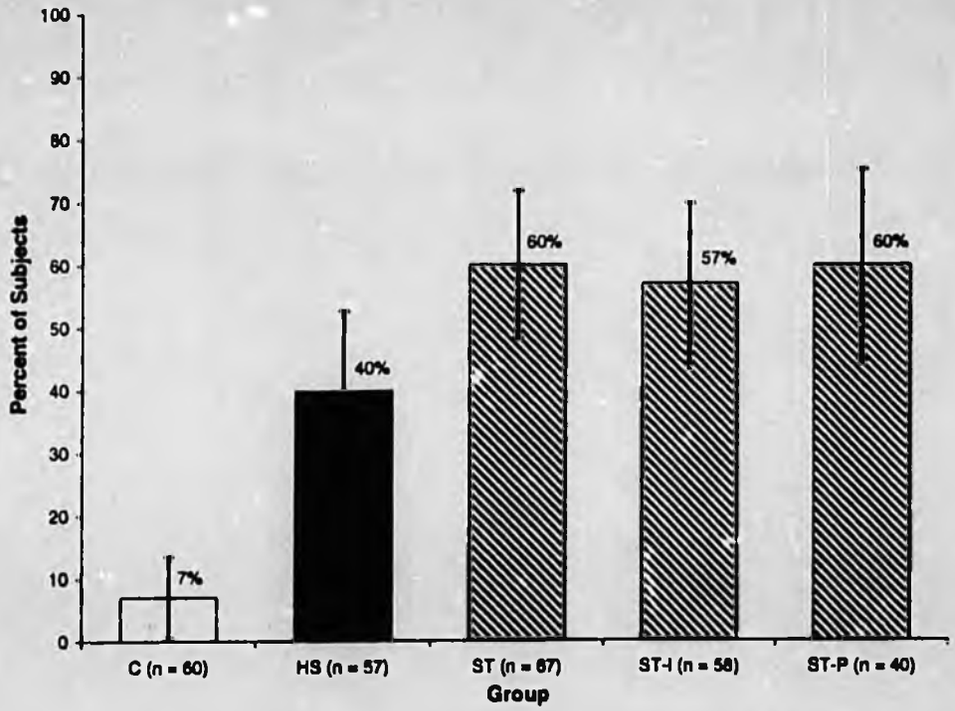

Fig. 5. Percentage of subjects with overall adequate performance, as rated by examiners.

size = −0.24) to call 911. HS subjects were more likely than C subjects ($P < 0.001$; effect size = 0.78) to do so.

Fig. 8 shows, for each group, the mean percentage of ventilations that were adequate (i.e., >700 ml), as measured by the sensored manikin. ST-Combined subjects performed better than HS subjects ($P = 0.014$; effect size = 0.40) and better than C subjects ($P < 0.001$; effect size = 1.08). HS subjects outperformed C subjects ($P < 0.001$; effect size = 0.83). It is also noteworthy that only 68% of subjects (13% of C subjects, 76% of HS subjects, and 81% of ST-Combined subjects) performed any ventilation that was detectable by the manikin. Review of videotaped assessments suggests that this low rate

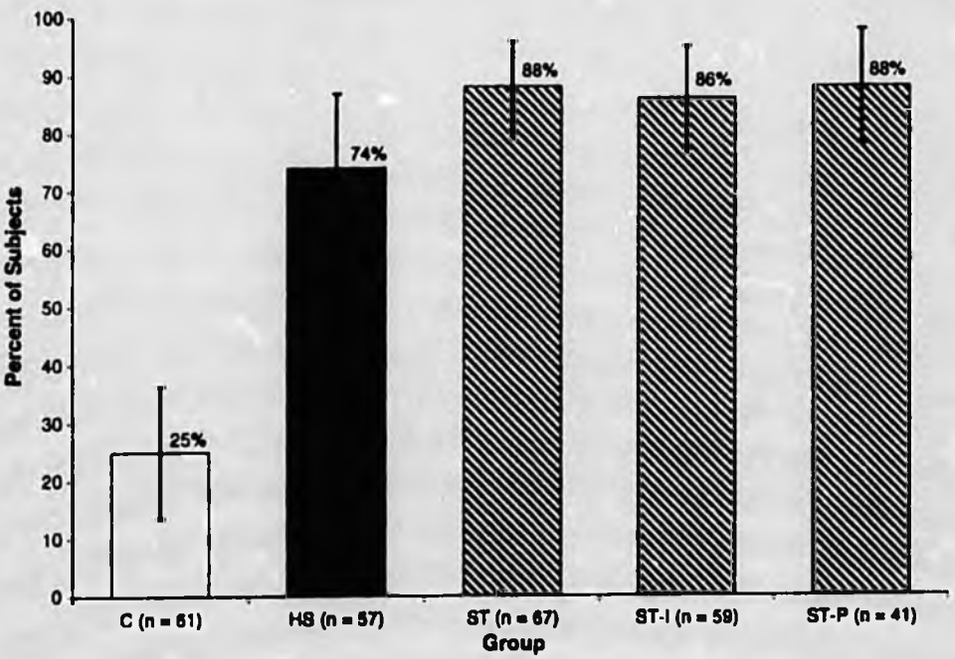

Fig. 6. Percentage of subjects who assessed responsiveness, as rated by examiners.

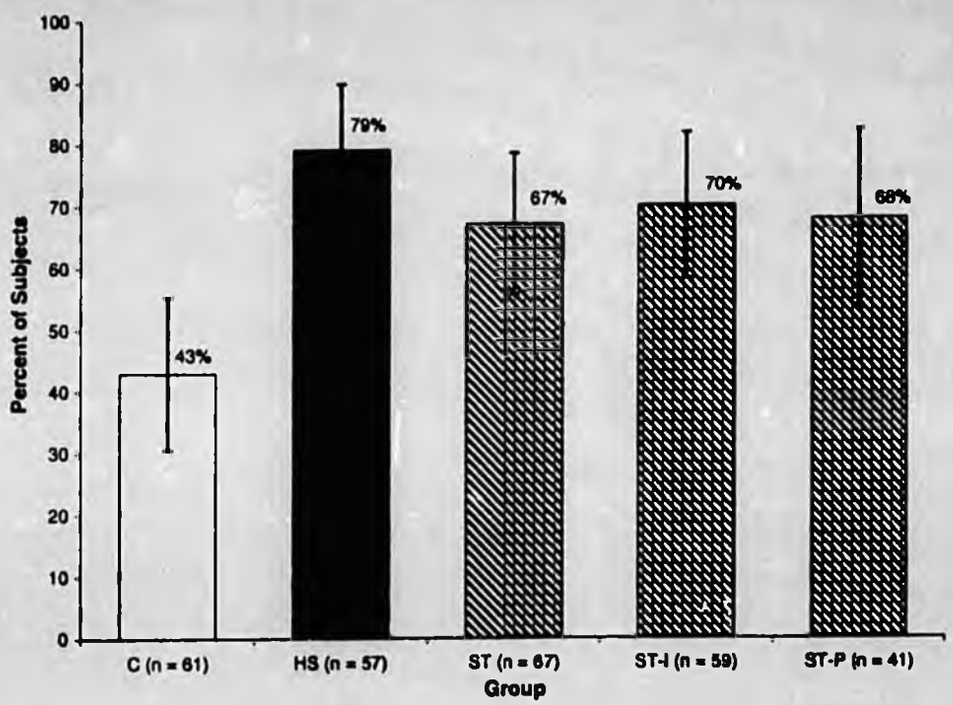

Fig. 7. Percentage of subjects who called 911, as rated by examiners.

was primarily due to many subjects' inability to open the airway or to maintain an open airway while performing ventilations.

Fig. 9 shows, for each group, the mean percentage of all compressions performed with proper hand placement, as measured by the sensored manikin. ST-Combined subjects reliably outperformed C subjects ($P = 0.026$; effect size = 0.39), but the effect for HS versus C subjects was not significant ($P = 0.438$; effect size = 0.27); nor was the effect for ST versus HS ($P = 0.999$; effect size = 0.13).

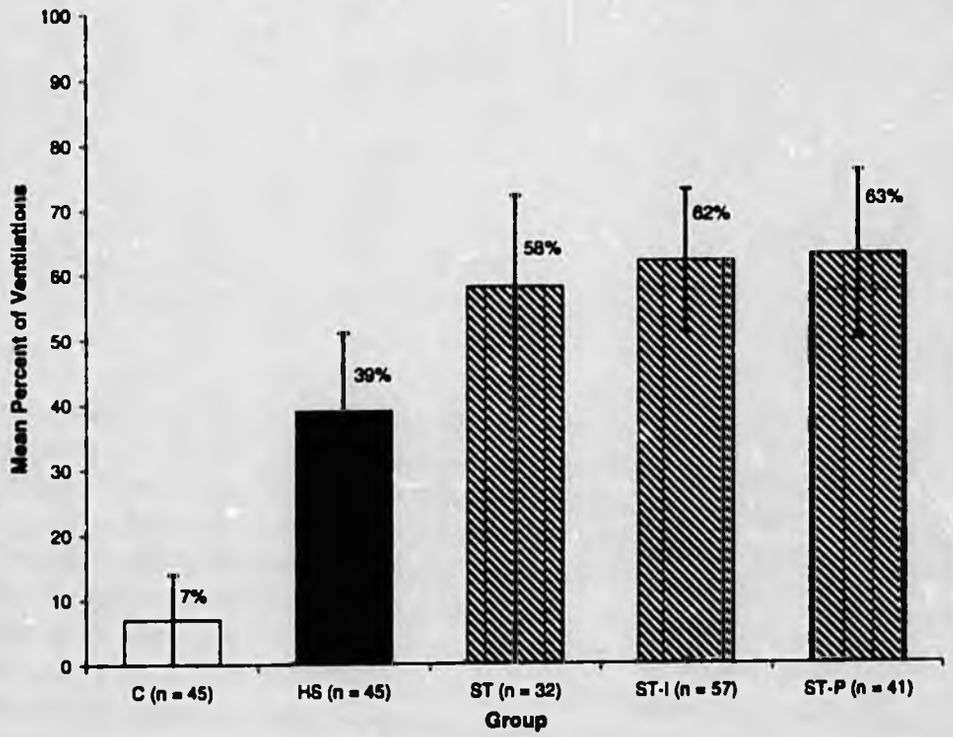

Fig. 8. Mean percentage of ventilations that were adequate, as measured by the sensored manikin.

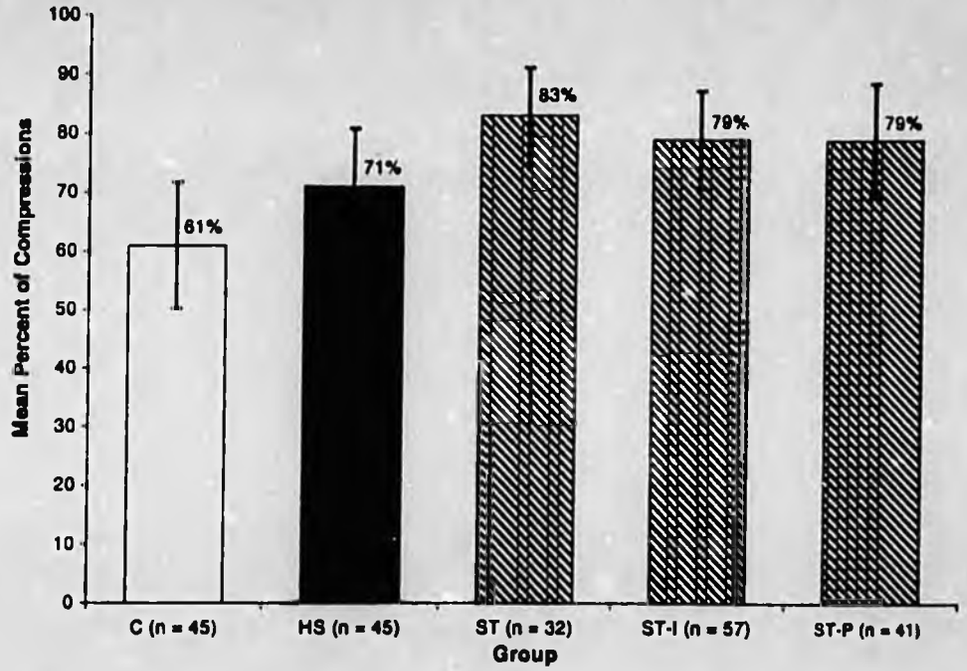

Fig. 9. Mean percentage of compressions performed with proper hand placement, as measured by the sensored manikin.

Fig. 10 shows, for each group, the mean percentage of all compressions performed with adequate depth, as measured by the sensored manikin. There were no significant differences among the groups on this skill ($P = 0.878$ and effect size = 0.19 for HS versus C; $P = 0.999$ and effect size = 0.08 for ST versus C; and $P = 0.999$ and effect size = 0.11 for HS versus ST), although examination of mean compression depths by group showed that HS and ST subjects missed the minimal depth criterion of 38 mm by a much narrower margin than did C subjects: the mean for HS was 35.2; for ST-Combined it was 33.9, and for C it was 23.0.

A similar pattern was seen for the average rate of compressions, where all groups tended to compress too slowly, but HS and ST came closer to meeting the 100-per-minute criterion: the mean for HS was 98.1; for ST-Combined it was 97.0, and for C it was 67.2.

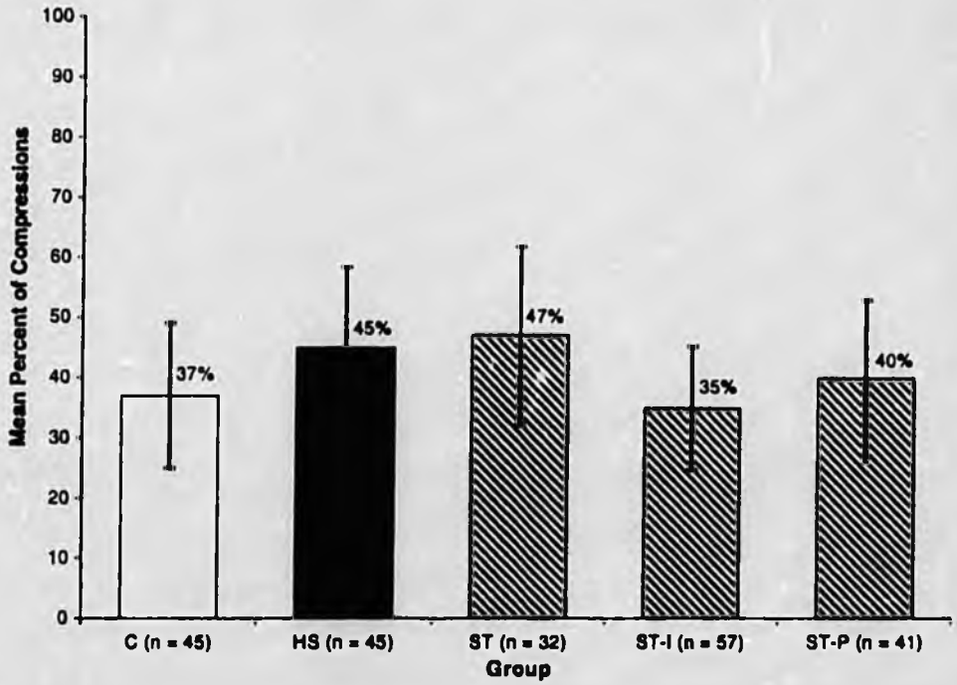

Fig. 10. Mean percentage of compressions with adequate depth, as measured by the sensored manikin.

Table 3
Results, *P*-values, and effect sizes of planned comparisons

Item	Group difference	*P*-value	Effect size
Overall performance	ST > C	<0.001	1.17
	HS > C	<0.001	0.89
	ST > HS	0.031	0.34
Assess responsiveness	ST > C	<0.001	1.70
	HS > C	<0.001	1.12
	ST = HS	0.057	0.36
Call 911	ST > C	<0.001	0.52
	HS > C	<0.001	0.78
	ST = HS	0.40	−0.24
Adequate ventilation volume	ST > C	<0.001	1.08
	HS > C	<0.001	0.83
	ST > HS	0.014	0.40
Proper hand placement for compressions	ST > C	0.026	0.39
	HS = C	0.380	0.27
	ST = HS	0.393	0.27
Adequate compression depth	ST = C	0.999	0.08
	HS = C	0.878	0.19
	ST = HS	0.999	−0.11

Note: equal sign (=) signifies no statistically reliable difference; greater-than sign (>) signifies statistically reliable advantage of first group over second group; alpha = 0.05 for all comparisons.

Table 3 summarizes the planned comparisons among HS, C, and ST-Combined groups, with obtained *P*-values and effect sizes.

4. Discussion

Whether skills were assessed by CPR instructors who were experimentally blind or whether skills were measured objectively by the manikin, self-training produced an effect on skill acquisition that was at least as great as the effect seen with traditional Heartsaver training, but in about one-eighth the time. Further, traditional training failed to show a reliable advantage over self-training for any of the skills tested by either method or for overall adequate performance as assessed by instructors. Self-training produced a reliable advantage for overall performance and for ventilation.

The data show a clear pattern of evidence in favor of self-training. These results are consistent with previous studies of VSI, which demonstrate that a well designed, shortened course can be an efficacious method of CPR training in general [4,5,15], and specifically for laypersons over the age of 40 [15,16]. Our study strengthens this converging evidence by being the first such investigation that incorporates random assignment of subjects to training interventions; an untrained control group against which to measure presence or absence of training effects; blinding of examiners to subjects' training and to study hypotheses; and a video that is by far the briefest CPR instructional medium for which published outcome data exist.

Potential limitations of the study include lack of data on: longer term retention; specific contributions of the separate training components (Mini Anne, CPR Coach, and video); potential to affect learning in settings outside the laboratory; effective means of distributing the kits so that they will be opened and used; and ways to tailor the video and packaging to appeal to particular user groups (e.g., adolescents versus older adults). Research to define effective distribution channels and user-friendly modes of labeling and packaging is particularly important because previous work indicates that even when a video training package is delivered free of charge to the homes of potential older learners, only about half will open the package and watch the video [6].

Although our study's results are consistent with those of other investigators in showing that brief VSI produces CPR skill performance equivalent to or better than traditional training, none of these previous studies used an interactive device like the CPR Coach to aid performance of compressions during training. Paradoxically, however, subjects who trained with this device performed no better during the skills assessment than did Heartsaver subjects. Although the average percentage of adequately deep compressions did not differ for VSI, Heartsaver, and control groups, the data on average compression depth clearly show that those who were trained by any method produced deeper compressions than did the controls; however, trained subjects still tend not to compress deeply enough to meet the criterion for effective perfusion. Other studies [18,22,23] that have tested feedback devices directly suggest that compressions performed with such devices tend to be deeper than those performed without them. For the sake of experimental control, all subjects in our study were tested without the CPR Coach; therefore, we must assume that if the CPR Coach enhances performance, it can only do so while it is in hand. In other words, previous use does not appear to foster retention of knowledge or skill for subsequent performance. Additional investigations are needed to determine whether use of the CPR Coach in both training and test, versus in training only, can produce a higher percentage of adequately deep compressions.

A training program such as the one we tested offers potential learners logistical convenience, a comfortable learning environment, and time efficiency without compromising acquisition of CPR skills. Communities could come significantly closer to the Utstein [1] ideal of attempted bystander CPR for every witnessed cardiac arrest if training alternatives were easily procured for people who cannot or will not go to longer courses. For example, CPR training in the workplace would undoubtedly be more attractive to employers if training could be accomplished in 30 min chosen at the learner's or employer's convenience, rather than in 3 or 4 h that must disrupt the schedule of many individuals. This program, combined with a distribution strategy that produces a high rate of learner use, could expand the reach of layperson CPR instruction significantly.

Conflict of interest statement

This research was funded by the American Heart Association and the Laerdal Medical Corporation.

Acknowledgements

We thank the American Heart Association's National Center and the Laerdal Medical Corporation for financial support. We thank Jerry Potts for substantive contributions to all phases of the study, Tom Rea and Mickey Eisenberg for helpful comments on the design, Alan Braslow and Robert Brennan for advice on the assessment, and two anonymous reviewers for their careful attention to all aspects of the manuscript. The authors gratefully acknowledge Gwen Hyatt's database expertise and the high level of professional participation and involvement from RMC Research support staff, particularly in subject recruitment and retention, which were critical to the study's success.

Appendix A. Examiner checklist

AHA CPR study: examiner checklist and performance guidelines

Learner ID: Instructor ID:

Skills (PLACE A CHECK IN THE BOX ONLY IF THE SKILL WAS PERFORMED ADEQUATELY.)

- ☐ Assess responsiveness
- ☐ Call 911
- ☐ Adequate ventilation
- ☐ Proper hand placement for compression
- ☐ Adequate compression depth

If no skills marked, what best describes the reason?

- ☐ Executed skills inadequately
- ☐ Did not attempt listed skills
- ☐ Attempted no action
- ☐ Other

☐ Actively refused / withdrew participation

Overall, performance was adequate.

- ☐ Yes
- ☐ No

Skill	Performance guidelines
Assess responsiveness	The examinee must have physical contact with the manikin and speak loudly enough to awaken a sleeping person
Call 911	The examinee must pretend to call, or send someone to call 911
Adequate ventilation	The examinee must provide adequate ventilations to cause the chest to rise
Proper hand placement	The examinee must demonstrate the proper hand position over the sternum
Adequate compression depth	The examinee must depress the chest approximately 1.5–2 in.
Overall, performance was adequate	Perfection is not necessary; the key is to determine whether the learner's actions would adequately perfuse the patient such that the patient's chances of survival would be increased, relative to no action

References

[1] Chamberlain DA, Hazinski MF. Education in resuscitation: an ILCOR symposium. Circulation 2003;108:2575–94.
[2] U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health, 2 vols. Washington, DC: U.S. Government Printing Office; November 2000.
[3] Swor R, Compton S, Farr L, et al. Perceived self-efficacy in performing and willingness to learn cardiopulmonary resuscitation in an elderly population in a suburban community. Am J Crit Care 2003;12:65–70.
[4] Todd KH, Heron SL, Thompson M, Dennis R, O'Connor J, Kellermann AL. Simple CPR: a randomized, controlled trial of video self-instructional cardiopulmonary resuscitation training in an African American church congregation. Ann Emerg Med 1999;34:730–7.
[5] Todd KH, Braslow A, Brennan RT, et al. Randomized, controlled trial of video self-instruction versus traditional CPR training. Ann Emerg Med 1998;31:364–9.
[6] Eisenberg MS, Damon S, Mandel L, et al. CPR instruction by videotape: results of a community project. Ann Emerg Med 1995;25:198–202.
[7] Pane GA, Salness KA. A survey of participants in a mass CPR training course. Ann Emerg Med 1987;16:1112–6.
[8] Brennan RT. Student, instructor, and course factors predicting achievement in CPR training classes. Am J Emerg Med 1991;9:220–4.
[9] Brennan RT, Braslow A. Are we training the right people yet? A survey of participants in public cardiopulmonary resuscitation classes. Resuscitation 1998;37:21–5.
[10] Wik L, Brennan RT, Braslow A. A peer-training model for instruction of basic cardiac life support. Resuscitation 1995;29:119–28.
[11] Flint LS, Billi JE, Kelly K, Mandel L, Newell L, Stapleton ER. Education in adult basic life support training programs. Ann Emerg Med 1993;22:468–74.
[12] Kaye W, Rallis SF, Mancini ME, et al. The problem of poor retention of cardiopulmonary resuscitation skills may lie with the instructor, not the learner or the curriculum. Resuscitation 1991;21:67–87.
[13] Kaye W, Mancini ME. Teaching adult resuscitation in the United States—time for a rethink. Resuscitation 1998;37:177–87.
[14] Goldberg J, Gore J, Love D, Ockene JK, Dalen JE. Layperson CPR—are we training the right people? Ann Emerg Med 1984;13:701–4.
[15] Braslow A, Brennan RT, Newman MM, Bircher NG, Batcheller AM, Kaye W. CPR training without an instructor: development and evaluation of a video self-instructional system for effective performance of cardiopulmonary resuscitation. Resuscitation 1997;34:207–20.
[16] Batcheller AM, Brennan RT, Braslow A, Urrutia A, Kaye W. Cardiopulmonary resuscitation performance of subjects over forty is

better following half-hour video self-instruction compared to traditional four-hour classroom training. Resuscitation 2000;43:101–10.

[17] Starr LM. An effective CPR home learning system: a program evaluation. AAOHN J 1998;46:289–95.

[18] Boyle AJ, Wilson AM, Connelly K, McGuigan L, Wilson J, Whitbourn R. Improvement in timing and effectiveness of external cardiac compressions with a new non-invasive device: the CPR-Ezy. Resuscitation 2002;54:63–7.

[19] U.S. Census Bureau Report on Americans with Disabilities: 1994–95, P70-61, 1997 (August).

[20] Brennan RT, Braslow A, Batcheller AM, Kaye W. A reliable and valid method for evaluating cardiopulmonary resuscitation training outcomes. Resuscitation 1996;85:85–92.

[21] Birnbaum A, McBurnie MA, Powell J, et al. Modeling instructor preferences for CPR and AED competence estimation. Resuscitation 2005;64:333–9.

[22] Starr LM. Electronic voice boosts CPR responses. Occup Health Saf 1997;66:30–7.

[23] Handley AJ, Handley JA. Improving CPR performance using an audible feedback system suitable for incorporation into an automated external defibrillator. Resuscitation 2003;57:57–62.

First Committee of Referral

DATE: 4/2/07

FURTHER: State Affairs

Date of 5-Day Notice: _____
(in accordance with Uniform Rule 23)

DATE TURNED IN TO OFFICE: _____

Health, Education and Social Services Committee considered SENATE BILL NO. 151

SB 151 NEW DRIVER'S LIC. /PERMIT:CPR/ FIRST AID

"An Act relating to cardiopulmonary resuscitation and first aid classes for initial applicants for driver's licenses and instruction permits."

and recommends:

[ ] be **replaced** with [ ] **SCS** or [ ] **CS** _____ (_____)

[ ] adopt **previous** [ ] **SCS** or [ ] **CS** _____ (_____)

[ ] attached amendment(s)

[ ] adopt _____Letter of Intent

[ ] further referral to _____Committee

SENATE BILL:
[ ] Same Title
[ ] New Title
_____
HOUSE BILL:
[ ] Same Title
[ ] Technical Title Change
[ ] New Title w/ SCR #_____

NEW FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#

PREVIOUS FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#

[ ] **APPROPRIATION - no fiscal note**

SIGNATURES AND RECOMMENDATIONS:	PRINTED LAST NAME	DO PASS	DO NOT PASS	NO REC	AMEND
	Elton	✓			
				✓	
	Thomas	✓			
CHAIR: Bethyle Davis	DAVIS	X			