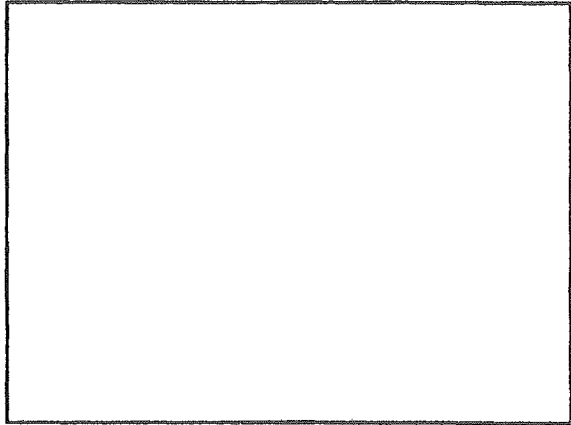


### Does Quick Shock come into play very much?

- Yes; in *most* defibrillator uses
- Published research indicates that in more than half of defibrillator uses, at least one shock is delivered after a CPR interval

Wahler R J, et al. *Circulation* 2000; 102:4-17. *Atten*  
Van Alben AP, et al. *European Heart Journal*, Volume 22: *Suppl* Sept 2001; p. 241  
Gibler BE, White PD. *Resuscitation* 1999 Jul; 41(2):133-44  
White RD, Russell JK. *Resuscitation* 2002 Oct; 55(1):17-23



Backup Slides

### The Industry's Innovation Leader

- Philips AED breakthroughs
  - Biphasic therapy
  - Effective low energy
  - Compensating for body resistance
  - AEDs on airlines
  - No pulse check required
  - Defibrillating infants & children
  - Purchase over-the-counter
  - Quick Shock

**PHILIPS**

### Philips in CPR

- CPR Measurement and Feedback for ALS professionals
- CPR Coaching for bystander-initiated CPR and the minimally-trained rescuer
- SMART CPR for trained first responders
- Quick Shock on all HeartStart AEDs

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**PHILIPS**

### Defibrillating VF Doesn't Always Restore Circulation

Likely return of circulation with a shock      Unlikely to return to circulation with shock      Asystole or "Flatline"

**Traditional AED Therapy:**      Shock then CPR      No shock advised

Time after collapse:      -4-5 min      -10 min

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**PHILIPS**

### The Opportunity: A Smarter Protocol & AEDs that Support It

- Some suggest "CPR First Always" protocol
  - But this also treats all VF the same: delay shock to do CPR
  - May be effective for rhythms typical of long-duration VF, but compromises the most promising patients (short duration VF, witnessed arrests)

1. Li L, et al. JAMA. 2003; 289: 1323-1329  
 Cobb LA, et al. JAMA. 1998; 279: 1187-1193  
 Callaway BJ, et al. Resuscitation. 2005; 56: 11-18  
 Vandenbroucke JP, et al. New England Journal of Medicine. 2002; 347: 1229-1235  
 Bryant DE, et al. Annals of the Royal College of Physicians. 2003; 35: 11-15

- What if an AED offered the opportunity to shock VF first or perform CPR first, depending on heart rhythm & circumstances?
  - Could outcomes improve?

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**PHILIPS**

### How SMART CPR Settings Treat the VF Continuum

May return to circulation with a shock      Unlikely to return to circulation with shock      Asystole or "Flatline"

**No Smart CPR (default)**      Shock first      No shock advised

**SMART CPR 1**      Shock first      No shock advised

**SMART CPR 2**      Shock first      No shock advised

**User C**      Shock first      No shock advised

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## Study Results: 7 minute VF in swine

Interruption (sec)	Resuscitated	CPR Duration (min)	Ejection Fraction (4 hours post resuscitation)
3	100% (5/5)	3.3 +/- 2.0	57 +/- 5%
10	80% (4/5)	8.2 +/- 4.2*	44 +/- 4%**
15	40% (2/5)	10.8 +/- 5.8*	48 +/- 4%**

\* p&lt;0.05,

\*\*p&lt;0.01 vs 3 sec interruption

Ye J, et al. Resuscitation 2002; 108:368-372

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## Standard on All HeartStart FR2+

- Effective with FR2+s shipped as of 12/05 (depending on language)
  - FR2+ software version 1.6
  - Features apply to warranty replacement units
  - Includes a CPR & NSA pause behavior change
- Most older devices can be upgraded for a fee

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The Seattle-King County  
Community Responder  
CPR-AED Program

*Building a Working Model for Integrated  
Community Cardiac Care*

## Table of Contents

- A. Background
  - B. Program Goals
  - C. Program Components
  - D. Community CPR-AED Coordinator
  - E. Steps for Implementation
  - F. References
- Appendices

# The Seattle-King County Community Responder CPR-AED Program

## A. Background

Cardiovascular disease is the single greatest cause of death in the United States. Every year more than 480,000 adult Americans die of a heart attack or its complications. About half of these deaths (250,000) result from sudden cardiac arrest, a complication of heart attack.<sup>1</sup>

Ventricular fibrillation, a disturbance in the electrical heart rhythm, is the most common cause of sudden cardiac arrest. Defibrillation is the only definitive treatment for ventricular fibrillation. The success of defibrillation diminishes rapidly with each passing minute, decreasing the chance of successful return of normal heart rhythm by 10% for each passing minute. Defibrillation by emergency medical technicians is recognized as the standard of care in most urban communities and increasingly so in suburban and rural communities.

Medical device engineers have developed external defibrillators that can automatically analyze the electrical heart rhythm and request a shock when appropriate. These machines are known as Automatic External Defibrillators (AEDs). Clinical studies confirm minimally trained emergency responders can successfully perform early defibrillation using AEDs.

Since the early 60's, cardiopulmonary resuscitation (CPR) performed by lay rescuers has been responsible for a significant improvement in the survival of victims of cardiac arrest. The recent development of AEDs now makes it possible for lay rescuers to administer defibrillation as well. *Linking CPR with the use of AEDs by lay rescuers creates an even greater chance to improve survival from cardiac arrest.*

A 1998 Washington State law protects lay responders in the use of AEDs. The Seattle Fire Department and King County Emergency Medical Services are committed to support their constituents in the appropriate application of this process. This document outlines a Community Responder CPR-AED Program in Seattle and King County -- a guide to improving the overall safety and effectiveness of linking CPR with the use of AEDs in the community.

The key to this program is preserving the principle of continuity of emergency medical services (EMS) patient care: *Once 911 is called, every person treated with an AED at a public site will become the responsibility of EMS personnel, the EMS system, and the system's medical directors and subsequent care providers.*

## **B. Program Goals**

The major goal of the *Seattle-King County Community Responder CPR-AED Program* is to improve survival from sudden cardiac death in Seattle-King County, Washington. This program should improve survival rates by reducing the time to defibrillation by having community responders use AEDs in either a public setting, or in the individual residence of a high risk patient.

## **C. Program Components**

The components of the *Community Responder CPR-AED Program* are:

- public and private sites willing to participate in a community responder CPR-AED program;
- community clinicians caring for high risk patients;
- community CPR-AED training programs (including American Heart Association, American Red Cross, National Safety Council, and any existing state-approved courses)
- AED manufacturers;
- an EMS-affiliated medical authorization process consistent with state regulations on the use of defibrillators;
- community 9-1-1 dispatch centers;
- local EMS services including EMT-level responders, paramedics, and police (when responding);
- compliance with enabling legislation RCW 70.54.310 (Appendix B).

## **D. Community CPR-AED Coordinator**

A key part of this program is maintaining communication between the site and the *Community CPR-AED Coordinator*, who will serve as an information source and non-emergency link with the EMS system. Barbara Welles is the designated Community CPR-AED Coordinator. Barbara works for King County EMS and can be reached at 206-205-5582.

## **E. Steps for Implementation**

Flow chart – see Appendix A

### **1. Site expresses initial interest in a CPR-AED Program.**

- Advertising, public media, personal word-of-mouth, as well as active corporate marketing has generated numerous inquiries to EMS services regarding the questions “Where do I get an AED?”, “Where do I get training?” and/or “How and where do I use an AED?”

- The *Community Responder CPR-AED Program* informational brochure will be available upon request from local hospitals, fire departments, Medic One, King County EMS and AED manufacturers.
- 2. *Site expresses definite interest in program implementation.***
- This document will be provided to the Community Responder Site as an implementation packet upon request.
  - The site is notified that Barbara Welles, Community CPR-AED Coordinator, can provide the following:
    - A) A list of state-approved AED Courses and numbers to contact the facilities who provide these courses and the instructors who teach them;
    - B) A list of community responder site coordinators;
    - C) A list of resources for post-event psychological intervention and support;
    - D) A list of numbers to call manufacturers for costs involved in the upkeep and maintenance of the AED;
    - E) Purchase Order Authorization (examples from manufacturers and physicians);
    - F) Annual Site Review Report (a phone call followed by a form post card to be filled out by the site and returned to King County EMS);
  - The Community CPR-AED Coordinator will make brief follow-up contact to determine what further information, if any, is needed.
- 3. *Site completes the following tasks:***
- Call Barbara Welles, Community CPR-AED Coordinator, at 206-205-5582.
  - Select a site coordinator and arrange a date for a site visit. This role may be assumed by the local EMS agency.
  - Select a Washington State approved course and trainer and complete training.
  - Review site expectations list with site coordinator;
  - Arrange for transfer of event data;
  - Complete and sign the *Community Responder Site Documentation* form (Appendix D) and mail to King County EMS. Information from this form will be maintained in a database by King County EMS.
- 4. *Site Recognition***
- Medical Director issues protocol;
  - King County EMS notifies appropriate dispatch center, BLS and ALS Provider of the location of AED, brand (if available), special circumstances, etc. This information is added to premise information of dispatcher address printout (E-911 Office may need to do this).
  - King County EMS maintains database.



**5. Community Responder Site support.**

- Barbara Welles, Community CPR-AED Coordinator, will be available to answer questions at 206-205-5582.
- A phone call will be made and a site status post card will be mailed to the site annually from King County EMS.

**6. Post-event Documentation**

Post-event steps (to be completed by the site and Community CPR-AED Coordinator):

- ◆ Determine a plan for reporting a clinical use (King County EMS will handle this with a 24-hour answering machine);
- ◆ Determine a plan for sending the event documentation module of the AED (or transmitting the information via internet connections) to King County EMS;
- ◆ Restore AED to service using the manufacturer's directions (must occur after clinical use by trained site personnel). Contact the manufacturer if any problems are identified;
- ◆ Determine a mechanism to evaluate the event;
- ◆ Provide post-event psychological support to any rescuers, family members or co-workers. These resources will be available upon request from King County EMS.

**F. References**

- 1., Heartsaver AED for the Lay Rescuer and First Responder, Aufderheide, T. MD, Stapleton, E., Hazinski, M.F. , American Heart Association 1998.

## **List of Appendices**

**Appendix A – Flow Chart for CPR-AED Program**

**Appendix B – RCW 70.54.310**

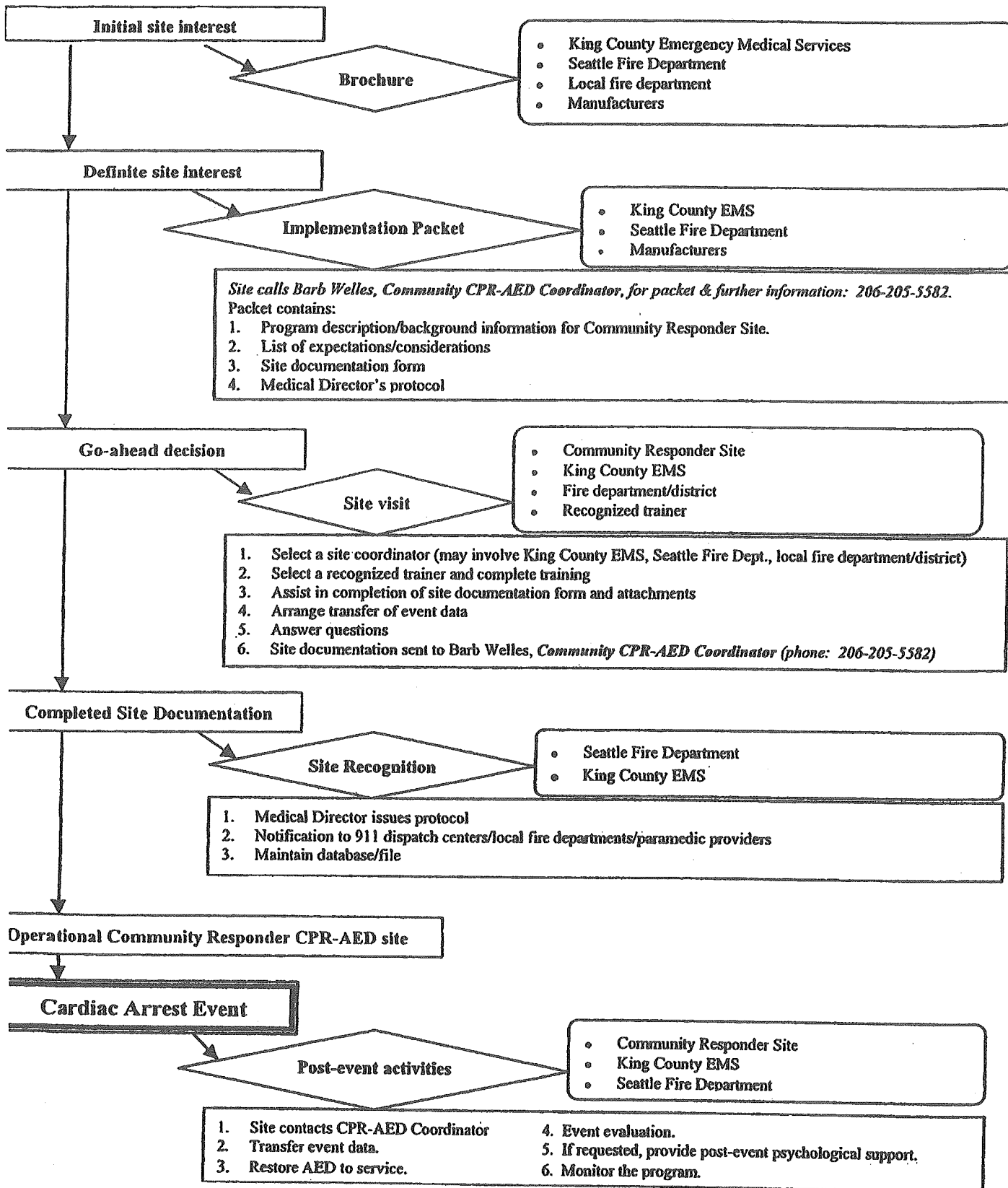
**Appendix C – List of expectations for the Community Responder Site**

**Appendix D – Community Responder Site Documentation forms**

**Appendix E – Medically authorized protocols for use of the AED**

# Appendix A: Flowchart to a successful Community Responder CPR-AED Program

Estimated one month's time to complete



## **Community Responder CPR-AED Program**

### **Appendix B**

#### **RCW 70.54.310**

**RCW 70.54.310 Semiautomatic external defibrillator--Duty of acquirer--Immunity from civil liability.**

- (1) As used in this section, "defibrillator" means a semiautomatic external defibrillator as prescribed by a physician licensed under chapter 18.71 RCW or an osteopath licensed under chapter 18.57 RCW.**
- (2) A person or entity who acquires a defibrillator shall ensure that:**
  - (a) Expected defibrillator users receive reasonable instruction in defibrillator use and cardiopulmonary resuscitation by a course approved by the department of health;**
  - (b) The defibrillator is maintained and tested by the acquirer according to the manufacturer's operational guidelines;**
  - (c) Upon acquiring a defibrillator, medical direction is enlisted by the acquirer from a licensed physician in the use of the defibrillator and cardiopulmonary resuscitation;**
  - (d) The person or entity who acquires a defibrillator shall notify the local emergency medical services organization about the existence and the location of the defibrillator; and**
  - (e) The defibrillator user shall call 911 or its local equivalent as soon as possible after the emergency use of the defibrillator and shall assure that appropriate follow-up data is made available as requested by emergency medical service or other health care providers.**
- (3) A person who uses a defibrillator at the scene of an emergency and all other persons and entities providing services under this section are immune from civil liability for any personal injury that results from any act or omission in the use of the defibrillator in an emergency setting.**
- (4) The immunity from civil liability does not apply if the acts or omissions amount to gross negligence or willful or wanton misconduct.**
- (5) The requirements of subsection (2) of this section shall not apply to any individual using a defibrillator in an emergency setting if that individual is acting as a good samaritan under RCW 4.24.300. [1998 c 150 § 1.]**

## **Community Responder CPR-AED Program**

### **Appendix C**

#### **Community Responder Site Expectations**

This list includes site expectations based on RCW 70.54.310.

- obtain CPR-AED training for an appropriate numbers of employees so as to assure a high probability that a trained responder will be on site during the major hours of operation
- keep a roster of trained employees, dates of training and renewal training
- provide renewal training at intervals of at least every 2 years
- provide training for new employees to replace those responders who may move on
- set up a device inspection and maintenance program consistent with the manufacturers guidelines
- contact Barbara Welles, Community CPR-AED Coordinator, at 206-205-5582, whenever the AED is opened and applied to a person, regardless of whether a shock was delivered or the victim was in cardiac arrest
- agree to telephone interviews with the Community CPR-AED Coordinator, whenever an event occurs
- agree to provide the event documentation module/tape/PC card to the Community CPR-AED Coordinator whenever there is a clinical use of the AED
- agree to a post-event, face-to-face debriefing session with the Community CPR-AED Coordinator
- notify the Community CPR-AED Coordinator if any substantive changes occur in the program parameters

# Appendix D

## King County CPR-AED Community Responder Program

### Site Documentation Form

Company Name: \_\_\_\_\_

Site/Location: \_\_\_\_\_

Site Address: \_\_\_\_\_

*Street Address*

*City*

*State*

*Zip*

Type of Business: \_\_\_\_\_

Work Hrs. (Reg/Shift Hrs) \_\_\_\_\_

Number of :  
Employees at the Site each day \_\_\_\_\_

Visitors at the Site each day \_\_\_\_\_

Site Coordinator: \_\_\_\_\_

Phone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

Email: \_\_\_\_\_

Type of AED \_\_\_\_\_ Number of AED's \_\_\_\_\_

Location of AED: \_\_\_\_\_

Date AED put into operation: \_\_\_\_\_

Training Program: \_\_\_\_\_

Name of Instructor: \_\_\_\_\_

Number of People Initially Trained: \_\_\_\_\_

Date Training Completed: \_\_\_\_\_ Renewal Date: \_\_\_\_\_

Medical Director: \_\_\_\_\_ Local Fire Dept: \_\_\_\_\_

Site Visit done by: \_\_\_\_\_  
*Name*

\_\_\_\_\_ *Agency*

Site Visit Date: \_\_\_\_\_

Attach the following documentation:

Appendix D, continued

1. Copy of Medical Directive to manufacturer for AED purchase
2. Medical Director's AED protocol
3. Maintenance and testing policy and procedures
4. Training/retraining policy

**Disclaimer Statement:** The agencies, employees or assigns of King County, the City of Seattle and Public Health - Seattle and King County hold no responsibility individually or collectively for the activities performed pursuant to this document, in relation to the public use of automated external defibrillators in King County, or resulting from the Community Responder CPR-AED Program in King County.

Medical direction is extended to the Community Responder Site based on documentation supplied by the site that requirements established in RCW 70.54.310 have been met.

"I/We hereby affirm and declare that the information provided herein is true and correct, and I/We will:

1. Assure that state-approved training for the Community Responder CPR-AED Program will be completed prior to installation of AED unit(s)
2. Will follow protocol related to the use, ownership, maintenance and other aspects of public use of automated external defibrillators as described in this document and via the abovementioned CPR-AED training.
3. Will provide event data to Seattle Fire Department or King County Emergency Medical Services via the mechanism provided through the Community Responder CPR-AED Program.
4. Have read and understand and am/are in compliance with RCW 70.54.310 and will remain in compliance with that statute.
5. Agree to maintain knowledge of and implement this program consistent with the current standard of care during the life of this program.

Executed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ at \_\_\_\_\_, WA  
(month) (year) (city when signing)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

### Personnel Trained for CPR-AED

Last name	First name	Level of medical training	CPR/AED training	Date

---

Instructor (Please Print Legibly)

---

Signature

---

Date

---

Instructor Agency



# Community Responder CPR-AED Program

## Appendix E

### Medically Approved Protocols for use of the AED



### Heartsaver AED Course

#### Critical Actions

- Assess responsiveness.
- Call 911; get the AED.
- Open the airway.
- Provide 2 breaths (must cause the chest to rise).
- Check the pulse.
- Begin chest compressions (must have proper hand placement).
- POWER ON the AED.
- Attach pads to patient's bare chest in proper location.
- Clear victim before analysis and shock (avoid contact with victim).
- Check breathing and pulse after "no shock indicated" message.
- Time from start to first shock is less than 90 seconds (start = AED at left ear).

**Disclaimer Statement:** The above protocols are approved for use in Washington State by the state Department of Health, and may be approved for use in Seattle-King County by Mickey Eisenberg, M.D. Dr. Eisenberg may extend his medical direction, including his approval of the use of the above protocols, to the Community Responder Site, pending receipt of documentation supplied by the site demonstrating that requirements established in RCW 70.54.310 have been met, and pending notification from Barbara Welles, Community CPR-AED Coordinator, that the site is operating within the guidelines of the Seattle-King County Community Responder CPR-AED Program.

**Public Health - Seattle King County  
AED/CPR Community Responder Program**

**2005 - 3rd Quarter Report**

*Overall number of Automated External Defibrillators (AED) placed in:*

<i>Program:</i>	<i>Number of Sites:</i>	<i>Number of AEDs</i>
<i>City of Seattle</i>	212	510
<i>King County</i>	415	853
<b>Totals</b>	<b>627</b>	<b>1363</b>

***Various Locations:***

***Number of AED places per category***

<b>Private</b>	213
<i>Includes Private Citizens &amp; Participates of the Family Heart Savers' Program</i>	
<b>Government</b>	181
<i>Includes Police/Sheriff's Dept., Fire Depts., Detention Facilities, Transit, Public Health Ctrs &amp; Various offices</i>	
<b>Airport</b>	164
<b>Athletic Facilities</b>	12
<b>Business</b>	544
<b>Golf/Country Club</b>	37
<b>Marine/Aquatic</b>	41
<b>Medical Facility</b>	15
<b>Retail/Grocer</b>	21
<b>School</b>	120
<b>Senior Center/Retirement</b>	15

# J-PULSE 海外発信

## 4. AHA2005 演題抄録・発表資料

# scientific sessions 2005

[scientificsessions.org](http://scientificsessions.org)



## Resuscitation Science Symposium Final Program and Abstract Book

November 11–12, 2005  
The Fairmont Dallas  
Dallas, Texas

Resuscitation Science Symposium