

# Use of Automated External Defibrillators (AED's) in Office Buildings

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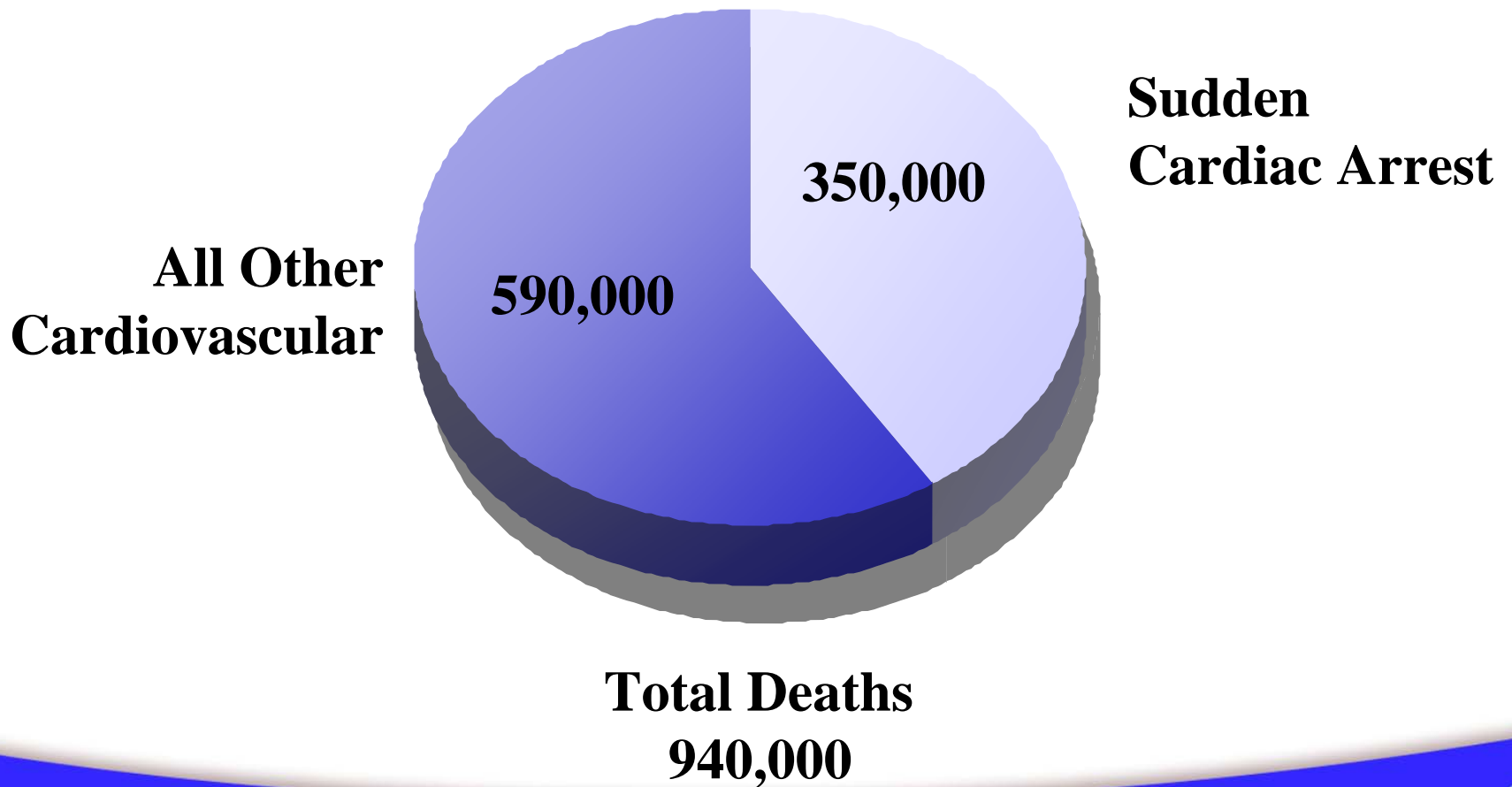
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# SUDDEN CARDIAC ARREST (SCA)

- SCA kills more than 1000 people every day in the U.S. alone.
- In America, over 350,000 people die from SCA every year. (That's more people than house fires, AIDS, firearms, prostate and breast cancer **combined**).
- In 1999 and 2000, 13% (815 out of 6,339) of workplace fatalities reported to OSHA were a result of SCA.

# What are the odds of having a SCA?

## Annual Deaths from Cardiovascular Disease-U.S.



# WHAT IS SUDDEN CARDIAC ARREST?

- SCA occurs when the heart's lower chambers (ventricles) suddenly develop a rapid, irregular rhythm (ventricular fibrillation).
- The quivering ventricles cannot pump blood to the body.
- **SCA IS NOT A HEART ATTACK !** (although a heart attack can lead to SCA).

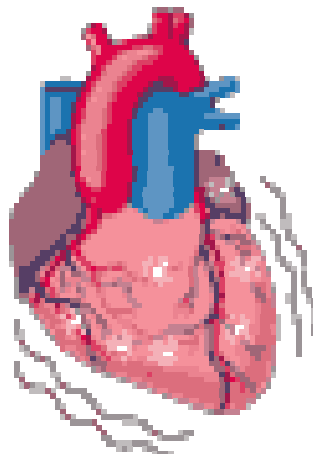
# HEART ATTACK vs. SCA?

- In a heart attack, one or more of the arteries delivering blood to the heart becomes blocked.
- Oxygen in the blood cannot reach the heart muscle and the heart muscle is damaged.
- Heart attacks often produce symptoms; chest pain, tightness in neck and arms.
- SCA strikes with no symptoms. Risk factors include; previous SCA or heart attack & family history.
- You can think of SCA as an “*electrical malfunction*” and a heart attack as a “*plumbing malfunction*”.



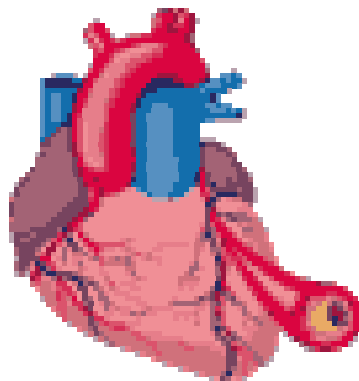
# SCA vs. HEART ATTACK, cont...

## SCA



- Caused by abnormal rhythm.
- Rarely a warning, victim collapses suddenly.
- Always loses consciousness; unresponsive.
- 90-95% will die unless a defibrillation shock is delivered within 10 minutes of collapse.

## HEART ATTACK



- Caused by blockage in an artery.
- Symptoms may include nausea, vomiting and sweating, and pain in chest, arm, or upper abdomen.
- Usually conscious and alert.
- With proper treatment, many people survive.

# RAPID RESPONSE IS THE KEY

CPR alone is not enough.

- American Heart Association “Chain of Survival”
  - Early Access to 911
  - Early CPR
  - Early Defibrillation (AED)
  - Early Advanced Care
- Defibrillation by a trained individual within 3-5 minutes can increase the survival rate to over 50%.



# WHAT IS AN AED? (AUTOMATED EXTERNAL DEFIBRILLATOR)



- AED's are used in the event of Sudden Cardiac Arrest (SCA).
- AED's can detect an abnormal heart rhythm and deliver an electrical charge (called defibrillation) to shock the heart back to normal rhythm.
- There are literally dozens of manufacturer's and hundreds of different AED models available in the marketplace.



# HOW DO AED's WORK?

- AED's are designed so that you cannot inadvertently administer a shock.
- AED's monitor a persons vital signs and will not administer a shock unless it detects ventricular fibrillation.
- Most AED's are fully automatic. There are no buttons to push, the unit will deliver a shock automatically.



# Should AEDs be placed at your work site?

**If you answer “yes” to one or more of the questions below, it may be worthwhile to do the analysis to see if an AED program is right for you.**

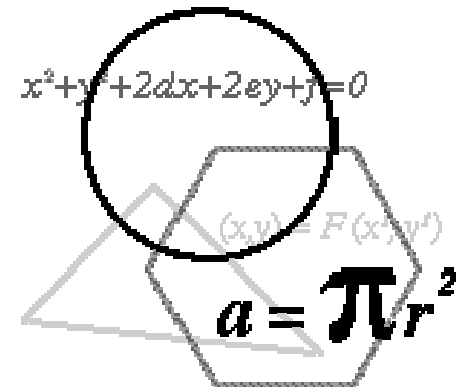
1. Is it unlikely that your EMS system would be able to reliably achieve a “call-to-shock” interval of five minutes or less at your work location?
2. Has an SCA incident occurred at your facility in the past five years and have the demographics of the population served by a given location remained relatively constant?
3. Does this site have a large concentration of persons over 50 years of age?
4. Is there a high probability of SCA at this site? (see formula on next slide).

# HOW DO YOU DETERMINE WHERE AED'S SHOULD BE PLACED?

## Formula for Calculating SCA Probability

1. Take the number of individuals at a particular location and multiply this number by the percentage of people WHO ARE age 50 and over.
2. Multiply this number by the average number of employee hours spent at that location each day.
3. Multiply the result by 250
4. If the exposure hours exceed 1.4 million, then your facility is a candidate for a PAD program.

(No. of employees) (Percentage  $\geq$  50 years of age)  
(Avg. hours onsite) (250) = Exposure Hours.



Reference: The National Center for Early Defibrillation:

<http://www.early-defib.org/>

# WHERE SHOULD AED'S BE PLACED?

- Installed to ensure a “Drop to Shock” response within 3-5 minutes.
- Areas where many people work together.
- Areas where electric-powered devices are used.
- Near confined spaces.
- Outdoor worksites where lightening may occur.
- Health units where workers may seek treatment for heart attacks.
- Fitness centers and cafeterias.

Source: OSHA

# PERSONAL ACCESS DEFIBRILLATION (PAD) PROGRAM

- Public access to defibrillation is the term used for an initiative that makes AED's available to the general public by placing them in public and private locations where large numbers of people gather.
- A PAD program encompasses all of the components that are necessary to install AED's and train people to use them.

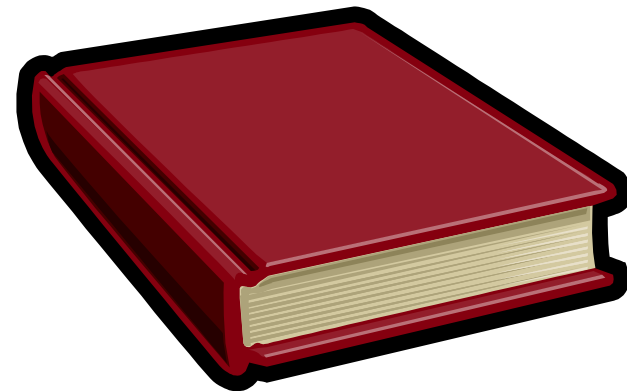
# PERSONAL ACCESS DEFIBRILLATION (PAD) PROGRAM

## Element of a PAD Program:

- Incorporate use of AED's into a well designed emergency response plan.
- Medical direction by a qualified physician.
- A written AED program for each location.
- Training consistent with federal, state, and local requirements.
- Coordination with local emergency medical services.
- Ancillary medical equipment and supplies.
- Proper number and placement of AED's
- Inspection program/quality assurance program
- Program evaluation/audit.

# PERSONAL ACCESS DEFIBRILLATION (PAD) PROGRAM

- The written PAD program at each location should include:
  - Building program administrator's name;
  - Location of AED's;
  - Names and floors of trained individuals;
  - Building AED notification procedure.





# QWEST PAD PROGRAM

- Qwest has a 3 year contract with Medtronic's.
- The contract includes:
  - Placement recommendations.
  - Equipment:
    - AED's, cabinets, responder kit containing one way CPR mask, nitrile gloves, razor, towel, and scissors.
  - Training:
    - 5 "Educredits" per AED.
    - Training is a 4 hour adult/infant CPR and AED instructor-led course.



# QWEST PAD PROGRAM

- A prescription for each AED device
- All required state notifications
- Post Use Procedures:
  - Data Download and Analysis
  - Data Forwarding
- Overseeing Physician
- State EMS (as required)
- Hospital Treating Physician
- Insurance Company Notification (as required)

# THE “AED” CHALLENGE

- AED Challenge is a web-based training program that all trained “AED Responders” must complete every six months.
- The AED Challenge takes only 10-15 minutes to complete.
- The intent of AED Challenge is to keep trained personnel alert and ready to respond.



# LEGAL ISSUES

- LifeLinkMD must be contacted anytime an AED is brought to a patient and the electrodes are attached regardless of whether or not a shock is delivered, or whenever a patient loses consciousness.
- During use, the AED records information that is regulated under the guidelines of the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
- Most states have enacted “Good Samaritan” laws that provide some degree of immunity to lay individuals who assist people in times of distress. Because these laws vary from state to state, PAD program managers should be aware of the laws that apply to their location.

# CONCLUSION

## COST BENEFIT ANALYSIS

- The average cost of an AED = \$1,500-\$3,500.
- Time it takes to train employees = 4 hours.
- Average cost of a fatality = \$ 1.1 million dollars
- Saving a Life = ??????

# OTHER COMPANIES

- Companies that have implemented PAD programs at their facilities:
  - Lockheed Martin
  - Lucent Technologies
  - Agilent
  - Level 3 Communications
  - IBM
  - Raytheon
- General Mills
- Excel Energy
- The National Renewable Energy Laboratory
- Michelin North American
- Raytheon