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Surviving Sudden Cardiac Arrest in the Workplace

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ROBB S. REHBERG, PhD, ATC, NREMT

Subject Matter Expert
First Aid and
Emergency Preparedness

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Keeping people safe for over 100 years

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OSHA Compliant Training Solutions

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Surviving SCA in the Workplace

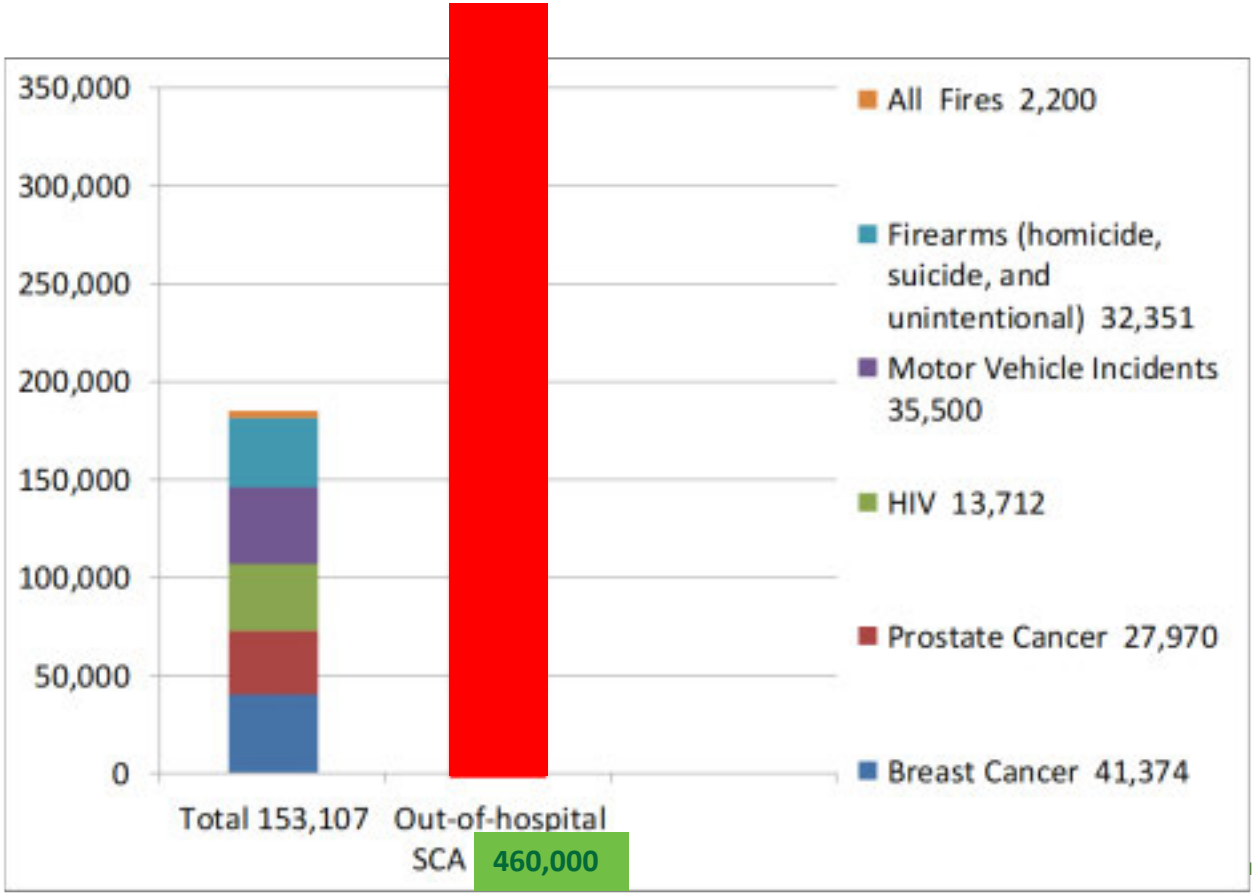
Objectives:

- Discuss the need for CPR and early defibrillation
- Explain the OSHA requirements for providing first aid in the workplace
- State what to do for heart attack and sudden cardiac arrest
- Explain how AEDs work
- Discuss CPR interface with AED deployment
- State the importance of AED access and location
- Planning for SCA in the Workplace

The Need for CPR and AED Training

- Every year in the U.S., more than 400,000-460,000 people suffer sudden cardiac arrest (SCA)
- Survival rate with CPR alone ≤ 8%
- About 90% of people who experience an out-of-hospital cardiac arrest die
- Survival rate **doubles** with CPR and AEDs
- In some venues, survival rate is as high as 57%

How SCA Compares With Other Causes of Death



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The Need for CPR and AED Training

- There are about 10,000 cardiac arrests in workplaces in the U.S. each year.
- Half of all U.S. workers cannot locate an AED at work

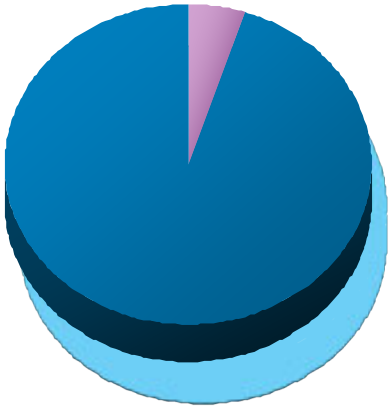
The Stakes

893 people per day
(one every 2 minutes)

84% out-of-hospital

≥25% without prior symptoms

≥90% die without *very early* treatment



< 8%
survive

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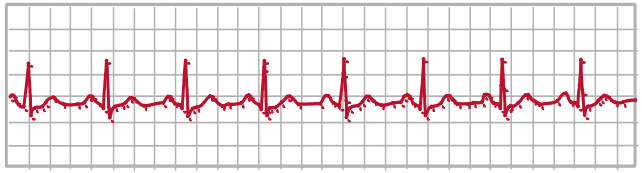
How a Healthy Heart Functions

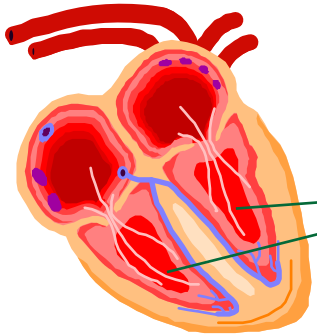
A Series of Events

An electrical event…



stimulates a mechanical event…

…resulting in coordinated heart pumping, and regular pulse



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Heart Attack vs. SCA

Heart Attack

- Reduced blood flow or blockage in coronary arteries
  - Usually a result of atherosclerosis

SCA

- An electrical problem in the heart itself

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Signs and Symptoms: Heart Attack vs. SCA

Heart Attack

- Responsive
- Breathing
- Signs and symptoms include:
  - Chest pain
  - Radiating pain
  - Difficulty breathing
  - Sweating/clammy
  - Jaw pain
  - Indigestion
  - Nausea

SCA

- Unresponsive
- Not breathing or not breathing normally
- Often no antecedent signs and symptoms
- No pulse

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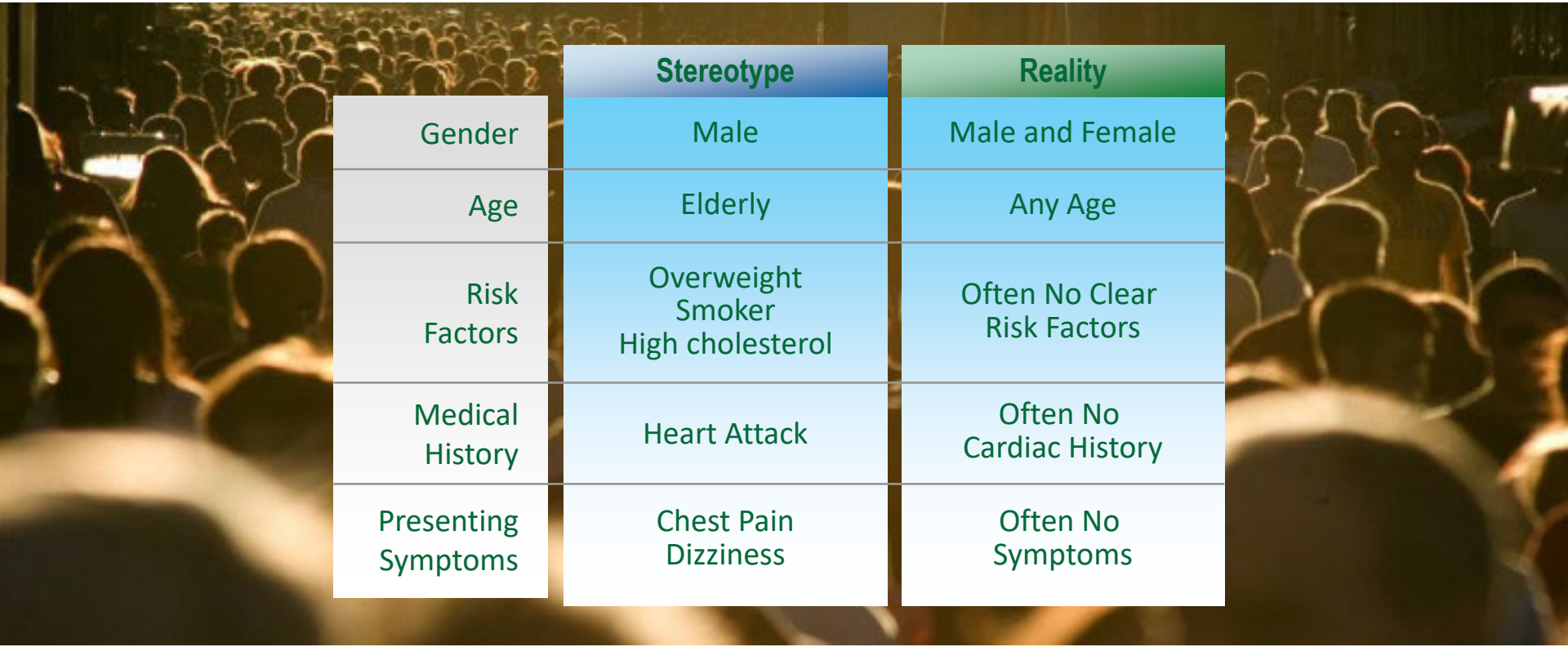
Who Will Have A Sudden Cardiac Arrest?



	Stereotype	Reality
Gender	Male	Male and Female
Age	Elderly	Any Age
Risk Factors	Overweight Smoker High cholesterol	Often No Clear Risk Factors
Medical History	Heart Attack	Often No Cardiac History
Presenting Symptoms	Chest Pain Dizziness	Often No Symptoms

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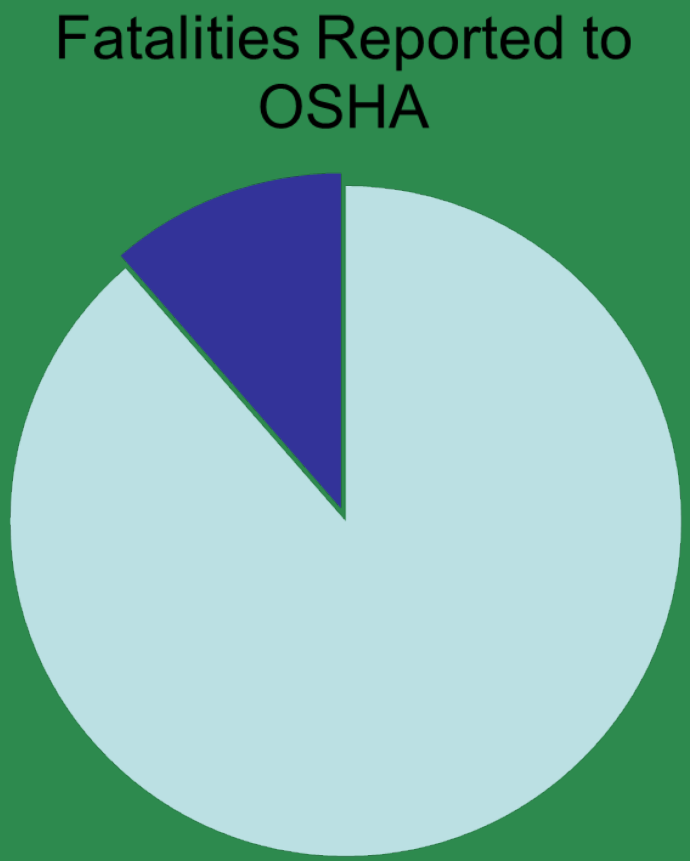
OSHA Weighs in on AEDs

- 13% workplace fatalities reported to OSHA are caused by SCA
- “Jobs with shift work, high stress, exposure to certain chemicals and electrical hazards increase the risk of heart disease and cardiac arrest”
- **“Employers should consider the use of AED’s at their work sites to reduce the time to defibrillation with the goal of improving survival.”**
- Technical Information Bulletin 12-17-2001



First Aid Regulations Draw From Three OSHA Sources

Occupational Safety and Health Administration

- Medical Services and First Aid Regulations
  (29 CFR 1910.151)

- Standard Interpretations

- Occupational specific regulations with First Aid requirements

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OSHA First Aid Regulations: Focus on Employer Responsibility

Occupational Safety and Health Administration
Medical Services and First Aid Regulations
29 CFR 1910.151

1910.151(a)
The employer shall ensure the ready availability of medical personnel for advice and consultation on matters of plant health.

1910.151(b)
In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. Adequate first aid supplies shall be readily available.

Standard interpretations: "7/24/95 – No exclusions"
There are no exemptions from 1910.151 due to a company's size. Many hazardous jobs are performed by smaller firms, and their employees are entitled to equal first aid protection. All industries are required to comply with 1910.151 regardless of the type of work performed by employees.

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First Aid Training Considerations

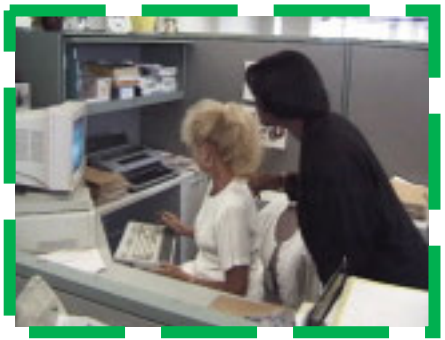
1. What is the possibility and severity of injury for the occupation?

2. How close is the job to emergency care?

"Risk of serious injury" treatment requires **immediate care**

"Risk of serious accidents" treatment requires care within **4 minutes**

- Falls
- Suffocations
- Amputations
- Electrocutions



"More remote possibility of serious injury" treatment requires care within **15 minutes**

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OSHA Defines Response Times

Federal Standard 29 CFR 1910.151b

Standard interpretations: "11/19/1992 – Response time and "in near proximity" requirements"

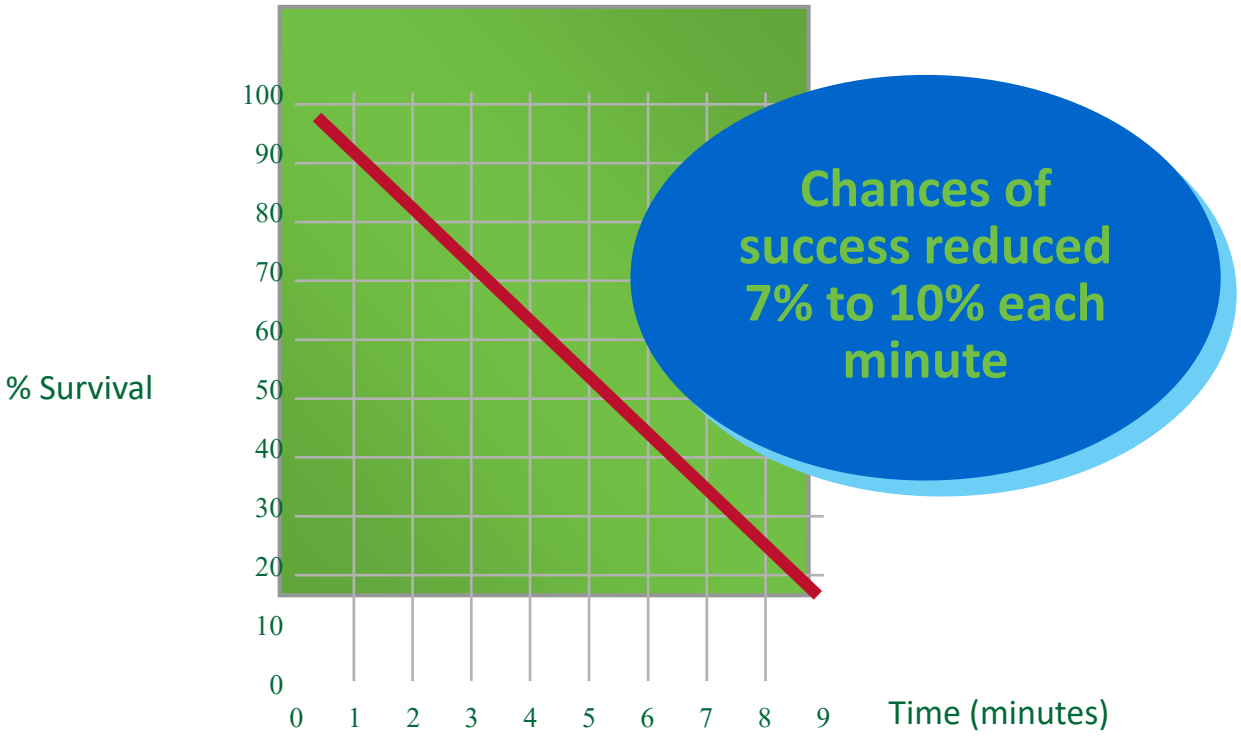
- "In areas where accidents resulting in suffocation, severe bleeding, or other life threatening injury or illness can reasonably be expected, **a 3 to 4 minute response time, from time of injury to time of administering first aid, is required.** In other circumstances, i.e., where a life-threatening injury is an unlikely outcome of an accident**, a 15 minute response time is acceptable."**

Standard interpretations: "3/23/2007 – Clarification of "in near proximity" requirements"

- "…. in workplaces where serious accidents such as those **involving falls, suffocation, electrocution, or amputation** are possible, emergency medical services must be available within 3-4 minutes, if there is no employee on the site who is trained to render first aid. OSHA recognizes that a somewhat longer response time of up to 15 minutes may be reasonable in workplaces, such as offices, where the possibility of such serious work-related injuries is more remote. "

Don’t Assume Your Worksite is Within a Few Minutes of Care

The Case for *Early* Defibrillation



Cummins RO, et al. Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (ECC), *Circulation (Suppl)* 2001;102:8, August 22

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Best Case Scenario, 911

Identify emergency/ Activate emergency response plan	30	seconds
911 call	1	minute
Alert ambulance and rescue squads (dispatch)	30	seconds
Responders to their units	30	seconds
Travel time to location	5	minutes*
Unload equipment/ Distance to patient	2	minutes
Assess patient/ Apply defibrillator/ Deliver shock	1.1	minutes**

TOTAL 10.6 minutes

*Travel time varies depending on weather, traffic, distance (vertical and horizontal), and ambulance (with defibrillator capability) availability.

**Cummins RO, et.al. Automatic external defibrillators used by emergency medical technicians: a controlled clinical trial. JAMA. 1987; 257:1605-10

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Chain of Survival for Adults

- Early Recognition and Access to Emergency Medical Services (Call 9-1-1)
- Early Bystander CPR
- Early Defibrillation (Get/Use an AED)
- Early Advanced Care
- Post Cardiac Arrest Care (Appropriate Hospital)

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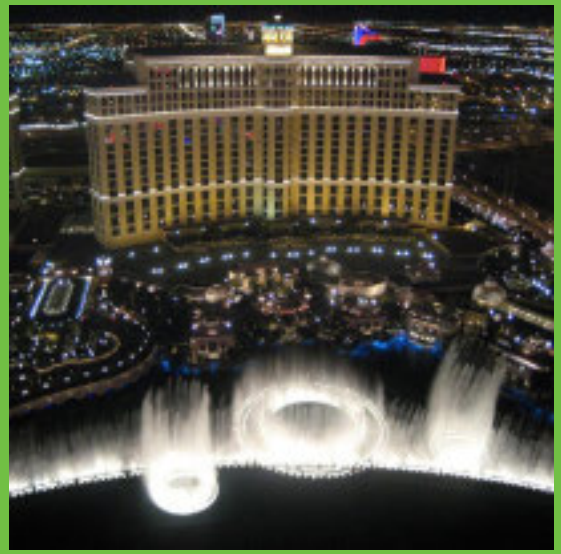
Las Vegas Casino Study

Best outcome when AED is deployed within three minutes



How Do AEDs Work?

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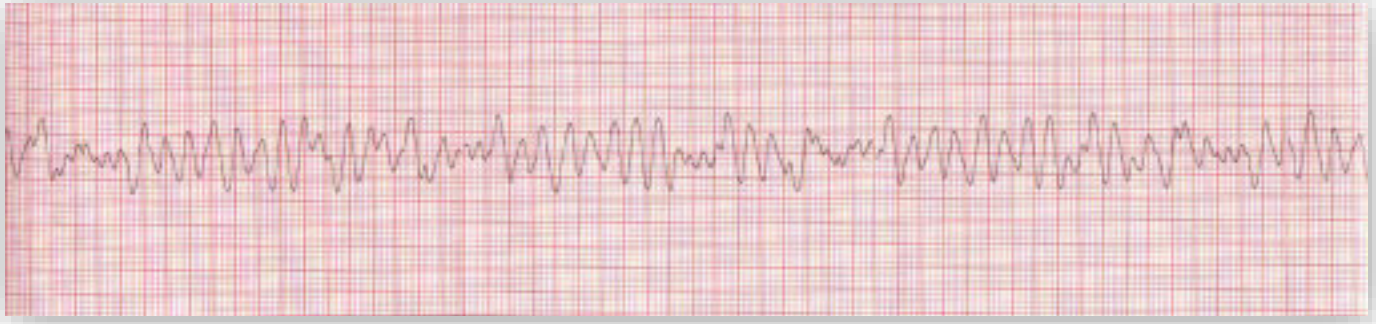
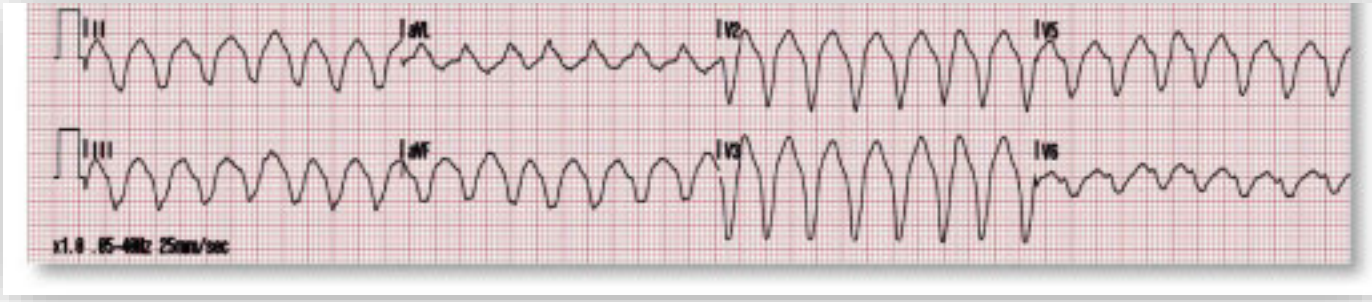
Basic Elements

- Electrode “Pads”
- Self contained battery
- Voice prompt instructions
- Data recorder
- Capacitor to deliver shock
- Shock button

Determines a“Shockable” Heart Rhythm



Ventricular Fibrillation (VF)



Ventricular Tachycardia (VT)

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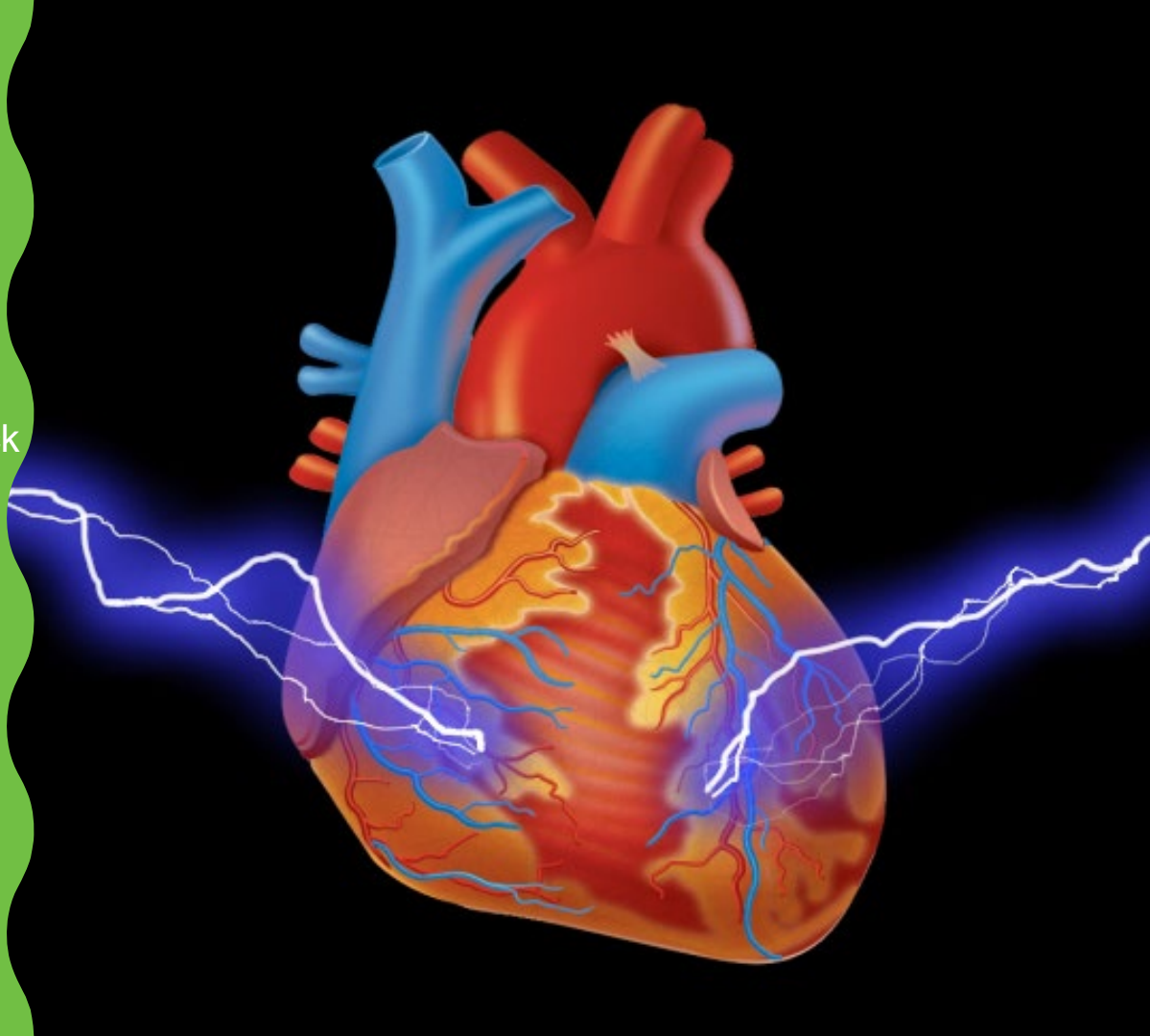
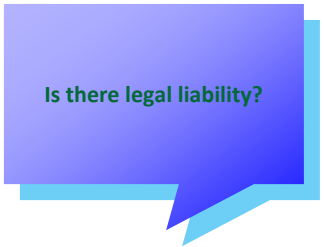
Safety Issues

- No record of rescuer death
- Responder has full control over shock
- Do not touch victim during shock
- Conductive surfaces



The Risks



- Cannot make things worse
- AEDs are designed to shock only when needed
- Product indemnification policy
- Good Samaritan laws, Cardiac Arrest Survival Act, standard of care
- There are greater risks for ***not*** having an AED on-site

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Placement and Number of AEDs

"Drop to shock" interval of ≤ 5 minutes

Physically walk the distance

No magic AED to employee ratio

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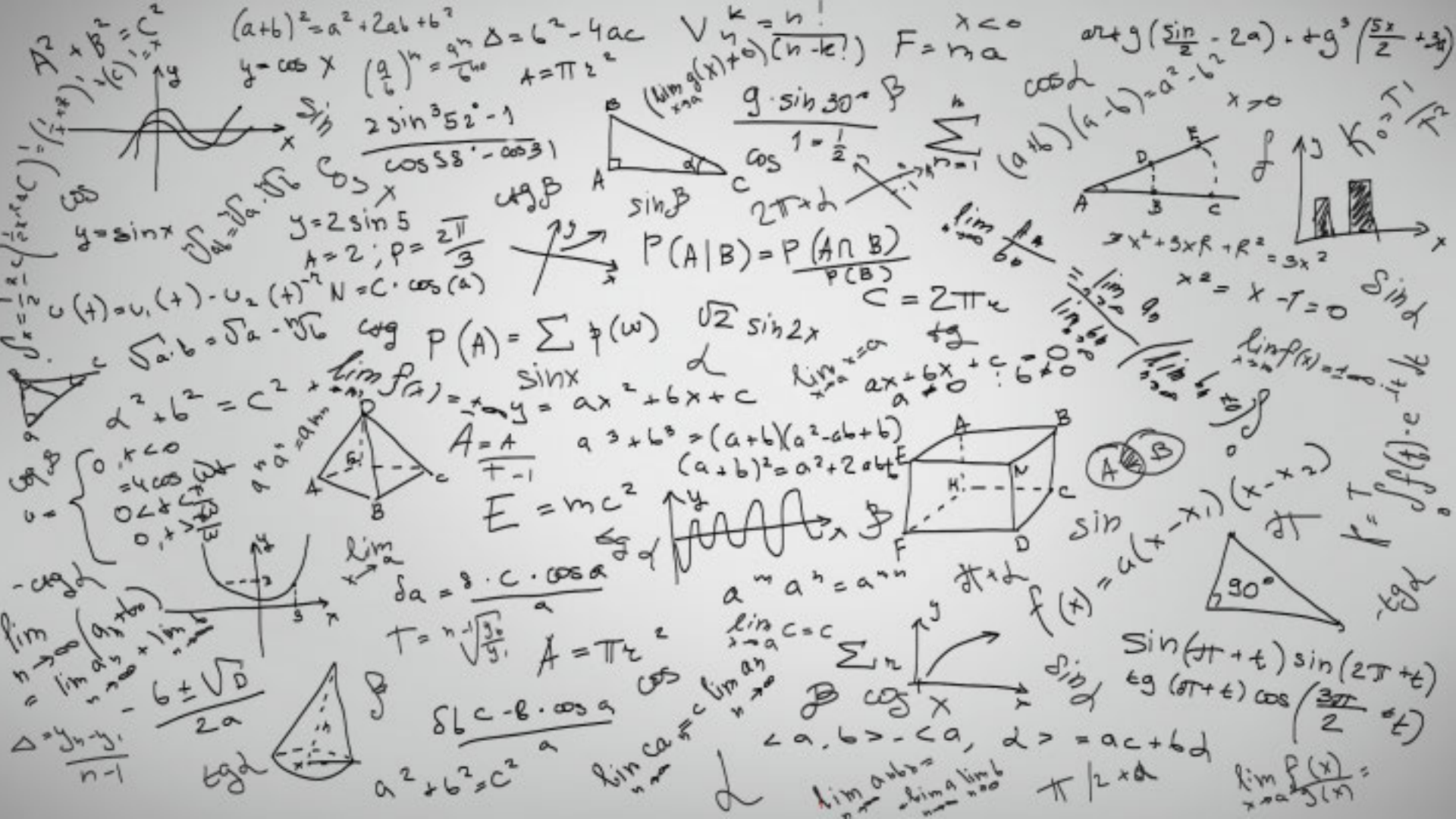
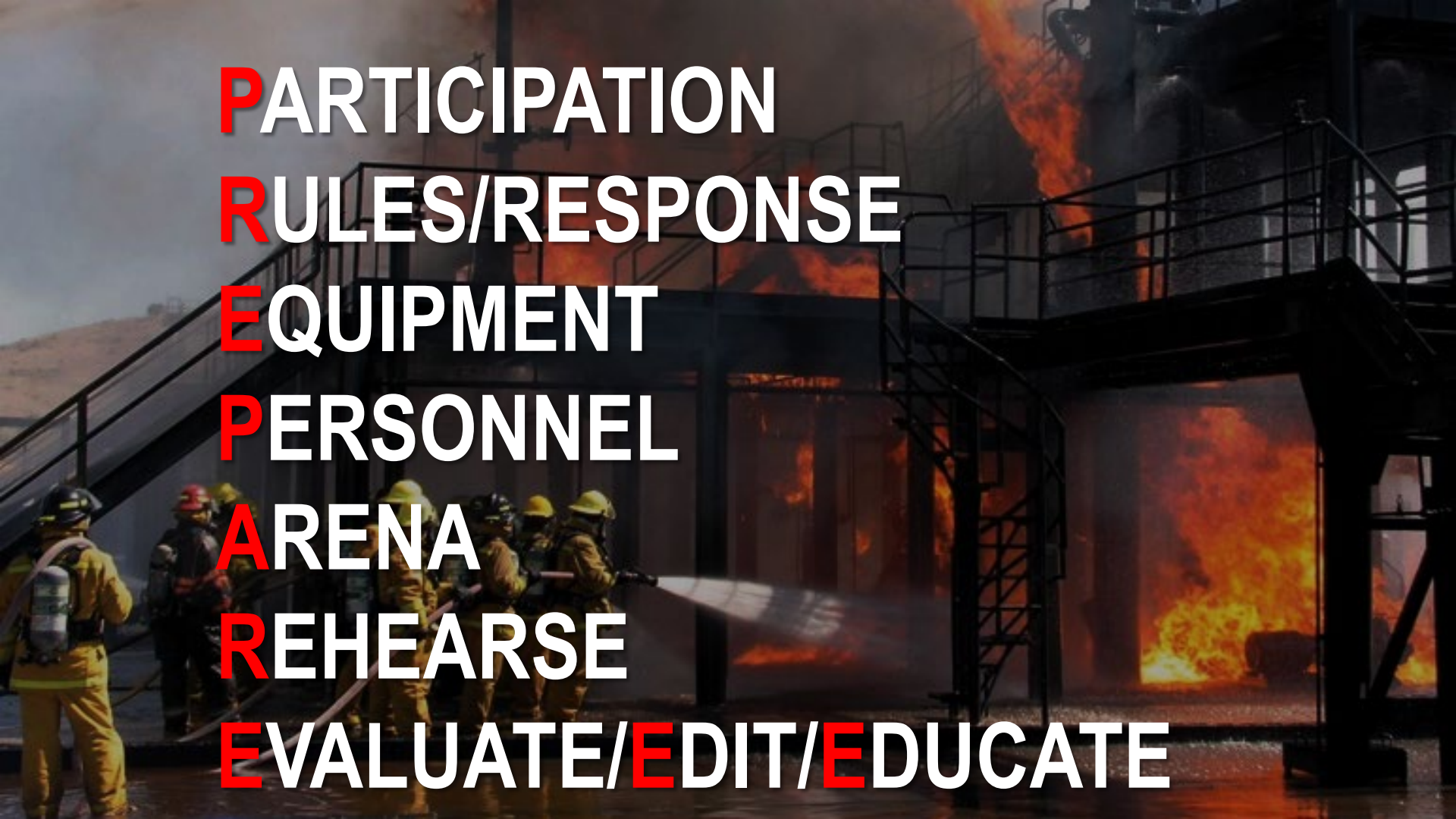
What can you do to prepare?



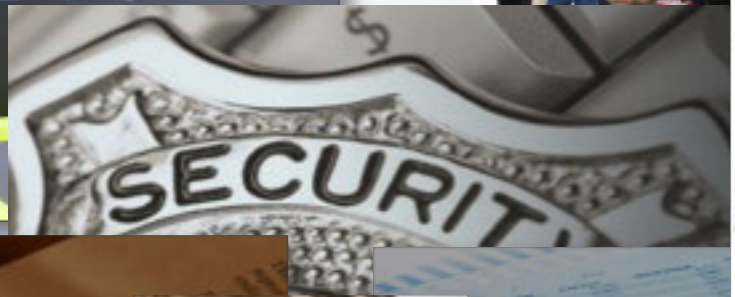
PREPARE


PARTICIPATION
RULES/RESPONSE
EQUIPMENT
PERSONNEL
ARENA
REHEARSE
EVALUATE/EDIT/EDUCATE

PREPARE

PREPARE

EMPLOYEES



Local law enforcement, fire, EMS

RULES and RESPONSE

PREPARE

RULES

- Emergency Response Plan
- Comprehensive
- Venue (Arena) Specific
- Reviewed at least annually

PREPARE

RULES

- Conduct a risk assessment
- Plan should:
  - Identify objectives and goals
  - Define the role of emergency response team members in an emergency
  - Identify any regulations covered by the plan (i.e. OSHA, fire code, etc.)

PREPARE

FIRST AID
WHITE CROSS
COTTON

Curity
ABSORBENT COTTON U.S.P.
BAUER & BLACK
Red Cross
1 INCH
10 YARDS
Bandage
Curity ADHESIVE TAPE
BAUER & BLACK

PERSONNEL

PREPARE

PERSONNEL: Creating an Emergency Response Team

- Who is on the team?
- Recruiting
- Organization
- Initial and ongoing training
- Incentivizing participation
- Interface with responding agencies

PREPARE

PREPARE

Know your facility!

- Is your facility prepared for a medical emergency?
- Emergency equipment location
- Routes of Ingress/egress
- Access control
- Maps and floor plans

REHEARSE

PREPARE

- **Drills**: A drill is a coordinated, supervised activity usually employed to test a single, specific operation or function within a single entity.

PREPARE

EVALUATE
EDIT
EDUCATE

After Action Report

Sample After Action Format

DATE: (Date prepared/submitted)

SUBJECT: After Action Report – (Event Title)

FROM: (Person Preparing report)
TO: (Primary Person in Chain of Command)
CC: (Courtesy Copy to interested individuals)

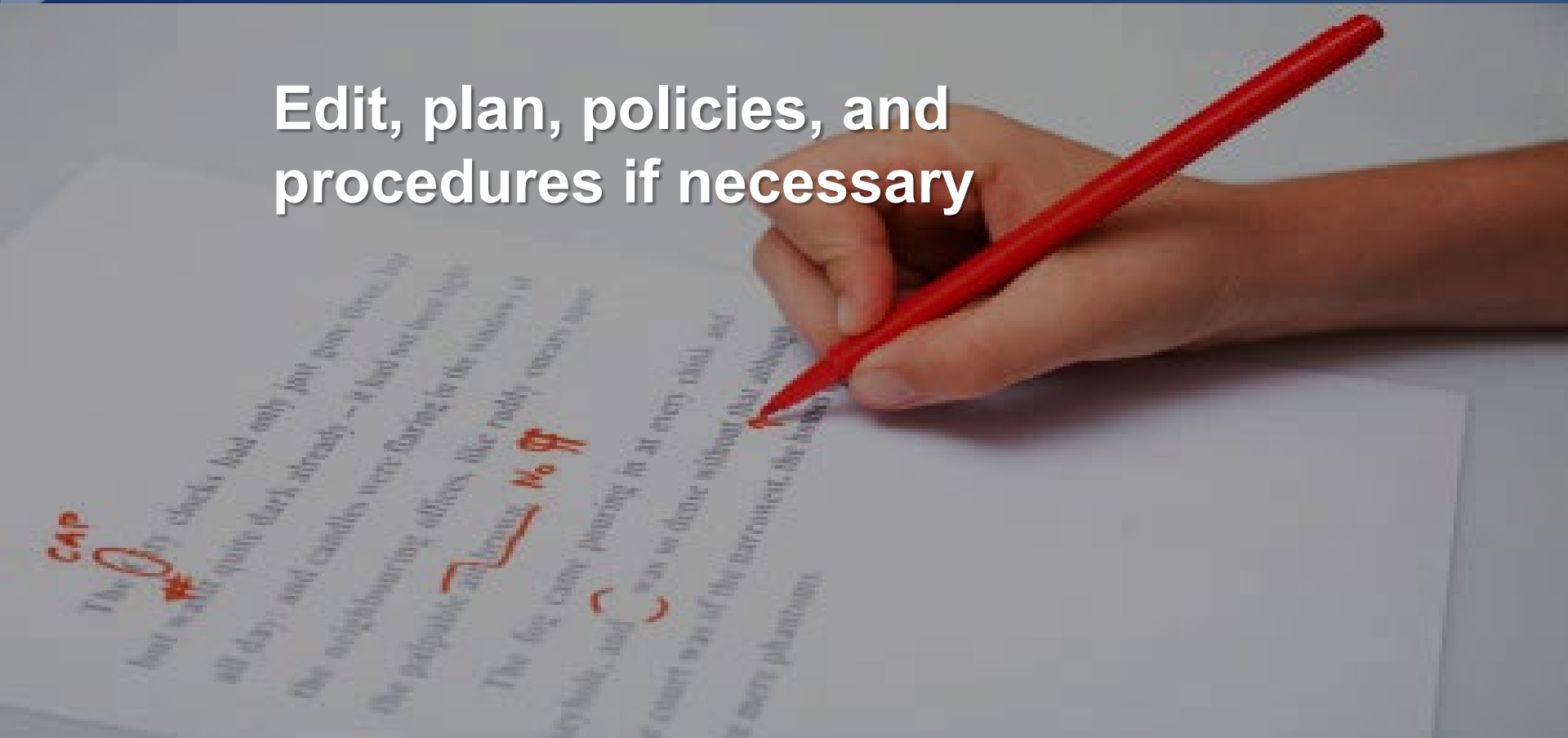
1. PURPOSE:
   Establish the facts.
   What was the mission description?
   What did we set out to do?
   What were the key tasks involved?
   Define acceptable standards for success.

2. EXECUTIVE SUMMARY
   Continue to establish the facts.
   What actually happened?
   Relevant times and dates
   Cause and effect, Why did it happen? Focus on the What not the Who.

3. LESSONS LEARNED
   What can we do better next time?
   Focus on items you can fix and try to suggest solutions to identified problems
   If you don't have a solution that's OK but you should try to provide some
   Identify successes to maintain those strengths

4. COMMENTS
   This includes good and bad performance, questionable actions. It can also include suggested changes in policy or really anything that the submitter wants the chain-of-command to know about. However, touchy or dangerous subjects such as potential disciplinary items are usually handled personally and not in a report like this that has general distribution.

PREPARE



Edit, plan, policies, and procedures if necessary

PREPARE

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How NSC Can Help?

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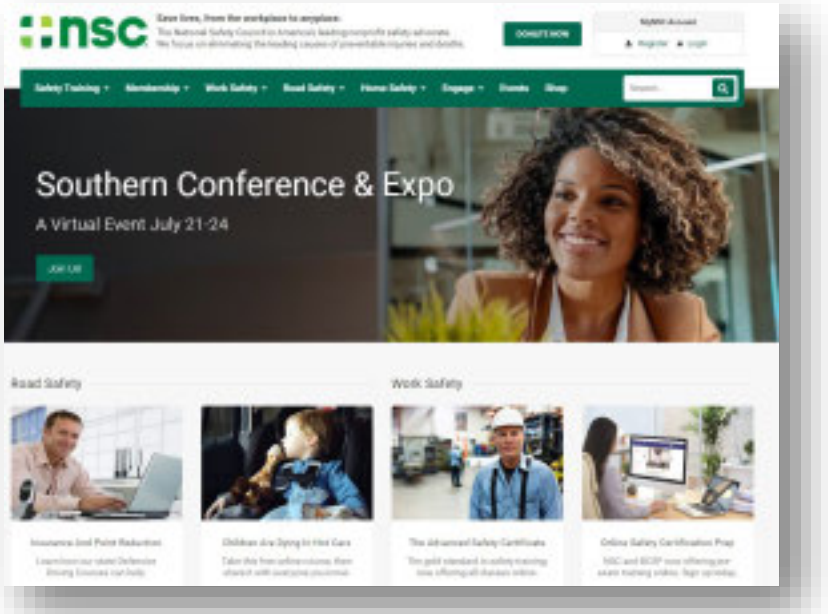
NSC Resources

Visit www.nsc.org for a wide range of resources on this and other topics.



NSC Offers World-Class First Aid, CPR and AED Courses

- First Aid, CPR & AED
- First Aid, CPR & AED Online
- First Aid
- CPR & AED
- Pediatric First Aid, CPR & AED
- Advanced First Aid, CPR & AED
- Basic Life Support for Health Care & Professional Rescuers
- Medical Emergency Response
- Bloodborne and Airborne Pathogens
- Bloodborne and Airborne Pathogens Online
- Emergency Preparedness
- Emergency Preparedness Online

On-Site Medical Emergency Response Preparedness Assessments

- NSC experts conduct an on-site facility evaluation
- A written report is generated with recommendations on implementation of:
- Medical Emergency Response Plans
- Deployment of First Aid Supplies/Equipment and AEDs
- Medical Emergency Response Teams

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NSC Offers Four Training Options for First Aid, CPR & AED

CLASSROOM TRAINING

BECOME AN NSC FIRST AID INSTRUCTOR

ONLINE EDUCATION

BLENDED LEARNING

Thank You!
Have more questions?

Contact me at: Robb.Rehberg@nsc.org

Or your NSC representative

800-621-7615

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