

Emergency Incident Rehabilitation

Working together
saving our own

Presented by:
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www.mitigationjournal.org



Why Rehab?

More than a document or
requirement

U.S. Fire Administration

Emergency Incident Rehabilitation

February 2008



FEMA



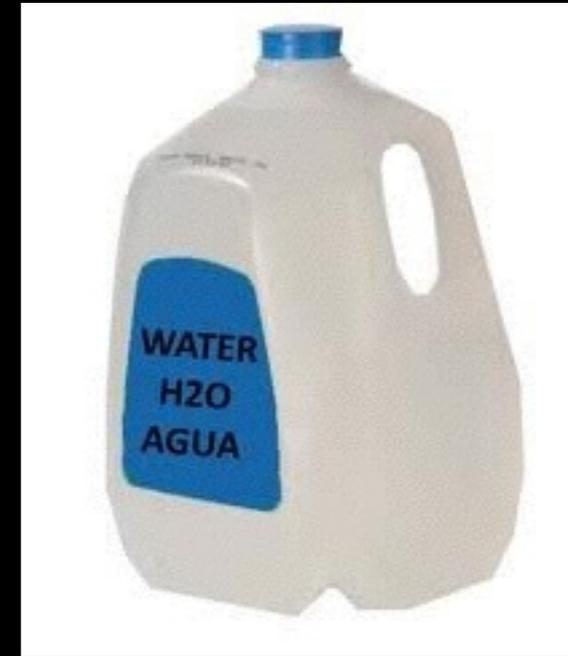
Rehab Defined

“...The formal term applied to caring for emergency responders during incident and training activities...”

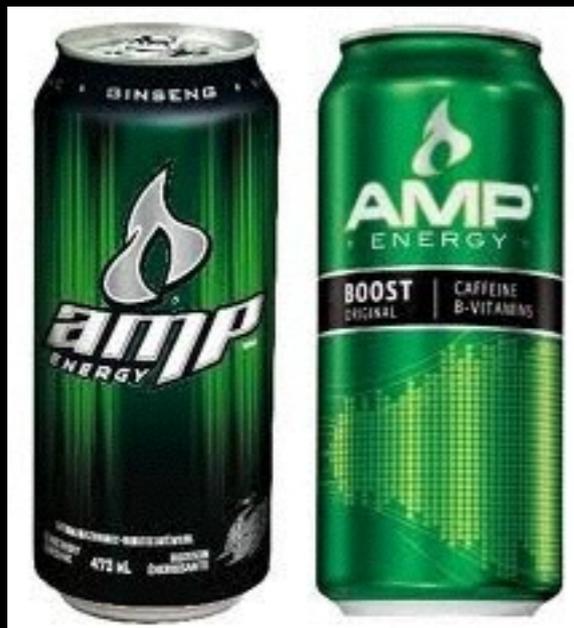
Before you
ReHab
You have to
PRE-Hab

“All day PREhabilitation”

Off duty habits = On duty performance



Fluid Choices for PRE-Hab

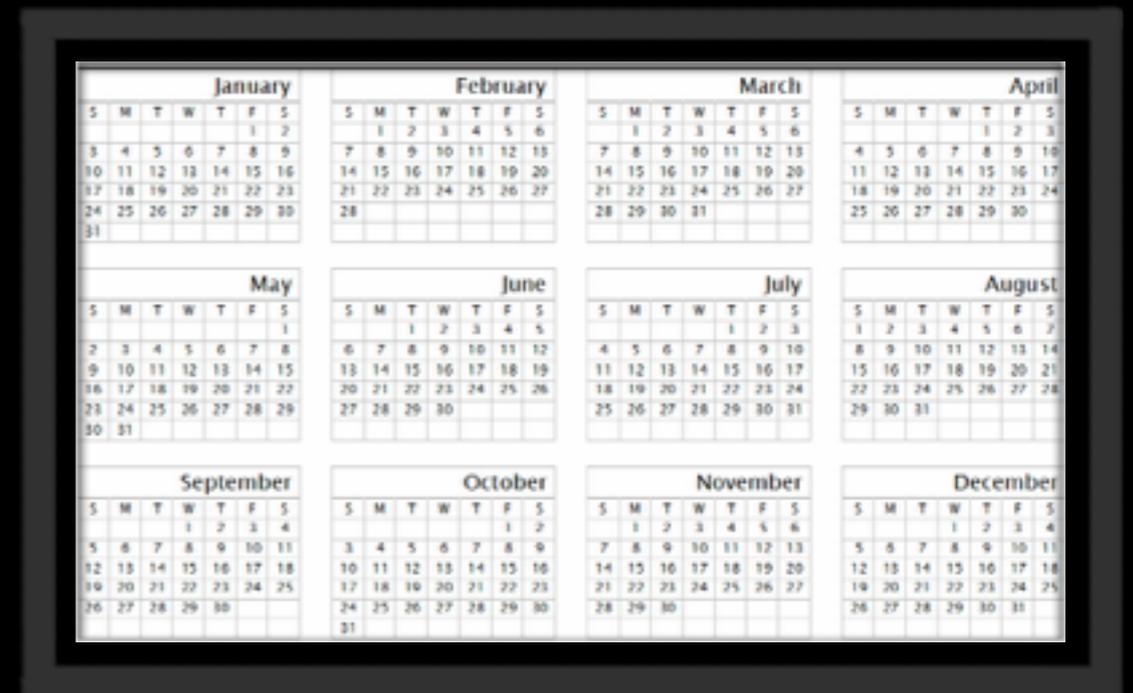


Factors in PRE-Hab

- Existing health of responder
- Environmental situation
- Health and Safety Officer
- Organizational Barriers
- Personnel/Personal Barriers
- Logistical/Operational Barriers

A Sector for all seasons...

- Provide Rest
- Provide Rehydration
- Provide Nourishment
- Provide Medical Evaluation
- At Extended or Extreme Operations



The Goal...

“...Get responders back into action or back to the station in a safe and healthy condition...”

Failure...

“...to provide or participate in rehabilitation functions jeopardizes life safety, incident stabilization and property conservation...”

Firefighter Deaths

- USFA 1990 - 2000
- Cardiac Event is leading cause of death
- 44% of all firefighter deaths
- 57% of all NYS firefighter deaths

Source: United States Fire Administration

“Stress/Overexertion”

- Cardiac Events/Strokes/Thermal
- 62 LODD Stress/Overexertion
- 55 cardiac events
- 6 strokes
- 1 thermal (heat)

Source: Unites States Fire Administration



2012 Fire LODD



- 83 Fatalities/34 states
- Pennsylvania/North Carolina highest (9)
- New York (6)...two murdered

Source: FEMA/USFA Firefighter Fatalities in the United States 2012

2012 Fire LODD



- 41 LODD from cardiovascular events
- *49% heart attacks and strokes*
- 18 LODD vehicle collisions (4x increase)
- 12 LODD after on-duty activity

Source: FEMA/USFA Firefighter Fatalities in the United States 2012

Training...

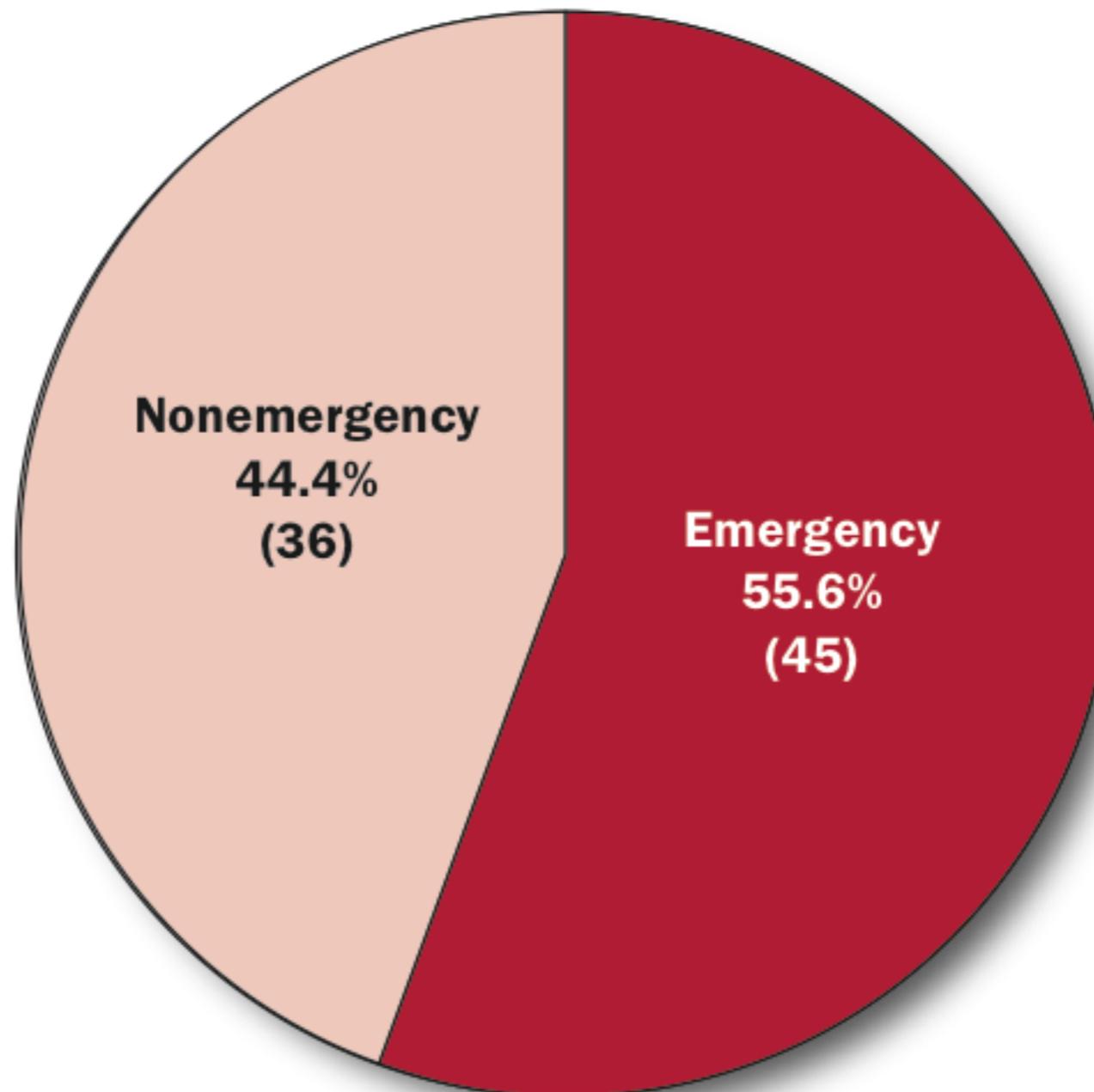
Table 9. Firefighter Fatalities While Engaged in Training.

Year	Number of Firefighter Deaths
2012	8
2011	8
2010	12
2009	10
2008	12
2007	11
2006	9
2005	14
2004	13
2003	12

Source: FEMA/USFA Firefighter Fatalities in the United States 2012

Type of Duty...

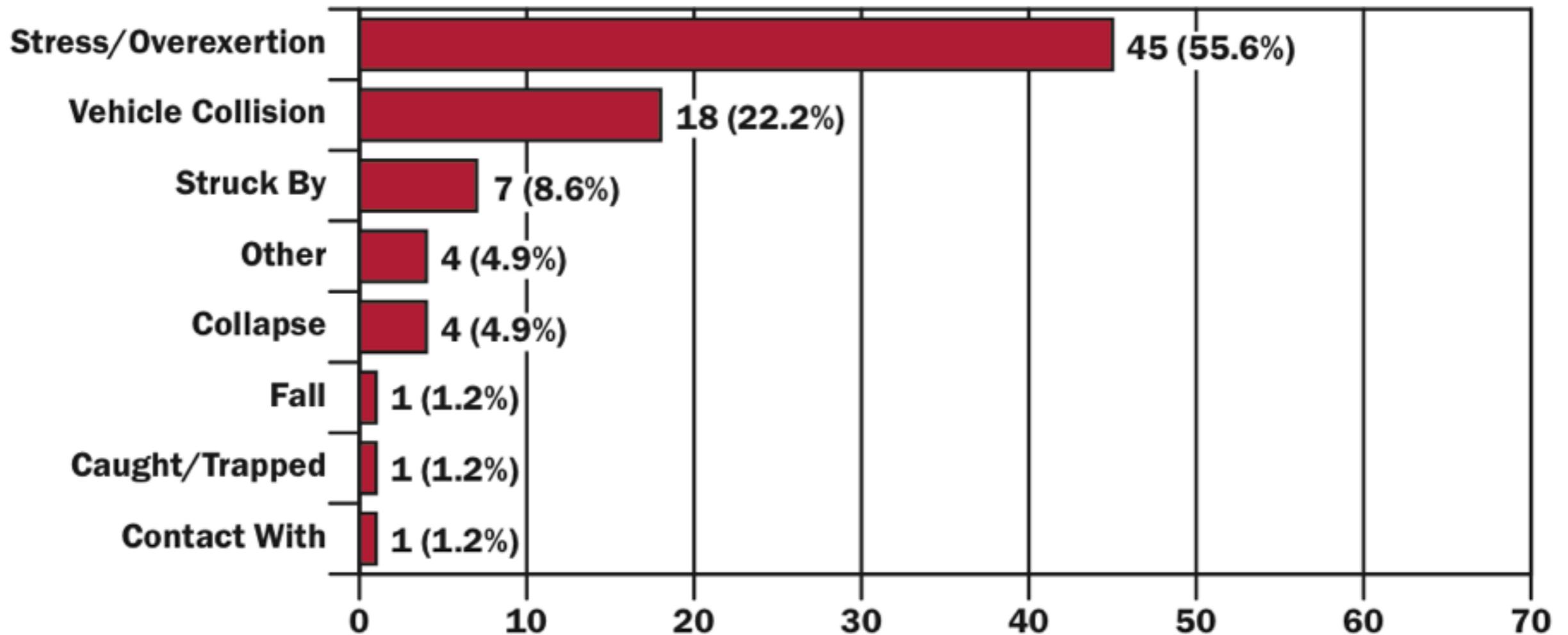
Figure 5. Firefighter Deaths by Type of Duty (2012).



Source: FEMA/USFA Firefighter Fatalities in the United States 2012

Stress/Overexertion

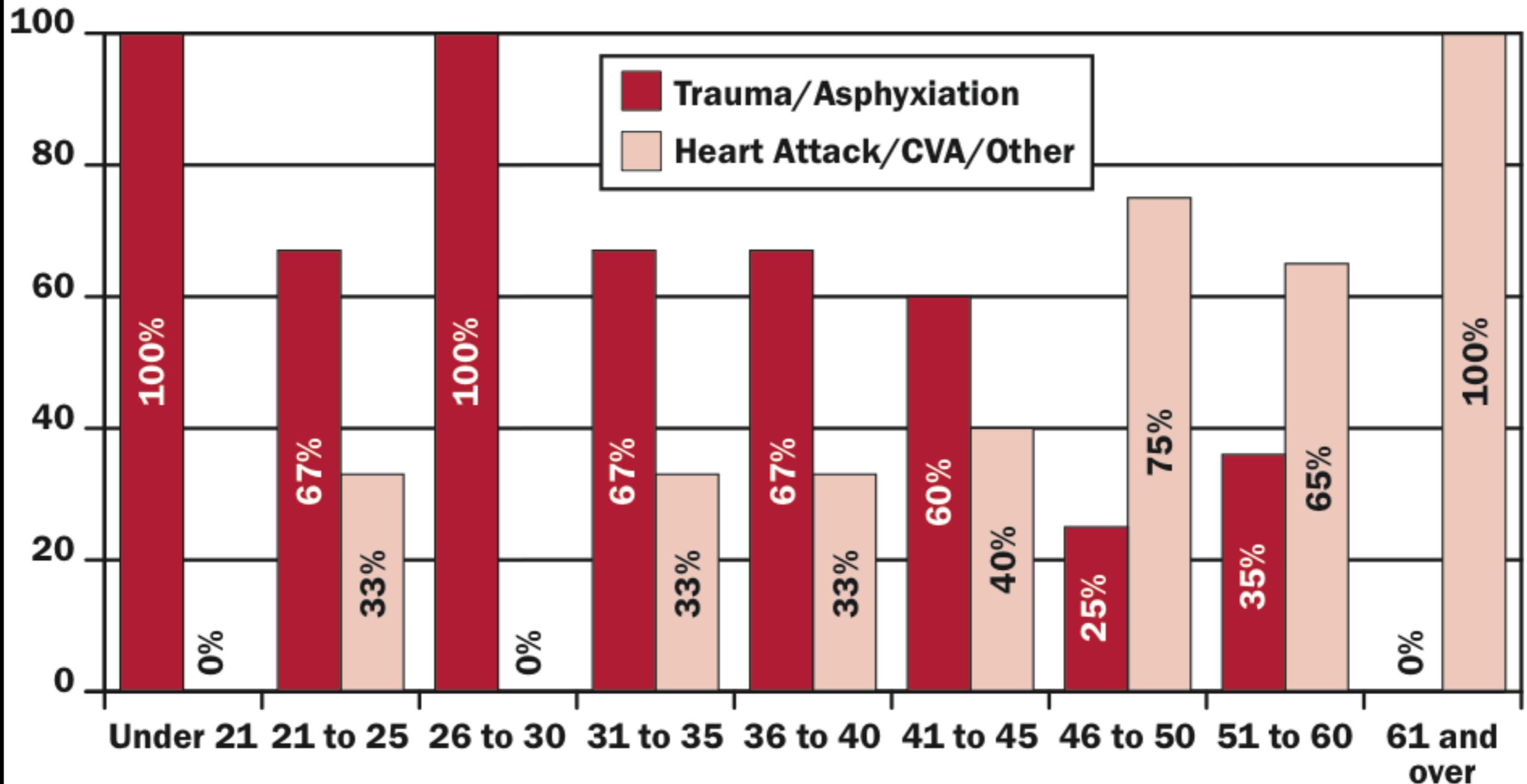
Figure 7. Fatalities by Cause of Fatal Injury (2012).



Source: FEMA/USFA Firefighter Fatalities in the United States 2012

LODD by Age...

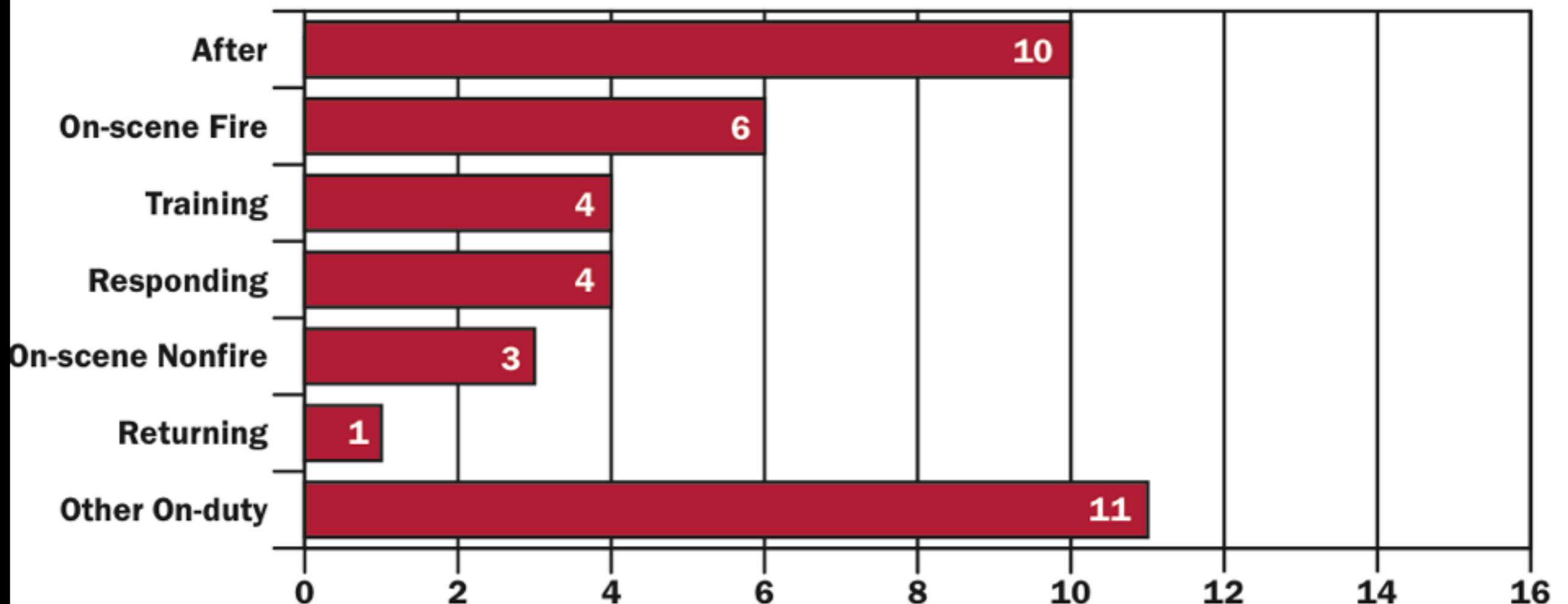
Figure 11. Fatalities by Age and Nature (2012).



Source: FEMA/USFA Firefighter Fatalities in the United States 2012

Heart Attack...

Figure 10. Heart Attacks by Type of Duty (2012).



Source: FEMA/USFA Firefighter Fatalities in the United States 2012

Not All Fatal...

In 2005 there were 765 firefighters that suffered nonfatal cardiac events

These events are career and life changing

One death due to heart attack every 8 days

Environmental

- Heat stress
- Cold stress
- Physiological and Psychological component



Benefits of Rehab

- Protect responders health and safety
- Maximal force multiplier
- Help protect agency
- ...its the right thing to do...

Rehab Functions

- Revitalization - Rest, Rehydrate, Nutrition
- Medical evaluation and treatment
- Transportation for those who require it
- Reassignment

Who is in Charge here?

Establishing Functional Rehabilitation

Establish Rehab

- Extended fires / Hazardous materials events
- Prolonged rescue or recoveries
- Adverse weather conditions
- When IAP indicates

Assessment

- Pulse > 110
- Respirations > 20
- Systolic BP > 160
- Diastolic BP > 100
- SpO₂ $< 96\%$
- Co-Oximetry $> 5\%$

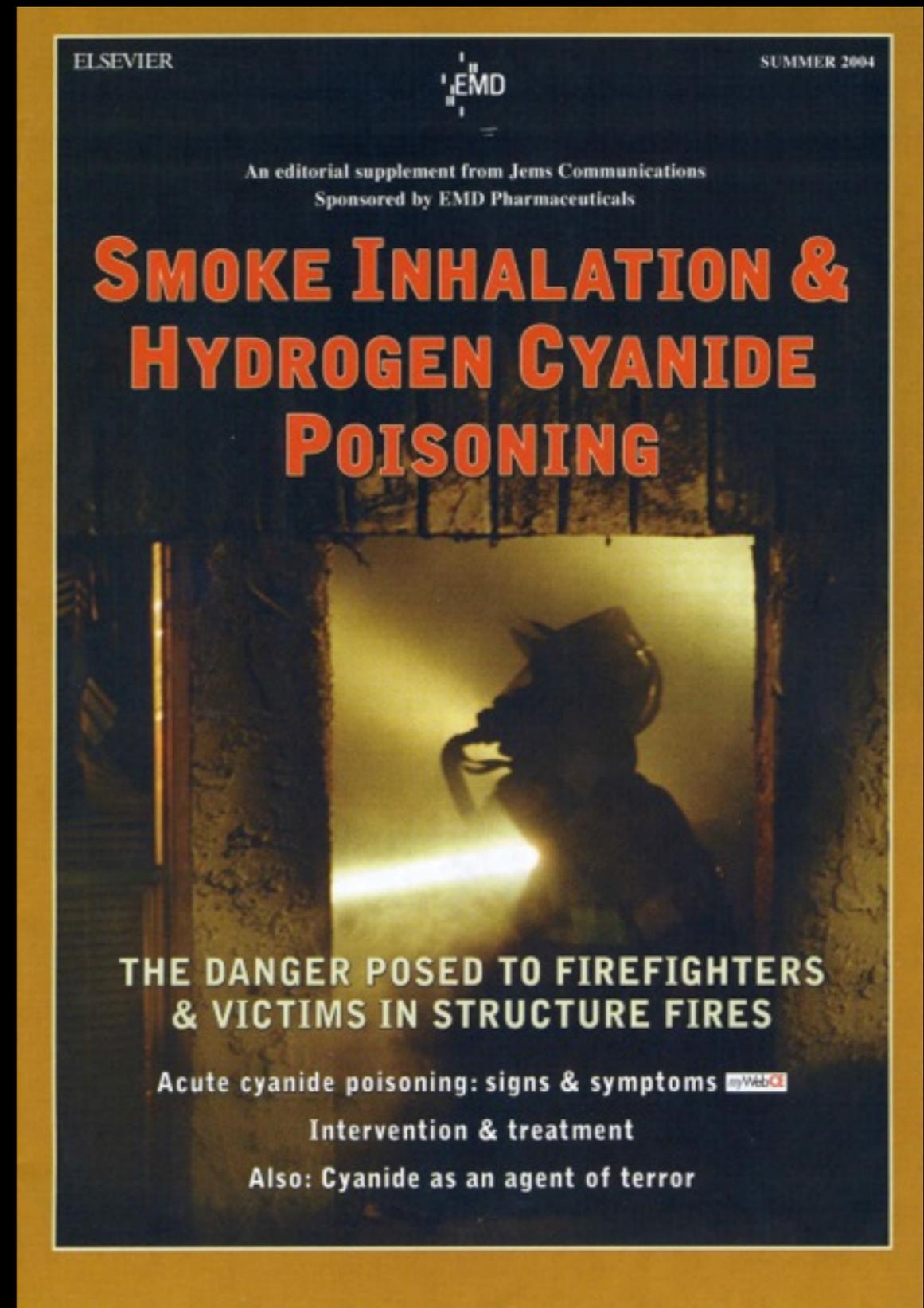
Rest and Monitor



A word about...

Cyanide

Carbon Monoxide



Abnormal Hemoglobin

- Carboxyhemoglobin
- Methemoglobin
- Cyanides/Nitrates/Sulfides



Pulse Oximetry

- Measures SpO₂ and Pulse Rate
- Cannot measure:
 - Oxygen content in blood
 - Respiratory rate or quality
 - Cardiac function

- Carbon Monoxide.
- CO binds with hemoglobin 200-250 times greater than oxygen, and occupies the same sites on the hemoglobin molecules that oxygen does.

SpO₂ READING (%)

INTERPRETATION

95 – 100

Normal

91 – 94

Mild Hypoxemia

86 – 90

Moderate Hypoxemia

< 85

Severe Hypoxemia

Treat the person, not the monitor..



Carbon Monoxide

- Leading cause of poisoning deaths
- +/- 4,000 deaths annually...preventable?
- Resulting from incomplete combustion
- Colorless/odorless/tasteless
- Heavier than air...why is this important?

- Linked to cardiac events
- Imitates other conditions...flu-like symptoms
- Threat to responders
- Can be deadly if missed

Severity	COHb Level	Signs & Symptoms
Mild	< 15 - 20%	Headache, nausea, vomiting, dizziness, blurred vision.
Moderate	21 - 40%	Confusion, syncope, chest pain, dyspnea, weakness, tachycardia, tachypnea, rhabdomyolysis.
Severe	41 - 59%	Palpitations, dysrhythmias, hypotension, myocardial ischemia, cardiac arrest, respiratory arrest, pulmonary edema, seizures, coma.
Fatal	> 60%	Death

CO exposure/COHb levels are not universal with symptoms or severity

Exposure threat exists all year

Immediate Life Threats

- Chest Discomfort
- Short of Breath
- Altered mental status
- Irregular pulse

What if I just don't
feel well...?

A Subtle Reminder

- Caffeine/Energy Drinks
- Alcohol/Substances
- “hangovers”
- Physical conditioning



“...Your off-duty behavior has on-duty consequences...”

Location

- Out of the elements
- In the cold zone
- No exhaust fumes
- Away from smoke



Maintain Unit Integrity

When reporting to Rehab

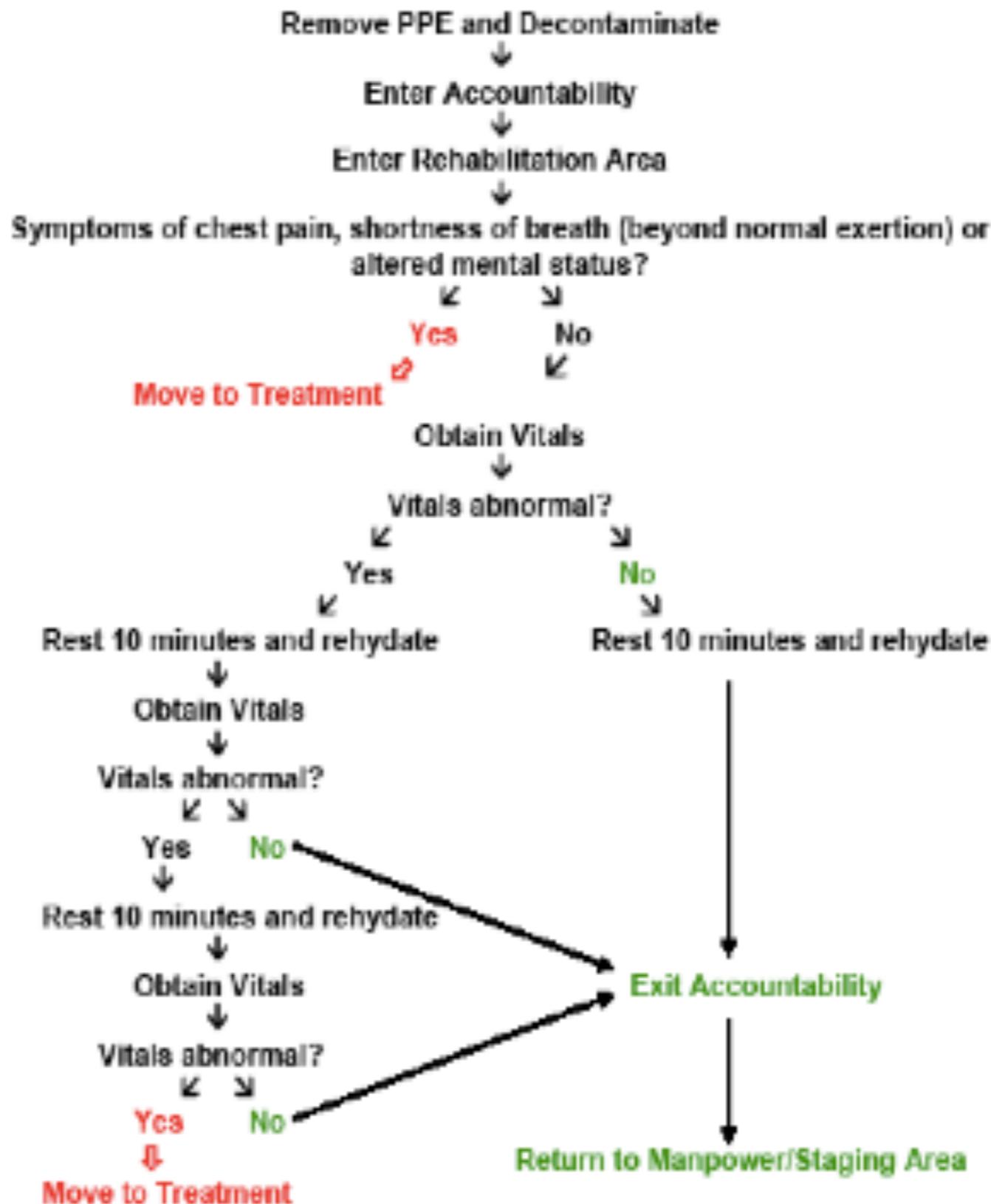


A word about...

Personal Accountability Systems



Emergency Incident Rehabilitation Quick Reference



- Factor in Preplanning
- Part of IAP
- Changing Conditions

Preplanning & IAP

- Overcome Myths
- Priority
- Training & Live Events
- Live By It

Commitment

Functional Emergency Incident Rehabilitation

“PRE HAB,”

- On & Off Duty
- Food & Fluid Choices
- Health & Environment

Accountability & ISO

- Effective ISO
- Account for everyone
- Unit Integrity
- Eliminate Freelancing

L Location

- *Free from fumes/smoke
- *Access/egress

E Estimate Number of Responders

- *Yours
- *Other agency
- *NonTraditional

V Vehicles

- *Ambulances
- *Stretchers
- *Special Vehicles/Trailers

E Environment

- *Current Weather
- *Anticipate Changes
- *Climate Impact

L Leadership

- *Appropriate within ICS
- *Understand tactics/SOP











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