Emergency Incident Rehabilitation

Working together
saving our own

Presented by:
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Why Rehab?

More than a document or requirement
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
Food 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: United 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
### Table 9. Firefighter Fatalities While Engaged in Training.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Firefighter Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8</td>
</tr>
<tr>
<td>2011</td>
<td>8</td>
</tr>
<tr>
<td>2010</td>
<td>12</td>
</tr>
<tr>
<td>2009</td>
<td>10</td>
</tr>
<tr>
<td>2008</td>
<td>12</td>
</tr>
<tr>
<td>2007</td>
<td>11</td>
</tr>
<tr>
<td>2006</td>
<td>9</td>
</tr>
<tr>
<td>2005</td>
<td>14</td>
</tr>
<tr>
<td>2004</td>
<td>13</td>
</tr>
<tr>
<td>2003</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: FEMA/USFA Firefighter Fatalities in the United States 2012
Type of Duty...

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

Nonemergency
44.4%
(36)

Emergency
55.6%
(45)

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

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

- Stress/Overexertion: 45 (55.6%)
- Vehicle Collision: 18 (22.2%)
- Struck By: 7 (8.6%)
- Other: 4 (4.9%)
- Collapse: 4 (4.9%)
- Fall: 1 (1.2%)
- Caught/Trapped: 1 (1.2%)
- Contact With: 1 (1.2%)

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).

- After: 10
- On-scene Fire: 6
- Training: 4
- Responding: 4
- On-scene Nonfire: 3
- Returning: 1
- Other On-duty: 11

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 10 Minutes
A word about...

Cyanide

Carbon Monoxide
Abnormal Hemoglobin

- Carboxyhemoglobin
- Methemoglobin
- Cyanides/Nitrates/Sulfides
Pulse Oximetry

- Measures SpO$_2$ 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.
<table>
<thead>
<tr>
<th><strong>SpO₂ READING (%)</strong></th>
<th><strong>INTERPRETATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>95 – 100</td>
<td>Normal</td>
</tr>
<tr>
<td>91 – 94</td>
<td>Mild Hypoxemia</td>
</tr>
<tr>
<td>86 – 90</td>
<td>Moderate Hypoxemia</td>
</tr>
<tr>
<td>&lt; 85</td>
<td>Severe Hypoxemia</td>
</tr>
</tbody>
</table>

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

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

Remove PPE and Decontaminate
↓
Enter Accountability
↓
Enter Rehabilitation Area
↓
Symptoms of chest pain, shortness of breath (beyond normal exertion) or altered mental status?
↓
Yes
↓
No
↓
Move to Treatment

Obtain Vitals
↓
Vitals abnormal?
↓
Yes
↓
No
↓
Rest 10 minutes and rehydrate
↓
Obtain Vitals
↓
Vitals abnormal?
↓
Yes
↓
No
↓
Rest 10 minutes and rehydrate
↓
Obtain Vitals
↓
Vitals abnormal?
↓
Yes
↓
No
↓
Move to Treatment

Exit Accountability
↓
Return to Manpower/Staging Area
Commitment
PrePlanning & IAP
Accountability & ISO

Functional Emergency Incident Rehabilitation

• Factor in Preplanning
• Part of IAP
• Changing Conditions

“PRE HAB”

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

Commitment
• Overcome Myths
• Priority
• Training & Live Events
• Live By It

Accountability & ISO
• Effective ISO
• Account for everyone
• Unit Integrity
• Eliminate Freelancing

PrePlanning & IAP
• Effective ISO
• Account for everyone
• Unit Integrity
• Eliminate Freelancing
Location
* Free from fumes/smoke
* Access/egress

Estimate Number of Responders
* Yours
* Other agency
* NonTraditional

Vehicles
* Ambulances
* Stretchers
* Special Vehicles/Trailers

Environment
* Current Weather
* Anticipate Changes
* Climate Impact

Leadership
* Appropriate within ICS
* Understand tactics/SOP
Emergency Incident Rehabilitation

Working together saving our own

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