



Firemedically

with Mike McEvoy
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Making Rehab a Requirement: NFPA 1584

Editor's note: How do you feel about the standard? Is it necessary? How seriously does your department currently take rehab? Share your thoughts in the [FireRescue1 Forums](#).

In a matter of weeks, it will be official: rehab is a requirement. NFPA 1584, "Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises," becomes effective in January. For the past four years, it has existed only as a recommendation but the NFPA began an overhaul of it just under one year ago.

Its graduation to "standard" status gives **NFPA 1584** a full set of teeth. Like other standards, 1584 includes a detailed annex which is not part of the requirements but serves to explain the standard and offers suggestions for compliance.

Rationale for rehab

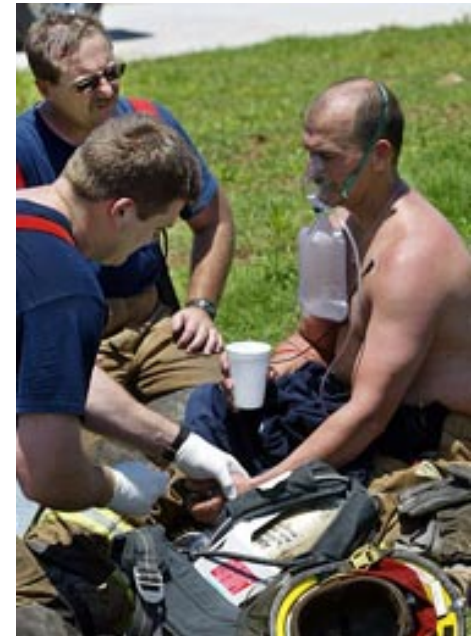
Firefighting has the greatest short-surge physiologic demands of any profession. Its abrupt requirements are equivalent to marathon running, often after awakening from a sound sleep and with little or no ability to physically warm up. Despite spending only 10 percent of our time on the fireground, virtually 50 percent of all firefighter deaths and 66 percent of injuries happen on scene.

There are three likely culprits behind these injuries and deaths: medical condition, fitness and rehab. NFPA 1582 set medical requirement standards for firefighting and NFPA 1583 set fitness standards. Rehab for fit, medically qualified firefighters is the next logical step in injury prevention. We don't know how many on-scene injuries happen due to fatigue, but occupational studies of other professions suggest fatigue leads to them.

That said, despite medical requirements and fitness standards, one need only look around their department to see that not all members are medically qualified for the rigorous demands of firefighter, nor are we all physically fit. In some cases, rehab may well be too little and too late. If NFPA 1584 is going to succeed at rehabilitation and regenerating work capacity, then medical screening and fitness initiatives are clear prerequisites.

What's needed to comply?

The introduction of NFPA 1584 as a standard means every department must have SOGs outlining how they provide rehabilitation at incidents and training exercises. Rehab is also necessary at scheduled training exercises where firefighters are expected to work for one hour or more. Although somewhat weaker than OSHA, 1584 requires minimum BLS level transport capable EMS.



AP Photo/Sue Ogrocki

An unidentified Oklahoma City firefighter is treated for heat exhaustion after tackling a fire in this file photo from 2004.

In fact, this is nothing new: OSHA has long required transport capable EMS, dedicated to firefighters and preferably ALS, at every HazMat and fire scene. Lastly, rehab must be integrated into your Incident Management System. For too long, accountability has focused on interior firefighters, but the time has come to know where every member on a scene is located. Expect to see other standards include similar language.

We're adults — why require rehab?

No one flags a marathon runner down with an order to report to rehab; runners are athletes who know precisely how to hydrate, feed and rest themselves. 1584 started out prescribing a whole lot more than what you'll see in the final product, thanks to input from the fire service and the medical community.

In fact, no one should have to tell a firefighter when, where and how to rehab, but the job of Incident Commander should be to provide firefighters with the tools they need to rehab themselves. The department should educate its members to know as much about rest, hydration and endurance as a professional athlete does. Wouldn't you know, this is exactly what NFPA 1584 says! None of this is going to happen overnight, but keep this in mind when writing SOGs: no one likes to be told what to do, especially a firefighter. The intent of NFPA 1584 is three-fold, aiming to:

- Provide ongoing education on when and how to rehab
- Provide the supplies, shelter, equipment and medical expertise to firefighters where and when they need it
- Create a safety net for members unable or unwilling to recognize when they are fatigued

Who's responsible for what?

Each department is responsible for developing and implementing rehab SOGs. On scene, the Company Officer or supervisor must assess his or her crew to determine members in need of rehab at least every 45 minutes. Individual firefighters and their supervisors should undergo rehab following use of a second 30-minute SCBA cylinder, after a single 45- or 60-minute cylinder, or after 40 minutes of intense work without SCBA. Supervisors are permitted to adjust these time frames depending on work or environmental conditions. In addition, EMS staff must have the authority to detain members in rehab or transport members when there are obvious indications preventing them from return to full duty.

How to implement 1584

There are nine key components of rehab required by NFPA 1584:

- 1. Relief from climactic conditions** — An area free of smoke and sheltered from extreme heat or cold is provided. This might be a non-fire floor in a high-rise building, a shaded area upwind from a brush fire or the heated fire apparatus cab during cold winter months. The theme is providing shelter from environmental extremes.
- 2. Rest and recovery** — Members are afforded the ability to rest for at least 10 minutes or as long as needed to recover work capacity.
- 3. Cooling or rewarming** — Members who feel hot should be able to remove their PPE, drink water and be provided with means to cool off. Members who are cold should be able to add clothing, wrap in blankets and be provided with means to warm themselves.
- 4. Re-hydration** — Fluid replacement. Fluid volume requirements were eliminated from the standard with the exception of pre-hydration with 500 ml (16 oz) of fluids consumed two hours prior to scheduled events. On scene, potable fluids must be provided so members can satisfy thirst. Fluids should also be provided to encourage continued hydration after the incident.
- 5. Calorie and electrolyte replacement** — When appropriate for longer duration events such as incidents exceeding three hours duration or situations where members are likely to work for more than one hour. Of note, whenever food is available, means for members to wash their hands and faces must also be provided.
- 6. Medical monitoring** — Specifies a minimum of six conditions that EMS must assess in each member during rehab:
 - a. Presence of chest pain, dizziness, shortness of breath, weakness, nausea or headache.
 - b. General complaints such as cramps or aches and pains.
 - c. Symptoms of heat or cold-related stress.
 - d. Changes in gait, speech or behavior.
 - e. Alertness and orientation to person, place and time.
 - f. Any vital signs considered abnormal in local protocol. The specific vital signs and what defines normal is entirely

up to local medical control and department medical authorities. Vital signs listed in the 1584 annex include temperature, pulse, respirations, blood pressure, pulse oximetry and carbon monoxide assessment using either an exhaled breath CO monitor or a pulse CO-oximeter (i.e. a pulse oximeter designed to measure carboxyhemoglobin).

7. EMS treatment in accordance with local protocol — Available on scene for members who require treatment or transport. Note that medical monitoring is documented in the fire department data collection system. When EMS treatment or transport is provided, a medical report must be generated and included in the member's employee medical record.

8. Member accountability —The personnel accountability system must track members assigned to rehab by Incident Command as they enter and leave.

9. Release — Prior to leaving rehab, EMS must confirm that members are able to safely perform full duty.

Changes in 1584

Some good things happened in revising NFPA 1584, beyond moving it from a recommendation to a standard. Overall, the document is considerably meatier. Earlier versions included many prescriptions for treatment and definitions of "normal" for your members. These have either been moved out of the standard into the annex, or completely kyboshed when not supported by science or medical evidence.

Also, some great additions appear in 1584: namely, pulse oximetry and rapid assessment of carbon monoxide levels in firefighters. Tools such as oximeters and exhaled breath carbon monoxide meters have been available for years. In 2006, a CO-oximeter came on the U.S. market for measurement of carboxyhemoglobin levels in the blood through a finger oximeter probe (RAD-57, [Masimo Corporation](#)). While no comprehensive data exist on normal CO levels in firefighters, two facts are widely known: CO is the most common poison in the world today, and dead firefighters often have significantly elevated CO levels. Many departments have already begun proactively screening members for CO during rehab to assure that no firefighter slips through the system with undetected CO poisoning in the line of duty.

Where to from here?

Medicine will evolve, and so will NFPA 1584. We know very little about normal vital signs in rehab and even less about what measurements have any value in the rehab process. NFPA 1584 is a starting point to begin evaluating cause and effect relationships. As you move forward with implementation of 1584 during 2008, don't forget its main purpose: the firefighter.

The job of firefighting requires world class athletes. Every firefighter must be attuned to their needs for rest, null recovery, hydration and protection from the elements. Every department must make the resources available for members to meet their rehab needs at every incident scene. Hopefully, the end result will be more firefighters coming home.

Mike McEvoy is the EMS Coordinator for Saratoga County and the EMS Director on the Board of the New York State Association of Fire Chiefs. Formerly a forensic psychologist, he is a clinical specialist in Cardiac Surgery and teaches Critical Care Medicine at Albany Medical College. Mike is a paramedic for Clifton Park-Halfmoon Ambulance, chief medical officer for West Crescent Fire Department, and past chair and current member of the New York State EMS Council.

He is the fire-EMS editor for Fire Engineering magazine and recently published a book titled "Straight Talk About Stress for Emergency Responders." Mike is a popular speaker at fire, EMS, and medical conferences and in his free time, is an avid hiker and winter mountain climber. To contact Mike, e-mail Mike.McEvoy@firerescue1.com.

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