

CITY OF KNOXVILLE FIRE DEPARTMENT MANUAL OF POLICIES AND GUIDELINES

REHABILITATION POLICY

The City of Knoxville Fire Department encourages its members to maintain their physical conditioning to minimize the detrimental effects of emergency operations and training exercises on the human body and to optimize their performance under extreme conditions. Proper hydration, nutrition, and diet are recommended to maintain normal body function. Rehabilitation needs will continue past the release of companies from the emergency scene and training exercises. The following guideline should be used for the rehabilitation of members operating at incidents or training.

PURPOSE

To ensure that the physical and mental condition of members operating at the scene of an emergency or a training exercise do not deteriorate to a point that affects the safety of each member or that jeopardizes the safety and integrity of the operation.

This recommended practice provides for the rehabilitation of members operating within an incident management system rehabilitation component, including but not limited to, the following:

1. Medical evaluation and treatment
2. Food and fluid replenishment
3. Relief from climatic conditions
4. Rest and recovery
5. Member accountability
6. Cooling (both active and passive) or warming
7. Release

RESPONSIBILITIES

Incident Commander

The Incident Commander (I.C.) shall consider the circumstances of each incident and make adequate provisions early in the incident for the rest and rehabilitation for all members operating at the scene. These provisions may include: medical evaluation by EMS, treatment and monitoring, food and fluid replenishment, mental rest and relief from extreme climatic conditions and the other environmental parameters of the incident.

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Supervisors

All Company Officers and the Incident Safety Officer (ISO) shall maintain an awareness of the condition of each member operating within their span of control and ensure that adequate steps are taken to provide for each member's safety and health. The command structure shall be utilized to request relief and reassignment of fatigued crews. The IC/ISO can place a crew in rehab anytime it is deemed necessary.

Members

Members are encouraged to maintain a balance of hydration and nourishment throughout the workday. During any emergency incident or training evolution, members shall advise their company officer/incident safety officer if they believe that their level of fatigue or exposure to heat or cold is approaching a level that could adversely affect themselves, their crew, or the operation in which they are involved. Members should also remain aware of the health and safety of other members of their crew.

ESTABLISHMENT OF REHABILITATION AREA

Responsibility

The Incident Commander or designee shall establish an adequate Rehabilitation Area when conditions indicate that rest and rehabilitation is needed for personnel operating at an incident scene or training evolution. A firefighter (preferably a Fire Officer), will be placed in charge of the rehab unit and shall be known as the Rehab Officer and will typically report to the Incident Commander or designee (i.e. Incident Safety Officer). The Incident Commander shall ensure emergency medical personnel are available in the rehabilitation area.

Rehab Location

For hot environments, the rehab location should include shade and/or air-conditioning, and a place to sit.

For cold or wet environments, this area should provide for dry protected areas out of the wind, heated areas, and a place to sit.

When the size of the operation or geographic barriers limit member's access to the rehab area, the Incident Commander shall establish more than one rehab area. Each additional location shall be given a geographic name consistent with its location at the incident site.

Site Characteristics

The site should be a sufficient distance from the effects of the operation (to include media and spectators), so that members can be afforded physical and mental rest.

The site should include an area where members can remove and leave their PPE prior to entering the designated rehabilitation area.

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The site shall be free of exhaust fumes from apparatus, vehicles, or equipment.

The site should be large enough to accommodate multiple crews and rehabilitation personnel, based on the size of the incident.

The site shall include a medical monitoring area.

The site shall allow access to transport members to a (medical) treatment facility where required.

The site should allow prompt access to the emergency operation upon completion of rehab.

Examples of site designations

1. A nearby garage, building lobby, or other structure.
2. Several floors below a fire in a high-rise building.
3. A KAT bus.
4. An ambulance, KFD's Rehab Vehicle, EMS Vehicle or other emergency vehicles at the scene or called to the scene.
5. An open area in which a Rehab Area can be created using tents, fans, heaters, etc.

Resources

The Rehab Officer along with the EMS staff shall notify the Logistics Officer of all necessary resources required to adequately supply the rehabilitation area. Supplies could include the following examples:

1. Fluids - water, activity beverage, oral electrolyte solutions and ice.
2. Food – Breads, Potatoes, Pastas, Meats, Cheese and Fish. Foods that do not require preparation such as energy bars and fruits may be used. Foods that are high calorie and quick prep such as doughnuts and candy bars can be used for short term incidents.
3. Medical - blood pressure cuffs, stethoscopes, oxygen administration devices, cardiac monitors, intravenous solutions and thermometers. (Provided by EMS)
4. Other - tents, awnings, fans, tarps, smoke ejectors, heaters, extra equipment, floodlights, blankets and towels, traffic cones and fire line tape (to identify the entrance and exit of the Rehabilitation Area).

GUIDELINES

Company/Crew Level Rehabilitation (Self-Rehabilitation)

Multiple locations for self-fluid replacement should be established, based on size and type of incident. **The Company Officer should ensure that fluids are available on**

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the apparatus. Company officers should assess their crew continuously when working in extreme conditions to determine their need for rehabilitation.

Rehabilitation Sector/Group Establishment

The Incident Commander/Incident Safety Officer should consider rehabilitation during the initial planning stages of an emergency operation or training exercise. However, the climatic or environmental conditions for the emergency scene should not be the sole justification for establishing a rehabilitation area. **Any activity or incident that is large in size, long in duration and labor intensive will rapidly deplete the energy and strength of the personnel, and, therefore, merits consideration for rehabilitation.**

Members should, at minimum, report to rehabilitation following the use of a second 30-minute self contained breathing apparatus (SCBA) cylinder, a single 45-minute or 60-minute SCBA cylinder, or a 45-minute work cycle. Shorter times should be considered during extreme weather conditions

Hydration

A critical factor in the prevention of heat injury is the maintenance of water and electrolytes. Members should be encouraged to regularly pre-hydrate themselves.

Members should have fluid intake as follows:

- Fluid intake of 2 oz to 4 oz approximately every 20 minutes during structural firefighting, Medical/MCI, and Hazmat operations.
- Fluid intake of 2 oz to 4 oz approximately every 20 minutes during wildland firefighting, emphasizing sports drinks due to long duration of event.
- Fluid intake should include 12 oz to 32 oz over a period of up to 2 hours after the end of an incident/exercise.
- Fluids should be administered at about 40 degrees.
- Rehydration is important even during cold weather operations.
- Over hydration (drinking too much, too fast) during operations can cause gastric discomfort or gastric distention, which can cause vomiting.

Members who are fighting wildland fires should carry fluids and foods that can be easily transported and maintained (energy bars, fruit, sports drinks, and water bottles).

Nourishment

The department shall provide appropriate food if available at the scene of an extended incident when units are engaged for **three or more hours** or when it has **been more than three hours since the last meal.** The I.C. has the option to call for nourishment any time that it is necessary.

Rest and Recovery

Members shall be afforded relief from climatic and/or extreme conditions.

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Members should rest for a minimum of 20 minutes or longer if necessary following the use of a second 30-minute SCBA cylinder, a single 45-minute or 60-minute SCBA cylinder, or a 45-minute work cycle, and receive medical evaluation by EMS.

Members should operate at an incident for no more than 12 hours without being provided with a multi-hour break away from the scene.

Members should not be moved from a hot environment directly into an air-conditioned area because the body's cooling system can shut down in response to the external cooling. An air-conditioned environment is acceptable after a cool-down period.

Members with heat-related stress shall remove protective clothing and, if applicable, apply active cooling to regain normal body temperature.

Members with cold-related stress shall add clothing, wrap themselves in blankets, or use other methods to regain normal body temperature.

Members entering rehabilitation shall, be encouraged to consume at least 32 oz (1 L) of fluid during rehabilitation and be encouraged to continue to rehydrate when they return to the fire station or their personal life. Certain drugs impair the body's ability to sweat and extreme caution must be exercised if the member has taken antihistamines, such as Actifed or Benadryl, or has taken diuretics or stimulants.

Members shall replace calories and electrolytes as required, particularly during incidents of more than 3 hours and incidents where members are likely to be working for more than one hour.

If possible, the rehab officer should ensure that a means to wash member's hands and faces is available whenever calorie replacement will be used.

Medical Monitoring and Emergency Medical Care

When needed, emergency medical care (EMC) shall be provided as part of the incident scene rehabilitation for the evaluation and treatment of members.

The preferred level of care is Advanced Life Support (ALS). Basic Life Support (BLS) shall be the minimum level of care available.

EMS personnel shall adhere to the Fire Department's infection control policies.

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Visual signs and symptoms remain the best method to evaluate members in the rehabilitation area. Vital sign measurements can be used as a baseline or to assist with treatment should it be deemed necessary.

Along with vital signs, EMS personnel can briefly question members arriving at rehabilitation to determine if they have any symptoms of dehydration, heat stress, cold stress, physical exhaustion, cardiopulmonary abnormalities, emotional/mental stress, and/or emotional/mental exhaustion. All of these factors should be considered when assessing a members rehab needs.

At a minimum, EMS personnel shall be alert for the following:

1. Personnel complaining of chest pain, dizziness, shortness of breath, weakness, nausea, or headache.
2. General complaints such as cramps, aches and pains.
3. Symptoms of heat or cold related stress.
4. Changes in gait, speech, or behavior.
5. Alertness and orientation to person, place, time and event.
6. Personnel with a blood CO level above 8% as indicated by monitoring devices.

Symptomatic members or members with abnormal findings shall receive additional monitoring during rehabilitation.

EMS personnel should assess and provide member treatment in accordance with City of Knoxville Fire Department protocols along with the following guidelines from NFPA 1584, **Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises. These guidelines should be considered:**

- Pulse of less than 100 after 20 minutes of rehab.
- Respiratory rate of 12 to 20 breaths per minute after 20 minutes of rehab.
- Blood pressure of < 160 systolic and/or <100 diastolic after 20 minutes of rehab.
- Pulse oximetry should be within normal limits (95% to 100 %).

Any member that is not within the parameters of the recommended guidelines may be required to remain in rehab, obtain additional medical monitoring, treatment, or transport to an emergency department.

Members treated for any heat-related injuries shall be removed from active duties and transported for evaluation at a medical facility.

EMS personnel shall record the information obtained during any medical monitoring or medical treatment on the Medical Monitoring / Rehab Form (Appendix A).

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Documentation

Time-in/time-out for members/crews entering or leaving the rehabilitation area shall be documented on the Medical Monitoring /Rehab form and given to the ISO for inclusion in their post incident report.

If medical treatment is required, emergency medical care documentation (run report) shall be completed. The ISO shall ensure completion of an Injury/Illness Form.

If medical evaluation and treatment are necessary, a copy of the appropriate portion of the run report shall be placed in the member's employee medical record by the HSO.

Accountability

Member accountability is a critical factor that needs to be maintained during rehabilitation in accordance with NFPA Standards.

The Rehabilitation Officer shall monitor each member's entrance and exit times into the Rehabilitation Area. No member should leave the Rehab Area unless released by both the EMS and the Rehabilitation Officer.

Crews should be released from the rehabilitation area in a "first-in, first-out" fashion.

Fresh crews released by the Rehabilitation Officer should be sent back to the manpower staging area for assignment.

POST-INCIDENT REHABILITATION

Re-Hydration

Fluid intake should include 16 oz to 32 oz (0.5 L to 1 L) over a period of up to 2 hours after the incident/exercise.

Certain types of foods should be consumed, such as carbohydrates (fruits, vegetables, grains, starches) and proteins (lean meats, legumes, and protein supplements).

Foods and beverages that potentially can cause gastric distress should be avoided.

Urine output and color should be monitored for signs of dehydration.

Critical Incident Stress Defusing/Debriefing

At incidents where mental/emotional stress is high, a chaplain or appropriate designee may be available in the Rehab Sector.

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Any member that is not within the parameters of the recommended guidelines may be required to remain in rehab, obtain additional medical monitoring, treatment, or transport to an emergency department. The following vital signs should be used as a guide to handling firefighters in Rehab.

- Pulse of less than 100 after 20 minutes of rehab.
- Respiratory rate of 12 to 20 breaths per minute after 20 minutes of rehab.
- Blood pressure of <160 systolic and/or <100 diastolic after 20 minutes of rehab.
- Pulse oximetry should be within normal limits (95% to 100%).