APPENDIX 18

EMERGENCY INCIDENT REHABILITATION (REHAB)

The physical and mental demands associated with firefighting and other emergency operations in hazardous situations, coupled with environmental dangers of extreme heat and humidity or extreme cold create conditions that may have an adverse impact on the safety and health of emergency response personnel. Additionally, in specific types of response activities, emergency responders may be exposed to Carbon Monoxide as a by-product of incomplete combustion, which places them at increased risk for occult exposure.

Adequate rest and rehydration activities and routine medical monitoring of emergency response personnel has become commonplace in the out-of-hospital setting. The Federal Emergency Management Agency (FEMA) and the United States Fire Administration (USFA) have issued Emergency Incident Rehabilitation SOPs that designate a Rehabilitation Sector (Rehab) as a sector within the EMS operations component of the Incident Command System (ICS).

Routine medical monitoring and evaluation in the Rehab Sector consists of the measurement of heart rate and orally acquired body temperature as primary vital signs associated with the assessment for medical problems that may result from working in extreme weather conditions. Firefighters, hazardous materials technicians and other emergency responders are routinely required to wear personal protective ensembles that inhibit the natural cooling process, thereby placing emergency responders at greater risk for succumbing to heat related emergencies.

Obtaining an oral body temperature measurement.i is a skill that can be performed by EMT-Bs, EMT-CCs and EMT-Ps when engaged in emergency incident rehabilitation activities at the scene of an incident. This protocol is for the routine medical monitoring of otherwise healthy emergency response personnel and is not intended for use on patients who present to EMS with an acute onset illness or injury.

Oral body temperature shall be obtained as part of the routine medical monitoring or medical evaluation of emergency response personnel engaged in activities requiring the use of personal protective equipment that inhibits the natural cooling process, placing emergency responders at greater risk for succumbing to heat related emergencies.ii

1. Follow the manufacturer's recommendations regarding the application of oral (PO) single patient use thermometers. Oral temperature should be obtained as early in the rest phase as possible and in accordance with the FEMA / USFA Rehabilitation guidelines.iii The oral temperature measurement must be taken ***prior to*** the administration of fluids by mouth for rehydration.

2. Follow the event recording and disposition guidelines of the FEMA/USFA Rehabilitation SOPs or your agency's emergency incident rehabilitation plan AND THE FOLLOWING STANDARD OPERATING PROCEDURE. When performing Rehab as part of routine medical monitoring, a PCR IS NOT necessary. An Emergency Incident Rehab Log Sheet should be used to record all activity in the rehab sector and retained with the agency fire alarm report.

Continued.

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EMERGENCY INCIDENT REHABILITATION (REHAB)

3. If at any time, an emergency responder presents with a chief complaint, signs / symptoms, and / or abnormal vital signs, the responder becomes a patient, a PCR is required, and all applicable NY State and Suffolk County Policies and Protocols must be followed.

4. Follow the manufacturer's recommendations regarding the application of non-invasive SpCO measurement devices.

Purpose:

To serve as a monitoring standard for BLS & ALS providers operating in an Emergency Incident Rehabilitation Sector. Rest, rehydration, rehab evaluation, and nutrition, are key components in supporting firefighters and other emergency responders operating in personal protective clothing for prolonged periods of time, as this activity often times impedes the body's natural cooling process. Other health hazards, such as exposure to carbon monoxide, hydrogen cyanide gas, and other atmospheric hazards are common in specific types of emergency response. Carbon monoxide is a colorless, odorless, tasteless toxic gas and is a product of incomplete combustion of any carbon-based material, and generally presents with vague flu-like symptoms, fatigue, or other general complaints. The addition of non-invasive CO-oximetry is an effective tool in measuring carboxyhemoglobin levels in the field.

This policy covers any event, including drills, fire-ground operations, hazardous materials incidents, technical rescues, lengthy extrications and any other event where emergency response personnel are wearing personal protective equipment and fluid loss, heat-related emergencies or exposure to carbon monoxide is a concern.

Consider the activation of a Suffolk County EMS Field Physician if more than one (1) agency will be requiring incident rehab and / or operations are expected to last for long periods of time.

Continued.

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EMERGENCY INCIDENT REHABILITATION (REHAB)

REST

Avoid going from hot directly to air conditioning. Ideally, there should be a ten (10) minute wait in ambient temperature. Firefighters should follow the "2 air bottle rule" or forty five (45) minutes work time maximum. Typically one (1) ten (10) minute rest period is appropriate unless otherwise indicated by the results of the evaluation.

REHYDRATION STRATEGY

Rehydrate emergency responder with *at least 12* oz. water or sports drink. Do not use carbonated beverages or caffeine. **NOTE:** PO Body temperature should be obtained prior to allowing the emergency responder to drink cold liquids.

EVALUATION

- Observe for behavioral changes, such as change in affect, loss of motor coordination/dexterity, or emotional decompensation.
  - Measure Heart Rate and Oral (PO) Body Temperature.
- If temperature greater than (>) 100.6 F, do not allow emergency responder to don PPE for the remainder of the event.
- If heart rate greater than (>) 110 bpm & temperature is less than (<) 100.6 F, one (1) additional ten (10) minute rest period is indicated.
- If heart rate does not return to normal after twenty (20) minutes continuous rest, the emergency responder becomes a patient and is transported to the closest emergency department.

NOTE: Emergency responders should be taken out of service and treated and transported to the closest emergency department per protocol whenever:

- Signs / symptoms of heat stroke;
- Altered Mental Status of any kind;
- PO temp greater than (>) 101 degrees F;
- Irregular heart beat;
- HR greater than (>) 150 bpm at any time and greater than (>) 140 bpm after rest;
- SPB greater than (>) 200 at any time; or
- DBP greater than (>) 120 at any time.

Continued.

APPENDIX 18 – Continued.

EMERGENCY INCIDENT REHABILITATION (REHAB)

AT ANY TIME THAT AN EMERGENCY RESPONDER COMPLAINS OF AN INJURY OR EXPRESSES ANY CHIEF COMPLAINT, OR HAS ABNORMAL VITAL SIGNS, HE/SHE BECOMES A PATIENT AND ALL APPLICABLE POLICIES AND PROTOCOLS MUST BE FOLLOWED, PARTICULARLY IF THE FOLLOWING PRESENTATIONS OCCUR:

- Chest pains;
- SOB / Dyspnea;
- AMS;
- Headache (major sign of dehydration);
- Persistent tachycardia;
- Orthostatic vital signs;
- Self-monitoring of urine – reported dark color/strong smell; or
- Nausea / Vomiting

Any EMS provider who is trained and authorized in its use may use Non-invasive CO-oximetry in conjunction with rest and rehydration activities to determine the carboxyhemoglobin level of emergency responders.

For an SpCO greater than or equal to (≥) 12% – TREAT with 100% oxygen and TRANSPORT to the closest emergency department.

For an SpCO less than (<) 12% **BUT** signs of CO exposure are present – TREAT with 100% oxygen and TRANSPORT to the closest emergency department.

For an SpCO less than (<) 12% and NO SIGNS OF CO EXPOSURE AND NORMAL VITAL SIGNS – no further medical monitoring is needed. An emergency incident rehabilitation log must be maintained to document rehab activities and filed with the department's fire report. Emergency responders should be instructed to seek medical attention if signs or symptoms develop over time.

ANY PATIENT WITH ASSOCIATED BURNS SHALL BE TRANSPORTED IN ACCORDANCE WITH THE BURN DESTINATION DECISION POLICY REGARDLESS OF THEIR CARBON MONOXIDE LEVEL.

REMEMBER – The use of pulse oximetry (SpO2) in individuals exposed to CO will produce false high SpO2 readings.

Patients should be transported to the closest appropriate emergency department, NOT directly to a hospital with a hyperbaric chamber, unless that hospital is in your catchment area. Hyperbaric therapy for patients with CO exposure is ordered based on failed neurological examination and laboratory confirmed blood values (> 25% CoHb). In addition, hyperbaric chambers may not be readily available upon your arrival and 100% oxygen via non-rebreather facemask changes blood saturation.

Continued.

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EMERGENCY INCIDENT REHABILITATION (REHAB)

The following reference table provides expected signs or symptoms that can be predicted based on percentage of CO detected in the blood. This is only a guideline, based on a variety of variables that the EMS provider may not be aware of.

SpCO Expected signs/symptoms

0-3%	Normal non-smoker
4-10%	Mild headache, shortness of breath with exertion
10-20%	Moderate headache, fatigue, shortness of breath
20-30%	Severe headache, blurred vision, nausea, dizzy, irritable, cardiac ischemia
30-40%	Muscle weakness, vomiting, vertigo, confusion
40-50%	Arrhythmias, syncope
50-60%	Seizures, shock, apnea, coma

WHEN IN DOUBT CONTACT MEDICAL CONTROL FOR PHYSICIAN CONSULTATION.

NUTRITIONAL/CARBOHYDRATE STRATEGY

During emergencies that occur over several days and include multiple operational periods, it is likely that rehab operations will be expanded to include providing snacks and/or meals concurrent with other rehab activities.

Simple carbohydrates are present in fluids and power bars and their key ingredients are rapidly available and are indicated when quick bursts of energy are needed. Complex carbohydrates are present in pastas and breads, and their key ingredients are available over longer periods of time, as they account for a more sustained release of energy.