



Responder Rehab

Fire and EMS Partnership



- * Are you on the way to a LODD?**
- * Have you prepared for or have a Rehab Process in Place to Prevent a LODD?**
- * Do you have the policies, procedures, or guidelines in place to comply with NFPA 1584?**



Objectives

- ✱ **Handouts**
- ✱ **Statement of Purpose**
- ✱ **History of NFPA 1584**
- ✱ **Scope of NFPA 1584**
- ✱ **Rehab Officer Role and Responsibilities**
- ✱ **Rehab Site Location and Set-Up**
- ✱ **Rehab Management Process**



Statement of Purpose:

- ✱ **This body of work is the result of a collaborative effort between fire and emergency medical services (EMS).**
- ✱ **The purpose is for improved responder safety through proactive, coordinated rehabilitation operations.**
- ✱ **Due to the many different combinations of fire and EMS agencies working together, this documentation is intended to create a common operating picture, a standard set of expectations, seamless integration, and collaboration of fire and EMS in a rehabilitation process.**
- ✱ **This is not intended to replace existing policy; rather it should be used to augment current rehab policies.**



Recognition of the REHAB Group!

- ✿ Allina Medical Trans
- ✿ Burnsville Fire
- ✿ Cottage Grove Fire
- ✿ Golden Valley Fire
- ✿ HealthEast EMS
- ✿ Hennepin EMS
- ✿ Lake Elmo Fire
- ✿ Life Link III
- ✿ Maple Grove Fire
- ✿ Maplewood Fire
- ✿ M.A.C. Fire
- ✿ Minneapolis Fire
- ✿ Mound Fire
- ✿ North Memorial
- ✿ Oakdale Fire
- ✿ Richfield Fire
- ✿ St. Paul Fire
- ✿ St. Louis Park Fire
- ✿ South Central EMS
- ✿ Woodbury P.S.



To whom does NFPA 1584 apply?

- * Organizations providing rescue, fire suppression, emergency medical services, hazardous materials mitigation, special operations, and other emergency services.*



Rehab History

✦ **NFPA 1583 (2003) recommended:**

- ✦ **Firefighter rehab be an organized system at incident scene operations and training exercises.**
- ✦ **Firefighter rehab should become an integral part of the department's safety and health program.**
- ✦ **NFPA 1584 was revised and republished in 2008.**
- ✦ **This document elevated firefighter rehabilitation from a recommended practice to a standard.**



Preliminary 2008 findings

✿ 114 on-duty firefighter deaths

- ✿ 50 (48.3%) from heart attacks and strokes
- ✿ 26 from wild land fires (double 2007 deaths)
- ✿ 64.9% occurred performing emergency duties
- ✿ 29 died in vehicle crashes:

CAUSE/CONTRIBUTING CAUSE	CAREER	VOLUNTEER
Heart Attack	39%	50%
Motor Vehicle-Related Trauma	12%	26%
Asphyxiation	20%	7%
All Other	29%	16%

HEART ATTACK [†]	CAREER	VOLUNTEER
Stress/Overexertion	97%	98%
Other	3%	2%



Scope

- ✱ **What is the scope of NFPA 1584?**
 - ✱ *Establishes the minimum criteria for developing and implementing a rehabilitation process.*
 - ✱ **Other recommendations include:**
 - ✱ **Scheduled events; for non-fire department responders**
 - ✱ **Proactive and pre-event measures for maintaining health and safety.**



Rehab Officer: Role and Responsibilities

- * Assigned by the Incident Commander**
- * Has the authority to prevent firefighters from returning to fire ground operations**
- * Shall manage the rehab process and ensure there are adequate personnel and resources to manage firefighter rehab.**
- * Will serve as the Liaison between fire and other agencies needed for rehab i.e. EMS**



Rehab Officer – Job Action Sheet

✿ **Ensure Adequate Resources**

✿ **Responsibilities**

✿ **Managing the process of rehab**

✿ **Documentation**

REHAB OFFICER JOB ACTION SHEET

ENSURE ADEQUATE RESOURCES:

- Adequate personnel to manage firefighters in need of rehab.
- EMS as a resource for rehab.
- Secure all resources necessary for rehab:
 - ✓ Potable drinking water for hydration
 - ✓ Sports drinks (electrolytes and calories) for longer incidents (> one hour)
 - ✓ Active cooling materials
 - ✓ Medical monitoring equipment (bp cuffs, stethoscopes, CO device, etc.)
 - ✓ Food
 - ✓ Means to wash hands and face
 - ✓ Blankets and warm, dry clothing for winter months
 - ✓ Bathroom materials

RESPONSIBILITIES:

- Ensure the Rehab Policy is followed.
- Don the Rehab Vest.
- Identify an appropriate site for rehab:
 - ✓ It is large enough to accommodate the number of personnel expected (including EMS Personnel for Medical Monitoring)
 - ✓ It has a separate area for personnel to remove PPE
 - ✓ It is accessible for ambulances and EMS personnel
 - ✓ It is removed from all toxic atmospheres (exhaust fumes and smoke)
 - ✓ It provides protection from inclement weather
 - ✓ It has access to hydration supplies and active cooling methods
 - ✓ It is away from spectators and the media
 - ✓ It is scalable and can expand and contract as the incident demands
 - ✓ It provides an entrance and exit to ensure adequate flow

Manage the process of rehab:

- ✓ Ensure personnel in rehabilitation receive at least 10 to 20 minutes of rest
- ✓ Ensure personnel rehydrate themselves
- ✓ Ensure personnel are actively cooled (where required)
- ✓ Maintain accountability and remain within rehabilitation at all times
- ✓ Inform the IC if a member requires transportation to a medical facility
- ✓ Inform the IC if crews are requiring additional time to rehab (accountability)

Documentation:

- ✓ During the rehab process minimal documentation is suggested
 - Crew
 - Time in
 - Time Out
- ✓ If a firefighter requires medical treatment follow local protocols



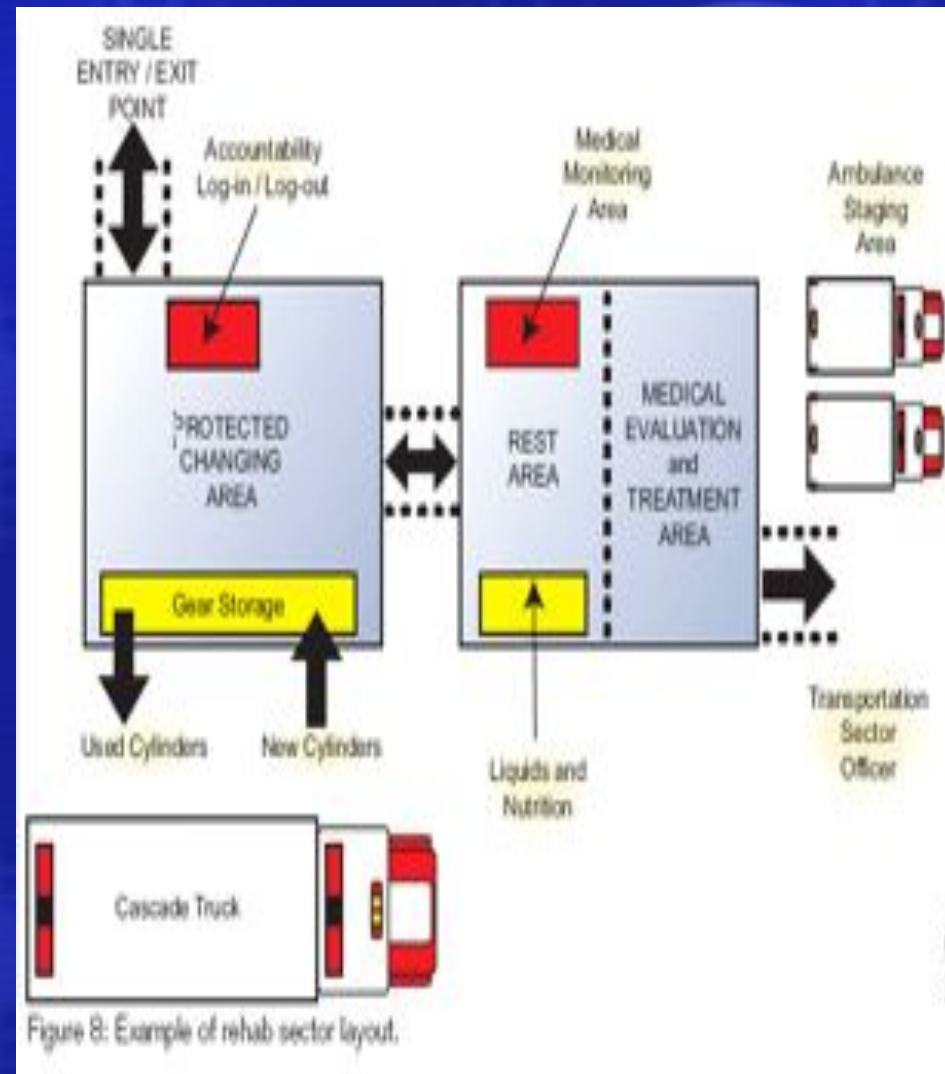
Rehab Site Location

- ✱ Large enough to accommodate the number of personnel expected (including EMS personnel for medical monitoring) with room to expand if necessary
- ✱ Separate area to remove PPE
- ✱ Accessible to EMS Units and personnel
- ✱ It is removed from toxic atmospheres
- ✱ Provides protection from weather
- ✱ It has access to hydration and supplies for active cooling
- ✱ Away from spectators and media
- ✱ Provides an entrance and exit to ensure adequate flow in and out of rehab



Rehab Site Location

- * Able to accommodate the number of personnel expected with room to expand if necessary
- * Separate area to remove PPE
- * Accessible to EMS Units and personnel
- * It is removed from toxic atmospheres
- * Provides protection from weather
- * It has access to hydration and supplies for active cooling
- * Away from spectators and media
- * Provides an entrance and exit to ensure adequate flow in and out of rehab





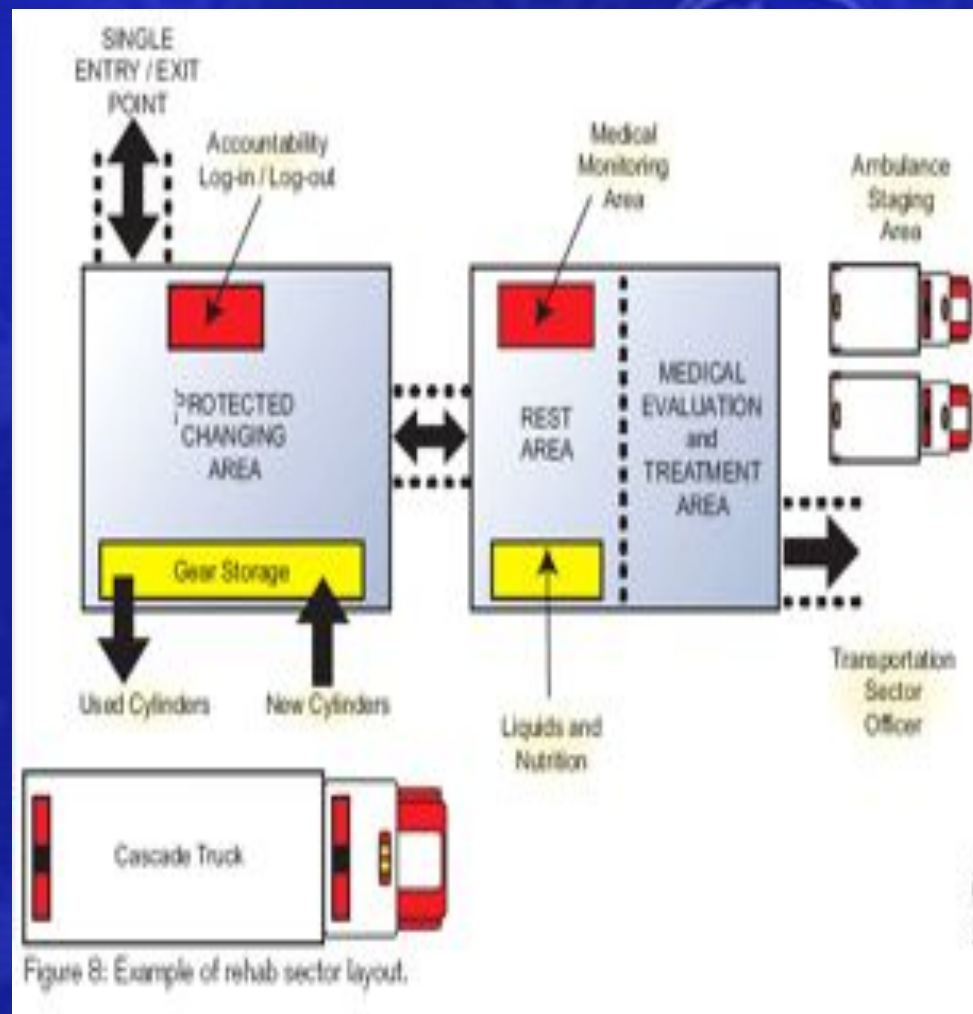
Managing the rehab process

- ✱ Personnel sent to rehab receive at least 10-20 minutes of rest
- ✱ Personnel rehydrate
- ✱ Ensure personnel are actively cooled (where required)
- ✱ Maintain accountability and remain with rehab at all times
- ✱ Inform IC if personnel require transport to a medical facility
- ✱ Inform IC if crews are requiring additional rehab time so additional resources can be requested for continued operations



Managing The Rehab Process

- ❖ Personnel sent to rehab receive at least 10-20 minutes of rest
- ❖ Personnel rehydrate
- ❖ Ensure personnel are actively cooled (where required)
- ❖ Maintain accountability and remain with rehab at all times
- ❖ Inform IC if personnel require transport to a medical facility
- ❖ Inform IC if crews are requiring additional rehab time so additional resources can be requested for continued operations





Entering the Rehab Area

- ✱ **Step 1 - Responder Rehab Initial Assessment / Survey**
- ✱ **Step 2 – Hydration and Replenishment**
- ✱ **Step 3 – Assessment Prior to Leaving Rehab**
- ✱ **Step 4 – Responder Disposition**



Responder Rehabilitation Guide

✱ **Step 1 – Responder Enters Rehab**

✱ **Step 2 – Hydration and Replenishment Cycle**

✱ **Step 3 – Prior to Leaving Rehab**

✱ **Step 4 – Responder Disposition**

Responder Rehabilitation Guide For Medical Monitoring

Max Heart Rate and Signs and Symptoms Guide on Back

<p>Step 1 <u>Responder Enters Rehab</u></p> <p><i>If answer is YES to any question in Step 1, Send to EMS for evaluation</i></p> <p>1) Is pulse greater than 220-age? (Guide on Back)</p> <p>2) Is CO greater than 10%? (If available)</p> <p>3) Do you have Chest Pain, SOB, Nausea or Dizziness?</p> <p>4) Do they have an altered mental status or difficulty speaking?</p> <p>5) Does responder look or feel sick?</p>
<p>Step 2 <u>Hydration and Replenishment Cycle</u></p> <p>✓ Rest 10 minute per cycle</p> <p>✓ Cooling Remove gear; consider active cooling (wet towels, mister, immersion chairs, etc.)</p> <p>✓ Heating As needed</p> <p>✓ Hydration 12 oz of water over 10 minutes</p> <p>✓ Lack of gradual improvement may warrant a 2nd cycle in rehab.</p> <p><i>If responder's condition does not improve, or worsens, Send to EMS for evaluation</i></p>
<p>Step 3 <u>Prior to Leaving Rehab</u></p> <p><i>If answer is YES to any question in Step 3, Send to EMS for evaluation</i></p> <p>1) Do you have Chest Pain, SOB, Nausea or Dizziness?</p> <p>2) Do they have an altered mental status or difficulty speaking?</p> <p>3) Does responder look or feel sick?</p> <p>4) Is skin hot to touch?</p>
<p>Step 4 <u>Responder Disposition</u></p> <p>✓ If pulse is less than 110 → Return to Duty</p> <p>✓ If pulse equal to or greater than 110 → Repeat Rehab cycle 1 time and re-evaluate (20 min. total)</p> <p>✓ Re-Check: If pulse is less than 110 → Return to Duty</p> <p>✓ If pulse equal to or greater than 110 → Send to EMS for evaluation</p>

Updated: 1/3/11



Step 1 **Responder Enters Rehab**

- * If answer is YES to any question in Step 1, they go to EMS for evaluation.**
- * 1) Is pulse greater than 220-age? (Guide on Back)**
- * 2) Is CO greater than 10%? (If available)**
- * 3) Do you have Chest Pain, SOB, Nausea or Dizziness?**
- * 4) Do they have an altered mental status or difficulty speaking?**
- * 5) Does responder look or feel sick?**



Step 2 Hydration and Replenishment Cycle

- * Rest - 10 minute per cycle**
- * Cooling - Remove gear, consider cooling chairs, misters, or ice packs**
- * Heating - If needed**
- * Hydration - 12 oz of water over 10 minutes**

Lack of gradual improvement may warrant EMS eval or 2nd cycle in rehab If responders condition does not change or worsens warrants EMS evaluation



Step 3 Prior to Leaving Rehab

If answer is YES to any question below, they go to EMS for evaluation.

- * 1) Does responder have Chest Pain, SOB, Nausea, or Dizziness?**
- * 2) Does responder have an altered mental status or difficulty speaking?**
- * 3) Does responder look or feel sick?**
- * 4) Is skin hot to touch?**



Step 4 Responder Disposition

- ✿ If pulse less than 110: → **may return to duty**
- ✿ If pulse greater than 110: Repeat Rehab cycle time and re-evaluate. (20 min. total)
- ✿ Re-Check: If pulse less than 110 may return to duty.
- ✿ If pulse equal or greater than 110: Send to EMS for evaluation
- ✿ Return to Duty/Fire Ground/Home or Sent to EMS



Documentation

- ✱ **During the rehab process minimal documentation is suggested**
 - ✱ **Crew**
 - ✱ **Time into Rehab**
 - ✱ **Time out of Rehab**
 - ✱ **If a firefighter requires medical treatment follow local documentation processes.**



Handout

☼ Max Heart Rate Guide

☼ Signs and Symptoms

☼ Heat

☼ Cold

☼ Carbon Monoxide

☼ Heat Index

Max Heart Rate Guide

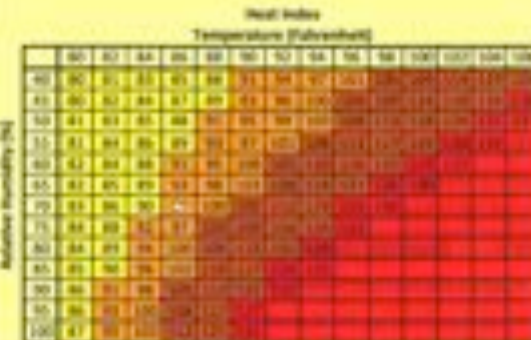
Age	Max Heart Rate	Age	Max Heart Rate
18	202	42	178
19	201	43	177
20	200	44	176
21	199	45	175
22	198	46	174
23	197	47	173
24	196	48	172
25	195	49	171
26	194	50	170
27	193	51	169
28	192	52	168
29	191	53	167
30	190	54	166
31	189	55	165
32	188	56	164
33	187	57	163
34	186	58	162
35	185	59	161
36	184	60	160
37	183	61	159
38	182	62	158
39	181	63	157
40	180	64	156
41	179	65	155

Signs and Symptoms Guide

HEAT SYMPTOMS		
Nausea	Shortness of Breath	Mental Confusion
Flushed Skin	Weakness	Seizure
Clamping	Sunburn	Exhaustion
Headache	Dehydration	
Rapid Heart Rate	Loss of Sweating	

COLD SYMPTOMS		
Headache	Dehydration	Shivers
Numbness	Mental Confusion	Muscle Rigidity
Waxy Pale Skin	Low Blood Pressure	

CARBON MONOXIDE GUIDE	
0-1%	Consider Normal
1-20%	Consider Normal in a Smoker
> 20%	Abnormal in Any Person; Consider High Flow Oxygen
> 25%	Significantly Abnormal in Any Person; Treatment Mandated



CAUTION EXTREME CAUTION DANGER EXTREME DANGER

Important: Since heat index values were derived for shady, light wind conditions, exposure to full sun/light can increase heat index values by up to 15°F.



Local EMS Protocol

- ✱ Special thanks to Dr. Kevin Sipprell
k.sipprell@mchsi.com
- ✱ Preliminary approval
- ✱ Will be submitted for final approval in the spring of 2011 to the Hennepin County ALS Protocol Committee



Overview

- ✱ **This protocol is designed for Paramedics to be able to monitor a responder for an extended amount of time on-scene Vs. the traditional immediate transport or release from care.**



EMS Arrival

- ✦ **Establish communication with IC or rehab division officer**
- ✦ **Stage ambulance near rehab**
 - ✦ **Consider egress and potential for additional incoming fire apparatus**



Fire Fighter Assessment

- ✱ **Perform focused assessment including complete set of vital signs and temperature(if applicable)**
 - ✱ **Consider 12-lead ECG**
 - ✱ **Consider Blood Glucose check**
 - ✱ **Consider transcutaneous CO measurement if avail. (see attached protocol)**
 - ✱ **Administer high flow O2 immediately if concern for CO toxicity regardless of level or ability to measure**



Immediate Transport

* Immediate transport for:

* Symptoms of chest pain, severe SOB, altered mental status and syncope

* HR > 220-age, Systolic BP < 100, RR > 30, SaO₂ < 85%

* Treatment for immediate transport

* IV, O₂, monitor, 12-lead ECG

* Consider hydroxocobalamin (Cyanokit) administration (separate protocol)



On Scene Treatment

- ✱ **Begin active cooling/warming based on weather conditions**
- ✱ **Provide oral rehydration 12-16 oz (10 oz min)**
- ✱ **Continue to monitor**



Reassess after 10 min.

* Vital signs

* Symptoms to assess for include:

* C/P, dizziness, shortness of breath, weakness, nausea/vomiting, headache, cramps, change in behavior/speech, unsteady gait

* If improving and asymptomatic, monitor until exit criteria met (see below)

* Minimum 20 min. rest/rehydration time

* Offer transportation, if refused, document per service specific guidelines



Reassess after 10 min. cont.

- ✱ **If worsening or symptomatic, transport**
 - ✱ **Follow EMS treatment and transport protocol**
 - ✱ **IV, O2, monitor, 12-lead ECG**
 - ✱ **Consider hydroxocobalamin (Cyanokit) administration (separate protocol)**



“May return to work” criteria

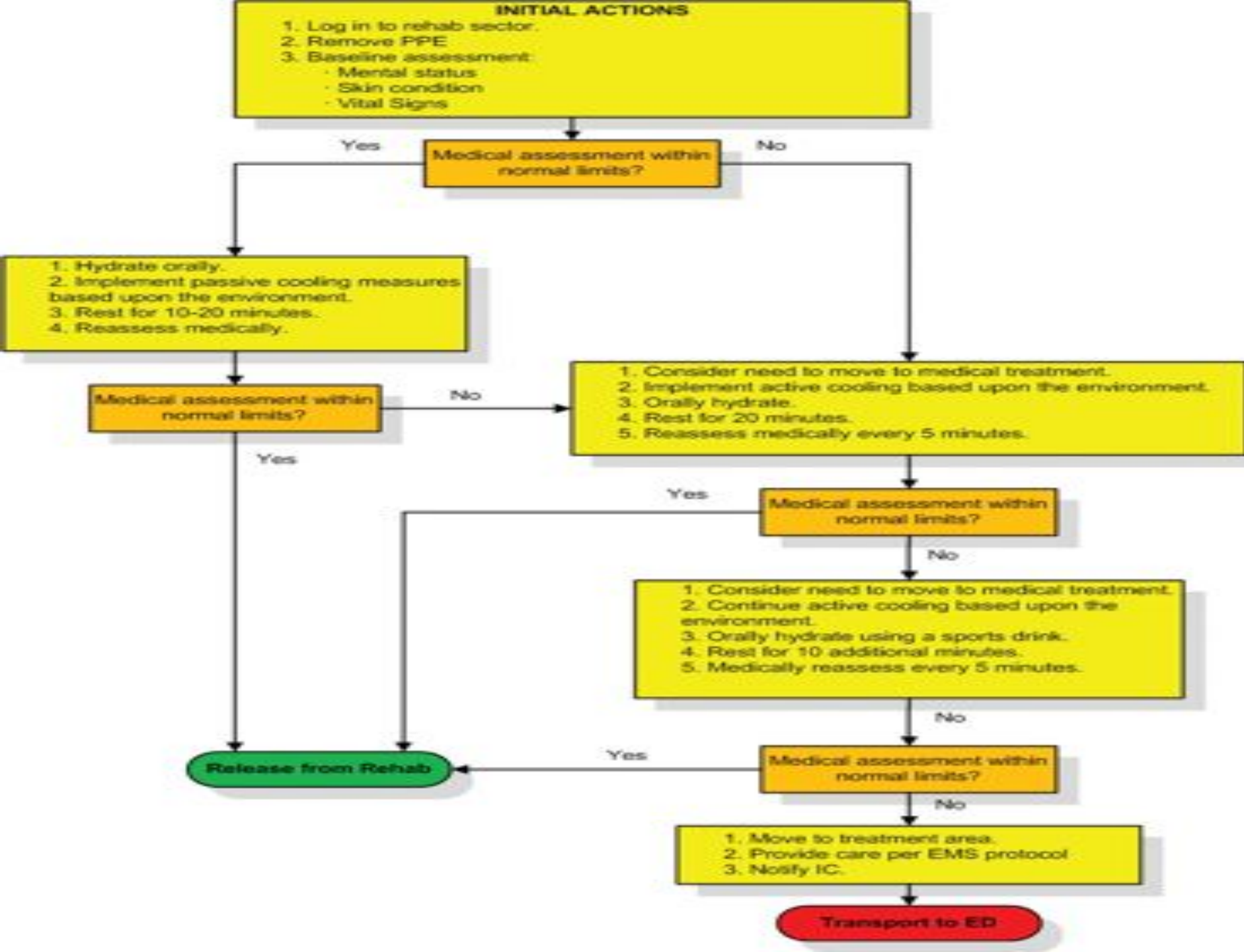
- * Must meet and document all below**
 - * Transport offer declined**
 - * Normal speech/mental status, steady gait**
 - * Normal Vital signs**
 - * HR<110, RR≤20, SBP>100, DBP<100, SaO2>95%, Skin temp -normal(or measured < 101.5°), CO<10(if applicable)**
 - * Asymptomatic**
 - * Paramedic discretion**



Dehydration Handout

Signs and Symptoms of Dehydration

% Weight Lost	Signs and Symptoms
1%	Increased thirst
2%	Loss of appetite, dry skin, dark urine, fatigue, dry mouth
3%	Increased heart rate
4-5%	Decreased work capacity by up to 30%
5%	Increased respiration, nausea, increased sweating, decreased urine output, markedly increased fatigue, muscle cramps, headache
10%	Muscle spasms, markedly elevated pulse rate, vomiting, dim vision, confusion, altered mental status





Questions?

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Handouts

- ✱ **Responder Rehab Guide for Medical Monitoring**
- ✱ **Rehab Officer Job Action Sheet**
- ✱ **Heat and Cold Stress Guide**
- ✱ **NFPA 1584 Objective and Curriculum**
- ✱ **Incident Rehab Check in and Check out**
- ✱ **EMS Rehab Protocol**