CHAMP
Uniformed Services University

Managing the Collapsed Runner: Marine Corps Marathon Medical Triage and Algorithms 2020

MCM 26.2
MARINE CORPS MARATHON

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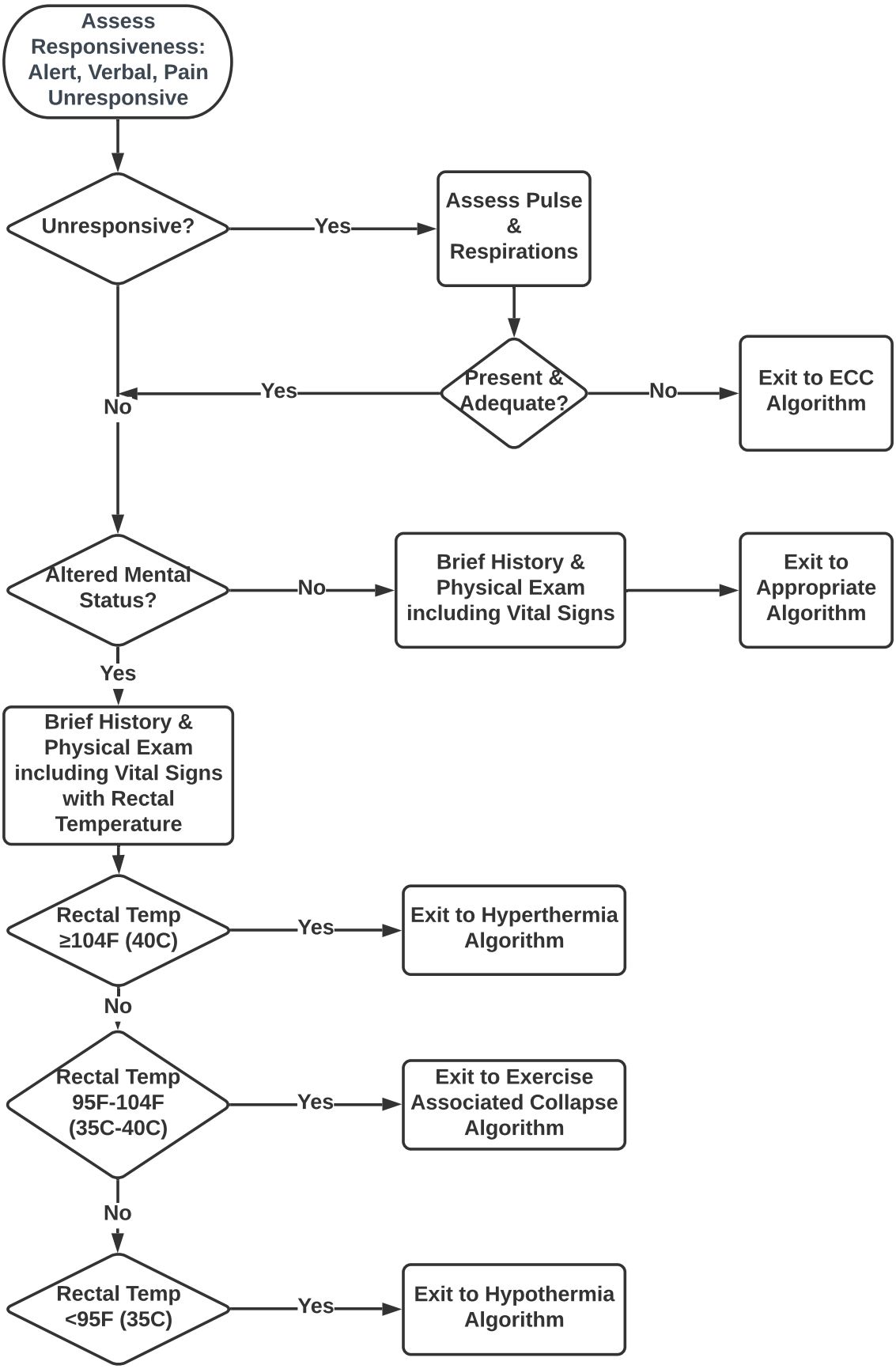
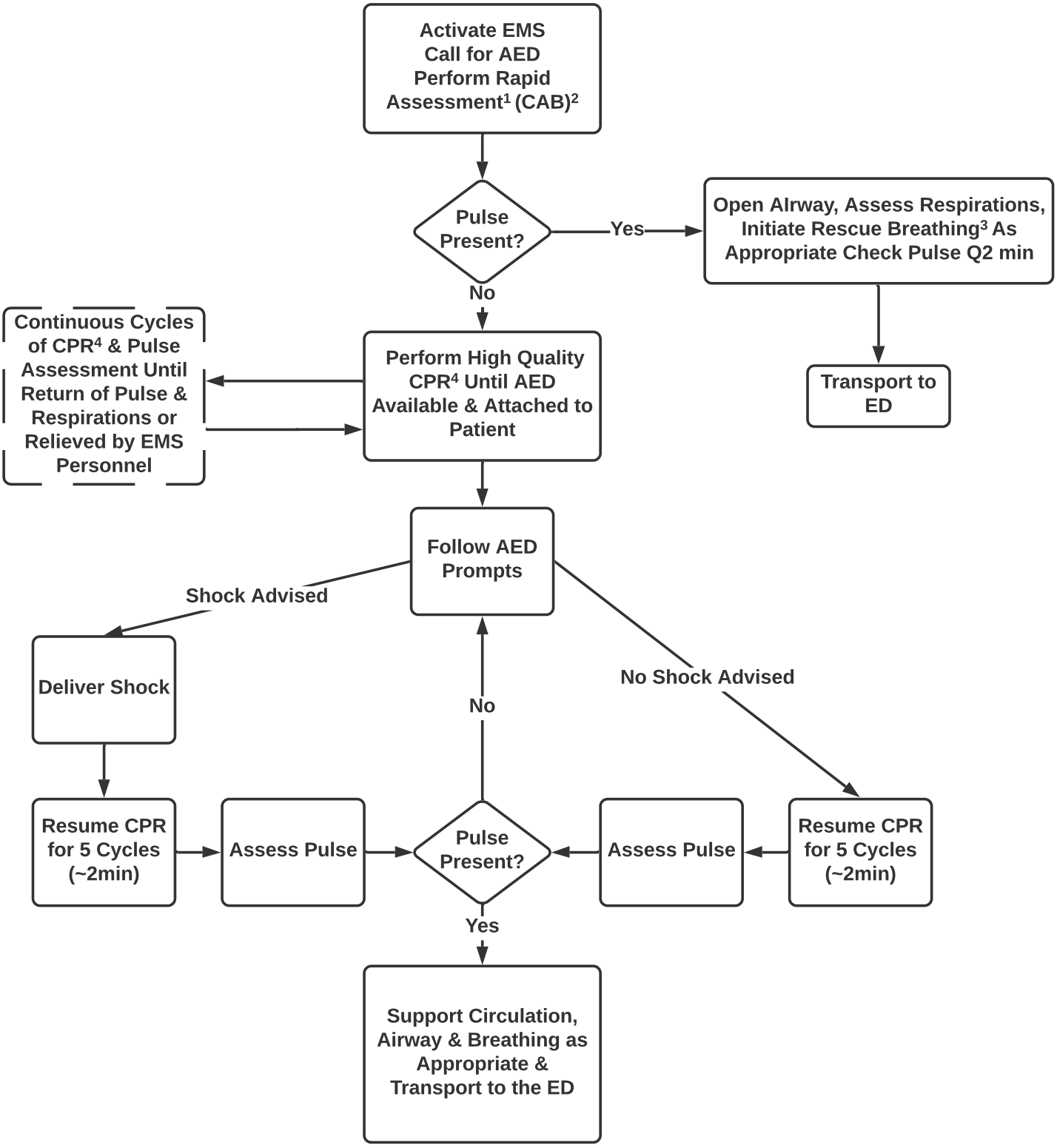
TABLE OF ALGORITHMS

I. Collapsed Athlete Traige (Master Algorithm)



II. Emergency Cardiac Care (ECC)

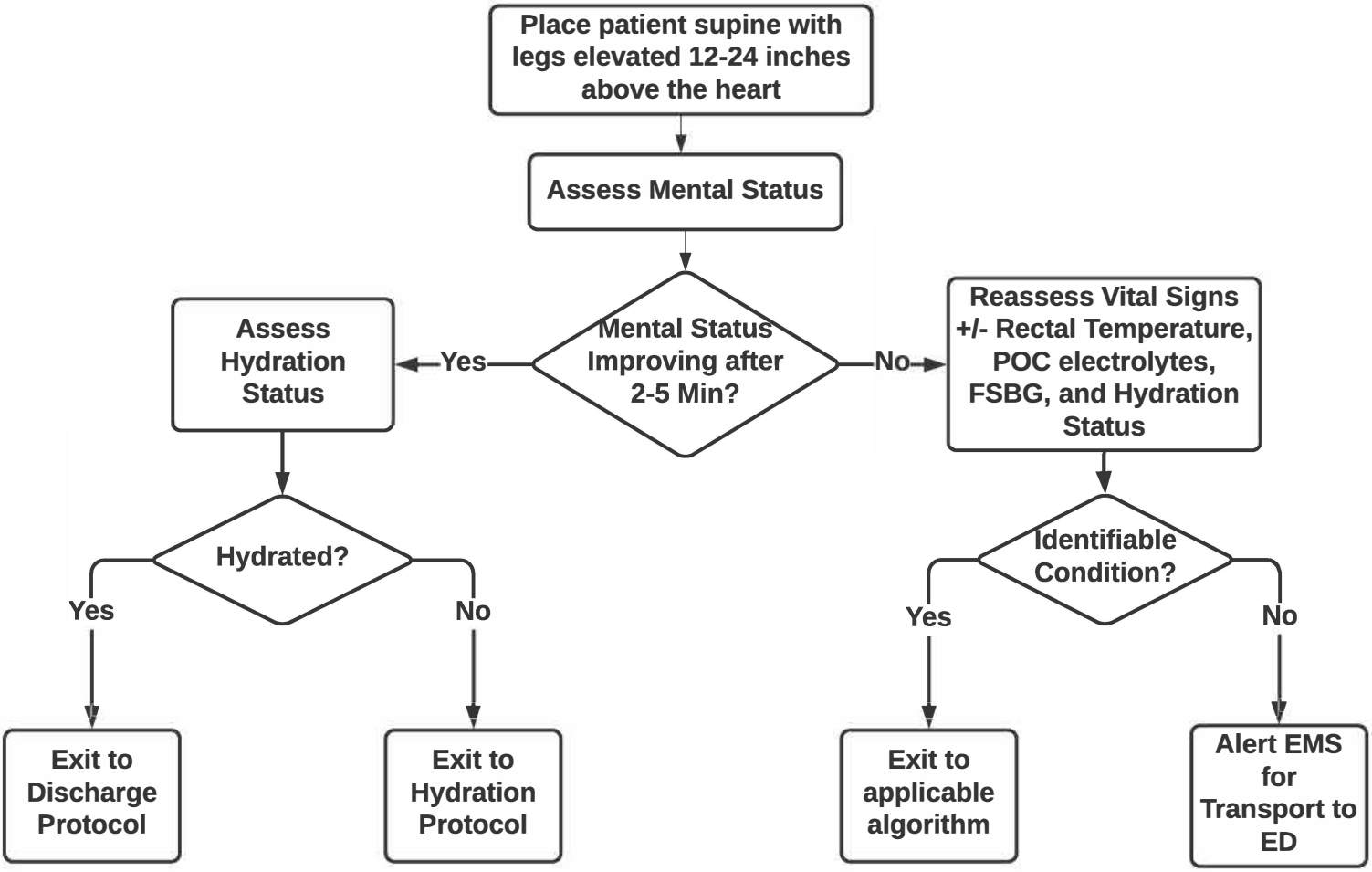


Principles & Considerations:

1) Rapid Assessment Includes: Open Airway, Assess Breathing & Check Pulse, no more than 10 seconds
2) ABC priority changed to CAB (Circulation, Breathing, Airway)- Initiate Chest Compressions ASAP
3) Adult Rescue Breating Rate: 1 Breath every 5-6 seconds
4) Adult CPR- 30 compressions:2 ventilations; 100 compressions/minute, depth of 2" with full chest recoil

**** For Cardiac Arrest refractory to initial ACLS interventions and defibrillation attempts, consider 1 ampule of Sodium Bicarbonate IV Push, as patients who collapse in the midst of strenuous exertion often have a profound concomitatnt lactic acidosis**
**** Do Not Delay Transport or Transfer of Care to EMS for Repeat Interventions**

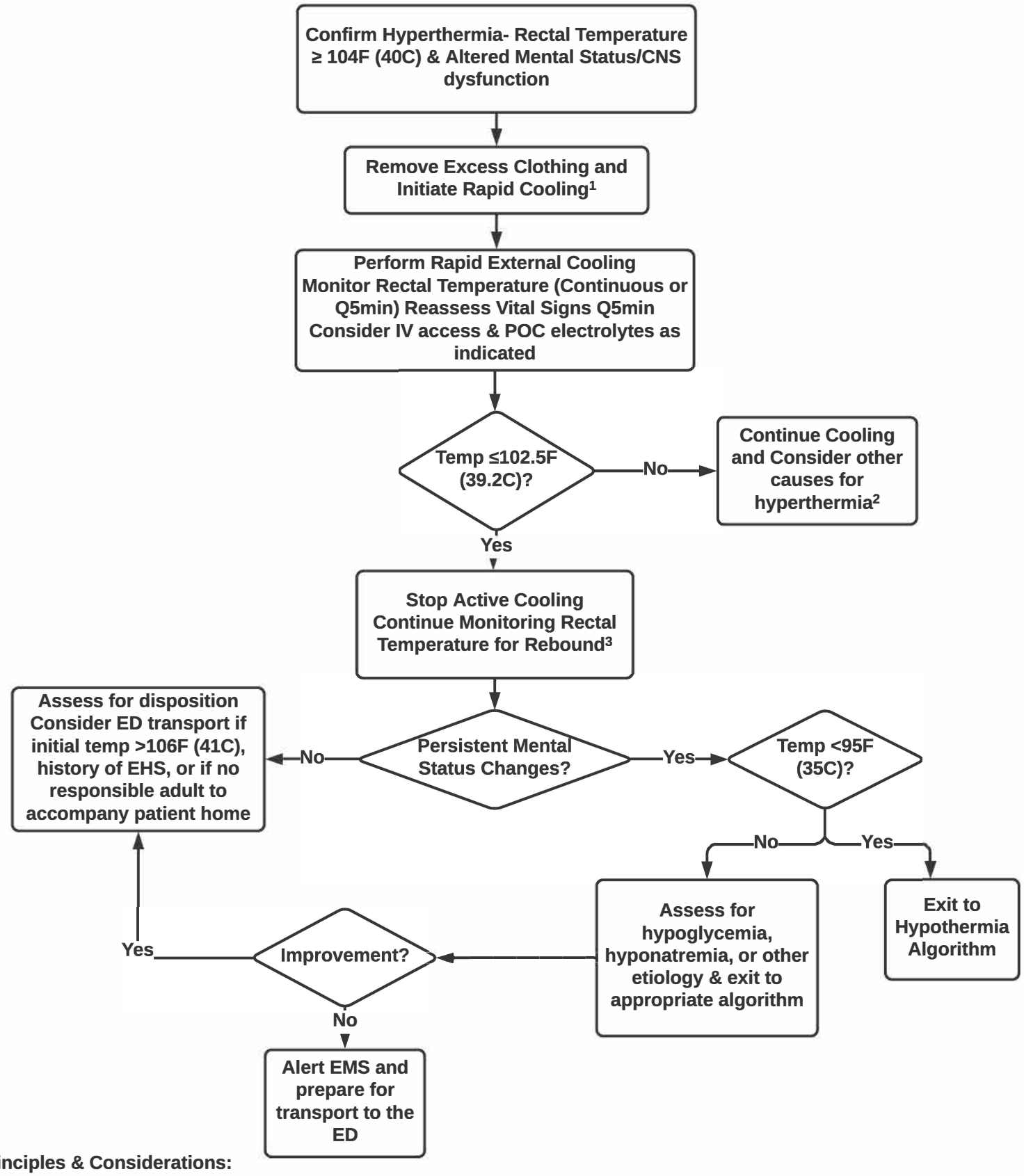
III. Exercise Associated Collapse (EAC)



POC- Point of Care testing for serum electrolytes
FSBG- finger stick blood glucose, if not included on serum testing

Assess Hydration:
a. Mild to Moderate Dehydration- signs and symptoms include: thirst, fatigue, headache, vomiting, reduced sweating, cold/clammy skin, decreased skin turgor, and sunken orbits
b. Severe Dehydration- signs and symptoms include: orthostatic hypotension, relative tachycardia, and capillary refill of >2 seconds, in additions to the findings described above.

IV. Hyperthermia



Principles & Considerations:

All Temperatures are Rectal Temperatures

Cool First and Transport Second

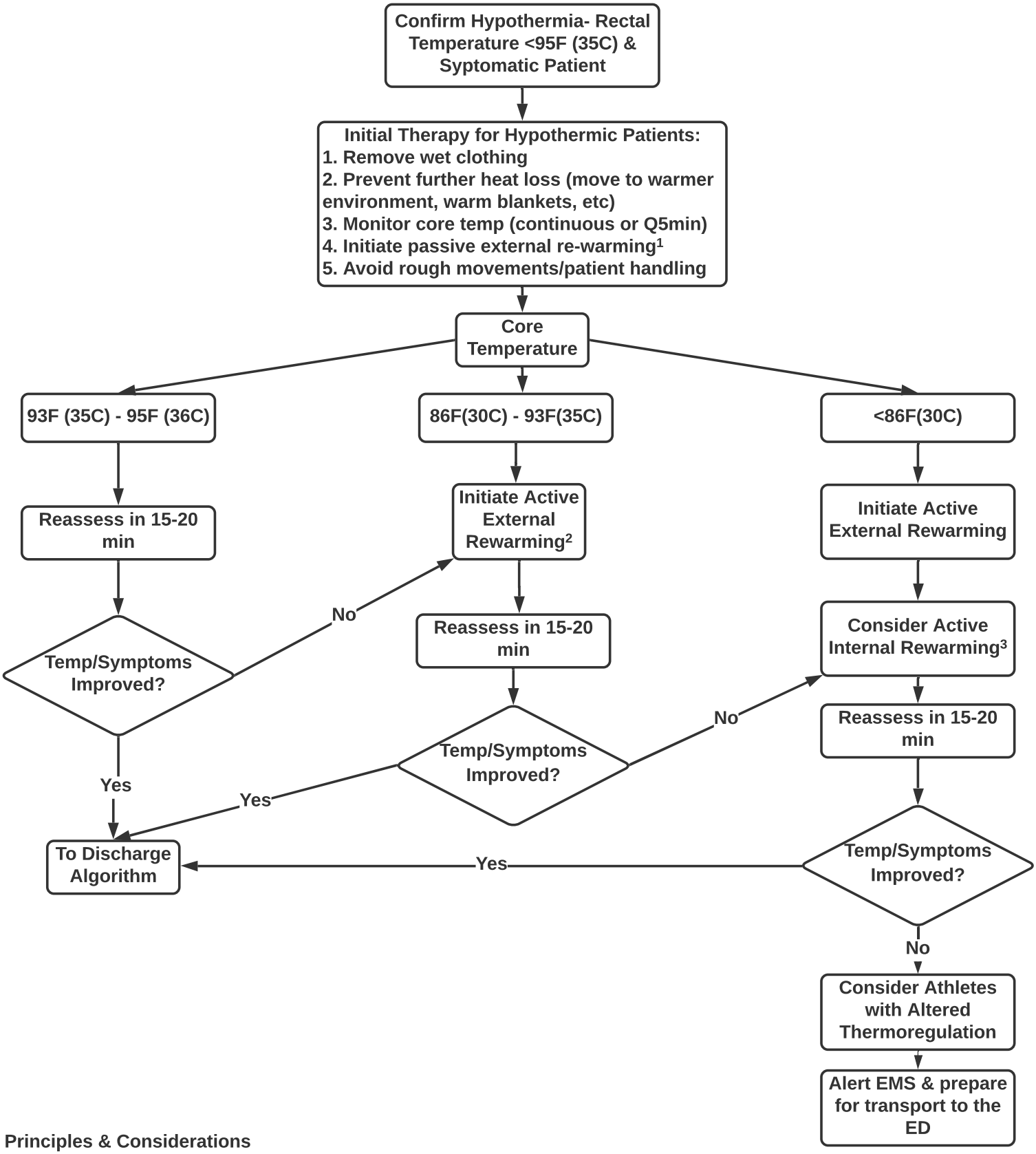
1. Preferred cooling methods are: 1) Ice Water Immersion, 2) Ice Water Baths with Dousing and Ice Passage and Packing with Fans (if available), May add cold IV fluids if serum sodium is normal

2. Consider Malignant Hyperthermia, Underlying infection, Neuroleptic Malignant Syndrome, patients with Altered Thermoregulation

3. Return to Active Cooling as clinically indicatecd

4. Mental status recovery may be delayed; some pateints will not return to normal mental status with temperature drop.

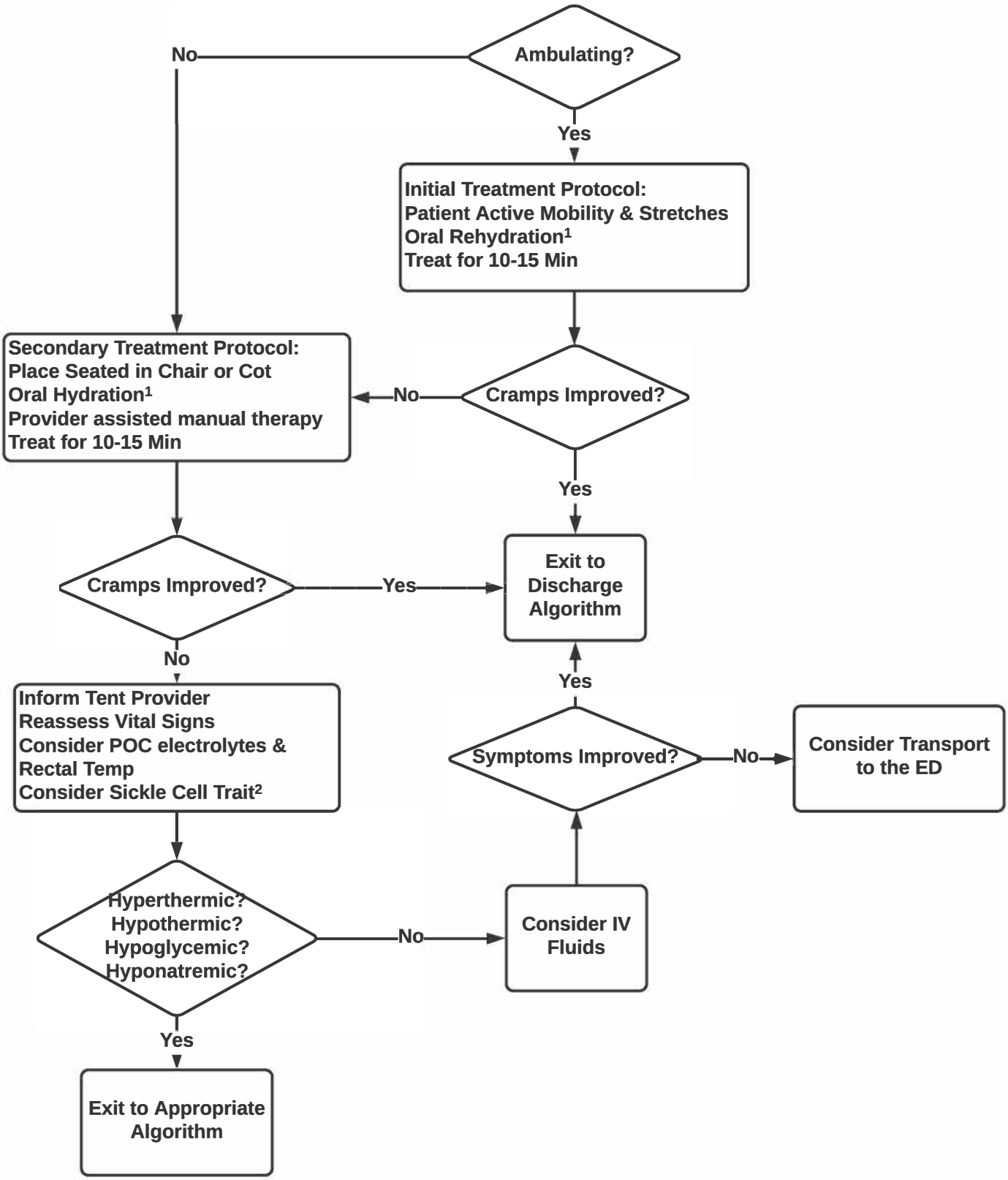
V. Hypothermia



Principles & Considerations
All temperatures are Rectal Temperatures
1. Passive Exernal Rewarming- Cotton, Wool, or Mylar Blankets
2. Acitve External Rewarming- Warmed Blankets, Heating Pads, Forced Warm Air
3. Active Internal Rewarming- Warm oral fluids (if patient has normal mental status and is tolerating PO), warmed IV fluids (40-42C), warmed O2

In General- warm core/trunk before extremities. Consider POC electrolyte and finger stick glucose testing.
If patient becomes pulseless- activate EMS and begin CPR

VI. Exercise Associated Muscle Cramps



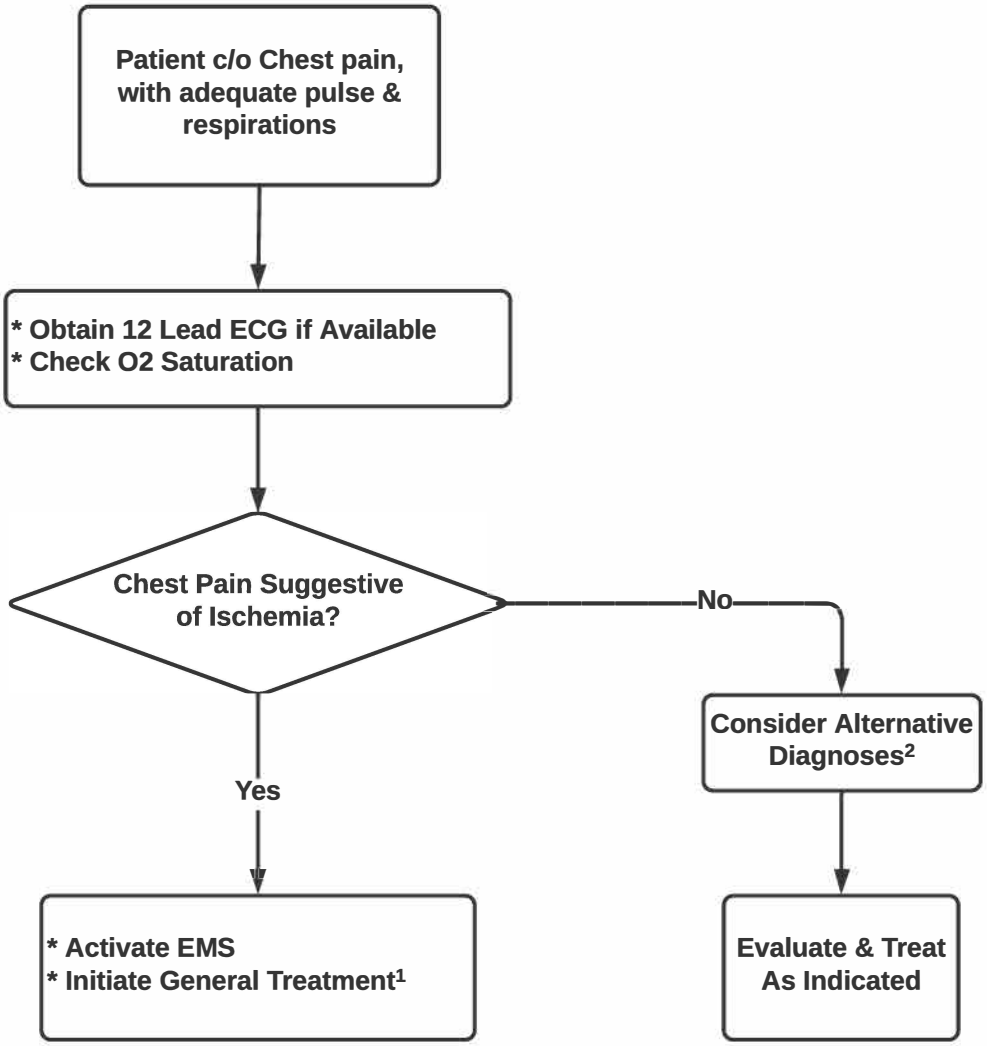
Priciples & Considerations:

1. Oral Hydration with Clear Fluids (Water, Sports Drink, Broth) per patient preference

2. Consider Exercise Associated Collapse/Cramping associated with Sickle Cell Trait and/or Compartment Syndrome if: African American, Perisstent cramping without visible cramps/fasiculations, muscle rigidity, and/or sustained severe pain.

Obtain detailed medication history and consider medications which may contribute to dehydration, hyperthermia, and cramping.

VII. Chest Pain



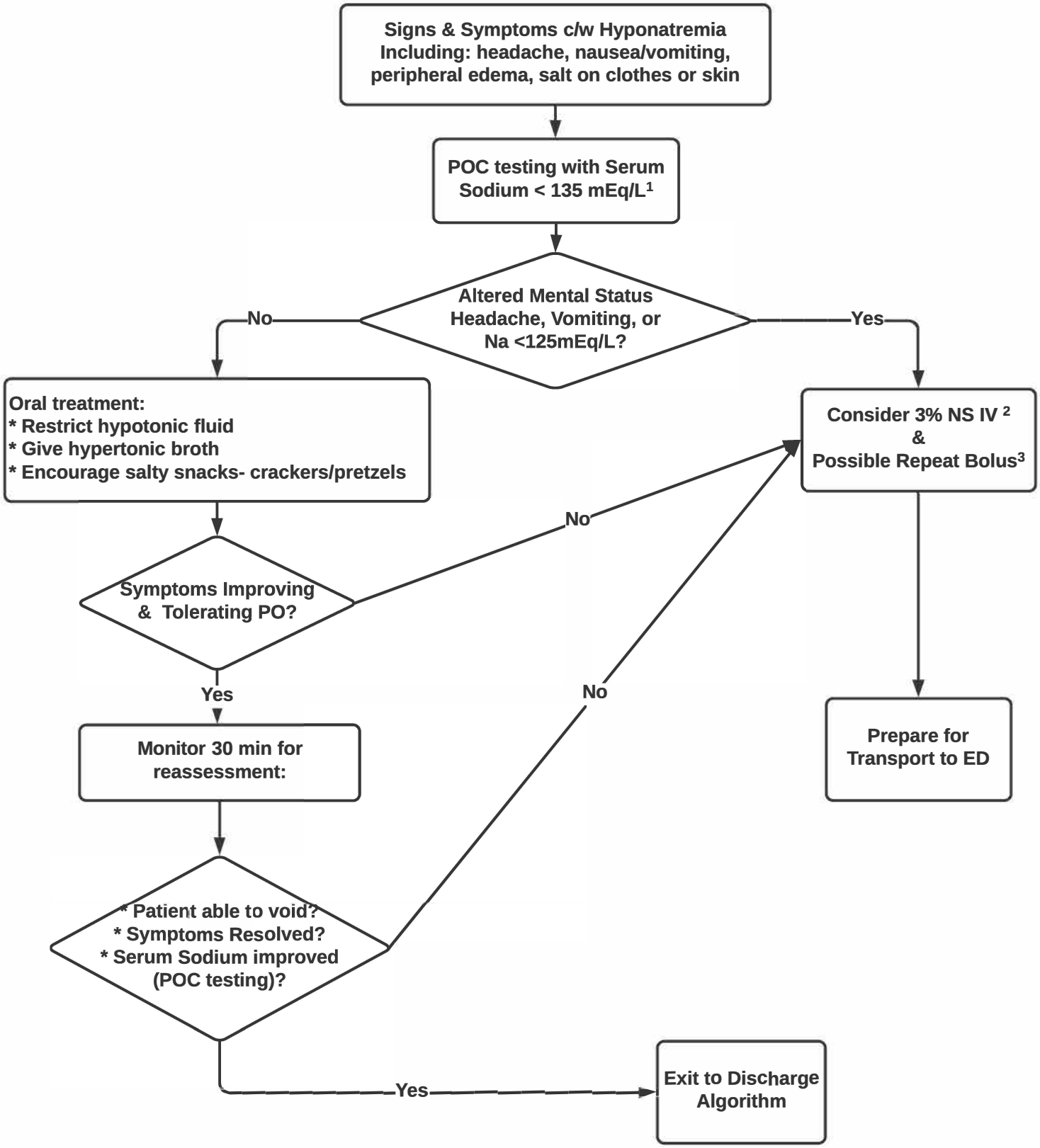
Principles & Considerations:

1. Immediate General Treatment Guidance

- *** Oxygen: by mask or nasal cannula if O2 <93% on room air**
- *** Aspirin: 325mg tablet should be administered and chewed (unless contraindicated)**
- *** Nitroglycerine:**
  - **-Administer (unless contraindicated)**
    - *** One sublingual tablet (0.03 - 0.04mg)**
      OR
    - *** One sublingual spray**
  - **- May repeat twice at 5 minute intervals**
  - **- Systolic Blood Pressure should be greater than 90-100mg Hg before administration of each dose**

2. Consider Alternative Etiologies of Chest Pain: PE, Pneumonia, Myocarditis/Pericarditis

VIII. Hyponatremia



Principles & Considerations

1 Patients with Serum Sodium (Na) 130-135 are rarely symptomatic- Consider other causes of altered mental status

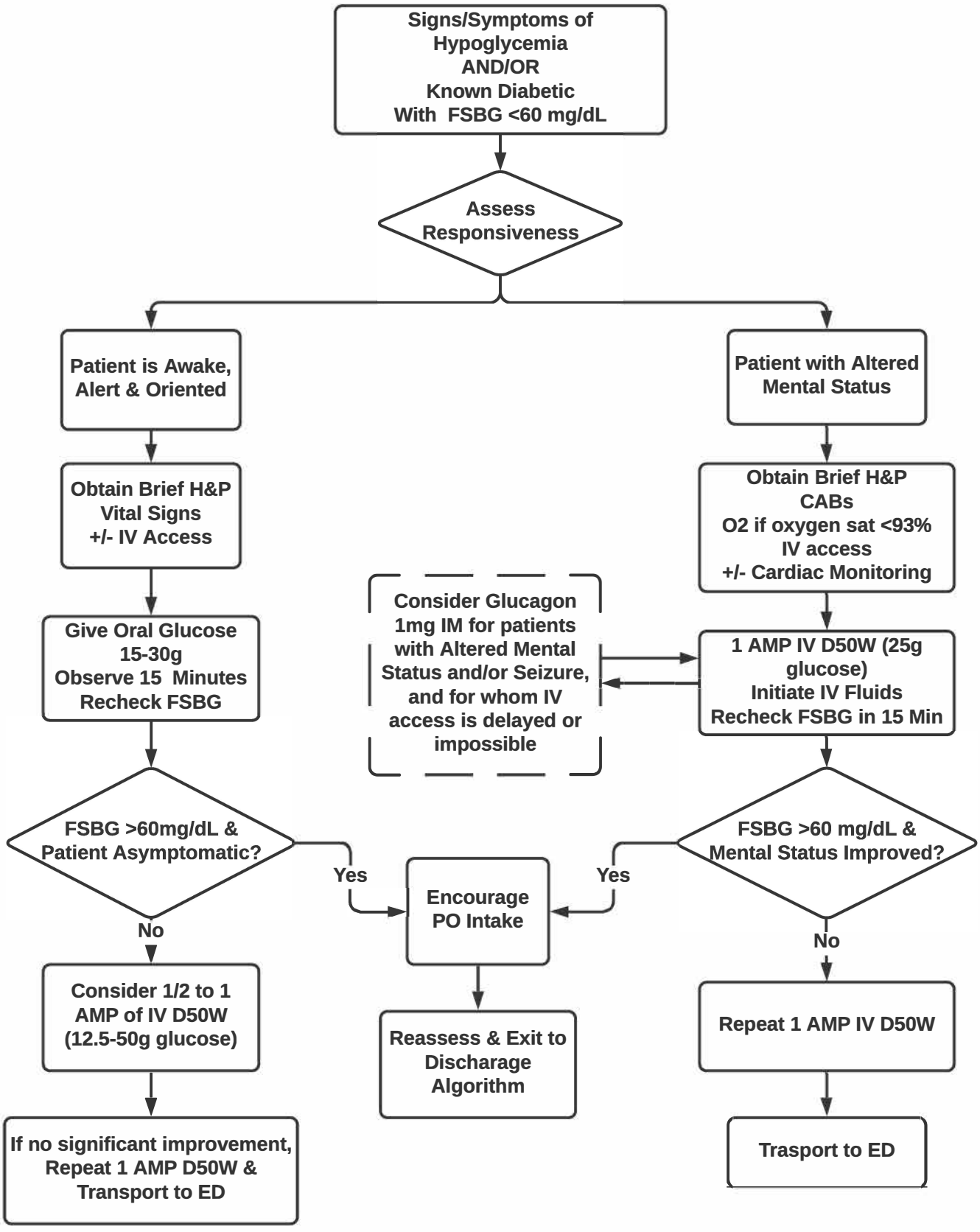
2. 100mL 3% NS will raise serum sodium 1-2 mEq/L

3. Consider repeat bolus for:

- *** Delay in transport**
- *** Worsening mental status/symptoms**
- *** Serum sodium <124 mEq/L**

NOTE- there have been NO CASES of CNS myelinosis reported from 3% NaCL treatment of race-associated hyponatremia

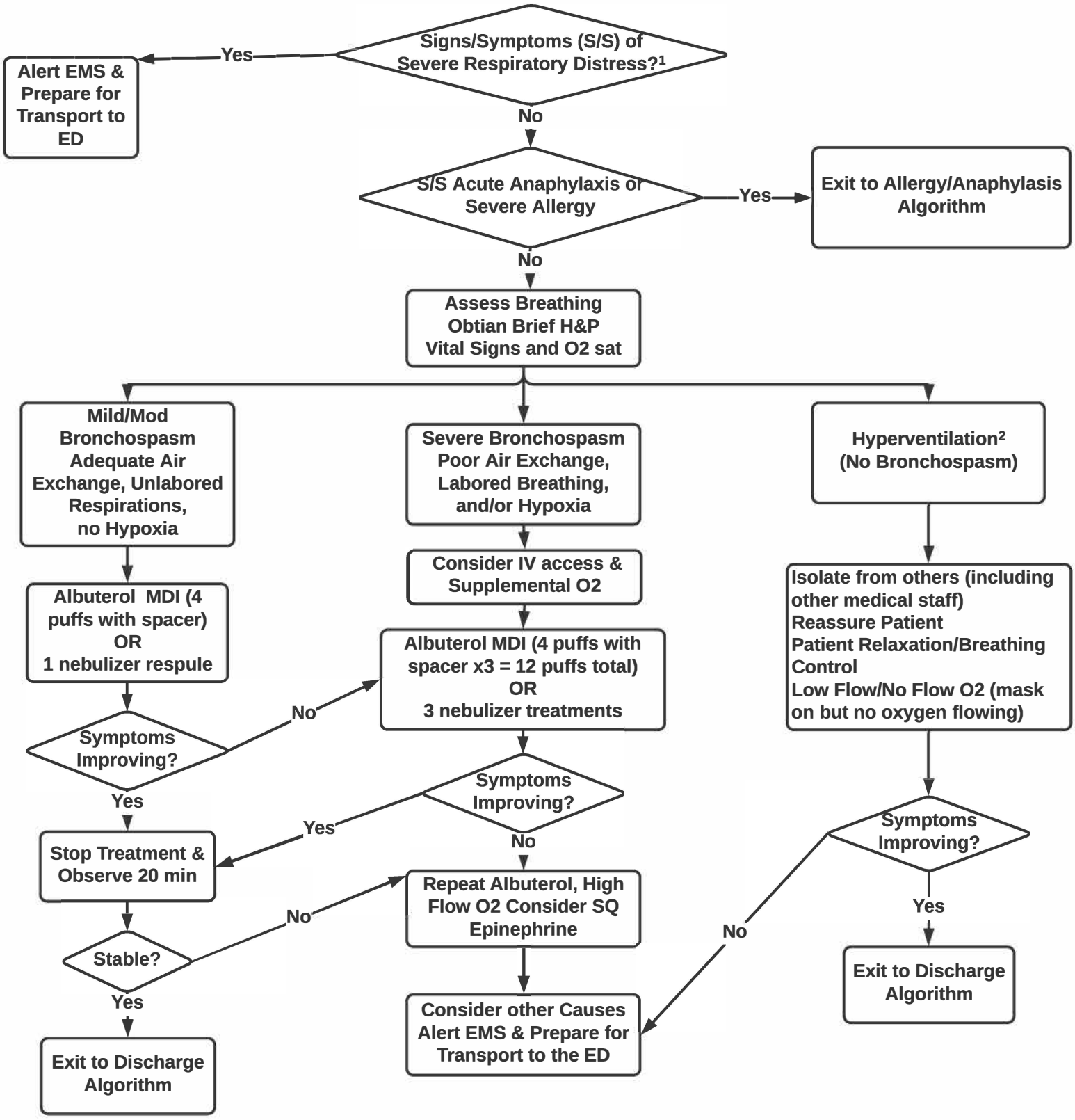
IX. Hypoglycemia



Priciples & Considerations

* FSBG- Finger Stick Blood Glucose
* Evaluate for Insulin Pump and If Present, PAUSE the Pump
* Consider discharge for patients with
    * FSBG >60mg/L
    * Patient NOT on a long acting hypoglycemic agent
    * Normal Mental Status, No focal neurologic Deficits
    * Tolerating PO and can eat a full carbohydrate meal

X. Respiratory



Principles & Considerations:

1. Severe Respiratory Distress- Tripod Position, 2-word sentences, stridor, cyanosis

2. Exercise Induced Hyperventilation

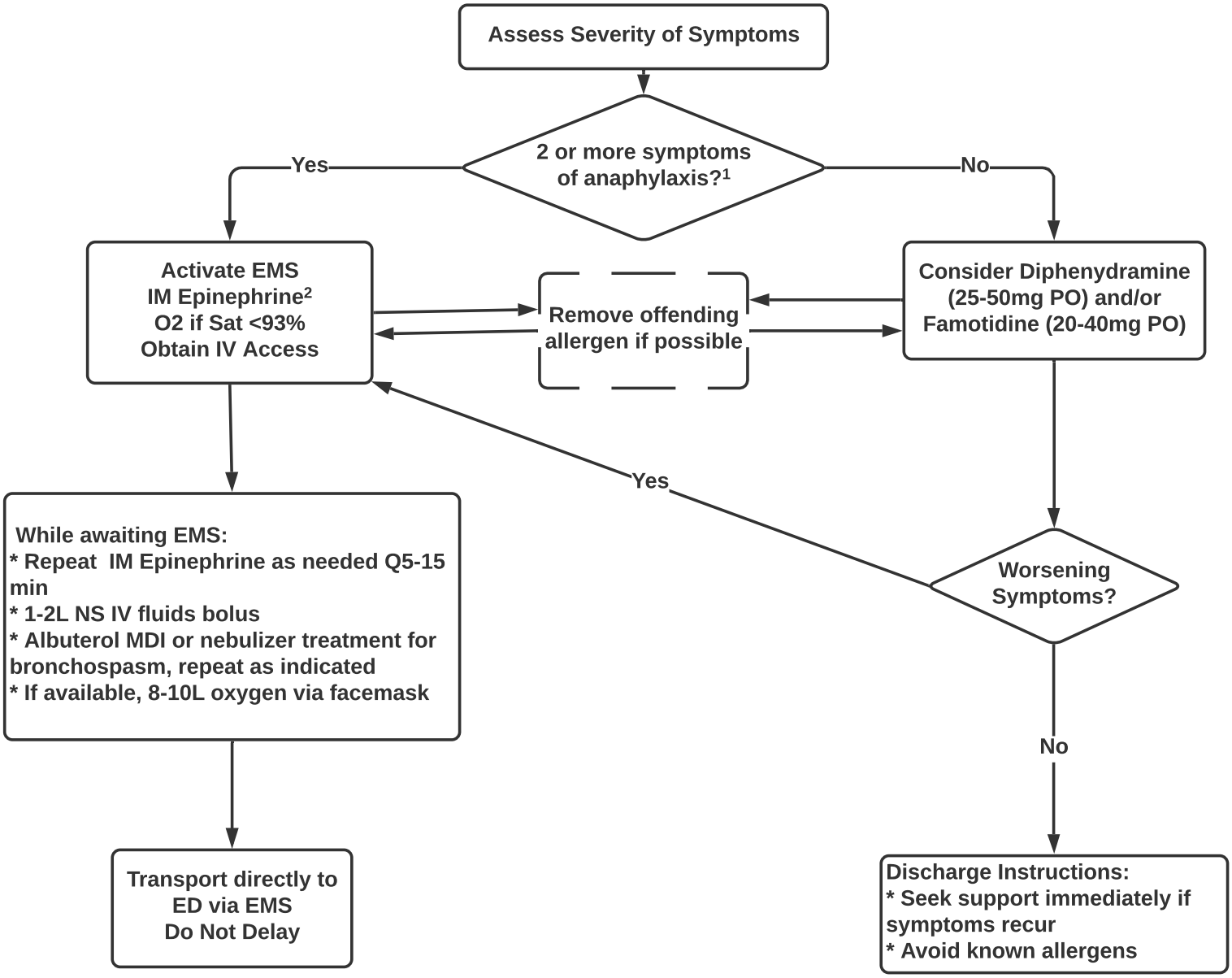
- **Common cause of shortness of breath in athletes, especially at the finish line**
- **Contributing factors: new to event, sprinting to finish, faster pace than usual; acidosis --> anxiety .->hyperventilation**
- **Characteristics include:chest tightness, lightheadedness, perioral/hand/foot paresthesias, carpo-pedal spasm, nausea +/- vomiting; O2 sats will be normal; lung exam will reveal good air entry, and clear breath sounds,**
- **May have referred vocal cord sounds (louder on ascultation of the larnyx); Instruct patient to stop making noise**

*** Bronchospasm can limit airflow and wheezing may be louder *after* albuterol treatment**

*** Albuterol may cause tachycardia and may lower serum potassium**

*** Aid stations have limited supply of inhalers-- DO NOT give inhaler away; If no spacer available- improvise by cutting a hole in a plastic water bottle, cup, or toilet paper roll**

XI. Allergy/Anaphylaxis



Principles & Considerations

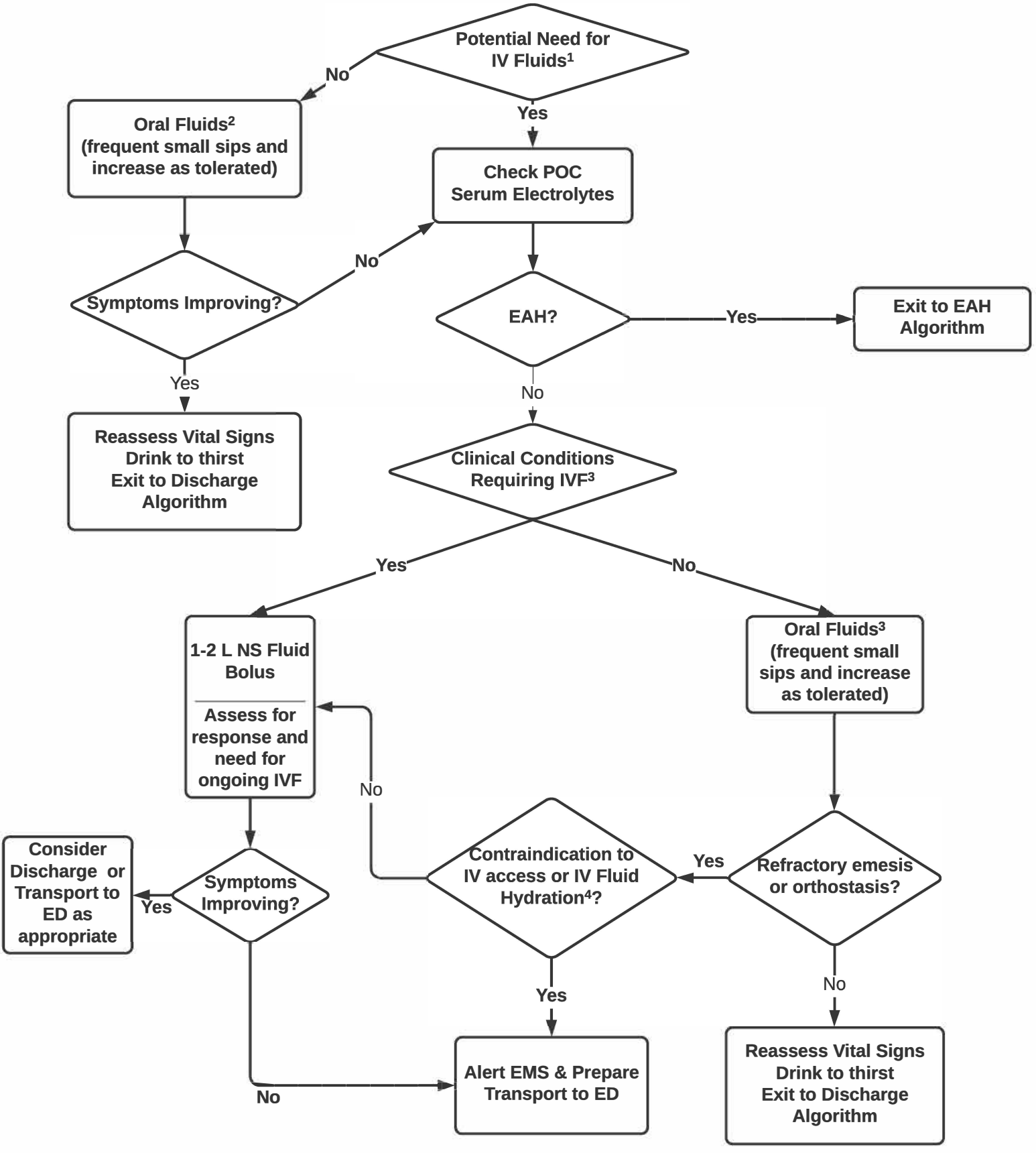
1. Anaphylaxis is HIghly Likely with rapid onset of symptoms (over minutes to hours) and with 2 or More of the Following Symptoms after exposure to allergen

- Respiratory Compromise: wheezing, cough, stridor, shortness of breath, choking, or throat closures
- Hypotension and End Organ Dysfunction: syncope, hypotonia, dizziness, collapse
- Skin or Mucosal Symptoms: Hives, itching, flushing, swelling of mouth, lips, tongue, or uvula, peri-orbital edema
- Gastrointestinal Symptoms: nausea, vomiting, diarrhea, crampy abdominal pain

2. Epinephrine dose for adults is 0.3mg and should be given IM in the anterior/lateral thigh

- If using an auto-injector- hold for 10 seconds after activating the device
- Pediatric patients can use an adult auto-injector if needed.

XII. Hydration Guidance



Principles & Considerations:

1. Dehydration, hypotension, orthostasis, severe muscle cramping,
2. Electrolyte drinks are preferred, but high sugar content may affect tolerance, consider concurrent salt replacement/salty foods if heavy sweating, salt lines on clothes, or salt crusting on skin
3. Conditions which may require IVF: DKA, EHS, Severe Rhabomyolysis, AKI, EAC with Sickle Cell Trait
4. Celluitis at site, obvious signs of fluid overload (e.g., pulmonary edema) warrant precautions

IXIII. Discharge Considerations

General Discharge:
1. Provide a copy of the medical encounter form to the patient
2. Ensure patient's information is correct in the medical database
3. Recommend follow up with an appropriate provider
4. All patients should be given instructions, precautions, and warning signs, and should understand under which conditions they should seek emergency care.
5. Patients should be discharged with dry clothing if at all possible
6. Patients who have received sedating medications (including diphenhydramine) should not drive home; should be discharged to the care of a responsible adult

EMS Transfers:
1. Provide a copy of the medical encounter form to the patient and EMS
2. Notify Medical Information Tent of the transfer
3. Notify Medical Director/Coordinator of the transfer

Pediatric Patients:
1. Notify guardian/emergency contact as soon as the patient arrives in the Medical Tent
2. Relase patient to parent/guardian only
3. Provide a copy of the medical encounter form to the parent/guardian

Signing out Against Medical Advice (AMA)
1. Ensure the patient signs the encounter form with "AMA" circled
2. Provide a copy of the medical encounter form to the patient
3. Notify Medical Director/Coordinator about patient signing out AMA
4. Flag the encounter in the medical database

Exertional Heat Stroke
1. Ensure temperature remains between 95.5F- 102F (35C-38.9C) prior to discharge
2. Notify Medical Director/Coordinator of injury and max. temperature
3. Ensure all temperatures/labs/data are entered into the medical tracker
4. Flag the encounter in the medical database

Exertional Hyponatremia
1. Ensure that POC lab values are entered into the medical tracker
2. Recommend follow up with appropriate provider

Exercise-Associated Muscle Cramps
1. Provide precautions regarding muscle soreness and worsening symptoms
2. Recommend gentle stretching, oral hydration, and salty foods for 24 hours

Hypolycemia
1. Ensure that POC lab values are entered into the medical tracker *
2. Ensure patient is NOT on a long acting hypoglycemic agent
3. Patient must have normal mental status, no focal neurologic deficits and should be tolerating PO and can eat a full carbohydrate meal

Respiratory, Alergy/Anaphylaxis
1. Instruct patient to seek support immediately if symptoms recur, many patients will need additional doses of medication
2. Instruct patient to avoid known allergens

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