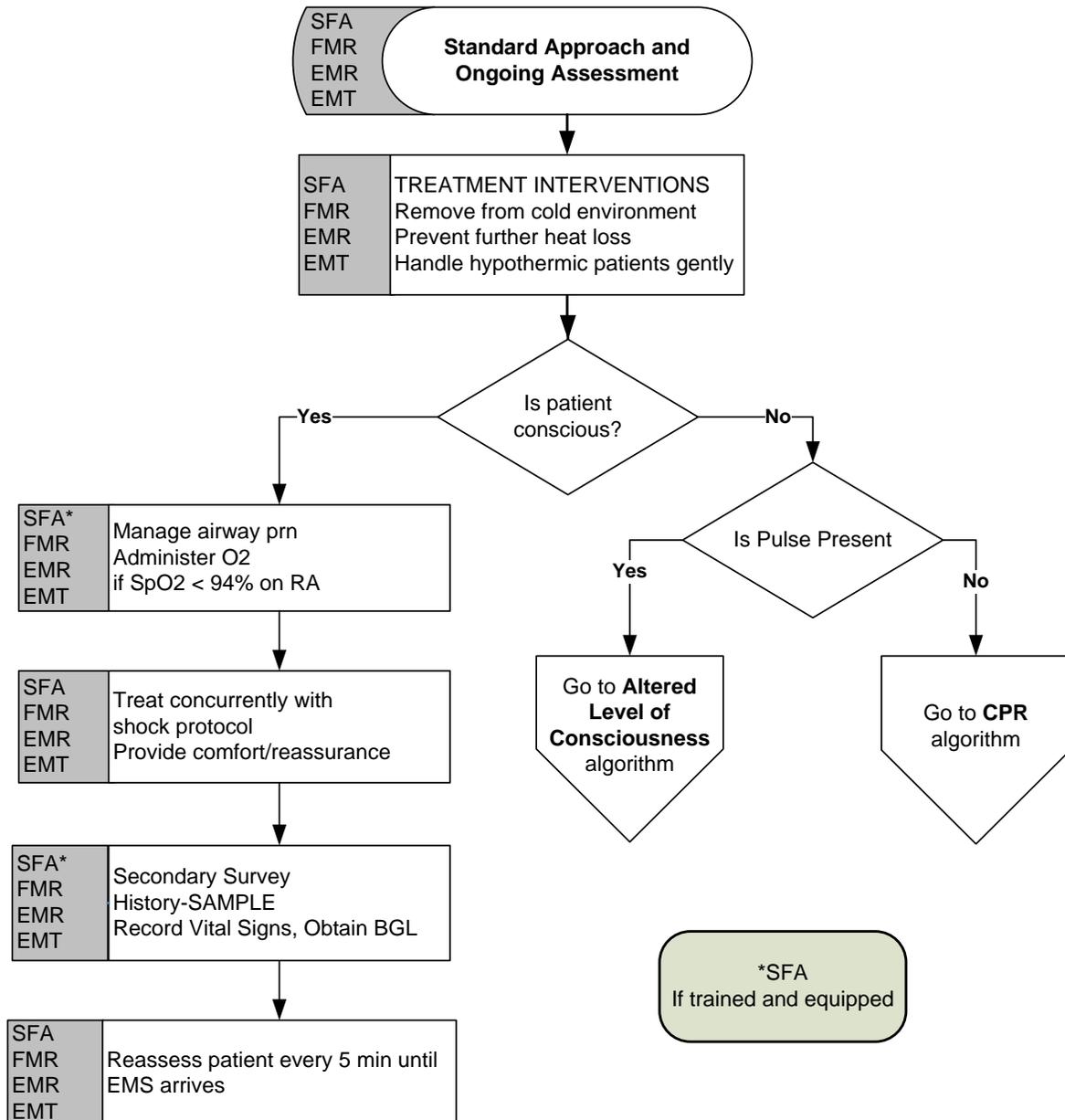


## Algorithm 15 Environmental Emergencies – Cold Related



Use a nasal cannula with oxygen at 4 – 6 litres/min for patients who do not require high-flow oxygen or are unable to tolerate a face mask. (I.e. mild shortness of breath, nauseated)

Obtain SpO<sub>2</sub> on room air prior to administering O<sub>2</sub>, if possible. Do not delay administering oxygen for patients in respiratory distress.

Report the oxygen saturations to responding EMS crews.

## **Environmental Emergencies – Cold Related (Algorithm 15)**

Severe hypothermia (body temperature below 28° C (82° F) is associated with marked depression of cerebral blood flow and oxygen requirement, reduced cardiac output, and decreased arterial pressure. Full resuscitation with intact neurological recovery is possible. The victim's peripheral pulses and respiratory efforts may be difficult to detect, but life-saving procedures should not be withheld on clinical presentation.

### **Recognizing Frostbite**

Cold exposure injuries to the skin and underlying tissues can vary in degree from superficial to deep. Superficial injuries are observed as skin that appears pale and does not return to normal colour with palpation although the underlying structures are soft. Deep injuries involve freezing of the underlying tissues with permanent cell damage. The skin appears white and waxy and the part feels firm when gently palpated. There may be blisters or swelling. When thawed or partially thawed, the skin may appear red with areas of purple or white.

When treating frostbite injuries in the pre-hospital setting, constrictive jewellery must be removed and the area covered with dressing. Do not break blisters or apply heat. Do not try to re-warm the area in deep tissue injuries. Do not re-warm superficial frostbite if re-freezing is likely.

### **Recognizing Hypothermia**

The signs and symptoms of hypothermia gradually become more severe as the core temperature falls. A general assessment of the patient's core temperature can be made by feeling the skin temperature of the abdomen with the back of your hand. If the abdomen feels cool to the touch, it is likely that the patient is experiencing a decreased core temperature.

At the onset of hypothermia, the patient is usually alert and shivering. As the core temperature drops, shivering stops and muscular activity decreases. Fine muscle coordination will be affected first. Eventually, all muscle activity stops. As the core temperature drops to 34° C (93° F), the patient's LOC begins to decrease.

Poor coordination, memory disturbances, impaired judgment, dizziness, and difficulty speaking follow. Below 30° C (86° F), the vital signs begin to diminish. The pulse slows and becomes weaker or may be completely absent. Respirations are extremely shallow or absent. The patient may appear dead.

Attempting to measure the body temperature in these patients may not be useful due to poor accuracy.

## **Management**

Cold Exposure - Remove from cold environment and protect from further heat loss, remove wet cloths, do not attempt to re-warm frozen limbs

## **Conscious Patients**

### **Stop the Cooling Process**

It is important to prevent further heat loss from the patient's body core by removing wet garments; insulating the patient in warm, dry material; and shielding the patient from the wind.

### **Complete the Initial Survey**

Pulse and respirations may need to be checked for longer periods to detect minimal cardiopulmonary efforts. The pulse should be checked for a span of 30 - 45 seconds to confirm pulselessness or profound bradycardia in severe hypothermia.

Manipulation of limbs should be kept to a minimum in order to avoid precipitating ventricular fibrillation. The patient should be moved in the horizontal position to avoid aggravating hypotension.

### **Administer Oxygen**

Airway management and patient movement should be undertaken as gently as possible to avoid precipitating ventricular fibrillation. Provide high-flow oxygen (if trained and equipped) as soon as possible.

## **Unconscious Patients**

### **Stop the Cooling Process**

Prevent further heat loss from the patient's body core by insulating the patient in warm, dry material; and shielding the patient from the wind.

Assess the Patient

Determine the LOC (**AVU**).

Assess the **ABCs**.

### **Assist Ventilations**

**If no adequate breathing** – Provide ventilation with a one way valve mask or shield as necessary.

Provide high-flow oxygen (if trained and equipped) as soon as possible. Check for a pulse every 2 min. Complete an initial survey.