# Maritime Health Trainings for Seafarers and Doctors

## « Training-9 Burn, Scalds, Frostbite and Effect Heats»

**ERASMUS+ KA2 - Cooperation for Innovation and the Exchange of Good Practices**
**KA202 - Strategic Partnerships for vocational education and training**

# Burns, Frostbite and Heat Stroke

✓ ***Learning Objective;***

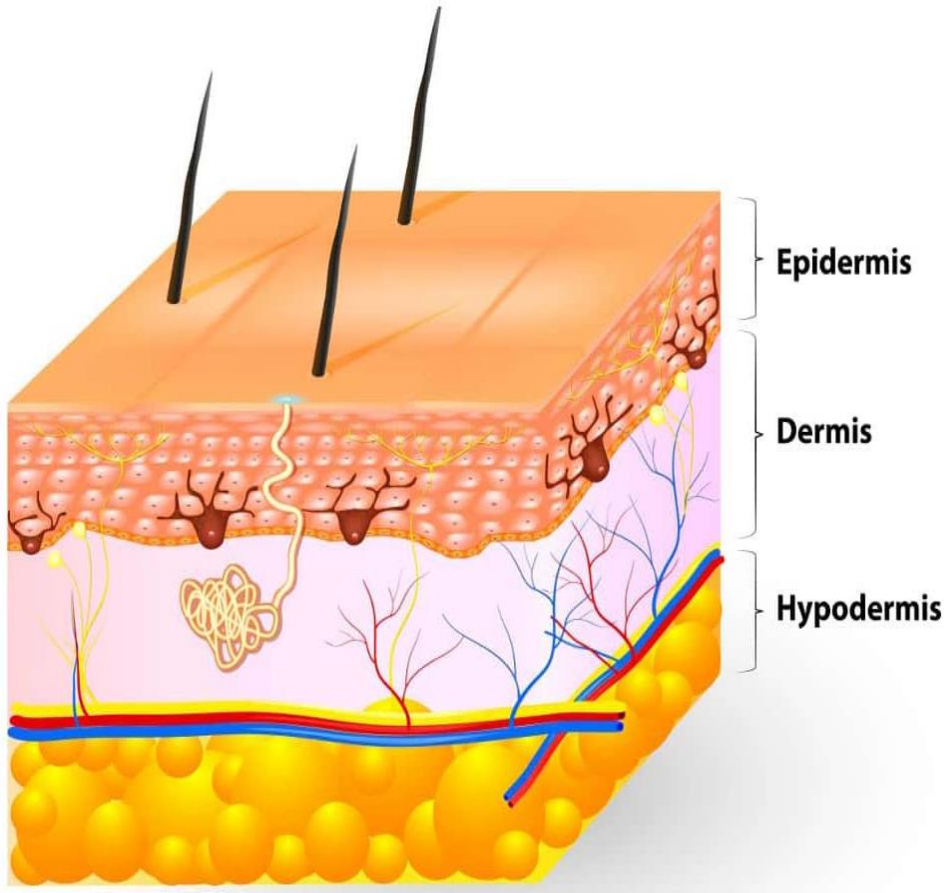
This section is aimed to raise awareness of officers on burns, frostbite and heat stroke to happen onboard. Upon completion of this section, trainers will be able to:

- Explain classification of burns
- Explain severity of a burn
- Explain types of hypothermia

- Familiarize on first aid intervention to ;
  - general burns
  - chemical substance burns
  - electrical burns
  - to hypothermia
  - to frostbite
  - to heat stroke

# Burn, Scalds, Frostbite and Effect Heats

- Burn is tissue impairment resulting from any heat exposure. Burn can cause shock and infection.
- Large burns that cause acute plasma loss cause shock.

# Classification of Burns

## Burns Caused by External Factors

Burns caused by:

- heat,
- contact with dry/wet heat
- frostbite,
- electricity,
- ray (sunlight)(UV)
- friction.

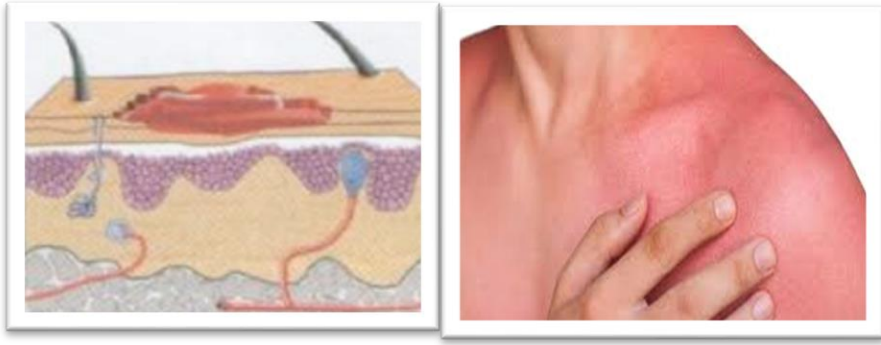
## Burns Caused by Chemicals

- Acids (Sulfuric acid, hydrochloric acid etc.)
- Alkalis (Potassium hydroxide, quicklime)
- Phosphorus and other chemicals


# Determination of the Severity of a Burn

## First-degree Burn

- It occurs on the outer skin layer. (Epidermis)
- Redness turning pale on pressure occurs, and pain and swelling also occur in cases of mild burns.
- It heals in 3-7 days without a scar.



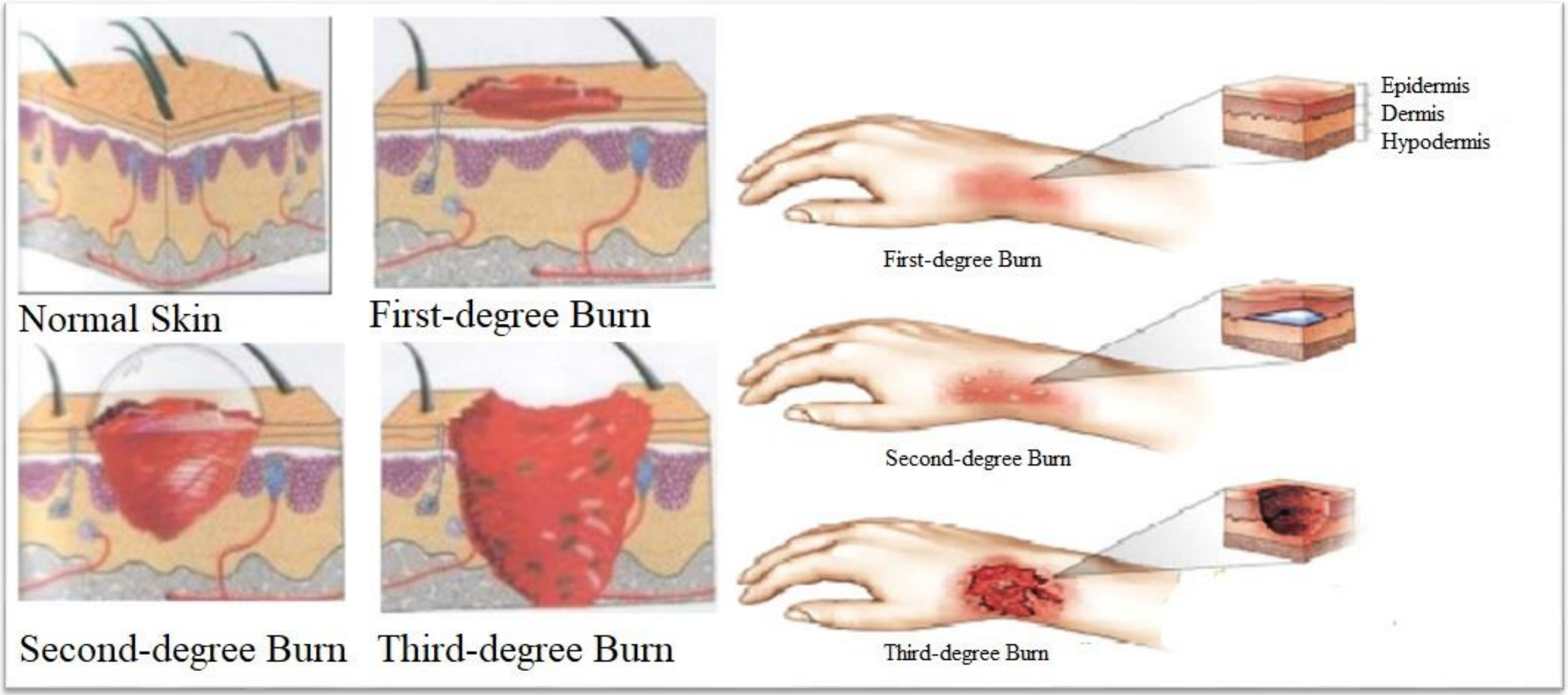
## Second-degree Burn

- The burned area weep and blisters occur.
- Red burned areas do not turn pale by pressing.

## Third-degree Burns

- All layers of the skin burned.
- The burn can reach the underlying fat, muscle and bone tissue.
- The skin is usually black or dark brown.
- Usually there is no pain.
- It cannot heal if not treated.
- It always leaves a scar.

# Determination of the Severity of a Burn



# Burns on Particular Areas

- ✓ Burn of the head, neck, chest, eyes, ears, hands, feet, and perineum are considered as burns that can be life-threatening, regardless of the burned area.

- It is important to call the Tele Health Center and evacuate the injured.

- The patient should be treated at an experienced burn unit/ area.

3rd degree hand burn

# First Aid for Burns on Board

## To Extinguish the Flame;

- If the person is still burning, tell the patient to close their eyes immediately and put out the fire with a fire extinguisher that blows dry powder.


## If there is no dry powder extinguisher;

- Lay the injured down and try to extinguish the flames by wrapping their body with any possible material (blanket, sheet, etc.), or
- Pour bucket of water over them, or
- If any, wash the injured with a hose.
- Make sure all of their clothes are put out.

# First Aid for Burns

## What Should We Do?

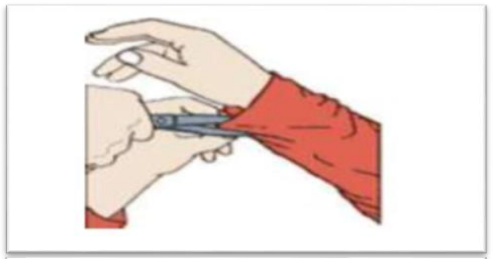
Call **Tele Health Center** for medical aid in all cases except minor superficial burns.

**1**- İmmediately get the person away from the heat source to stop burning

**2**- Hold the burned area under cool running water as quickly aspossible for at least 20 minutes or immerse in cool water.

**In burns caused by hot oil, you shouldn't pour water immediately. Hot steam can worsen the burns.**

**3-** Remove clothing from the burned area gently (rings, earrings, belts, etc.) but never tear those that are stuck to the skin.



**4-** Cover the burned area with a dry, lint-free cover larger than the area and bandage.

**5-** After cooling the burned area, take the patient to a warm room.

# First Aid for Burns

**6-** Give paracetamol or ibuprofen to relieve the pain in minor burns.


**7-**In case of large/deep burns, give morphine 5-20 mg intramuscularly to relieve the pain.


- Repeat the dose every 3-4 hours without waiting for the pain to return to its former level.
- If the patient still has the pain 1 hour after the second dose, increase the dose of morphine by 50%.
- Give the patient rehydration fluids or tea with sugar, or
- Give 0.9 isotonic NaCl intravenous 125 ml/hour iv.

**8-** Keep the patient in a warm place.


**9-** Wash gently the burned area with soap and potable water.

# First Aid for Burns

**10-** Do not use disinfectant (such as chlorhexidine).

**11-** Do not open and treat large burned areas at once.

**12-** Keep the patient warm against the risk of hypothermia. Use a blanket or sterile burn blanket.

**13-** Cut the loose, dead skin with sterile scissors.

**14-** Do not cut the blisters unless;

- The fluid is bloody or cloudy,
- The blister is over a joint, or
- The patient has to lay on the blister.

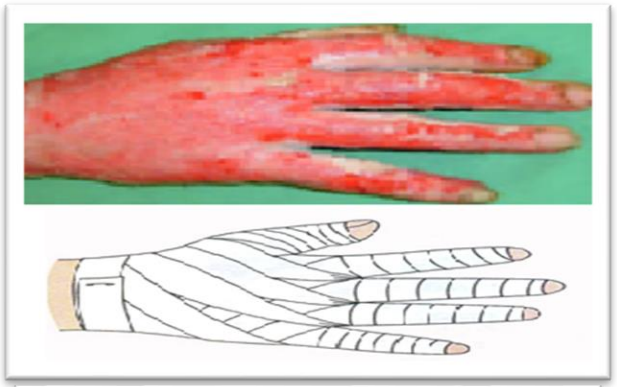
If so, cut the blister from the top with a sterile scissors (do not use a needle).

**15-** Cover it with a sterile non-adherent dressing.

# First Aid for Burns

**16-** In order to prevent fluid leaking from the burned area and to strengthen the dressing.

**17-** You should not bandage the burned areas together, especially the fingers should be dressed separately to prevent from sticking together.



**18-** Do not cover superficial hand and foot burns/or just cover them with a non-adherent gauze.

**19-** Change dressing daily.

**20-** For full-thickness (> 2 cm) or large-area burns, the patient should see a doctor

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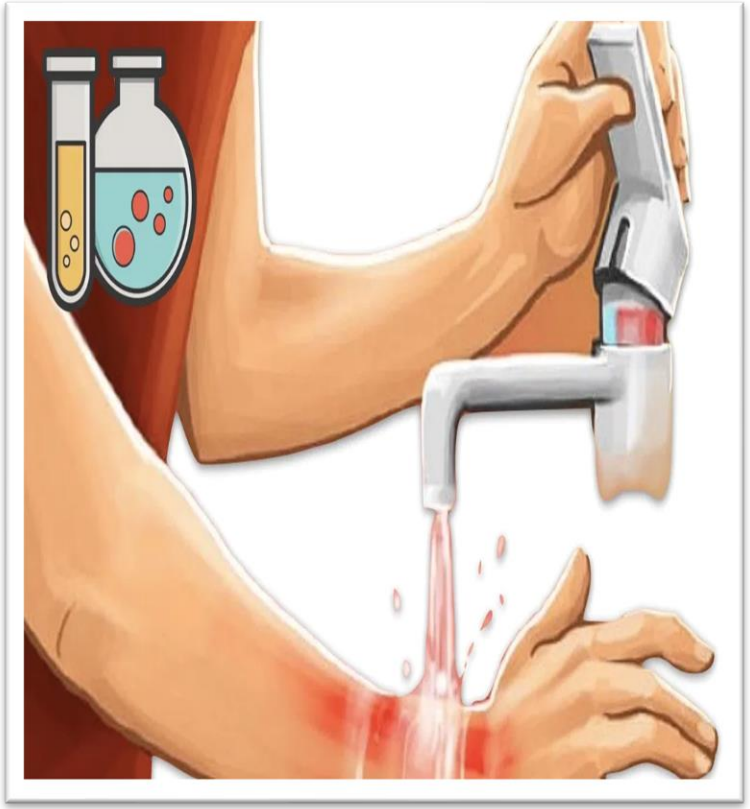
# First Aid for Burns Caused by Chemicals

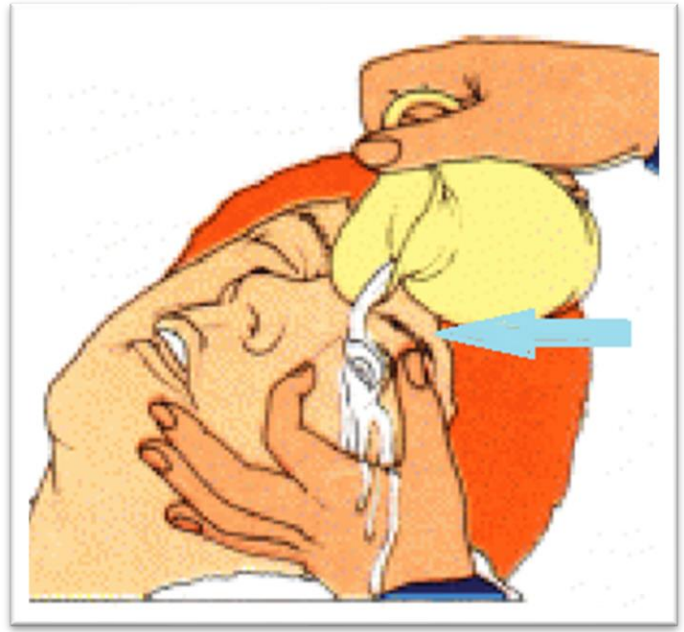
- Remove the clothing  contamined with chemicals as soon as possible.
- Wash the area gently with plenty of non-pressurized water for at least 20 minutes.
- Cover the patient/injured.
- Call Tele Health Center.
- Keep a detailed record of the chemical substance and its content, do not forget to give it to the patient when leaving the vessel!



# What Should We Do for a Chemical Burn in the Eye

- **The first thing to do to reduce the damage in case of chemical burns is to wash the eye with plenty of water. Then, Call the Tele Health Center immediately.**

1. Washing the eye with tap water until saline solution is provided is more important than all off the other treatments.
2. Then apply an anesthetic drop to the injured eye
3. If the patient is using contact lenses, gently slide out and remove them.
4. You should continue washing for at least 15 minutes with at least 500 milliliters of liquid.
5. You should cover the eye with an antibiotic ointment
6. Call Tele Health Center
7. Give information about chemical agent



The process of washing **the eye** with plenty of water by opening the eyelids

# First Aid for Electrical Burns

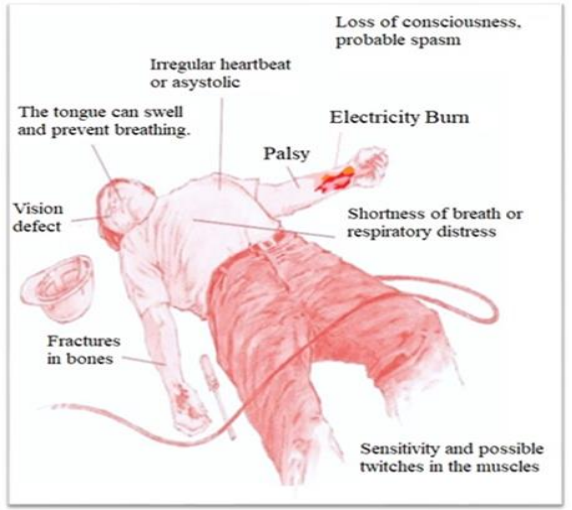
## Electric Current Damages in Three Ways:

1. It converts energy into heat in the body, leading to burns.
2. It directly affects the heart.
3. It causes falls, causing injury.

## What Should We Do?

- Get near safely to the person who contacts with electricity
- If possible, cut off electricity.
- If you cannot cut off the electricity, wear rubber gloves, boots and insulate with a plastic sheet before getting near to the patient.
- If the patient is entangled in electrical cables, remove the cables with a wooden chair, rod, or non-metallic insulating material.

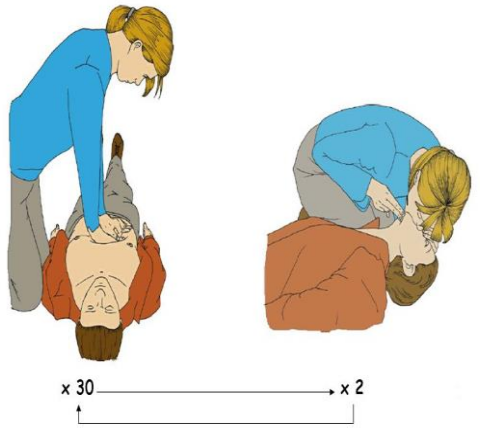
Symptoms of Electrocution




# First Aid for Electrical Burns

## What Should We Do?

- Check the heartbeat and breath immediately.
- If the patient is not breathing, give mouth-to-mouth resuscitation.
- If there is no heartbeat, start cardiac massage immediately.
- Send someone to find help.
- When the patient starts breathing again, cool the burned areas with cool water, wrap them with a clean, dry, lint-free dressing.
- Call Tele Health Center. Evacuate the patient.
- Treat the wound as with heat burns (reduce the pain, prevent the patient from having shock/treat shock, prevent infection).



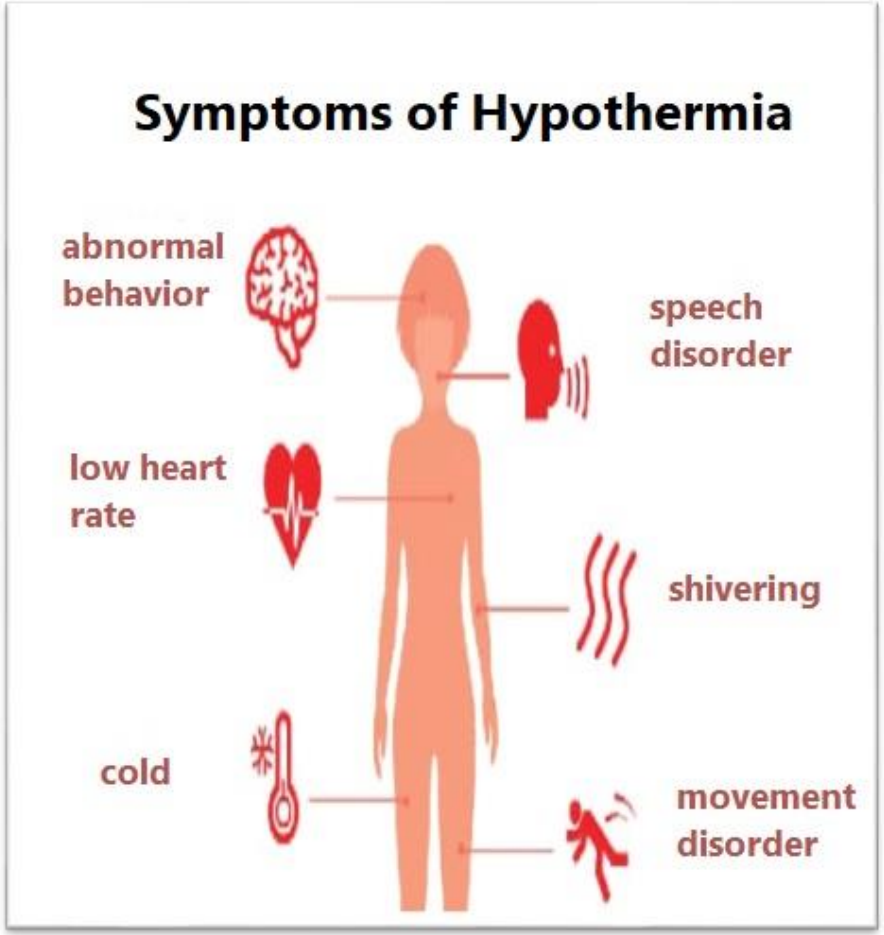

Electrocution and Tissue Damage

# First Aid for Hypothermia

## Hypothermia:

It occurs when the body temperature is lower than normal.

- ✓ If done correctly, first aid is sufficient for the treatment of hypothermia.
- ✓ The body temperature required for all our vital functions to work is 37°C.



# First Aid for Hypothermia

## Mild Hypothermia

- Core temperature is above 34°C.
- Consciousness, complaint from cold.
- Pain in the arms and legs, shivering,
- Pupils are in normal size, they react to light quickly.


## Moderate Hypothermia

- Core temperature is between 27°C and 34°C.
- Sleepiness is characterized by decreased muscle function.
- Decreased level of consciousness, weakening of decision-making and discernment,
- decreased sense of pain,
- Irregular and slow breathing
- Narrowing of pupils, slow reaction to light,
- **Immediately Call Tele Health Center**

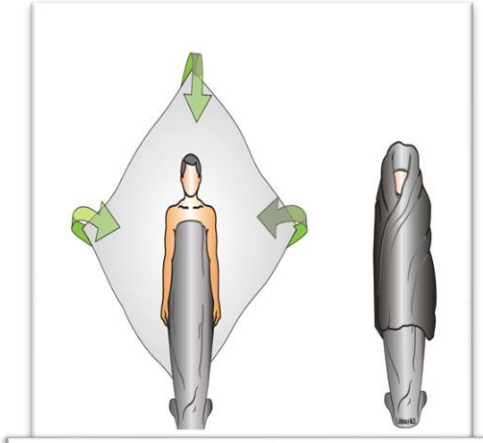
## Severe Hypothermia

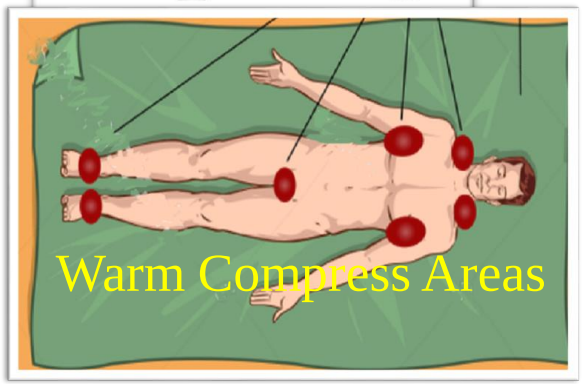
- Core temperature is below 27°C.
- Shallow breathing
- Large pupils and loss of reaction to light appear.
- When the core temperature is 20°C, the pupils become fixed and dilated.
- **Immediately Call Tele Health Center**

# First Aid for Hypothermia

You should;

1. Ensure the safety of the patient.
2. Take off jewellery
3. Carry the patient in a lying position safely.
4. If the patient's body temperature is below 30°C, warm them until the core (rectal) temperature is above 32°C.
5. Lay the patient on a bed with a dry sheet and wrap them with two or three blankets .
6. Apply four towel with heated warm to the armpits and groin until the patient's body temperature rises.
7. Apply hot water bottles under the blanket to the areas where the patient loses the most heat - head, neck, chest and groin.
8. Give warm and sugary drinks, do not give alcohol in any case.



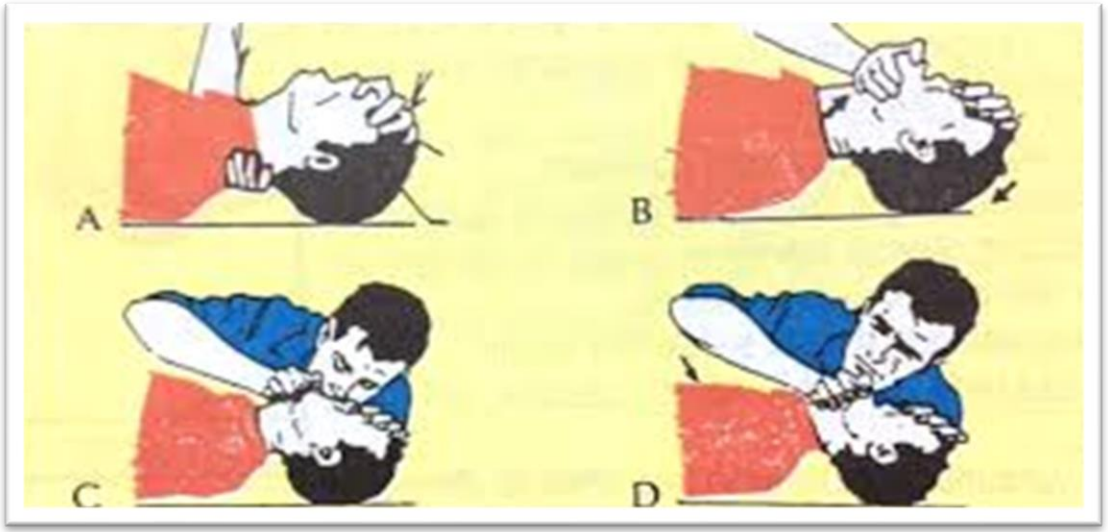



✓ usually the greatest danger is over when the muscle contractions reappear.

# Hypothermia Treatment

## If the Patient Is Not Breathing,

Make sure the airway is open and immediately start doing mouth-to-mouth, mouth-to-nose rescue breathing, continue with basic life support for at least 30 minutes.




## If Patient Is Breathing But Unconscious,

Place the patient on his or her left side so that their breathing is not blocked by tongue or vomiting.

- Avoid all unnecessary body movements.
- The greatest danger is the occurrence of cardiac arrest.

✓ In fact, the patient will die due to exposure to cold with heart failure.

# Responses That Should Not Be Done For Hypothermia!

1. Do not heat quickly and suddenly.
2. Do not heat the arms and legs before the body
3. Do not immediately take the patient in a very hot place.
4. Do not expose directly to any external heat source.
5. Do not rub;
6. Do not massage or bandage.
7. Do not let them smoke or give alcohol.
8. Do not give anything orally to an unconscious person.

# Determination of the Severity of Frostbite

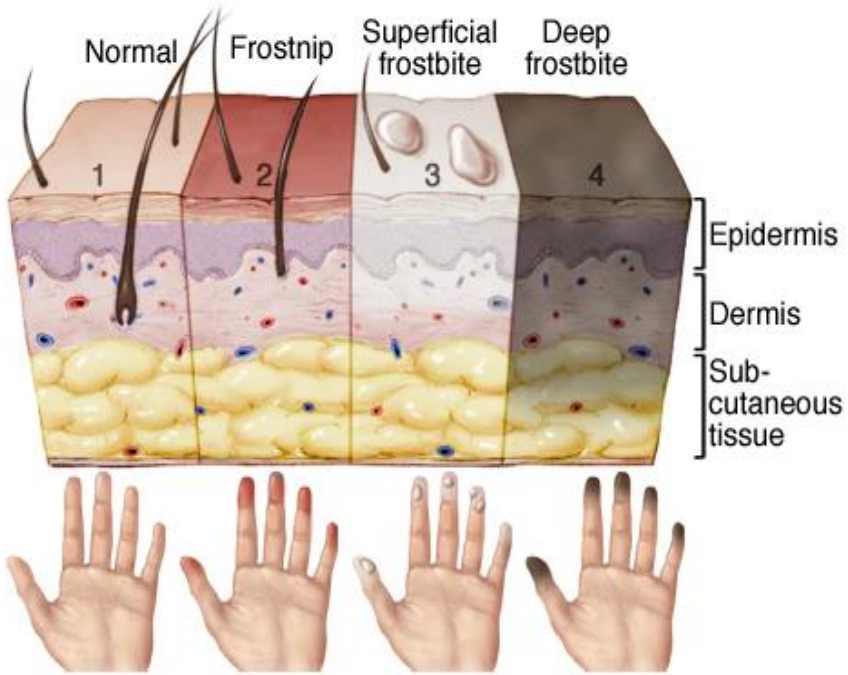
- Frostbite appears when the skin and under the skin tissue freeze as a result of experiencing freezing cold for a long time.
- Frostbite is most common in the nose, ears, feet and fingers. Affected areas should be warmed up slowly.
- According to the extent of damage to the tissue, frostbite is classified from the 1st to the 4th degree.

1st Degree

2nd Degree

3rd Degree

4th Degree



# Frostbite

✓ Do not warm up suddenly and quickly.

- For hands and feet; the affected areas should be warmed up slowly by immersing them in warm water (**not hot**) for 15-30 minutes in a container with controlled temperature with a thermometer (**around 40°C**); For the face and ears, by applying a gas compress soaked in warm water.


# Frosbite

You should take off the jewellery.

- You should cure local circulation, replace wet clothes with dry ones, and take off compressing garments such as tight clothing, belts, socks, shoes.
- You can warm up the body naturally. For example, by placing their hands under someone else's armpits.
- You can give hot sugary drinks, but not alcohol.
- The frostbitten limb should be immobilized with a splint and kept above heart level.

# First Aid for Frostbite

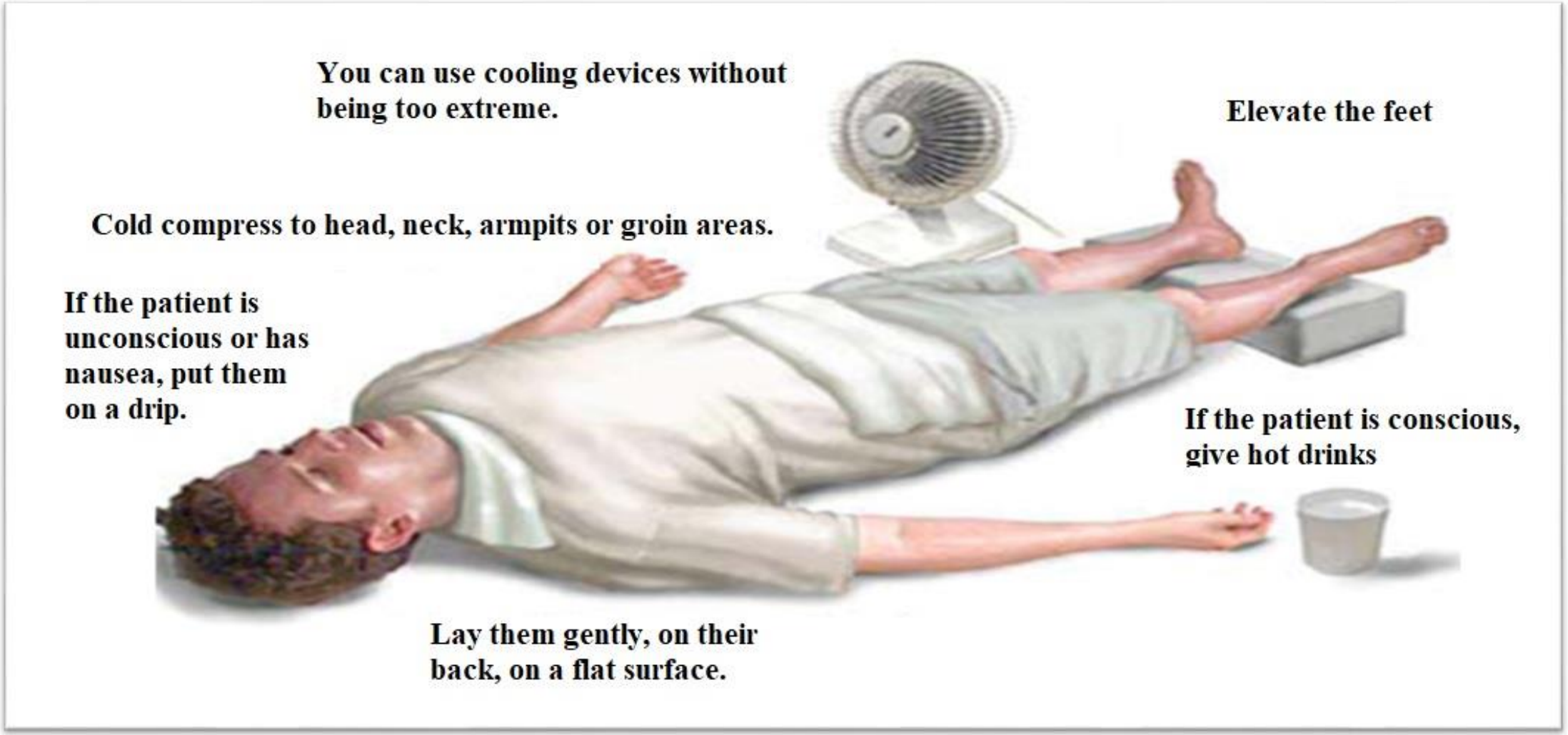
- Doing exercise and moving will help to prevent the early onset of cold injury.
- Affected areas should not be rubbed or massaged with ice.
- Massage should not be given.
- DO NOT SMOKE. Smoking reduces blood flow in the hands and feet.
- The bullae (large blisters containing fluid) should not be hit. The hit bullae with bleeding should be covered and dressed.

## Important Points

✓ Do not warm up or thaw frostbitten area externally until proper medical care is provided. If re-frostbite is likely to develop, do not warm up or thaw at the scene.

✓ No warming operation or attempt should be done during the transportation of the patient with frostbite for emergency response.

# First Aid for Heat Stroke



# First Aid for Heat Stroke

HEAT EXHAUSTION

1.Moist and sticky skin

2. Dilated pupil

3.Normal or above normal core temperature

HEAT STROKE

1. Warm and dry skin

2.Narrow pupil

3.Too high core temperatur