



### ***Thermal burns – practical recommendation for resource-limited setting***

**Target group & disclaimer:** The recommendation first and foremost targets non-professional caregivers and health care professionals without wound expertise. Professional caregivers may benefit additionally from the publications referenced below. The recommendations and guidelines will be chosen by a select group of EWMA experts with experience in wound management from war, crisis and emergency aid contexts. The guidelines are thus not based on a broad consensus.

Before giving care and if achievable, remember to provide an environment as clean as possible and use alcohol-Based Hand Rub or water and soap to clean your hands.

Practical file inspired by two papers from the Wilderness Medical Society Journal:

*Wilderness the Care of Thermally Injured Patients in Operational, Austere, and Mass Casualty Situations*

[https://www.wemjournal.org/article/S1080-6032\(17\)30098-4/fulltext](https://www.wemjournal.org/article/S1080-6032(17)30098-4/fulltext)

<https://www.wemjournal.org/action/showPdf?pii=S1080-6032%2817%2930098-4>

*Wilderness Management of Burn Injuries in the Wilderness: Lessons from Low-Resource Settings*

[https://www.wemjournal.org/article/S1080-6032\(16\)30216-2/fulltext](https://www.wemjournal.org/article/S1080-6032(16)30216-2/fulltext)

<https://www.wemjournal.org/action/showPdf?pii=S1080-6032%2816%2930216-2>

Thermal burns are a quite frequent cause of wounds. They result from exposure to excessive heat sources. Among them, fire, boiling water, steam and other hot gazes, metal in fusion, ...

Distinction: Burns can also be caused by other sources such as electricity, chemical, radiations. These can look different and can be treated slightly differently from thermal burns.

The basic classification is done on the:

1. percentage of total body surface area burned (% TBSA),
  - an easy way to measure is to compare the burn surface to the size of the hand palm of the patient (1 palm equals 1% of body surface)
2. depth of the burns; expressed as superficial (or first-degree), partial-thickness (or second-degree), or full-thickness (or third-degree):
  - Superficial (first-degree) burns: Affect only the epidermis, or outer layer of skin. The burn site is red, painful, dry, and with no blisters. Mild sunburn is an example.
  - Partial thickness (second-degree) burns: Involve the epidermis and part of the dermis layer of skin. The burn site appears red, blistered, and may be swollen and painful.



- Full thickness (third-degree) burns: destroy the epidermis and dermis. Underlying bones, muscles, and tendons can be damaged. The burn site appears white and/or charred. As the nerves are destroyed, there is no sensation in the area.

Large burns (>20% TBSA) are considered at high risk as they can induce potentially deadly complications to the whole body.

Note that as burn can evolve during the next days after exposure, a reassessment is needed after 72 hours for a correct diagnosis.

Burns are painful and can get infected.

Depending on the heat mechanism, (blast, house fire, ...) burn patients can also be presented with other serious initial problems such as carbon monoxide intoxication, fractures, internal trauma, ...

### **Thermal burn initial management**

When taking care of a burn patient, try to stay secure and avoid contact with heat sources, electricity, gases, chemicals, toxic gas and/or heat inhalation (note that respiratory problems can occur at 24 to 48 hours delay from the exposure).

### **Local management**

The very first aid will be to cool the lesion down. The rational is to dissipate as much heat from the lesion as possible as we know that residual heat inside the tissues will continue destruction long after exposure to the heat source has stopped.

Usually, it's done with large amount of water. The water should be cold but not freezing, do not use ice, as you risk adding freeze lesions to the burn ones. The rule of 20 can be applied: 20 minutes irrigation for cooling, with 20°C running water at 20cm distance between the wound and the water source.

If irrigation is not possible, extremities can be put in water buckets. At other places, soaked gauzes (should be renewed regularly) can be used ([read more here](#)).

If there are blisters, they should not be taken off unless they are under high tension (they can be incised and the remaining tissue left in place as a primary dressing).

- In superficial (first degree) burns, as the skin is not open, a cream is enough. It can be a body moisturising cream, paraffin, petrolatum jelly, vegetable oil, ...
- As soon as the skin is open, the preferred dressing, will be one that will not stick on the wound.
- Silver sulfadiazine cream has long been a standard, but petrolatum jelly (Vaseline) impregnated gauzes seem to perform as well.



- Other alternatives are to use boiled cabbage leaves or boiled potato peels (inside face on the lesion) over the wound. Sugar or honey can also be used on the wound.
- Gauze or clean cotton fabrics are place over - plastic alimentary film can also be used.
- They can be kept in place for a few days. They must be removed with the help of water in order not to attach and be harmful to the tissues and painful.
- At each dressing, the wounds must be observed as they evolve with time and can need a strategy change (drier or more humid, infected and so on).

### **General management**

Pain control is important. Paracetamol, acetaminophen, anti-inflammatory drugs (ibuprofen and others) are currently used. Stronger medicine can also be used. In patients with large, burned surfaces (more then 10-20%) the following problems can occur:

- Hypothermia: as body temperature can drop, the patient should be kept warm as soon as possible.
- Hypovolemia: For many reasons, the blood volume may drop to a level where the heart has problems with maintaining a proper flow. Usually, the patient will receive fluids by IV. If this is not possible, make the patient drink as much as possible.
- Recipe for homemade rehydration solution: Add 6 teaspoons of sugar and half a teaspoon of salt to 1 liter of water.

Deep burns can lead to skin retraction and disability; if observed or in the vicinity of joints, simple splinting can be required.