Protocol for the treatment of burns

Classification of degrees

First-degree burns (no wound)

- No blisters; no open wounds
- Redness
- Successful capillary refill
- Supple
- Painful

Second-degree burns (partial thickness of the skin)

- Blisters intact / broken
- Pink, shiny and even
- Successful capillary refill
- Supple
- Painful
- Deep second-degree burn
- Blisters intact / broken
- Pink, matte, non-homogeneous, mottled
- Slow capillary refill
- Slightly tougher
- Painful

Third-degree burn (full thickness of the skin)

- Blisters intact/broken, epidermis stuck to burnt dermis
- White, brown, yellow, red (if there was contact with hot water for an extended period of time)
- No capillary refill; redness cannot be eliminated by pressing down on burn
- Tough
- Less painful than might appear based on the size of the wound

Case history

How?

Burns can be caused by hot fluids, flames, contact with hot objects, electric power, or chemical agents. For blowtorch burns, temperatures are high, with a very short absorption period.

How much?

Burns caused by spilled scalding hot coffee are less deep than burns caused by an accident involving a pot of hot soup. The concentration of a chemical compound is important: the more diluted the compound, the smaller the damage.

Kitchen accidents in which a blowtorch emits from an oven after it is ignited typically don't involve much contact, as a result of which the burn is not too deep. When a gas tank explodes inside a trailer, a great deal more gas is released and the heat impact is significantly larger. The burn is likely to be deep.

How hot?

Tea that has already cooled off causes less damage than tea that is freshly made.

How long?
The longer the contact, the deeper the burn. Burning clothing nearly always causes deep burns, while a blowtorch burn generally causes second-degree burns.

There are also additional factors that play a role. Children and the elderly whose clothing has caught fire often fail to react immediately, which increases the length of contact with the heat.

Another important factor is pressure: someone involved in a fall with a moped who ends up under a hot exhaust pipe will have deeper burns that someone who only briefly brushes against the pipe.

Measures?
Burns must be cooled immediately in order to limit further damage. If the patient has sustained chemical burns, the burn must be rinsed in order to dilute the concentration of the chemical compound. If this is neglected or done inadequately, the burn will deepen.

Clinical examination

This consists of five points and includes both inspection and palpation of the burns. When the skin of people of African descent is burned, palpation is sometimes the only method used to identify burns.

Blisters
Blisters may or may not be formed on top of the burn; they can be flat or rounded, intact or broken. If blisters do form, the patient has sustained at least second-degree burns.

Any loose blisters can be debrided during the examination, and a check is performed to see if parts of the skin covered with soot are burnt.

By forcefully rubbing the skin, it is possible to make a distinction between a flat, intact blister and skin discoloration. If there is a blister, the skin can be shifted.

Characteristics of the burns
The burns have different colours and are shiny in various degrees. Superficial second-degree burns are usually light pink/shiny, while deep second-degree burns tend to be a matte, non-even pink (mottled).

Third-degree burns can be white/yellow/brown as well as matte red. This redness cannot be eliminated as a result of the destruction of red blood cells in the capillaries. These types of burns are caused by sustained contact with hot water (e.g. tap water).

Suppleness
The more superficial the burn, the more supple. Superficial second-degree burns are as supple as undamaged skin; third-degree burns are tougher if they were caused by flames, while red, third-degree burns caused by hot water are supple.

Capillary refill

The capillary refill of a burn is tested by pressing the skin down for four seconds and then checking how long it takes for the burn to regain colour again. Due to the heterogeneity of the burn, this must be assessed in several areas inside the burn.

The faster the capillary refill, the more superficial the burn. With yellow, brown or red third-degree burns, the burn does not change colour when you press down on it, as there is no blood flow inside the burn.

This test has replaced the pin-prick test and other sensitivity tests for these burns. The scratch test is obsolete as well.

Pain

This refers to the overall pain experienced by the patient, and not to the above-mentioned local sensitivity of the burn.

Second-degree burns are extremely painful, while third-degree burns, which involve damage of the nerve endings inside the burn, cause little to no pain.

All burn patients suffer pain because each burn involves both more superficial and deeper damage of the skin. However, a patient with large third-degree burns experiences less pain than might appear based on the size of the burn.

First aid for burns

First aid is provided by lay responders at the accident site. Aid workers must protect their own safety, as well as that of their patients and their environment.

First aid for burns consists of deactivating the agent and cooling or rinsing the burns. Lukewarm running water should be used to cool the burns; keep water running for 10 minutes. Chemical burns should be rinsed for 45 minutes, using a large amount of lukewarm water. Beware of the risk of hypothermia, particularly when treating children.

Cooling blankets are effective in directly cooling the burn at the accident site. The blankets are used as a water substitute.

As is the case with cooling in general, use of a cooling blanket should be limited to 10-20 minutes, in order to prevent hypothermia. Cooling blankets are contraindicated for long-haul transport and the treatment of burns.

Primary care

The primary care of burn patients is conducted in compliance with the **ATLS** (Advanced Trauma Life Support) and **EMSB** (Emergency Management Severe Burns) guidelines:

A (Airway) Keeping the airway clear through cervical spine protection
B (Breathing and Ventilation)
C (Circulation)
D (Disability)
E (Exposure)
F (Fluid resuscitation)

A - 'Airway': Keeping the airway clear through cervical spine protection
The priority is to keep the airway clear, taking into account any injury of the cervical spine. An airway examination is conducted by checking, listening and feeling if air is passing through.

If the patient is talking, the airway is obviously clear, and the ventilation (B) examination can be performed . Note the presence of scorched hair/nasal hair and of soot in the nasal and oral cavities. Ask the patient whether his or her voice has changed: this could be a sign of possible inhalation injury.

If the airway cannot be cleared using simple methods (e.g. chin lift/jaw thrust), the victim must be intubated. In the airway, upper respiratory inhalation injury could result in swelling, which may cause the airway to be blocked. See Inhalation injury

B - Breathing and Ventilation
Trauma patients must always be administered 10 litres of pure oxygen, particularly if there is a suspicion of carbon monoxide intoxication or inhalation trauma.

In assessing ventilation and respiratory support, you must check breathing (i.e. frequency, use of auxiliary breathing muscles, moaning, nostrils, etc) and effectiveness (i.e. feeling and listening if air is passing through).

Check if the thorax is moving symmetrically and sufficiently and if there are any wounds that could obstruct breathing. The need for escharotomies must be assessed if the patient has (a) third-degree circumferential thoracic burn(s).

For A and B, it must be established whether the patient has suffered inhalation injury – this occurs when a patient has spent time in a smoke-filled room for an extended period of time. If the patient has suffered blowtorch burns that occurred outdoors, the eyebrows and nasal hair are scorched as well, but the risk of inhalation injury is limited.

Case history and physical examination are both important factors in identifying an inhalation injury. The final diagnosis of inhalation injury is made by means of a bronchoscopy.

C - Circulation
The assessment and treatment of the patient's circulation are no different than for other trauma patients. The patient's pulse strength and frequency, capillary refill, complexion and state of consciousness are all indicators of the quality of circulation.

In addition, it must be established whether there has been any active haemorrhaging, either internal or external.

Circulation is assessed by checking blood pressure and urine production; red-pigmented urine could be a sign of hemochromogenuria or myoglobinuria. Insert two large (16g) syringes, preferably on a section of non-burnt skin. No central lines should preferably be inserted due to the risk of infection.

At the same time, a blood sample can be taken to establish blood type, as well as trial serum, blood count, electrolytes, kidney function and the presence of carbon monoxide. An initial bolus of crystalloid fluid replacement is administered (1-2 litres). This must be deducted at a later stage from the amount of fluids that must be provided based on expected need (this depends on the size of the burns).

If the patient has suffered circumferential burns to the extremities, circulation may be compromised. However, this is non-life threatening, and the performance of an escharotomy is not part of the primary survey.

D - Disability
Assess the patient's state of consciousness based on the Glasgow Coma Scale or the AVPU (alert, reaction to vocal, painful stimuli, unresponsive).

Pupil reaction to light is checked.

Besides trauma capitis, hypoxaemia and hypovolaemia, carbon monoxide intoxication can cause a shift in consciousness.

E - 'Exposure': undressing the patient / environmental conditions
All loose and constraining clothing, along with any jewellery, must be removed from the patient's body, while at the same time preventing hypothermia. Make sure the ambient temperature is warm enough and provide infusion fluid, blankets, etc.

The size and depth of the burns must be determined based on the Rule of Nines or the 'palm' method. First-degree burns are not included in the Total Body Surface Area (TBSA):

TBSA:	**Adult**	**Child aged 0-1**	**Child aged 5**
head and neck:	9%	18%	14%
front or rear torso:	18%	18%	18%
leg:	18%	14%	16%
arm:	9%	9%	9%
perineum:	1%	0%	0%
palm and fingers	1%	1%	1%

(According to Wallace)

F - Fluid resuscitation

The Baxter-Parkland formula is used for fluid resuscitation for burns in children for a Total Burn Surface Area (TBSA) of 10% or higher and for adults for a TBSA of 15%. The fluids previously administered must be included in the calculation.

Loss of fluids caused by burns starts at the time of the accident, i.e. the infusion is calculated from that time. Of this quantity, one-half is administered during the first 8 hours after the burns were sustained; the other half is administered in the ensuing 16 hours.

4 ml physiological salt* / kg / %TBSA
of Ringer's lactate solution or Hartmann solution

The Baxter-Parkland formula serves as a guideline. The infusion speed is adapted to the lead of the diuresis: This must range from 0.5 to 1ml/kg body weight; and from 1 to 2ml/kg body weight for children up to 30kg. A urinary catheter is fitted in order to be able to check the diuresis every hour.

Children (with a body weight of up to 30 kg) also receive a maintenance infusion containing a glucose solution to prevent hypoglycaemia. This is administered in the same dosage every 24 hours.

Salt/glucose solution for children's maintenance infusion
100 ml / kg for the first 10 kg of body weight
50 ml / kg for the second 10 kg of body weight
20 ml / kg for the third 10 kg of body weight

For example, a child weighing 25kg will receive:
100ml x 10 + 50ml x 10 + 20ml x 5 = 1,600 ml / 24 hours

Hemochromogenuria (red-pigmented urine) occurs in patients with large third-degree burns. This causes the urine to change colour as a result of the breakdown products haemoglobin and myoglobin. This may cause renal insufficiency due to the products forming deposits in the tubuli. In that case, the diuresis must be doubled by increasing infusion speed.

Additional examination

- Radiological examination
  This must be conducted in accordance with the ATLS guidelines. Additional injuries in burn patients can be expected in the event of an explosion, jump from a great height, traffic accidents, etc.
- Laboratory examination
  If this was not already conducted during the primary survey when the infusions were fitted, this must be done at a later stage.
- Peer consultation

This is necessary in particular if there is a suspicion of inhalation injury (intensivist) and eye injury (opthamologist).

Pain relief

For burns: less than 10% TBSA for children and less than 15% TBSA for adults, orally administered paracetamol or NSAIDs/opiates (intramuscular) will suffice.

For patients with larger burns, opiates must be titrated intravenously. For these types of large burns, opiates administered intramuscularly are not systemically absorbed in a reliable manner.

Antibiotics and corticosteroids

Prophylaxis antibiotics are not used during the initial stage of burn treatment. Instead, selective bowel decontamination is used for patients with inhalation injury and/or burns exceeding 20% of TBSA.

The use of corticosteroids is not suited to the acute phase of the treatment of burn victims.

Reference criteria

The reference indications are drafted by the Dutch Burn Association (Nederlandse Brandwonden Stichting) in accordance with EMSB and ATLS.

- Burns exceeding 10% of TBSA for adults.
- Burns exceeding 5% of TBSA for children.
- Third-degree burns exceeding 5% of TBSA.
- Burns sustained by the elderly and children.
- Burns sustained by patients with pre-existent conditions that can affect treatment and recovery.
- Burns associated with some other trauma or with inhalation injury.
- Burns to functional body areas (e.g. hands, feet, face, perineum, genitals and large joints).
- Burns caused by electricity.
- Chemical burns.
- Circumferential burns to the torso or limbs.

If a patient meets one of these indications, the burn centre must be contacted first before the patient is transferred.

Dutch Burn Centre telephone numbers

- Burn Centre Beverwijk: +31 (0)251 265220
- Burn Centre Groningen: +31 (0)50 5245245
- Burn Centre Rotterdam: +31 (010) 2903000

Inhalation injury

The **case history** and **clinical study** combined could lead to suspicion of inhalation injury.

Diagnosis

Case history

Key indications in the case history are fire in an enclosed space, the duration of exposure and the amount of smoke emitted. In many cases, the patient failed to exit the smoke-filled room due to impaired consciousness.

Blowtorch burns, for example, do not cause inhalation injury but do exhibit the external characteristics of inhalation injury from a clinical perspective.

<u>Clinical information</u>
Key clinical criteria are facial burns, scorched nasal hair, and eye injury. On inspection of the pharynx, the uvula and pharyngeal arches are found to be red and swollen. The patient has undergone a change in voice, coughs, or produces sputum containing soot. Auscultation focuses on inspiratory stridor, wheezing and rhonchus.

<u>Additional examination</u>
Bronchoscopy confirms the diagnosis and determines the severity of the injury.

A thorax X-ray and measurement of arterial pO2 do not discriminate for the occurrence of inhalation trauma.

Increased carboxyhemoglobin levels also indicate inhalation.

Clinical information
The clinical images below typically occur in combination:

- Upper respiratory inhalation injury is caused by breathing hot gases, which results in mucosal oedema and obstruction during the first few hours after the accident.
- Lower respiratory inhalation injury is caused by inhaling smoke, which then results in chemical tracheobronchitis; this represents classic smoke inhalation, creating respiratory insufficiency between 12 hours and 5 days after the burns were sustained.
- Systemic inhalation injury is caused by the inhalation of toxic substances released during a fire, e.g. carbon monoxide and cyanide. This may result in hypoxemia and the associated clinical symptoms.
- Decreased respiratory excursions due to the intransigent thoracic wall in patients with third-degree circumferential thoracic burns and obstruction of the airway caused by circumferential neck burns.

Treatment
All trauma patients are administered 10 litres of oxygen via a non-re-breathing mask. If cervical spine injury is excluded, the patient is treated in a semi-upright position in order to prevent oedema in the head and neck. This also applies if the patient has been intubated.

Unnecessary intubation and ventilation are to be avoided, since – particularly in burn patients – this causes fluid retention, excessive swelling (oedema), further complications and longer hospitalisation. It is therefore advisable to consult with the burn centre before intubating the patient.

Extra attention must be paid to children, as they have a relatively narrow respiratory tract.

If there is a risk of the upper respiratory system becoming obstructed, you must act in accordance with the following algorithm:

Suspicion of upper respiratory inhalation or burns to the head/neck area

Signs of obstruction:

→yes	→release is successful	→no	→intubation
		→yes	→observe; administer O2; semi-upright position
→no	→long transport time	→no	→observe; administer O2; semi-upright position
		→yes	→call burn centre for advice on preventive intubation

Patients with upper respiratory inhalation injury are only intubated if there is a risk of respiratory failure. Deep circumferential thoracic burns can obstruct breathing and, in so doing, contribute to respiratory insufficiency.

In children, the risk of respiratory problems occurs if the entire area between the flanks, upper abdomen and front of the thorax is burnt, i.e. without the occurrence of circumferential burns.

However, since this only occurs after several hours, escharotomies are seldom performed at the referring hospital. If this does prove necessary, you must contact a burn centre.

Burn depth assessment

The terminology used to classify burn depth varies, with the terms ‘degrees’, ‘epidermal’ and ‘dermal’ all being used.

In assessing the depth of a burn, it is important to realise that burns are dynamic and heterogeneous.

In the context of burns, ‘heterogeneity’ refers to the fact that burns never have a single depth but that multiple depths occur within a single wound. It is therefore important that the entire wound is inspected and palpated under clinical examination.

Wound depth changes over time and depends on the treatment used/not used, both locally and systemically. Another important factor is the patient’s overall clinical condition.

Over the course of the treatment, peripheral circulation disorders, dehydration of the wound, infection and mechanical injury may cause second-degree burns to ‘deepen’ into third-degree skin defects.

Burn treatment

The purpose of burn treatment is to ensure that the burn can heal without any problems while at the same time bringing relief to the patient.

The burn must be prevented from drying and becoming colonised with bacteria that could prevent the burn from healing properly. Other important factors include reducing patient discomfort; the pain; and the frequency of bandage changes.

Burns are dynamic and can become deeper. In addition, since the diagnostics of the depth of the burn is not precise, burns diagnosed as second degree on initial examination may eventually turn out to be deeper. Time to healing is, in fact, a more effective diagnostic than the initial inspection.

Second-degree burns must have healed within two weeks, particularly burns in functional areas (e.g. hands and face) or burns in children. For adults with burns to non-functional areas, treatment may take up to three weeks.

Continuing conservative therapy beyond this period would result in protracted and painful burn treatment, the outcome of which would ultimately be worse than if a skin-grafting procedure were to be performed at an early stage of the treatment. The healing of the burn may be retarded due to bacterial colonisation. Changing the local therapy can help fight disruptive bacterial colonisation.

If a burn does not heal within the time set, not even after the local treatment has been changed, surgical treatment must be considered.

Prognosis

1st degree:	body lotion and healing without residue				
2nd degree:	heals in less than 14 days	→ yes	→ body lotion and healing without residue		
		→ no	→ change burn regimen	→ healing in less than 1wk	→ body lotion; residual scar
				→ no healing after more than 1wk	→ skin grafting
3rd degree:	always combined with scarring; healing possible only through skin grafting				

Treatment by surface and depth

First degree

Rub skin with body lotion or after sun lotion. Pain relief: using paracetamol or an NSAID. If blisters start to form, recommend that the patient sees his/her GP or reports to the hospital emergency room.

Second and third degree

type of burn	**treatment of blisters**	**treatment of burns**
superficial second-degree blister intact < 2% TBSA	injection	Unitulle wound dressing* OPSITE®
superficial second-degree broken blister < 2% TBSA	remove blister	OPSITE® DuoDERM® AQUACEL® Flammazine® cream*
superficial second-degree broken blister 2-10% TBSA	remove blister	AQUACEL® Flammazine® cream*
deep second-degree > 2% TBSA	remove blister	Hydrocolloid/DuoDERM® Flammazine® cream*
deep second-degree 2-10% TBSA	remove blister	Flammazine® cream*
third-degree diameter: 2cm		DuoDERM®
third-degree diameter exceeding 2cm	Remove blisters	Flammazine® cream; skin grafting

Treatment by location

(commonly occurring burns)

location	type of burn	day-to-day care	type of treatment
face	small areas	daily showering/shaving	Alternate Flammazine® cream* with Betadine*** (open)
	large areas	daily showering/shaving	Flammazine® cream* alternate with Betadine*** (open of underneath wound dressing) AQUACEL®
hair growth on head		shaving/daily shampooing	Alternate Flammazine®* cream with Betadine*** (open)
hand	palm contact (children)	daily showers for hydrocolloid wound dressings	inject blister; cotton gauze blister removed after 4/5 days, Flammazine® cream*
hand/fingers	all burns	daily showers	Flammazine® cream*
arms, legs, torso	second-degree	daily showers	Wound dressing / Flammazine® cream*
	mixed burns	daily showers	Flammazine® cream*
neck/armpits/loins/ genitals/buttocks	mixed burns	daily showers	Flammazine® cream*

*: combined with cotton wad, **: combined with hydrophilic gauze, *** combined with non-adhesive gauze (ADAPTIC® /Cuticell®/Cuticerin® /Mepitel®) and cotton wad.

Method: wound dressing
These dressings are used to create a wound environment in which epithelial tissue can grow unhindered and bacterial growth is controlled.

This is a delicate balance: unfavourable wound conditions upset the balance, resulting in unchecked bacterial growth and the risk of wound infection. The success of the treatment depends on the indication for wound size and burn depth, as well as the selection of the appropriate therapy.

Wound covers impregnated with antibacterial agents (including microcrystalline silver) have been developed in order to reduce the risk of infection.

Wound dressings are indicated for non-colonised, second-degree, small-surface burns. In practice, it is also important that the dressings are properly applied to the wound and that the outline of the wound is followed correctly.

This means that use of dressings on joints, neck, fingers, perineum and genital area tends to be limited. For a number of adhesive bandages, including hydrocolloids and foam dressing, the wound must be surrounded by a strip of healthy skin.

- The simplest – natural – wound dressing is the blister that is kept intact on top the burn. Small, superficial burns covering less than 2% of the body surface area can remain covered by a flat blister.

  After injection, the blister is left intact on the burn and kept in place by paraffin gauze, which is then covered with absorbent wound dressing.

  The blister is removed after 5-7 days, so as to avoid the risk of moisture retention beneath the blister causing the skin to soften and preventing the burn from healing quickly. Once the blister has been removed and the burn has not healed, the therapy is continued using an antimicrobial cream.

- Polyurethane foil. If there is no blister (or only part of a blister), small, superficial burns can also be covered with adhesive foil. Adhesive polyurethane foils, such as OPSITE® and Tegaderm®, have limited permeability to air and water and are bacteria-proof, making them suitable for this particular purpose.7.

  To control moisture retention, the foil can be punctured on a regular basis; it is removed after 5-7 days.

- Hydrocolloid wound dressings, such as DuoDERM®, are applied to the burn as synthetic ‘blisters’. The hydrocolloid constitutes a gel-like wound environment with a low pH in which bacterial growth is inhibited and epithelial tissue can grow unhindered.

  However, with the availability of many other wound dressing products, this type of dressing is not commonly used in the treatment of burns.

  Hydrocolloid wound dressing is indicated for small, deep burns with a diameter of several centimetres. The moist wound environment quickly decomposes the burn scab, and ephetialisation can take place unhindered from the edges of the wound.

One advantage of the adhesive membrane wound dressing with a waterproof top layer is that no additional adhesive dressings are required and that patients are able to take brief showers.

- Hydrofibre wound dressing. AQUACEL® is a porous membrane consisting of natrium carboxymethyl cellulose. Immediately after the burn has occurred and once all blisters have been removed, the burn is treated with AQUACEL® and covered with light cotton gauze.

  If necessary, the burn is first decontaminated using a local therapeutic agent such as silver sulfadiazine cream (Flammazine®).

  If the wound is inspected daily and, if necessary, the non-adhesive parts of the hydrofibre dressing are replaced, adherence will occur inside the wound bed within 3 days. As the burn heals, the material dries up into a dry scab, which is released on the areas of the skin that have already healed.

  This product is suitable for superficial and deep second-degree burns for a TBSA of up to 5%9.

  Compared with the local therapeutic agent silver sulfadiazine cream, the product's main benefits are related to pain relief and wound dressing procedures, since the dressing remains on the wound site from the time of first application until the wound has healed.

Method: half open
(ointments/creams)

Although wound dressing is preferred in terms of the quality of the treatment of the burn and in terms of patient comfort, there are many reasons to opt for an ointment or cream instead.

For one, neglected wounds and deep burns can be treated more safely with a cream or ointment. Other reasons that might make a burn unsuited for wound dressing treatment are location, depth and/or area covered by the burn, and bacterial contamination or infection.

The procedure chosen in this case is 'half-open treatment' using antimicrobial ointments and creams.

- Silver sulfadiazine cream This is the number one choice for cream treatment. (Flammazine® cream) Silver sulfadiazine cream has a broad antibacterial spectrum, making it highly suitable for the treatment of potentially contaminated or infected burns.

  The cream provides adequate pain relief, and, combined with the wound exudates, it forms a layer on top of the wound that complicates subsequent depth assessment.

  Silver sulfadiazine cream cannot be used on an unlimited basis. Second-degree burns must have healed after 2-3 weeks. The cream may cause hypergranulation and maceration of healed skin after this period, which interferes with healing. The treatment must therefore be terminated, and one of the agents below must be used instead.

  Several years ago, a lipido-colloid wound dressing (Urgotul® SSD) became available on the market; this dressing is impregnated with silver sulfadiazine. There has not been much experience with this product in the Netherlands to date, but it is commonly used in France and Germany.

- Povidon Iodine or Betadine ointment. The antibacterial effect on burns is not as strong as that of silver sulfadiazine cream, making it less suitable for initial treatment of large and deep burns. It is, however, suitable for 'open' treatment of small facial burns.

- Fucidin. Fucidin ointment and Bactroban ointment are effective against Staphylococcus aureus. They are not suitable for use in the initial treatment of burns, but can be used in a secondary stage of the treatment, particularly for wounds contaminated by Staphylococcus aureus and if wound-healing progress is insufficient. Resistance against Fucidin ointment occurs after approximately one week.

- Cetomacrogol cream containing 5% zinc oxide is mildly antibacterial and protects healed skin from maceration. The cream is used as a therapeutic agent when the burn has almost healed.

Covering burns with creams and ointments
The method used to cover a cream or ointment and to remove the wound dressing is very important for the success of the therapy and for patient comfort. If cream is used to treat the burn, the dressing is changed daily or every other day.

The Flammazine cream® should preferably be applied to the burn in a 2-millilitre layer, covered with cotton wad. Patients shower (or bathe) every day; the wound dressing is removed in the shower, after which the wound is cleaned.

For patients who have sustained burns to the head, regular shampoo is used to wash their hair. Men who have suffered facial burns must shave every day.

Fucidin ointment, Betadine ointment and Bactroban are less easy to combine with cotton wad, as the wound dressing may become stuck to the wound. In this case, the wound and a thin layer of ointment are covered with Adaptic® or Cuticerin®, vaseline-impregnated synthetic gauze or Mepitel®, a silicone gauze.

Cotton gauze is not used for open wounds. The wound residual (size: 1 sq.cm.) can be treated 'openly' using zinc cream or Cavilon®.