



HEALTH AND FAMILY WELFARE DEPARTMENT

Standard Operating Protocol for *Management* of **Burns**



**TAMILNADU ACCIDENT & EMERGENCY CARE INITIATIVE
[TAEI]**

Burn Protocol

- I. At the scene of the Burn incident**

- II. At 108**

- III. At the primary level Centre (PHC)**

- IV. At the District HQ Hospital**

- V. At the Tertiary level Care Centre**

**** Contributed by following Authors...**

- 1. Dr V Jayaraman Retired Prof of Plastic Surgery KMC**
- 2. Dr Nirmala Ponnambalam, Prof of Plastic Surgery, KMC**
- 3. Dr Angeline Selvaraj, Prof of Plastic Surgery, KMC**
- 4. Dr G Karthikeyan, State Nodal Officer Burns, TAEI & Prof of Plastic .
Surgery, KMC**

I. At the scene of the Burns

First wear a mask and protective goggles when you have been called to the room if the burn incident is happening or has happened in a closed room.
Make sure the person you're helping is not in contact with the source of the burn.

If the person is still on fire, follow the **STOP, DROP and ROLL procedure**.

STOP, DROP and ROLL exercise.

STOP the patient from running around. Cover him with a thick blanket.

DROP him on the floor gently

ROLL him on the floor

Then open the windows and leave all the doors open

Identify the patient who is on fire or has been affected by the fire

For electrical burns, make sure the power source is off before you approach the burned person.

Once the fire is off, move the patient outside the room

Then shift the patient to to the 108, if available, before starting any resuscitation.

If 108 is available,

Patient should immediately be shifted to 108 and the next protocol follows.

If 108 has not yet come,

Make certain that the person burned is breathing. If needed, begin rescue breathing if you know how.

Pour running tap water on the burn wounds

Remove jewelry, belts and other restrictive items, especially from around burned areas and the neck. Give the removed jewelry, belts to the relatives of the patient if they are available.

DO NOT put ice on the burn

DO NOT immerse the patient in a tub of water

DO NOT apply ink, flour, turmeric or any other material on the burn wound

DO NOT apply cotton on any part of the burn areas

Then shift the patient to 108.

First aid for other types of Burns

a. Chemical burns

Quickly remove any contaminated clothing

Avoid contact with any chemical and further injury to the patient.

If the chemical is a powder brush it off, avoiding contact, before flushing with water.

Flood the burned area with copious amounts of water and continue for up to 20 minutes.

Don't allow the water to flow down the body of the patient. The water must flush the affected part and then flow directly to the ground

If a chemical solution has splashed into the eye

Hold the affected eyelids open to ensure water washes thoroughly under the lids to remove any trapped chemical.

b. Burns involving the mouth or throat

If the patient has been accidentally exposed to fire or heated gases, damage may occur to the mouth and airway. There may be signs of burning around the lips, nose, mouth, eyebrows or lashes.

A dry cough or hoarse voice is an early sign of airway injury

Remove the patient to an area free of the risk of further injury and preferably into fresh air.

Cool the injury by pouring running water over the burn for 20 minutes.

If there is any breathing difficulty allow the patient to find the position enabling easy breathing with the head and chest raised.

c. Electrical Burns

II. At 108

Decide on where the patient is to be shifted

- a) Start an IV line if the limbs are free

If the limbs are not free, do not attempt to start an IV line

Start Ringers lactate

Note down the time of starting the IV line

Note down the amount of fluids being given.

- b) Start giving humidified O₂ by face mask @ 2 litres/mt

- c) Make a quick assessment of the Burn surface area

When the body is involved by burns, it may not look obvious. The only thing that can be noted is the slight change in the colour of the skin.

- i. If it is involving only one part of the body, like head, chest, abdomen, only one upper limb or one lower limb, shift the patient to the nearest primary care Centre
- ii. If there are burn injuries involving two parts of the body, shift the patient to the nearest District Headquarters hospital
- iii. If there are burn injuries involving the entire body, shift the patient to the district headquarters hospital.

Cut the burnt clothes that are loose

Put the cut bits of clothes in a clean bag and label the bag with the name of the patient, part of the body from where the cloth was taken, time of removing the cloth.

Do not peel the burnt clothes if they are stuck to the patient's body

Don't break blisters if they are present.

Pour running tap water on the burns for at least 10 minutes

Cover the burn wounds with a clean gauze

Apply Silver sulfadiazine cream over the areas that appear burned.

Apply a loose bandage to hold the dressings in place

Elevate the burned area. Raise the wound above heart level, if possible.

DO NOT put ice on the burn

DO NOT immerse the patient in a tub of water

DO NOT apply ink, flour, turmeric or any other material on the burn wound

DO NOT apply cotton on any part of the burn areas

- d) If the patient is able to swallow a tablet, give a Tablet of Paracetamol (500 mg) with a little water.

Do not allow oral fluids until the hospital is reached.

For First-Degree Burns (Affecting Top Layer of Skin)

1. Cool Burn

Hold burned skin under cool (not cold) running water or immerse in cool water until pain subsides.

Use compresses if running water isn't available.

2. Protect Burn

Cover with sterile, non-adhesive bandage or clean cloth.

Do not apply butter or ointments, which can cause infection.

3. Treat Pain

Seek medical help if:

You see signs of infection, like increased pain, redness, swelling, fever, or oozing.

The person needs tetanus or booster shot, depending on date of last injection.

Tetanus booster should be given every 10 years.

The burn blister is larger than two inches or oozes.

Redness and pain last more than a few hours.

Pain worsens.

5. Follow Up

For Second-Degree Burns (Affecting Top 2 Layers of Skin)

1. Cool Burn

Immerse in cool water for 10 or 15 minutes.

Use compresses if running water isn't available.

Don't apply ice. It can lower body temperature and cause further pain and damage.

Don't break blisters or apply butter or ointments, which can cause infection.

2. Protect Burn

Cover loosely with sterile, nonstick bandage and secure in place with gauze or tape.

3. Prevent Shock

Unless the person has a head, neck, or leg injury, or it would cause discomfort:

Lay the person flat.

Elevate feet about 12 inches.

Elevate burn area above heart level, if possible.

Cover the person with coat or blanket.

When to refer a burn patient and where to refer?

Patients who should not be treated in a primary health Centre

- all chemical and electrical burns
- large or deep burns – any burn bigger than your hand
- burns that cause white or charred skin – any size
- burns on the face, hands, arms, feet, legs or genitals that cause blisters
- If someone has breathed in smoke or fumes
- children under five years old and pregnant women

What to look for in a burn patient

1. First assess the area and depth of Burn

Wallace (Rule of 9)

Depth - Chart

Associated injuries

Head injury

Open wounds

Associated co-morbid

Diabetes

Kidney disease

Cardiac problems

Epilepsy

Congenital anomalies

Pregnancy lactating mothers

Age - Less than 5 years and more than 60 years

Start IV line and give fluids according to the calculations

Urinary catheterization

Take blood for sampling

CBC

LFT

RFT

HbsAg

HIV

Urea

Sugar

Creatinine

Start drugs

Analgesics

Antibiotics

Nil oral for 24 hrs

Dressings

III. At PHC

Which patients to treat?

Treat only < 10% superficial burns **without** the following co-morbid conditions
Diabetes mellitus

- Kidney disease
- Cardiac problems
- Hypertension
- Ischemic heart disease
- Epilepsy
- Congenital anomalies
- Pregnancy lactating mothers

Conditions that must be referred to District / Taluk HQ hospital straightaway

- < 10 % burns with above mentioned co-morbid conditions
- 10% – 20 % superficial burns
- > 60 % burns
- Any percentage Electrical Burns
- Any percentage chemical burns
- Any burn in the very young < 5 years or more than 60 years age,
- Any full thickness burn
- Burns of special regions: face, hands, feet, perineum
- Circumferential burns
- Inhalation injury

Documentation

- OP form must be filled
- Medico-legal case record must be filled

Preparation

Nil

Investigations

- Complete Blood Count (CBC)
- Renal Function Tests (RFT)
- Liver Function Tests (LFT)

IV fluids

Nil

Diet

Normal diet

Drugs to be given

Antibiotics / analgesics / vitamins

Procedures

Nil

Wound management

Complete bath after removing any temporary dressings that may have been done

Clean with dilute Betadine solution 10 ml in 1 bottle of Normal saline

Apply Silver sulfadiazine cream ½ inch thick over the wounds

This process must be done daily

If wounds do not heal or start to heal in 10 days,

or there is persistent temperature > 101 F

or Abnormal blood sugar values (on 2 consecutive instances)

or Abnormal renal parameters

or Abnormal liver parameters

Refer to MC Hospital

IV. At the District HQ Hospital

Which patients to treat?

< 10 % burns with co-morbid conditions like

- Diabetes mellitus
- Hypertension
- Ischemic heart disease
- Epileptic

10% – 20 % superficial burns

> 60 % burns

Any percentage Electrical Burns

Any percentage chemical burns

Receive the patient in a clean corner of the surgical ward

Restrict the number of visitors for the patient

Advise hand washing for the medical / paramedical personnel and the caregivers for the patient

- Before touching the patient or his surroundings
- After touching the patient or his surroundings
- Before doing any procedure like recording temperature / changing IV fluids / doing dressings

Conditions that must be referred to Medical College Hospital straightaway

Any percentage of deep burns

Any percentage electrical burns

Any percentage chemical burns

Documentation

IP form must be filled

Medico-legal case record must be filled

Preparation

Assess weight of the patient

Burn surface Area (% BSA)

Assess the depth of the burns (See Chart)

IV line to be started with 18 G Venflon in the upper limbs

If upper limbs are involved in burns, lower limbs can be used for IV cannula

If IV line is not possible, venous cut-down to be started

Urinary catheterization to be done with indwelling rubber/silastic catheter

Investigations

Complete Blood Count (CBC)
Renal Function Tests (RFT)
Liver Function Tests (LFT)
Blood grouping
Chest X-ray
If pregnancy / history of amenorrhea, Ultrasound abdomen to be done

IV fluids

Fluids to be administered according to the calculated amount

Day 1:

Total fluids to be given on Day 1(24 hours from time of burn)
Modified Parkland Regimen (3 ml X %age BSA X Body weight in kg)
First 8 hours (calculated from the time of the burn): $\frac{1}{2}$ of the calculated total amount
Second 8 hours: $\frac{1}{4}$ of the calculated total amount
Third 8 hours: $\frac{1}{4}$ of the calculated total amount

Day 2:

$\frac{1}{2}$ the total calculated amount as Ringer's Lactate
Remaining of the calculated total amount must be given as Dextrose.
Day 3 onwards:
Total urine output volume + 1 litre to be given.

Diet

Sips of fluids if tolerated
Do not allow oral fluids if

- unsupervised feeding
- patient is not conscious
- patient disoriented

Drugs to be given

Antibiotics / analgesics / vitamins

Procedures

Day 1: If any associated injuries like lacerations – should be sutured.
Day 3: Wound swab to be taken and sent for culture and antibiotic sensitivity

Wound management

Complete bath after removing any temporary dressings that may have been done

Clean with dilute Betadine solution 10 ml in 1 bottle of Normal saline

Apply Silver sulfadiazine cream ½ inch thick over the wounds

This process must be done daily

For the 10 – 20% burns,

If wounds do not heal or start to heal in 10 days,

or there is persistent temperature > 101 F

or Abnormal blood sugar values (on 2 consecutive instances)

or Abnormal renal parameters

or Abnormal liver parameters

For the > 60% burns,

60 – 80% Burns can be referred to Medical College Hospital, if the patient has normal parameters on CBC, RFT, LFT, blood sugar, adequate urine output

Refer to MC Hospital

V. Burn protocol at Medical College Hospital

1. Admission

1.1 Registration

1.1.1 Triage

1.1.2 Records

1.1.3 Consent forms

1.2. Criteria for admission

1.3. Referral

1.4. Legal procedures

1.5. Investigations

2. Burn care

2.1. Fluid management

2.1.1. Initial fluid therapy

2.1.1.1. Adult

2.1.1.2. Pediatrics

2.1.1.3. Burn patients with comorbid illness

2.1.2. Maintenance fluid therapy

2.1.2.1. Fluid therapy for shock

2.1.3. Transfusion of colloids and blood products

2.1.4. Antibiotic protocol

2.1.5. Pharmacological support for burn care

2.2. Burn wound management

2.2.1. Burn wound assessment

2.2.2. Burn wound cleaning

2.2.3. Burn wound dressing

2.3. Burn surgeries

2.3.1. Emergency procedures

2.3.2. Acute burn wound surgeries

2.3.3. Amputation

2.3.4. Delayed surgeries

2.4. Pain control

2.4.1. Acute burn pain

2.4.2. Postsurgical pain relief

2.4.3. Chronic pain management

2.4.4. Management of pruritus

3. Respiratory care

4. Nutrition

- 4.1. Acute phase
- 4.2. Recovery phase
- 5. Physiotherapy
 - 5.1. Acute stage of burn
 - 5.2. After stabilization of acute stage
- 6. Management of comorbid conditions
- 7. Rehabilitation
- 8. Post burn follow up protocol

1. Admission

1.1. Registration

- a. All burn patients are seen by the casualty medical officer (CMO).
- b. AR (Accident Registry) entry is made.
- c. Patients with minor burn are referred to surgery ward for opinion.
- d. CMO admits burn patients with major burns.
- e. In patient number and diet sheet are issued and patients are sent to burns ward.
- f. Inj. Tetanus toxoid 0.5 ml is given at the time of initial visit if not given in the hospital from where patient was referred.

1.1.1. Triage

If many burns patients are presented at the same time, triage is done. CMO examines the patient and segregates the patients as to be admitted as inpatients or to be treated as out patients based on criteria for admission (1.2)

1.1.2. Records

The following registers must be maintained in the Ward where the Burn patients are being admitted

- a. Police intimation book
- b. Outpatient entry register
- c. Burns ward admission register- nominal register
- d. Acute burn register (Containing details of the patient with regards to Burns and General condition) (Annexure)
- e. Admission –Discharge register

- f. Emergency surgery record register
- g. Police Outpost Memo book
- h. Magistrate memo book - Memo should be sent to the Magistrate to record dying Declaration (DD) for all Burns
 - In women who have been married for less than 7 years
 - Any patient with homicidal burns
 - Any patient with burns with a suspicious / unreliable history
- i. Operation register
- j. Discharge intimation book
- k. Death intimation book

1.1.3. Forms

1.1.1. DIL Form (Annexure)

1.1.2. Consent form for surgery (Annexure)

1.1.3. AMA Discharge (Against medical advice)

1.1.4. Corporation forms in case of death of the patient

1.2 **Criteria for admission**

- Burns >15% BSA in adult
- Burns >10% BSA in children
- Burns over face, hands and genitalia
- Burn in patients in extremes of age.
- Homicidal burns.
- Chemical burns.
- Electrical burns.
- Burns in patients with co-morbidities
- Burns in pregnant women
- Burns sustained in suspicious circumstances.

1.3. **Referral**

1.3.1. Referral to burns ward from other hospitals

- a. Burns requiring admission. (Ref 1.2)
- b. Burns requiring surgical management.
- c. Burns with complications either medical or surgical.

1.4. **Legal Procedures**

1. All burn patients are treated as medico legal patients.
2. Police and Judiciary are to be informed.
3. All burn deaths are subjected to postmortem examination.

4. Medical records are preserved for 15 years by MRD.

1.5 Investigations

1.5.1: At the time of admission:

Blood sample:

1. CBC
2. Blood sugar
3. Blood urea
4. Serum creatinine
5. Serum electrolytes
6. HIV
7. HBsAg
8. ECG- In patients with co morbidities and > 40 years
9. CT Scan- when associated with Trauma

1.5.2: On second day:

1. All the investigations done on Day 1 are repeated
2. Blood grouping & Rh Typing
3. LFT
4. RFT
5. Total proteins
6. X ray chest

1.5.3: PBD3:

Swab taken from wound for culture & sensitivity
Investigations required as per patients
comorbidity/ specialist opinion

1.5.4: Investigations are repeated according to the
general condition of the patient

2. Burn Care

2.1 Fluid management

2.1.1. Initial fluid therapy.

2.1.1.1. Adult: Resuscitation is by modified Parkland
formula with Ringer lactate solution

$3 \times \text{BSA} \times \text{Weight in Kg} = \text{fluid requirement for 24 hours}$

50% of the calculated fluid is given in the first eight hours which is calculated from the time of burns and not from the time of admission.

Rest of the calculated fluid is given in the ratio of 25% in next eight hours each.

2.1.1.2. Pediatric patients: they are given burn replacement fluids and maintenance fluids.

$3 \times \text{BSA} \times \text{Weight} = \text{replacement fluid for 24 hours.}$

Maintenance fluid is 5% dextrose solution which is calculated as below.

Up to 10 kg: 100 ml/ kg body weight

50 ml/ kg for next 5 Kg and 30 ml/ Kg for > 15 kg.

Total volume is divided into 3 rations for every 8 hour of post burn infusion and is given along with replacement fluids.

2.1.1.3. Fluid requirements for special needs.

2.1.1.3.1. Electrical burn patients: are resuscitated with Ringer lactate solution $7 \times \text{BSA} \times \text{Weight}$ for replacement fluid therapy.

2.1.1.3.2. Diabetic patients who are already on treatment are started with Ringer lactate solution. CBG and venous blood samples are sent for blood glucose assessment.

If blood glucose is > 200mg/dl then the fluid for replacement is changed to 0.9 % normal saline.

2 units of Inj.Actrapid insulin is started and if needed Dextrose normal saline is transfused.

Eighth hourly glucose monitoring is done.

2.1.1.3.3. Renal diseases complicating burns: Patients with chronic renal disease are given 0.9 normal saline infusion and fluids are adjusted as per the Nephrologist opinion which is based on renal parameters.

Strict intake output chart is mandatory and FFP may be given early.

2.1.2 Maintenance fluids:

From the second post burn day fluid transfusion is for maintenance therapy only.

50% of the calculated fluid is usually given in the next 24 hours. This is given as Ringer lactate and Dextrose normal saline.

2.1.2.1 Oral fluids: all conscious patients are permitted to take oral fluids and diet to avoid enteric translocation of bacteria. Nasogastric tube feeding can be done and high calorie diet can be given when there is no paralytic ileus.

2.1.3 Transfusion of blood, plasma and colloids:

On post burn day 2, all patients are given 1 unit of fresh frozen plasma.

Repeat doses are given when serum proteins are low. Patients with impaired renal parameters and have to have strict fluid restrictions are given FFP to supplement fluids.

Blood transfusions are required in patients with Hb <10 gm/dl.

Blood replacement is required for surgical blood loss or for replacement in postoperative period.

Colloids like Dextrin, Dextran, Haemacel are used during large volume fluid replacement or in shock management.

Amino acids are available for transfusion to enhance protein supplementation in the post burn period.

2.1.4. Infection Control

Patient must be kept in isolation

Patient must be taken care of by a single Nurse / Ward attendant who are dedicated to this patient only

Follow hygiene precautions

 Sterile gloves when handling patients

 Hand washing by the attender of the patient

 Hand washing by the medical and paramedical personnel

Rigorous wound management (dressing changes, early excision).

 – Separate “new” patients (< 7 days from burn) from convalescent patients (≥ 7 days from burn).

- Do not administer antibiotic therapy in the absence of systemic infection.

Infection is defined by the presence of at least 2 of 4 following signs:

Temperature > 38.5 °C or < 36 °C

Tachycardia.

Tachypnoea.

Elevation of white blood cell count by more than 100% (or substantial decrease in the number of white blood cells).

In the event of systemic infection, start empiric antibiotic treatment:

cefazolin IV

Children > 1 month: 25 mg/kg every 8 hours

Adults : 2 g every 8 hours

+ ciprofloxacin PO

Children > 1 month: 15 mg/kg 2 times daily

Adults: 500 mg 3 times daily

- Local infection, in the absence of signs of systemic infection, requires topical treatment with silver sulfadiazine.

2.1.5. Pharmacological support for burn care

- Omeprazole IV from D1

Children: 1 mg/kg once daily

Adults: 40 mg once daily

- Tetanus immunization/prophylaxis (see Tetanus, Chapter 7).

- Thromboprophylaxis: nadroparin SC beginning 48 to 72 hours post-injury. High risk dosing protocol if the BSA is > 50% and/or in the event of high-voltage electrical injury; moderate risk dosing protocol if the BSA is 20 to 50% and/or in the event of burns of the lower limbs.

2.2. Burn wound management

2.2.1. Burn wound assessment

The extent of burn wound is assessed with Lund and Browder chart by marking the burnt areas on the diagram.

Depth of burn is indicated by a single slant line shading for superficial burn and double cross shading for deep burn and full darkening for gangrenous area.

First degree burns are not included for the purpose of calculation of BSA burnt.

First degree burns are epidermal burns characterized by redness and burning sensation. Wash the area with water till the burning sensation is reduced and apply SSD ointment.

Second degree burns are reddish and develop blisters. If the size of blister is less than 1 cm only SSD or saline dressing is done. If the blister is more than 1 cm then de roof and apply SSD/ SALINE dressing. After 24 hours the wounds are covered with collagen. Collagen can be applied for trunk or non-circumferential areas on limbs. Acticoat or Mepilex AG dressing can be used for fingers and circumferential burns on limbs.

After dressing limb elevation is done.

Third degree burns are full thickness burns and are whitish or black in appearance if covered with soot particles. There is no pin prick sensation and surface is dry. These areas are usually covered with SSD. Closed dressing with thick absorbent pad and bandage is applied.

2.2.2. Burn wound cleaning

All patients are given a bath and then only dressings are done. Before every dressing patients are taken to the washroom and are given a shower. Wounds are cleaned with soap and water. Patients who are critical or on ventilator support are to be given dressings in their beds after cleaning with betadine and saline.

Patients who had chemical burns are given repeated wash with copious running water in the first 24 hours.

Post-operative patients are given dressings in the OT or bedside after first 24 or 48 hours of surgery as per the soakage of dressing.

Non adherent (paraffin gauze) dressing is applied after SSG.

2.2.3. Burn wound dressing

2.3. Burn surgeries

2.3.1 Emergency procedures

2.3.1.1: At the time of admission: all bleeding injuries due to laceration or trauma has to be cleaned debrided and suturing is done under local regional or general anesthesia as required.

2.3.1.2: Full thickness circumferential burns with distal vascular deficit need emergency Fasciotomy.

2.3.1.3: Circumferential deep burns over neck and chest will require crisscross checker incisions up to the level of burns to allow chest expansion.

2.3.1.4: Respiratory burn victims require emergency tracheostomy if intubation and ventilation was not possible.

2.3.2 Gangrene of digits or limb has to be managed by amputation at appropriate level under regional or general anesthesia. All high tension contact burns will lead to gangrene and hence have to be dealt with Fasciotomy to avoid further extension of gangrene above the level of demarcation.

2.3.3. Acute burn wound surgeries

2.3.3.1: After first 24 hours of burn: All superficial burn patients are taken to the operation theatre for wound debridement.

2.3.3.2: Collagen application under intravenous sedation.

2.3.3.3: After 3 to 5 days of burn: Full thickness burn less than 20% BSA can be excised tangentially till capillary bleeding is noted and covered either with meshed auto graft or cadaver graft.

2.3.4. Delayed procedures:

2.3.4.1: Escharectomy. All raw areas with eschar need debridement. Eschar with is separating is dealt with Escharectomy. If eschar is circumferential it can be incised to accelerate the separation process.

2.3.4.2: Skin grafting

Post burn granulating raw areas need SSG. (Intermediate thickness split thickness skin graft)

2.3.4.3: Flap cover

When vitals like blood vessels, nerves, bones or cartilage are exposed, appropriate flap from local/ regional area or even micro-vascular (free flap) is done.

2.4. PAIN MANAGEMENT

2.4.1. Acute stage of burn: On admission: Inj.Pentazocain / Inj.Morphin/ Inj.Tramadol

Pediatric burns: Syrup

Inj.Paracetamol infusion

2.4.2. Post-surgical pain: Inj.Pentazocain / Inj.Morphin/ Inj.Tramadol

2.4.3. MANAGEMENT After patients are shifted to step down wards - patients are put on Diazepam at night.

Pruritus: Inj.Chlorpheniramin maleate

T.Gabapentin

Emollients like liquid paraffin body lotion or coconut oil.

3. Respiratory care:

3.1. Patients with respiratory burns:

All patients who sustained burns in closed space patients with facial burns are suspected to have inhalation burn and need care for maintaining airway and oxygen saturation. It is ideal to put all cases of deep facial burns in ventilator for first few days till the facial edema subsides.

When the severity of inhalation burn is more and ventilation is not possible emergency tracheostomy has to be done.

3.2. Respiratory infections in burn patients:

Patients may develop bronchitis or aspiration pneumonia during the course of burn management. Proper antibiotics and respiratory therapy is needed, sputum has to be sent for culture and chest physiotherapy is done.

For less severe inhalational burn bronchodilators and nebulization has to be started.

4. Nutrition

4.1. Acute phase

Start feeding early, beginning at 8 hours following the burn

Stop at anytime if patient is not able to tolerate the feeds

– Daily needs in adults

Calories: $25 \text{ kcal/kg} + 40 \text{ kcal} \times \% \text{ BSA}$

Proteins: 1.5 to 2 g/kg body weight

– High energy foods (NRG5, Plumpy'nut, F100 milk) are necessary if the BSA is $> 20\%$ (normal food is inadequate).

– Nutritional requirements are administered according to the following distribution: carbohydrates 50%, lipids 30%, proteins 20%.

– Provide 5-10 times the recommended daily intake of vitamins and trace elements.

– Enteral feeds are preferred: oral route or nasogastric tube (necessary if BSA $> 20\%$).

– Start with small quantities on D1, then increase progressively to reach recommended energy requirements within 3 days.

– Assess nutritional status regularly (weigh 2 times weekly).

– Reduce energy loss: occlusive dressings, warm environment ($28-33 \text{ }^\circ\text{C}$), early grafting; management of pain, insomnia and depression.

4.2. Recovery phase

5. Physiotherapy

5.1. Acute stage of burn

5.2. After stabilization of acute stage

6. Management of comorbid conditions

7. Rehabilitation

8. Post burn follow up protocol

NATIONAL HEALTH MISSION
TAMIL NADU

