aci.health.nsw.gov.au

Wound Management

http://www.aci.health.nsw.gov.au/networks/burn-injury

ACI Statewide Burn Injury Service

NSW GOVERNMENT

AGENCY FOR CLINICAL INNOVATION

@nswaci

2022

Mechanisms

Burns

Burns can be caused from many different sources including:

- scald
- flame
- contact
- chemical
- electrical
- friction
- radiation
- reverse thermal (cold burns)

Scald

- Mainly superficial to dermal
- Very young and elderly
- Tea/coffee, bath/shower
- Recently
  - 2min noodles
  - cup-a-soups
  - hot oil and
  - hair removal wax

Scald

Cup of Coffee

Bath

Water temperatures

Type of liquid	Temperature	Time for serious burn
Boiling water from a kettle	100°C	under 1 second
Cup of hot tea/coffee	70-95°C	under 1 second
Hot water from a tap	65-75°C	under 1 second
Hot water from a kettle, 5-10 minutes after boiling	55°C	10 seconds
Hot water from a tap with a temperature regulator	50°C	3-5 minutes

Flame

- Most flame burns mainly deep dermal to full thickness
- Generally teenage and young adult

Lighting candles - drunk

Flame

Contact

- Often deeper in paeds
- Commonly irons, oven doors and exhaust pipes

Contact

Oven door

Coiled Hotplate

Heater

Chemical

Caustic soda

- Types
  - Alkaline
  - Acid
  - Phosphorus

Photos courtesy of RNSH

Chemical

Hydrofluoric Acid

Extravasation

Electrical

- Low voltage – Household 240 to 415 volts
- High voltage – 1000 to 33000 volts
- Lightning – extremely high voltage and amperage but extremely short duration

Photos courtesy of RNSH

Fork into powerpoint

Trod on fallen power lines (exit point)

Arcing Injury

Lichtenberg flowers/figures

- Caused by lightening

Friction

Dragged under car

Photo courtesy of RNSH

- Treadmills, gravel, MBA
- Varied depths, often deep dermal thickness


Treadmill

Radiation

- Sunburn, IPL, laser, radiotherapy
- Predominantly superficial

Sunburn

Photos courtesy of RNSH

Radiotherapy

IPL/Laser

IPL (Intense Pulse Light)

Laser

Reverse Thermal/Cold

- Severe cold burns similar to frostbite due to the rapid drop in temperature.
- Initial wound appears
  - Hyperaemic
  - Oedematous
  - without apparent tissue necrosis

Reverse Thermal/Cold

PLEASE NOTE: the usual recommendations for burns first aid (20 minutes of cool running water) is contraindicated in contact LPG gas cold burns

Rapid re-warming in bath of water between 37 - 40^0C for 15 - 30 minutes – aims to minimise tissue loss and reduce chemical irritation.

Active motion whilst rewarming is recommended

Avoid massaging affected area during rewarming

Pain Management

Pain Management

- Most difficult time for patient and staff to handle.
- Techniques used need to suit the situation, patient and staff.

Pain Management

- Optimal outcomes include
  - rapid onset of analgesia
  - little post procedure sedation
  - able to be administered on unit with patient and staff control
  - no need to fast/NBM
  - non-toxic for repeated use.

Pain Management

- Burn pain is complex
- Many phases of burn treatment, from the acute initial injury, through treatment, wound healing and onto rehabilitation.

- Three main categories
  - *Background Pain*
  - *Breakthrough Pain*
  - *Procedural Pain*

Pain Management

Background Pain

- Pain experienced, when at rest, in burned areas and treatment areas, e.g. donor site.
- Constant and dull in nature.
- Best treated with constant serum opioid levels, e.g.
  - acute phase, continuous narcotic infusion
  - slow released oral opioid as pain levels decrease.

Pain Management

Breakthrough Pain

- Rapid onset of pain and often short in duration.
- Occurs whilst attending to simple activities such as walking or changing position in bed.
- Relieved by quick release oral opioids and for patients with IV access, PCA or bolus doses.

Pain Management

Procedural Pain

- High levels of intense pain for duration of procedure, for example wound dressing changes and physiotherapy.
- Requires higher more potent doses of opioid administration.

Pharmacological

Pharmacological

- Opioids
- Analgesics
- Anxiolytics

Routes

- Intravenous
- Oral
- Intranasal
- Inhaled

http://indianexpress.com/article/india/india-news-india/do-you-take-one-of-these-300-banned-drugs/

Non-pharmacological

Adjuncts to analgesia

- Minimal wound exposure
- Avoidance of hypothermia
- Check position / splints / bandages
- **Always investigate any pain that does not match the clinical picture**

Analgesia

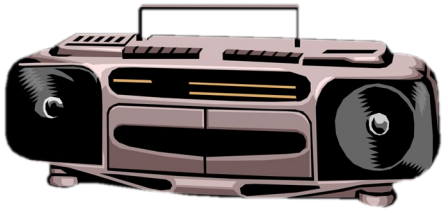
- Cool / irrigate the burn wound
- Cover the burn wound
- Elevate the burnt area
- Reassurance

Massage

Play Therapy

http://www.google.com.au/search?hl=en&q=play+therapy+in+hospital+photos&btnG=Search&meta=

Music Therapy



http://stinrc.org/ResidentLife/musictherapy.html

http://news.nationalgeographic.com/news/2005/08/0812_050812_babymusic.html

Itch

Analgesia: Itching

- Moisturising cream + + +
- Massage
- Antihistamines
- Gabapentin
- Ondansetron
- Oatmeal bath / shower products

Wound Management

Patient Assessment

Patient History

- Physical
  - Age
  - Co-morbidities
  - Nutrition
- Psychosocial
  - Support networks
- Mobility and independence

Injury History

- Date & time
- Source of Injury
- First aid
- Initial presentation
- Treatment
- Time to definitive care

Burn Wound Assessment

- Depth
  - Capillary refill
  - Appearance
  - Sensation
- Area (% TBSA)
- Anatomical location
  - Surrounding skin integrity
- Barriers to healing eg.
  - Necrotic tissue
  - Infection

Wound Cleansing Aims

- To remove necrotic burden such as:
  - exudate
  - old dressings/creams
  - loose dead skin
- To minimise pain & cellular damage
- To reassess the burn wound

Washing

- Wash in solution eg. Chlorhexidine Gluconate 5% diluted in water (1:2000), saline, etc
- Bowl, bath or shower

Hair

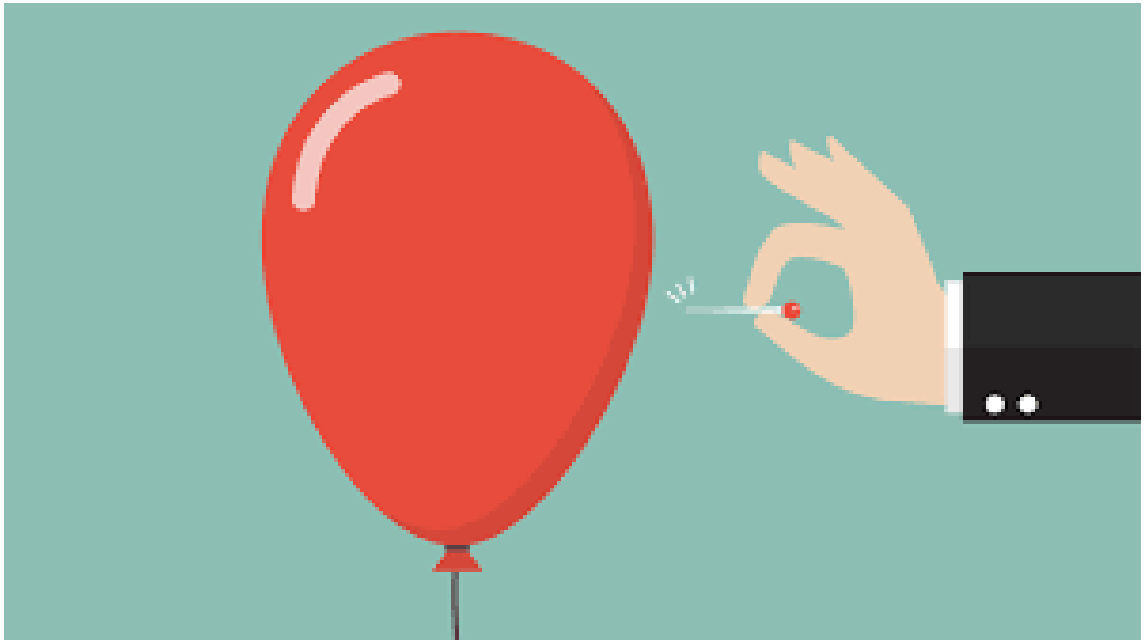
- Assess for burns through hair
- Shaving may be necessary
  - Allows accurate assessment of % TBSA
  - Avoids complications e.g. folliculitis
  - Should extend 2-5cm around burnt area

Management on Transfer

- Analgesia
- Plastic wrap < 8hrs or
- Contact Burn Unit for dressing advice >8hrs
- Clean dry sheet
- Keep warm, prevent hypothermia
- ⇨ Consult and Transfer to Burn Unit
- Documentation

Don’t delay transfer, doing complicated dressings

Pop or not?



Blisters

- Management of blisters guided by specialist clinician or institutional preference
- Treatment dependent on mechanism

Blister Management Options

Pros	•Natural skin barrier •Limited trauma for patient. •Reduced dressing time	•May reduce pain and increase function •Natural skin barrier remains	•Decreases infection risk from breakdown of devitalised tissue •Allows depth assessment •May increase function •Improved comfort once dressed
Cons	•May cause pain and discomfort •May limit function •Cannot assess wound beneath •Blister fluid may detrimental to healing •Risk of spontaneous rupture	•Devitalised tissue may pose potential infection risk •May be difficult to assess wound beneath •May have a large amount of exudate continually released	•Requires adequate analgesia and sedation •Creates open wound - infection risk if not correctly managed

Slide prepared by Madeleine Jacques CHW

MINOR BURN BLISTER MANAGEMENT

Blisters are formed when there is separation of the epidermal and dermal layers, often with fluid present. The management of these blisters is generally guided by specialist clinician or institutional preference. The ACI Statewide Burn Injury Service recommended management for burn [illegible] de-roofing (removal of skin and fluid), after adequate [illegible]

NB If your facility does not have capacity or resources (access to adequate analgesia and dressings) to follow this guideline, incise and drain the blister and contact the appropriate Burn Unit.

De-roofing is done to:

- remove non-viable tissue
- prevent uncontrolled rupture of blister
- avoid risk of blister infection
- relieve pain from tense blisters
- reduce restriction of movement of joints
- assess the burn wound bed

Blister management example

Prior to [illegible]

Procedure for de-roofing blisters >5mm

NB If your facility does not have capacity or resources (access to adequate analgesia and dressings) to follow this guideline, incise and drain the blister and contact the appropriate Burn Unit.

De-roofing is done to:

- remove non-viable tissue
- prevent uncontrolled rupture of blister
- avoid risk of blister infection
- relieve pain from tense blisters
- reduce restriction of movement of joints
- assess the burn wound bed

Blister consensus – key points

- **Prior to de-roofing:**
- Assess blister size. Burn blisters ≤5mm can be left intact.
- **If patient is being transferred to a burn unit contact the receiving unit before de-roofing.**
- Obtain consent from the patient or family.
- Administer appropriate analgesia and allow time to take effect prior to procedure.
- Take digital image before and after de-roofing procedure if possible.

Blister Debridement example

Blister management

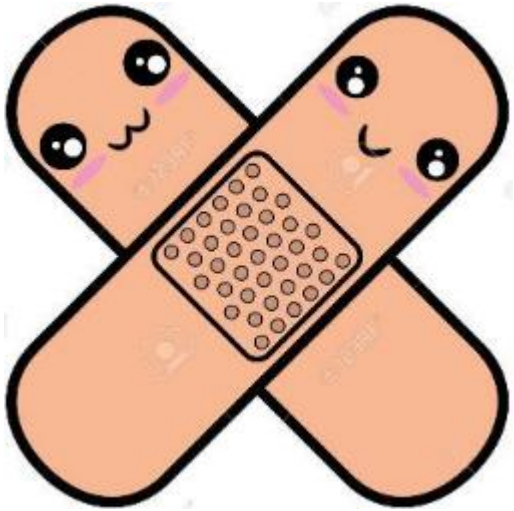
Debridement of blisters



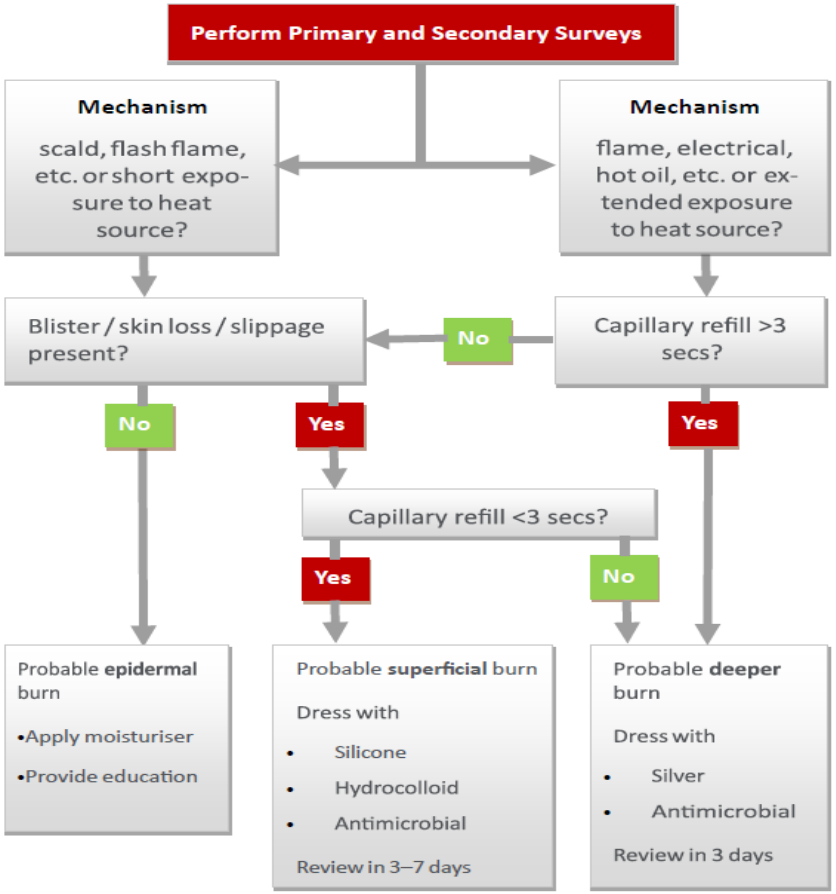




Dressing Products



Burn patient dressing decision-making tree



Which dressing?

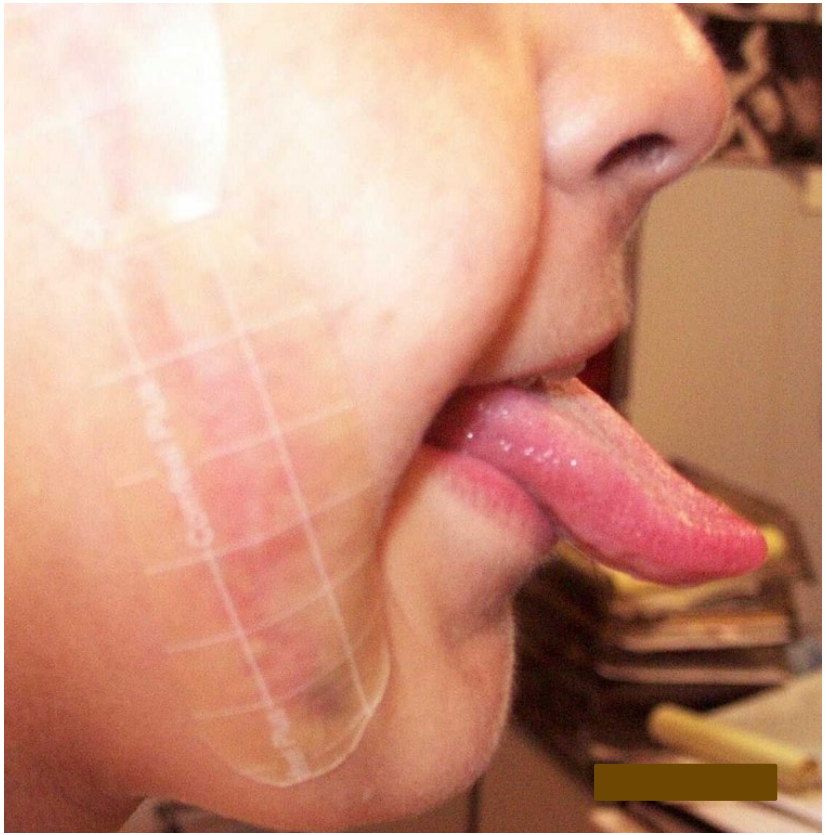
- Moisturiser e.g. Sorbolene, DermaVeen

Which dressing?

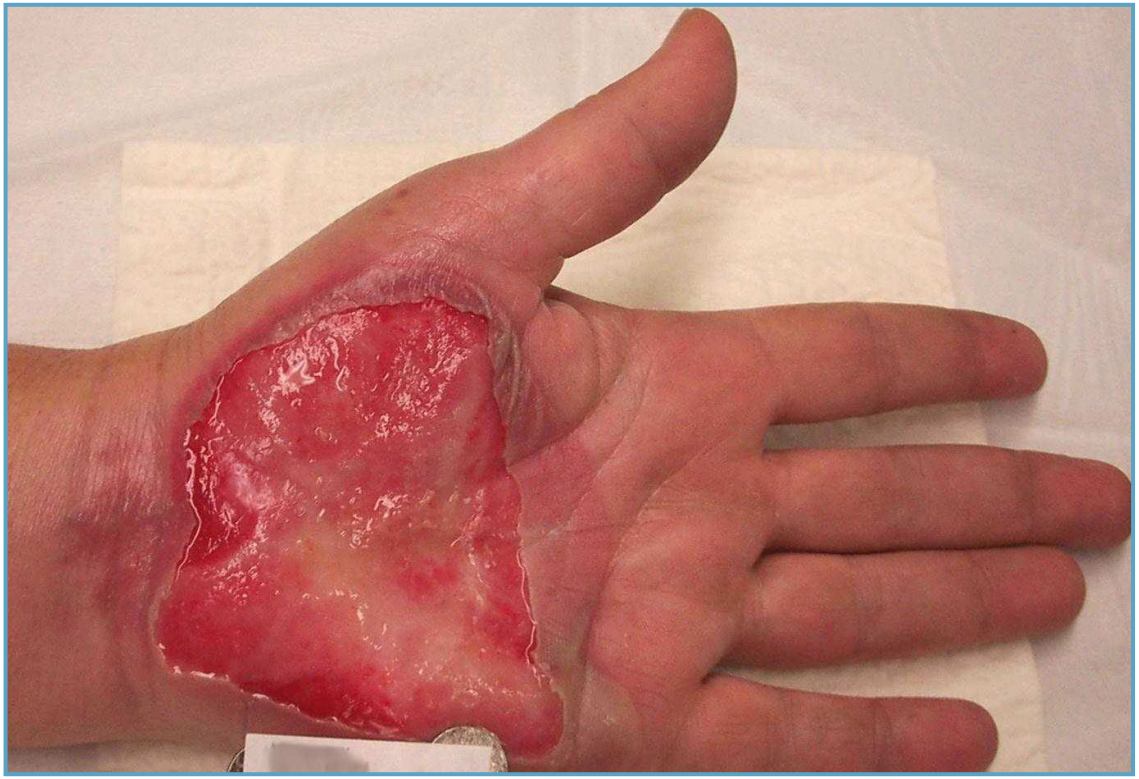
- **Silicone**
- Film
- Silver
- Impregnated Gauze
- Hydrocolloid

Which dressing?

- **Hydrocolloid**
- Film
- Silicone
- Silver
- Impregnated Gauze



Which dressing?



- **Silver**
- Impregnated Gauze
- Hydrocolloid


06/05/2003


09/05/2003


13/05/2003


20/05/2003



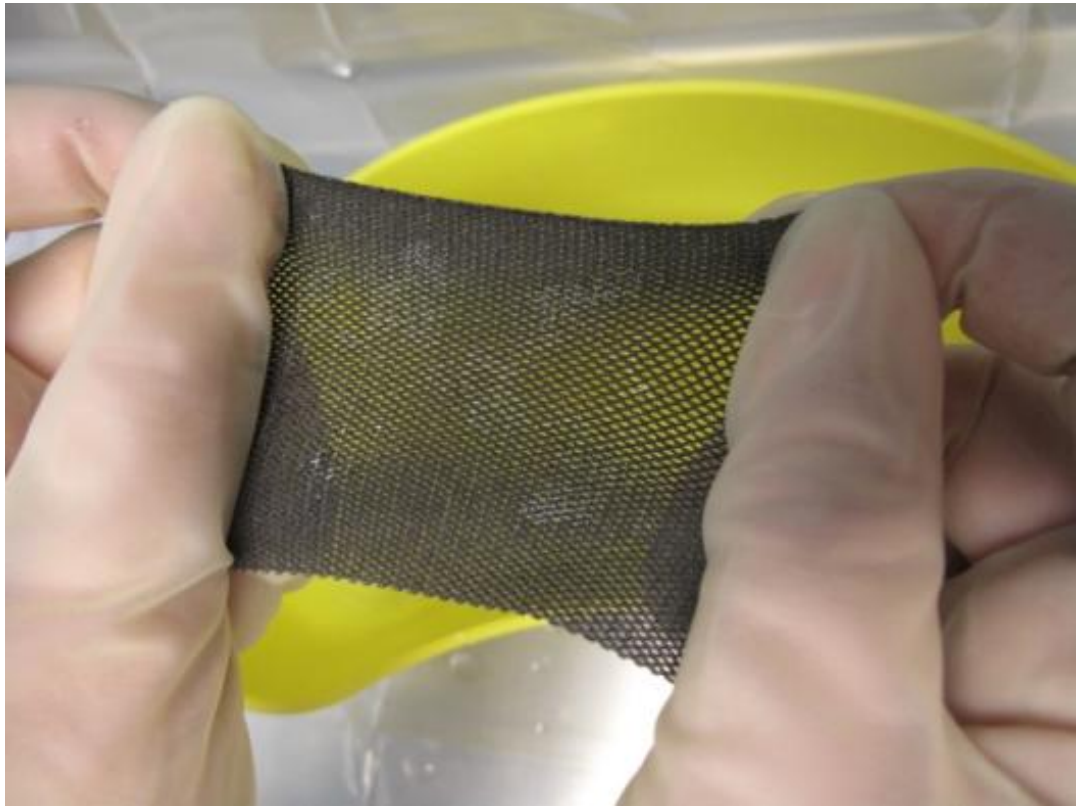

Which dressing?

- **Silver**
- Impregnated Gauze
- Hydrocolloid

Which dressing?

- **Silver**
- Impregnated Gauze
- Hydrocolloid


AHF7113
Baxter
Water for Irrigation
Steripour® Pour Bottle
Caution: Do not use unless seal is intact. Store below 30°C. Do not heat this unit in excess of 80°C. Discard unused portion.
Baxter Healthcare Pty. Ltd.
1 Baxter Drive, Old Toongabbie, N.S.W., Australia.
Sterile, nonpyrogenic
Warnings:
For Irrigation only
Not for Injection.



- One way stretch, increasing conformability
- Different preparation to Acticoat

Friction burn - treadmill

Which dressing?

- **Impregnated Gauze**
- Silver
- Silicone
- Hydrocolloid

Impregnated Gauze

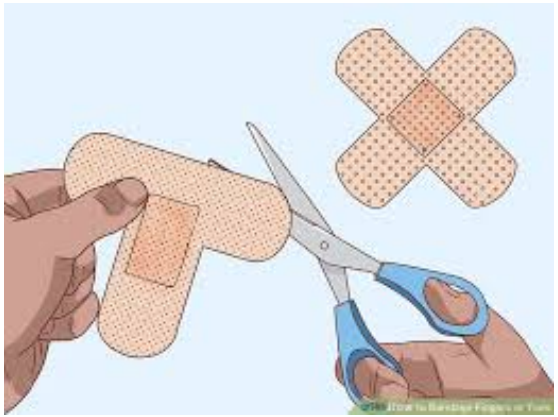
Which dressing?

- **Silver**
- Impregnated Gauze
- Hydrocolloid

Silver

- Apply Flamazine impregnated cloth to wound and apply bandage

Fixation



Adhesive woven tape

Bandage

Tubular bandage

Cotton Glove

Net dressing

Specialised Fixation

‘Madonna’ suit

Prevent Complications

Maceration

Bleeding

Slippage

Swelling - constriction

Inappropriate bandaging

Further Information

Available on website:

- Burn Education Day lectures
- Specific dressing selection and application refer to Clinical Practice Guidelines: Burn Wound Management
- Functional and physiological management refer to Physio/ Occupational Therapy Practice Guidelines
- Burn Transfer and Model of Care Guidelines

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http://www.aci.health.nsw.gov.au/networks/burn-injury

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