

Burn Education Day

Wound Management

ACI Statewide Burn Injury Service

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

Agency for Clinical Innovation

aci.health.nsw.gov.au

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

Unburnt skin



Lighting candles - drunk

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

Flame



Contact



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

Contact



Oven door



Coiled Hotplate



Heater

Chemical



Caustic soda

- Types
 - Alkaline
 - Acid
 - Phosphorus



Chemical



Hydrofluoric Acid



Extravasation

Electrical



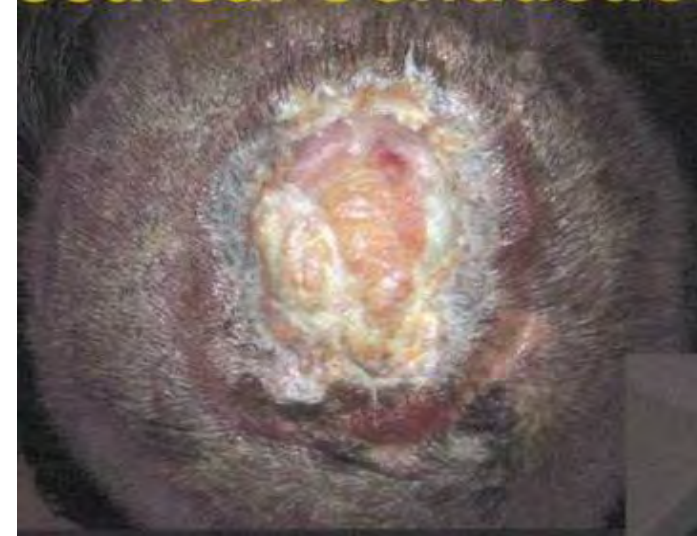
- Low voltage – Household 240 to 415 volts
- High voltage – 1000 to 33000 volts
- Lightning – extremely high voltage and amperage but extremely short duration



Bit Christmas lights



Fork into powerpoint



Trod on fallen power lines (exit point)

Arcing Injury



Lichtenberg flowers/figures

- Caused by lightning



Negative Charge



Positive Charge

Friction



Dragged under car

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

Treadmill



Radiation

- Sunburn, IPL, laser, radiotherapy
- Predominantly superficial



Radiotherapy



IPL/Laser



IPL (Intense Pulse Light)

Agency for Clinical Innovation



Laser

Reverse thermal/cold



Severe cold burns similar to frostbite due to the rapid drop in temperature

Causes:

- “Frosties”
- Wart removers
- Liquid petroleum gas (LPG)
- Liquid nitrogen (dry ice)

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

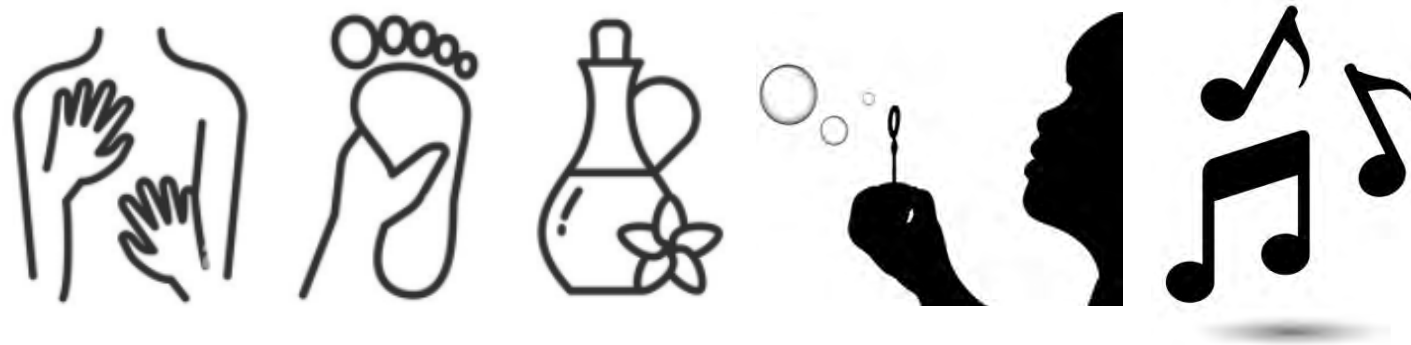
- Opioids
- Analgesics
- Anxiolytics

Routes

- Intravenous
- Oral
- Intranasal
- Inhaled



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



Itch



Analgesia: Itching

- Moisturising cream + + +
- Massage
- Antihistamines
- Gabapentin
- 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



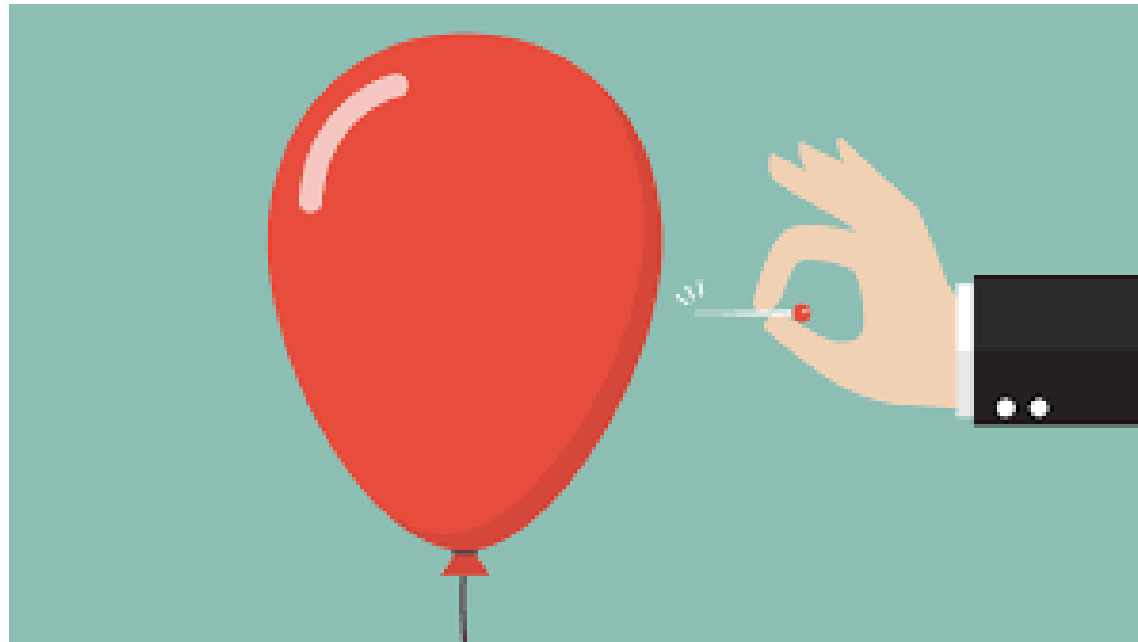
- Assess for burns through hair
- Shaving may be necessary
 - Allows accurate assessment of % TBSA
 - Avoids complications e.g. folliculitis
 - Should extend 2-5cm around burnt area

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

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 blisters is de-roofing (removal of skin and fluid), after adequate analgesia.

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 de-roofing

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.

Procedure for de-roofing blisters >5mm



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 $\leq 5\text{mm}$ 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



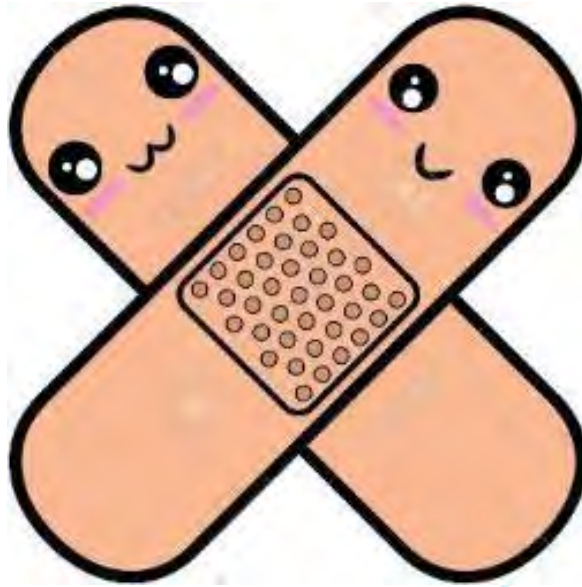
Blister management

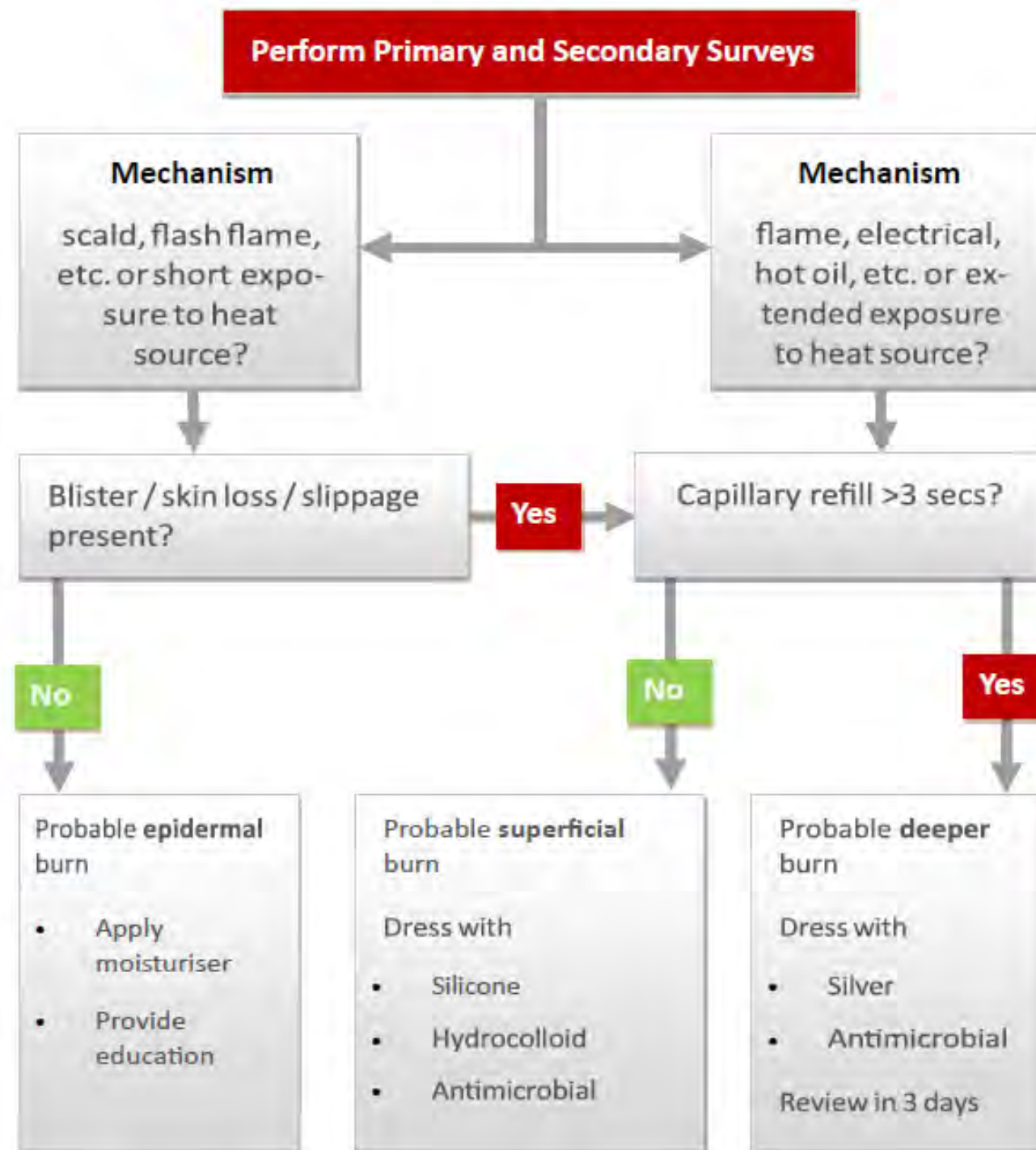


Debridement of blisters



Dressing Products







Which dressing?



- Moisturiser e.g. Sorbolene, DermaVeen

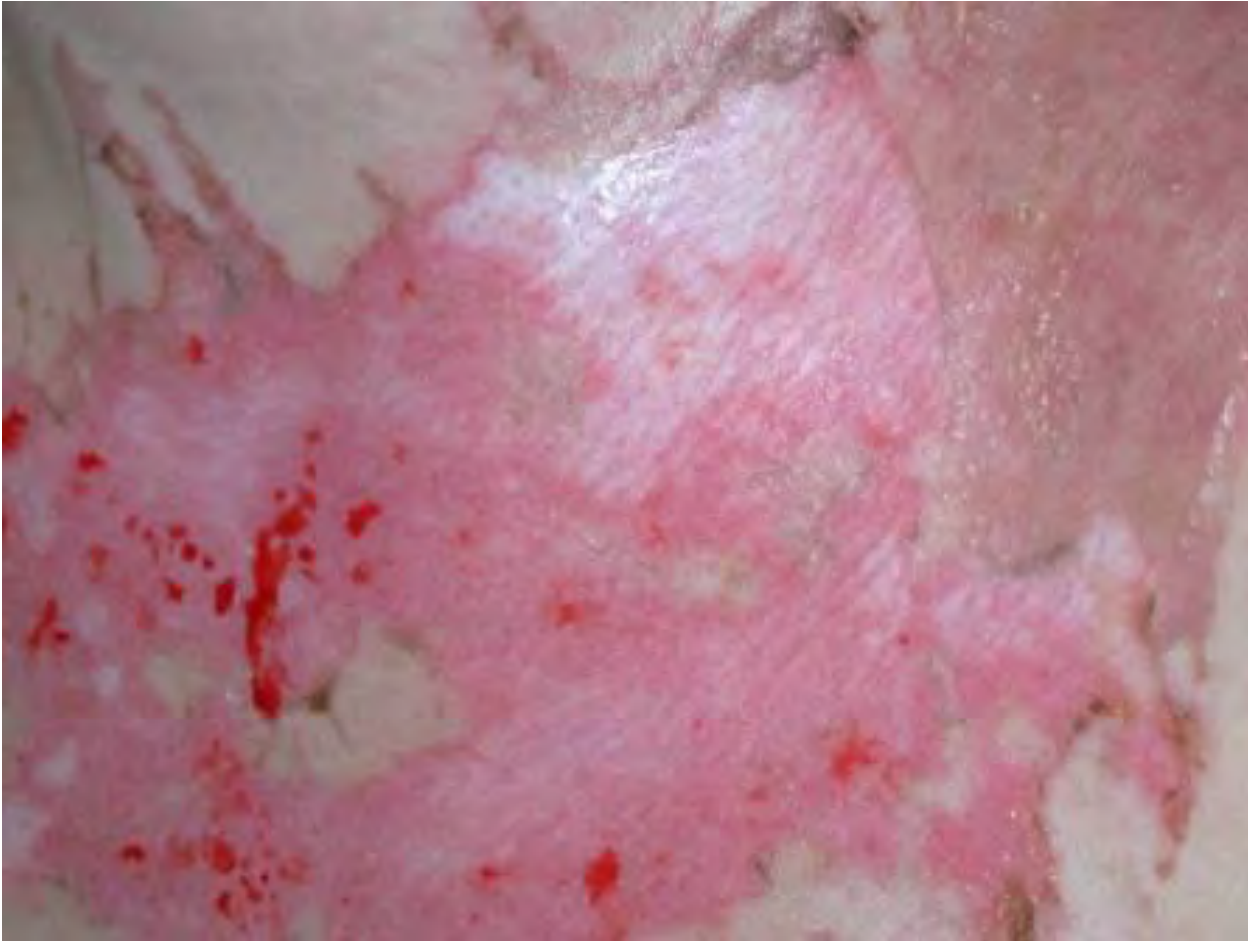
Which dressing?



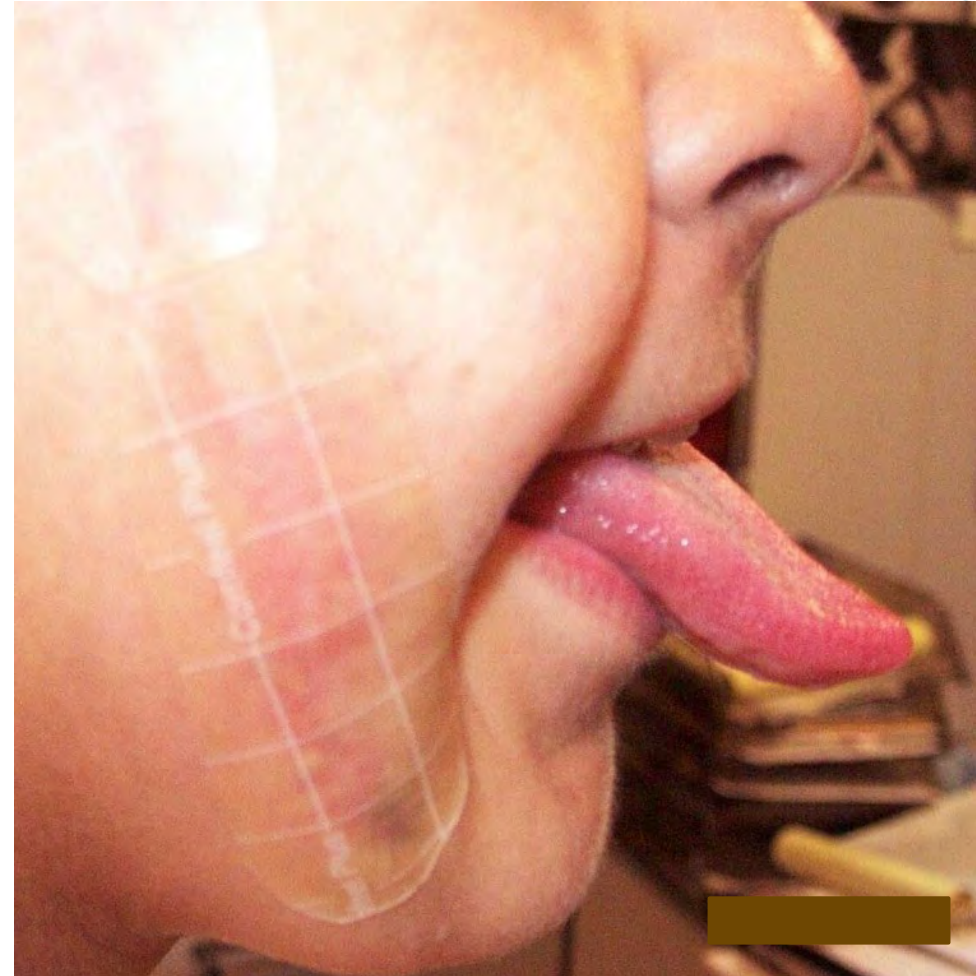
- **Silicone**
- Film
- Silver
- Impregnated Gauze
- Hydrocolloid



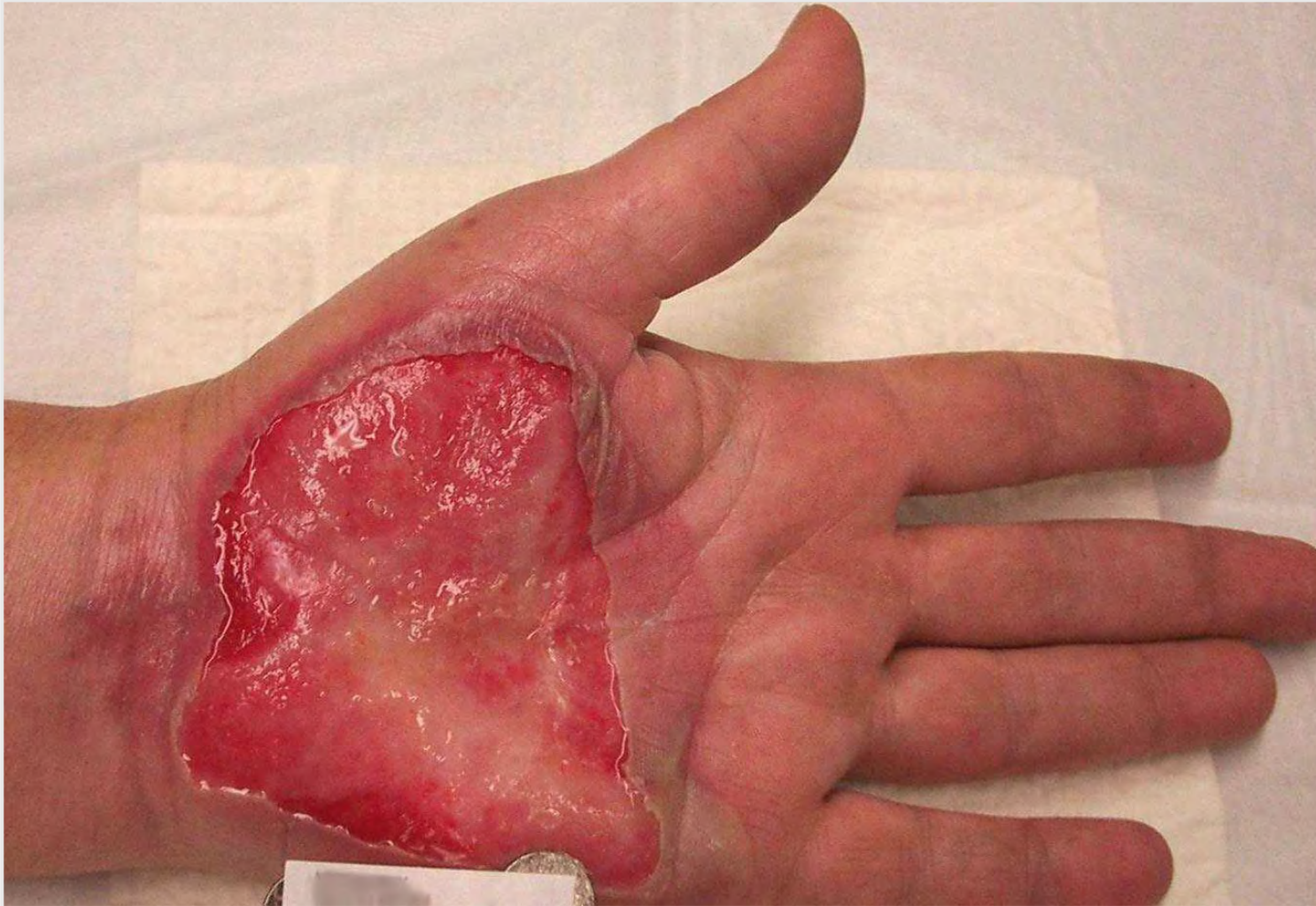
Which dressing?



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



Which dressing?



- **Silver**
- Impregnated Gauze
- Hydrocolloid





Which dressing?



- **Silver**
- Impregnated Gauze
- Hydrocolloid

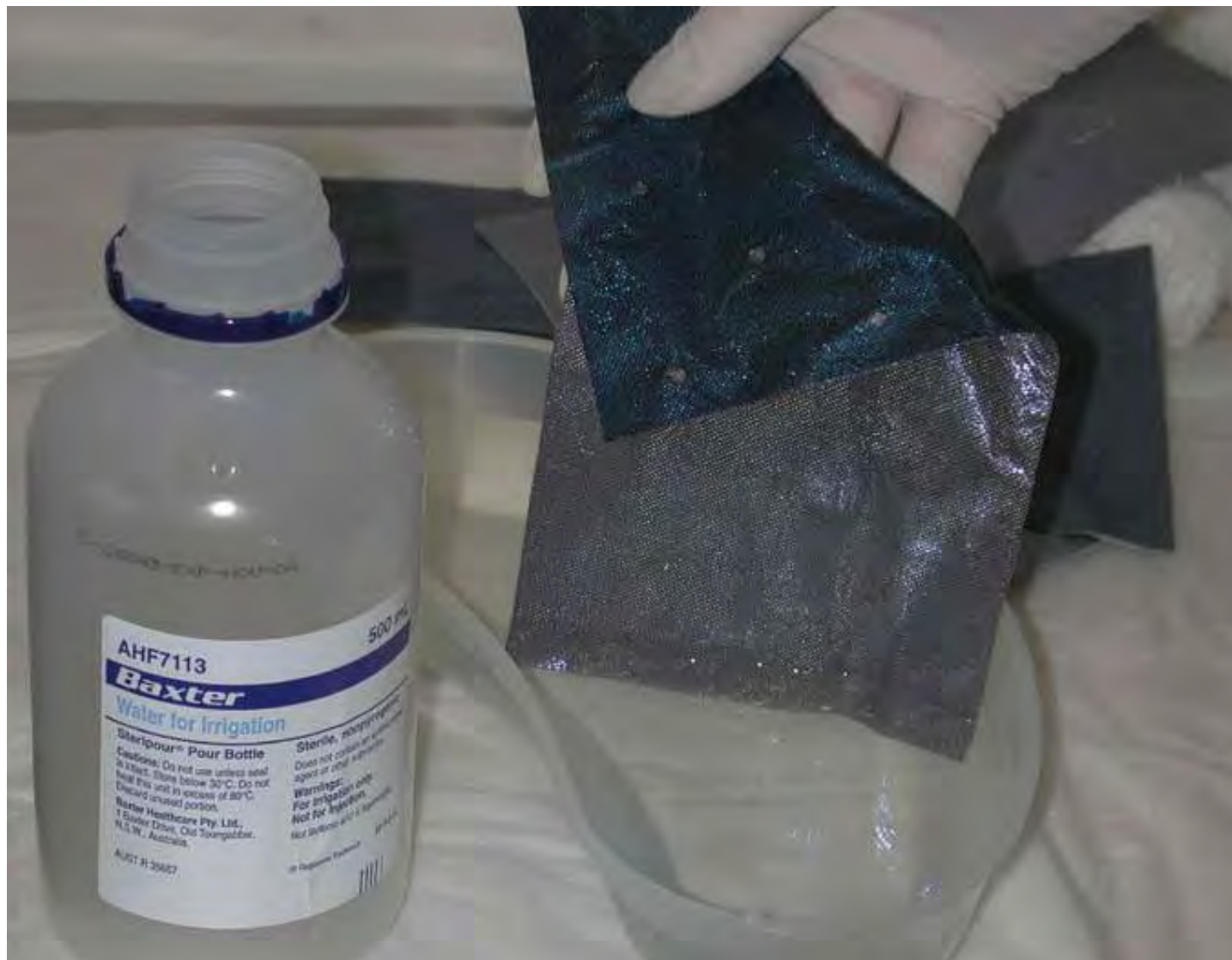




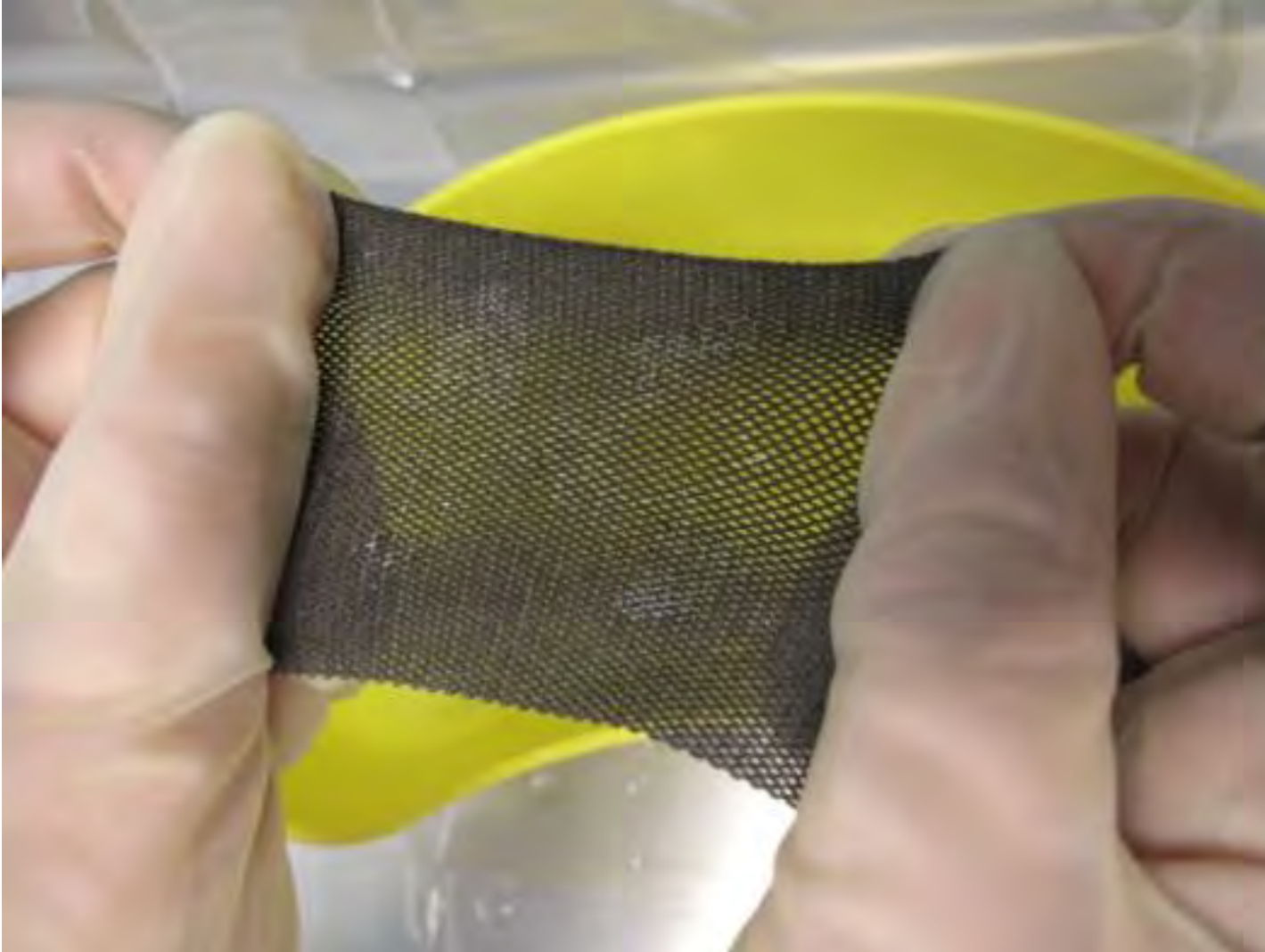
Which dressing?



- **Silver**
- Impregnated Gauze
- Hydrocolloid







- 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 Guide: Burn Wound Management
- Functional and physiological management refer to Physio/Occupational Therapy Practice Guide
- Transfer & Retrieval of Burn Patients
- Burn Model of Care

ACI Statewide Burn Injury Service

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

1 Reserve Rd
St Leonards NSW 2065

T + 61 2 9464 4666

F + 61 2 9464 4728

aci-info@health.nsw.gov.au

aci.health.nsw.gov.au