Minor Burn Management

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(from The Children’s Hospital at Westmead, Royal North Shore Hospital and Concord Repatriation General Hospital)

NSW Burn Unit Contact Numbers:

NSW Severe Burn Service (SBIS)
Ph: (02) 9926 5641

Royal North Shore Hospital (RNSH)
Ph: (02) 9926 8940

Concord Repatriation General Hospital (CRGH)
Ph: (02) 9767 7776

The Children’s Hospital at Westmead (CHW)
Ph: (02) 9845 1114

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### On Presentation of Burn Patient to ED

#### First Aid for Burns
- STOP, DROP, COVER face & ROLL if on fire
- At least 20 minutes cold running water
- Keep rest of body warm to prevent hypothermia
- Remove clothing and jewellery

#### Perform Primary & Secondary Surveys

#### Obtain Clear History of Burn Injury
- Mechanism of Injury, How and When burnt
- Any First Aid (what, how long?). Continue cooling if within 3 hours of burn
- Were clothes removed?

#### Give Appropriate Pain Relief

#### Assess % TBSA (total body surface area) using Rule of Nines

#### Does it meet referral criteria?
- Partial thickness burns >10% TBSA, full thickness >5% TBSA in adults.
- Partial/full thickness burns in children >5% TBSA.
- Any priority areas are involved, i.e. face/neck, hands, feet, perineum, genitalia and major joints.
- Caused by chemical or electricity, including lightning.
- Any circumferential burn.
- Burns with concomitant trauma or pre-existing medical condition.
- Burns with associated inhalation injury.
- Suspected non-accidental injury.
- Pregnancy with cutaneous burns.

#### Refer to appropriate Burn Unit:
- Royal North Shore Hospital
  Ph: (02) 9926 8940 (Burn Unit)
  Ph: (02) 9926 7988 (Ambulatory Care)
- Concord Repatriation General Hospital
  Ph: (02) 9767 7776 (Burn Unit)
  Ph: (02) 9767 7775 (Ambulatory Care)
- The Children’s Hospital at Westmead (all paediatrics <16yrs)
  Ph: (02) 9845 1114 (Burn Unit)
  Ph: (02) 9845 1850 (Ambulatory Care)

#### Minor Burn:
Can be managed in outlying hospitals and clinics, (see attached document)
- Assess burn wound
- Apply appropriate dressing
- Arrange follow-up dressing and review
- Prescribe pain relief as required
- Contact Burn Unit for any questions or for further review via emailed digital photograph or phone consult

### Does it meet referral criteria?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

**Minor Burn:**
- Can be managed in outlying hospitals and clinics, (see attached document)
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  - Prescribe pain relief as required
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Introduction

- It is often difficult to define a minor burn as classification is not solely reliant on burn size or depth.
- Referral to a burn unit may only involve a consultative phone conversation, utilising emailed digital images if possible (with patient consent). Burns unit staff will provide support if the clinician is confident to care for minor burns within local setting. Discussion with burn unit will aid planning for appropriate management.
- Some burns which do not initially meet the criteria for referral to a tertiary burn unit may still need consultation with specialist unit if a burn takes longer than 10-14 days to heal.
- If the burn is deep dermal or full thickness it will need skin grafting to heal and would need the services of an appropriate surgeon, scar management and functional follow up care. If the facilities do not exist locally for any or all of these services the patient will require referral.
- Some small burns may develop significant scarring resulting in functional and psychosocial impairment. These burns should be referred to an appropriate burn unit for follow up care and rehabilitation.

Assessment

- It is important to accurately assess surface area involved and possible depth of the burn. The most experienced clinician available should assess the patient. Surface area should be charted on an appropriate chart.
- Record an accurate weight to assist calculation of pain relief medication (especially important in children), and fluid requirements if necessary.

Surface Area Assessment

Rule of Nines

For every year of life after 12 months take 1% from the head and add ½% to each leg

Palmar

Palm and fingers of the patient = 1% TBSA
### Burn Assessment: Depth

<table>
<thead>
<tr>
<th>Depth</th>
<th>Colour</th>
<th>Blisters</th>
<th>Capillary Refill</th>
<th>Healing</th>
<th>Scarring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epidermal</strong></td>
<td>Red</td>
<td>No</td>
<td>Brisk 1-2 sec</td>
<td>Within 7 days</td>
<td>None</td>
</tr>
<tr>
<td><strong>Superficial Dermal</strong></td>
<td>Red / Pale Pink</td>
<td>Small</td>
<td>Brisk 1-2 sec</td>
<td>Within 14 days</td>
<td>None Slight colour mismatch</td>
</tr>
<tr>
<td><strong>(Superficial Partial)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mid-Dermal</strong></td>
<td>Dark Pink</td>
<td>Present</td>
<td>Sluggish &gt;2 sec</td>
<td>2-3 weeks Grafting may be required</td>
<td>Yes (if healing &gt;3wks)</td>
</tr>
<tr>
<td><strong>(Partial)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Deep Dermal</strong></td>
<td>Blotchy Red / White</td>
<td>+/-</td>
<td>Sluggish &gt;2 sec / Absent</td>
<td>Grafting required</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>(Deep Partial)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Full Thickness</strong></td>
<td>White / Brown / Black (charred) / Deep Red</td>
<td>No</td>
<td>Absent</td>
<td>Grafting required</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Sources: Modified from EMSB Course Manual, p46; Partial Thickness Burns – Current Concepts as to Pathogenesis and Treatment, p21. (Jan Darke CNC RNSH)

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### Skin Depth

![Image of skin depth with labels](http://www.skinhealing.com/2_2_skinburnsscars.shtml)
Recognising Burn Depths

**Epidermal Burn**
- Skin intact, blanch to pressure
- Erythema not included in % TBSA assessment
- Heal spontaneously within 3-7 days with moisturiser or protective dressing

**Superficial Dermal Burn** (Superficial Partial Thickness)
- Blisters present or denuded
- Blanch to pressure (under blister)
- Should heal within 7-14 days with minimal dressing requirements

**Mid Dermal Burn** (Mid Partial Thickness)
- Heterogeneous, variable depths
- Blanches to pressure may have slow capillary return
- Should heal within 14 - 21 days
- Deeper areas or over a joint may need surgical intervention and referral

**Deep Dermal Burn** (Deep Partial Thickness)
- Heterogeneous, variable depths
- Generally need surgical intervention
- Refer to specialist unit

**Full Thickness Burn**
- Outer skin, and some underlying tissue dead
- Present as white, brown, black
- Surgical intervention and long-term scar management required
- Refer to specialist unit
Blisters

- Dependent on the mechanism blisters are often lanced or aspirated. The skin can be left intact as a biological dressing. Lift a section of the skin to view wound bed and ascertain capillary refill (see diagram below).
- In circumstances such as blisters over high movement areas the skin is de-roofed to allow appropriate treatment of underlying tissue. In these circumstances appropriate dressings must be available.
- In large fluid filled blisters such as the one pictured left fluid causes pressure on underlying wound beds. Fluid should be drained or skin debrided to relieve pressure.
- Management of blisters is generally guided by specialist clinician or institutional preference.

Capillary Refill

Lift small area of skin, apply pressure and observe for capillary refill, replace skin as biological dressing if acceptable refill time.

Blister Management Option

- Incise blister
- Allow fluid to drain, cleanse gently, dressing, elevate
- Healed

NB
- It is important to note mechanism when considering blister management. Burns caused by hot oil often present with deeper areas underneath blisters. If left intact this would cause infection and wound complications.
- In most cases blister skin should not be left intact for long periods. After 2-3 days remove blister skin and apply appropriate dressing.
Pain Management

• In the acute period IV or oral routes are preferred, but as most patients with minor burns do not require IV therapy, an oral opioid can provide initial pain relief. Avoid using IM pain relief for burn patients due to extended absorption times and poor fluid hydration status of burn patients.
• After the acute phase a medication regimen such as paracetamol and oral codeine or oxycodone may be necessary for significant background pain.
• If the patient is required to attend an outpatient appointment appropriate pre-medication or ‘pre-med’ may need to be prescribed, to be taken prior to procedure (see below).
• If patient is prescribed regular opioids they should also have a prescription for aperients.
• Admission for pain management may be required, even if admission is not indicated for the burn.

Wound Management

• Superficial dermal/partial thickness minor burns should heal within 7-14 days and not require any long-term scar management.
• If the burn is deep dermal or full thickness it will need skin grafting to heal and requires the services of an appropriate surgeon, and scar and functional follow up care.
• Dressing changes should be as infrequent as possible to allow epithelialisation, unless there is concern of infection. Apply a long-term dressing if possible, to avoid disturbing the regenerating wound bed.
• Soak dressings prior to removal to reduce damage to regenerating epithelial layer.
• If available take digital photos to monitor wound progress or for email consultation with burn specialists (with patient’s consent). See page 29 of Clinical Practice Guidelines: Burn Wound Management for tips on taking digital photographs.

Tips

• Plan carefully prior to dressing application to ensure optimum wound care.
• Avoid burnt surfaces coming into contact with each other.
• Elevate affected arms and legs to reduce oedema especially in the acute period. When bandaging, start from the fingertips or toes and move upwards. Sometimes it is necessary to incorporate the hands and feet, even if they are not burnt to avoid oedema formation.
• Encourage early mobility and range of movement of affected limb. Discourage usage of mobility aids such as crutches, unless utilised prior to injury. Slings should not be used as they inhibit normal functioning.

Analgesia for Wound Management

• Removal of dressings and cleansing can be painful – instructions should be given to take a ‘pre-med’ 30-60 mins prior to procedure, especially for children.
• Pre-med can be paracetamol, ibuprofen, paracetamol and codeine mixture, etc as required.
• Nitrous oxide can also be used in combination with a pre-med if pain is severe or not controlled with other analgesia.
### Burn Wound Management

#### Selecting an Appropriate Dressing

<table>
<thead>
<tr>
<th>What Dressing</th>
<th>Dressing Options</th>
<th>Dressing Product</th>
<th>Dressing Application</th>
</tr>
</thead>
</table>
| • Silicone (eg Mepilex Lite)  
• Vaseline Gauze  
• Silver  
• Hydrocolloid | | | • Apply to clean wound bed  
• Cover with fixation/retention dressing  
• Change 3-7 days depending on level of exudate |
| • Hydrocolloid (eg Comfeel)  
• Silicone  
• Vaseline Gauze  
• Silver | | | • Apply to clean wound bed  
• Change 3-4 days depending on level of exudate |
| • Vaseline Gauze (eg Bactigras)  
• Silicone  
• Silver  
• Hydrocolloid | | | • Apply directly to wound  
• 2-3 layers for acute wounds, 1 layer for almost healed wounds  
• Cover with appropriate secondary dressing  
• Change every 1-3 days |
| • Silver (eg AquacelAg)  
• Silicone  
• Vaseline Gauze  
• Hydrocolloid | | | • Apply to moist wound bed  
• Allow 2-5 cm overlap  
• Cover with secondary dressing  
• Review in 7-10 days, remove secondary dressing  
• Leave intact until healed, trimming edges as required |
| • Silver (eg Acticoat)  
• Vaseline Gauze  
• Hydrocolloid | | | • Wet Acticoat with H2O; drain and apply blue/silver side down  
• Insert irrigation system for Acticoat7  
• Moisten secondary dressing to optimise desired moisture level  
• Replace 3-4 days (Acticoat) or 7 days (Acticoat 7) |
| • Silver (eg Silvazine)  
• Vaseline Gauze  
• Hydrocolloid | | | • Apply generous amount to sterile handtowel to ease application  
• Cover with secondary dressing  
• Not recommended for most burns due to changes to wound appearance and frequency of required dressing changes – daily |
# Burn Wound Management

## Wound Care Product Selection

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Silicone (eg Mepilex Lite) • Hydrophilic polyurethane foam + soft silicone layer + waterproof outer layer Also Mepilex Ag (silver)</td>
<td>• Non-adherent • Conformable</td>
<td>• Superficial burns</td>
<td>• Apply to clean wound bed • Cover with fixation/retention dressing</td>
<td>• Do not use if any infection</td>
</tr>
<tr>
<td>Hydrocolloid (eg Comfeel, Duoderm) • Hydrocolloid wafer</td>
<td>• Aids autolysis of devitalised tissue. • Provides moist wound environment • Absorbs exudate.</td>
<td>• Superficial to mid dermal burns • Low to moderately exuding wounds</td>
<td>• Allow 2-5cm margin around wound. • Can remain intact 2-3 days • Wafers up to 5 days if no signs infection.</td>
<td>• Do not use if any infection</td>
</tr>
<tr>
<td>Vaseline Gauze (eg Bactigras) • Chlorhexidine impregnated vaseline gauze Also Jelonet, Adaptic, etc</td>
<td>• Antiseptic dressing • Conformable</td>
<td>• Dermal thickness burns</td>
<td>• Apply directly to wound • 2-3 layers for acute wounds • Cover with secondary dressing • Change every 1-3 days</td>
<td>• Avoid if chlorhexidine sensitivity or allergy • Soak off if adhered to wound bed</td>
</tr>
<tr>
<td>Silver (eg Aquacel Ag) • Sodium carboxymethylcellulose (CMC) &amp; 1.2% ionic Ag in fibrous material Also Contreet H</td>
<td>• Broad spectrum antimicrobial • Facilitates debridement • Absorbs exudate</td>
<td>• Mid dermal to full thickness burns • Moderately exuding wound</td>
<td>• Apply to moist wound bed • Allow 2-5 cm overlap • Cover with secondary dressing • Review 7-10 days • Leave intact until healed</td>
<td>• Exudate level indicates frequency of dressing change</td>
</tr>
<tr>
<td>Silver (eg Acticoat/Acticoat 7) • 2 layered/3 layered nanocrystalline Ag coated mesh with inner rayon layer. Also Acticoat Absorbent</td>
<td>• Broad spectrum antimicrobial protection • Decreases exudate formation</td>
<td>• Dermal to full thickness burns • Grafts &amp; donor sites • Infected wounds</td>
<td>• Wet Acticoat with H2O; drain and apply blue/silver side down • Moistened secondary dressing • Replace 3-4 days (Acticoat) or 7 days (Acticoat 7)</td>
<td>• Temporary skin staining • Avoid if allergy to Silver • Avoid hypothermia/warm blankets.</td>
</tr>
<tr>
<td>Silver (eg Silvazine [SSD]) • Silver Sulphadiazine 1% and Chlorhexidine Gluconate 0.2%. Also Flamazine</td>
<td>• Reduces infection</td>
<td>• Infected wounds • Dermal to full thickness burns if only available option</td>
<td>• Apply generous amount to sterile handtowel to ease application • Apply to wound • Cover with secondary dressing</td>
<td>• Not recommended for most burns due to changes to wound appearance and frequency of required dressing changes</td>
</tr>
</tbody>
</table>
Outpatient Management

- Patients are instructed to leave the dressing intact and keep it clean until review.
- Paracetamol may be useful for pain relief, as required.
- A prescription for codeine, oxycodone or a paracetamol and codeine mixture may be necessary if pain is severe, or the area is sensitive.
- A normal well-balanced diet high in protein is recommended with encouragement of extra fluid for the first few days following the injury.
- Follow-up is arranged as ordered by the doctor or specialist clinician – refer to burns referral unit as indicated.

Referral

- Refer to the NSW Severe Burn Injury Service Transfer Guidelines, available on website.
- If unsure or concerned contact the appropriate referral centre.
- If healing time is delayed >10-14 days the patient should be referred to a specialist unit for review and treatment.
- Some small burns, that did not fit the criteria for referral to a specialist unit, may develop significant scarring and functional and psychosocial impairment. These burns should be referred to a burn unit for follow up care and rehabilitation.

Digital Photo Referral

- NSW Burn Units have digital photo consultancy services for clinician to clinician referral. All photographs must be accompanied by a clinical history. Email addresses are:
  CHW: kidsburns@chw.edu.au
  RNSH: burnsconsult@nsccahs.health.nsw.gov.au
  CRGH: erghburns@email.cs.nsw.gov.au

Further Information

- For information on specific dressing selection and application refer to Clinical Practice Guidelines: Burn Wound Management, available on the website.
- For information on functional and physiological management refer to Physio/Occupational Therapy Practice Guidelines, and Burns Scar Management for Therapist (Education Poster), available on the website.
- Burn Transfer and Model of Care guidelines available on the website.


References

- [http://www.skinhealing.com/3_1_burntreatments.shtml](http://www.skinhealing.com/3_1_burntreatments.shtml)