**First aid**

- Stop the burning process. 'Cool the burn' with cool tap water for 20 minutes. Do not use ice.
- If cool tap water has not been applied it is still effective up to 3 hours post burn.
- Remove clothing, jewellery and anything constricting.
- Once cooled, cover burn area with cling wrap and warm the patient. Elevate limbs.
- Chemical burns – Wash copiously with water until ‘burning’ sensation settles.

**Primary survey**

- **Airway**
  - Stabilise cervical spine.
  - Check airway patency.
  - Observe for signs of inhalation injury.
- **Breathing**
  - Humidified oxygen should be commenced. If breathing is compromised, consider early endotracheal intubation.
- **Circulation**
  - Check pulses and blood pressure. Consider IV access.
  - Circumferential deep dermal to full thickness burns may cause a tourniquet effect. Escharotomies may be required. Elevate the affected area. Check distal pulses and capillary return and contact WCH Burns Service.
- **Disability**
  - Assess conscious state.
- **Exposure/Environment**
  - Estimate percent of total body surface area burned (%TBSA).
  - Monitor temperature, erythema.
  - Circumferential deep dermal to full thickness burns may cause a tourniquet effect. Escharotomies may be required. Elevate the affected area. Check distal pulses and capillary return and contact WCH Burns Service.
  - Observe signs of inhalation injury.
  - Check airway patency.
  - Observe urine colour.
- **Other injuries**
  - Check for any other injuries, i.e. cervical or spinal injuries, loss of consciousness, lacerations etc.
  - Check for any other injuries, i.e. cervical or spinal injuries, loss of consciousness, lacerations etc.
  - Ingest ion of any hot or caustic material.
  - Ingestion of any hot or caustic material.

**Lund and Browder chart**

<table>
<thead>
<tr>
<th>Area</th>
<th>0-1 year</th>
<th>1-4 year</th>
<th>5-9 year</th>
<th>10-14 year</th>
<th>15 year</th>
<th>Adult</th>
<th>Superficial</th>
<th>Deep</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>19</td>
<td>17</td>
<td>13</td>
<td>11</td>
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<tr>
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</tbody>
</table>

| Total %    |         |         |         |         |         |       |             |      |         |

**Fluid requirements**

- **Hartmann's solution (Parkland Formula)**
  - 4mls x % of burn x body weight (kg) = quantity over 24 hours
  - Give 50% of the fluid in the first 8 hours
  - Give 50% of the fluid in the next 16 hours
  - The periods of time are calculated from the time of the burn injury.
  - Children should have daily maintenance in addition to the fluid resuscitation.

<table>
<thead>
<tr>
<th>Fluid resuscitation</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>4mls x % TBSA (do not include erythema)</td>
<td>12kg</td>
</tr>
<tr>
<td>4mls/kg/hr for between 10–20kg</td>
<td>4mls per kg for the first 10kg = 40mls</td>
</tr>
<tr>
<td>1ml/kg/hr for greater than 20kg</td>
<td>2mls/kg for between 10–20kg = 44mls/hour</td>
</tr>
</tbody>
</table>

**Monitor urine output**

- > Burns ≥10% may require a urethral catheter.
- > Urine output should be 1ml/kg/hr.
- > Observe urine colour.

**Secondary survey**

- **Other injuries**
  - Check for any other injuries, i.e. cervical or spinal injuries, loss of consciousness, lacerations etc.
  - Chemical burns.
  - Electrical burns.
  - Full thickness burns.
  - Burns with associated trauma.
  - Suspicious burns.

**Analgesia**

- Ensure that respiratory rate, sedation and oxygen saturation are monitored during morphine administration.
- Initial morphine: Prepare a syringe with 10mg of morphine to a total of 10mls = 1mg/ml.
- Titrate to comfort in five minute doses.
- > <12 months of age call WCH on call Anaesthetist on 8161 7000, pager 3643.
- > 10–20kg use 0.5ml 20–30kg use 1ml 30–40kg use 1.5ml ≥40kg use 2ml bolus
- > When comfortable start morphine infusion at 0.5mg/kg/hr and titrate every 30 minutes.
- > 5% Glucose + 0.45% Normal Saline @ 4mls/kg/hr for the first 10kg
- > 2mls/kg/hr for between 10–20kg
- > 1ml/kg/hr for greater than 20kg
- > 0.5ml 20–30kg use 1ml 30–40kg use 1.5ml ≥40kg use 2ml bolus
- > When comfortable start morphine infusion at 0.5mg/kg/hr and titrate every 30 minutes.
- > 4mls per kg for the first 10kg = 40mls
- > 2mls/kg for between 10–20kg = 44mls/hour
- > 1ml/kg for greater than 20kg

**Medications**

- Tetanus toxoid should be given if patient is not currently covered.
- > Obtain advice from WCH Burns Service.
- > Wash burns with soapy water, cover with cling wrap.
- > Apply White Soft Parafin to the face.

**Referral criteria**

- > Burns greater than 5% Total Body Surface Area (TBSA).
- > Full thickness burns.
- > Electrical burns.
- > Chemical burns.
- > Inhalation burns.
- > Circumferential burns.
- > Burn Injury in patients with pre-existing medical disorders.
- > Burns with associated trauma.
- > Suspicious burns.

**For more information**

Women’s and Children’s Hospital, Burns Service
Telephone: (08) 8161 7000 and page the burns registrar.

*Considerable care has been taken to ensure that the information included in these guidelines is accurate. These guidelines are intended as an aid only and should not replace clinical judgment. Any loss or damage incurred as a consequence of using these guidelines is not the responsibility of the Women's and Children's Hospital.*