

TRAUMA

BURNS

Major burns should be approached in an ABC manner as with any acutely unwell patient. Also remember to **stop the burning process**. This includes the removal of clothing (which may be smouldering or contaminated with chemicals), brushing off dry chemical powders and rinsing areas affected by a chemical burn with warm water.

Remember that other injuries may coexist with a major burn, especially following explosion.

Indications for transfer to a burns centre:

- Full thickness burns >5% body surface area.
- Partial thickness burns >20% body surface area (>10% if <10 years or >50 years).
- Inhalation injury.
- Burns to special areas (face, ears, eyes, hands, feet, genitalia, major joints).

Airway and Breathing

Airway burns cause massive oedema and can lead to airway obstruction. If there are signs suggestive of an airway burn (box below) electively intubate before obstruction develops. A surgical airway may be necessary if swelling is already advanced and intubation is impossible.

Carbon monoxide poisoning and direct injury to the lower respiratory tract may also result from inhalation injuries. Treat with high flow oxygen and obtain an ABG; remember that SpO₂ is an unreliable indicator of hypoxia as it does not distinguish between oxyhaemoglobin and carboxyhaemoglobin.

Extensive chest wall burns can restrict chest expansion leading to hypoventilation. An escharotomy may relieve this restriction.



Signs Suggestive of Airway Burn

- Stridor (late sign – intubate!)
- Dyspnoea
- Hypoxia
- Face/neck burns
- Singed eyebrows/nasal hair
- Mouth/nose carbon deposits
- Carbonaceous sputum
- Pharyngeal oedema/erythema
- Hoarseness
- Confusion
- Confinement in burning area
- High carboxyhaemoglobin

Circulation

Major burns cause dehydration and hypovolaemic shock. Fluid is lost through damaged skin and systemic inflammation leads to fluid leak from capillaries.

Obtain large bore venous access and catheterise to measure urine output. If necessary, cannulae can be placed through burned skin.

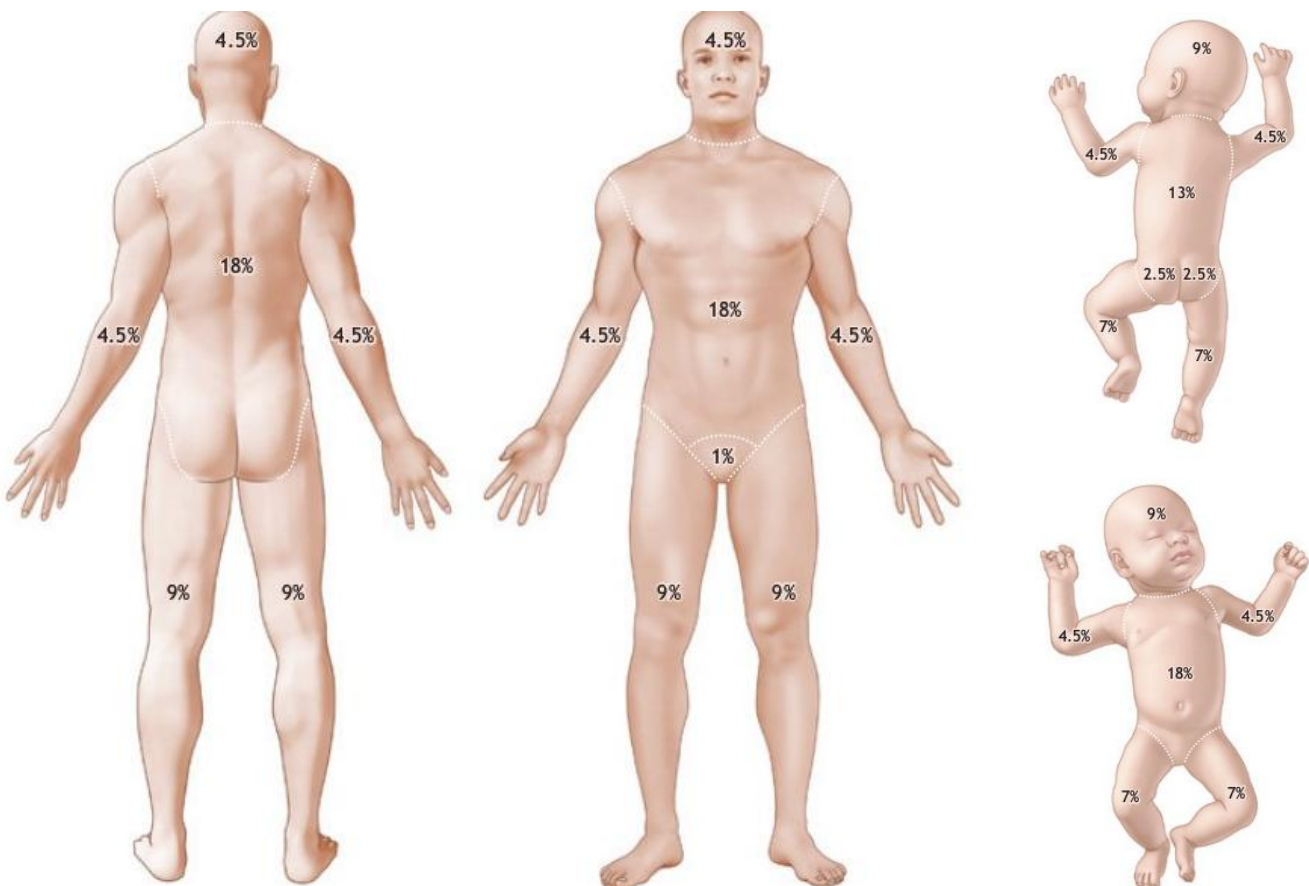
Hypovolaemic shock should be managed by aggressive fluid resuscitation. Also consider other causes of shock such as bleeding from other injuries. In those without shock, fluid resuscitation with crystalloid should be guided by the Parkland Formula.

Parkland Formula

body surface area burned (%) x weight (kg) x 4 = total fluid (ml) over 24 hours

50% of this volume is infused over 8 hours. The other 50% is infused over the remaining 16 hours. Remember that the 24 hour period starts from the time of the burn, not the time of arrival in ED. The infusion rate should be adjusted to maintain urine output at least 0.5ml/kg/hour.

Estimating Body Surface Area (each side counted separately eg. whole arm = 9%)



Note: always remember to ensure tetanus status is up to date.