

MANAGEMENT OF BURNS IN ED

The initial assessment

EMERGENCY MANAGEMENT OF SEVERE BURNS

Australian and New Zealand
Burn Association


INTRODUCTION

- ▣ Early pre-hospital first aid assists in better chance of survival and outcomes.
- ▣ Early notification to the Burn Unit.
- ▣ Most common burns are at home in the bathroom or kitchen.
- ▣ Burns are most common in adults and scalds are more common in children and the elderly.
- ▣ IV resuscitation, improve nutrition and topical antimicrobials are essential.

Body's response to burns

- ▣ Release of inflammatory mediators leads to increase capillary permeability causing increase transport of substances such as albumin out of circulation into the interstitial space leading to oedema.
- ▣ Hypovolaemia results from changes in capillary permeability. These changes can be systemic, therefore, needs urgent correction.
- ▣ Infection is the leading cause of mortality in burn patients.
- ▣ Early enteral nutrition should be started due to changes in the gastrointestinal barrier function which leads to bacterial translocation.
- ▣ Acute Respiratory Distress Syndrome can occur in patients even if there is no inhalation injury due to systemic inflammatory response.

EMERGENCY ASSESSMENT AND TREATMENT



Structure of EMSB

LOOK	A I R W A Y	B R E A T H I N G	C I R C U L A T I O N	D I S A B I L I T Y	E X P O S U R E	FLUIDS	A.M.P.L.E. History
						ANALGESIA	Head to Toe Examination
DO						TESTS	Tetanus
	C spine	O ₂	Haemorrhage control TK	AVPU & Pupils	Environmental Control	TUBES	Documentation and Transfer
Primary Survey						First Aid	Secondary Survey
							Support

PRIMARY SURVEY

- A. **AIRWAY** management with *C–Spine* control
- B. **BREATHING** with ventilation and supplementary *oxygen*
- C. **CIRCULATION** with *haemorrhage control* and *IV access*
- D. **DISABILITY**– Neurological status (*AVPU*) and *pupils*
- E. **EXPOSURE** with *environmental control* and estimate *TBSA*

AIRWAY MANAGEMENT WITH C-SPINE CONTROL

- ▣ Talk and listen for response.
- ▣ Remove foreign body or obstruction.
- ▣ Reduce movement of the C-Spine.
 - Hard collar or sand bags.
- ▣ Consider adjuncts early.
- ▣ Assess from top to bottom.
- ▣ If in doubt...intubate.

BREATHING AND VENTILATION WITH SUPPLEMENTARY OXYGEN

- ▣ Expose the chest.
 - Inspect, palpate and auscultate.
- ▣ Respiratory rate.
 - Depth, symmetry, WOB.
- ▣ Always provide supplementary oxygen with a Non-rebreather mask at 15L O₂.
- ▣ Circumferential chest and abdomen burns can decrease ventilation. Escharotomy may be needed.
- ▣ Carbon monoxide poisoning can have false reading of SpO₂ and patients can have a “pink” appearance.

CIRCULATION WITH HAEMORRHAGE CONTROL

- ▣ Check for evidence of haemorrhage.
 - External, chest, abdomen, long bones, pelvis.
- ▣ Check centrally and peripherally
 - Pulses
 - Temperature
 - Caprefill
- ▣ Two large bore IV leurs.
 - FBC, U&E, LFT, coags, Crossmatch, B-hCG, carboxyhaemoglobin
- ▣ Blood pressure and heart rate.
- ▣ Immediate commencement of IVFluids.

DISABILITY: NEUROLOGICAL STATUS

A– alert

V– voice

P– pain

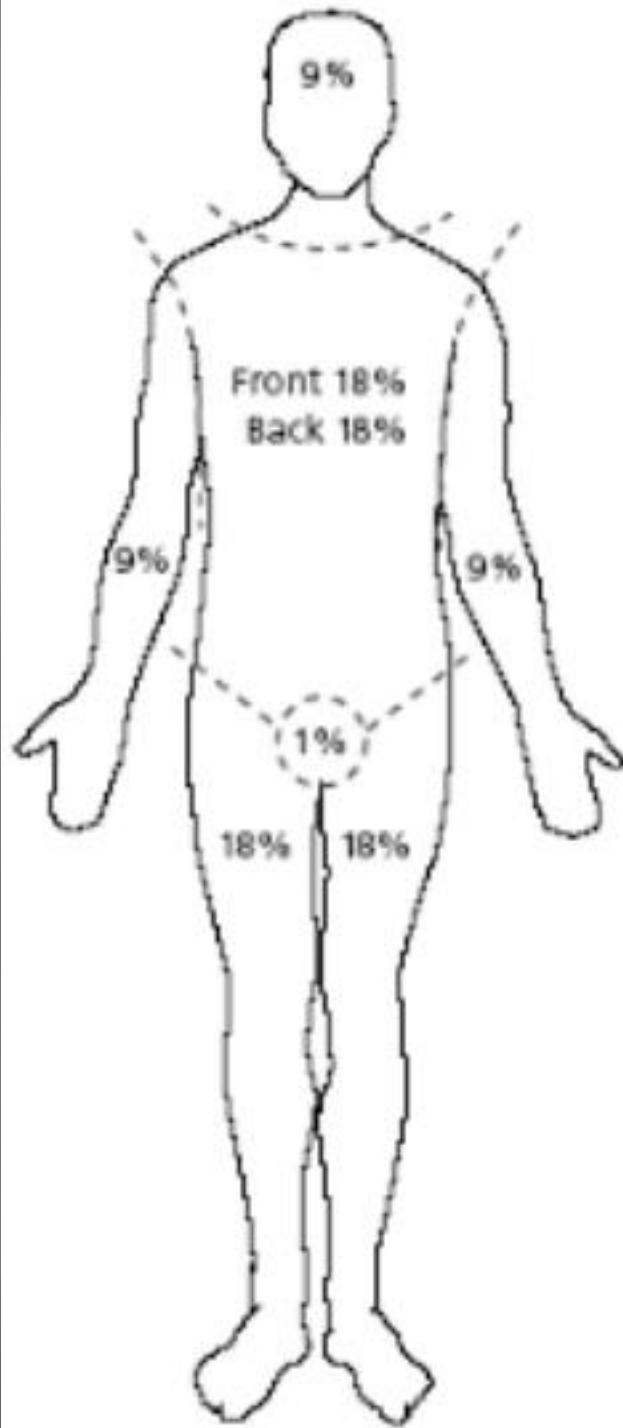
U– unresponsive

- ▣ Check pupils.
- ▣ Restlessness and decreased LOC could be signs of hypoxaemia or shock.

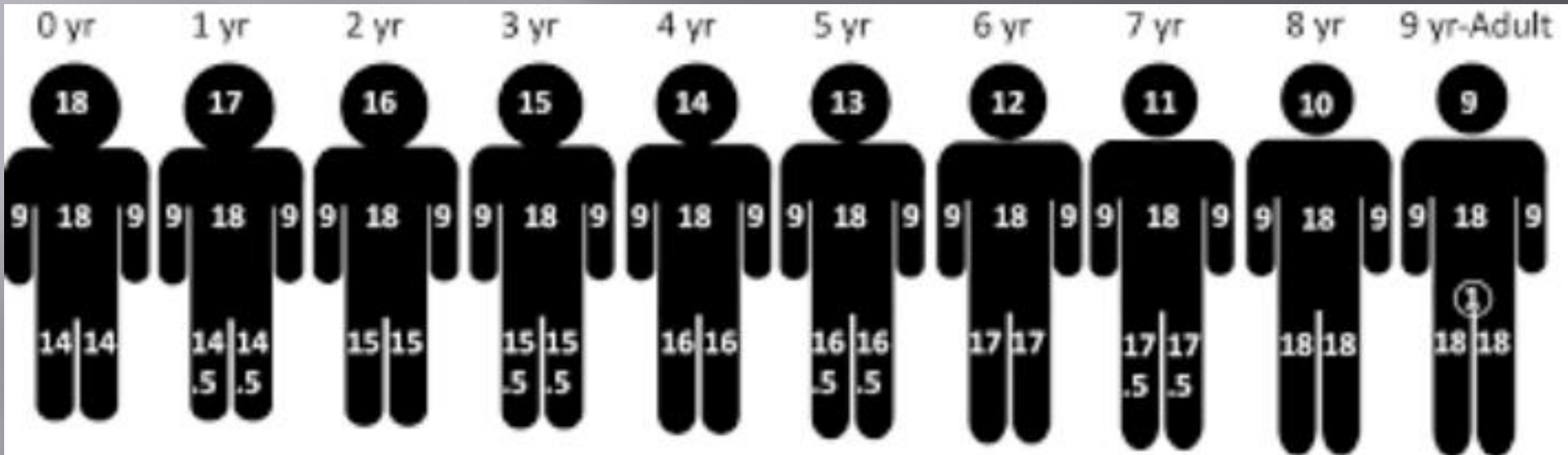
Expose with environmental control

- ▣ Remove all clothing and jewellery.
- ▣ Log roll to visualise posterior for burns.
- ▣ Keep the patient warm.
- ▣ Estimate TBSA using the “Rule of Nines” or “Rule of ones”.

ADULT



PAEDIATRIC



FIRST AID

- ▣ Ensure adequate first aid was completed in the community
 - 20minutes of cooling with running water

F– Fluids

A– Analgesia

T– Tests

T– Tubes

FLUIDS

- Start fluids immediately. Consider blood if there are signs of haemorrhagic shock.
 - **3mls X weight (kg) X % of TBSA**
 - Crystalloid solution: Plasmalyte 148 in WDHB
- Maintenance fluids for children
 - NaCl 0.9% with Dextrose 5%
- Fluids should be warmed when possible.
- Rate of fluid administration should ensure half the calculated fluid is given in the first **8 hours** of the burn and the remainder is given over **16 hours**.
- Insert urinary catheter to assess hourly urine output.
 - Do not insert if urological trauma.
- ECG, pulse rate, respiratory rate, blood pressure, pulse oximetry.

ANALGESIA

- ▣ Intravenous morphine.
 - 0.05–0.1mg/kg.
 - Titrate to affect.

TESTS

- ▣ Radiology
 - Lateral C–Spine/CT
 - Chest
 - Pelvis
- ▣ Sonography
 - FAST scan (focused assessment with sonography for trauma)
 - Other images as clinically indicated
 - Bloods
 - ▣ Carboxyhaemoglobin, FBC, lactate, G+H, coagulation, ABG, ETOH, BhCG

TUBES

- ▣ **IDC** is important to monitor urine output and to accurately titrate for fluid resuscitation.
- ▣ **Nasogastric tube** for major burns (>10% TSBA in children and >20% TSBA in adults) if there are associated injuries or to decompress the stomach.
- ▣ Consider **ETT** where indicated.

SECONDARY SURVEY

- ▣ To be initiated after life–threatening conditions have been treated.
- ▣ History
 - A**– Allergies
 - M**– Medications
 - P**– Past illnesses
 - L**– Last meal
 - E**– Events and circumstances related to injury

Mechanism of injury

▣ **Burn**

- Duration of exposure.
- Enclosed space– ??inhalation.
- Type of clothing– did they ignite?
- Temperature/nature of fluid.
- Composition and concentration of chemicals.
- Voltage and current in electrical burns.
- Adequacy of first aid.

▣ **Penetrating**

- Proximity.
- Direction of travel.

▣ **Blunt**

- Speed of travel and angle of impact.
- Use of restraints in an RTC.
- Ejection. Height of fall.
- Type of explosion/blast and distance thrown.
- Use of protective equipment.

Head-to-toe examination

▣ **Head**

- Eyes– penetrating injuries, visual acuity, foreign bodies.
- Scalp– lacerations, boggy masses.

▣ **Face**

- Missing teeth.
- CSF leak from nose, ears or mouth.
- Soot, blisters, oedema of the tongue or pharynx.

▣ **Neck**

- Inspect, palpate, X-Ray. Check pulses.

▣ **Chest**

- Exam anterior and posterior.
- Breath and heart sounds.
- Cough productive of soot.
- Altered voice, brassy cough.
- Circumferential burns need escharotomy.

▣ **Abdomen**

- Assess for intra-abdominal free fluid.

Head-to-toe examination...cont

▣ **Limbs**

- Contusion, deformity, tenderness, crepitus.
- Assess pulses in all limbs.
- Venous return will be obstructed and eventually arterial perfusion due to tissue ischaemia.
- Circumferential burns will need escharotomy.

▣ **Pelvis**

- Identify possible fractured pelvis.

▣ **Neurological**

- Glasgow coma scale.
- Motor and sensory assessment of all limbs.
- Paralysis and muscle weakness indicate major injury.
- Decrease LOC
 - ▣ Hypoxaemia/hypercapnia.
 - ▣ Cyanide or carbon monoxide poisoning.
 - ▣ Hypovolaemia.
 - ▣ Head trauma.
 - ▣ Intoxication.

SECONDARY SURVEY... cont

- ▣ **Documentation**
 - Document all observations, procedures, interventions.
 - Consent for photography.
- ▣ **Tetanus prophylaxis**
- ▣ **Re-evaluation**
 - Re-evaluation the primary survey.
 - Respiratory compromise.
 - Adequate fluid resuscitation.
 - Peripheral circulation insufficiency.
- ▣ **ECG**
- ▣ **Emergency burn wound care**
- ▣ **Cover with non-constrictive plastic cling wrap**
 - Apply lengthwise, not circumferentially.
 - Allow for oedema.