

# How to treat electrical injuries

A guide for paramedics and other medical professionals



## Management of electrical injuries

<b>1</b>	<b>Treat A,B,C's and associated injuries</b>		
<b>2</b>	<b>Perform fluid resuscitation</b>	<p><b>Details</b></p> <p>Ringers Lactate @ 3 ml/kg body weight /% body surface burn (electrical injuries may require considerably more fluid than formula suggests)</p>	<p>If myoglobin is present in the urine</p> <ul style="list-style-type: none"> <li>• keep urine output &gt; 2 ml/kg/hr until clear</li> <li>• add NaHCO<sub>3</sub> 1 ampoule (50 mEq)/litre to Ringers Lactate</li> <li>• consider Mannitol to increase diuresis—25 gm bolus and then 12.5 gms q 2–4 hours until pigment clears.</li> </ul>
<b>2</b>		<p>This volume is given over the first 24 hours post injury:</p> <ul style="list-style-type: none"> <li>• 1/2 in first 8 hours</li> <li>• 1/2 in next 16 hours</li> </ul>	<p>Determine the adequacy of volume replacement by:</p> <ul style="list-style-type: none"> <li>• vital signs</li> <li>• urine output—50 –100 ml/hr</li> </ul>
<b>3</b>	<b>Monitor</b>	<p>a) cardiac b) renal function—urine output, urine myoglobin c) extremities—pulses, sensation, motor function, muscle compartment palpation</p>	
<b>4</b>	<b>Escharotomies and fasciotomies when necessary</b>		

## Electrical injuries produce

### Surface burns:

- from electric current itself
- from associated flames

### Deep injuries:

- current passage generates heat effecting especially muscles closest to bone
- physiological effects of electric shock (see reverse)

### Muscle tissue injury can result in:

- muscle death
- tissue swelling possible compartment syndrome
- myoglobin release possible renal impairment

# Physiological effects of electric shock

Site	Mode of action		Consequences
Bones/Joints	Thrown from source, fall		Fractures, Dislocations
Muscles	Heat		Muscle death
	Contraction		Muscle damage, Rupture
Respiratory system	Tetanization	Increased respiratory tract pressure, Alveolar ruptures	Asphyxia (acute pulmonary edema)
		Epiglottal blockage, Laryngospasm	Apparent death of person
		Vascular system	Angina pectoris, hemorrhage
Vascular system	Vasoconstriction, Destruction of vascular walls, High blood pressure	Angina pectoris, Hemorrhage	Myocardial infarction
Heart	Rhythm disturbances, Conduction disturbances, Cardiopathic aggravation, Increased myocardial temperature	Ventricular fibrillation	Apparent death of person
	Cardiac arrest		Apparent death of person
Carotid sinus	Loss of cerebral arterial pressure	Syncope	Apparent death of person
Brain	Inhibition of cortical centres, Desynchronization, Cerebral edema		Loss of consciousness, Epilepsy-like crisis
Medulla oblongata	Increased temperature, Loss of excitability, Loss of conductivity		Apparent death of person
Nerves	Neuronal lesions	Cardiorespiratory syncope	Apparent death of person
Cells nerve muscular	Electric curarization	Metabolic arrest	Apparent death of person
Skin	Heat		Thermal burns, most likely full thickness

## Have more questions?

Call the Patient Transfer Network at 1 800 561 1133 to connect you with a Burn Specialist