



# Treatment of Electrical Injuries

## Initial Clinical Assessment in ED

1. Electricity source?
2. Assess voltage – low or high?
3. Contact points and length of contact?
4. Patient thrown from source?
5. LOC? – increase suspicion of head injury or cardiac arrhythmia



## Assess Voltage

### Low < 1000 v

- \* UK household 240v
- \* Workshops 380v

### High >1000 v

- \* Overhead lines 1500v
- \* Railway lines 25,000 v
- \* Lightning strike 10-200 million v



### Low voltage

- ABCDE approach
- All patients require:
  1. 12 lead ECG
  2. Urinalysis
- Patients can be fit for discharge

#### 12 lead ECG:

#### IF ABNORMAL

- **manage as per high voltage guideline**
- Admit for cardiac monitoring
- Bloods to include troponin and bedside ECHO by cardiology

#### Urinalysis:

- If myoglobin or blood present requires baseline bloods

#### Discharge criteria:

- Discuss with senior decision maker
- Absence of syncope
- Normal 12 lead ECG
- No secondary injuries requiring further management
- Safe environment for discharge



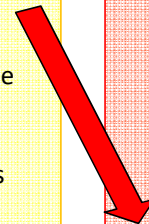
### High voltage

- APLS approach
- Contact on-call SpR or Consultant for Plastic Surgery to attend
- Trauma call with PEM Consultant and PICU present
- Patient Weight
- Assess for:
  - Cutaneous burns
  - Head injury
  - Dislocation / fracture
  - Compartment syndrome
  - Cardiac injury
  - Spinal cord / peripheral nerve injury
  - Periosteal burns
  - Renal injury

**All patients will be admitted to critical care for a minimum of 24 hours**

#### Management:

- FBC, U+Es, bone profile, Mg, amylase, CK, troponin, myoglobin
- 12 lead ECG
- Bedside ECHO by cardiology if ECG abnormality
- IV fluids to aim urine output 1-1.5 mls / kg / hour
- Urinary catheterization
- Monitoring for signs of compartment syndrome



#### Special considerations:

- **Temperature management;** low threshold for active temperature management above 39 degrees
- **Imaging;** low threshold for multiregional scans due to high risk of trauma
- **Burn Surface Area;** caution when using Lund and Browder charts as cutaneous burn area underestimates subcutaneous tissue injury
- **Analgesia;** high analgesic requirements, likely to require opiates. If pain appears out of proportion, consider compartment syndrome