### EVIDENCE-BASED PRACTICE RECOMMENDATIONS

#### Electrical Injuries: A Review For The Emergency Clinician
Czuczman AD, Zane RD. October 2009; Volume 11, Number 10

This issue of Emergency Medicine Practice focuses on the challenges of evaluating and managing electrical injuries, using the best available evidence from the literature. For a more detailed discussion of this topic, including figures and tables, clinical pathways, and other considerations not noted here, please see the complete issue at www.ebmedicine.net/topics.

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<th>Key Points</th>
<th>Comments</th>
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<td>Survey the scene carefully and make sure the electrical source has been shut off before approaching any victims of electrical injury.</td>
<td>Although no published reports describe this, the underlying theory presumes that if the victim is still in contact with the electrical source, he or she (or even the ground if it is wet) can become a conductor and electrocute the rescuer.</td>
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<td>Always start with the ABCs, and follow basic Advanced Cardiac Life Support and Advanced Trauma Life Support algorithms.</td>
<td>Take note of any electrothermal burns involving the face, mouth, or neck, as they may make obtaining a secure airway more difficult. Also look for tympanic membrane rupture during the otoscopic examination, as this may be the only clue of lightning injury in a patient brought from the field.</td>
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<td>Obtain an initial ECG for all adult patients.8</td>
<td>An ECG should be obtained for both low-voltage and high-voltage injuries.</td>
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<td>Use cardiac monitoring for patients with arrhythmia or evidence of ischemia on electrocardiogram, loss of consciousness, and high-voltage (&gt; 1000 volts) injuries.8,19,21,103</td>
<td>This recommendation is based on the practice guidelines developed by Arnoldo et al and published in the Journal of Burn Care and Research in 2006 using Class II and Class III evidence.8</td>
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<td>Watch out for rhabdomyolysis in electrical injury patients, especially those with a high-voltage injury.</td>
<td>If heme pigment from rhabdomyolysis is present in the urine, urine output must be constantly monitored.</td>
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<td>Do not use any formula for IV fluid resuscitation that is based on percentage of body surface area burned. These formulas are not applicable in electrical injuries because there may be significant underlying musculoskeletal injury.</td>
<td>Fluid resuscitation should maintain a urine output of 1.0 to 1.5 cc/kg per hour.</td>
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<td>Involve consultants early on and consider transfer to a regional burn center for any patients with significant electrothermal burns.27</td>
<td>Patients with extensive electrical burns will likely require multiple surgeries and occupational and physical rehabilitation and are best served at a burn center. Patients who have abnormal neurologic findings suggestive of spinal cord injury, CNS dysfunction, or extensive visceral or vascular injury require admission to ICU or an area with a similar level of care for frequent monitoring and rapid intervention. All patients with a history of loss of consciousness, documented arrhythmias (including cardiac arrest) before or after arrival to the ED, ECG evidence of ischemia, or who have a sustained a high-voltage electrical injury should be admitted for additional monitoring.</td>
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<td>Immediately remove any constricting objects such as rings because edema may develop quickly.</td>
<td>Vascular injuries can also lead to edema and/or compartment syndrome. Vascular injury following electrical trauma is usually most severe in the small muscle branches where the blood flow is slower; this can create tissue necrosis.</td>
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See reverse side for reference citations.

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REFERENCES

These references are excerpted from the original manuscript. For additional references and information on this topic, see the full text article at ebmedicine.net.


CLINICAL RECOMMENDATIONS

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