

:Burn Infections

Risk factors:

- Loss of mechanical barrier.
- Impaired cellular and humeral response.
- Invasive procedures e.g. CV line, folly's cath. etc.

Common sites:

- blood stream
- burn wound eschar
- urinary tract
- respiratory tract

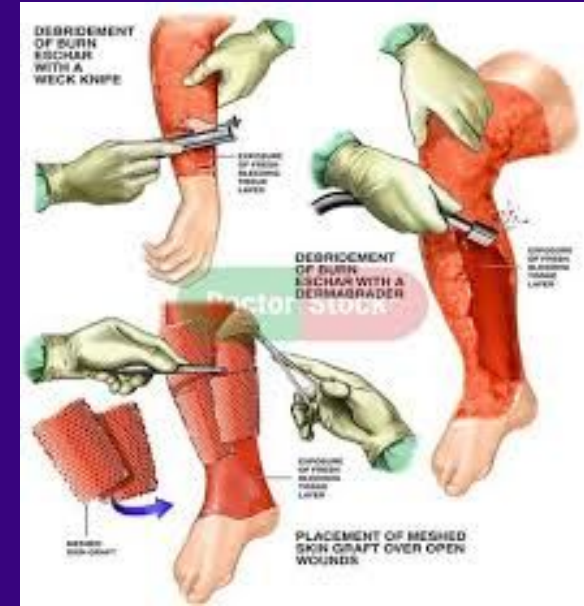


- **Causative organisms:**

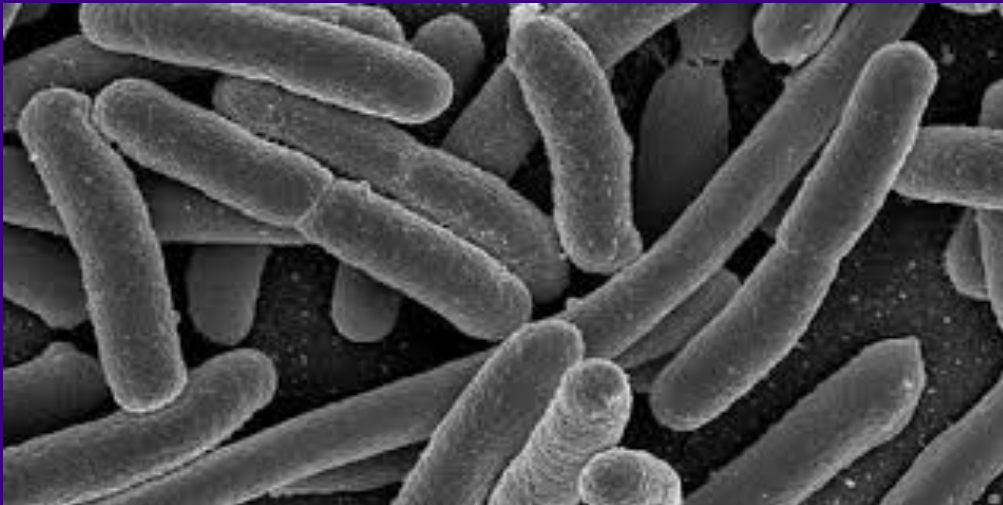
- pseudomonas aeruginosa and staphylococcus aureus are the most common
- candida
- CMV

Prevention:

- Early wound excision and closure.
- Adequate nutrition.
- Immunization with tetanus toxoid



- Regular infection surveillance by periodic cultures of urine, sputum, blood, and central lines.
- Subeschar tissue quantitative culture and histologic examination.



No Rule For AB Prophylaxis

Clinical Presentation:

- Spiking fever
- Unexplained hypotention
- Tachypnea
- New onset ilius
- Altered mental status
- Decreased UOP
- Hypothermia



:Investigation

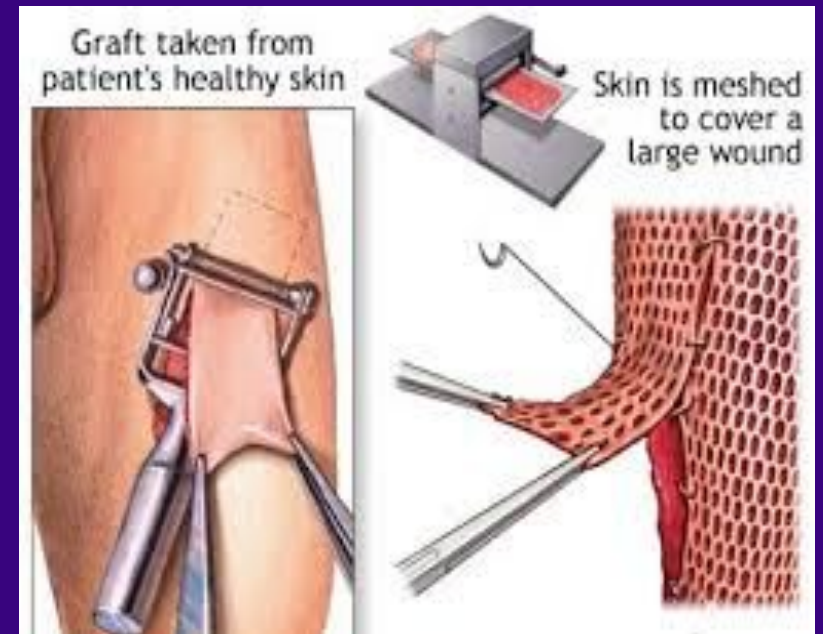
- hypoxia
- leukopenia, leukocytosis with left shift.
- hypo or hyper glycaemia.

Treatment:

- Support of cardiopulmonary and GIT systems.
- Eschar debridement.
- Empiric antibiotic therapy followed by culture derived use.
- Change topical agent to more penetrating one.

Surgical management of burns

- Early staged excision should begin on post burn day 3 for major burns that are clearly full thickness.
- Operations can be spaced 2 to 3 days apart until all eschar is removed and the burn wound covered. The interval days are to allow for stabilization and resuscitation of the patient.



:CHEMICAL INJURIES

- Classified as: acid or alkali (base) burns.



- Alkali burns cause more severe injury than acid burns since alkaline agents cause a liquefaction necrosis and deeper penetration.

- Removal of the inciting agent and all contaminated Clothes.
- Copious irrigation of all Areas of affected skin with water.
- Adequate irrigation can be verified by checking the skin pH.



:Avoid

- **Irrigation** of chemical **powders** (dust off before irrigation)
- **Neutralization** of agent (exothermic reaction)



Specific chemicals

- **Hydrofluoric acid (HF)** used in the glass and cleaning solutions.



- **Elemental Sodium, potassium and lithium:** ignite on water exposure so should be covered with oil before surgical debridement.



- **Phosphorus:** garlic smell, ignite on air exposure, should be treated by underwater debridement.

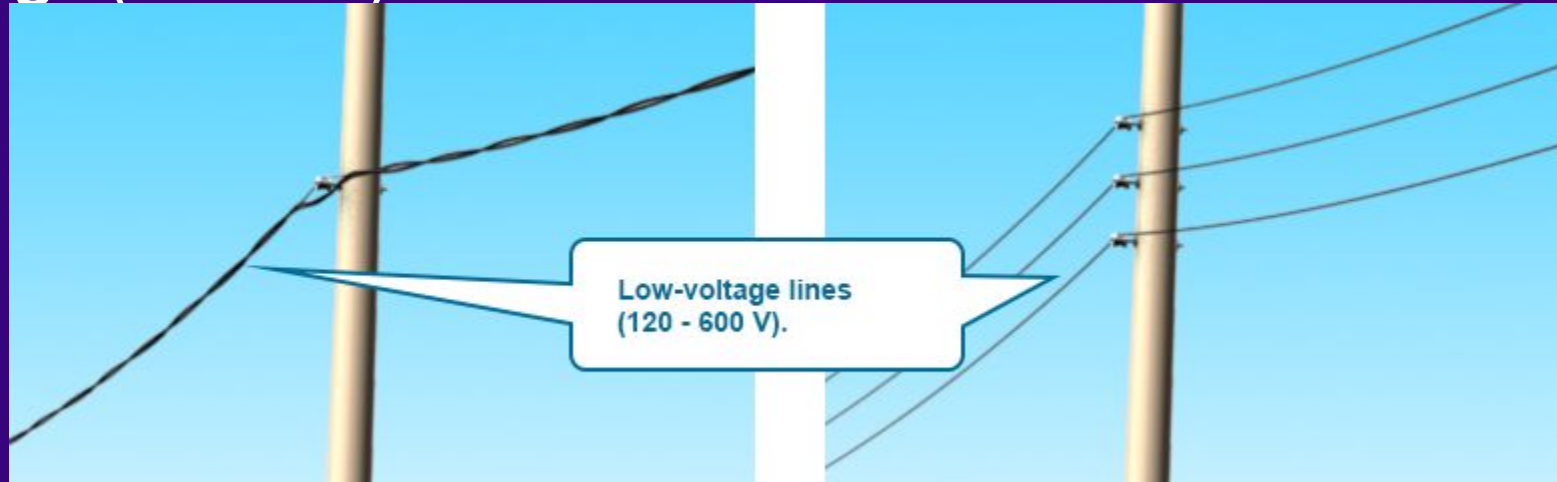


ELECTRICAL INJURIES

- direct or alternating current .
- low or high voltage



- **Low voltage (<1000 v)**



- **high-voltage (>1000 v)**



Low voltage (<1000 v) alternating current

more dangerous than that of direct current because of:

1. low resistant of skin to passage of alternating current
2. tetanizing effect on muscle called the "let-go" threshold.
 - The let-go threshold is 15 mAmp.
 - >20mAmp respiratory asphyxiation.
 - > 40 mAmp, ventricular fibrillation.

high-voltage (>1000 v)



- Arc, or flash of light 4000° C, (ignite the victim's clothing and even melt bone, the victim may be thrown away from it and may sustain traumatic injuries).

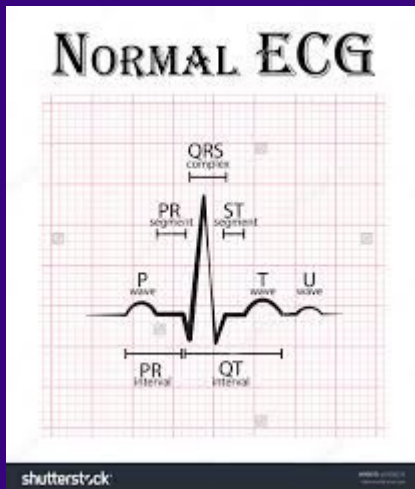
The passage of an electrical current (within the patient's body), tissue resistance causes the buildup of intense heat $>1000^{\circ}\text{C}$. along bone, muscle necrosis causes compartment syndrome and myoglobinuria



:Guidelines for management

- Follow the ATLS protocol and determine from history if the injury was high or low voltage.
- Specific evaluation :
 1. % TBSA is calculated (if there was a flame burn).
 2. The neurovascular status of injured extremities.
 3. All patients who sustain electrical injuries should have an ECG in the emergency room.

Patients with a **low-voltage** injury who had no loss of consciousness •
.and no dysrhythmia present can be discharged home



GLASGOW COMA SCALE		
EYE OPENING	VERBAL RESPONSE	MOTOR RESPONSE
		
Spontaneous > 4	Orientated > 5	Obeys commands > 6
To sound > 3	Confused > 4	Localising > 5
To pressure > 2	Words > 3	Normal flexion > 4
None > 1	Sounds > 2	Abnormal flexion > 3
	None > 1	Extension > 2
		None > 1
GLASGOW COMA SCALE SCORE		
Mild 13-15	Moderate 9-12	Severe 3-8
MEDIC TESTS #1 EMT & PARAMEDIC EXAM PREP		



- Patients with **high-voltage** injuries should be monitored for the followings:
- Compartment syndrome and myoglobin urea .
- Cardiac arrhythmia and possible infarction.
- Possible neurological injury or cataract.



COLD INJURY (frostbite)

- Cell death and tissue necrosis occur from the formation of ice crystals within the cells and extracellular space as well as from microvascular thrombosis. Cellular injury from ice crystal formation occurs during the Period of cold exposure, whereas microvascular thrombosis is thought to occur during reperfusion when the affected limb is rewarmed.



TREATMENT

- Frost-bitten extremities should be rapidly rewarmed in water that is 40°C. Typically, rewarming can be completed in 20 to 30 minutes. Adjunctive use of nonsteroidal anti-inflammatory medications and calcium channel blockers.
- Patience is required in determining which areas require debridement since it is difficult in the immediate post-injury period. Early debridement and amputation are necessary if soft tissue infection occurs during the waiting period.

:LATE EFFECTS OF BURN INJURY

- Hypertrophic Scarring (deep 2nd. and 3rd. Degree)
- Hyper or hypopigmentation. (superficial 2nd. degree)



- Marjolin's ulcer malignant degeneration of a healed burn wound, occur decades following injury, typically in areas that were not skin grafted.



- Heterotopic Ossification : deposition of calcium in the soft tissue around joints blocking normal joint functioning. Most commonly affects elbow and shoulder joints and occurs 1 to 3 months following injury.



Thank you