Don’t get BURNED By Burn Care

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• EMS burn care presents unique challenges in assessment and management
• EMS encounters with major burns often occur in high stress/high distraction situations
• Is your care based on myth, tradition, expediency, or current practice?

Photo courtesy of Vito Maggiolo
Goals and Objectives for This Experience

At the end of this presentation, the EMS provider will:

1. Have a better understanding of the multiple priorities in burn care
2. Be able to make sound treatment decisions based on current best practices
3. Understand the value and limitations of prehospital treatment
4. Make informed transport decisions based on patient priorities and not just protocol

This picture is courtesy of Aaron Burns of Local 2551.
The Basics

First Degree Burns

[Image of a person with a sunburn and text: "Next time wear Coppertone"]
The Basics

- Second Degree Burns
The Basics

Third Degree Burns
The Basics

Photos: WebMD
Getting Beyond The Basics:
Treating the Patient With Major Burns

- Understand what kills major burn victims immediately:
  - Unrecognized airway issues
  - Inadequate treatment of shock
  - Undetected medical or traumatic conditions

- Understand what kills major burn victims later:
  - Infection
  - Organ failure
Major Burns

- 2\textsuperscript{nd}/3\textsuperscript{rd} degree burns greater than 15% BSA
- 3\textsuperscript{rd} degree burns greater than 5% BSA
- Respiratory burns
- Burns of the eyes/ears/face/hands/feet/genitalia
- Peds/Geriatrics
Don’t get BURNED by:
Inadequate Airway Management

- Early control of the airway is essential
- Look for evidence of inhalation burn, facial burns, severe chest burns. Assess lung sounds and chest expansion
- The burned airway can swell rapidly
- Don’t be fooled if there is “no severe respiratory distress”-things can go from bad to worse quickly
- Tube early, but be prepared for surgical airway intervention

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4624587
Don’t get **BURNED** by:

**Inadequate Airway Management**

- Don’t forget to consider smoke inhalation/carbongenesis
- Pulse oximetry may be unreliable
- If the patient does not require intubation, give 100% O₂ via NRB. Humidification is preferable, but not immediately essential unless transport times are long
- **REASSESS FREQUENTLY!**
Don’t get **BURNED by:**

Use of Prehospital IV Fluids

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**Parkland Formula**

Volume of Lactated Ringers solution:

\[ 4 \text{ml} \times BSA(\%) \times \text{weight(kg)} \]

- Give half of the solution for the first 8 hours
- Give the other half of the solution for the next 16 hours

There are other formulas, Parkland is the most commonly used
Don’t get BURNED by:
Use of Prehospital IV Fluids

Example:
- 4ml x 50% bsa burned x 80 kg = 16,000 ml (16 L) RL in 24 hours
- Give 8 L in the first 8 hours (1L/hr or approx. 17ml/min)
- Give 8 L over the next 16 hours (500 ml/hr or approx. 8ml/min)
- IV or IO in burned areas? Get what you can!
- Make sure you don’t give cold fluids!
Don’t get BURNED by:
Use of Prehospital IV Fluids

But what if they’re hypotensive?

Increase fluids as needed BUT....

- **LOOK FOR OTHER CAUSES OF SHOCK AS WELL**
- **USE MENTAL STATE AS A GUIDE, NOT JUST BP**
  - TARGET 90 -100 SYSTOLIC
- **AVOID FLUID OVERLOAD, WATCH FOR THIRD-SPACING, WATCH FOR IV INDUCED HYPOTHERMIA**
- **BEWARE OF HIDDEN BLEEDING/TRAUMA**

DONT JUST REFLEXIVELY RUN FLUIDS WIDE OPEN!
Don’t get BURNED by: Hypothermia

COOL THE BURN

WARM THE PATIENT
Don’t get BURNED by: Hypothermia

WET!  DRY!

The battle continues!!
Don’t get BURNED by: Hypothermia

THE WET GUYS SAY:

► Cools the burn
► Helps relieve pain
► Calms the patient

(Lots of research says they’re right!)
Don’t get BURNED by: Hypothermia

THE DRY GUYS SAY:

- WET Promotes hypothermia
- WET Interferes with coagulation
- WET Interferes with wound healing and promotes infection
- (Lots of research says they’re right!)
Then there’s THESE guys... just to confuse the issue further
Let’s try a little experiment....
YOU SATURATED YOUR BURN PATIENT WITH SALINE AND DIDN'T WRAP THEM WITH BLANKETS?

YOU'RE A SPECIAL KIND OF STUPID, AREN'T YOU?
The Hibbler Method of Passive External Rewarming

- Completely open the blanket and drape over the stretcher - moisture resistance layer down, insulting layer up.
- Place the patient onto the stretcher and wrap them up - snug as a bug in a rug.
- Limit skin exposure

http://journals.lww.com/ejanaesthesiology/Fulltext/2010/06121/A_non_evaporative_layer_combined_with_insulation.608.aspx
Don’t get BURNED by:
Inadequate Pain Management

- Pain and anxiety management are **essential** components of burn care
- Opiates and benzodiazepines
- IV/IO route preferred
- No topical analgesics
- No IM injections directly into burned areas
- BLS Comfort measures-THEY MATTER!

Don’t get BURNED by:

Electrical Burns

- External damage may not seem extensive, BUT.....
- There may be major damage UNDER the skin
- Everything between point A and point B is literally “cooked”
Don’t get **BURNED by:**

**Electrical Burns**

**Special Considerations:**
- Cardiac dysrhythmias/arrest
- Paralyzed respiratory muscles
- Organ system failure seemingly remote from injury
- Safety concerns
Don’t get BURNED by:
Chemical Burns

- Be suspicious of liquids, powders, vapors at scene
- Beware in industrial settings
- Withdraw if necessary
- Use proper PPE
- Decontaminate immediately
- Use additional resources
“SCENE SAFETY-BSI!”
(........NOT!)
<table>
<thead>
<tr>
<th>BURN CENTER</th>
<th>TRAUMA CENTER</th>
<th>NEAREST 911 ER</th>
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<tbody>
<tr>
<td>Most preferred choice for burns w/o other issues</td>
<td>Burns with major trauma issues</td>
<td>Unmanageable airways</td>
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<tr>
<td></td>
<td></td>
<td>Cardiac arrest</td>
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<td>Excessive transport times</td>
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<td>Minor burns not meeting burn center criteria</td>
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Don’t get BURNED by: Transport Decisions

Q: But can’t any ER handle burns?

A: In the initial stages, YES

(NYS Burn Disaster Initiative-2006-Burn supplies to community and non burn center hospitals)

Q. So why should I go to a burn center???
Why Burn Centers Benefit Patients

- Your patient has just survived a burn emergency and was transported to the ER. Airway, breathing, circulation supported. Systems monitored. Pain controlled. Dressings in place.

**NOW WHAT?**
Why Burn Centers Benefit Patients

Burn centers provide a comprehensive system of post-ER care for the physical and psychological well being of major burn victims.

Among the services provided:

- Specialized Burn Surgical Teams with experience in general surgery, plastic surgery, burn surgery, and critical care
- Nurses and respiratory therapists specializing in burn care
Why Burn Centers Benefit Patients

- Specialized Burn ICU with particular attention to infection control issues
- A full range of rehabilitation specialists, including physical and occupational therapists, social workers, psychological services, pain management specialists
- Centralized services from admission to discharge

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2801053/
Why Burn Centers Benefit Patients
Links to Articles and Websites on Burn Care
in addition to those listed in the presentation


DEMAND EVIDENCE AND THINK CRITICALLY