

Welcome! Perhaps you've heard a thing or two about this rotation. This will clear everything up. Let's get started...



Mr. Chavez, Daytime Front
Desk Clerk



Overview

- The **burn center** is located entirely on the 5th floor of the new Los Angeles County General Hospital. It contains:
 - Burn ICU: 10 beds total, 2 isolation
 - Burn Ward: 10 beds
 - Burn OR
 - Burn Walk-in Evaluation Clinic

What's a Burn Unit?

- Multidisciplinary Team Approach is essential to care for patients with complex needs

Burn Surgeons, Residents, Students

Nurses

Nutritionist, Pharmacist

PT, OT

Psychologist

Social Worker

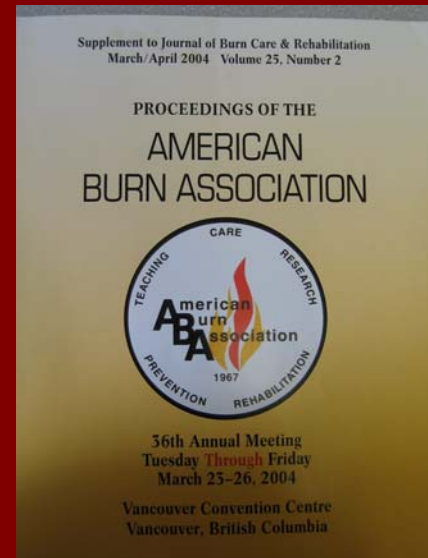
Case Manager

Emergency Services (FD,
Paramedics.)



General Burn Information

- 139 Burn Centers in North America (~1700 beds)
- American Burn Association
- Burn mortality index from 1970's:
 - Age + % TBSA = Mortality
- 9/11 Burn Injuries:
 - Average age: 43
 - Average TBSA: 43%
 - Mortality 29.6%



LAC +USC Burn Center Physician Team

- Attendings: Warren Garner, Reza Nabavian, Chia Soo, Regina Baker
- Fellow: Charity Wip (2009-10)
- Chief Residents: USC, UCLA and Dartmouth Plastic Surgery
- Residents: Rotating GS PGY 2 from USC, UCLA, Harbor-UCLA, Huntington
- Intern from USC General Surgery

Pat Diaz



She is the den mother for all of our administrative needs. Dr Garner says she has all the answers.

Nurses

- We have nurses with a full range of experience. Some have been with the burn unit for 20+ years, some are just training.
- They are very knowledgeable and can help you greatly if you are polite and respectful.
- They can be very assertive
- Ron Vasquez is the Nurse Manager

Pharmacy



We have a dedicated pharmacy located down the hall. A pharmacist always joins us for rounds and is indispensable in calculating drug dosages and warning us of drug reactions.

Do not let them distract you during rounds or Dr Garner will get cranky!

They are a wonderful resource

Pharmacy; Does and Don'ts

- Pain is major problem for burn patients. They need narcotic orders re-written Q3 days
- Stress ulcer prophylaxis only if no gastric feeds
- Use sedation/paralysis holidays
- Do not titrate an Ativan drip over 2u/hour without permission
- No Lasix or other diuretics
- Use antibiotic algorithm

Nutrition



Burn patients are all hypermetabolic. Our onsite dietitian participates on rounds and is available to help you calculate the caloric needs of our patients. Dr Garner will always want to know pts nutritional status (pre-albumin).

Social Work

- In your secondary survey, it is very important to be alert to signs of abuse and neglect – particularly in our elderly and pediatric populations.
- Social work is an invaluable resource for discharge planning

Rounds Start 7:30 AM

(9 AM Fridays)



EVERYONE comes to rounds!

Call Schedule

- Junior residents: Rotate (q3-4), overnight call. All work hours rules must be followed
- Senior residents: Home call
- Never hesitate to call a senior or the attending if you are not sure what to do!!! If something goes wrong and nobody above you knows about it, it is YOUR FAULT.
- SO MAKE THE CALL

Operating Room

- The post-call junior resident has priority to operate until noon.
- On call residents are always welcome in the OR if floor work/clinic is taken care of
- Make sure that line ups are turned in *before 10AM* 2 days before surgery. If line ups are not turned in by then, you will lose your operating time!

Universal Precautions



Please protect both yourselves and our patients. We practice universal precautions before touching ANY patients in the burn unit. This includes, hand washing, gloves, gown, mask, and hat before approaching any patient. Throw away all protective gear before leaving the unit



Bedside Procedures



24 Hour Walk in Evaluation clinic



This clinic allows you to see new patients 24/7 with the Burn units staff to help. It also allows follow-up visits as needed.

Admissions/Transfers



Most of our admissions come from outside hospital transfers.

When this happens, the Medical Alert Center (MAC) will page the on call resident directly

Take down all of the info in the MAC book

Almost all burn transfers should be accepted. However, do not accept a transfer without discussing with a superior.

Check with the charge nurse before accepting any patients to make sure that there are enough beds and nursing staff

Referral Criteria

- The ABA identifies the following as injuries requiring a Burn Center referral:
 - 2nd degree burns > 10% TBSA
 - Burns to face, hands, feet, genitalia, perineum, major joints
 - 3rd degree burns
 - Electric injury (lightning included)
 - Chemical burns
 - Inhalation injuries
 - Burns accompanied by pre-existing medical conditions
 - Burns accompanied by trauma, where burn injury poses greatest risk of morbidity or mortality
 - Burns to children in hospitals without pediatric services
 - Patients with special social, emotional or rehabilitative needs

Discharges

- All patients must have dressings taught to a family member twice prior to discharge
- Patients also need to be cleared by OT/PT/Nutrition and Social Work
- If a patient is a candidate for long term rehab at Rancho, plan ahead and make the arrangements
- Make sure that all patients have been advanced to oral pain medication prior to discharge (MS Contin is not prescribed for discharge)

Conference/Meetings



It is imperative that you keep friends and family members informed of their loved ones' progress. This can be a very anxiety provoking time. Do not forget to speak with families after surgery!

Outpatient Clinic

- Every Monday and Wednesday afternoons in 2p1 outpatient building (non-Kaiser)
- Most patients with open wounds need to be seen every week until wounds are closed
- Make sure you document what dressing and follow up time in your note so that the nurses will know
- Kaiser patients are seen Tuesday and Thursday afternoons in the burn unit walk in clinic



Brief Overview of Burn Physiology

- Epidemiology
 - 2-3 million burns / yr
 - 100,000 require admission
 - 5,000-6,000 die / yr
 - 25% pediatric admissions
 - 1.0-1.5 hospital days / % burn
 - Only 1/6 of total treatment
 - Outpatient care now a mainstay of Rx



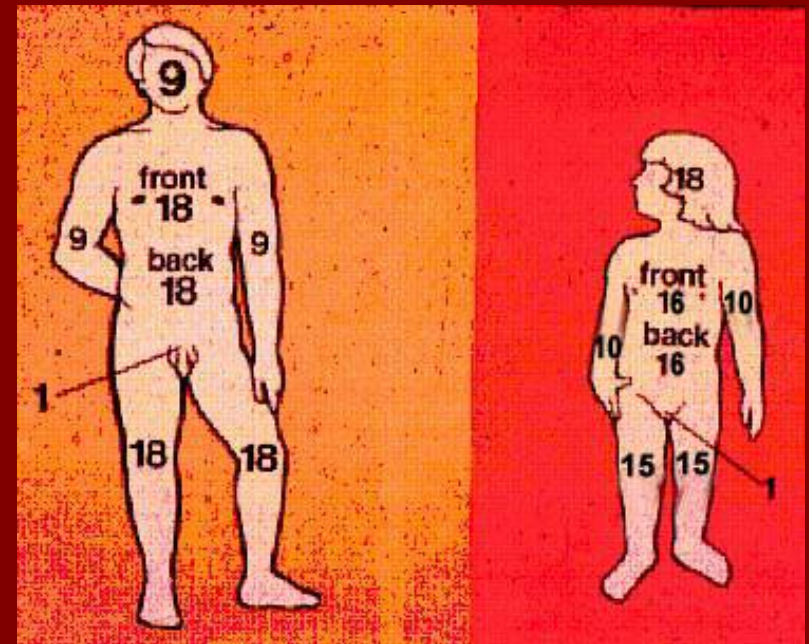
Secondary Survey

- Consider Mechanism of Action
 - Flame, Scald, Chemical, Electrical
 - Duration of exposure?
 - Enclosed space?
- Contact Family and Friends
 - Possible neglect or abuse
 - Vocation, hand dominance
- Other History
 - Urine Toxicology
 - Tetanus



% Total Body Surface Area

- Need complete exposure
- Add 20% for inhalation injury
- Only 2nd & 3rd degree counts
- Know the Rule of Nines
- Palm (wrist through fingers) = 1%



There is some literature available about computer programs that can estimate burn size. Unfortunately, we don't have that available!

2nd Degree Burn

- Partial Thickness (large range, most common)
 - Superficial = blisters, pink, moist, edematous
 - Deep = paler, moist and edematous



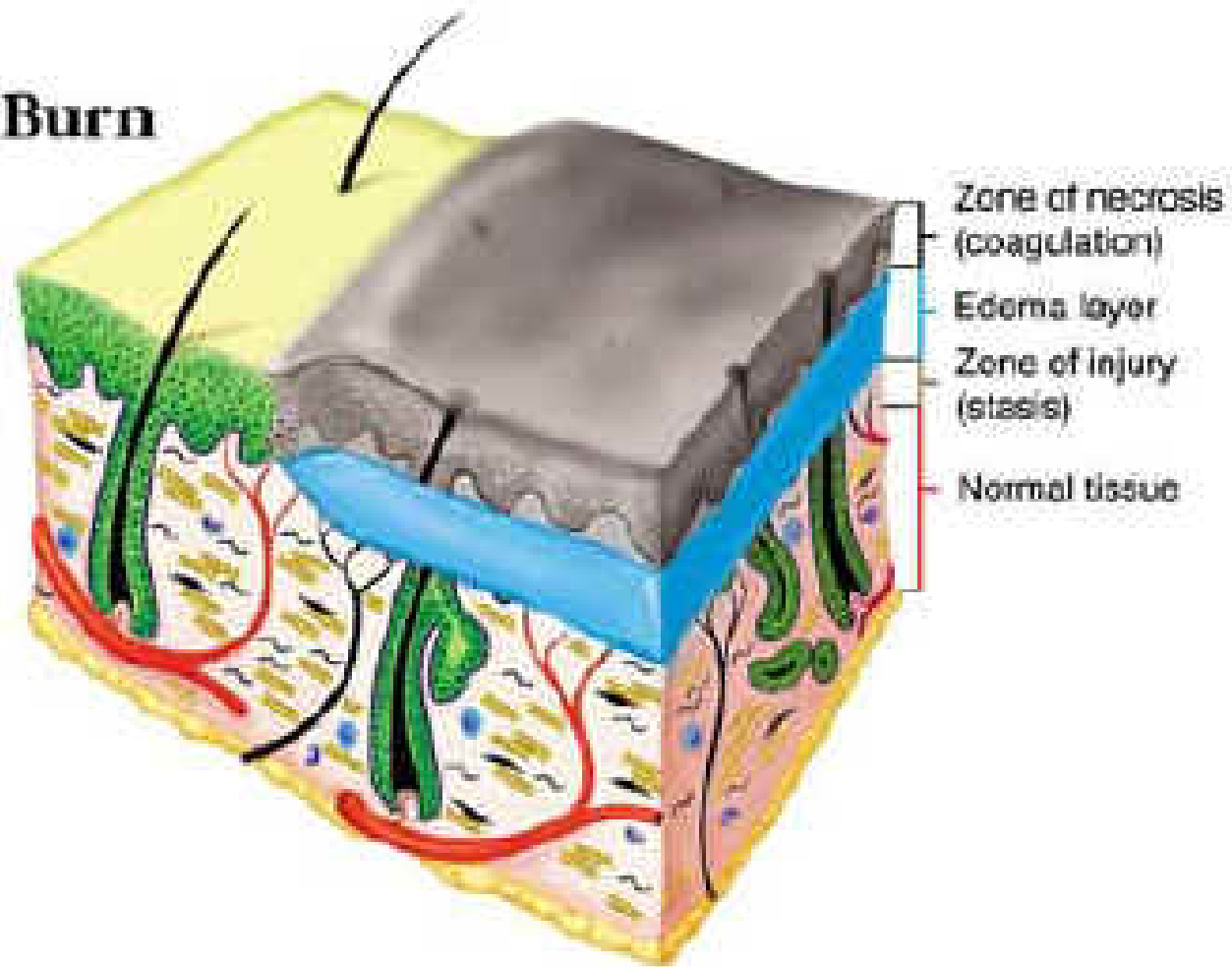
Histological Assessment

- Zone of Coagulation (necrosis)
 - irreversible
- Zone of Stasis (injury)
 - dynamic
- Zone of Hyperemia
 - Vasodilatation due to inflammation induced mediators
 - Likely recovers

Superficial Dermal Burn

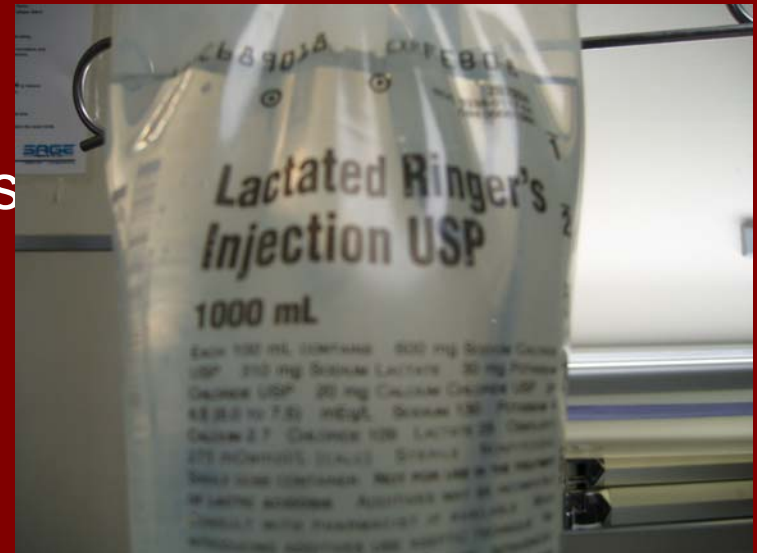
Characteristics

1. Necrosis confined to upper third of dermis
2. Zone of necrosis lifted off viable wound by edema
3. Small zone of injury



Fluid Resuscitation

- Parkland Formula = $4 \text{ cc} \times \text{wt (kg)} \times \% \text{ TBSA}$
 - 50% over first 8 hours (from time of injury)
 - 50% over next 16 hours
- Urine output
 - $\frac{1}{2} \text{ cc/ wt (kg)/ hour}$ for adults
- Cardiac Index
 - 3.5 L/min/m^2



Patients usually receive MORE fluid than Parkland calculations using physiologic endpoints

Too Much Fluid?



It is very important to watch patients with circumferential full thickness burns to trunk or extremities during resuscitation. Should compartments become tight from tissue edema underneath inflexible 3rd burn, an escharotomy is necessary to allow perfusion of the distal extremity.

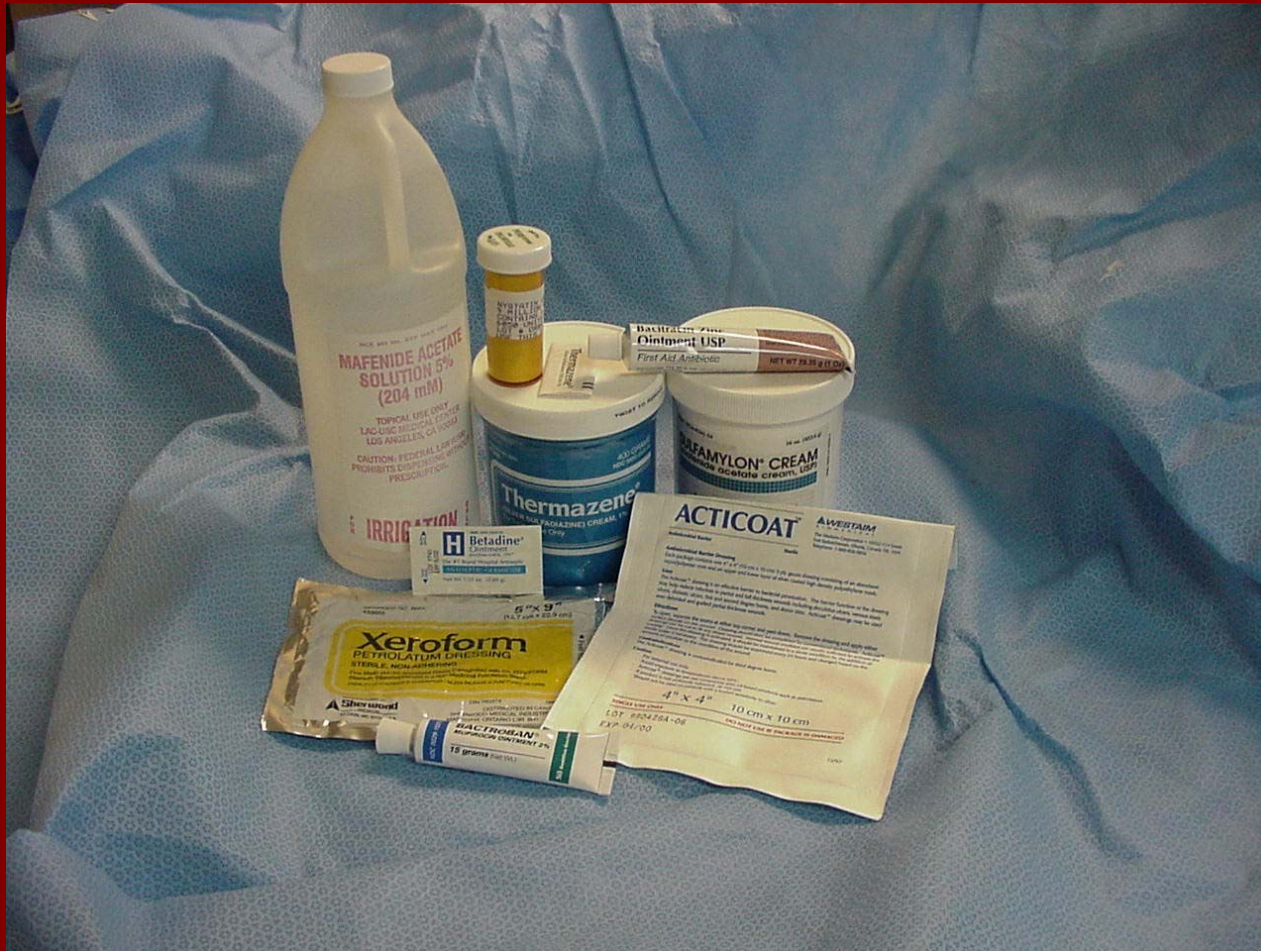
Too Much Fluid?:



Abdominal Compartment Syndrome

In patients with massive injuries, combined burn with “blast” injury to abdomen or if the patient undergoes excessive resuscitation with crystalloid fluids, abdominal compartment syndrome may result. This is a surgical emergency that is diagnosed by symptoms of impaired ventilation and decreased urine output. The diagnosis is confirmed by measuring a bladder pressure.

Basic Dressing Options



Dressing options are all basically topical antimicrobials. Burns predictably get infected by day 7 if not excised. Silver is the active ingredient of choice

Required Reading

- Strategies in the Prevention and Management of Ventilator-Associated Pneumonia *Am Surg.* 2007 May;73(5):419-32
- What's New in Burn & Metabolism *Sheridan RL, Tompkins RG J Am Coll Surg.* 2004 Feb;198(2):243-63
- The Burn Survivor Perspective *J Burn Care Res.* 2007 May 17
- The Complexities of Managing Severe Burns with Associated Trauma
- Garner's Acute Burns article: Grunwald TB, Garner WL. Acute Burns. *Plast Reconstr Surg*, 121(5):311e-319e, 2008
- Selected Readings in Plastic Surgery
 - Burns
 - Skin Grafts and Skin Substitutes
- Advances in Burn Care: *Curr Opin Crit Care.* 2007 Aug;13(4):405-10