Burn Center
Referral Criteria

University of Wisconsin Hospital and Clinics Burn Center is a verified burn center for both adult and pediatric patients.

Burn injuries that should be referred to a burn center include the following:

1. Partial-thickness burns of greater than 10% of the total body surface area
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
3. Third-degree burns in any age group
4. Electrical burns, including lightning injury
5. Chemical burns
6. Inhalation injury
7. Burn injury in patients with pre-existing medical disorders that could complicate management, prolong recovery or affect mortality
8. Any patients with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient’s condition may be stabilized initially in a trauma center before transfer to a burn center. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols
9. Burned children in hospitals without qualified personnel or equipment for the care of children
10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention

Excerpted from Guidelines for the Operation of Burn Centers (pp. 79-86), Resources for Optimal Care of the Injured Patient 2006, Committee on Trauma, American College of Surgeons.

UW Burn Center Verified

The UW Hospital and Clinics Burn Center was recently verified as both a pediatric and adult burn center by the American College of Surgeons. This verification confirms that the burn center has met rigorous standards for personnel, facilities and medical care to provide expert burn care. Verification requires an in-depth on-site review by members of the ABA Verification Committee, as well as senior members of the ABA. The report that is generated is further reviewed by the ABA Verification Committee and by the Committee on Trauma of the American College of Surgeons.

Burn Center verification is a voluntary review process based on national standards published by the American Burn Association (ABA) with the goal being to optimize burn care in the United States.

We are proud to be the only verified burn center in Wisconsin. Burn center verification provides a true mark of distinction for a burn center and is an indicator to government, third-party payers, patients and their families that the center provides high quality patient care to burn patients from time of injury through rehabilitation.

Each year in the United States, burn injuries result in more than 500,000 hospital emergency department visits and approximately 50,000 acute hospital admissions. Of the patients who require hospitalization, about 20,000 are admitted directly or by referral to hospitals with burn centers. See the sidebar on burn center referral criteria.

Statewide Burn Care Program in the Works

The state has collaborated with the American Burn Association to develop a burn plan. This includes offering burn education, Advanced Burn Life Support (ABLS) to hospitals in the region, and having them act as Resource Hospitals. The plan also includes a treatment algorithm for burn care.

If you are interested in obtaining a copy of the state’s burn plan, contact Ann Krainyk at ak2@medicine.wisc.edu.
Fluid Resuscitation in the Burn Patient

EMS personnel were called to assist a 50 year old male involved in an accident while working at a foundry. Upon arrival it was found that the patient had suffered 2nd and 3rd degree burns to his entire back, legs and arm after having hot molten spilled and splashed on him. Thermal burns accounted for nearly half of his body. Primary and secondary assessments were completed, the patient was placed on a 15L nonrebreather mask and 2 large bore IVs were started with Lactated Ringers solution infused. The initial transport decision was to Med Flight the patient to UW Hospital but due to inclement weather he was ground transferred to the UW Hospital Emergency Department and subsequently admitted to the Burn Unit.

For burn victims, fluid resuscitation is critical within the first 24 hours. The goal of fluid resuscitation is to

RULE OF 9's

The first step in assessing a burn and planning resuscitation involves a careful examination of all body surfaces. A standard Lund-Browder chart is readily available in most emergency departments for a quick assessment of total body surface area burns. If this is not available, the “rule of nines” is fairly accurate in adult patients.

See the rule of nines as follows. Note that a patient’s palm is approximately 1% TBSA and can be used for estimating patchy areas.

- Head/neck - 9% TBSA
- Each arm - 9% TBSA
- Anterior thorax - 18% TBSA
- Posterior thorax - 18% TBSA
- Each leg - 18% TBSA
- Perineum - 1% TBSA

With pediatric patients, the head is a proportionally larger contributor to body surface area (BSA), while the upper legs contribute less. This difference is reflected in the slight differences noted in the pediatric Lund-Browder diagram. A useful tool for estimating BSA of spotty burns is the close approximation of just less than 1% BSA to the patient’s palm size. Only second-degree burns or greater should be included in the TBSA determination for burn fluid calculations.

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**Guidelines for various burns:**

- **Thermal Burns**
  - Stop the burning process
  - Cool the burn with room temperature water for a few minutes only
  - Universal precautions
  - Airway and C-spine precautions
  - Treat according to BLS/ACLS/ATLS/ABLS protocols
  - Remove all clothing and jewelry—especially rings
  - Initiate fluid resuscitation Lactated ringers
  - Cover the burn with clean dry sheet or saran wrap
  - No prophylactic antibiotics
  - Ice or wet dressings should never be used
  - Monitor distal pulses (palpable) in circumferentially burned extremities
  - Does patient meet American Burn Association referral criteria? Listed on page 4 of Level One

- **Electrical Burns**
  - Turn off power source, scene safety
  - Do not get injured yourself in effort to rescue victim
  - Universal Precautions
  - Start CPR if indicated
  - Treat according to BLS/ACLS/ATLS/ABLS protocols
  - Remove all clothing and jewelry—especially rings
  - Assess for occult injuries
  - Monitor for cardiac arrhythmias
  - Monitor neurological status
  - Assess and document pulse or affected extremities
  - Initiate fluid resuscitation Lactated ringers
  - Meets American Burn Association referral criteria

- **Chemical Burns**
  - Protect yourself—full personal protective equipment
  - Remove all clothing and jewelry which can trap chemicals
  - If dry powder is present brush away before irrigating with water
  - Neutralization is contraindicated
  - Certain chemicals require special consideration (e.g., Hydrofluoric acid)
  - Flush with copious warm water on scene and en route to ER/UWHC Burn Center
  - Irrigation of chemical injury is necessary prior to patient transfer
  - Identification of agent after institution of therapy may provide additional medical considerations. DO NOT delay treatment to identify agent involved
  - Chemical injuries to eyes are an emergency. Remove contacts and irrigate continuously with normal saline. DO NOT STOP
  - Meets American Burn Association referral criteria

Each year, 100,000 children are scalded by hot food or drinks and 5,000 children are scalded from hot tap water. The result is 100 deaths annually in the United States. Let’s help our communities prevent scald burns. Children under 2 years of age and the elderly are at risk. Because kids have thinner skin than adults, they are at higher risk.

**Below are tips that you can share within your community:**

**Prevent Scalds in the Bathroom**

- Bath safely! Set the water heater’s thermostat to 120 degrees Fahrenheit.
- Install anti-scald or tempering devices on your shower and bathtub fixtures.
- Fill the tub to desired height before getting in by adding cold water, then hot. Mix the water.
- Test the temperature of the bath water before putting a child or yourself into the tub or shower. Temperature test cards such as Too Hot for Tots are available through the Wisconsin Alliance for Fire Safety at 1-800-315-0911.
- Face children away from the tub faucet to keep them from turning on the hot water.
- Never leave children alone while they are bathing or showering.
- Avoid flushing toilets, running water, dishwashers or clothes washers while others are showering or running water into the bathtub.
It is extremely important for the prehospital provider to adequately calculate the amount of fluid infused as this may be taken into consideration in regards to the patient’s total fluid resuscitation.

Once the patient arrives at the hospital, the Parkland formula for fluid resuscitation is often utilized in the management of burn victims. The Parkland Formula for Adults is 2-4ml LR X kg body weight X % TBSA burn.

One-half of this volume is to be administered in the first 8 hours, the remainder over the next 16 hours post burn. The Parkland Formula is used only as a starting point for fluid resuscitation as each patient reacts differently to burn injury and resuscitation.

This patient had a 115 day hospital admission and underwent seven surgical procedures due to his extensive burns. He has since returned home to his wife and children, has frequent follow up visits to the UW burn clinic, and has continued to be an avid Minnesota Vikings fan!

**New Helicopters!**

This past summer new technically advanced medical helicopters replaced UW Med Flight’s two Italian-built Augusta Power 109 aircraft that served countless patients for nearly 10 years.

Specifically designed for air rescue, the new Eurocopter (EC 135) aircraft has come to be known as a workhorse in the emergency air transport industry. Equipped with the most advanced air medical technology available, the low-noise and powerful twin-engine helicopter is highly maneuverable and features rear loading clam shell doors. The helicopters fly about 130 knots or 150 miles per hour. The weight limitation is approximately 350 lbs.

The new helicopters also include state-of-the-art avionics including GPS, moving map radar, SAT phones and a traffic collision avoidance system. Our pilots maintain IFR status, a rating that allows us to fly under FFA approved weather conditions that allow us to be more available throughout the year. UW Med Flight is certified under instrument flight rules, not just visual flight rules in which the pilot must be able to see where they are going at all times. Instrument flying allows UW Med Flight to fly in less than ideal weather conditions.

**Eliminate Scalds in the Kitchen**
- Keep children a safe distance from food preparation areas.
- Cook on back burners and point pot handles toward the back of the stove.
- Beware of dangling cords. Never use deep fryers around children.
- Keep hot foods and drinks at least 10 inches away from the edge of tables & counters.
- Avoid using tablecloths on serving areas.
- Use vented containers to allow steam to escape while cooking. Wait one minute before removing cooking covers then lift the farthest corner away from your face, hand and arm.
- Do not eat or drink hot foods or beverages when holding or carrying children or infants.

**Prevent Microwave Scalds**
- Never heat baby bottles in the microwave. Plastic bottle liners may burst increasing the risk of scald burns to infants and toddlers.
- Microwaves should be placed so the faces of older children and people in wheelchairs are higher than the front door of the microwave.
- Microwaves should be kept out of young children’s reach.
- Thoroughly stir all microwave foods and liquids before eating.
- Test the temperature of heated food before eating or feeding children.
- Establish and enforce a “No Kids Zone” in the kitchen to keep children away from the stove, sink, and food preparation areas.

For more information on burn prevention contact the UW Hospital and Clinics Burn Center at (608) 263-1490 or chandel@uwhealth.org.