

Trauma Clinical Guideline **Minor Burn Care**

The Trauma Medical Directors and Program Managers Workgroup is an open forum for designated trauma services in Washington State to share ideas and concerns about providing trauma care. The workgroup meets regularly to encourage communication among services, and to share best practices and information to improve quality of care. On occasion, at the request of the Emergency Medical Services and Trauma Care Steering Committee, the group discusses the value of specific clinical management guidelines for trauma care.

The Washington State Department of Health distributes this guideline on behalf of the Emergency Medical Services and Trauma Care Steering Committee to assist trauma care services with developing their trauma patient care guidelines. Toward this goal, the workgroup has categorized the type of guideline, the sponsoring organization, how it was developed, and whether it has been tested or validated. The intent of this information is to assist physicians in evaluating the content of this guideline and its potential benefits for their practice or any particular patient.

The Department of Health does not mandate the use of this guideline. The department recognizes the varying resources of different services, and approaches that work for one trauma service may not be suitable for others. The decision to use this guideline depends on the independent medical judgment of the physician. We recommend trauma services and physicians who choose to use this guideline consult with the department regularly for any updates to its content. The department appreciates receiving any information regarding practitioners' experience with this guideline. Please direct comments to 360-236-2874.

This is a trauma assessment and management guideline. It was adapted from professional literature. The workgroup reviewed the guideline, sought input from trauma care physicians throughout Washington State, and used that input to make changes. Both the Emergency Medical Services and Trauma Care Steering Committee and the Department of Health Office of Community Health Systems endorsed the guideline. This guideline has not been tested or validated.

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The Problem

According to the American Burn Association (ABA), in 2016 there were nearly 500,000 burn injuries in the United States requiring medical treatment. Of those, 40,000 required hospitalization, leaving most burns to be treated in the outpatient setting. The majority of burns (69 percent) occur in the home. The most common mechanism of injury is thermal-related causes such as fire or flames, scalding, and contact with hot objects. Most burns occur during cooking, with intoxication a contributing factor. Scalding burns account for 90 percent of all burn-related injuries in children; about 5 percent of those are associated with non-accidental trauma.

The initial assessment and triage of burn patients can be challenging. Often, burn injuries can be treated in an outpatient setting in the communities where the injury occurred. Determining whether a patient should be transferred to a specialized burn center and selecting the most appropriate treatment options can be difficult. Following the recommendations in this guideline can help make those decisions.

Criteria for Outpatient Burn Care

Patients meeting the following criteria are considered appropriate for outpatient burn care.

1. Pain control: pain must be manageable with oral pain medications in the outpatient setting, and the patient must be able to participate in a scheduled medication plan. Use caution when prescribing opioids. Summary [guideline](#) on prescribing opioids for pain.
2. Wound care: the patient must be able to perform daily wound care and dressing changes in addition to other items in the therapy plan.
3. Mobility and activities of daily living: Patients must be mobile and able to perform their normal activities of daily living. They must also be able to perform range of motion and stretching exercises.
4. Psychosocial support: there must be adequate psychosocial support in the patient's environment to foster healing.

Indications for Burn Center Referral

The following ABA criteria include burn injuries that should result in a consultation with a designated burn center. Contact your nearest burn center for its individual criteria. Consultation with the burn center can help with arranging outpatient follow-up, wound care and therapy advice, or immediate transfer as appropriate.

- Partial thickness burns greater than 10 percent TBSA
- Burns that involve the face, hands, feet, genitalia, perineum, or major joints
- Third-degree burns in any age group
- Electrical burns, including lightning
- Chemical burns
- Inhalation injuries
- Burn injury in a patient with preexisting medical conditions

- Any patient with burns and concomitant trauma
- Burned children in hospitals without qualified personnel or equipment
- Burn injury in patient who will require special social, emotional, or rehabilitative interventions.

Burn physicians are available for consultation at **Harborview Medical Center 1-888-731-4791**. In southwest Washington consider contacting **Legacy Oregon Burn Center 1-888-598-4232**.

Assessment

Burns result from a variety of mechanisms that can cause more severe underlying injuries. Burn injuries can be distracting and result in missed injuries upon initial assessment. To ensure injuries are identified appropriately and interventions performed, a systematic approach should be used when assessing these patients. Standard precautions should be taken by all care providers by donning personal protective equipment (PPE). The systematic approach should follow the advanced trauma life support (ATLS) process, which includes the primary and secondary survey. If the initial assessment reveals a major burn where > 10 percent total body surface area (TBSA) has burned, or if mechanisms includes chemical, electrical or inhalation injury, refer to the [Major Burn Resuscitation Guideline](#) and consult with the burn center. Burns involving the face, hands, feet, genitalia, perineum, or major joints may also require burn center consultation.

The primary survey should begin with an assessment of airway, breathing, and circulation. Emphasis should be placed on stopping the burning process and ensuring all sources of heat have been removed, which may including clothing and jewelry. The burned area can be flushed with sterile water, normal saline, or tepid water. If chemicals are present, the area should be brushed off (dry chemical) and then flushed with copious amounts of tepid water. All clothing should be removed to assess injuries, and to facilitate determining the burn severity and total body surface area (TBSA) burned.

Assessing the burn mechanism, depth, and size are essential in determining if a burn can be considered minor and appropriate for local outpatient treatment. Many interventions for burn-related injuries will be based on these assessments.

Mechanism:

- Thermal
- Chemical
- Electrical
- Radiation

Severity:

The table below defines some of the common characteristics of each burn severity (depth).

Depth	Skin Layer	Appearance	Sensation	Healing Time
Superficial (first degree)*	Epidermis	Dry, red, blanches (sunburn)	Painful	3-6 days
Superficial partial-thickness/superficial dermal (second degree)	Epidermis and superficial dermis	Blisters, moist and weeping, red, blanches	Painful	7-21 days
Deep partial-thickness/dermal (second degree)	Dermis	Blisters, wet or waxy and dry, patchy (white and red), does not blanch	Painful to pressure	> 21 days May require graft
Full-thickness (third degree)	Subcutaneous or deeper	Waxy white to leathery, does not blanch	Painful to deep pressure	Requires surgical grafts

**do not include in TBSA calculation.*

Total Body Surface Area:

Determining TBSA for minor burns in small or scattered locations might best be estimated using the Rule of Palm ([Figure 1.](#)), which estimates one percent TBSA burned based on the size of the patient's hand, including fingers. Superficial burns are not included. The Rule of Nines ([Figure 2.](#)) provides a rapid assessment to begin treatment for larger burns. This rule can be applied to both adults and pediatrics.

Circumstances of Injury:

An assessment regarding the circumstances of injury is a vital component to ensure appropriate interventions are in place to promote healing and wellness. The patient's social support network should be assessed to determine available resources during recovery. If appropriate psychosocial support is unavailable, the patient may need admission to the hospital and possible burn center referral.

Interventions

The majority of minor burn injuries can be appropriately managed by primary care physicians in the outpatient setting. Burn injury interventions generally focus on rapid healing, pain control, and return to full function.

Initial treatment should include stopping the burning process by flushing the burn area with cool water for about 15-20 minutes (chemical burns require up to 30 minutes). Ice immersion should be avoided. All clothing and jewelry should be removed from the injured area. Tetanus immunization should be evaluated and updated in patients with burns.

Minor superficial and partial thickness burns can be very painful. Oral pain medications should be sufficient to manage burn injuries as an outpatient; however, IV medication may be

appropriate for initial wound care. Opioids may be needed, particularly for wound care, and pain is not necessarily associated with burn size. Provide pain medications 30 minutes before initial burn care and dressing changes. Use caution when prescribing opioids and consult the following [guideline](#) on appropriate prescribing practices. Keeping the wound covered while awaiting definitive dressing can decrease pain. A moist or non-stick covering such as a wet washcloth or plastic wrap may be used.

Most burns can be cleaned by using mild soap and water. It is not necessary to scrub the wound with Betadine or similar cleaning products. Soot can be removed by gentle wiping with soap and water. Vigorous scrubbing should be avoided.

Wound care for superficial burns with intact epidermis, such as a sunburn can generally be managed in the outpatient setting. Apply moisturizing topical, unscented lotions and encourage hydration. Non-steroidal anti-inflammatory drugs (NSAIDS) should provide adequate pain relief. Patients should be counseled to use sun screen in the future.

Partial thickness burns require wound care. Blisters need to be addressed or skin debrided to accurately determine the severity. Small blisters may be left in place but larger blisters over joints or affecting range of motion should be debrided. This includes blisters at high risk of rupture during daily activity. Remove blisters with scissors while elevating the injured epidermis with forceps. This is well tolerated if contact with the underlying wound bed is avoided. Loose skin that does not easily wash away with a washcloth should also be removed. Again, elevate this with forceps and trim away with scissors.

An initial dressing and subsequent dressing changes will be required. Generally, dressings should be changed once daily. The goal of dressings should be to provide a moist, clean environment. Dressings should have minimal effect on range of motion and activity. Avoid bulky dressings. Digits should always be dressed individually. Dressings should be kept simple so that changes can be performed at home by the patient or family members. Family members or helpers should participate and learn how to properly change the dressing and care for the wound. Wound care at home should include hand hygiene, soap, water, and a washcloth. It may be necessary to use a generous amount of tap water to help remove the old dressings and antimicrobials. All loose debris and skin should be removed gently with a washcloth. Use this [link](#) to access burn care and dressing change videos.

Dressings should create a moist environment, include antimicrobials, and a barrier layer. For superficial partial thickness burns, bacitracin ointment and greasy gauze are an example of an appropriate dressing. The ointment should be applied liberally and can be reapplied without changing the greasy gauze if the wound appears dry. A thin layer of gauze can hold this in place. Deep partial thickness or full thickness burns require more moisture initially, and an antimicrobial agent such as silver sulfadiazine can be used. This should be applied liberally like frosting and covered with gauze. Several options are now available for long-term dressings that remain in place for three to seven days. These dressings provide a covering to the burn and contain antimicrobials such as silver. These dressings are appropriate for superficial partial thickness burn, and can eliminate the need for wound care at home.

The burn healing process will result in the skin tightening and decreased range of motion in joint areas. Patients should be encouraged to be mobile and continue to do everyday activities, as well as dedicated stretching. Maintaining range of motion and normal activities will help reduce edema and promote skin stretching. To reduce edema, elevate burned arms and legs above the level of the heart when not moving. In some cases it may be necessary to include in the discharge plan additional stretching to help prevent contractures. General rules of stretching include: stretch every hour, perform each stretch up to 10 times, hold each stretch for at least 30 seconds, and stretch hard enough to see the skin blanch. Some pain when stretching is normal and patients may notice some bloody drainage on their dressing. The Harborview [video series](#) demonstrates appropriate stretching techniques.

Discharge teaching should encourage mobility to help prevent disuse and extremity edema. Patients with lower extremity burns should be encouraged to elevate the extremity and routinely walk during the day. Crutches and walkers should not be used unless required for pre-morbid state. Both verbal and written instructions regarding medications and dressing changes should be provided.

Special Populations

Pediatric

Burn injuries are common in children and account for more than 50 percent of all burns, resulting in more than 100,000 emergency department (ED) visits annually. As children grow, they are at increased risk for burn injuries as they develop and explore their environment with limited comprehension of risk. The morbidity and mortality rate is higher in children with burn injuries when compared to adults.

Care providers should appreciate the physiological and anatomical characteristics of pediatric patients, and the role it plays in the assessment and management of the burn injuries. If trained pediatric providers are not available for consult, the burn center should be contacted.

Non-accidental trauma (NAT) occurs in a significant number of children admitted to burn centers. It may be difficult to determine abuse from non-abuse. High-risk intentional burn injuries include scalds to the buttocks, perineum, bilateral lower extremities, feet, unilateral limbs, multiple contact burns, and those with clearly demarcated edges. If burn injuries with these characteristics are present in children and vulnerable populations, the provider should be suspicious of possible abuse. In some cases where NAT may be the cause of the injury, special interventions and consultations may be required.

Burn characteristics related to NAT may include:

- Burn pattern is inconsistent with the mechanism of injury or story
- Inconsistent stories for parents or caregivers.
- Parent or caregiver's behavior is suspicious and/or they are disinterested in the child's wellbeing
- Scald burns with circumferential demarcation lines

If care providers suspect NAT, they should perform a complete physical exam, ensure a safe environment for the child, and consult with the burn center. Contact [Child Protective Services](#) at 1-866-ENDHARM (363-4276).

Geriatric

Geriatric patients are at risk for burn-related injuries because of sensory and cognitive impairments later in life. These impairments limit their ability to recognize and react to potential danger, resulting in more severe burns. Geriatric burn patients have a greater morbidity and mortality rate when compared to younger patients. Much of this increase is related to comorbidities and physiological changes that result in poor microcirculation, thinner skin, and the susceptibility to infection. Geriatric burn injury patients should be followed very closely by their care provider. Meticulous burn wound care is very important. Care providers should have a very low threshold to consult to a burn center when treating geriatric burn patients. Children aren't the only population at risk for NAT – consider NAT in older and disabled patients with scalds to the buttocks, perineum, bilateral lower extremities, feet, unilateral limbs, multiple contact burns, and those with clearly demarcated edges. Report abuse at 1-855-ENDHARM (363-4276).

Prevention

All burn injuries are considered preventable. Hundreds of preventable burn injuries are treated in emergency departments (ED) every day. They result in unnecessary hardships for patients, families, and the healthcare system. All healthcare providers are encouraged to help prevent burn injuries by educating patients and family members to the potential hazards in their environment and ways to mitigate their risk. Injury prevention efforts should be focused on vulnerable people (children less than 10 years old and the elderly) and people with burn injury risk factors (poverty, limited education, single-parent homes, and substandard housing conditions). The following resource links may be helpful:

[American Burn Association Prevention Resources](#)

[Burn Prevention Network](#)

[Children's Safety Network: Burn Prevention Resource Guide](#)

[CDC Protect the Ones You Love: Child Injuries and Preventable](#)

[Safe Kids: Fire Safety](#)

[Shriners Hospital Prevention Resources](#)

Reference

The following online burn resources are provided by UW Medicine/ Harborview Burn Center. For patients who do not meet transfer criteria but will require outpatient burn care, please consult the online video series regarding wound care and stretching.

[UW Medicine Burn Education Videos](#)

[UW Medicine Outpatient Burn Care Video](#)

[UW Medicine Burn Stabilization Protocol](#)

[UW Medicine/Harborview Burn Center Referral](#)

[UW Medicine Patient Videos](#) (300 series are formatted for patients and includes Spanish versions)

American Burn Association - Advanced Burn Life Support Course Provider Manual. Chicago - American Burn Association (2016).

American Burn Association. Burn incidence and treatment in the United States fact sheet 2016. ABA, 2017. <http://ameriburn.org/who-we-are/media/burn-incidence-fact-sheet/>

American Burn Association Referral Criteria. (n.d.). Retrieved December 13, 2016, from <http://www.ameriburn.org/BurnCenterReferralCriteria.pdf>

Atiyeh, B., Costagliola, M., & Hayek, S. (2009). Burn prevention mechanisms and outcomes: pitfalls, failures and successes. *Burns (03054179)*, 35(2), 181-193. doi:10.1016/j.burns.2008.06.002

Escobar Jr MA, Flynn-O'Brien KT, Auerbach M, Tiyyagura G, Borgman MA, Duffy SJ, Kelly Falcone KS, Burke RV, Cox JM, Maguire SA. (2017). The association of non-accidental trauma with historical factors, exam findings and diagnostic testing during the initial trauma evaluation. *Journal of Trauma*. 82(6), 1148-1157.

Feliciano, D., Mattox, K., Moore, E., Trauma (6th ed.). (2008). New York: McGraw Hill.25(5), 1051-1066

Lloyd, E., Rodgers, B., Michener, M., & Williams, M. (2012). Outpatient burns: prevention and care. *American Family Physician*, 85(1), 25-32.

University of Washington Harborview Medical Center. Burn Protocol (2013).

Washington State Interagency Guideline on Prescribing Opioids for Pain (2015), from <http://www.agencymeddirectors.wa.gov/Files/2015AMDGOpioidGuideline.pdf>

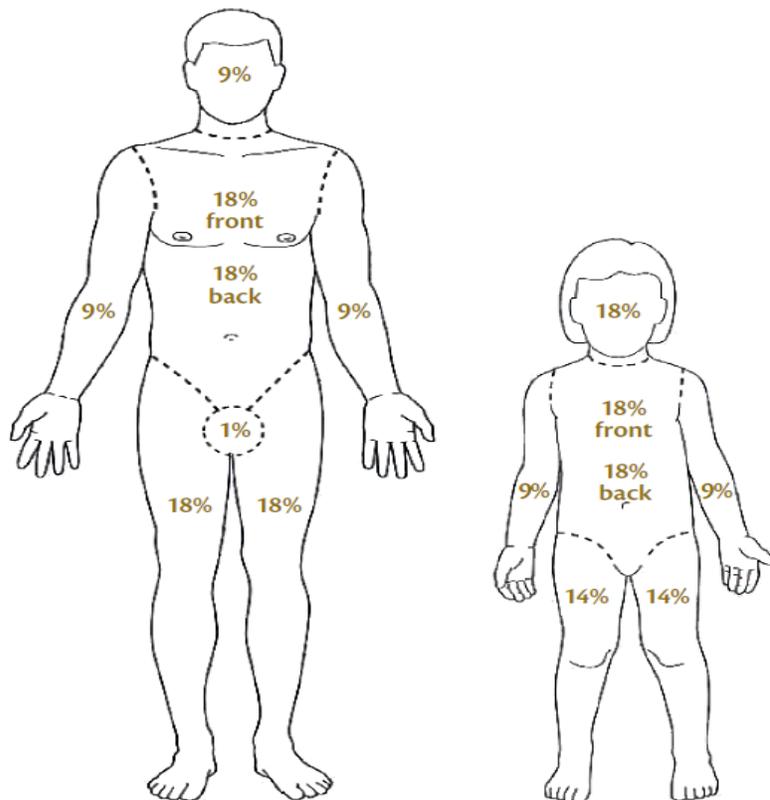
Wasiak, J., Cleland, H., Campbell, F., & Spinks, A. (2013). Dressings for superficial and partial thickness burns. *Cochrane Database Of Systematic Reviews*, (3), N.PAG.

Figure 1. Rule of Palm



The palm and fingers equals one percent TBSA. Used to estimate small scattered burns.

Figure 2. Rule of Nines



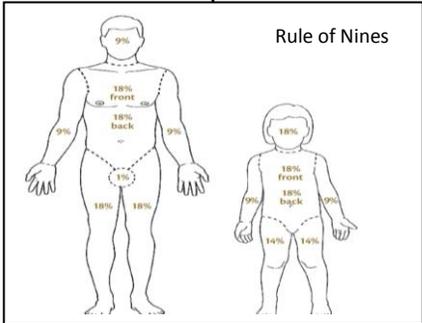
Minor Burn Care Algorithm

- Burn Center Consultation Criteria**
- Partial thickness burns > 10% TBSA
 - Burns involving the face, hands, feet, genitalia, perineum, or major joints
 - Third degree burns in any age group
 - Electrical burns, including lightning
 - Chemical burns
 - Inhalation injuries
 - Burn with preexisting medical conditions
 - Burns with concomitant trauma
 - Burned children in hospitals without qualified personnel or equipment
 - Burn injury requiring special social, emotional, or rehabilitative interventions

Harborview Burn Center 1-888-731-4791
Legacy Oregon Burn Center 1-888-598-4232

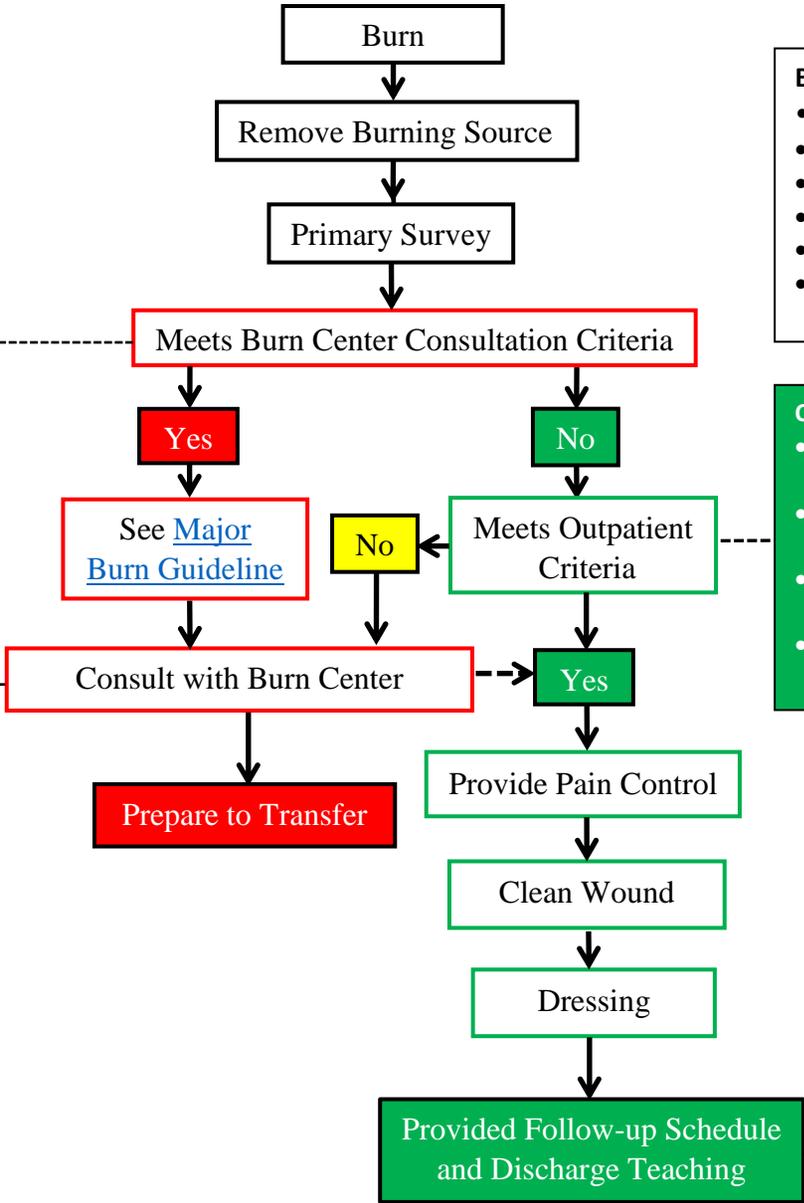
Severity:

- First degree (superficial partial thickness): Skin red, dry and painful. *do not include in TBSA.
- Second degree (partial thickness): Skin red, blistered, weepy, swollen, and painful.
- Third degree (full thickness): Skin whitish, brown, charred, with minimal to no pain.



- Burn Key Points**
- Protect caregivers
 - Remove clothing and jewelry
 - Hazmat concern, flush with cool water
 - Avoid hypothermia
 - Use Rule of Nines to determine % TBSA
 - Poison Control for chemical burn consultation 1-800-222-1222

- Outpatient Criteria**
- Pain control: pain manageable with oral pain medications
 - Wound care: able to perform daily wound care either at home or in their physician's office
 - Activities of daily living: mobile and able to perform ADLs
 - Psychosocial support: adequate psychosocial support



For Harborview referrals call the transfer center for appointment 1-888-731-4791