VANDERBILT UNIVERSITY MEDICAL CENTER

Guideline: Burn Admission & Discharge Criteria

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Introduction:

The Burn Center is a regional Burn Center serving the State of Tennessee and the surrounding area (Kentucky, Missouri, Arkansas, Mississippi, Alabama, and North Carolina). The Burn Center consists of adult and pediatric inpatient and outpatient settings that specialize in the emergent, acute and rehabilitative phases of all form of burn injuries (electrical, chemical, friction, contact, scald, etc), frostbite, and SJS/TEN. The Burn Center is designed to accommodate patients requiring all levels of care; it includes designated ICU and stepdown beds as well as outpatient clinic rooms. This policy provides a guideline for patients being referred to and cared for in the Burn Center, and outlines criteria to enable the Burn Center to prioritize admissions and discharges as well as transfers in and transfers out of the Burn Center.

Policy Details:

I. Referral and Admission Criteria

A. The Burn Center is never closed and burn patients should never be diverted by the Emergency Department or the Transfer Center unless under the direction of the Burn Director. Burn admissions do not require a review/permission by the on-call chief of staff.

B. Ultimately, the decision for admission is at the discretion of the Burn Surgeon on call. These criteria are intended to provide general guidelines and are not an all-inclusive list.

C. The Burn Center admits patients of all ages with all types of burn injuries (including chemical, electrical, road rash, etc), smoke inhalation, frostbite, and SJS/TEN. Pediatric patients (</= 15 years of age) are admitted to the Vanderbilt Children's Hospital under the Burn Surgeon on call. Patients >/= 16 years of age are admitted to the Adult Burn Unit under the direction of the on-call Burn Surgeon.

D. The American Burn Association's (ABA's) published Burn Center Referral Criteria provides general guidance on burn *referrals,* but do not reflect an exhaustive list of *admission* criteria. These are guidelines and do not exclude patients that fall outside the criteria, nor do they represent mandatory admission criteria. These criteria are included in the appendix below.

E. Injuries/skin disorders admitted to the Burn Center include, but are not limited to:

1. All types of burn injuries (including but not limited to scald, flame, flash, contact, electrical, chemical, friction, and radiation burns)
2. Smoke inhalation
3. Cold injuries (including but not limited to frostbite injuries)
4. Soft tissue degloving injuries
5. Friction injuries (including but not limited to road rash)
6. SJS/TENS

F. Any patient suffering from burn injuries extensive enough to require inpatient care should be admitted to the Burn Center. Patients with concomitant burn and trauma injuries will have disposition decided on a patient-by-patient basis between the on-call trauma and burn surgeons.

G. Off-service critical care and step-down status patients may be admitted to the Burn Center when the hospital is at increased capacity, but priority should be given to patients with the above diagnosis categories. Off-service patients should be moved off of the burn unit when beds are needed for burn patients and to open a Regional just-in-time burn bed.

H. Patients with surgical wounds, including necrotizing fasciitis, do not fall under the purview of the burn service and should be admitted to their respective services. Similarly, non-SJS/TEN cutaneous conditions should be referred to the medical services or dermatology (See SJS-TEN PMG for further detail)

II. Referral and Admission Process

A. General:

1. An attending burn surgeon is available for consultation and triage 24 hours per day. The Burn Surgeon Attending should determine whether the patient can be managed in their current setting, as an outpatient, or whether the patient requires inpatient admission to the Burn Center.

2. If the attending burn surgeon determines that the patient may be cared for in the outpatient setting, they should be given instructions for care and the Vanderbilt Transfer Center will arrange a Burn Clinic appointment.

3. When the Burn Center census is at maximum, patients may be admitted/ transferred to another ICU or to a med/surg care unit to accommodate other burn service patients or a new acute burn service admission.

~~**a.**~~ When a patient's primary diagnosis is burn, the burn service will be the primary service admitting the patient. ~~The Burn Service should remain the primary service in all burn patient when possible. When this is not possible, the burn service will follow closely to manage the care the patient requires.~~

b. For patients requiring intensive care, the Surgical ICU is the first choice for overflow admission

B. Admission from Other Facilities:

1. The Burn Surgeon Attending should be notified of all patients from outside referring facilities through the Vanderbilt Transfer Center.

2. The Vanderbilt Transfer Center should ask the referring provider to send encrypted photos which will be sent to the Burn Surgeon Attending through their VUMC e-mail account. However, **this is not necessary if it will slow down or inhibit patient care.**.

C. Admission from the ED:

1. The Burn team should be notified according to the Burn Alert Protocol (see below).

a. The patient should be evaluated by a Burn Provider to determine appropriate level of treatment.

i. Patients with burn injuries that do not require admission to the hospital may be cared for by the Emergency Department Physician and Nursing team in consultation with the Burn team.

D. Admission from the Burn Clinic:

1. A decision to admit a patient from the clinic should be done in collaboration with the Burn Clinic Provider and the Burn Surgeon Attending on call. The on-call Burn

Resident will complete the admission orders, history & physical and the Lund and Browder. See Appendix for the Burn Clinic Admission Algorithm.

E. ICU Admissions:

- All adult patients with burns ≥20% TBSA
- All pediatric patients with burns ≥15% TBSA (PICU at Children's hospital)
- All intubated patients
- Any patient requiring close monitoring of extremity perfusion (e.g. fullthickness circumferential burns requiring q1hr neurovascular exams)
- Any patient requiring ICU level for respiratory monitoring, including some patients with concerns for smoke inhalation.
- Any hemodynamically abnormal patient (shock, cardiacarrythmias)
- High-voltage Electrical Injury
- Other patients at the discretion of the burn surgeon or intensivist

F. Stepdown Admission

- Any patient with:
  - Adult patient with burns < 20% TBSA requiring admission
  - Pediatric patients with burns <15% TBSA requiring admission
  - Infected burns
  - Concern for non-accidental trauma
  - Uncontrolled pain
  - Housing instability
- Patients requiring initiation of rehabilitative therapy, or those unableto perform stretches
- Patients with medical comorbidities that will significantly alter theirability to recover from a burn injury
- Social stressors related to their injury that require additionalpsychiatric or social work support
- Other patients at the burn surgeon's discretion

III. Hospital Discharge Criteria:

Patients need to meet the following 5 criteria to transition to outpatient management in the Burn Clinic.

1. Pain controlled with oral meds or alternative pain control plan
2. Wound care can be performed by the patient or a designee to the satisfaction of the burn center staff following teaching providers and nursing)
3. Burn therapy (PT/OT) has recommended discharge and the patient has demonstrated the ability to perform their home therapy program.
4. Patient has a safe place to discharge to
5. Patient is maintaining adequate PO intake

- All discharging patients should have a discharge appointment set up in the Burn Clinic prior to discharge.
- Discharge orders should be signed by 9:30 am for all discharges whenever possible and do not require the completion of rounds prior to order placement.
- Patient discharges should occur prior to 11:00 am whenever possible. Possible discharge dates should be discussed daily on MD/RN rounds to assist with communication to the

hydro team for appropriate wound care teaching.
- Whenever possible, planned discharges should be placed on the priority list during disposition rounds the day prior. Planned discharges should have their meds to bed ordered the day prior when able and most of the discharge paperwork/orders should be completed the prior day when possible
- Patient waiting on rides, meds, etc. - consideration should be given to send these patients to the discharge lounge.

IV. Transition Criteria:

Decisions to transition to a lower acuity of care are ultimately up to the attendings managing the patient, but the following criteria may inform those decisions.

A. Criteria for Transition from ICU to Stepdown (adult):

Patients that no longer have critical care needs but still have inpatient needs, such as further operations, wound care, pain control, and rehabilitation, are appropriate to consider for stepdown. However, patients with the following limitations may need to remain in the ICU:

- Any patient with a high risk of deterioration from a physiologic standpoint may remainin the ICU until that risk has been resolved
- Any patient meeting rapid response criteria
- Patients with ≥20% TBSA burns that have not completed their initial early excision may remain in the Burn ICU until those operations have been completed
- Patients in which:
  - Acuity exceeds nursing resources
  - Time-and/or skill-intensive wound care is performed in their beds, rather than hydrotherapy
  - Ongoing conscious sedation with prolonged post-procedure recovery is expected
  - There is a risk of vital functional reserve loss secondary to transfer (i.e. will not perform their exercise program as needed without hourly reminders and that will result in functional deficits).
  - The Burn Surgeon and Burn Intensivist agree the use of an ICU bed is warranted

B. Criteria for Transition from PICU to 11S Stepdown (pediatric):

Pediatric patients without ongoing critical care needs, who still require inpatient care, are reasonable to transfer to 11S in the adult hospital for ongoing burn management. However, pediatric patients with the following limitation may need to remain in the PICU

- Any patient with a high risk of deterioration from a physiologic standpoint should remainin the PICU until that risk has been resolved
- Any patient meeting rapid response criteria
- Patients with ≥15% TBSA burns that have not completed their initial early excision shouldremain in the ICU until those operations have been completed

Prior to transfer, pediatric patients must undergo *at least* one successful round complete wound care according to their discharge plan. Pediatric conscious sedation is only available in the adult hospital Monday through Friday and early transition to the adult hospital may necessitate returns to the OR for sedation on the weekend.

V. Appendix

A. ABA Guidelines for Burn Patiennt Referral

Guidelines for Burn Patient Referral

(Advice on Transfer and Consultation)

- These guidelines are designed to be used to aid in clinical decision making. If you have sustained a burn injury, please seek medical advice from a medical professional.
- Local and regional infrastructure, resources, and relationships may determine the necessity and timeliness of burn center referral.
- These guidelines are not meant to be definitive care recommendations. They may facilitate building the proper referral network within the local healthcare community.

	Immediate Consultation with Consideration for Transfer	Consultation Recommendation
Thermal Burns	• Full thickness burns • Partial thickness ≥10% TBSA* • Any deep partial or full thickness burns involving the face, hands, genitalia, feet, perineum, or over any joints • Patients with burns and other comorbidities • Patients with concomitant traumatic injuries • Poorly controlled pain	• Partial thickness burns <10% TBSA* • All potentially deep burns of any size
Inhalation Injury	• All patients with suspected inhalation injury	• Patients with signs of potential inhalation such as facial flash burns, signed facial hairs, or smoke exposure
Pediatrics (≤14 years, or <30 kg)	• All pediatric burns may benefit from burn center referral due to pain, dressing change needs, rehabilitation, patient/caregiver needs, or non-accidental trauma	
Chemical Injuries	• All chemical injuries	
Electrical Injuries	• All high voltage (≥1,000V) electrical injuries • Lightning injury	• Low voltage (<1,000V) electrical injuries should receive consultation and consideration for follow-up in a burn center to screen for delayed symptom onset and vision problems

Burn Severity Determination

SUPERFICIAL
- Dry, red, easily blanching, sometimes painful
- Example: Sunburn
- NOT counted in calculations of total burn surface area (TBSA)

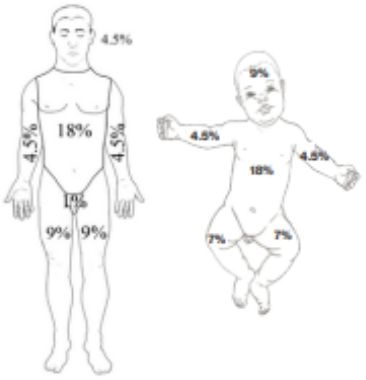
SUPERFICIAL PARTIAL THICKNESS
- Moist, red, blanching, blisters, very painful
- Counted in calculations of total burn surface area (TBSA)

DEEP PARTIAL THICKNESS
- Drier, more pale, less blanching, less pain
- Counted in calculations of total burn surface area (TBSA)

FULL THICKNESS
- Dry, leathery texture, variable color (white, brown, black), loss of pin prick sensation
- Counted in calculations of total burn surface area (TBSA)

Percentage Total Body Surface Area (TBSA)

"RULE OF NINES"

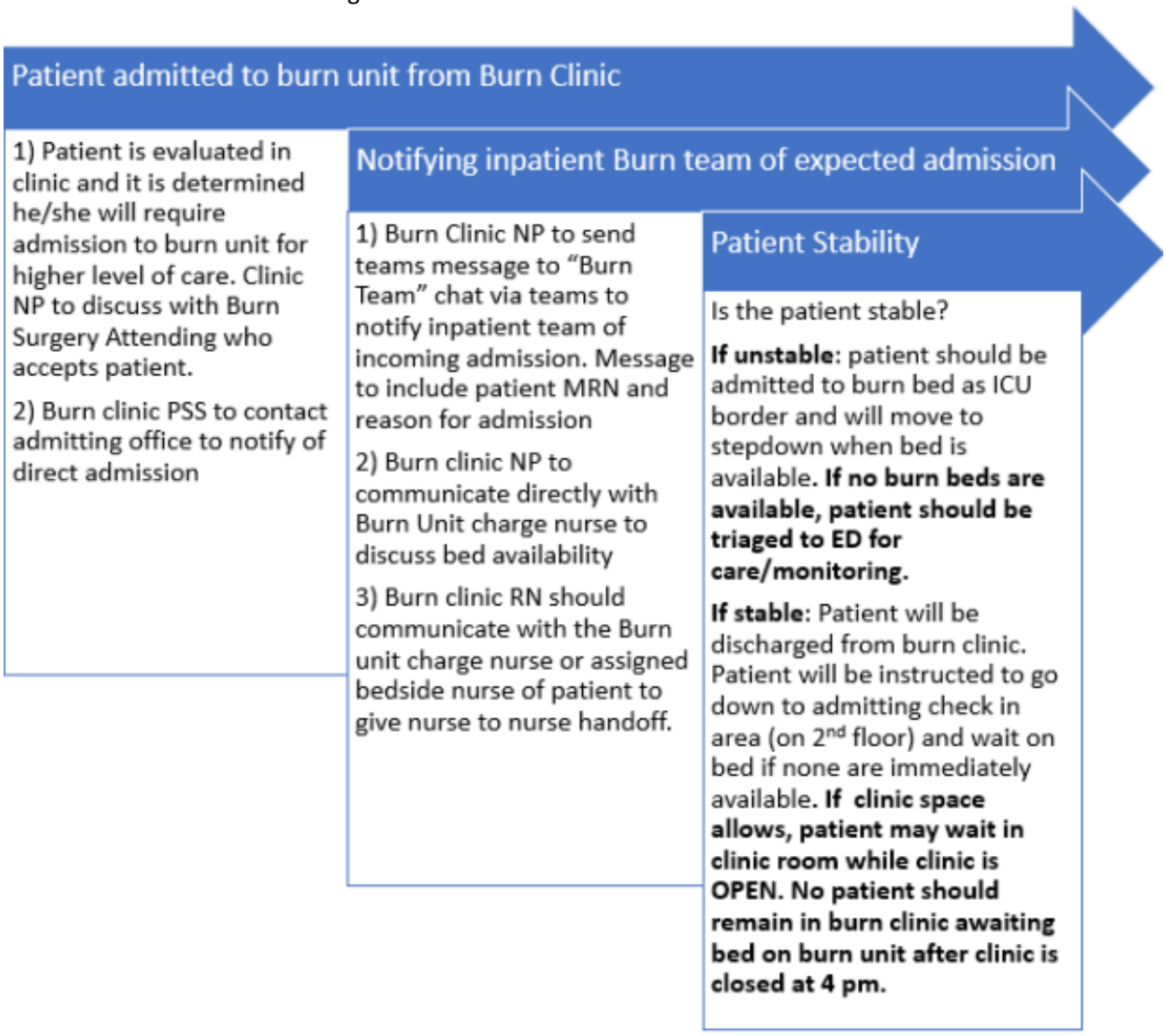


"PALMAR METHOD"

Patient's entire palmar surface is approximately 1%

For more information visit **ameriburn.org/burnreferral**

B. Burn Clinic Admission Algorithm



C. Adult Burn Alert Level Criteria

Vanderbilt Adult Emergency Medicine Burn Alert Criteria

Burn Alert Level I

- ≥ 20% total body surface area (TBSA) full/partial thickness burns without concurrent trauma
- Any intubated burn patient or burn patient with unstable/ unsecure airway
- High voltage electrical (> household voltage 240) or lightening injuries
- Chemical burns that involve >20% TBSA (Hydrofluoric acid injuries > 1% TBSA)
- Extremities: frozen or thawed within the last 24 hours, and body temp: moderate (core body temp 30-34°C/86-93°F) to severe (core body temp <30°C/<86°F) hypothermia

Burn Alert Level II

- 5-19% total body surface area (TBSA) of partial and/or full thickness (2nd and 3rd degree) burns
- Non-intubated inhalation injuries, including chemical inhalation
- Low voltage electrical (</= household voltage 240) with burn injury or neuropathy
- Chemical burns <20% TBSA (Hydrofluoric acid injuries < 1% TBSA)
- Extremities: frozen or thawed within the last 24 hours, and body temp: mild hypothermia (core body temp 34-35.9°C)

All leveled burns should be 2nd or 3rd degree (partial or full thickness). First degree burns should not be leveled.

Burn Consult

- Any burn injury not meeting burn alert criteria
- Frostbite injury thawed extremities >24 hours
- Soft tissue disorders or injuries such as TENs, SJS, soft tissue degloving, and crush injury
- Hydrofluoric acid <5 minutes

SPECIAL CONSIDERATIONS

- Emergency Medicine, Trauma or Burn Attendings ONLY may up/downgrade patients
- Residents, Fellows, and ED staff DO NOT level patients
- LifeFlight flight crew will level their patients
- Unless requested by an EM Attending, the Communications Center personnel will assign a level

D. Pediatric Burn Alert Level Criteria

Vanderbilt Peds Emergency Medicine Burn Alert Criteria

Burn Alert Level I

- ≥ 15% total body surface area (TBSA) full/partial thickness burns without concurrent trauma
- Any intubated burn patient or burn patient with unstable/ unsecure airway
- High voltage electrical (> household voltage 240) or lightening injuries
- Chemical burns that involve >15% TBSA (Hydrofluoric acid injuries > 1% TBSA)
- Extremities: frozen or thawed within the last 24 hours, and body temp: moderate (core body temp 30-34°C/86-93°F) to severe (core body temp <30°C/<86°F) hypothermia
- Arrival of 3 or more patients from the same incident regardless of acuity

Burn Alert Level II

- 5-14% total body surface area (TBSA) of partial and/or full thickness (2nd and 3rd degree) burns
- Non-intubated inhalation injuries, including chemical inhalation
- Low voltage electrical (</= household voltage 240) with burn injury or neuropathy
- Chemical burns <15% TBSA (Hydrofluoric acid injuries < 1% TBSA)
- Extremities: frozen or thawed within the last 24 hours, and body temp: mild hypothermia (core body temp 34-35.9°C)

All leveled burns should be 2nd or 3rd degree (partial or full thickness). First degree burns should not be leveled.

Burn Consult

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