

# Guidelines for the Operation of Burn Centers



**E**ach year in the United States, burn injuries result in more than 500,000 hospital emergency department visits and approximately 50,000 acute admissions. Most burn injuries are relatively minor, and patients are discharged following outpatient treatment at the initial medical facility. Of the patients who require hospitalization, about 20,000 are admitted directly or by referral to hospitals with special capabilities in the treatment of burn injuries. These service capabilities, along with the setting in which they are provided, are termed burn centers. These guidelines define the burn care system, organizational structure, personnel, program, and physical facility involved in establishing the eligibility of a hospital to be identified as a burn center. (See Definition of Terms on the following page.)

Many trauma centers do not have a burn center within the same hospital. In such cases, the trauma center should be able to communicate with the burn center and assess, stabilize, and arrange safe transport for seriously burned patients. Assessment follows Advanced Burn Life Support® (ABLS®) and Advanced Trauma Life Support® (ATLS®) guidelines. The burn center should be telephoned and the patient and transfer discussed with the senior burn surgeon on call. In the absence of other injuries, the condition of burn patients usually is easily stabilized, and patients can withstand long-distance transport with resuscitation continuing in route.

A trauma center that will need to refer burn patients should have in place a written transfer agreement with a referral burn center. The agreement should identify which patients will be referred, what specific stabilization will be expected, who will arrange transportation, and what needs the patient will have during transfer.

It is the responsibility of the referring hospital and the burn center director to keep this transfer agreement current. If there are collaborative arrangements for the transfer of patients from another unit of the hospital,

such as a trauma unit, a surgical intensive care unit, and so on, protocols should be written for such transfer and acceptance.

## Burn Center Referral Criteria

A burn center may treat adults, children, or both.

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 preexisting 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

## Burn Care System

A *burn care system* is a coordinated component of an emergency medical services (EMS) system that encompasses one or more burn centers and features communication links to and triage-transfer protocols

## Definition of Terms

### **ABLS®**

the Advanced Burn Life Support® course of the American Burn Association

### **ABLS Now®**

the self-directed, Web-based ABLS® course of the American Burn Association

### **Attending staff surgeon**

a surgical member of the burn team appointed by the burn center director, with credentials and privileges appropriate to the burn service

### **Burn care system**

a component of a coordinated emergency medical services (EMS) system that encompasses one or more burn centers. Communication linkages and triage transfer protocols coordinate health care facilities, EMS prehospital personnel, and patient transportation.

### **Burn center director**

a surgeon designated by the institution and medical staff to coordinate the activities of the burn center

### **Burn center hospital**

an institution with a commitment to meet the criteria specified in this document

### **Burn service**

a clinical service established by the medical staff that has responsibility for burned patients

### **Burn program**

a group of health care professionals and resources organized to provide care to burned patients in a coordinated system of care

### **Burn therapist**

a physical or occupational therapist who has a commitment to the care of burn patients and is responsible for providing rehabilitation services in the burn center

### **Burn center**

a specific area within the hospital that has committed the resources necessary to meet the criteria for a burn center. This area contains beds and other equipment related to care of patients with burn injury.

### **Promptly available**

the physical presence of health professionals in a stated location in a short time, which is defined by the burn center director and continuously monitored by the performance improvement program

### **Nurse manager**

a registered nurse who has a commitment to the burn center and is administratively responsible for the nursing service of the burn center

between health care facilities, EMS prehospital personnel, and transportation services.

- The burn center must have a medical and an administrative commitment to the care of patients with burns (CD 14-1).
- The burn center must have written guidelines for the triage, treatment, and transfer of burned patients from other facilities (CD 14-2).
- The burn center hospital must maintain current accreditation by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (CD 14-3).

### **Prehospital Care**

- The burn center must maintain access to an EMS system for the transport of patients with burns from referral sources within the service area (CD 14-4).
- The burn center must offer input into the performance improvement of prehospital care of burn patients (CD 14-5).
- The burn center must have a written multiple casualty plan for the triage and treatment of patients

burned in a multiple casualty incident occurring within its service area (CD 14-6).

- The multiple casualty plan must be reviewed and updated as needed and on an annual basis by EMS representatives and the burn center director (see Chapter 20, Disaster Planning and Management) (CD 14-7).
- The burn center must offer education on the current concepts in emergency and inpatient burn care treatment to prehospital and hospital care providers within its service area (CD 14-8).

## Organizational Structure

### **Documentation of Policies and Procedures**

- The burn center must maintain an organizational chart relating personnel within the burn center and the hospital (CD 14-9).
- The burn center must maintain an appropriate policy and procedure manual that is reviewed annually by the burn center director and the nurse manager (CD 14-10).

The policy and procedure manual must contain policies addressing the following (CD 14-11):

1. Administration of the burn center
2. Staffing of the burn center
3. Criteria for admission to the burn center by the burn services
4. Use of burn center beds by other medical or surgical services
5. Criteria for discharge and follow-up care
6. Availability of beds and the transfer of burn patients to other medical or surgical units within the hospital
7. Care of patients with burns in areas of the burn center hospital other than the burn center

### Burn Program

The burn center hospital must formally establish and maintain an organized burn program that is responsible for coordinating the care of burned patients (CD 14-12).

### Consistency of Protocol and Reporting

- The burn center must participate in the American Burn Association's (ABA's) National Burn Repository, either through ABA's TRACS or by providing the minimum acceptable record information (Table 1) in a computer-exported format compatible with the ABA National Burn Repository (CD 14-13).
- This database must include all patients who are admitted to the burn center hospital for acute burn care treatment (CD 14-14).

### Admission and Census Levels for the Burn Center Hospital

- The burn center must admit an average of 100 or more patients annually, with acute burn injuries averaged over 3 years (CD 14-15).
- The burn center must maintain an average daily census of 3 or more patients with acute burn injuries (CD 14-16).

## Medical Personnel

### Administrative Responsibility

- The burn center director must be granted the necessary authority to direct and coordinate all services for patients admitted to the burn service (CD 14-17).
- The burn center director must make sure that medical care conforms to the burn center protocols (CD 14-18).
- Privileges for physicians participating in the burn service must be determined by the medical staff

**Table 1. Minimum Acceptable Record: National Burn Repository\***

- Reporting hospital number
- Number of operating room visits
- Number of procedures performed
- Patient sex
- Race
- Cause of death
- State in which injury occurred
- Patient age (for patients younger than 90 years)
- Year of injury
- Year of arrival at reporting hospital
- Description of event (free text)
- Site at which injury occurred (E849 code)
- Etiology of injury code (E-code)
- Body areas injured (Lund and Browder 19 areas × 6 age categories)
- Total burn size
- Total deep burn
- Inhalation injury
- ICD-9 diagnosis codes
- Total hospital days
- Hospital discharge disposition
- Primary payer source
- DRG code
- Circumstances of injury
- Discharge status (alive or dead)
- Year of discharge or death
- Total ICU days
- Interhospital transfer to your hospital

ICD-9 indicates *International Classification of Diseases, Ninth Revision*; DRG, diagnosis-related group; and ICU, intensive care unit.

\* Compliant with the Health Information Portability and Accountability Act.

credentialing process and approved by the burn center director (CD 14-19). Qualifications for surgeons who are responsible for the care of burned patients must conform to criteria documenting appropriate training, patient care experience, continuing medical education, and commitment to teaching and research in the care of burned patients (CD 14-20).

- The burn center must be actively engaged in promoting ABLScourses in its region (CD 14-21). It is desirable for the director to be an ABLScourses instructor and essential that the director is current in ABLScourses (CD 14-22). The unit should have 1 or more employees who are ABLScourses instructors.

### **Qualifications and Activities of the Burn Center Director (Table 2)**

- The burn center director must be a licensed surgeon with board certification by American Board of Surgery or American Board of Plastic Surgery; certification of special qualifications in surgical critical care is desirable (CD 14-23).
- The burn center director must have completed a 1-year fellowship in burn treatment or must have experience in the care of patients with acute burn injuries for 2 or more years during the previous 5 years (CD 14-24).
- It is desirable for the burn center director to have current certification as an ABLScourses instructor.
- The burn center director must direct the total burn care of 50 or more acutely burned patients annually (CD 14-25).
- The burn center director must participate in continuing medical education in burn treatment and must demonstrate ongoing involvement in burn-related research and community education in burn care and/or prevention (CD 14-26 and CD 14-27).

### **Responsibilities of the Burn Center Director**

The responsibilities of the burn center director must include, but not be limited to, the following (CD 14-28):

1. Creation of policies and procedures within the burn center that specify the care of burned patients
2. Creation of policies and protocols for use throughout the burn care system for initial care, triage, and transport of burn patients
3. Cooperation with regional EMS authorities in all aspects of burn treatment

4. Communications on a regular basis with physicians and other authorities about patients who have been referred
5. Direction of the burn center administrative functions
6. Direction and active participation in the burn center performance improvement program
7. Liaison with adjacent and regional burn centers
8. Development and participation in internal and external continuing medical education programs in the care and prevention of burn injuries

### **Qualifications and Activities of Attending Staff Surgeons (Table 2)**

- The director may appoint qualified attending staff surgeons to participate in the care of patients on the burn service.
- Attending staff surgeons must be board-certified or qualified as established in Chapter 6, Clinical Functions: General Surgery (CD 14-29). Certification of special qualifications in critical care is desirable.
- Attending staff surgeons must have demonstrated expertise in burn treatment as evidenced by completion of a 1-year fellowship in burn treatment or by 2 or more years of experience during the previous 5 years in the management of patients with acute burn injuries (CD 14-30).
- Attending staff surgeons must participate in continuing medical education in burn treatment (CD 14-31).
- Attending staff surgeons must participate, including primary decision making, in the care of 50 or more acutely burned patients annually (CD 14-32).

### **Burn Service Coverage**

- There must be at least 1 full-time equivalent attending staff surgeon involved in the management of burn patients for each 300 annual acute inpatient admissions (CD 14-33).
- The burn service must maintain an on-call schedule for residents and attending staff surgeons who are assigned to the burn service (CD 14-34). The residents and/or staff surgeons must be available promptly on a 24-hour basis (CD 14-35).

**Table 2. Qualifications for Burn Center Staff Surgeons**

	Category/Description	Medical Director	Staff Surgeons
<b>I</b>	Board certification in general or plastic surgery	Required	Required*
	Special qualification in surgical critical care	Desirable	Desirable
<b>II</b>	<b>Training</b> Completion of a 1-year fellowship in burn treatment or 2 or more years of burn care experience during the previous 5 years	Required	Required
<b>III</b>	<b>Clinical activity</b> Participation, including primary decision making, in the care of 50 or more acutely burned patients annually	Required	Required
<b>IV</b>	<b>Continuing medical education</b> Annual participation in 16 hours or more of burn-related education	Required†	Required†
<b>V</b>	<b>Research participation</b> Demonstrated commitment to clinical or basic science burn care research or organization of burn care systems	Required	Desirable
<b>VI</b>	<b>Community education and burn prevention</b> Participation in development or revision of community or EMS burn treatment protocols or representation on state or local EMS committee At least 1 of the following: <ul style="list-style-type: none"> <li>• Annual participation in 1 or more training or certification courses in burn care</li> </ul> or <ul style="list-style-type: none"> <li>• Annual development or presentation of acute burn care courses or lectures</li> </ul> or <ul style="list-style-type: none"> <li>• Participation in a burn prevention program</li> </ul>	Required	Desirable

EMS indicates emergency medical services.

\* Can be met by special exemption (see Chapter 6, Clinical Functions: General Surgery).

† Can be met by attendance at the annual meetings of the American Association for the Surgery of Trauma, American Burn Association (ABA), or any ABA-endorsed meetings (for example North American Burn Society, International Society for Burn Injuries, regional ABA meetings).

The following specialists must be available for consultation (**CD 14-36**):

General surgery	Pulmonary
Cardiothoracic surgery	Radiology
Neurological surgery	Nephrology
Obstetrics/gynecology	Psychiatry
Ophthalmology	Cardiology
Anesthesiology	Gastroenterology
Pediatrics	Hematology
Orthopaedic surgery	Neurology
Otolaryngology	Pathology
Plastic surgery	Infectious disease
Urology	

## Nursing Personnel

### Nurse Manager

There must be 1 registered nurse with a baccalaureate or higher degree who is administratively responsible for the burn center and has 2 or more years of experience as a nurse in a burn center (**CD 14-37**).

The nurse manager must have at least:

1. Two years or more of experience in acute burn care (**CD 14-38**)
2. Six months or more managerial experience (**CD 14-39**)



3. Annual participation in 16 or more hours of burn-related education (can be met by attendance at the annual meetings of the American Association for the Surgery of Trauma, ABA, or any ABA-endorsed meetings or continuing education programs, such as ABLIS® or ABLIS Now®.) (CD 14-40).

There must be an organizational chart relating the nurse manager to the burn service and other members of the burn team (CD 14-41).

### **Nursing Staff**

- There must be a patient care system in effect that is used to determine nurse staffing for each patient in the burn center (CD 14-42). This system must be used to determine daily staffing needs (CD 14-43).
- There must be a burn center orientation program that documents nursing competencies specific to the care and treatment of burn patients, including critical care, wound care, and rehabilitation that are age-appropriate (CD 14-44).
- Burn center nursing staff must be provided with a minimum of 2 burn-related continuing education opportunities annually. (CD 14-45).

## **Rehabilitation Personnel**

### **General**

- There must be a rehabilitation program designed for burned patients that identifies specific goals (CD 14-46).

### **Rehabilitation Personnel**

- Physical and occupational therapists in the burn center must be appropriately licensed in their specific disciplines (CD 14-47).
- Staffing must be based on inpatient and outpatient activity with at least 1 full-time equivalent burn therapist for the burn center (CD 14-48).
- If a therapist is not permanently assigned to the burn center for inpatients and outpatients, one must be assigned for a period of no less than 1 year (CD 14-49).
- Burn therapists must receive regular supervision from individuals with at least 1 year of experience in the treatment of burn patients (CD 14-50).
- There must be a competency-based burn therapy orientation program for all new therapists assigned to the burn center (CD 14-51).
- Burn center therapists must be provided with a minimum of 2 burn-related continuing education opportunities annually (CD 14-52).
- The primary burn care therapist must have annual participation in 16 hours or more of burn-related

education (can be met by attendance at the annual meetings of the American Association for the Surgery of Trauma, ABA, or any ABA-endorsed meetings or continuing education programs, such as ABLIS® or ABLIS Now®) (CD 14-53).

## **Other Personnel**

### **Physician Extenders**

- Appropriately credentialed physician extenders may be used as members of the burn team. These individuals may include, but are not limited to, physician assistants, surgical assistants, and nurse practitioners.

### **Social Workers**

- Social service consultation must be available to the burn service (CD 14-54).
- If a social worker is not permanently assigned to the burn center for inpatients and outpatients, one must be assigned on a rotational basis for a duration of at least 1 year (CD 14-55).
- Burn social worker staff must be provided with a minimum of 2 burn-related continuing education opportunities annually (CD 14-56).

### **Nutritional Services Personnel**

- A dietitian must be available on a daily basis for consultation (CD 14-57).

### **Pharmacy Personnel**

- A pharmacist who has at least 6 months of experience in critical care and the pharmacokinetic implications for patients with acute burn injuries must be available on a 24-hour basis (CD 14-58).

### **Respiratory Care Services Personnel**

- Respiratory therapists must be available for the assessment and management of patients on the burn service on a 24-hour basis (CD 14-59).

### **Clinical Psychiatry or Psychology Personnel**

- A psychiatrist or clinical psychologist should be available for consultation by the burn service on a 24-hour basis.

## **Performance Improvement Program**

### **Policies and Procedures**

- The burn program must have a performance improvement program that is multidisciplinary (CD 14-60).
- The burn center director must be responsible for the performance improvement program (CD 14-61).

- The burn center multidisciplinary committee, which oversees the performance improvement program, must meet at least quarterly (CD 14-62). Sufficient documentation must be maintained to verify problems, identify opportunities for improvement, take corrective actions, and resolve problems (CD 14-63).
- Morbidity and mortality conferences must be held at least monthly with physicians other than the immediate burn care team to ensure objective review of the presentations (CD 14-64-1). Attendees at this conference must include specialist staff members other than those practicing in the burn center (CD 14-64-2).
- All significant complications and deaths must be discussed (CD 14-64-3). There must be open, candid discussion with high points documented and assessment of the death or complication classified as “caused by disease,” “potentially preventable,” “possibly preventable” (or the equivalent thereof) (CD 14-64-4 and CD 14-64-5). Actions recommended must also be documented, and there must be documentation of loop closure (CD 14-64-6 and CD 14-64-7). Records of this conference must be kept (CD 14-64-8).

### **Weekly Patient Care Conferences**

- Patient care conferences must be held at least weekly to review and evaluate the status of each patient admitted to the burn center (CD 14-65). Each clinical discipline should be represented to appropriately contribute to the treatment plan for each patient.
- Patient care conferences must be documented in the progress notes of each patient and/or in minutes of the conference (CD 14-66).

### **Audit**

- The burn service must conduct audits at least annually that include, but are not limited to, the severity of burn, mortality, incidence of complications, and length of hospitalization (CD 14-67).

## **Other Programs**

### **Educational Programs**

- The burn center must have an educational program for the medical staff (CD 14-68).
- If residents rotate on the burn service, the burn service director or his or her designee must be responsible for an orientation program for new residents (CD 14-69).

## **Infection Control Program**

- The burn center must have effective means of isolation that are consistent with principles of universal precautions and barrier techniques to decrease the risk of cross-infection and cross-contamination (CD 14-70).
- The burn center hospital must provide ongoing review and analysis of nosocomial infection data and risk factors that relate to infection prevention and control for burn patients (CD 14-71). These data must be available to the burn team to assess infection risk factors that relate to infection prevention and control for burn patients (CD 14-72).

## **Continuity of Care Program**

The burn center must provide the following services (CD 14-73):

1. Recreational therapy for children cared for in the unit
2. Patient and family education in rehabilitation programs
3. Support for family members or other significant persons
4. Coordinated discharge planning
5. Follow-up after hospital discharge
6. Access to community resources
7. Evaluation of the patient’s physical, psychological, developmental, and vocational status
8. Planning for future rehabilitative and reconstructive needs

## **Burn Prevention Program**

The burn center must participate regularly in public burn awareness programs (CD 14-74).

## **Research Program**

- The burn center should participate in basic, clinical, or health sciences research.
- The medical director must demonstrate ongoing involvement in burn-related research (CD 14-75).

## **Configuration and Equipment**

### **Configuration**

- The burn center hospital must maintain a specialized nursing unit dedicated to acute burn care (CD 14-76).
- The burn center must be used predominantly for patients with burn injuries or patients with skin disorders, major wounds, or other problems requiring treatment similar to that of burn patients (CD 14-77).

- The burn center must have at least 4 beds that are intensive care unit–capable (CD 14-78).

### **Equipment**

The following equipment must be available in the burn center (CD 14-79):

1. Weight measurement devices
2. Temperature control devices for the patient and for intravenous fluids and blood products
3. Intensive care monitors
4. Cardiac emergency carts with age-appropriate equipment

### **Other Services**

- Renal dialysis, radiologic services, including computed tomography scanning, and clinical laboratory services must be available 24 hours per day (CD 14-80).

### **Operating Suites**

- The burn center hospital must have operating rooms available 24 hours a day (CD 14-81). The burn center must have timely access to these operating rooms (CD 14-81).

### **Emergency Service**

- The emergency department must have written protocols mutually developed with the burn service for the care of acutely burned patients (CD 14-82).

### **Allograft Use**

- The burn center hospital's policies and procedures for the use of allograft tissues must be in compliance with all federal, state, and JCAHO requirements, and, when feasible and appropriate, with standards of the American Association of Tissue Banks (CD 14-83).

This chapter was prepared and approved by the American Burn Association, in consultation with the American College of Surgeons Committee on Trauma.