Guidelines to be followed by centres, services and units in order to be designated as Reference Centres, Services and Units of the National Health System as agreed by the Interterritorial Board.

1. CRITICAL BURN PATIENTS

The Critical Burn Unit may be defined as the highly specialized and complex healthcare service, within a healthcare centre, with the necessary human and equipment resources for providing care to these patients based on the best available evidence.

Criteria for admission into a Critical Burn Unit: [1,2,3,4,5]

- Second or third degree burns > 20% of total body surface area at any age group.
- Second or third degree burns > 10% of total body surface area, for patients under 10 or over 50.
- Electrical and chemical burns.
- Burns in critical areas.
- Burns with associated injuries (smoke inhalation, trauma, etc.).
- Burns with associated risks (patient clinical record including diabetes, immunodeficiency, etc.).

A. *Rationale for the proposal*

► Epidemiological data (incidence and prevalence).	The figures of incidence and prevalence of burn patients in Spain have been estimated from different studies: *United States*[6, 7, 8, 9, 10]: In 1999, with a population of $280x10^6$, 500,000 people suffered burns requiring medical care. Out of these, 50,000 generated hospital admission, of which the latest 20,000 were referred and treated in specialized burn units. This implies: - 178 out of every 100,000 people suffer burns requiring medical care. - 18 out of every 100,000 people require hospital admissions after suffering burns. - 7-8 out of every 100,000 people require admission in a major burn unit. *Spain*[11]: - 300 out of every 100,000 people suffer burns requiring medical care. - 14 out of every 100,000 people require hospital admission after suffering burns.

- Some data on hospital admissions in major burn units in Spain[12]:

Hospital	2001	2002	2003	2004	2005
H. Valle de Hebrón (Barcelona)	418 Children:125	454 Children:137	487 Children:142	437 Children:132	389 Children:155
H. Miguel Servet (Zaragoza)	67 Children:15	59 Children:12	65 Children:14	57 Children:13	63 Children:17
H.U. de Getafe (Madrid)		208	165	137	150

Hospital Virgen del Rocío (Seville)

1993	1994	1995	1996	1997	1998	1999	2000	Total
225	228	238	229	246	245	294	268	1.973

Additional data[10,13,14,15]:

- data from the ABA (American Burn Association) (2003):

They think that there should be a bed in a burn unit for every 200,000 people, i.e., 1,400 beds for its 280 million people; although rationalization of resources for treating this pathology is being considered. Nowadays there are 1,950 beds in 139 burn centres; i.e., 1 burn unit for every 2 million people. These resources are considered excessive given that the burn incidence has diminished thanks to prevention measures and campaigns developed on this regard. In order to rationalize the resources and to guarantee patient treatment quality, it is considered that a burn unit:

- Should not have less than 10 beds.
- Should have an average of 100 or more admissions in a year at least for 3 years.
- Should keep a daily average of 3 admitted patients.

- On the other hand, in the United Kingdom a burn unit is suggested for every 5 to 5.5 million people (distances in the UK are different to those in the United States; population density is higher).

B. ***Guidelines to be followed by Centres, Services and Units in order to be designated as Reference Centres, Services and Units for Burn Intensive Care.***

► Experience of the Reference Centres, Services and Units: - Activity: • Number of patients that should be treated in a year to guarantee an adequate care - Other data: research on the subject, postgraduate teaching, continuing training, etc.	Care activity requirements of the unit[16, 17]: - An average of 100 admissions per year during 3 years. - 500 burn emergencies per year. - 70-100 acute burn surgical procedures per year. - Accredited postgraduate teaching. - Participation in related research projects and publications[a]. - Continuing training program [a]. - Weekly programme of clinical, theoretical or bibliographic technical meetingson morbi-mortality.
► Specific resources of the Reference Centres, Services and Units: - Human resources required for the adequate care of patients with critical burns.	- Person in charge of the Unit: Plastic surgeon working full time at the Burns Unit. - Continuous care must be provided 24 hours a day, 365 days a year, by at least one specialist in Plastic, Reconstructive and Aesthetic Surgery, physically available in the hospital. - Nursing Staff: 1 nurse and 1 healthcare assistant every 2 critical patients and 1 nurse and 1 healthcare assistant every 4 patients in progressive care during the day shift. During the evening and night shifts these numbers may be reduced since the number of curative care diminishes. - At least 1 physiotherapist.

Professional background[b]:	- Person in charge of the Unit: Plastic Surgeon with 3 or more years of experience in the treatment of critical burns and active participation in the care of more than 50 patients with critical burns in a year. - Surgeons specialized in Plastic, Reconstructive and Aesthetic Surgery, with 2 or more years of experience in the treatment of critical burns and active participation in the care of more than 50 patients with critical burns in a year. - Nursing staff experienced in critical patients and training in psychological support and supportive care for both patients and family. - Physiotherapist with experience in the care of burn patients.
- Specific equipment required for the adequate care of patients with critical burns.	The Unit must have written rules, updated and known by the unit staff, in relation to staff movement and the circulation of clean and contaminated materials, between the different parts of the unit and between the unit and the exterior. The Burn Unit will be divided in several areas clearly differentiated: - *Admission and A&E:* Area where the patient is stripped of contaminated material and emergency care is provided. Air conditioning flow (12changes/hour) directed from the ceiling towards the floor, from the clean area to the polluted, and from this area out of the unit. - *Hospitalization:* Area with access restricted to healthcare staff. • At least 5 beds in an environment highly protected against infections. • Individual bedrooms, with enough space for various people to work at the same time with the inpatient, with medical gas outlets and mechanical ventilation equipment, and continuous monitoring of critical patients. • Specific equipment for patients with burns allowing patient transportation and the prevention of pressure ulcers. Special beds and mattresses for critical patients which might be adjusted to position and height. • Independent and clearly identified circulation areas for clean and waste materials. • Air conditioning with several recharges, a filter system similar to those in the operating theatres, adjustable temperature and humidity. • Nurse station of the unit situated in a place that allows visual control of the maximum number of inpatients in the cubicles.

► Resources from other units and services besides those belonging to the Reference Centres, Services and Units which are required for the adequate care of patients with critical burns.	- *Minor surgery room-Baths:* Close to the surgical suite and in communication with the unit restricted circulation area. • Specific bath which allows treatment of burn patients, properly supplied with cranes, monitoring equipments (EGC and pulse oximeter) and emergency carts, oxygen and vacuum outlets. • Air-conditioning with a high number of recharges, with HEPA filters, adjustable temperature and humidity. - 1 *surgical theatre* integrated in the Burn Unit equipped with the necessary equipment for the treatment of patients with critical burns (meshers and dermatomes, electric and manual)[18]. - *Outpatient consultation area.* - Intensive care unit. - Cardiology. - Anaesthesia. - Rehabilitation. - Psychiatry and Psychology. - Nutrition and Dietetics. - Infectious Diseases Department. - Laboratory. - Microbiology. - Blood Transfusion Services. - Tissue Bank authorized by the corresponding region, for homograft processing, keratynocite culture, amniotic membrane treatments, etc. - Social workers.
► Procedure and clinical results indicators of the Reference Centres, Services and Units [c]:	**The indicators will be agreed with the Units that will be designated.**
► Existence of an adequate IT system. (Type of data that the IT system must include to allow identification of the activity and evaluation of the quality of the services provided)	- Include a surveillance system of the nosocomial infection that allows information collection and monitoring of the indicators contained in the previous section. - Filling up the complete MBDS of hospital discharge.

	- The unit must have a *registry of burn patients* which at least must include: - Medical record number. - Date of birth. - Sex. - Date of admission in the Burn Unit. - Date of discharge from the Burn Unit. - Circumstances of the discharge from the Intensive care unit (home, hospital transfer, voluntary, death, transfer to a healthcare centre, other). - Main diagnosis (ICD-9-CM). • Date of the burn injury. • Cause of the burn injury. • Total burned body surface. • Deep burn surface. • Area where the burn injury is. - Number and type of therapeutic procedures provided to the patient (ICD-9-CM): • Surgical procedures associated with the burn injuries. • Other therapeutic procedures. - Diagnostic procedures provided to the patient (ICD-9-CM): - Complications (ICD-9-CM): • Respiratory, digestive, hepatic, cardiovascular, renal, plasma, blood, neurological, muscular, bone and joint, skin, infections. - The unit must have the required data which should be sent to the Spanish National Health Service Reference Centres, Services and Units Appointment Commission Secretariat for yearly reference unit monitoring.

[a] *Criteria to be assessed by the Appointment Commission.*
[b] *Experience will be accredited by certification from the hospital manager.*
[c] *Clinical results standards, agreed to by the experts group, will be assessed, initially by the Appointment Commission, while in the qualification process, as more information from the Reference Centres, Services and Units is being obtained. Once qualified by the Appointment Commission, the Quality Agency will authorize its compliance, as for the rest of guidelines.*

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