**Burns:** burn-related injuries are decreasing in US but estimates show that 500,000 burn patients are treated and 45,000 require hospitalization

**Skin**: largest organ of the body and serves primarily as environmental barrier

* Skin has two different layers which are epidermis (skin growth cells present) and dermis (composed highly structured and organized collagen, wandering cells, blood vessels, etc.)
* Burn: is a permanent destruction of tissue caused by release of energy from an external agent
* Eschar: dead epidermis and necrotic dermis that remain attached to wound bed

**Measures of Burn Injury Severity**

Percentage of Total Body Surface Area Involved: the extent of the burn is classified as a percentage of the total body surface area

* Two methods used to estimate burn size are the “rule of nines” and Lund and Browder Chart

Burn Depth: assessment is based on experienced clinical observation of the appearance, sensitivity, and pliability of a wound

Mechanism of Injury: thermal injuries are caused by exposure to flame, steam, hot liquids, hot metals, electricity, radiation, toxic chemicals, or extreme cold

**Hospital Medical Management**

Initial Care: Fluids and electrolytes are replaced to prevent shock and death

* Edema (swelling) is the first problem that OT practitioners treat
* Burns can become thick which can impair normal circulation (an escharotomy is a procedure to improve circulation)

Wound Care: a shower, shower cart hydrotherapy, submersion cleansing, or local cleansing of wound on admission and depending on dressing used weekly or biweekly

* Topical agents can be applied, and staff should always observe to look for infections

Skin grafting: when depth and extent of wound will require 3 or more weeks of healing, surgery will decrease hospital length of stay, pain, and car or contracture complications

* Autograft: a surgical transplantation of the person’s own skin from an unburned area.
* Split thickness of graft is applied to clean excised wound
* Alternative to grafts include other cultured skin substitutes, biological dressings/temporary graft, or synthetic coverings.
* Full thickness skin graft requires donor wound closure be an STSG, reserved for reconstruction

Pain: defined as an unpleasant sensory and emotional response to a stimulus associated with actual or potential tissue damage

* Burn pain severity differs depending on the type of burn, severity of burn, and placement

Scar Formation: a hypertrophic scar is a red, hard, collagenous bundle of connective tissue raised above the surface of the burn wound

* Hypertrophic scars become visible 6 to 8 weeks after wound closure

Contracture development: normal wound healing occurs by contraction

* Contracture is limited joint motion caused by shortened soft tissue, tendons, ligaments, blood vessels, and nerves or by calcium deposits surrounding involved joint

Physiological Factors: patient may experience fear, isolation, dependency, and pain

* May include OTDS, depression, withdrawal, reactions to disfigurement, and more

**Burn Rehabilitation**

Team: multidisciplinary team is family, physicians, nurses, PT, PTA, OT, OTA, dieticians, etc.

Phases of Recovery: acute care (1), surgical and postoperative care (2), and rehabilitation (3--inpatient/outpatient)

Goals of rehabilitation: must be functional, cosmetic, and psychosocial consequences of severe burn

Acute Care Phase: medical management and patient survival are primary concerns

Surgical and postoperative phases: OT goals during the surgical and postoperative phases promote skin graft adherence while preserving or assisting function when possible

Rehabilitation Phase: the overlapping third phase of recovery is post grafting (would maturation)

* Care focuses on achieving independence while preventing deformity and contractures
* OT and OTA teach family precautions and prepares for discharge
* At discharge or soon after the patient will do the following…
  + Direct skin conditioning and wound care with minimal assist
  + Recover at least 80% of preborn AROM
  + Recover 80% of preborn strength to return to preburn functionality in home/community
  + Recover coordination for work and ADL’s
  + Control limb edema with vascular supports 23 hours a day with elevated positions
  + Demonstrate independent donning and removal of splints, inserts, and overlays to modify burn scars
  + Learn and use protective outdoor interventions like flap hats or sunscreen
  + Demonstrate successful use of interventions like cutting nails, applying lotion, etc
  + Participate in appropriate coordinated planning for discharge
  + Explore vocation issues with a vocational rehab or school counselor to resume work or school
  + Explore and participate in recreational activities, leisure planning, and social
  + Hire and supervise appropriate attendant help if there is no help already
  + Learn coping skills
  + Participate in survey of home needs emphasizing independence and safety

**Role of Occupational Therapy**: OT’s specialized knowledge of environments, sexuality, cultural and family influences, anatomy, physiology, kinesiology, neurology, infection control, splint fabrication, ADL’s, IADL’s, and psychosocial development.

* Often OT is part of multidisciplinary team to best help patient (usually rehab)
* OTA can make adaptations for support garments and clothing, re-measure patients for custom fitted vascular support garments, and teach homemaking skills/tasks.

Assessments: OT will complete initial patient evaluation within the first 24-38 hours getting data about burn etiology, medical history, any secondary diagnoses, & precautions from medical chart

Acute Care Phase Treatments: include ROM which is primary component of burn treatment plan

* Strength and endurance activities are introduced early and is specific to patient

Edema Management: keep extremity raised above heart, positioning is important to prevent harm

Splinting: used during the acute phase is usually applied during rest, with activity and exercise emphasized while patient is awake

* Volar burn hand splint is designed to provide approx. 30 degrees wrist extension, 50 to 70 degrees of MCP flexion, full IP extension and thumb is abducted and extended

Surgical and Postoperative Phase Treatments: immobilization assists graft adherence and vascularization

* Bulky dressing and standard equipment is used, and procedures are all different
* Physician and OT/OTA can view unbandage graft site to look for integrity, exposed tendons, and bleeding area before resuming exercises

Rehabilitation Phase Treatments: exercise is most important in this phase

* Strengthening, ROM, stretching (helps with flexibility and fluidity of movement), and more are all worked on in treatment
* It’s important to control edema all throughout therapy
* External vascular supports or pressure garments help to manage hypertrophic scars but must be supervised to avoid additional complications
  + Garments can be fitted to patient once weight is stable and skin can handle it
  + Garments are to be worn 23 hours of day to provide adequate scar compression
  + Assessment of physical tolerance and work skills should proceed return to work
  + Functional activities and work skills are assigned to improve work tolerance, strength, endurance, and flexibility like lifting, pushing, pulling, handling, etc.
  + Healed wounds have increased sensitivity to cold b/c of change ability to sweat and constrict or dilate capillaries in scar tissue (OT should remember this)
  + Patient and family collaboration and motivation is important to promote successful outcomes.