

DERMATOLOGY REVIEW NOTES: BY: Dr. Steven L. Kleinfield F.A.C.O.

- Definition: The branch of medicine that is concerned with the physiology and pathology of the skin.
- Skin is the largest organ of the human body Skin continues to grow, differentiate itself and continually renews itself. Skin is the barrier between our internal organs and the outside world.
- Skin is a pretty good reflection of internal disease. The skin assists in fluid homeostasis and protects against infection, toxins and harmful effects of UV radiation.
- The skin is divided into 3 distinct layers: Subcutaneous Layer, Dermis Layer & Epidermis Layer.
- **Subcutaneous Layer:** Contains the largest volume of adipose tissue in the body.
- **Dermal Layer:** Has a rich blood supply and contains the eccrine glands (exocrine glands eg. Sweat glands designed in temperature regulation) “apocrine glands
- **Epidermis Layer:** By: This is the most superficial layer of the skin Contains several types of cells including keratinocytes, melanocytes as well as dendritic cells.
- Primary lesions include: Macule, Patch, Papules, Nodule Cyst, Vesicle , Bullae, Pustule, Wheal
- Secondary lesions include: Scales, Crust, Oozing, Induration, Ulcer, Fissure, Atrophy, Burrow, Eczema, Erosion, Scar
- Special lesions: Lichenification, Comedone, Atrophy, Burrow, Alopecia, Sebaceous Cysts, Folliculitis, Abscess, Maceration
- Configuration is the shape of single lesions and the arrangement of clusters of lesions.
- Typing of Configuration: Linear, Grouped, Annular, Geographic, Gyrate, Confluent, Target
- Types of tissue testing include: Cultures, Biopsy, Patch testing
- For Dermatophytic Infections you are checking for fungal infection. Use KOH preparation and then view under the microscope.
- TZANCK Preparation: Is good for diagnosing the presence of herpes simplex or zoster/varicella infection
- Culture: In this test, you try and isolate the organism in question.
- Skin Biopsy eg: Excisional biopsy, Punch Biopsy, Shave Biopsy
- Patch testing: Is good for detecting allergens who are showing a form of contact dermatitis.
- Dermatological Therapies Include: Topical Medicine, Creams, Ointments:, Gels, Lotions, Emollients:
- Dressings: Are coverings that are placed over a wound. They can be wet or dry and they can be occlusive in nature as well.
- Baths: You can consider the use of baths as a form of a wet type of dressing. Eg: Aveeno oatmeal baths

- **Corticosteroid Therapy:** is one of the most used therapies due to antiinflammatory nature of the medication. Systemic Side Effect: These are rare but you need to be cognizant about them.....
- **Adrenal suppression & Growth retardation**
- **Antipruritics:** These are lotions that are used to decrease itch. They include: camphor and menthol along with pramoxine placed or added to topical products
- **Keratolytics:** These agents remove or soften the horny layer of the epidermis
- **Keratoplastics:** These agents are used to increase the thickness of the horny layer of the epidermis.
- **Anti-eczematous:** These agents help in removal of oozing and vesicular excretion of the lesion.
- **Anti-parasitic:** These agents destroy or inhibit living infestation.
- **Antiseptics:** These agents destroy or inhibit bacteria, fungi and viruses.
- **Laser Therapy:**
- **Laser** stands for **Light Amplification Stimulated Emission of Radiation.**
- **Types of lasers:** CO2, Pulsed Dye, Yag , Q-Switched, Diode Lasers
- Each type of laser has a specific wavelength and property that is applied to various conditions. You need to match the condition to the laser.
- **CO2 Laser:** Can be used as a cutting instrument since it will vaporize tissue. Can be used to seal blood vessels.
- **Pulsed Dye Laser:** Is used for treatment of Hemangiomas including Port Wine Stains.
- **YAG Laser:** This type of laser is used in the treatment of Large Vein Varicosities.
- **Q- Switched Lasers:** Used for tattoo removal
- **Diode Lasers:** Useful in Laser Hair Removal.
- **Cryotherapy:** In this procedure you typically use liquid nitrogen which has a temperature of -195.6 degrees C
- **Skin Brushing:** Helps remove dead skin and scales
- **Sauna Therapy:** Will increase circulation and perspiration.
- **Detoxification Baths:** Pull toxins out of the body and the skin.
- **Contrast Showers:** Increase circulation as well as the migration of white blood cells to help fight disease.
- **Examples of Non-pigmented lesions:** Warts, Corns, Actinic Keratosis, Skin cancer
- **Examples of Pigmented lesions:** Freckles, Melasma, Seborrheic Keratosis
- **Warts:** are benign neoplasms caused by infection of the epidermal cells with papillomavirus.
- **Flat warts:** Benign cutaneous proliferations due to infection with the HPV virus subtype 3& 10.
- **Plantar Warts:** are caused by the HPV virus types 1,2 and 4 and the location of these warts are on the plantar surface of the foot.
- **Corns** are a localized thickening of epidermis, secondary to chronic pressure or friction. A.K.A. Clavus and Heloma
- There are two types of corns. **Hard corns** (heloma durum's) and **Soft corns**
- **Actinic Keratosis:** Is a **precancerous neoplasm** of the epidermis caused by ultraviolet light.

- Skin cancer: 3 Types: Basal Cell Carcinoma, Squamous Cell Carcinoma, Malignant Melanoma
- Basal cell carcinoma: The most common cutaneous malignancy in humans, It is locally invasive as well as destructive.
- Squamous cell carcinoma: An invasive primary cutaneous malignancy arising from keratinocytes of the skin or mucosal surface
- Malignant melanoma: This is a common malignancy of melanocytes
- The **ABCD's** of malignant melanoma **A**symmetry, **B**order irregularity sometimes called a notched border, **C**olor variation and variegation, **D**iameter greater than 6mm
- Freckles: are common, benign brown macule lesions that occur on the sun-exposed skin of Caucasian people
- Melasma: This is a patchy macular hyperpigmentation of the face:
- Seborrheic Keratosis: Is a benign neoplasm of epidermal cells that clinically appear as a scaling, pitted papule or plaque. It is thought to be an autosomal dominant inherited trait.
- Color and the texture of the lesion can help in your differential diagnosis.
- A Nodule is usually a “marble-like” lesions more than 0.5 cm in both diameter and depth.
- A **Cyst** is a closed pirsac having a distinct membrane
- Dermal and Subcutaneous Growths include the following items: Inclusion cysts, Hemangioma, Dermatofibroma, Keloid, Lipoma, Neurofibroma, Xanthoma, Kaposi's Sarcoma
- Inclusion cysts: Originates from the upper portion of the hair follicle and is found in the mid to lower dermal layers.
- Hemangioma: Is a benign tumor that is made up of blood vessels located in the dermal tissue
- Dermatofibroma: Is an area of focal dermal fibrosis with overlying epidermal thickening and hyperpigmentation
- Keloid: represents a proliferation of collagen tissue after trauma to the skin
- Lipoma: Is a benign tumor of subcutaneous fat
- Neurofibroma: Represents a focal proliferation of neural tissue within the dermis
- Xanthoma: Represents a focal collection of lipid-laden histiocytes in the dermis or tendon
- Kaposi's Sarcoma: Is a malignant tumor derived from endothelial cell
- Eczematous Rashes: The terms Eczema and Dermatitis are used interchangeably
- Dermatitis is an inflammation of the dermis.
- Classifications of dermatitis: Essential Dermatitis, Contact Dermatitis, Atopic Dermatitis, Seborrheic Dermatitis
- Essential Dermatitis: Is a condition that is diagnosed by **exclusion** of other forms of dermatitis
- Contact Dermatitis: Also known as **“allergic contact dermatitis”**:
- Atopic Dermatitis: Is an eczematous eruption that is distressingly pruritic (Itchy), recurrent, and symmetric
- Seborrheic Dermatitis: Is a common chronic inflammatory papulosquamous disease. It has been proposed that *Pityrosporum* yeast is the cause.”

- Urticaria: A.K.A. Hives, The Urticaria typical lesion, wheal results from liberation of histamine from tissue mast cells and from circulating basophils
- Psoriasis: A common chronic inflammatory papulosquamous disease of unknown etiology due to abnormal T lymphocyte function
- Vesicles and Bullae conditions include: Herpes Simplex, Herpes Zoster, Varicella, Bullous Impetigo, Pemphigus
- Herpes Simplex (HSV): Is an acute, self-limiting intraepidermal vesicular eruption caused by infection with herpes simplex virus
- Fever Blisters and Canker Sores: Canker sores, however, occur only *inside* the mouth--on the tongue and the inside linings of the cheeks, lips and throat. *Fever blisters, also called cold sores, usually occur outside the mouth--on the lips, chin, cheeks or in the nostrils.*
- Herpes Zoster: Is an intraepidermal vesicular eruption occurring in a dermatomal distribution. caused by re-activation of a latent varicella-zoster virus in persons that have had varicella
- Varicella: Results in a condition called Chicken Pox which is a highly contagious intraepidermal vesicular eruptive disease.
- Bullous Impetigo: Is an intraepidermal infection of bacterial origin.
- Bullous Pemphigus: Is a uncommon autoimmune subepidermal blistering disease which primarily affects elderly people
- Inflammatory Papules include: Scabies, Insect bite, Tick bite and Spider bite
- Scabies: Is an infection of the epidermis by the “itch mite”, *Sarcoptes scabiei*
- Insect bite: Insect bites and stings usually cause a local inflammatory response. The inflammatory response is due to injection of foreign chemicals and toxins into the skin
- Tick Bites: Are bites from ticks with subsequent infection that can have a local and a systemic end product. *Borrelia burgdorferi*: Causes Lyme disease. It’s carrier is a Deer Tick... *Rickettsia rickettsii* : causes Rocky Mountain Spotted fever
- These are bites from spiders: The ones we are particularly concerned about are Black Widow & Brown Recluse
- Black Widow: Causes systemic disease due to the envenomation of a neurotoxin. Only the female spider is capable of envenomation.
- Brown Recluse Spiders: The neurotoxin is Sphingomyelinase D. It is cytotoxic and hemolytic in nature. Death is rare and tissue necrosis is common.
- Pustules are a collection of neutrophils that are situated superficially, usually in a hair follicle (eg. Acne and folliculitis) or just below the stratum corneum (eg. impetigo and candidiasis).” Examples of conditions that can produce pustules include as noted in the last slide are: Acne, Rosacea, Folliculitis and Candidiasis
- Acne: Is a papular or pustular eruption that usually involves the face, chest or back
- Rosacea: Is a common facial eruption characterized by redness, telangiectasia (dilation of preexisting small blood vessels, creating focal red lesions), flushing, blushing and pustules (inflammatory).
- Folliculitis: Is an inflammatory reaction in the hair follicle caused typically by *Staph aureus*

- Candidiasis: A.K.A. Moniliasis and Thrush Is a condition where *Candida albicans* produces skin and mucous membrane infection
- White spots in the skin result from a decrease in melanin pigmentation
- Common conditions that have white spots include: Tinea Versicolor, Tinea Corpora & Vitiligo
- Tinea Versicolor is a superficial fungal infection of the stratum corneum that will result in altered pigment in the epidermis
- Tinea Corporis is a dermatophyte infection of the body, trunk and limbs
- Vitiligo: is a disfiguring depigmenting disease of unknown origin that causes destruction of melanocytes
- Generalized Erythema: is a redness of the skin produced by congestion of the capillaries
- Generalized Erythema has the following causation: Drug Induce Eruptions, Viral Exanthems, Toxic Erythema and SLE (Systemic Lupus Erythematosus)
- Drug Induced Eruptions are eruptions due to a reaction to drugs.
- Viral Exanthems are caused from a hematogenous dissemination of virus to the skin in which a vascular response is elicited
- Viruses most often involved in exanthems are: Measles (Rubeola), German Measles (Rubella), Herpes Virus type 6 (Roseola) and Coxsackie Virus (Hand, Foot and Mouth Disease)
- Measles (Rubeola) Koplik spots in the mouth will become visible Spots about 1-3mm that are bluish/white on top of a red base, bilaterally on the mucous membrane near the parotid duct. Development of the morbilliform rash will appear behind the ears and on the forehead and then will spread over the face, neck, trunk and the extremities.
- German Measles: The rash looks like measles however the redness is less intense and will usually disappear within 2-3 days. You develop cervical and postauricular lymphadenopathy. In distinguishing this from measles, there will be no Koplik spots and the fever as well as the rash are milder.
- Roseola: is a condition that is caused by Human Herpes Virus 6 and 7
- Coxsackie virus: Is also known as Hand, Foot and Mouth Disease.
- Toxic Erythema: Is a condition that causes a cutaneous response to a circulation toxin. Conditions that can cause this topic include: Scarlet Fever and Toxic Shock Syndrome
- Scarlet Fever: Erythrogenic toxin is made by *Strep. pyogenes*. Development of a “*Strawberry tongue*” may be seen at the height of skin eruption.
- Toxic Shock Syndrome: is an acute toxin mediated multisystem disease resulting in high fever, diffuse erythroderma, mucous membrane hyperemia and profound hypotension
- SLE (Systemic Lupus Erythematosus): Is a condition is one in which the body’s own defenses are turned against themselves. Cause is still unknown while some think there is a genetic factor and some say hormones as well as environment plays a role.
- Localized Erythema: Is a lesion that has discrete lesions that are localized to a small area on the body. Common types of localized erythema are: Cellulitis, Furuncle and Erythema nodosum

- Cellulitis: Is a deep infection in the skin. It is a condition that affects the dermis and subcutaneous tissue. Typically Group A Strep. pyogenes and or Staph. aureus are the cause.
- Furuncle: A.K.A. Boil is a walled off deep and painful mass enclosing pus. Can occur or evolve from a superficial folliculitis. Staph. aureus is the most common organism in this pathogenesis.
Can be used by E. coli, and or Pseudomonas
- Erythema nodosum: Is an inflammatory reaction in the subcutaneous fat that in most cases represents a hypersensitivity response to a remote focus of infection or inflammation.
- Purpura: The term purpura is derived from the Latin word for purple, a clinical characteristic that helps differentiate the lesion from erythema which is red
- Thrombocytopenic Purpura: Is a condition that results in a petechiae
- Vasculitis means any inflammation of blood vessels. The term generally means a necrotizing reaction in blood vessels
- Dermal Induration: The term induration represents dermal thickening resulting in skin that feels thicker or firmer than normal. Scleroderma represents this disorder the best
- Scleroderma has an increased number along with increased activity of the fibroblast. Localized scleroderma is called Morphea
- Sarcoidosis: Is a systemic granulomatous disease of unknown cause that affects the skin, lungs, lymph nodes, spleen, liver, parotid glands and the eyes. You can have involvement of the CNS, heart, bones and upper respiratory tract
- Polyarthritis/Rheumatoid Conditions. Examples are: Reiter's Syndrome, Ankylosing Spondylitis, Psoriatic Arthritis, Rheumatoid Arthritis, Lyme Disease and Rheumatic Fever
- Reiter's Syndrome: Is classified with other sero-negative spondyloarthropathies. While the cause is somewhat unknown, there appears to be a correlation with Chlamydia infection. Triad of symptoms: Urethritis develops within 7-14 days after contact. Conjunctivitis: develops after a few weeks post contact. (Typically mild in nature) Arthritis: develops after a few weeks post contact.
- Ankylosing Spondylitis: (A.S.) Is a systemic rheumatic disorder characterized by inflammation of the axial skeleton and large peripheral joints. Diagnosed with a lab test called HLA-B27
- Psoriatic Arthritis: Is an inflammatory arthritis associated with psoriasis of the skin or nails. It is a seronegative rheumatoid variant
- Rheumatoid Arthritis: Is a chronic syndrome characterized by non-specific symmetric inflammation of the peripheral joints resulting in progressive destruction of articular and periarticular structures.
- Lyme Disease: This is a disorder caused by a Deer Tick bite: (Borrelia burgdorferi)
- Rheumatic Fever: Is a condition that is a non-suppurative acute inflammatory complication of group A Strep infection. This condition is characterized by: Arthritis, Carditis, Subcutaneous skin nodules and Erythema marginatum
- Hair disorders:
- Alopecia: (Lack or loss of hair from the skin where it should be normally present

- Telogen Effluvium: (Stress induced alopecia) causes include: High fever, Childbirth, Major surgery, Emotional disorders, Crash diets, Hypothyroidism as well as Rx... Oral contraceptives, Coumadin and beta blockers
- Androgenic Alopecia: (Common baldness). This is a condition that has a replacement of terminal hairs by miniaturized hairs with eventually resulting in complete atrophic follicles.”
- Trichotillomania: Is a self induced alopecia. Result from a compulsive plucking, twisting and rubbing that causes broken hair shafts.
- Alopecia Areata: Is an idiopathic disorder that has well circumscribed round or oval patches of non scarring hair loss
- Dermatophytes: (Tinea). Any group of imperfect fungi parasitic on keratinized tissue, (skin, nails or hair) of humans.
- Paronychia: is an inflammatory process of the nail fold itself. Most commonly caused by Staph aureus. Chronic paronychia is commonly caused by Candida albicans.
- Felon: Is an infection of the pulp space of a phalanx” The most common site is the distal pulp which can have involvement centrally, laterally and apically.
- Onychomycosis: Is a fungal infection of the nail” Onychomycosis is the most common nail disorder and accounts for up to half of all nail problems encountered in a dermatologic practice.
- Digital Clubbing: Is enlargement of the terminal digital phalanges with loss of the nail bed angle.
- This condition is seen in the following conditions: Cyanotic congenital heart disease, Lung tumors, Bronchiectasis as well as Lung abscess
- Longitudinal ridging: Is a common aging change that is occasionally seen in young people as well
- Beau’s Lines: Are lines that are transverse in nature and can be depressions or ridges. This condition develops in response to high fever, scarlet fever, Hand, foot and mouth disease. Can be seen in patient’s taking chemotherapeutic agents as well”
- Terry’s nails: Is a physical finding in which fingernails and/or toenails appear white with a characteristic "ground glass" appearance, with no lunula. The condition is thought to be due to a decrease in vascularity and an increase in connective tissue within the nail bed. It frequently occurs in the setting of hepatic failure, cirrhosis, diabetes mellitus, congestive heart failure, hyperthyroidism, and/or malnutrition. Eighty percent of patients with severe liver disease have Terry's nails.
- Lindsay’s Nails (sometimes known as 'half-and-half' nails), nails in which half of the top of the nail is white and the other half is pink, may be a sign of chronic kidney disease.”
- Koilonychia: A characteristic concave *koilonychia* (spoon nail) may be inherited or acquired. Iron deficiency anemia and other hematologic conditions, syphilis, and thyroid disease are acquired disease states producing koilonychia

Please note: If you need more in depth information regarding the above items... please refer to the class manual for Dermatology.