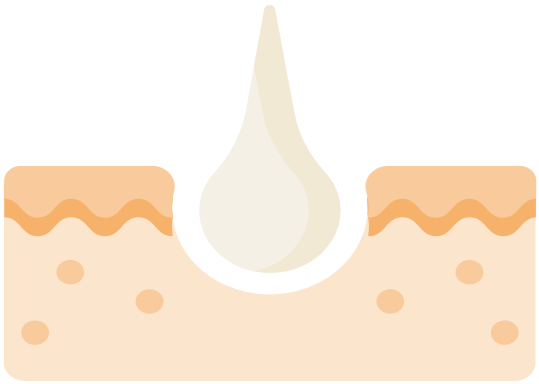

INTRODUCTION TO DERMATOLOGY

(Structures And Functions Of The Skin & The Language Of Dermatology)

Objectives:

1. To learn and understand the normal structure of the skin.
2. To be able to take proper history from a dermatology patient.
3. To be able to describe lesions by using proper dermatological terminology.
4. To be able to formulate a list of differential diagnosis.
5. To be able to diagnose and treat common skin disorders.
6. To be familiar with dermatologic emergencies.

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Color index:

- Important
- Doctors Notes
- Extra

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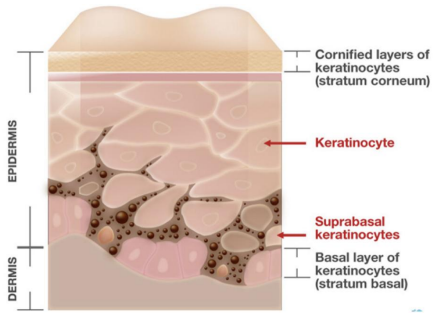
Function & Structure of the skin

The Skin:



- The skin is the largest and heaviest organ in human body
- Body surface area of 1.5- 2 m^2
- Contributes to 1/6- 1/7 of body weight
- It consists of many cell types called "Keratinocytes"
- Specialized structures like the Basement Membrane
- It serves multiple functions that are crucial to health and survival
- Skin diseases are common
- Skin lesions maybe the presenting feature of an underlying systemic diseases
- Skin disease can have serious psychosocial effects
- The skin is associated with RA, SLE, Dermatomyositis, Ankylosing spondylitis, Scleroderma.

Video From Group B

Skin function:

Immune

- Barrier to harmful exogenous substance & pathogens, Langerhans cells in the skin are part of the adaptive immune system.

Metabolic & Endocrine

- Prevents loss of water and proteins, vitamin D production after UVB exposure.

Sensory organ

- Contains a variety of nerve endings that respond to heat, cold, touch, pressure, vibration and pain. Hence, protects against physical injury.

Thermoregulation

- Regulates body temperature through eccrine glands "sweat glands" and dermal blood vessels. Important component of immune system.

Other functions

- **Psychological & Cosmetic Importance**
- **Protection:** acts as a barrier from chemical, antimicrobial, heat and radiation damage.
- **Sensation:** it has nerve endings which respond to temperature, pressure, pain, touch and vibration.
- **Storage:** of fat in the hypodermis Contains 50% of fat (subcutaneous tissue).
- **Synthesis:** of vitamin D.

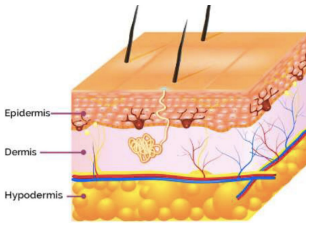
Colour/ skin's response to UV light

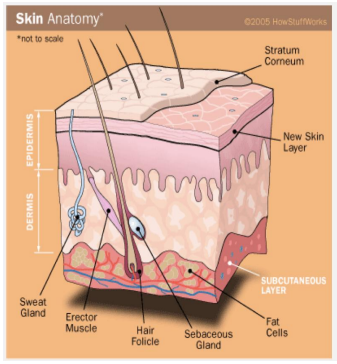
- **The number of melanocytes are equal in white and dark skin.**

Function & Structure of the skin

Skin structure:

- The skin consists of:
  1) Epidermis
  2) Basement membrane
  3) Dermis
  4) Subcutaneous tissue
  5) Skin appendages (hair, nail, sweat & sebaceous glands)





Skin Structure composed of three layers:

- Epidermis
- Dermis
- Hypodermis (Subcutaneous tissue)

Video From The Doctor

Epidermis: ("Epi" coming from the Greek meaning "over" or "upon")

- It is the **outermost** layer of the skin.
- It is stratified squamous epithelium.
- There are **No blood vessels** (cells receive nutrients via diffusion from capillaries in **dermis**).
- The thickness is **site-specific** (from 0.03 mm on the eyelids to 1.5 mm on the soles of the feet).
- **The main cell types which make up the epidermis are:**

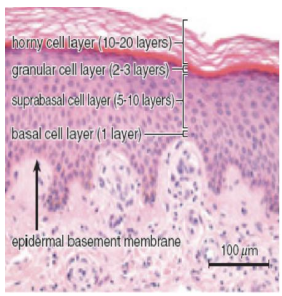
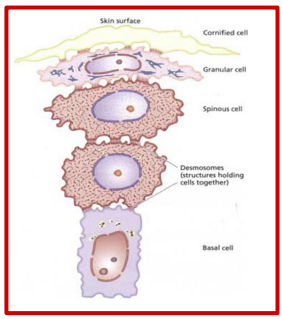


Fig. 1.4 The four layers of the epidermis



1-Keratinocytes

- **Major cell type of epidermis 90%.**
- They found in the stratum basale and move up to stratum corneum.
- The average time for a cell to travel is about 40 days. (In psoriasis the period is shorter about 3-4 days).

2-Melanocytes

- They produce melanin.
- There are 2 types of melanin: the brownish black **(eumelanin)** and the reddish yellow **(pheomelanin)**.
- Melanin packed into melanosomes and transported to basal keratinocytes.
- Skin colour is determined by the number and size of the melanosomes (not the number of melanocytes).

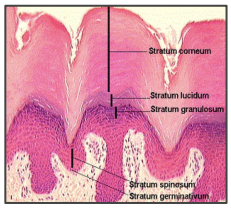
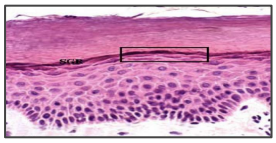
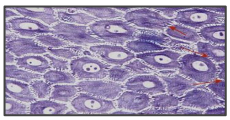
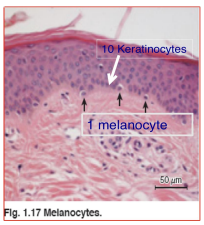
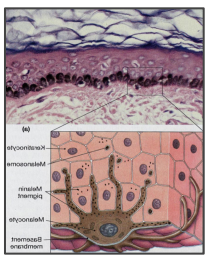
3- Langerhans cells

- They are antigen-presenting immune cells.
- They have a role in the skin immunity.
- They can be found in the mid-epidermis.

4-Merkel cells

- They are small round/oval cells.
- They act as touch receptors.
- They transmit sensory information in the skin to the sensory nerves.

Function & Structure of the skin

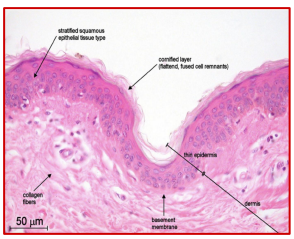
The epidermis consist of several zones:	
Stratum Corneum	- The outermost layer (cornified layer horny cell layer), composed of elongated and flattened dead cells **without nuclei** or organelles (for protection) called "corneocytes". - Its 25-cell layer. - The cells have a thick envelope that helps it resist external chemicals. - In psoriasis the cells are dividing rapidly and you see a nuclei in the stratum corneum. **Nuclei in the stratum corneum: parakeratosis** 
Stratum lucidum	- It is **only** found on thick skin of the palms and soles below the Stratum Corneum.
Stratum granulosum (Granular layer)	- Formed of flat cells containing keratohyalin granules which is responsible for the colour of the cells, making it the **darkest** layer. - Diamond shaped granular cell layer. - Cytoplasm is filled with Keratohyalin granules. - The thickness of this layer is proportional to that of the stratum corneum layer. - In thin skin such as the eyelid it is 1 -3 cell layers and 10 cell layers in thick skin like palms and soles (the stratum corneum is thicker there). - Has a waterproof properties 
Stratum spinosum (Spinous layer)	- Polyhedral cells with larger nucleus attached by desmosomes. - So called because of desmosomes and keratin filaments that gives the cells a spiny appearance. - **Keratinocytes** adhere **to each other** by **Desmosomes** (complex modification of the cell membrane). On the other hand, hemidesmosomes holds the basal layer to the underlying basement membrane. When desmosomes & hemidesmosomes get attacked in autoimmune diseases, it results in loss of attachment → cells become floaty - When there is a problem with desmosomes, the patient develops "blistering diseases" → the connection between keratinocytes is no longer there due to autoimmune antibodies or other causes) - Spinous cell layer as they are connected to each other by desmosomes and gap junctions which appear as spines. - Langerhan cells are antigen presenting cell present in abundance in this layer. 
Stratum Basale (Basal layer)	- Columnar or cuboidal rapidly dividing cells that are in contact with the basement membrane (the forcing cells for regeneration of keratinocytes; a superficial skin erosion heals without scarring thanks to these cells) - Basal cell layer which rests on the basement membrane. - Divides continuously and moves upwards. - Melanocytes are dendritic cells lying between basal cells in a ratio of 1:10 (melanocyte:keratinocytes). They synthesize melanin (which is responsible for skin color and protection against UV light) stored in melanosomes "pigment granules". - Melanosomes: Transferred to adjacent keratinocytes by means of dendrites thus forming the "**Epidermal Melanin unit**" includes melanosomes, melanocytes and keratinocytes. - The size of melanosomes and packaging of melanin pigment is different in white from dark skin, but the number of melanocytes are equal in white and dark skin.  Fig. 1.17 Melanocytes. 

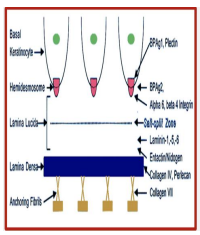
Function & Structure of the skin

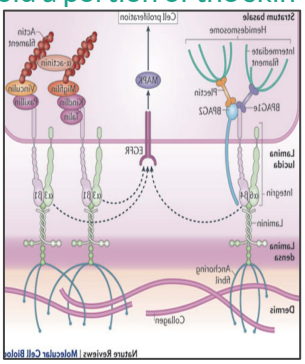
Dermoepidermal junction (BMZ)

Basement membrane

- It is a pink homogenous area (meeting point) **between the epidermis and dermis**
- It consists of a number of proteins, provides adhesion and transport of cells and molecules between them.
- It can be a target for some autoimmune diseases like CT diseases such as dermatomyositis or lupus, leading to skin thickening.
- It is the site of attack injury in blistering diseases (Other autoimmune diseases can target attachment structures in the BM or in the epidermis → loss of attachment → blistering)
- **Formed by:**
  1. Plasma membrane of basal cells and hemidesmosomes (proteins that anchor the **basal cells to basement membrane**).
  2. Thin clear amorphous space (lamina lucida) a6 and b4 integrins are a site of injury in certain autoimmune diseases or in genodermatoses (ex: dermatitis bullosa is a genetic disorder in which babies are born without these integrins that hold a portion of the skin together → they blister easily & there's no treatment for it.
  3. An electron dense area (lamina densa).
  4. **Anchoring fibrils** that anchors the **epidermis to dermis**.



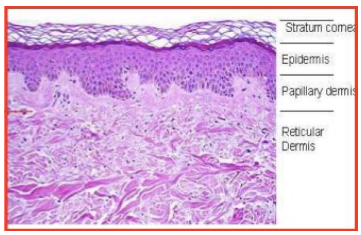


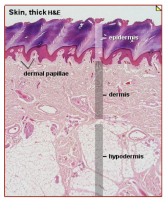


Dermis

Dermis

- Provides nourishment and support to the epidermis and interacts with it during wound repair.
- Gives the skin its strength, elasticity, and softness.
- It contains nerve endings so if you feel pain after stepping on a pin it means that the pin reached the dermis.
- The range is between 1 and 4 mm in thickness (depending on age and body site).
- **It is divided into two layers:**
  - Papillary dermis (Upper layer).
  - Reticular dermis (Lower layer).
- **Consists of:** (no keratinocytes)
  1. Collagen fibers:
     - 70-80%
     - Provides **strength** to the skin.
     - Thin fibers in papillary dermis.
     - Thick fibers in the reticular dermis.
  2. Elastic fibers:
     - 1-3%
     - Provides elasticity.
     - Protects against trauma and shearing forces.
  3. Ground substance:
     - E.g. proteoglycans and glycoproteins.
     - Binds water and maintains skin turgor.
  4. Blood vessels (to nourish the overlying epidermis), sweat glands and hair follicles.
  5. Cellular component:
     - e.g. fibroblasts (produce the above elements "collagen"), mast cells, plasma cells and histiocytes.



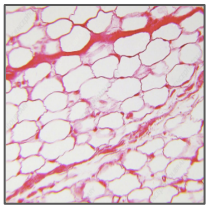


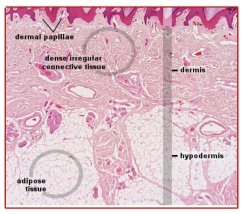
Function & Structure of the skin

Hypodermis (Subcutaneous fat)

Hypodermis

- It lies below the dermis.
- It binds the skin to underlying bone and muscle.
- It supply the dermis with blood vessels and nerves.
- Composed of lipocytes.
- The main cell type is adipocytes (fat cells), used mainly for fat storage.



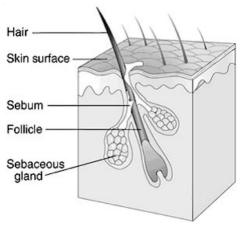


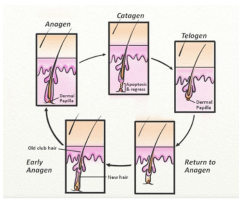
Skin appendages

(Skin-associated structures that serve a particular function)

Hair follicle

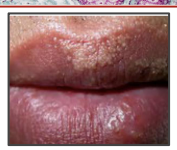
- We have up to 5 million hairs over the surface of the skin.
- Most of this is vellus hair (fine short hair).
- Terminal hair (longer and thicker hair) typically found on the scalp, axillae and the pubic area.
- **Pilosebaceous unit**: formed by the hair follicles with it's attached sebaceous gland.
- Hair growth is dynamic process within **three phases**:
  1. anagen (active growing hair).
  2. Catagen (rest phase of the hair).
  3. Telogen (shedding of the hair).
- Hair follicle has the hair shaft, hair bulb and the bulge.





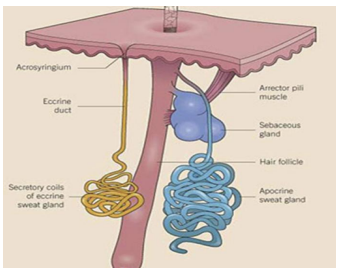
Sebaceous glands

- They secrete sebum (oil) to lubricate the hair and skin.
- They present in the scalp, forehead, face, upper chest but **NOT** in the palms and soles. (hands can be sweaty but never oily)
- Attached to hair follicles or open freely, under adrenergic stimuli.
- Sebaceous glands in the areola are called "**Montgomery tubercles**", and in the eyelid they are called "**Meibomian glands**".
- Ectopic sebaceous glands in the mucous membrane are called "**Fordyce Spots**" - sometimes we see them after fillers if they get pushed



Eccrine sweat glands

- Tubular structures open freely on the skin not attached to hair follicles.
- They regulate body temperature.
- Abundant in palms and soles.
- They present everywhere except:
  - Vermilion (lip) border.
  - Nail beds.
  - Labia minora & glans.
- Under parasympathetic cholinergic stimuli.

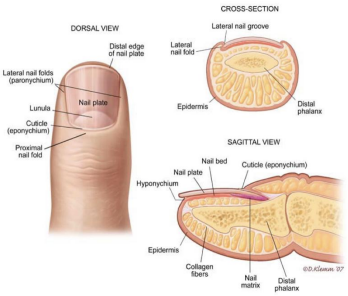


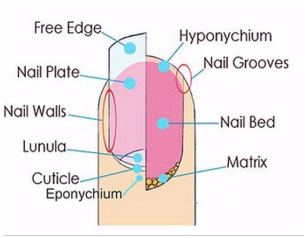
Apocrine sweat glands

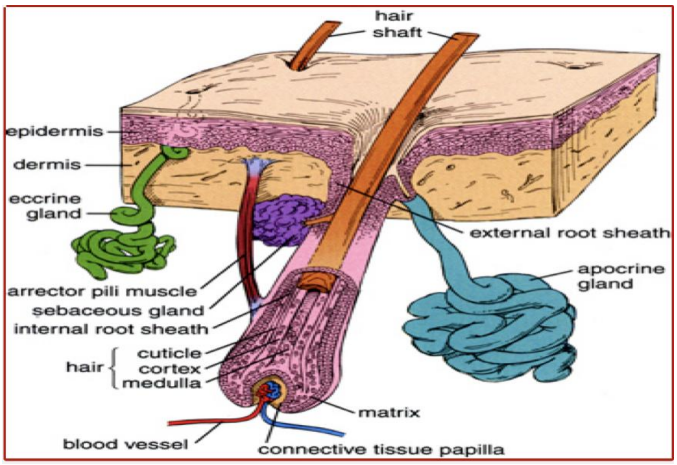
- They are larger than eccrine glands, they open to the hair follicle
- They release region-specific secretions that bacteria act on.
- They are mainly found in the axilla and genital skin.
- Modified sweat glands that present in the axillae, anogenital, external ear canal, the eye lids (moll's glands) and the areolae.
- Under adrenergic stimuli.

Function & Structure of the skin

Skin appendages cont’	
Nails	- Consist of: nail plate (formed of hard keratin), nail bed (under the plate), matrix (the lunula is the visible part of the matrix), proximal and lateral nail folds (proximal nail fold morphology can be altered in connective tissue disease) and hyponychium. - The matrix is like the factory from which the nail regenerates. Biopsies should be taken from the matrix. There is always a risk for possible nail disfiguration (permanent) during biopsies - Contributes to tactile sensation and acts protection for the nail tip. - Fingernails grow 3mm/month. - Toenails grow 1mm/month. - Can be affected in systemic and skin diseases. (e.g: Lichen planus).







The language of dermatology (Descriptive and Morphology skills):

- Why do dermatologist use words that are rarely used by medical Specialties?
  - The language of dermatology is different, and the use of correct dermatologic terms is important to accurately describe skin lesions.
  - A good description of a skin lesion enables the listener to formulate a series of differential diagnosis

How do you approach a patient with skin lesions?

History → Examination → Investigations

Approach to dermatology patient

History:

- Introduce yourself, Confirm identity of the patient, Take permission
- **Step 1: Start with basics:** Personal data (name, age, gender ..etc).
- **Step 2 : History of skin lesion:** Chief Complaint(When? (Onset), Duration, Where? (site of onset), Progression, Extension of lesions, Evolution, Associated symptoms (itching, pain), Triggering and relieving factor (sun,heat, ..Etc), Aggravating factors, Treatment.
- **Past medical history:**
  - many common systemic diseases display skin manifestations.
- **Family history:**
  - Does anyone in the family have a similar problem?,
  - Does anyone in the family have a disorder of the skin?
  - N.B. Some skin conditions: e.g. (neurofibromatosis, have a strong genetic basis).
- **Drug & allergy history:**
  - Over-the-counter, new, old, Herbal medications.
  - any known drug allergies.

Condition	Skin manifestations
Cushing's syndrome	Bruising, striae, acne, hirsutism
Addison's disease	Hyperpigmentation of skin and mucous membranes, hirsutism
Internal malignancy	Dermatomyositis , pemphigus, vasculitis, annular erythemas, Sweet's syndrome, pruritus
Diabetes mellitus	Necrobiosis lipoidica, neuropathic leg ulceration, skin infections
HIV	Maculopapular rash at seroconversion, Kaposi's sarcoma, multiple head-and-neck molluscum contagiosum
Sarcoidosis	Lupus pernio, erythema nodosum
Lupus	Malar rash, photosensitivity, vasculitis
Coeliac disease	Dermatitis herpetiformis

- **Psychological history:**
  - People with severe, chronic skin disease may suffer from anxiety, depression and social isolation (e.g: patients with psoriasis).
  - The psychological problem may be the cause of the skin disease, **e.g** dermatitis artefacta**.**
- **Social history:**
  - Occupation (e.g. occupational dermatitis) and hobbies.
  - History of contact with other affected individuals.
  - Recent travel (abroad): it is important to be aware of endemic diseases in other parts of the world.
  - **Sun exposure:** tanning.. etc.
  - **Smoking habits:** some conditions are related directly to smoking such as psoriasis, hidradenitis suppurativa and palmoplantar pustulosis.
- **Systemic review**

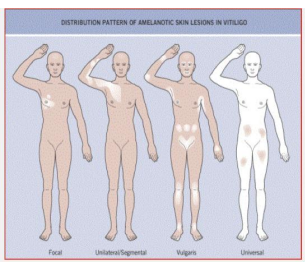
Examination:

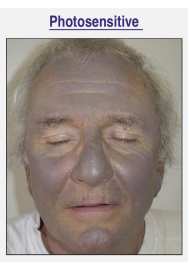
- Wash your hands, Introduce yourself, Confirm identity of the patient, Take permission (consent and explain examination), Privacy, Exposure.
- Use good light, Don't forget to examine: **Hair, Nails and Mucous membrane.**
- General appearance of patient: is he/she well? scratching or displaying other signs of distress.
- **Inspection:**
  - Is it symmetrical or asymmetrical?, Does it involve particular sites? (e.g. extensor or flexor, sun-exposed or covered), Do lesions adopt any particular pattern? (e.g. diffuse, linear, grouped or scattered).
- **Describe skin lesion as follow:**
  - Distribution, Configuration, Size, Border and shape, Color, Morphology (Primary lesion and Secondary changes).
- **Distribution:** refers to how the skin lesions are scattered or spread out.
  - Skin lesions may be isolated (solitary/ single) or multiple.
  - The localization of multiple lesions in certain regions aids in making a diagnosis, as skin diseases tend to have characteristic distribution.
  - Aids in understanding the extent of the eruption and its pattern.

Approach to dermatology patient

Examination (cont'):

Distribution Types			
Acral	Affecting the distal extremities (hand, foot) and head (ears, fingers, toes, nose) e.g. acral vitiligo.	Koebnerised	Arising in a wound or scar. The Koebner phenomenon refers to the tendency of several skin conditions to affect areas subjected to injury.
Dermatomal	Corresponding with nerve root distribution. Ex: Herpes zoster	Photosensitive	Favoring sun exposed areas such as face, neck and back of hands. Ex: subacute lupus, nonmelanoma skin cancer
Extensor	Involving extensor surfaces of limbs such as knees, elbows, shins. Contrast with flexor surfaces. (Vasculitic lesions on the limbs ddx: henoch-schonlein purpura)	Seborrhoeic	The areas generally affected by seborrheic dermatitis, with a tendency to oily skin (seborrhoea). Scalp, behind ears, eyebrows, nasolabial folds, sternum and interscapular.
Flexural	Involving skin flexures (body folds); also known as intertriginous (e.g. groin, neck, behind ears, popliteal and antecubital fossa).	Symmetrical	In the same regions, the left side is affected in a similar way to the right side.
Generalized	Universal distribution (all over the body); may be scattered or diffuse.	Unilateral	Wholly or predominantly on one side of the affected region.
Localized	Restricted to one area of skin only.		





➔ **Koebnerised**
E.g: Psoriasis, Lichen planus, Vitiligo, Lichen nitidus

- **Configuration:** refers to the shape or outline of the skin lesions.
  - Skin lesions are often grouped together.

Nummular lesion
Round (coin-shaped) lesion, also known as "**Discoid**". Ex discoid lupus

Linear lesion
A linear shape to a lesion often occurs for some external reason such as scratching. Scratching may be due to high creatinine or uremia

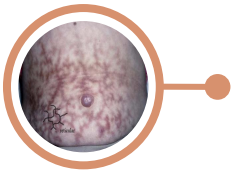
Target lesion
Concentric rings also known as "iris lesion". Typically occur in erythema multiforme

Annular lesion
Lesions grouped in a ring like pattern.

Approach to dermatology patient

Examination (cont'):

Grouped lesion
As in **herpes simplex** lesion.



Reticular
Net like pattern.

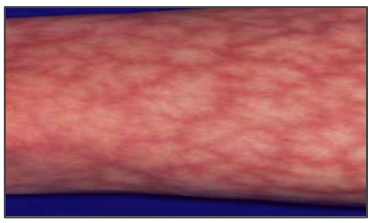
- **Colour:** What colour is the affected skin?
- **Shape, Size.**
- **Border:** Is the border well-demarcated or not?
- **Palpation:**
  Tenderness,temperature,
  consistency, mobility and depth.

Colour	Examples
Black	Melanin, e.g. some naevi, melanoma
	Exogenous pigments, e.g. tattoos, pencil/ink
	Exogenous chemicals, e.g. silver nitrate, gold salts
	Deeply situated blood or melanin, e.g. angiomas, blue naevus
Blue–grey	Inflammatory diseases, e.g. orf
	Drug-induced pigmentation, e.g. phenothiazines, minocycline
Dark brown	Melanin nearest the skin surface, mostly melanocytic naevi
	Exogenous pigments, e.g. dithranol (anthralin) staining
Pale brown	Melanin near the skin surface, e.g. lentigo, freckles
Muddy brown	Melanin in the superficial surface, e.g. post-inflammatory pigmentation
Purple	Vascular lesions, e.g. angiomas
Dusky blue	Reduced amounts of oxygenated haemoglobin, e.g. poor arterial supply, central causes of cyanosis, methaemoglobinaemia
Violaceous and lilac	Lichen planus, edge of plaques of morphoea, connective tissue disorders, e.g. dermatomyositis
Pink–red	Many exanthemas and common disorders, e.g. psoriasis
Red–brown	Inflammatory dermatoses, e.g. seborrhoeic eczema, secondary syphilis
	Haemosiderosis, e.g. pigmented purpuric dermatoses

Descriptive terms

Descriptive Terms:	Description
Photodistribution	- Lesions occurring over sun exposed skin. - Protected areas remain free of lesions. 
Linear	- Forms a line. 
Dermatomal	- Occurring within the distribution of nerve. 
Annular	- Ring like. 
Herpetiform	- Lesions grouped in a manner similar to herpes simplex lesions. 

Descriptive Terms and morphology of Skin lesions

Descriptive Terms:	Description
Reticular	- Net like. 
Discoid:	- coin like lesions e.g. discoid lupus. 
Guttate	- Drop Like ''en gouttes'' مثل المطر 
Targetoid	- Round lesions with concentric border and a dark center. - Iris like. Seen in erythema multiforme. 
Umbilication	- Round depression in the center E.g: **Molluscum contagiosum.** 

Morphology

- **Skin lesions:** are divided into:

Primary skin lesions

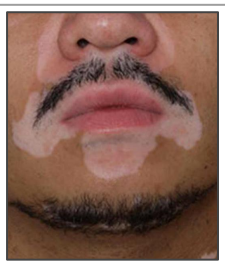
➔ Basic lesion.
➔ Examples:
- Macule/patch
- Papule/plaque
- Nodule
- Cyst
- Wheal
- Vesicle/ bulla
- Pustule
- Burrow

VS

Secondary skin lesions

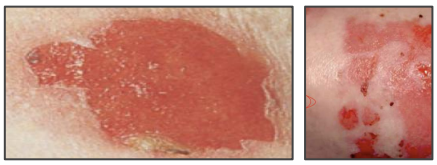
➔ Develop during evolution of skin disease or created by scratching or infection or crusting
➔ Examples:
- Excoriation
- Erosion
- Scale
- Fissure
- Ulcer
- Scar
- **Lichenification**

Descriptive Terms and morphology of Skin lesions

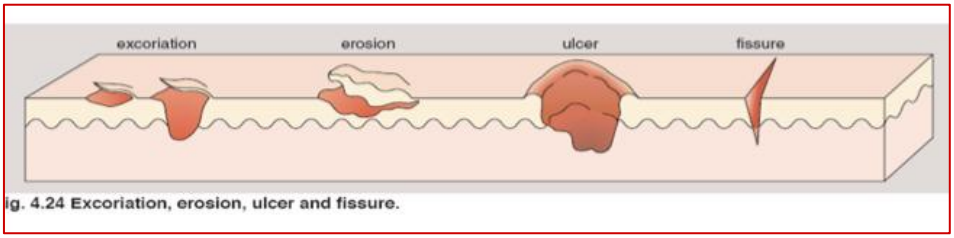
Primary skin lesion	Description
Macula	- Flat circumscribed discoloration. **Just a change in color** - Lacks surface elevation or depression (no epidermal change) (not palpable) e.g. freckle. - less than 1 cm (< 0.5 cm) in diameter. 
Patch	- Flat circumscribed skin discoloration. **Just a change in color** - Lacks surface elevation or depression. e.g Vitiligo, melasma. - More than 1 cm (>0.5 cm) in diameter " a large macule". 
Papule	- Elevated, solid lesion. - < 0.5 cm in diameter. - Examine for color and surface changes eg. Umbilicated (mulloscum contagiosum), Keratotic (like warts), Papillomatous, Flat topped (lichen planus) 
Plaque	- Elevated, solid confluence or expansion of papules (can arise from papules coalescing together or just a directly) - > 0.5 cm in diameter. Lacks a deep component. - Confluence (group) of papules leads to the development of larger, usually flat-topped, circumscribed, plateau-like elevations known as Plaques e.g. Plaque psoriasis.  
Nodule	- Elevated, solid lesion. - > 0.5 cm in diameter. - With deep component - e.g. hidradenitis.  
Cyst	- Nodule that contains fluid or semisolid material. 
Vesicle	- Elevation that contains clear fluid. - Less than <0.5 cm in diameter. - Vesicle is a smaller bulla. - e.g. Dermatitis Herpetiformis. 

Descriptive Terms and morphology of Skin lesions

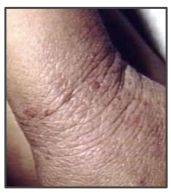
Primary skin lesion	Description
Bulla	- Raised lesion. - Localized clear fluid collection. - > 0.5 cm in diameter " a large vesicle" - Can be tense of flaccid (within the epidermis (lack of attachment of the desmosomes) will give flaccid bullae,but if it happened under the epidermis it will be tense). Picture: tense bullae - e.g. Bullous Pemphigoid. 
Burrow	- Linear tunnel in the epidermis induced by **scabies** mite. 
Pustule	- Elevation that contains purulent material (pus). - Less than <0.5 cm in diameter. - A pustule is a purulent vesicle. - It is filled with neutrophils, and may be white, or yellow. - Not all pustules are infected. 
Wheal (Hive)	- Raised lesion (swelling). - Firm, edematous plaque that is evanescent (transient/short lived) and pruritic. - Pale center and a pink margin (flare of border). - Happens in diseases such as urticaria or atopic dermatitis (in atopic dermatitis they can be white not pink). Can also be with dermatographism 

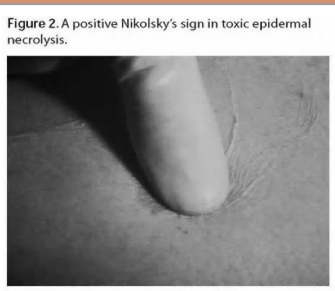
Secondary skin lesion	Description
Excoriation	- **Linear** erosion induced by **scratching**. - Heals without scarring 
Erosion	- A partial and superficial focal loss of epidermis. - Heals without scarring. - Like excoriations but they're not linear 
Ulcer	- A full thickness focal loss of epidermis and dermis. - Heals with scarring. 
Fissure	- Vertical loss of epidermis and dermis with sharply defined walls; "cracks in skin". 

Descriptive Terms and morphology of Skin lesions



ig. 4.24 Excoriation, erosion, ulcer and fissure.

Secondary skin lesion	Description
Crust	- A collection of cellular debris, dried serum and blood. - Antecedent primary lesion usually a vesicle, bulla, or a pustule (when a vesicle or bullae dries, it forms crusting. Crusting always has an antecedent lesion) - e.g. Impetigo.  
Scale	- Thickened stratum cornium. (there should always be a plaque under the scale, they don't appear suddenly) - e.g. Psoriasis  
Scar	- A collection of new connective tissue. - May be hypertrophic (raised) or atrophic (depressed) - Implies dermoepidermal damage. 
Lichenification	- Increased skin markings secondary to chronic scratching (ex: atopic dermatitis.. Anyone that scratches chronically will have more melanin deposition in the skin. If they stop scratching, the darkening of the skin will get better) 
Atrophy	- Thinning of the skin - It might be due to the long-standing use of Topical corticosteroids. 

Important Signs In Dermatology	Description
Nikolsky sign	- Rubbing of apparently normal skin induces blistering of the skin. - Seen in pemphigus vulgaris and toxic epidermal necrolysis (TEN). In diseases that are associated with separation of the skin such as autoimmune blistering disorders (ex: pemphigus vulgaris) or Steven Johnson syndrome or TEN  Figure 2. A positive Nikolsky's sign in toxic epidermal necrolysis. Reproduced with permission from: Habif T, ed. *Clinical Dermatology: A Color Guide to Diagnosis and Therapy.* 3rd ed. St. Louis: Mosby; 1996.

Important signs & investigations

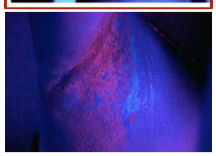
Important Signs In Dermatology	Description
Auspitz sign	- Removal of scale on top of a red papule produces bleeding points (pinpoint bleeding) - Seen in **psoriasis** (in psoriasis the blood vessels are closer to the surface) 
Koebner's phenomenon	- The tendency for certain skin diseases (psoriasis, vitiligo, lichen planus, warts) to **develop** at sites of trauma. 
Dermographism	- Firm stroking of the skin produce erythema and wheal. - Seen in physical urticaria. - In patients with atopy, stroking produces **white** dermatographism rather than red.  

Investigations in Dermatology

Wood's lamp

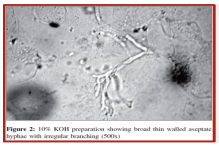
- Produces long wave UVL (360nm).
- Useful in :
  - Tinea Versicolor - yellowish green (orange) fluorescence
  - Tinea Capitis - (yellow green) fluorescence in M.canis, M. audouini
  - Pseudomonas (green)
  - Vitiligo - (milky white)
  - Erythrasma - (coral red) fluorescence





KOH preparation for fungus

- For diagnosing fungal infections.
- Method:
  1. Cleanse skin with alcohol Swab.
  2. Scrape skin with edge of microscope slide onto a second microscope slide.
  3. Put on a drop of 10% KOH
  4. Apply a cover slip and warm gently.
  5. Examine with microscope objective lens.

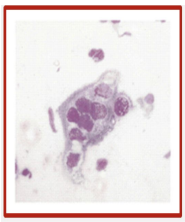
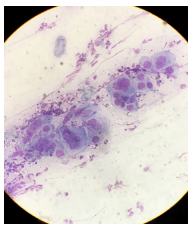
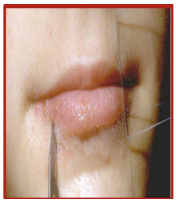



Direct immunofluorescence (DIF)

- Autoimmune diseases e.g. Bullous pemphigoid.

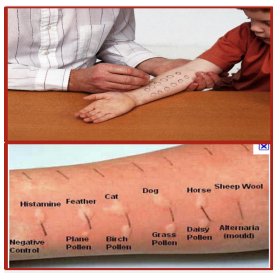
Investigations

Tzank smear

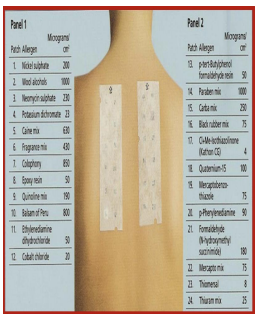
- Important in diagnosing:
  - Herpes simplex or VZV (multinucleated giant cells).
  - Pemphigus Vulgaris (acantholytic cells; which are floating cells in blistering disorders due to antibodies against desmosomes)
- Method:
  1. Select a fresh vesicle.
  2. De-roof and scrape base of the vesicle.
  3. Smear onto a slide.
  4. Fix with 95% alcohol.
  5. Stain with Giemsa stain.
  6. Examine under microscope.

Prick test



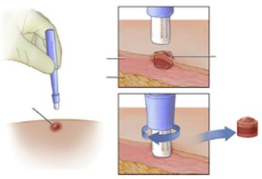
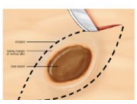
- Food allergy, drug allergy.
- Method:
  1. Put a drop of allergen containing solution.
  2. A nonbleeding prick is made through the drop.
  3. After 15-20 minutes the antigen is washed, and the reaction is recorded.
- A positive test shows urticarial reaction, erythema, wheels at site of prick.
- Detects immediate-type IgE mediated reaction (type 1 hypersensitivity)
- Emergency therapeutic measures should be available in case of anaphylaxis.

Patch Skin Test



- Important in contact dermatitis.
- Method:
  1. Select the most probable substances causing dermatitis.
  2. Apply the test material over the back.
  3. Read after 48 & 72 hr (type 4 hypersensitivity) and look for (erythema, edema, vesiculation).
- Positive patch test showing erythema and edema.
- In severe positive reaction vesicles may be seen.

Skin Biopsy

- To diagnose or R\O some skin diseases.
- **Shave biopsy:** we shave a thin layer from the lesion.
- **Excisional biopsy:** we use a scalpel to take off the entire lesion.
- **Punch biopsy:** we use an instrument called "punch" to remove a circular section through **all layers** of the lesion. Method:
  1. Clean skin with alcohol.
  2. Infiltrate with 1-2 % xylocaine with adrenaline.
  3. Rotate 2-6 mm diameter punch into the lesions.
  4. Lift specimen and cut at base of lesion.
  5. Fix in 10% formalin
  6. For Immunofluorescence put in normal saline.
  7. Suture if 5 mm punch is used.

Topical therapy

Topical therapy:

- Applied directly to the skin
- **Advantage:** less side effects and toxicity.
- **Disadvantage:** can be time-consuming to apply, messy or uncomfortable!
- **Common types of topical formulations:**
  - **Solution:** Water or alcoholic lotion containing a dissolved powder.
  - **Lotion:** thicker than a solution and more likely to contain oil as well as water or alcohol.
  - **Cream:** thicker than a lotion, a 50/50 emulsion of oil and water.
  - **Ointment:** nearly water-free (80% oil), Greasy, sticky, emollient,protective and occlusive.

- **Tropical steroids:**
  - They act as anti-inflammatory, anti-mitotic, and immunosuppressive agent.
  - Many topical steroids available, from mild (Hydrocortisone) to very potent (Clobetasol).
  - Successful treatment depends on an accurate diagnosis and consideration of the steroid's delivery vehicle, potency, frequency of application, duration of treatment and side effects.
- **Common types of topical steroids:** (depending on; diagnosis, location, age)
  - **Ointments:** the most potent/most occlusive (ex: for dry/ thick hyperkeratotic lesions).
  - **Creams:** less potent than ointment but cosmetically more appealing, non-occlusive.
  - **Lotions:** less occlusive (ex: work well in hairy regions).
  - **Gels:** like lotions, less occlusive and greasy; (ex: work well in hairy regions; more beneficial for the scalp.
- **Side effects:**
  - Atrophy and striae.
  - Telangiectasia and purpura.
  - Masking the initial lesion.
  - Perioral dermatitis and rosacea or acne.
  - Systemic absorption.
  - Tachyphylaxis (sudden loss of response).

Questions

1- What is a patch?

A) Solid elevated less than 1 cm
B) Solid elevated less more than
C) Flat circumscribed less than 1 cm
D) Flat circumscribed more than 1 cm

2- A reticular lesion is similar to which of the following?

A) coin like lesion
B) drop like lesion
C) line like lesion
D) Net like lesion

3- Which one of following is a secondary lesion?

A) Plaque
B) Papule
C) Wheal
D) Ulcer

4- What makes the difference between whites and dark skin?

A) Number if melanocytes.
B) Sizes of melanocytes.
C) Sizes of melanosomes.
D) Number of melanosomes.

5- Which layer of the following composed of cells with no Nucleus?

A) Granular layer.
B) Basal layer.
C) Spinous layer.
D) Cornified layer.

6- Woods lamp is helpful in diagnosing which one of the following?

A) Lichen planus.
B) Tinea capitis
C) Vitiligo.
D) Psoriasis.

7- Flat discoloration of the skin more than 0.5 cm:

A) Patch
B) Plaque
C) Papule
D) Macule

Answers:
1:D, 2:D, 3:D, 4:C, 5:D, 6:C, 7:A