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SKIN CANCER PRESENTATION

Objectives

- Define risk factors for development of skin cancer
- Identify clinical characteristics of
  - Precancerous lesions
  - Common skin cancers
- Choose appropriate methods for diagnosis and treatment

SKIN Cancer

- Skin cancers are named for the type of cells that they arise from.
- Skin cancers are the most common type of cancer in the US
- **Each year there are more new cases of skin cancer than the combined incidence of cancers of the breast, prostate, lung and colon.**
- Skin cancers are also the fastest increasing type of cancer in the US

Skin Cancer

- Over the past three decades, more people have had skin cancer than all other cancers combined.
- One in five Americans will develop skin cancer in the course of a lifetime.

Skin

- Each year in the U.S. over 5.4 million cases of nonmelanoma skin cancer are treated in more than 3.3 million people.

- Basal cell carcinoma (BCC) is the most common form of skin cancer. More than 4 million cases are diagnosed in the U.S. each year.

Skin Cancer

- Squamous cell carcinoma is the second most common form of skin cancer. More than 1 million cases are diagnosed in the U.S. each year.

Skin Cancer

- Actinic keratosis is the most common precancer; it affects more than 58 million Americans.

- **The annual cost of treating skin cancers in the U.S. is estimated at $8.1 billion: about $4.8 billion for nonmelanoma skin cancers and $3.3 billion for melanoma.**

Skin Cancer

- One person dies of melanoma every hour (**every 54 minutes).**
- An estimated 87,110 new cases of invasive melanoma will be diagnosed in the U.S. in 2017.
- An estimated 9,730 people will die of melanoma in 2017.
- Melanoma accounts for less than one percent of skin cancer cases, but the vast majority of skin cancer deaths.

Two main types of skin cancer

- Cancers that develop from melanocytes, the are called melanomas.
- Skin cancers that are not melanoma are sometimes called non-melanoma skin cancers.
- The two most common kinds are:
  - Basal cell carcinoma
  - Squamous cell carcinoma

Melanoma

- Melanoma is a cancer that starts in skin cells called melanocytes.
- Melanomas are usually brown or black, but they can be blue, red, or a combination of colors. They can also have no color.
- Melanomas can grow anywhere on the skin, but are more likely to start in certain locations.
  - Trunk (men)
  - Neck
  - Legs (women)
  - Face

Basal cell skin cancers

- They usually develop on sun-exposed areas, especially the head and neck.
- Once found only in middle-aged or older people, they now are also being seen in younger people.
- They are slow growing.
- Rarely metastasize.

Squamous cell skin cancers

- They commonly appear on sun-exposed areas of the body such as the face, ears, neck, lip, and back of the hands.
- They can also develop in chronic skin ulcers, or in actinic keratosis.
- Organ transplant patients are approximately 100 times more likely than the general public to develop squamous cell carcinoma.

Skin cancer risk factors

- Most skin cancers are caused by ultraviolet (UV) radiation
- There are three types of UV radiation. UVA and UVB, and UVC.
- UVB causes sunburns which leads to melanoma and other skin cancers
- UVA penetrates deeper and causes premature aging of the skin, and also skin cancers.
- The UV radiation causes changes the DNA
- Sun lamps and tanning beds also cause skin cancer due to UV exposure

Skin cancer risk factors

- Age: The risk of basal and squamous cell skin cancers grows as the population ages
- Gender: Men are more likely than women to have basal and squamous cell cancers

Basal and squamous cell cancer risk factors

- Fair skin (Fitzpatrick's types (I-III)
  - Blue eyes
  - Red hair
- Exposure to certain chemicals
  - Large amounts of arsenic
  - Work exposure to industrial tar, coal, paraffin, and certain types of oil
  - Previous radiation treatment
  - Previous skin cancer
  - Long-term or severe skin inflammation or injury

Melanoma risk factors

- Patient with multiple nevi is more likely to develop melanoma.
- Family history of melanoma Melanoma risk is greater if 1 or more of first-degree relatives (mother, father, brother, sister, child) has been diagnosed with melanoma.
- About 10% of all people with melanoma have family members with melanoma

Melanoma risk factors

- On average, a person's risk for melanoma doubles if he or she has had more than five sunburns.[14]
- The estimated 5-year melanoma survival rate for blacks is only 69 percent, versus 93 percent for whites. Melanomas in blacks, Asians, Filipinos, Indonesians, and native Hawaiians most often occur on non-exposed skin with less pigment, with up to 60-75 percent of tumors arising on the palms, soles, mucous membranes and nail regions.

OBJECTIVES

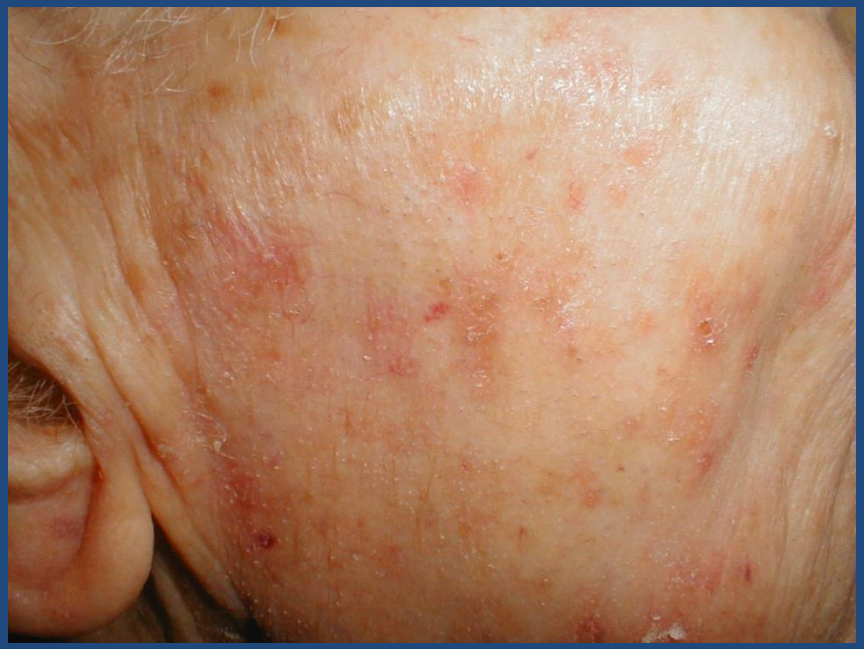
- This presentation will cover
- Actinic Keratosis
- Basel Cell Carinoma
- Squamous cell carcinoma
- Malignant melanoma

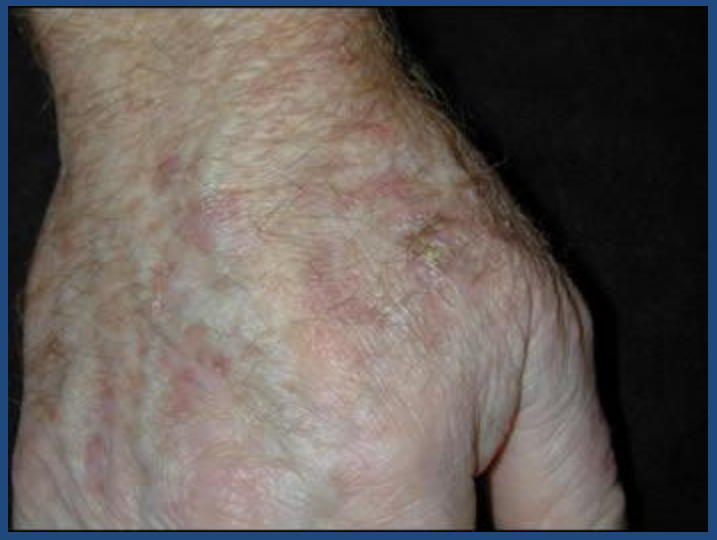
Actinic keratoses

Actinic keratoses

- Rough, scaly spots on sun damaged skin
- This represents abnormal skin development due to UV radiation
- It should be considered possibly precancerous (>10 AK = 10-15% risk of SCC.
- Common on sun exposed sites such as backs of hands, face, scalp and ears.

Actinic keratoses





10% to 15 risk of malignant transformation

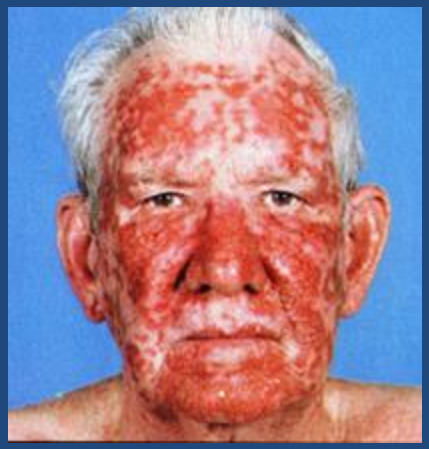
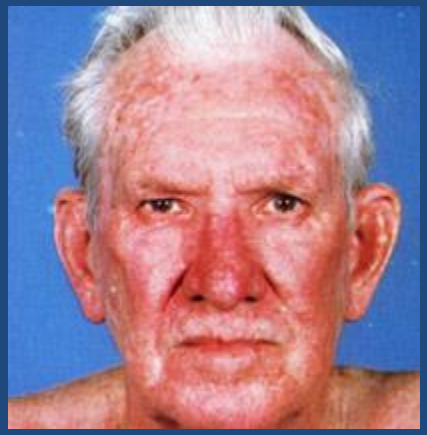
Actinic cheilitis

Treatment of Actinic keratoses

- Excision
- Solaraze
- Cryotherapy
- Efudix
- Aldara

Topical therapies

Efudex or Aldara

* 3-5 times per week
* 6-8 weeks

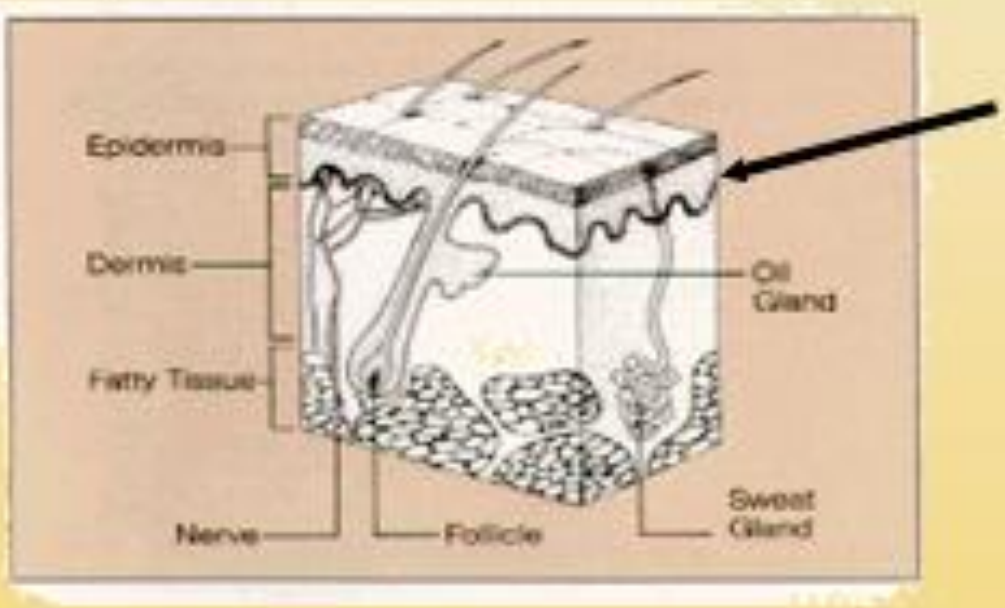
Basal Cell Carcinoma

Basal cell Cancers

- It effects adults who have had a lot of sun exposure and multiple sunburns
- Gorlin's Syndrome- inherited tendency to multiple BCC
- BCC grow slowly over months and years
- It causes destructive changes to the surrounding tissue.

Basal Cell Carcinoma

- A type of skin cancer that arises from the basal cells, small round cells found in the lower part (or base) of the epidermis, the outer layer of the skin.



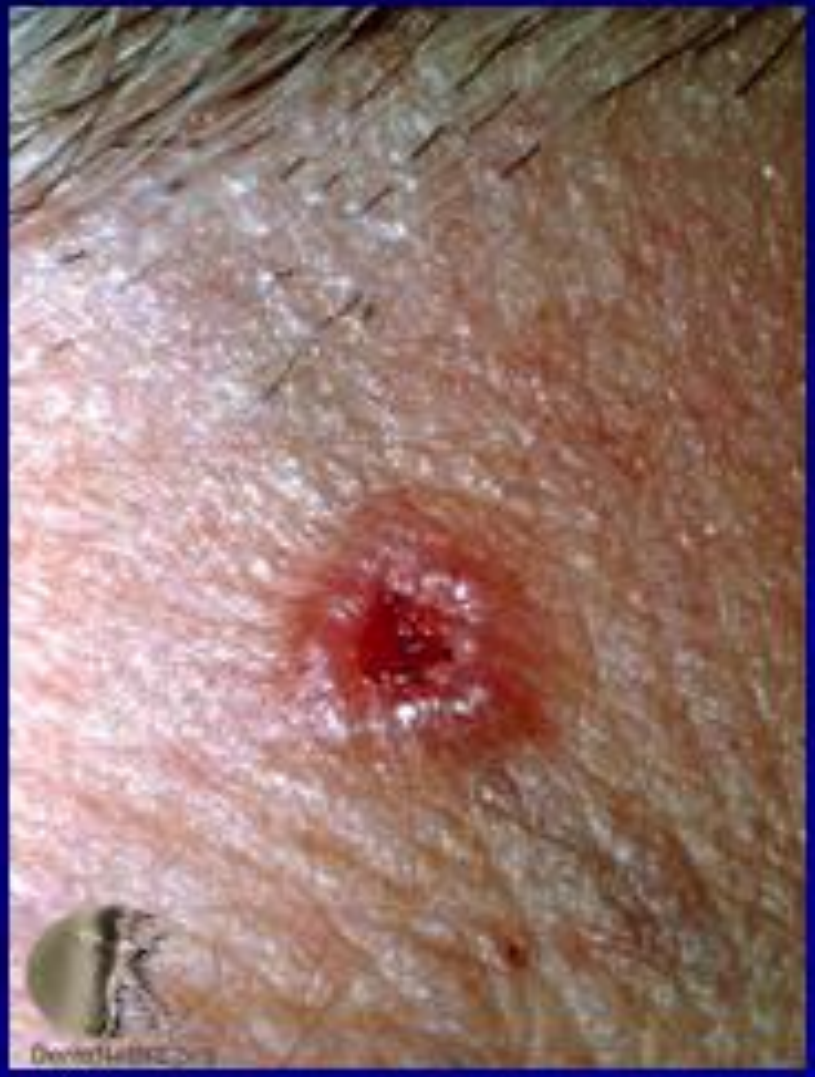
Basal Cell Carcinoma Types

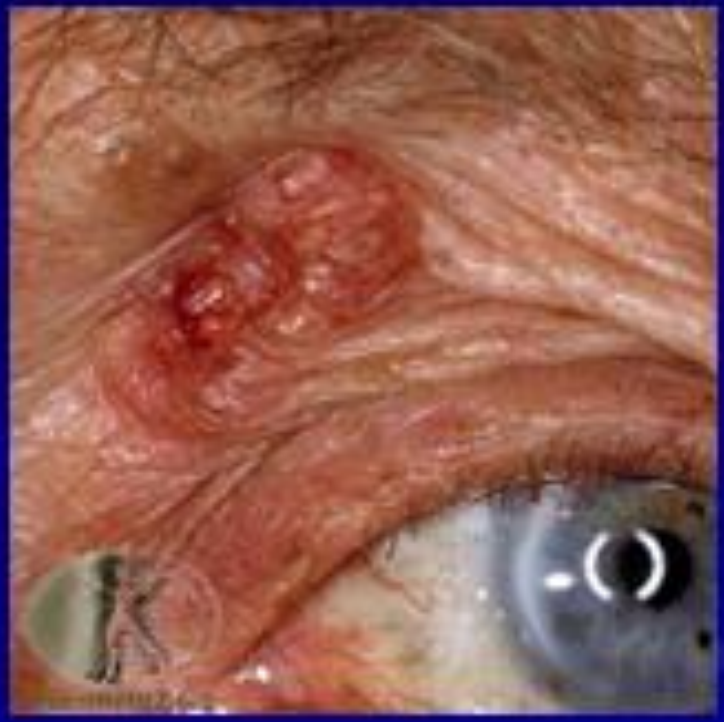
- Nodular BCC- Most common type
- Superficial BCC- this is also common
- Morphoeic BCC- Waxy like
- Pigmented BCC
- Basosquamous BCC- mixed BCC and SCC

Nodular BCC

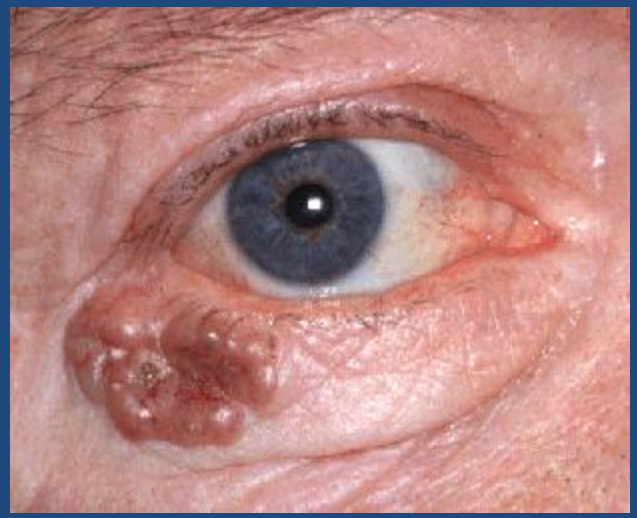
- The most common type on the face
- Small shiny, skin-colored swelling
- Telangiectasia across the edges
- May have a central ulceration or scab, so the edges appear rolled.
- Often bleeds spontaneously, then heals over
- Rodent ulcer

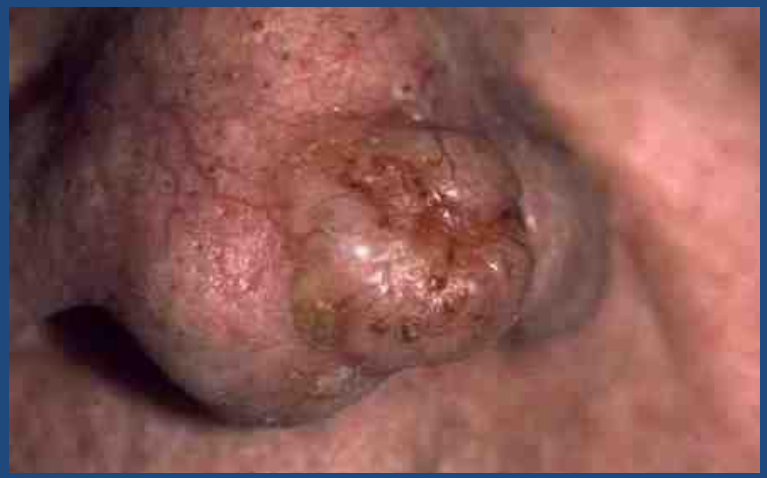
Nodular basal cell carcinoma





Nodular BCC



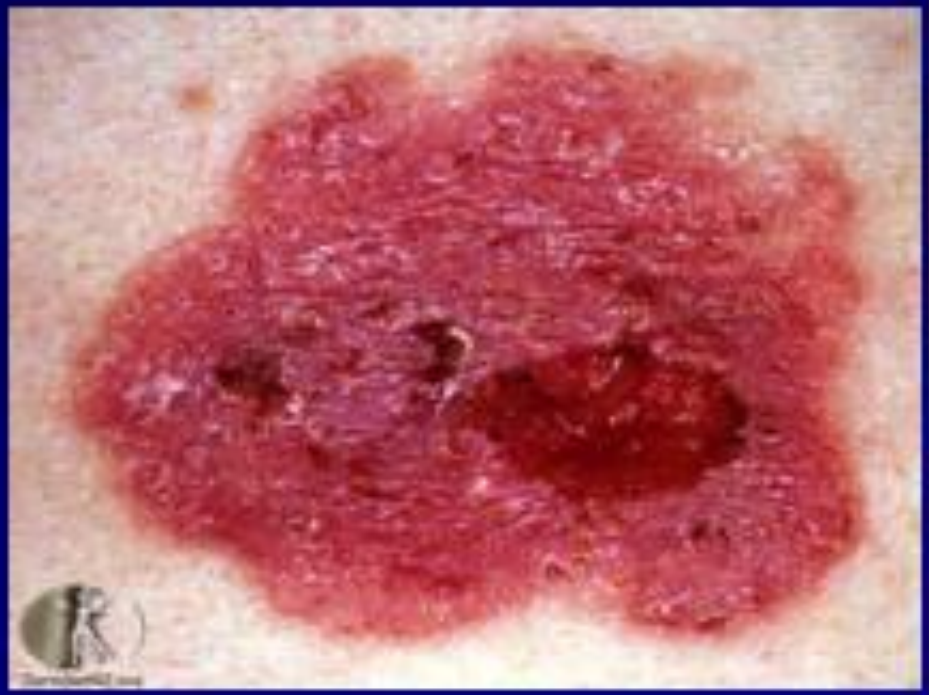


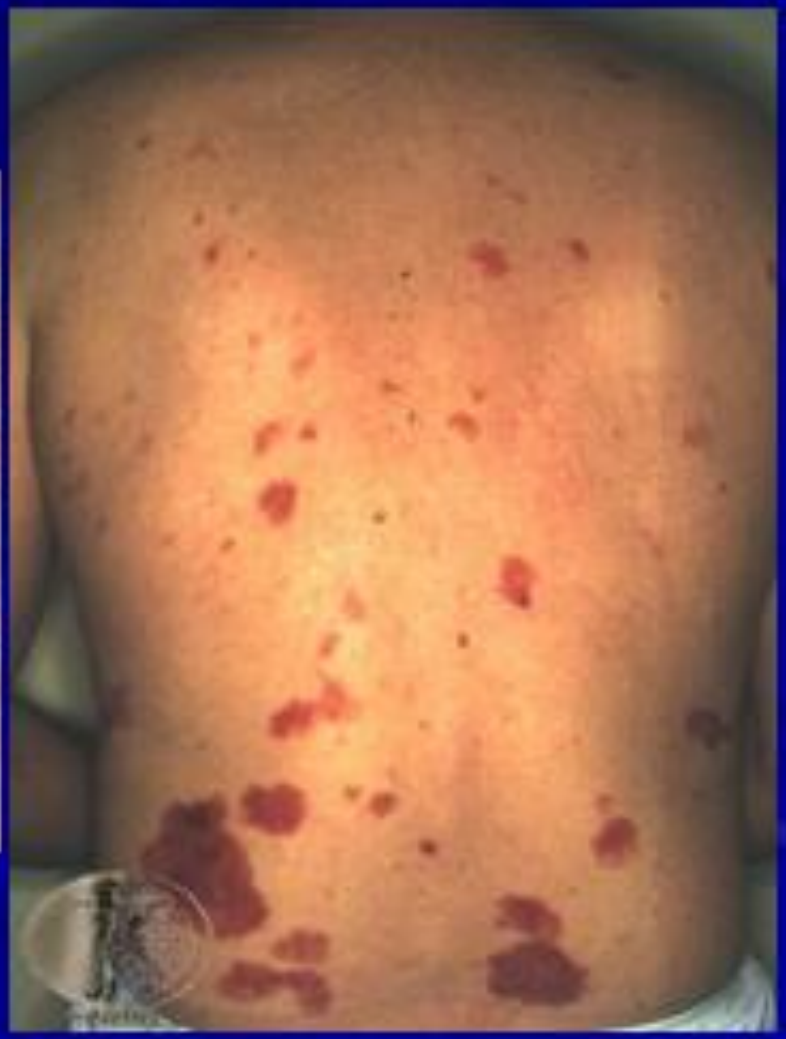
- Chronic lesion
- Easy bleeding
- Pearly border
- Surface telangiectasias
- Head and neck, trunk, and extremities

Superficial BCC

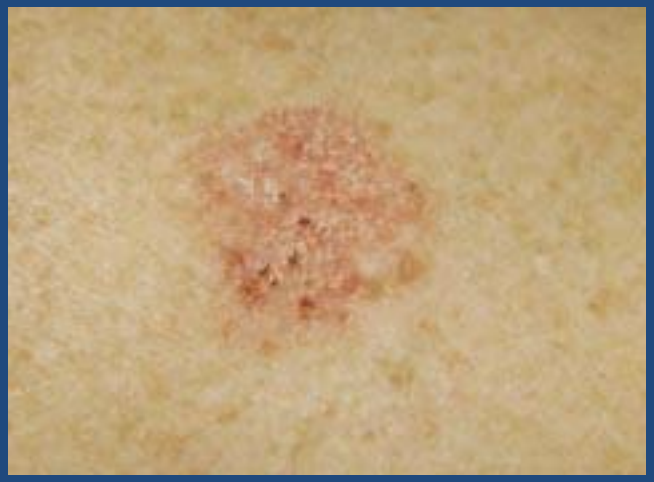
- Often multiple
- Most common location is upper trunk or shoulders, however it can occur anywhere.
- Pink or red scaly patch with raised edges
- Slow growing, over months or years
- Bleeds or ulcerates early

Superficial basal cell carcinoma



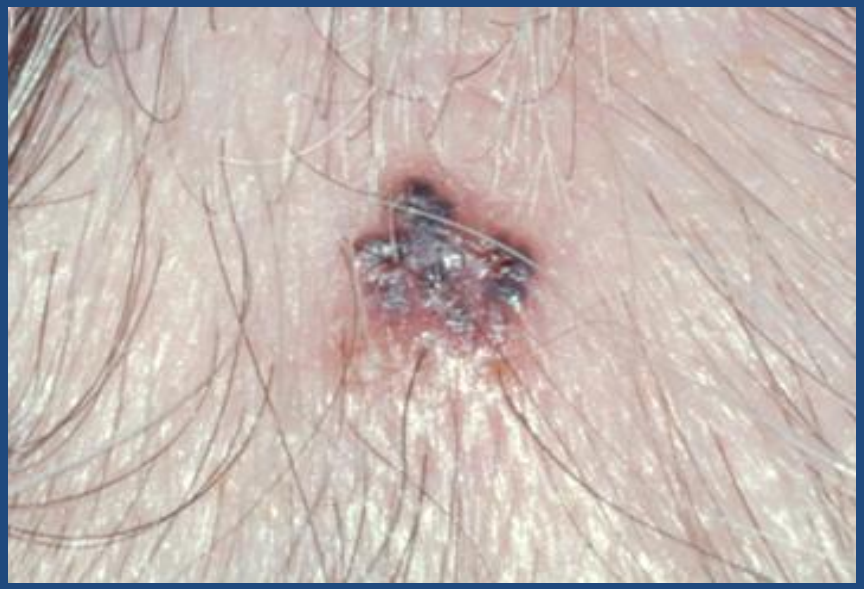


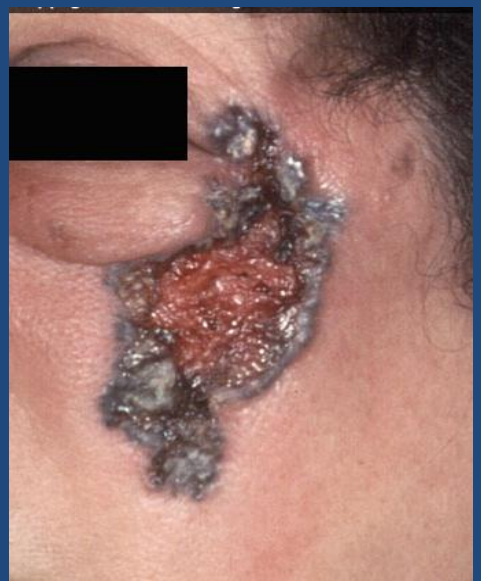
Superficial BCC



- Erythematous scaly plaque
- Slow growth
- Asymptomatic
- Trunk, extremities, face

Pigmented BCC





- Similar to nodular but with black discoloration
  - Melanin deposits
- Pigmented races
- Face, trunk, and scalp

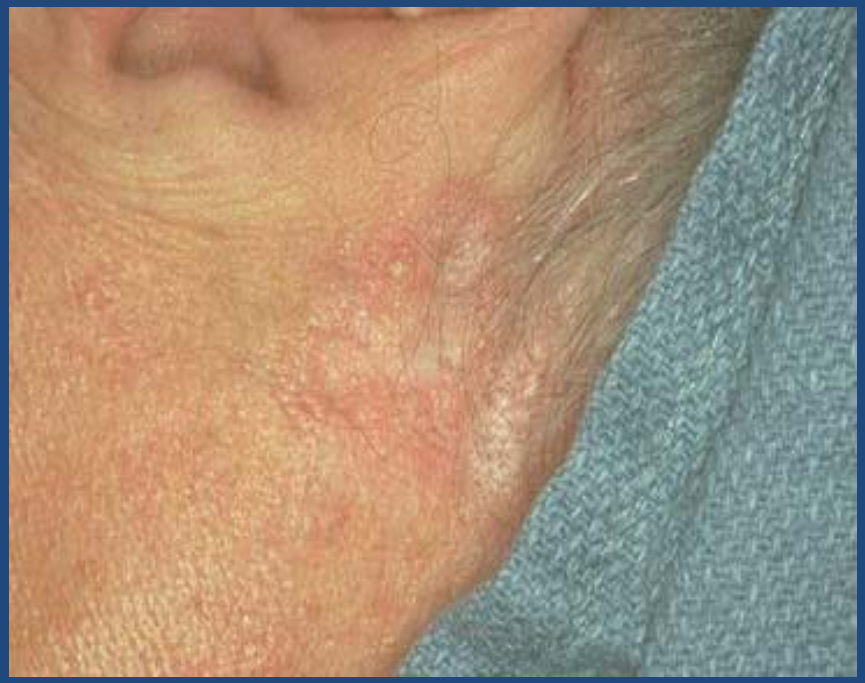
Morpheaform BCC

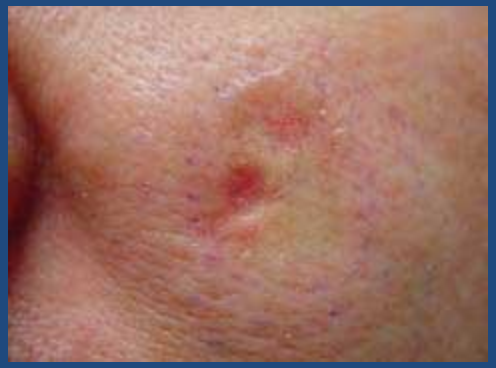
- Morpheic or primary sclerosing basal cell carcinomas (BCC) appear as flat, firm, atrophic, rubbery tan or yellowish tumors characteristically present beneath the skin.
- surface with actual margins usually wider than they appear clinically. They tend to spread laterally and superficially with little dermal penetration.

Morpheaform BCC

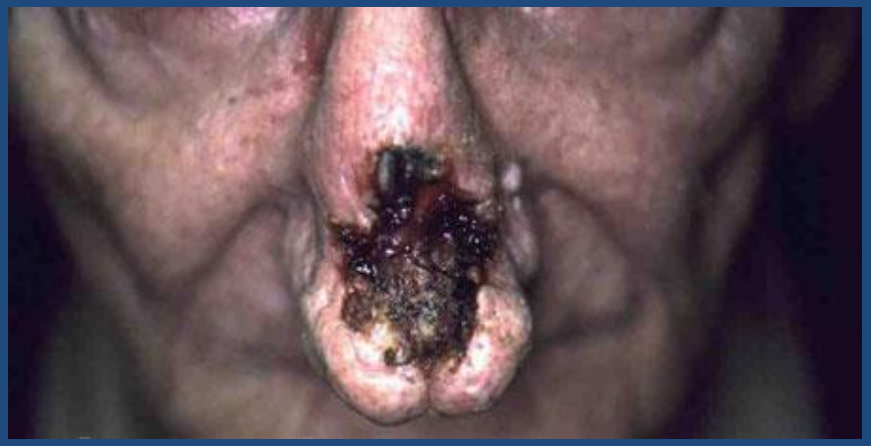
- They tend to spread laterally and superficially with little dermal penetration. Induration is almost always present with ulceration being very rare.
- Traditionally they are considered more aggressive and difficult to control, with this consistent pattern of growth. This makes complete excision more difficult and consequently recurrences are more common .

Morpheaform BCC





- Resembles scar
- Asymptomatic and slow growing
- Ill-defined margins
- Marked subclinical extension



- BCC is the most frequent skin cancer (80%)
  - BCC is 4x more frequent than SCC
- Metastases are rare (<1% of cases)
  - Local destruction of tissue

Treatment of BCC

- Curettage electrodessication (ED/C)
- Surgical excision
  - Traditional
  - Mohs surgery

95% Cure Rate

- Radiation therapy

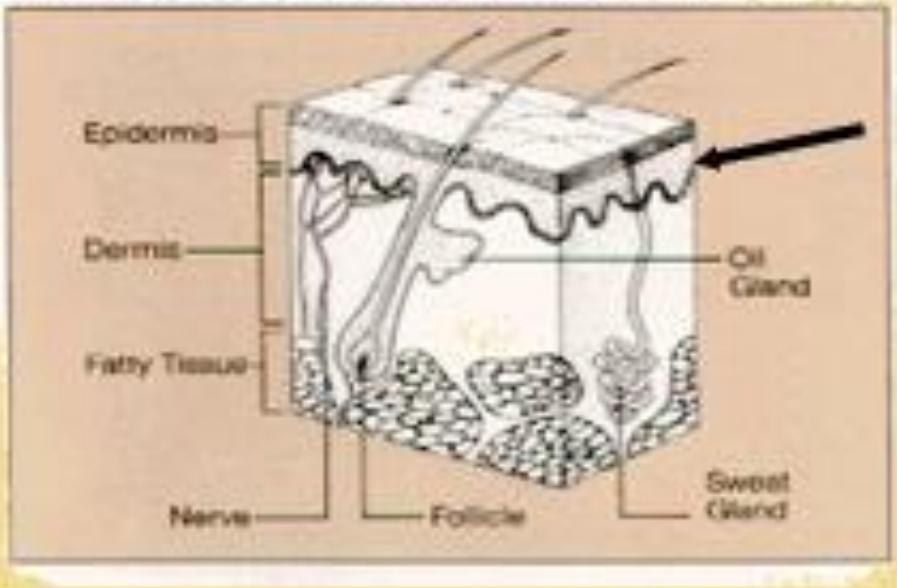
50-75% Cure Rate

- Topical therapy
  - imiquimod

Squamous cell carcinoma

Squamous Cell Carcinoma

- Cancer that begins in squamous cells, which are thin, flat cells that look like fish scales.
- Squamous cells are found in the tissue that forms the surface of the skin.
- Also found on other internal and external body surfaces.



Squamous Cell Carcinoma

- Squamous cell carcinomas often start as flat red or brown splotches which become rough, dry, and scaly.
- If not treated, they may eventually grow large enough to spread to nearby internal organs and can be fatal.
- It occurs in all areas of the country, but is more prevalent in southern states.

Squamous Cell Carcinoma

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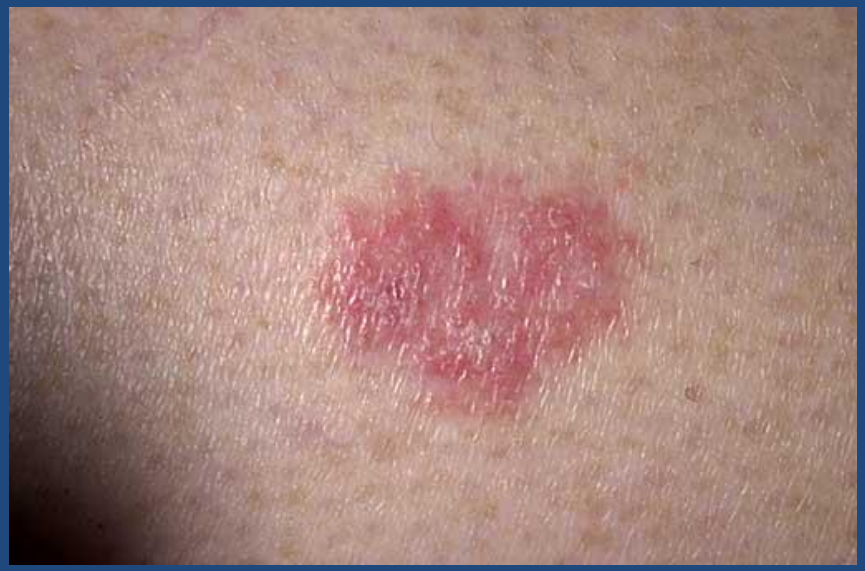
- If not treated, they may eventually grow large enough to spread to nearby internal organs and can be fatal.

SCC types

- In-situ
  - –Bowen’s disease
- Keratoacanthoma
- Invasive SCC

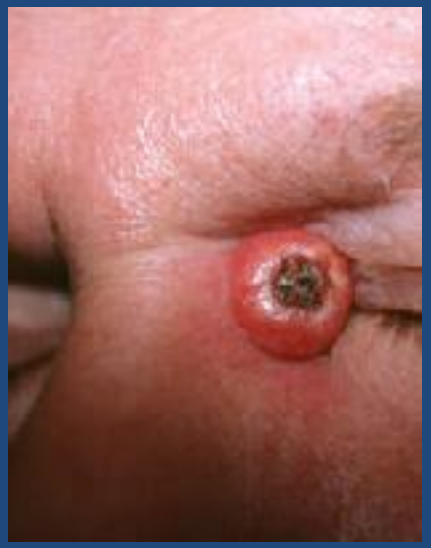
Bowen's disease

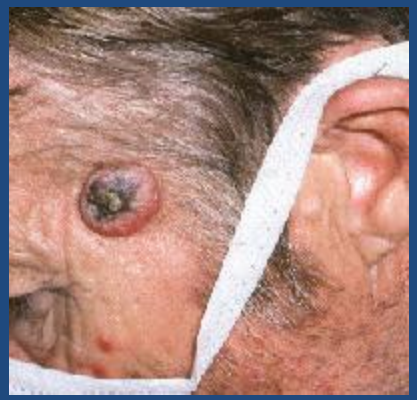


- In-situ SCC

- **Causes**
- Arsenic, HPV 16, radiation

Keratoacanthoma





- Low grade SCC
- Rapid growth over weeks
- Trauma, sun exposure, HPV 11 and 16
- May progress to invasive SCC

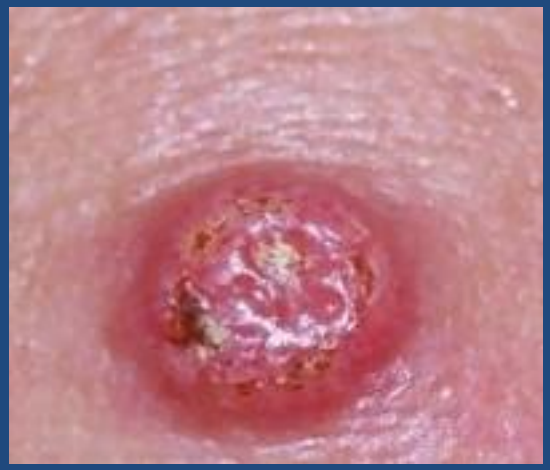
Invasive SCC

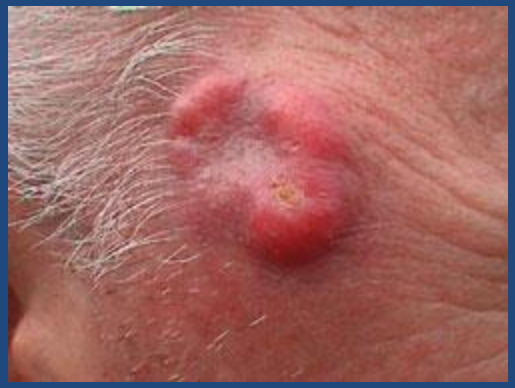
- SCC may presents as a shallow ulcer with elevated margins, often covered by a plaque
- It is usually located in a sun-exposed area.
- There are typical surface changes , which may include scaling, deep ulceration, crusting, and **cutaneous horn**.

SCC Diagnosis

- **Diagnosis may include:**
- computed tomography (CT) scanning to evaluate for soft tissue or bony invasion and lymph node metastasis.
- Magnetic resonance imaging (MRI) may be used to rule out invasion vital structures.
- Incisional or excisional biopsy for definitive diagnosis. The choice of biopsy will depend on the size and location of the lesion.

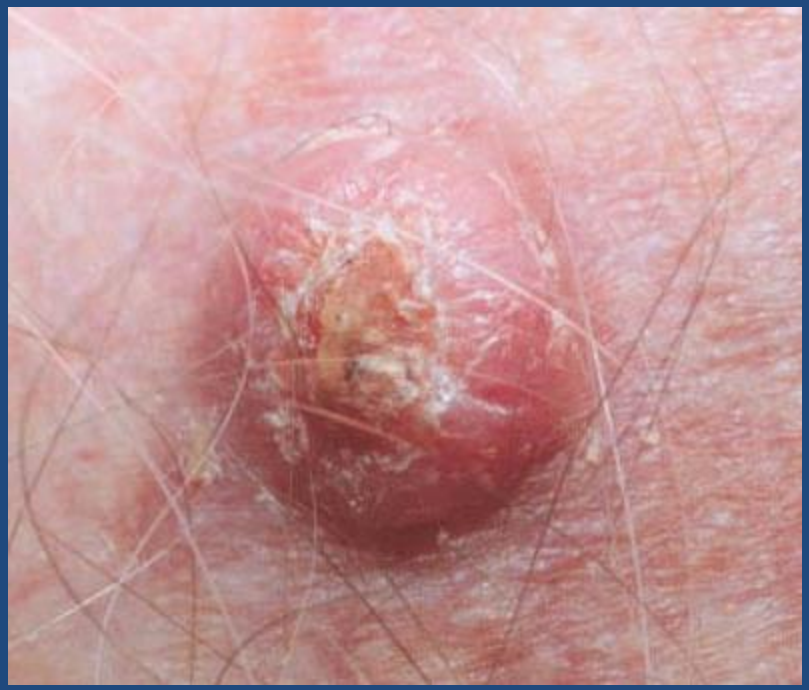
Invasive SCC

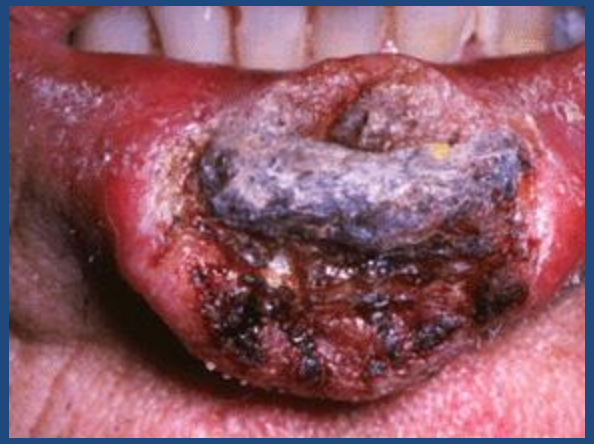


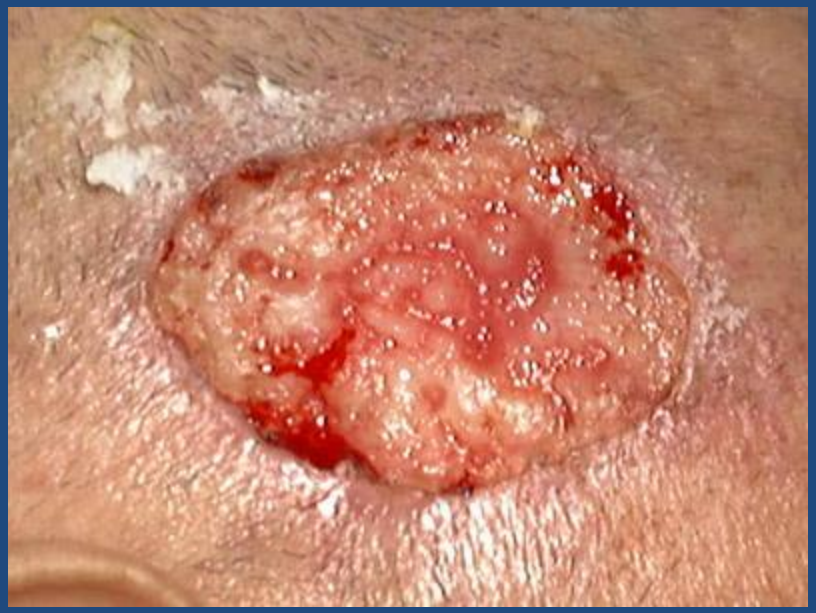


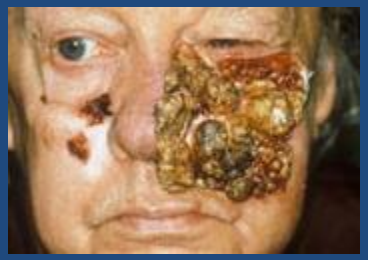
- Erythematous nodule
- Indurated lesion
- Sun-exposed skin
  - Men > women
- Slow growth

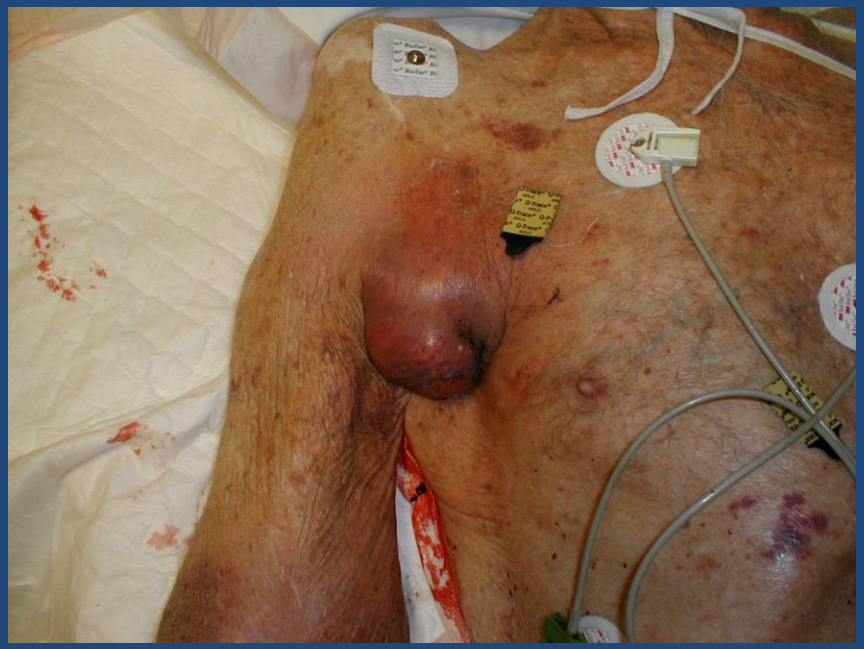
Invasive SCC











- SCC is locally invasive and destructive
- Metastases in 5% of cases
  - To lymph nodes
    - 50-73% survival
  - Distant sites (lungs)
    - Incurable

Squamous cell carcinoma
Risk factors

- **High risk lesions include:**
- Greater than 2 mm in thickness
- Invasion into the lower dermis or subcutamous layers of the skin
- Invasion into the nerves and blood vessels
- 5% of SSC metastasis from primary ear or lip lesion.

Squamous cell carcinoma
Risk factors

- Common in transplant patients
- Patients with CLL
- Associated with increasing age
- Associated with alcoholism
- More likely if multiple skin cancers are present

Squamous cell carcinoma stages

- **Stage 0 squamous cell carcinoma:** Also called carcinoma in situ, cancer discovered in this stage is only present in the epidermis
- **Stage I squamous cell carcinoma:** less than 2 centimeters, and has one or fewer high-risk features.
- **Stage II squamous cell carcinoma:** larger than 2 centimeters across,, or a tumor of any size with 2 or more high risk features.

Squamous cell carcinoma stages

- **Stage III squamous cell carcinoma:** spread into facial bones or 1 nearby lymph node, but no distant metastasis.
- **Stage IV squamous cell carcinoma:** any size and has metastasized to 1 or more lymph nodes with distant metastasis.

Treatment of SCC

- Surgical excision with clear margins, as verified by frozen sections.
- Mohs micrographic surgery for invasive cSCC in the facial region

Treatment of SCC

- Radiation therapy as an adjuvant to surgery, to provide improved locoregional control, or as primary therapy in patients who are unable to undergo surgical excision .
- Radiation is also recommended for high risk SSC as well.

Treatment of SCC

- Chemotherapy, such as treatment with oral 5-fluorouracil (5-FU) and epidermal growth factor receptor (EGFR) inhibitors, as **adjuvant** therapy for select highest-risk cases
- Systemic chemotherapy for metastatic SCC

Malignant Melanoma (MM)

Malignant Melanoma

- Melanocytes are found in the basal layers of the epithelium
- Non cancerous growth of melanocytes results in moles or freckles
- Cancerous growth of melanocytes results in melanoma.

Common sites for melanoma

- In men the commonest site is the back
- In women the commonest site is the leg
- Can occur on mucous membranes eg lips or genitals.
- Can occur under the nail
- Can occur in eye brain or mouth
- BEWARE OF AMELANOTIC MELANOMA

Glasgow 7 point check list

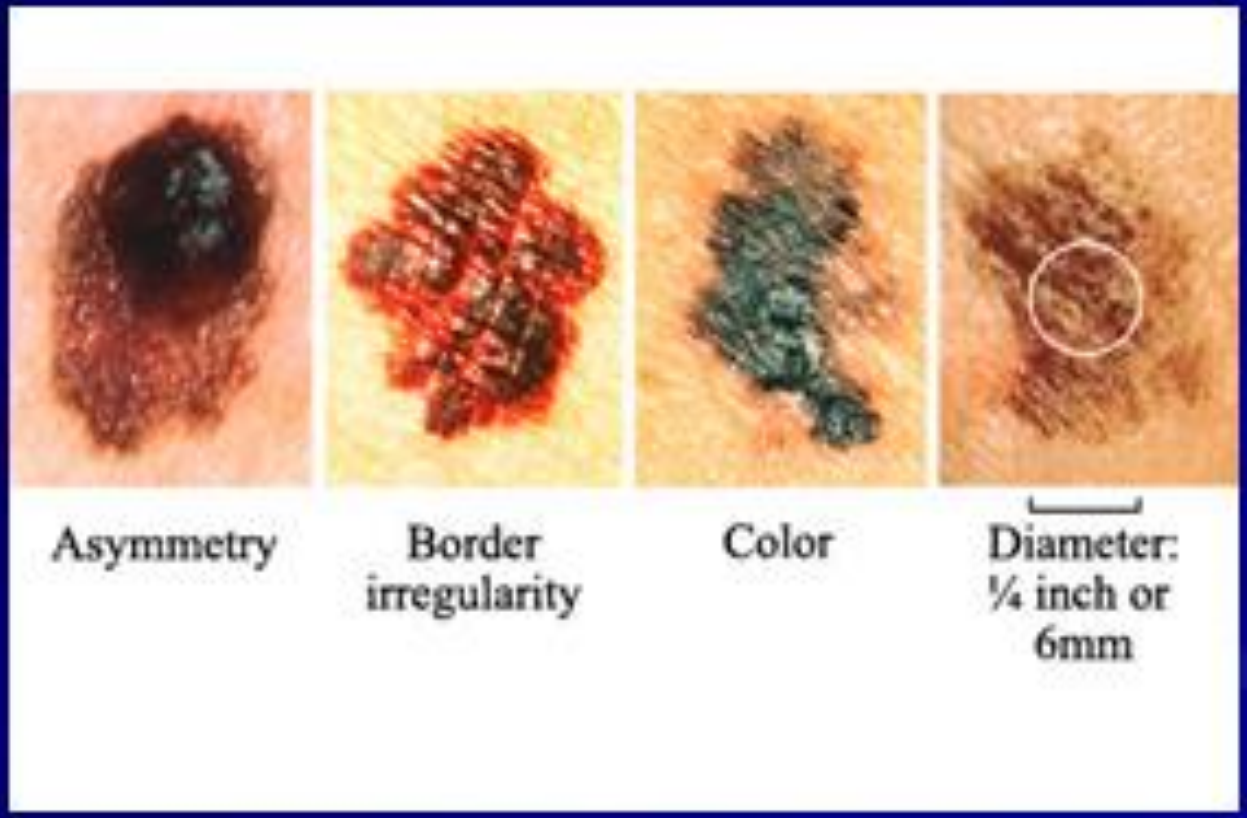
- **MAJOR FEATURES**
- Changes in size
- Irregular shape
- Irregular color

- **MINOR FEATURES**
- Diameter >7mm
- Inflammation
- Oozing
- Changes in sensation

The ABCDE of Melanoma

- **A** asymmetry
- **B** border irregularity
- **C** Color Variation
- **D** Diameter over 6mm
- **E** Evolving (enlarging or changing)

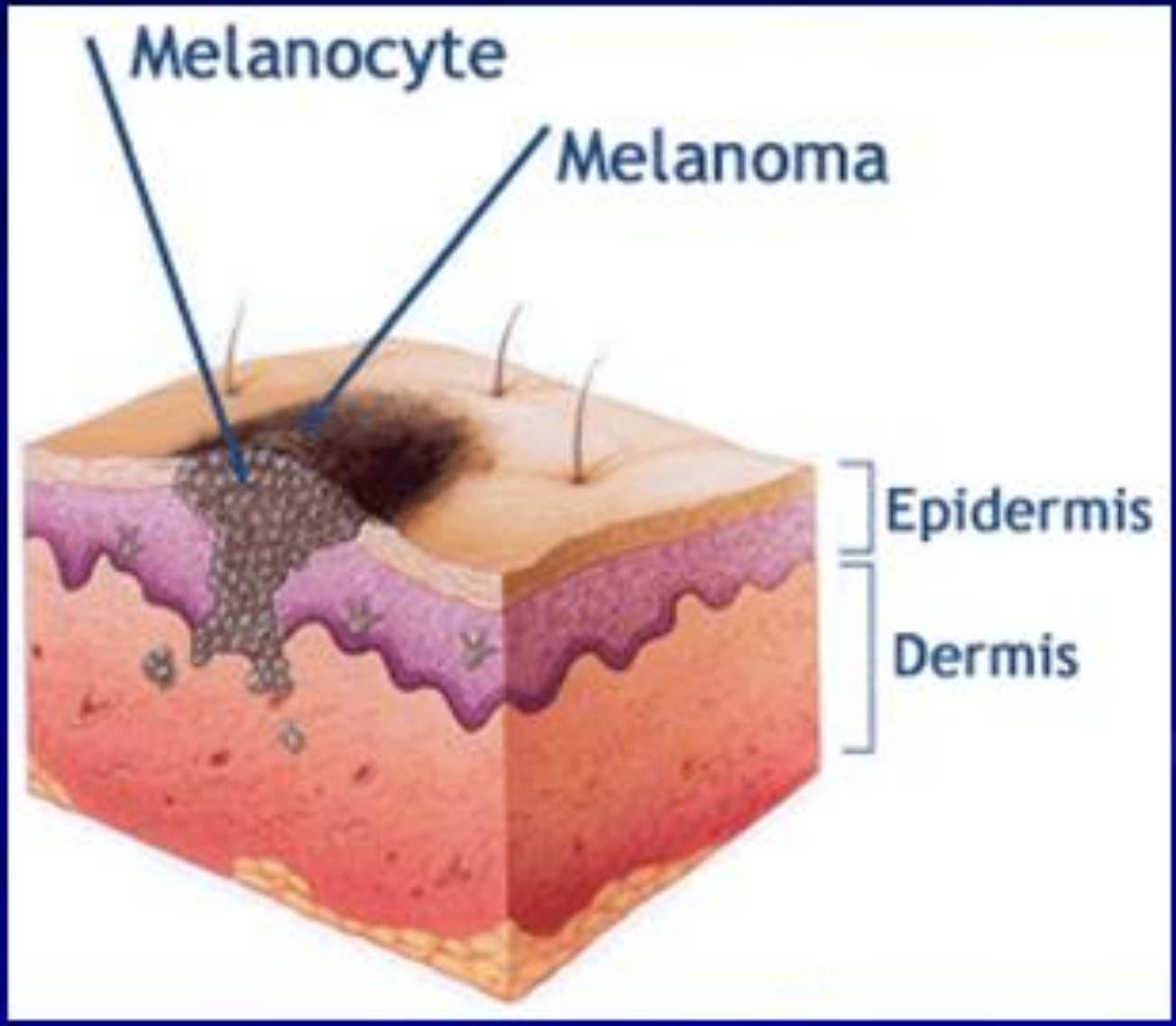
Malignant melanoma



Growth of Melanomas

- Horizontal growth with in epidermis is melanoma in situ
- Vertical growth through basement membranes into dermis is invasive melanoma.
- Once melanoma penetrates dermis, it spreads via lymphatic and blood stream which is metastatic melanoma

Malignant melanoma



Histological classification

- Breslow Thickness

- Clarks level
- Level 1-5

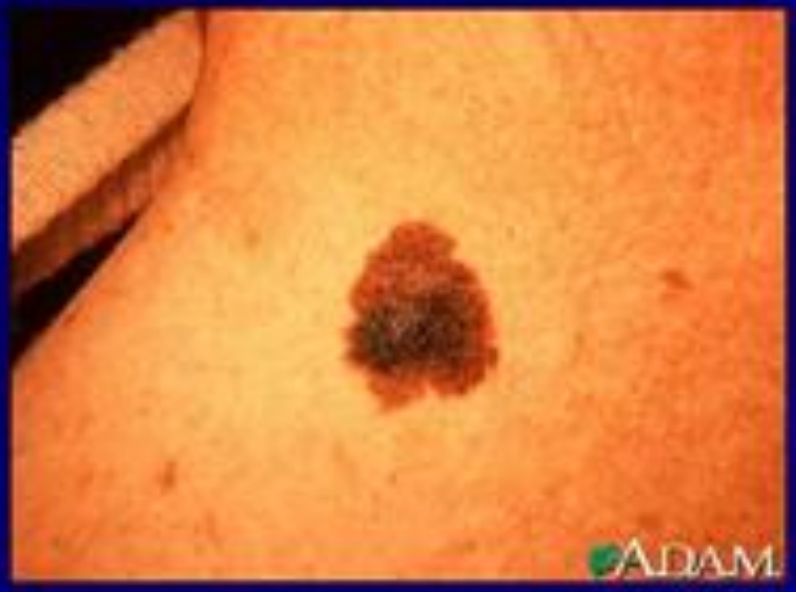
Breslow Depth

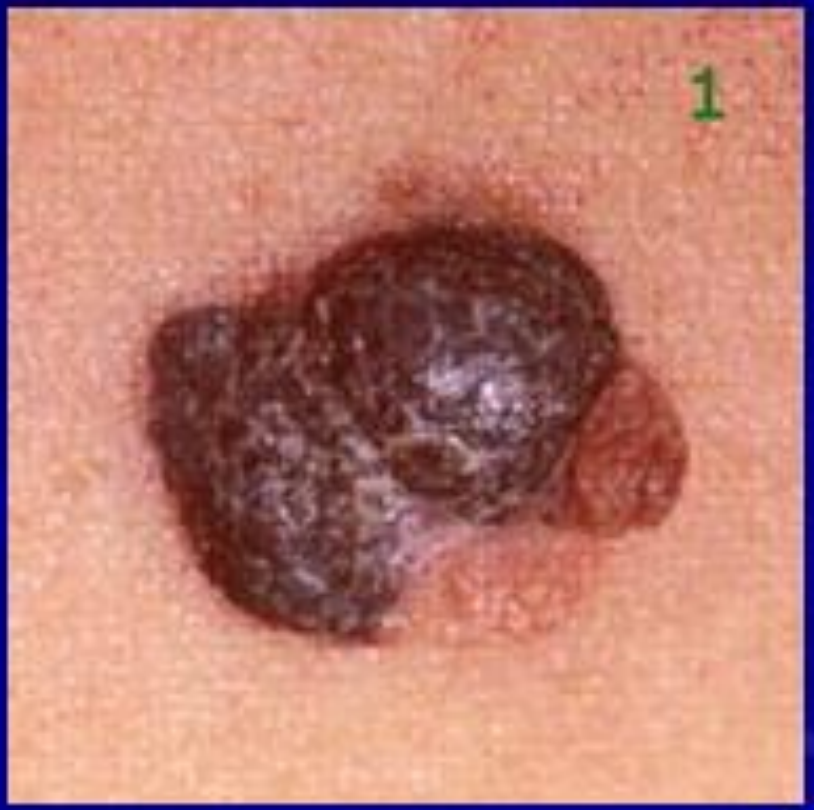
Stage	Depth
Stage I	less or equal to 0.75mm
Stage II	0.76 mm - 1.50mm
Stage III	1.51 mm - 2.25mm
Stage IV	2.26 mm - 3.0mm
Stage V	greater than 3.0 mm

Histological classification
Clark levels

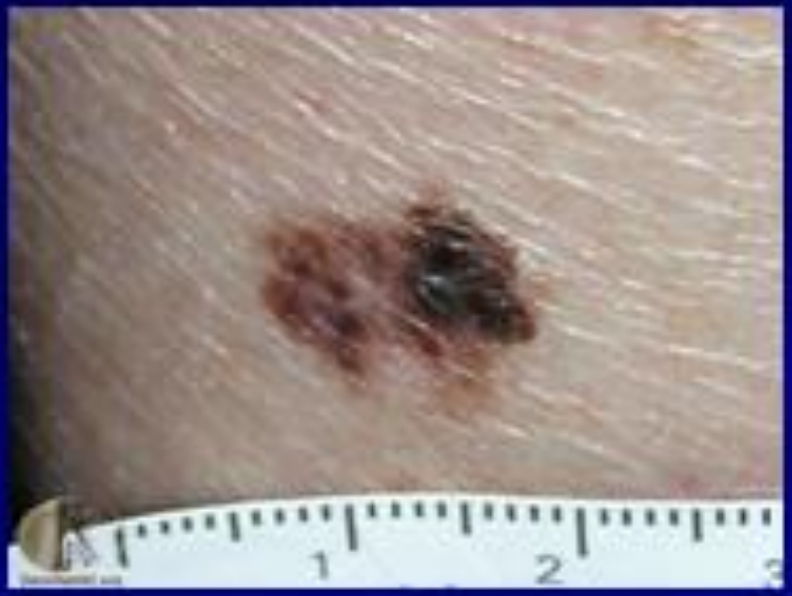
- Level 1 : Melanoma confined to the epidermis (melanoma in situ)
- Level 2 : Invasion into the papillary dermis
- Level 3 : Invasion to the junction of the papillary and reticular dermis
- Level 4 : Invasion into the reticular dermis
- Level 5 : Invasion into the subcutaneous fat

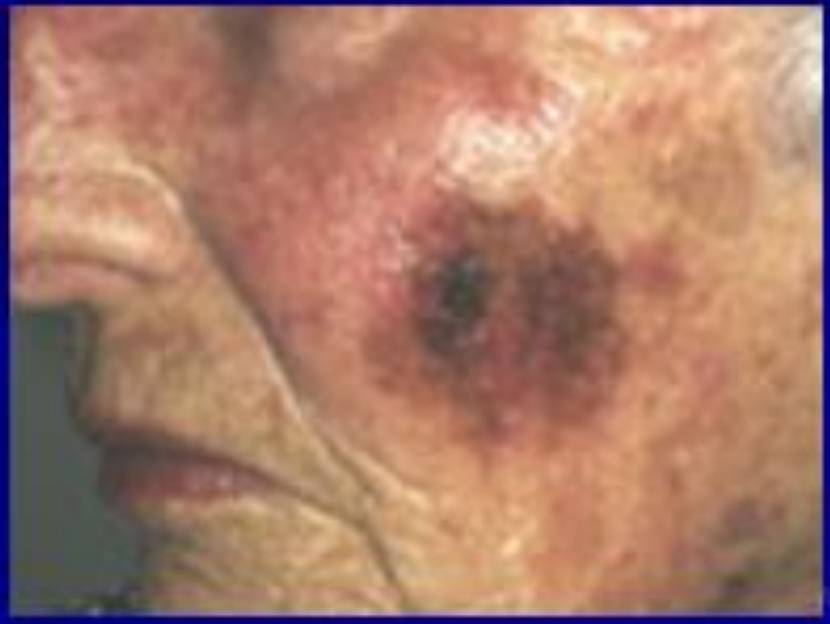
Malignant melanoma



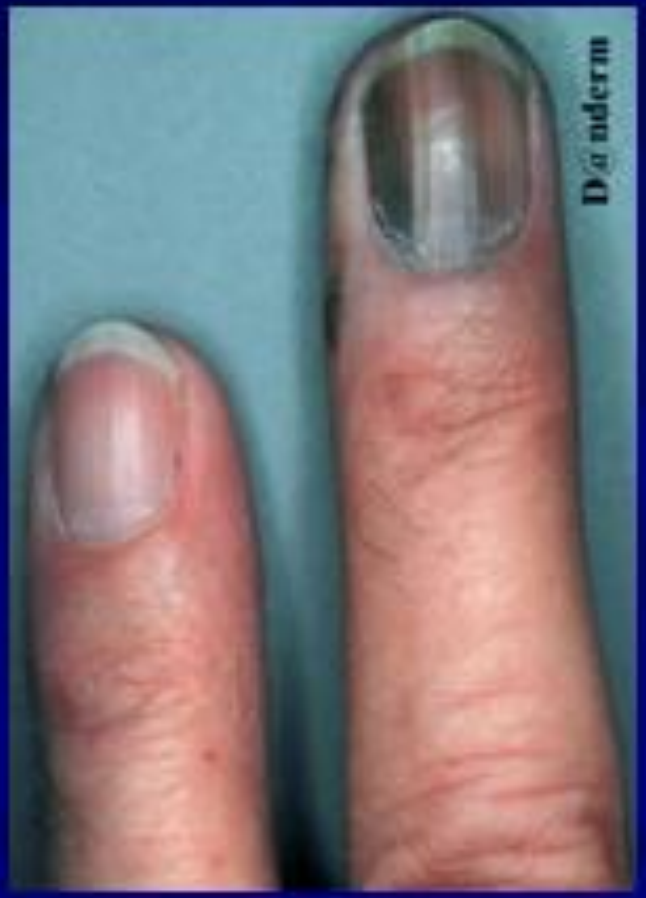


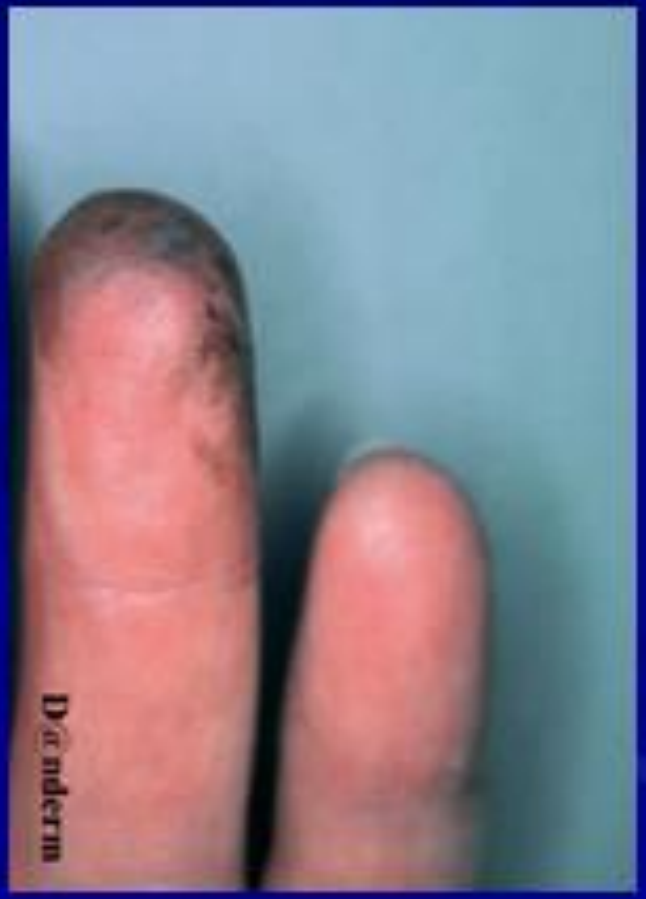
Malignant melanoma



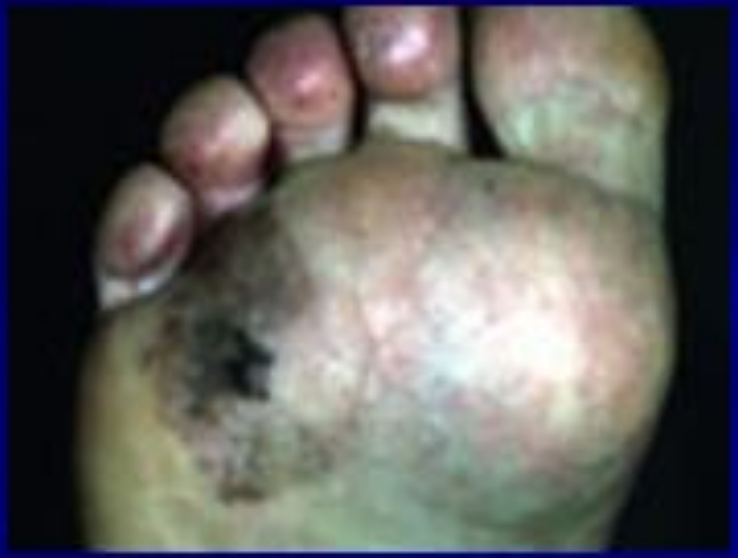


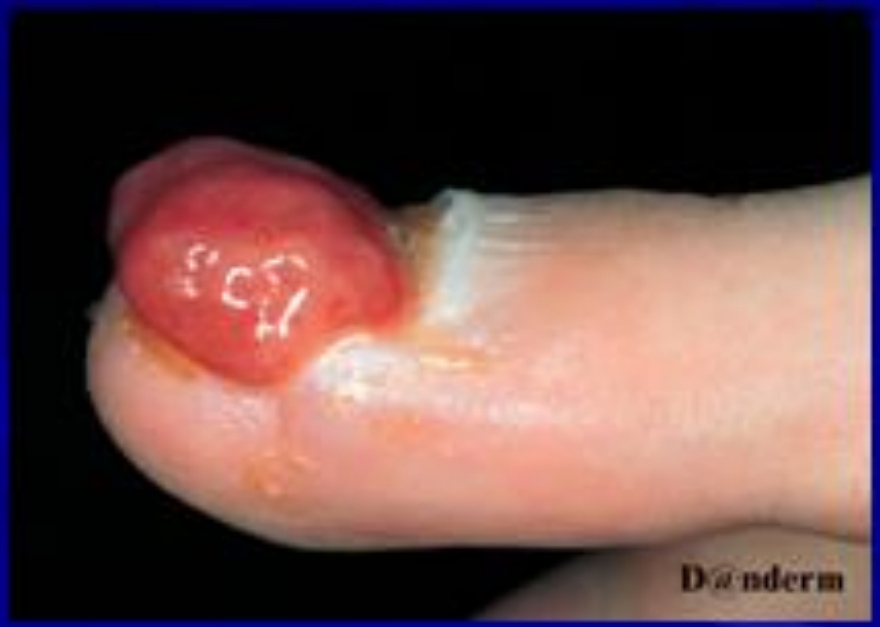
Malignant melanoma





Malignant melanoma





Treatment of Melanoma

- *Stage 0 in situ and IA* [1] :
- **For patients with stage I and stage IA** (≤1 mm thick, no ulceration, mitotic rate < 1/mm ^{2} with no adverse features) melanoma, treatment recommendations include **wide-excision surgery**
- Widely excise the tumor or previous biopsy site; use a 0.5- to 1-cm margin for melanomas in situ
- For patients with stage IA (≤1 mm thick, no ulceration, mitotic rate < 1/mm ^{2} with one or more adverse features), consider **wide-excision surgery and discussion of sentinel lymph node biopsy (SLNB)**

Treatment of Melanoma

- For patients with stage IA (≤1 mm thick, no ulceration, mitotic rate < 1/mm ^{2} with one or more adverse features), consider **wide-excision surgery and discussion of sentinel lymph node biopsy (SLNB)** 1-cm excision margins are adequate,
- For lesions greater than 1 mm require 2-cm margins; for lesions with a depth greater than 1 mm, recommend sentinel lymph node biopsy at the time of wide local excision

Treatment of Melanoma

- *Stage IB and IIA* [1] :
- Discuss and offer patients SLNB and wide-excision surgery

Treatment of Melanoma

- *Stage IIB or IIC* [1] :
- Perform a 2-cm surgical resection for stage IIB or IIC; also discuss or offer SLNB
- If SLNB is performed and node positive, or if clinically positive, then complete dissection of nodal basin should be performed

Treatment of Melanoma

- *Stage IIB or IIC* [1] : Continued
- Alternatively, observation can be recommended or clinical trial or interferon alfa
- Use of interferon alfa is based on lower level of clinical evidence, and its use should be individualized

Treatment of Melanoma

- Stage III: Wide local excision of the primary tumor with 2-cm margins remains first-line therapy; [1] perform regional lymph node dissection because a stage III melanoma represents nodal disease; If the nodal status is unknown, consider a sentinel lymph node biopsy to determine if the disease is stage I, II, or III adjuvant therapy includes clinical trials or observation or interferon alfa

Treatment of Melanoma stage III

- Consider radiation therapy to nodal basin if stage IIIC disease is present with multiple nodes involved or macroscopic extranodal extension
- If stage III (sentinel node positive), primary treatment is clinical trial or lymph node dissection; adjuvant treatment includes clinical trial or observation or interferon alfa-2b (20 million IU/m ^{2} IV five times weekly for 4 wk, then 10 million IU/m ^{2} SC 3 times weekly for 48wk; treat for a total of 1 y)

Treatment of Melanoma

- Peginterferon alfa-2b has been approved for adjuvant treatment of melanoma with microscopic or gross nodal involvement within 84 d of definitive surgical resection including complete lymphadenectomy; dosing recommendations are 6 µg/kg/wk SC for eight doses followed by 3 µg/kg/wk SC for up to 5 y

Treatment of Melanoma

- Ipilimumab is indicated for the adjuvant treatment of patients with cutaneous melanoma with pathologic involvement of regional lymph nodes >1 mm who have undergone complete resection, including total lymphadenectomy; the recommended regimen is 10 mg/kg IV q3wk for four doses followed by 10 mg/kg q12wk for up to 3 years

Treatment of Melanoma stage III in-transit disease

- Primary treatment options include the following:
- Complete resection (preferred, if feasible)
- SLNB for resectable disease
- Hyperthermic perfusion/infusion with melphalan for localized multiple lesions in a single extremity or recurrent lesions in a single limb

Treatment of Melanoma stage III in-transit disease Clinical trial

- Intralesional injection (bacillus Calmette-Guérin [BCG], interferon alfa)
- Local ablation therapy
- Systemic therapy
- Topical imiquimod

Treatment of Melanoma
Stage IV

- *Stage IV with distant metastasis* [1] :
- Treatment depends on whether melanoma is limited (resectable) or disseminated (unresectable)
- If limited disease, resection is recommended; alternatively, observation or systemic therapy
- Treatment for limited disease includes clinical trial or systemic therapy with interleukin-2 (IL-2) **or** temozolomide -, dacarbazine -, or paclitaxel-based chemotherapy for two to three cycles, ipilumimab q3 wk four times, and then assessment for response; if stable, continue treatment (see below for drug regimens)

Treatment of Melanoma Stage IV

- For patients with unresectable disease without brain metastases, treatment includes systemic therapy; patients with brain metastases require treatment of the central nervous disease
- For stage IV disease in one limb, recommendations include surgery **plus** lymph perfusion treatment **plus** options such as observation, clinical trial, or treatment with interferon alfa

Conclusion

An ounce of prevention
is better than a pound of cure

Conclusion

- About 90 percent of nonmelanoma skin cancers are associated with exposure to ultraviolet (UV) radiation from the sun
- The UK study found that about 86 percent of melanomas can be attributed to exposure to ultraviolet (UV) radiation from the sun.[12]

Conclusion

- Ultraviolet (UV) radiation is a proven human carcinogen.
- More people develop skin cancer because of tanning than develop lung cancer because of smoking.[22]

- People who first use a tanning bed before age 35 increase their risk for melanoma by 75 percent.

Conclusion

- An estimated 90 percent of skin aging is caused by the sun.[26]

- People who use sunscreen with an SPF of 15 or higher daily show 24 percent less skin aging than those who do not use sunscreen daily.

Conclusion

- Prevention wear sun screen:
- Broad-spectrum protection (protects against UVA and UVB rays)
- Sun Protection Factor (SPF) 30 or higher
- Water resistance
- Sun's rays are strongest between 10 a.m. and 2 p.m. Thus avoid the sun at these time.

Conclusion

- Avoid tanning beds.
- Skin checks: anything changing, itching or bleeding.