Can You Recognize Skin Cancer in Your Dental Patients?

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LDA Cruise 2019

Ephelis / Ephelides (Freckle)

- Pigmented macule
- Increased melanin production, not increase in number of melanocytes
- Face, arms, and back of light skinned people
- 1-3mm, light brown coloration
- Sharply demarcated from adjacent skin
- Never elevated
- Sunscreen can help prevent them from darkening

Melanotic macule

- 25 – 45yo men and women
- Site: any mucosal surface
  - Most commonly lower lip
- Clinical findings:
  - Well-circumscribed, pigmented lesion
  - <1cm
  - Even distribution of pigment
  - Light tan, brown

Sebaceous hyperplasia

- Benign hamartomatous enlargement of the sebaceous glandular tissue
- Facial skin
- Adults > 40
- Clinical findings:
  - Soft, white, yellow or skin colored papules
  - Umbilicated with a central depression
  - Usually <5mm diameter
  - Often multiple
  - Compression may cause release of sebum
  - No tx necessary unless trying to rule out BCC or for aesthetic reasons
**Actinic Lentigo (age spots, liver spots)**

- Benign brown macule
- Results from chronic UV damage to skin
- Age: Adults >40
  - Although seen in younger patients with long history of UV exposure and damage
- Increase in melanin production and melanocytes
- Relatively even pigmentation ranging from light tan to brown to black.

**Actinic Lentigo (age spots, liver spots)**

- In America, they are observed in as many as 90% of whites older than 60 years and in 20% of whites younger than 35 years.*

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**Treatment options for actinic lentigo**

- Do nothing
- Sunscreen
- Cryosurgery
  - Successful because of the susceptibility of melanocytes to freezing with liquid nitrogen*
  - Melanocytes freeze at -4 to -7°C, Squamous cells resist injury up to about -20°C
- Laser therapy
  - Short-pulsed, pigment-specific lasers
  - Selectively destroy the pigment**
- Topical cream
- Trichloroacetic acid (TCA)

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**Seborrheic Keratosis**

- Benign proliferation of epidermal cells with basaloid features
  - Lesion is elevated above the epidermis
  - Does not typically grow into the epidermis
- Unknown cause
  - Positive correlation with sun exposure
- Adults, beginning in the 30s
  - Lesions become more prevalent with age

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*Sources:
Seborrheic Keratosis

- Clinical features:
  - Face, trunk, extremities
  - Well-defined, light tan, brown, black,
  - “stuck on” appearance, dripped on wax
  - Velvety surface texture, matte-like
  - “cracked” appearance
  - Slowly enlarge and increase in thickness
  - Often multiple

- NOT premalignant – will not become cancer
- Usually with prominent keratin production and formation keratin pseudocysts when examined microscopically

Seborrheic Keratosis

Treatment of Seborrheic Keratoses

- None necessary unless concern of cancer
- Biopsy to confirm diagnosis
- May be removed for esthetics or in area of frequent trauma:
  - Cryotherapy
  - Electrodesiccation
  - Curettage
  - shave biopsy
  - excision using a scalpel
  - laser or dermabrasion surgery.
Sign of Leser-Trélat

- association of multiple eruptive, pruritic seborrheic keratoses with internal malignancy
- abrupt appearance of multiple seb kers caused by an associated cancer
  - rapid increase in their size and number.
- eruption of seb kers may develop after an inflammatory dermatosis

Arthur K Balin

Sign of Leser-Trélat

- Most commonly observed with adenocarcinoma*
  - Usually stomach and the colon
- Also reported in cases of squamous cell carcinoma, lymphoma, and leukemias
  - 20% of patients with the sign reportedly have a lymphoma or a leukemia
- Unusual cases:
  - 20-year-old woman with osteosarcoma **
  - 22-year-old man with a probable germinoma of the pineal body.***


Dermatosis papulosa nigra

- Form of seborrheic keratosis
- Occurs in about 30% of people of African descent
- Clinical findings:
  - Multiple, 1-3mm darkly pigmented papules
  - Usually in the zygomatic and periorbital region


• 45-year-old man


• 43-year-old woman


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Acrochordons (skin tags)
- Benign fibroepithelial polyp
- Incidence: 46% in the general population
- Typically develops in an area of skin irritation or skin folding
  - Armpit, neck, groin, eyelid, bra line
  - More common in overweight people
- Clinical findings:
  - skin colored or hyperpigmented papule
  - 2-5 mm in diameter
  - May resemble a papilloma
  - Single or multiple

http://www.emedicine.com/derm/topic606.htm

Acrochordon
- Tx: none necessary
  - may be removed for cosmetic reasons or due to frequent irritation

http://dermatlas.med.jhmi.edu/derm/indexDisplay.cfm?ImageID=173
http://www.emedicine.com/DERM/topic265.htm

Milia
- benign, keratin-filled cysts
- occurring in approximately half of all infants
- Seen in any age, race, gender
- Clinical Findings:
  - develop on the face
  - Periorbital, nose, cheeks
  - superficial, uniform
  - pearly white-yellowish
  - 1-2 mm

http://dermatlas.med.jhmi.edu/derm/indexDisplay.cfm?ImageID=173
http://www.emedicine.com/DERM/topic265.htm

Xanthelasma
- yellowish, soft, plaques
- age 15-75
  - Middle age and older is more common
  - 1% of the population
- Location:
  - eyelids, usually bilateral
  - near the inner canthus
  - more common on the upper eyelid
- 50% of patients with xanthelasma have elevated plasma lipid levels
  - recommend cholesterol evaluation

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This 36-year-old woman developed yellow pebbly plaques on the medial aspect of the right upper eyelid. The lesions were not symptomatic and a serum lipid profile was normal.

**Hemangioma**

- Benign proliferation of blood vessels  
  - (true neoplasm ???)  
  - Capillary, arteriovenous, cavernous  
- Vascular malformation  
- **Site:** Any location (skin or intraoral)  
  - Tongue, buccal mucosa, gingiva  
- **Clinical findings:**  
  - Red, purple or blue nodule/swelling  
  - Flat or elevated with a smooth surface

**Hemangioma**

- + Diascopy  
- Lesion may develop or contain a thrombus  
- **Tx:**  
  - Small lesions - no tx necessary (other than for cosmetic reasons)  
  - Large lesions -  
    - sclerosing agents  
    - embolization  
    - cryotherapy

- developed a rapidly growing blue mass on the right lower eye lid at 8 weeks of age  
- Started on propranolol 0.5 mg/kg/day in 3 divided doses.  
- One day later the dose was increased to 1 mg/kg/day, and the next day it was increased to 2 mg/kg/day.
Melanocytic Nevi

- **Congenital**
  - Present at birth
- **Acquired**
  - Junctional
  - Compound
  - Intradermal

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Melanocytic nevus (plural = nevi)

- Nevus definition: a circumscribed malformation of the skin or oral mucosa which is not due to external causes. May involve epidermis, connective tissue, vasculature, skin adnexa
- Melanocytic nevus = “Mole”
  - Benign proliferation of nevus cells
    - “first cousins” of melanocytes, derived from melanocytes
- Types
  - Congenital
  - Acquired
    - Junctional → compound → intradermal

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Melanocytic Nevi

- **Congenital**

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Congenital nevi

- Present in 1% of newborns in the U.S.
- May see hair within lesion
- Small: <1.5 cm in greatest diameter
- Medium: 1.5-19.9 cm in greatest diameter
- Large/giant: >20 cm in diameter
  - Risk of melanoma developing in these lesions has been reported to be as high as 5-7% by age 60 years (Bett 2005).
Giant/Large congenital nevus

- > 20 cm in greatest diameter
  - increased risk for the development of melanoma
  - the risk of developing melanoma has been reported to be as high as 5-7% by age 60 years (Rhodes, 1981; Bett, 2005)
Acquired Melanocytic Nevi

- Benign lesions which develop anywhere on the skin—can be found in the oral cavity.
- Composed of organized clusters of nevus cells arranged at various levels in the skin.
  - Nests of cells within:
    - Epidermis only = Junctional
    - Interface of epidermis & dermis = Compound
    - Dermis only = Intradermal
- 80% have BRAF mutations
  - A proto-oncogene, also a mutation in about half of skin melanomas.

Acquired Melanocytic Nevi

- Most adults have between 10 and 40 nevi
  - Most are above the waist
  - Head and neck area is common
- Sun exposure appears to be a stimulus for cell growth of nevi (most develop on sun-exposed skin)
- Appearance of new acquired nevi reaches a peak before age 30
- Newi appearing after age 30 should be regarded as suspicious, as should acquired nevi appearing in sun-protected areas
  - Some studies say age 21

Acquired Melanocytic Nevi

- People with large numbers of nevi (>50) have an increased lifetime risk of melanoma
- People with large numbers of nevi and a familial history of melanoma at greater risk
  - >2 members of the primary family with melanoma

Acquired Melanocytic Nevi

- Clinical features
  - Junctional nevus
    - Brown to black macule, <6mm diameter → evolves into compound nevus
  - Compound nevus
    - Elevated, brown/tan → evolves to intradermal nevus
  - Intradermal nevus
    - Gradually loses pigmentation, hairs may grow out of it, surface becomes papillary

Melanocytic nevus
Intradermal nevi

14 year old female

Intraganglionic nevus

Intramucosal nevus
**Acquired Melanocytic Nevi**

- Treatment: None, unless in an area of repeated trauma or for cosmetic reasons
- Prognosis: Excellent
  - Malignant transformation is extremely rare
- **Dysplastic Nevi / Atypical nevi**
  - Nevus cells have cytologic atypia
  - Larger, atypical appearance
  - Color variation
  - Irregular border
  - Precursor to melanoma

**Clinical features of atypical nevi and melanoma**

- **A = asymmetry**
  - Half the lesion does not match the other half
- **B = border irregularity**
  - The edges are ragged, notched, or blurred
- **C = color variegation**
  - Pigmentation is not uniform and may display shades of tan, brown, or black; white, reddish, or blue discoloration is of particular concern
- **D = diameter > 6 mm**
- **E = evolving, expanding, elevating**
  - Changes in the lesion over time are characteristic

**Border irregularity**

- ragged, blurred, or irregular

**Color variation**

- Multiple colors within one lesion, history of color change

**Atypical melanocytic nevi**

- Can you draw a line down the mole and each half is close to or symmetrical

Asymmetry


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Atypical nevus

- 24-year-old man was evaluated for multiple atypical nevi on sun exposed areas of his trunk
- irregularly shaped and hyperpigmented plaque
- architectural and cytological atypical changes, and the scar was re-excised

9 year old girl

- Nevus growing over several years 1.2 cm X 0.8 cm.
- center became elevated and the border developed a darker brown ring.
- family history of atypical moles and melanoma
“Know your skin” The Skin Cancer Foundation

- Anyone who has an increased risk of developing melanoma must be vigilant.
  - light eyes, hair, and/or skin; freckles;
  - many moles
  - personal or family history of melanoma or nonmelanoma skin cancer
  - sun sensitivity
  - inability to tan
  - repeated and intermittent sunburns
  - a very large mole present at birth
  - dysplastic nevi

“Know your skin” The Skin Cancer Foundation

- Become aware of all moles on your total skin surface
- Examine the skin completely each month
- using a good light source a full-length mirror and a hand-held mirror
- Ask a family member or friend to help in examining hard-to-see parts of the body.
- A hair dryer is useful when checking the scalp
- examine the bottom of the feet and between the toes.
- If moles are changing, as they may during adolescence, they should be checked at more frequent intervals.
- Inform your doctor about any moles that have suspicious signs, symptoms, or changes.

Actinic Keratosis

- Premalignant skin condition, dysplasia
- Etiology: Chronic sun exposure, UV damage
- Develops into squamous cell carcinoma of the skin if not treated. (6-10%)
- Age: middle-aged or older
- More common in light skinned people

The Skin Cancer Foundation

- Some suggestions for people with dysplastic nevi:
  - write down a complete family history of unusual moles, melanomas
  - have regular complete skin examinations
  - supplement regular medical checkups with monthly self examination
  - reduce sun exposure.
  - check with your doctor about having a set of full-body photographs taken,
  - have any unusual or changing skin growth examined promptly by your doctor.
  - With regular self-examination, professional examination, and common sense, you greatly reduce your chances that a melanoma will grow to a threatening size before it can be detected and removed.
**Actinic Keratosis**

- **Clinical:**
  - Found on sun-exposed areas
  - Face and dorsum of the hands
  - Rough, scaly plaque
  - Skin-toned, red or brown in color with light to intensely white overlying keratin production
  - Size: 3-10mm (can be larger)
  - Lesions may develop a "cutaneous horn" excess keratin production
  - May be easier to feel than see

http://www.webmd.com/melanoma-skin-cancer/slideshow/sun-damaged-skin
Actinic cheilitis/cheilosis

- Precancerous alteration of the lip
  - More common on lower lip, involving vermillion
- Caused by chronic UV damage
  - Slowly progressive
  - Risk of malignant transformation (to SCC) is about 2.5x greater than for actinic keratosis
- Males (10:1), fair-skinned individuals
- Highly correlated with outdoor occupations

Actinic cheilosis

- Early changes
  - Indistinct border between the vermillion and skin
  - Atrophy/thinning of the vermillion
  - Blotchy, pale areas

- Advanced lesions
  - Thickened, scaly, crusted lesions
  - Leukoplakia
  - Ulceration

http://www.webmd.com/melanoma-skin-cancer/slideshow-sun-damaged-skin
Treatment options for AK/AC

- Cryotherapy (freeze with liquid nitrogen)
- Topical chemotherapeutics
  - 5-fluorouracil (5-FU) ointment or liquid
    - 0.5 to 5% has FDA approval
    - Most widely used topical treatment
    - It is effective against not only the visible surface lesions, but also the subclinical ones.
    - Rubbed onto the skin 1-2X/day for 2-4wks, cure rates of up to 93%
- Curettage
- Surgical excision
- Laser therapy

Incidence of BCC and SCC

- Determining the true incidence of SCC is difficult:
  - Health registries exclude nonmelanoma skin cancer from their databases because of the high number of cases and limited resources to collect data
- In 1994, the annual incidence in the United States ranged from 81-136 cases per 100,000 population for men and 26-59 cases per 100,000 population for women. *
  - rate of these cancers varies based on geographic locale.

http://jama-medicine.medscape.com/article/181135-overview

Skin Cancers

Basal cell carcinoma (BCC)
Squamous cell carcinoma (SCC)
Melanoma
BCC

- **US statistics**
  - estimated 5.4 million basal and squamous cell carcinomas in 3.3 million US people in 2018*
  - 8/10 are BCCs*


Basal Cell Carcinoma (BCC)

- Most common skin cancer – 75%
- Etiology: Chronic UV damage
- **Clinical:**
  - Slow-growing, firm papule, plaque or nodule
  - Center usually is depressed “rolled border”
    - “umbilicated”
  - May be ulcerated
  - Surface may have telangiectatic vessels
  - Commonly seen in the head and neck - 80%
    - Middle 1/3 of face (upper lip – eyebrows)
    - More common in people over 40


Islands of tumor cells infiltrating into the adjacent dermis
Peripheral cells exhibit PALISADING and “retraction artifact”
64-year-old woman
Dermoscopy (x20) shows arborizing (tree-like) vessels and blue-gray globules, hallmarks of basal cell carcinoma

BCC

• Treatment:
  — Surgical excision (3-10mm margins)
  — Mohs micrographic surgery
  — electrodessication and curettage
  — radiation

• Prognosis:
  — Excellent
  — Incidence of metastatic BCC is estimated < 0.1%.

Mohs Micrographic Surgery

• most advanced and effective treatment procedure for skin cancer available
• exact and precise
• minimizes chance of re-growth
• lessens potential for scarring or disfigurement
• has the highest success rate of all treatments for BCC
• microscopic surgical procedure ensures complete removal
• Specially trained surgeons
  — one additional year of fellowship training
  — (in addition to the physician’s three-year dermatology residency) under the tutelage of a Mohs College member.
**Indications for Mohs:**

- Recurrent or incompletely excised BCC or SCC
- Primary BCC or SCC with indistinct borders
- Lesions located in high-risk areas involving mainly embryonic fusion planes
  - Eyelids, nose, ear
  - Nasolabial folds, upper lip, vermilion border, columella
  - Periorbital, temples
  - Preauricular and postauricular areas, scalp

**Five-year recurrence rates for primary BCC**

- **Mohs micrographic surgery** - 1%
- Surgical excision - 10.1%
- Curettage and desiccation - 7.7%
- Radiation therapy - 8.7%
- Cryotherapy - 7.5%

**Five-year recurrence rates for recurrent BCC**

- **Mohs micrographic surgery** - 5.6%
- Surgical excision - 17.4%
- Curettage and desiccation - 40%
- Radiation therapy - 9.8%
- Cryotherapy - 13% (&lt;5-y period)

**Technique**

- Divide the specimen into small sections and stain with different color dyes
- Draw a map of these sections with colored sides to facilitate localization of any residual skin cancer
- Tissue is frozen, sections are cut using the cryostat and stained with H&E
Technique

- Sectioning
  - Horizontally, includes lateral and deep margins
- Mohs surgeon or pathologist review slides
- Complete evaluation of the lateral and deep margins
  - Fewer false-negative results compared with ordinary bread-loaf sections in paraffin slides.
- Any residual skin cancer, repeat the whole process until the tumor is completely removed.
Mohs and cost effectiveness

- Mohs surgery is no more costly than standard excision
- less expensive than radiation therapy or excision in an ambulatory surgery center.

- minimizes the risk of recurrence, reduces and may eliminates cost of larger, more serious surgery for recurrent skin cancers.


Squamous Cell Carcinoma

- Second most common type of skin cancer.
- Primary cause of most SCC is cumulative lifetime UV exposure
- Malignant neoplasm of squamous epithelial cells
- Other risk factors:
  - > 50 years
  - Male
  - Light skin
  - Blonde or light brown hair
  - Green, blue, or gray eyes
  - Skin that sunburns easily
  - Geographic location close to the equator
  - History of prior nonmelanoma skin cancer

Incidence of SCC

- Determining the true incidence of SCC is difficult:
  - Health registries exclude nonmelanoma skin cancer from their databases because of the high number of cases and limited resources to collect data
  - Because the rate of SCC varies based on geographic locale.
- In 1994, the annual incidence in the United States ranged from 81-136 cases per 100,000 population for men and 26-59 cases per 100,000 population for women.

Risk factors for SCC

- Therapeutic UV exposure
  - Ex: UV light treatments used for psoriasis
- Ionizing radiation
  - medical treatments, occupational or accidental radiation exposure
- Chemical carcinogens
  - Arsenic, tar
- DNA repair failure:
  - xeroderma pigmentosum: deficiency in an enzyme essential for normal DNA repair of UV-induced damage

   http://link.springer.com/article/10.1007%2Fs10615-008-9043-4

Squamous Cell Carcinoma (SCC)

- UV sunlight exposure
- UVB (290-320 nm), both an initiator and a promoter of carcinogenesis.
- UVB spectrum inhibits antigen presentation, induces the release of immunosuppressive cytokines, and elicits DNA damage
  - specifically the generation of pyrimidine dimers in keratinocyte DNA that is a molecular trigger of UV-mediated immunosuppression.
  - Inactivation of the tumor suppressor gene p53 occurs in up to 90% of all cutaneous squamous cell carcinoma lesions.


Xeroderma pigmentosum: deficiency in an enzyme essential for normal DNA repair of UV-induced damage


Risk factors for SCC

• Iatrogenic immunosuppression
  – organ transplant patients
  – 65- to 250-fold increased risk of developing squamous cell carcinoma compared with the general population*
• Noniatrogenic immunosuppression
• Chronic scarring conditions
• Certain genodermatoses
  – Ex: Dystrophic epidermolysis bullosa, dyskeratosis congenita

Squamous Cell Carcinoma (SCC)

• Clinical:
  – ~70% of all skin SCCs occur on the head and neck
  – Ill-defined
  – Rough or ulcerated surface
  – Firm, enlarging lesion
  – Patient may report bleeding from the lesion


http://www.webmd.com/melanoma/skin-cancer/slideshow/sun-damaged-skin


85 year old woman

45 year old man
68 year old woman

70 year old man

Squamous cell carcinoma

SCC
Squamous Cell Carcinoma

- **Treatment:**
  - Surgical excision
  - Mohs micrographic surgery
  - Radiation
  - Electrodesiccation and curettage
  - Cryotherapy

- **Prognosis:** Good
  - 1-3% metastasize
  - Easily curable if treated early
  - Local size and depth of penetration important in prognosis

Melanoma

- Third most common skin cancer
- <5% of all skin cancers, causes most deaths
- 1:40 people
- ~178,560 cases diagnosed in US in 2018*
  - ~87,290 in situ, 91,270 invasive*
- ~9,320 deaths in US in 2018*
- Most common cancer in women age 25-29
- Site:
  - 25% of skin melanomas arise in the head and neck area
  - 40% on the extremities
  - 35% on the trunk
  - Head, neck, back - most common locations for men
  - Back or lower legs in women
- Acute sun exposure may contribute to causing melanoma more than chronic exposure

* https://www.skincancer.org/skin-cancer-information/skin-cancer-facts
† https://www.cancer.org/cancer/melanoma-skin-cancer/about/key-statistics.html

Melanoma

- Average age at melanoma diagnosis is 63 years

https://www.cancer.org/cancer/melanoma-skin-cancer/about/key-statistics.html

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Primary risk factors for melanoma

• Changing pigmented lesion (most important warning sign)
• Clinical atypical/dysplastic nevi
  – (particularly >5-10)
• Large numbers of common nevi (>100)
• Large (giant) congenital nevi (>20 cm diameter in an adult)
• Previous melanoma
• History of excessive sun exposure
• Melanoma in first-degree relative(s)

Primary risk factors

• Male gender
• Age older than 50 years
• light-skin phenotype
  – blue/green eyes
  – blond or red hair
  – light complexion
  – sun sensitivity
• occurrence of blistering sunburn(s) in childhood and adolescence

Sunburn* Prevalence (%) in the Past Year, Adults 18 and Older, US, 2004

*Reddening of any part of the skin for more than 12 hours. Note: The overall prevalence of sunburn among adult males is 46.4% and among females is 36.3%.


Primary risk factors

• Prior nonmelanoma skin cancer
• Presence of xeroderma pigmentosum or familial atypical mole melanoma syndrome:
  – 500- to 1000-fold greater relative risk of developing melanoma

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Lentigo Maligna

- Precursor to melanoma – melanoma in-situ
- >1-3 cm in diameter
  - present for a minimum of 10-15 years, grows slowly over 5-20 y
- average age 65 y
- head, neck, and arms of light-skinned older individuals
- macular pigmentation ranging from dark brown to black
- Dermal invasion (progression to lentigo maligna melanoma) is characterized by the development of raised blue-black nodules within the in situ lesion
Melanoma
— Can be seen in areas that never see the sun
  • intraoral, esophagus, anus, vagina
  • meninges, conjunctiva and retina

Melanoma

- **Treatment:** Wide surgical excision
- **Prognosis:**
  - Vertical thickness
  - Depends on stage at time of diagnosis
Melanoma prognosis

- Tumor thickness (Breslow depth)
  - measured vertically in millimeters from the top of the granular layer (or base of superficial ulceration) to the deepest point of tumor involvement.
- Presence of ulceration
- Anatomic level of invasion (Clark level)
- Presence of mitoses
- Presence of regression
- Lymphatic/vessel invasion or vascular involvement
- Host response (tumor-infiltrating lymphocytes)

Melanoma treatment

- Stage 0 (melanoma-in-situ)
  - Wide surgical excision (at least 1 cm margins)
- Stage I, II, III (resectable)
  - Wide surgical excision +/- lymph node management
    - Sentinel lymph node biopsy
    - Complete lymph node dissection
- Stage III and IV (unresectable)
  - Immunotherapy (stimulating the body’s own immune system to attack cancer cells)
  - BRAF inhibitors (for pts with BRAF mutation)
  - Chemotherapy

Summary

- Discuss your patients’ skin lesions with them
- Be aware of your own skin lesions and monitor them for changes
- Seek annual evaluations with a dermatologist and recommend the same to your patients
- Refer any patient with a suspicious skin lesion for evaluation
- Wear and recommend sunscreen!!!

Reference Text Suggestions

Thank You!

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