

Skin Lesions and Cancers: When is a Spot More than a Spot? ...and also... Sunscreens

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I have no conflicts of interest to disclose

Outline

- Common benign skin lesions
- Non- melanoma skin cancers
 - Actinic keratoses (“pre-cancers”)
 - Basal cell carcinoma
 - Squamous cell carcinoma
- Moles (Nevi)
- Melanoma
- Sunscreen

Common Skin Lesions

- Seborrheic keratosis
- Dermatofibroma
- Cherry angioma
- Pyogenic granuloma
- Chondrodermatitis nodularis helices
- Sebaceous hyperplasia

Seborrheic Keratoses

- BENIGN
- Appear beginning at age 40, earlier in sunny regions
- Stuck-on (above the skin)
- Greasy/waxy/warty texture
- Face, under breasts, trunk
- 0.1 to 2.0 cm in diameter





Seborrheic Keratoses

Treatment

- None required
 - No malignant potential
- Most common
 - Liquid nitrogen

Dermatofibroma

- Firm, 3-7 mm slightly rough surfaced, slightly elevated papules
- Overlying hyperpigmentation
- Firm to palpation; Dimple sign
- Often at sites of minimal trauma
 - Bug bite, ingrown hair, etc
- Treatment : Reassurance, cryotherapy, removal
- Often recur after removal









Cherry Angioma

- Very Common
- Increases with age (senile angioma)
- F>M (?hormonal)
- 1-5 mm bright red dome-shaped bump
- Not easily compressible
- Association: None
- Complications: None



Pyogenic Granuloma

- Friable, 5-10 mm papule
- Occurs after trauma
- Children and adults
- Biopsy: Excess granulation tissue
- Treatment: Surgical removal (curette), electrodesiccation of base
- Complication: Rarely may recur and form satellites



Chondrodermatitis Nodularis Helices

- Benign inflammation of the cartilage of the ear (helix or antihelix)
- Middle aged men
- Painful!
- “can’t sleep on that side”
- May mimic skin cancers
- Treatment
 - Relieve pressure, surgical removal, time
 - LN2, steroid injections, laser therapy

“CNH pillow”





Sebaceous Hyperplasia

- Common, benign
- Single or multiple pink to yellow bumps on the face, often with telangiectasias (visible blood vessels) and central depression
- May mimic BCC
- Treatment- electrodesiccation, laser, shave removal, photodynamic therapy (“blue light”), cryotherapy



Nonmelanoma Skin Cancer (NMSC)

- Actinic Keratosis (“pre-cancer”)
- Basal Cell Carcinoma
- Squamous Cell Carcinoma

- Caused primarily by ultraviolet radiation

Actinic Keratosis

- In-situ dysplasia from ultraviolet exposure
- Sign of sufficient sun injury to develop NMSC
- Precancerous (low rate <1%)
- Prevented by sun screen use, even in adults

Actinic Keratosis

- Diagnosis - Clinical inspection
 - Red, scaly patch < 6mm.
 - Tender to touch.
 - Sandpaper consistency.
- Location - Scalp, face, dorsal hands, lower legs (women)



Basal Cell Carcinoma

- Most common of all cancers
 - > 1,000,000 diagnosed annually in USA
 - Lifetime risk for Caucasians: up to 50%
- Intermittent intense sun exposure and overexposure (sunburns)
- Locally aggressive, very rarely metastasize

Basal Cell Carcinoma

- Clinical Subtypes
 - Nodular (classic)
 - Superficial
 - Pigmented
 - Morpheaform (scar-like)
- Clinical and histologic subtypes (microscopic description) influence behavior
 - Most concerning: morpheaform, sclerotic, micronodular, infiltrative

Basal Cell Carcinoma- Superficial

- Clinically pink, slightly scaly, slightly shiny patch
- Looks like an actinic keratosis

Basal Cell Carcinoma- Pigmented

- May be entirely pigmented or there may be specks of pigment within what otherwise looks like a nodular or superficial BCC
- Melanoma is on the differential!!



Basal Cell Carcinoma- Morpheaform

- Clinically scar-like
- Difficult to determine clinically where lesion begins and ends

Squamous Cell Carcinoma

- Presents as red plaque, ulceration, or wart like lesion
- Risk factors:
 - Fair skin
 - Inability to tan
 - Chronic sun exposure
- Special situations:
 - Organ transplant recipients





Keratoacanthoma



- Rapidly growing (1 month)
- Dome-shaped nodule with central core of keratin
- May spontaneously regress, but treat as an SCC

Treatments

Actinic Keratoses

Basal Cell Carcinoma

Squamous Cell Carcinoma

Liquid Nitrogen





wiseGEEK

Electrodesiccation

- Damped, high-voltage current
- Causes superficial tissue damage via dehydration





From: Bologna, Jorizzo, and Schaffer. Dermatology 3rd ed. Elsevier 2012



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Actinic Keratoses- Treatment

- Liquid nitrogen (single freeze-thaw cycle)
- Topical treatment
 - 5-fluorouracil (0.5-5%) (Efudex)
 - Imiquimod 5% cream (Aldara)
 - Diclofenac (Solareze)
 - Picato (ingenol mebutate); 0.015%, 0.05%
- Photodynamic therapy



AKs treated with 5-fluorouracil



Actinic Keratoses- Treatment

- Always biopsy if an AK is not responding to appropriate therapy
 - r/o SCC, superficial BCC

Basal Cell Carcinoma- Treatment Location, Size, and Subtype Guide Therapy

- Superficial
 - Imiquimod
 - Electrodesiccation and curettage (ED+C)
- Nodular or pigmented
 - ED+C
 - Excision
 - Mohs micrographic surgery
 - Radiation- comorbidities, tumor size and location
- Morpheaform, infiltrative, micronodular
 - Excision
 - Mohs micrographic surgery

Squamous Cell Carcinoma Treatment

- SCC in situ
 - 5-FU
 - Imiquimod
 - Liquid nitrogen
 - Electrodesiccation and curettage
- Invasive SCC
 - Excision with 4-6 mm margins
 - Mohs micrographic surgery

Topical Treatment of Skin Cancer

- Patient selection is the key
- Work for superficial cancers (NOT invasive)
 - Superficial BCC, SCC in situ
- Long courses (months) may be required
- *Biopsy to confirm diagnosis should be done before treating*

Topical Treatment of Skin Cancer

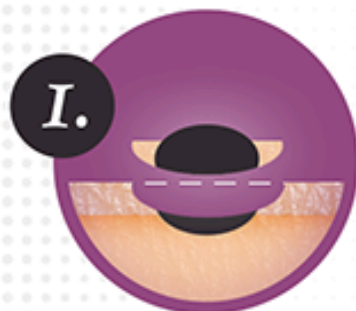
- Scarring may be reduced compared to surgery
- Superficial BCC's and SCC in situ
- Imiquimod 5% cream
 - 5X per week for 6-10 weeks depending on the host reaction
 - Efficacy 75%-85%
- 5 fluorouracil
 - Topically twice daily for up to 12 weeks

What is Mohs Micrographic Surgery?

- Named after Frederic E. Mohs who developed technique
- High cure rate
- Surgeon (dermatologist trained in MMS)
 - Removes only the skin with the cancer cells
- Performed in the office
- Appropriate for tumors (BCC, SCC) that are
 - Aggressive or large
 - Appear in areas with little tissue beneath it
 - Has been treated but recurred

Mohs surgery

what to expect:



1. The visible tumor and a small segment of surrounding skin are removed.



2. The tissue is examined under a microscope for cancer cells.



3. If cancer cells are found, skin continues to be removed and examined.

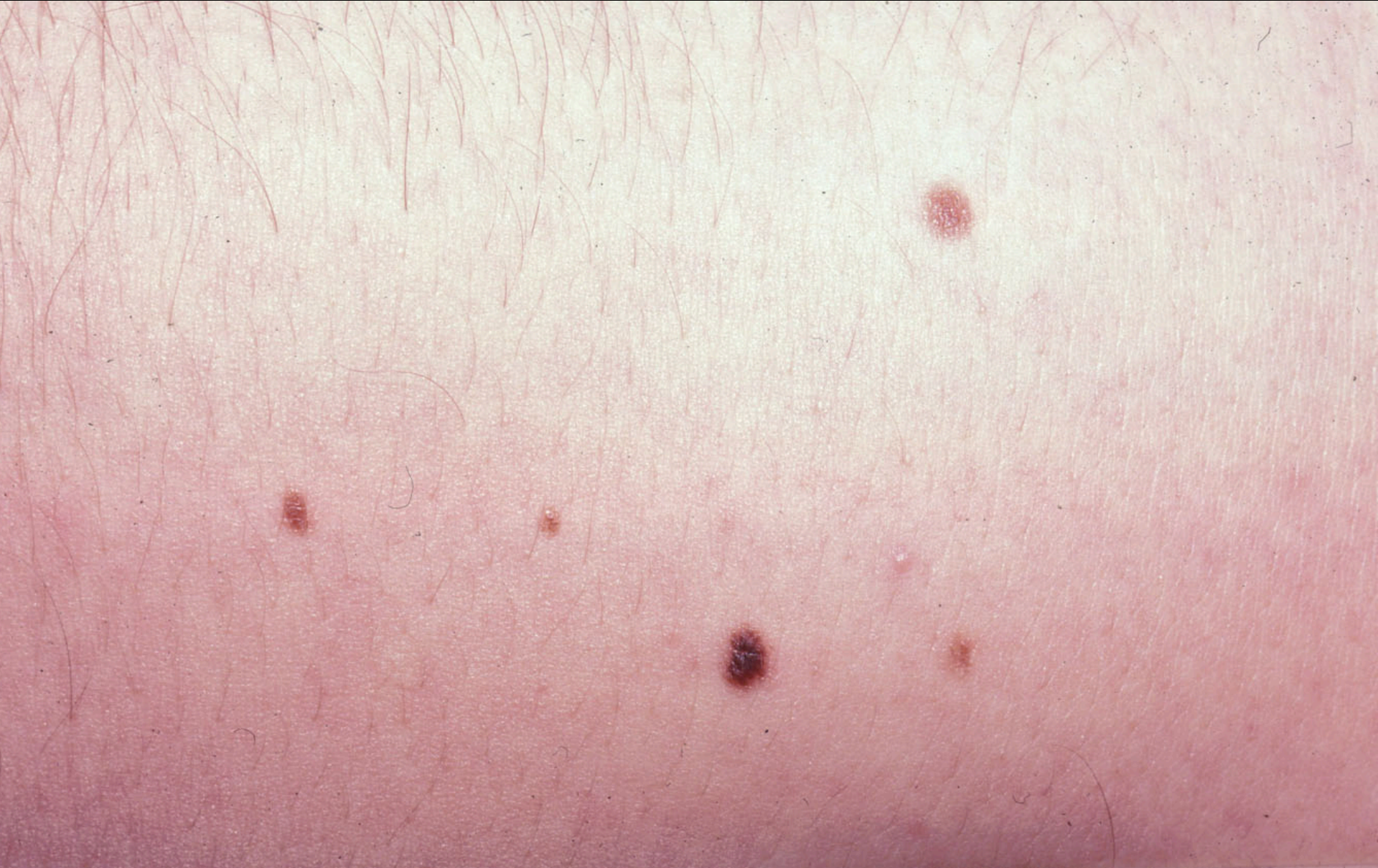


4. This continues until no more cancer cells are found.

Acquired Nevi (Moles)

Acquired Nevi (Moles)

- Almost universal
- In areas of sun exposure
- Change throughout life, appearing at preschool age, growing during young adulthood, and involuting in old age
- 5mm in diameter or less (size of pencil eraser)
- Size (>6mm), number (more than 50) and pattern (not in sun exposed sites) predicts melanoma



Atypical Moles

- Not in sun exposed sites
- Larger than 6 mm in diameter
- Greater than 50



Question: The most important prognostic indicator in melanoma is:

1. Duration of lesion before diagnosis
2. Depth of lesion
3. Presence of ulceration
4. Size of radial growth phase
5. Location of lesion

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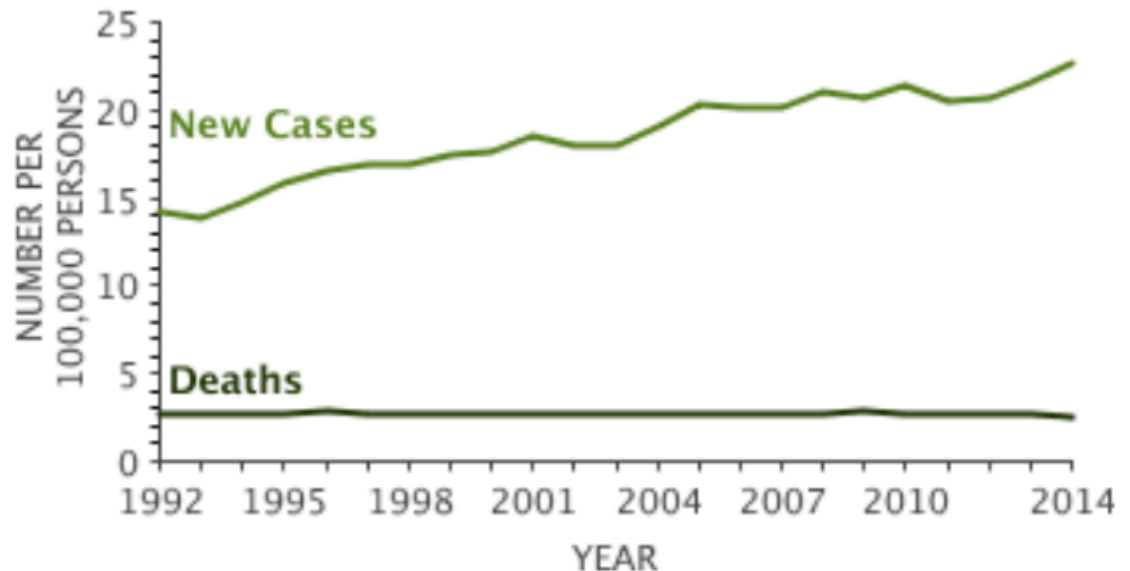
Malignant Melanoma

Estimated New Cases in 2017	87,110
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% of All New Cancer Cases	5.2%
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Estimated Deaths in 2017	9,730
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% of All Cancer Deaths	1.6%
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Current lifetime risk of melanoma in US is 2.2%
5 year survival 91.7%

Malignant Melanoma

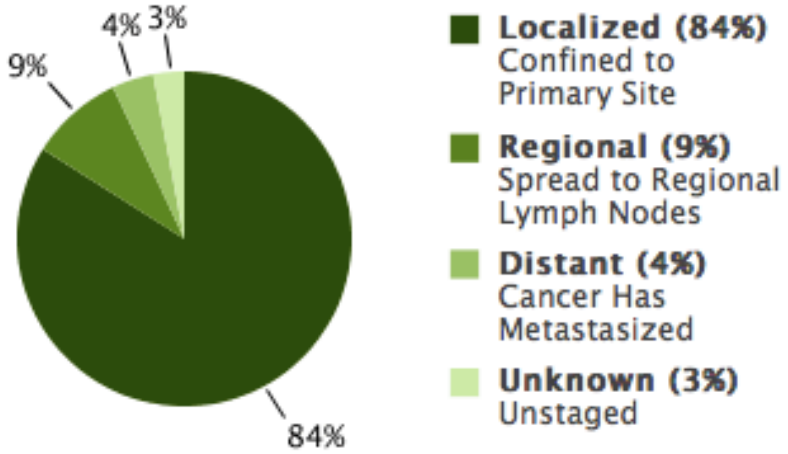
Common Types of Cancer	Estimated New Cases 2017	Estimated Deaths 2017
1. Breast Cancer (Female)	252,710	40,610
2. Lung and Bronchus Cancer	222,500	155,870
3. Prostate Cancer	161,360	26,730
4. Colorectal Cancer	135,430	50,260
5. Malignant Melanoma of the Skin	87,110	9,730
6. Bladder Cancer	79,030	16,870
7. Non-Hodgkin Lymphoma	72,240	20,140
8. Kidney and Renal Pelvis Cancer	63,990	14,400
9. Leukemia	62,130	24,500
10. Uterine Cancer	61,380	10,920

Melanoma of the skin represents 5.2% of all new cancer cases in the U.S.

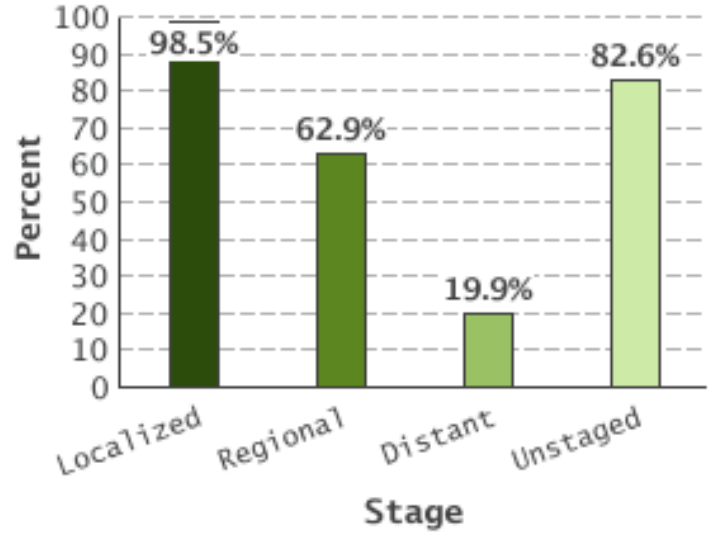


Percent of Cases & 5-Year Relative Survival by Stage at Diagnosis: Melanoma of the Skin

Percent of Cases by Stage

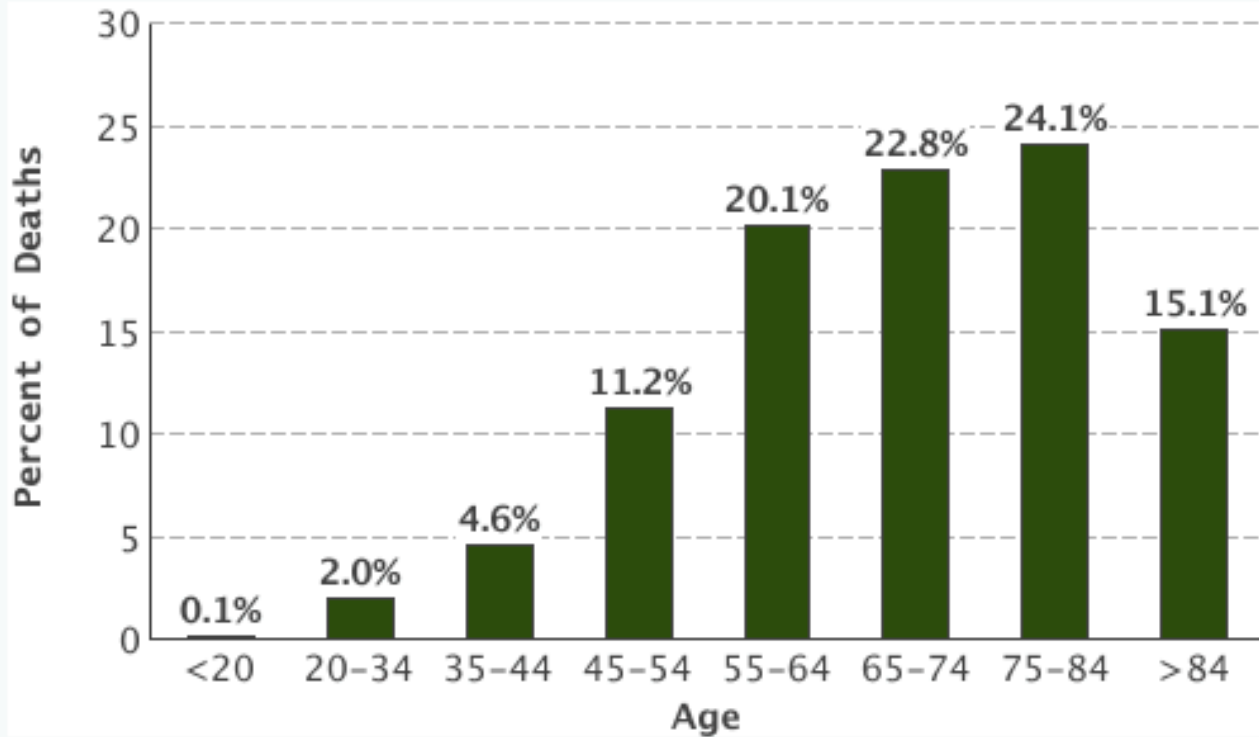


5-Year Relative Survival



SEER 18 2007-2013, All Races, Both Sexes by SEER Summary Stage 2000

Percent of Deaths by Age Group: Melanoma of the Skin



The percent of melanoma of the skin deaths is highest among people aged 75-84.

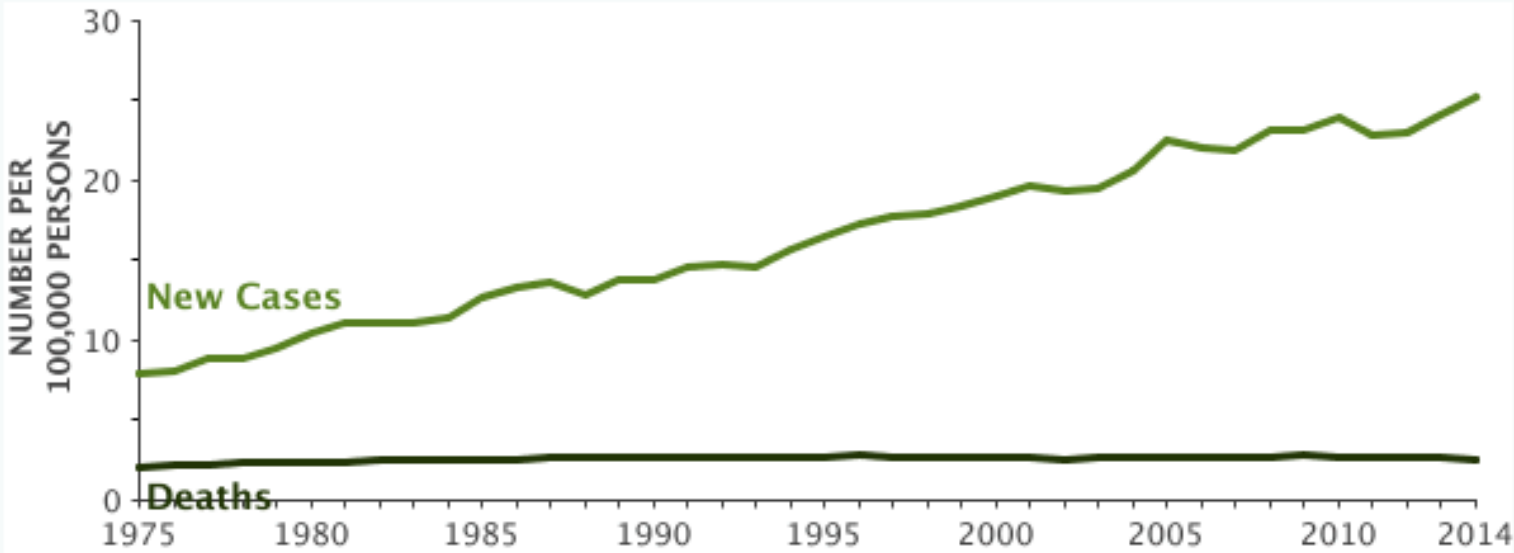
Median Age At Death

70

U.S. 2010-2014, All Races, Both Sexes

New Cases, Deaths and 5-Year Relative Survival

[View Data Table](#)



Year	1975	1980	1985	1990	1995	2000	2005	2009
5-Year Relative Survival	81.8%	83.9%	86.2%	89.3%	90.2%	92.1%	93.3%	93.1%

SEER 9 Incidence & U.S. Mortality 1975–2014, All Races, Both Sexes. Rates are Age-Adjusted.

Diagnosis of Melanoma

- The prognosis is **DEPENDENT** on the depth of lesion and lymph node status
- Melanoma of **< 0.8mm** in thickness is **low risk**
- Sentinel lymph node biopsy
 - Recommended for melanoma depth $\geq 1.0\text{mm}$
 - May be recommended for melanoma depth $< 0.8\text{mm}$ with ulceration or $0.8\text{-}1.0\text{mm}$ with or without ulceration

Risk factors for melanoma

Moles - atypical

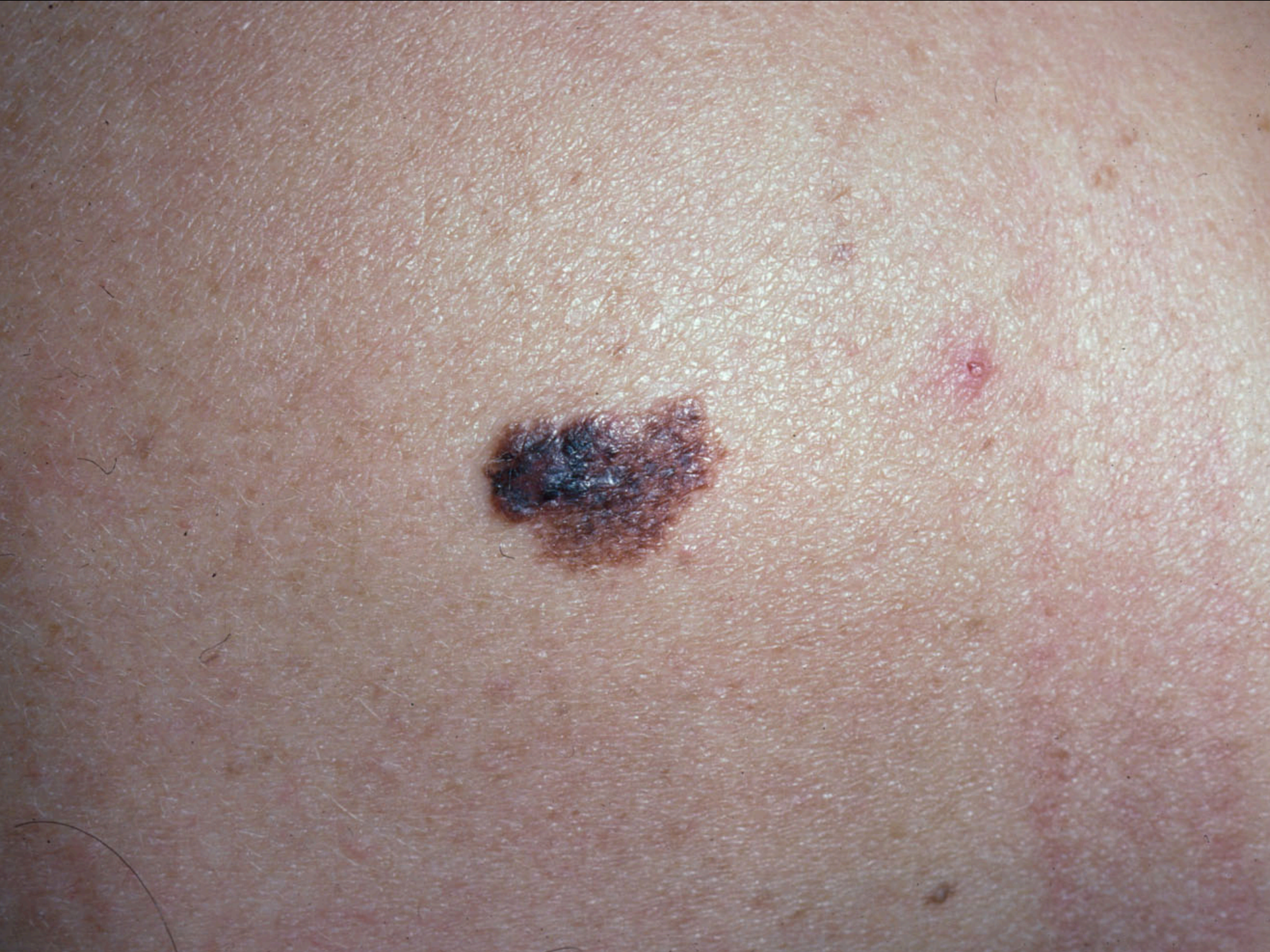
Moles - typical > 50

Red hair and freckling

Inability to tan – skin types 1 and 2

Severe childhood sunburns

Kindred - first degree relatives with melanoma; genetic mutations: CDKN2A, CDK4, others











Acral Melanoma



- Suspect in African American, Latino, Asian patients

Malignant Melanoma

- Asymmetry
- Border
- Color
- Diameter
- Evolution

Thinking of "ABCD" can help you remember what to watch for:

A Asymmetry—The shape of one half does not match the other.



Normal *Melanoma*

B Border—The edges are ragged, notched, or blurred.



Normal *Melanoma*

C Color—The color is uneven. Shades of black, brown, and tan may be present. Areas of white, grey, red, or blue also may be seen.



Normal *Melanoma*

D Diameter—There is a change in size.



Normal *Melanoma*

Malignant Melanoma

- *Asymmetry – Two halves of lesion not the same*
- Border
- Color
- Diameter
- Evolution

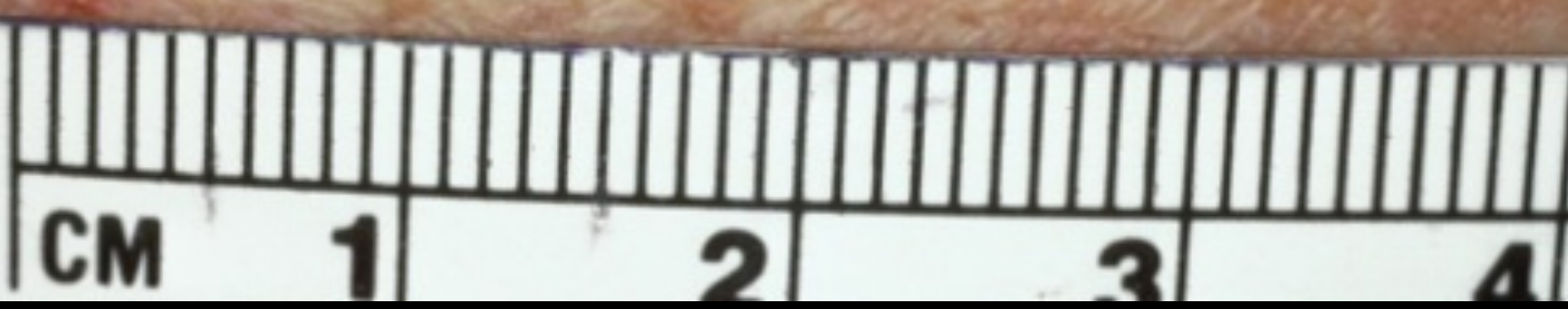


Malignant Melanoma

- Asymmetry
- *Border – Irregular, notched, vague*
- Color
- Diameter
- Evolution

Malignant Melanoma

- Asymmetry
- Border
- *Color - Variations in color: red, white and blue*
- Diameter
- Evolution



CM

1

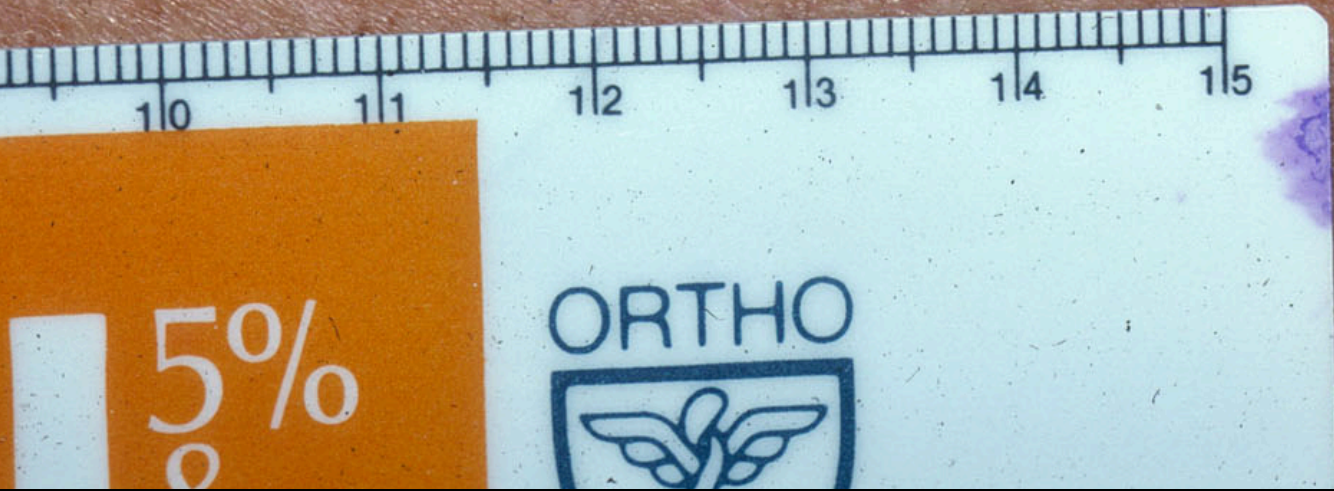
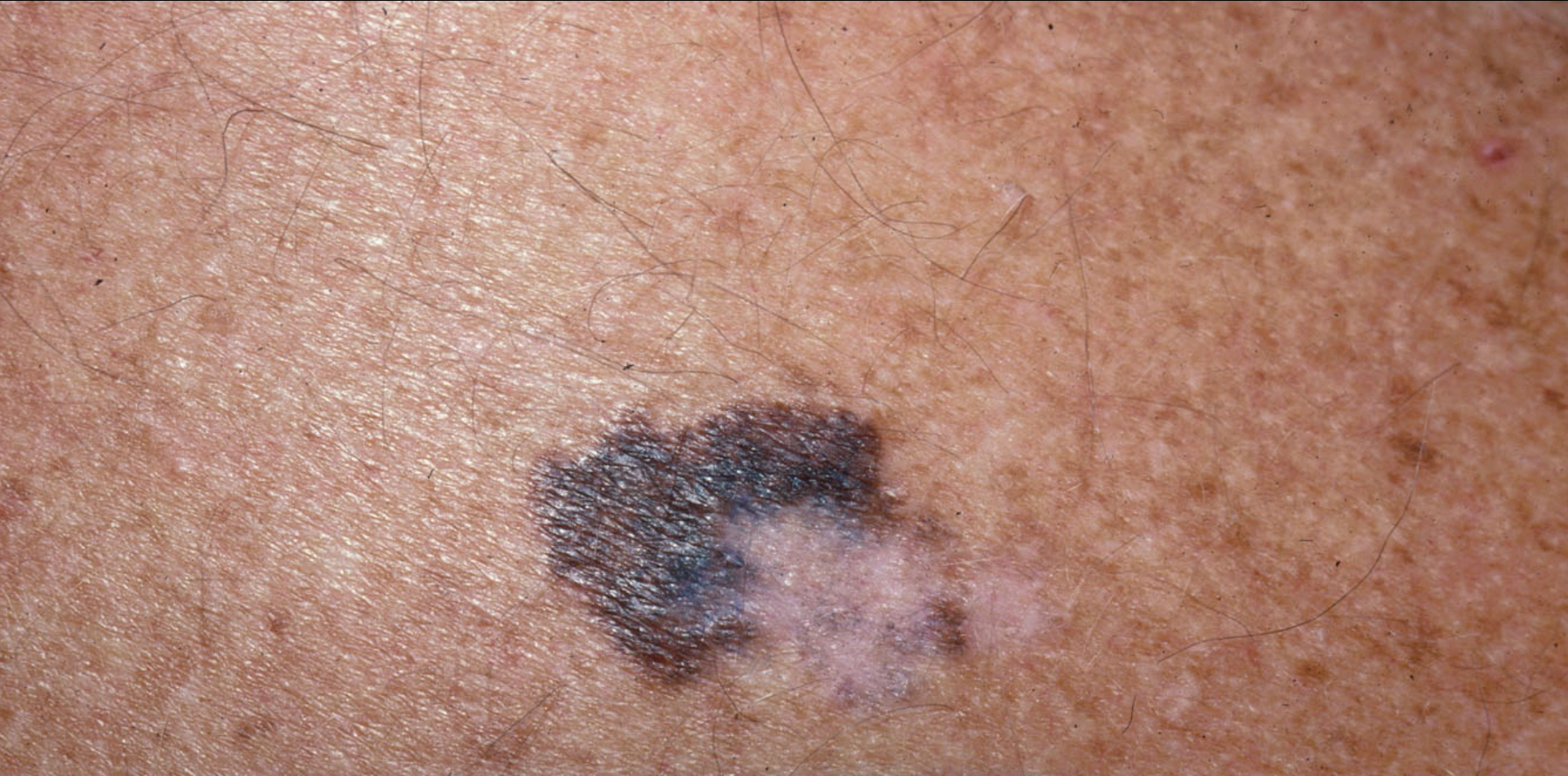
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3

4

Malignant Melanoma

- Asymmetry
- Border
- Color
- *Diameter - Approximately 6mm (pencil eraser)*
- Evolution



Malignant Melanoma

- Asymmetry
- Border
- Color
- Diameter
- *Evolution - Changing*

Amelanotic Melanoma

- Form of melanoma that lacks pigment
- Must **THINK** about it in order to make the diagnosis



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NEW Systemic Therapies for the Treatment of Advanced Skin Cancer

- BCC

- Vismodegib (Erivedge)

- Hedgehog signaling pathway inhibitor
 - Metastatic, relapsed, inoperable, or not amenable to radiation

- Melanoma

- BRAF inhibitors (V600E mutation)

- Vemurafenib (Zelboraf); Dabrafenib (Tafinlar)

- Monoclonal Ab to CTLA4

- Ipilimumab (Yervoy)

- Monoclonal Ab to PD-1

- Pembrolizumab (Keytruda); Nivolumab (Opdivo)

- MEK inhibitor

- Trametinib (Mekinist); Cobimetinib (Cotellic)

You May Have Heard....

- Aspirin can prevent melanoma
 - Studies still inconclusive
- Blood pressure medications may increase the risk of skin cancer
 - True only for hydrochlorothiazide
 - Still need more information
- Nicotinamide 500 mg twice a day*
 - Decreases AKs (by 11%)
 - Decreases NMSC in high risk patients (by 23%)

Sunscreens 101

Why Sunscreens?

- Prevention of skin cancer
- Prevention of photosensitivity (UVA)
 - Medications
 - Diseases: e.g. lupus erythematosus
- Prevention of skin aging

New Sunscreen Labeling (Summer 2012)

- Broad spectrum = blocks UVA and UVB
- SPF= UVB blockade
- For sunscreen to say can prevent skin cancer AND sunburn, must
 1. be broad spectrum
 2. $SPF \geq 15$
- Water resistant for 40 min or 80 min
 - No more “water proof”, “sweat proof”
 - Suggests that always need to re-apply every 2h

Chemical vs Physical Sunscreens

- Chemical sunscreens have UV absorbing chemicals
 - Benzophenone, Parsol 1789, Mexoryl, etc
 - Chemical UVA blockers are photo-unstable (degrade)
 - Stabilizers are now common (e.g. Helioplex)
- Physical sunscreens scatter or block UV rays
 - Zinc and titanium are physical blockers
 - More photostable
 - Block UVA well
 - Inelegant (white film)

Sunscreen and Coral Reefs

- AVOID
 - Oxybenzone (benzophenone-3)
 - Also allergic contact dermatitis
 - Butylparaben (preservative)
 - Octinoxate (ethylhexyl methoxycinnamate)
 - 4-methylbenzylidene camphor
 - Not allowed in US
- DO
 - Water resistant sunscreen
 - Biodegradable
 - Sunprotective clothing
 - Zinc oxide

How to Apply Sunscreen

- Every morning before leaving house
 - at least 20 min before sun exposure
- For heavy sun exposure
 - Reapply 20 minutes after exposure begins
- Reapply every 2 hours or after swimming/
sweating/towel-drying
- Apply liberally
 - 1oz application= shot glass = covers the body

Sunscreen Myths

- Antioxidants in sunscreens
 - Vit E, Vit C, tea extract, etc
 - No SPF value, prob no beneficial effect
- Nanoparticles in sunscreens (e.g. zinc and titanium)
 - Coated when in sunscreen, do not penetrate intact skin, remain on surface of the skin
 - No evidence of any consequences when used on intact skin, not sufficient data when there is barrier dysfunction

Melanoma and Sunscreen Use

Research

JAMA Derm 2018; 154:1001-9

JAMA Dermatology | Original Investigation

Sunscreen Use and Melanoma Risk Among Young Australian Adults

Caroline G. Watts, MPH, PhD; Martin Drummond, MBIost; Chris Goumas, MPH; Helen Schmid, MPH; Bruce K. Armstrong, MBBS, PhD, FAFPHM; Joanne F. Aitken, PhD; Mark A. Jenkins, PhD; Graham G. Giles, PhD; John L. Hopper, PhD; Graham J. Mann, PhD; Anne E. Cust, MPH, PhD

- Childhood sunscreen and lifetime sunscreen use sig assoc with decreased risk of melanoma

**SPF 100+ sunscreen is more protective
against sunburn than SPF 50+ in actual
use: Results of a randomized,
double-blind, split-face, natural
sunlight exposure clinical trial**



Joshua D. Williams, PhD,^a Prithwiraj Maitra, PhD,^a Evren Atillasoy, MD,^a Mei-Miau Wu, DrPH,^a
Aaron S. Farberg, MD,^b and Darrell S. Rigel, MD, MS^c
Skillman, New Jersey, and New York, New York

Vitamin D

- Typical sunscreen use does not affect Vit D levels
- Strict use will lead to low Vit D levels
- Supplement those at risk for osteoporosis who obey stringent sun-protections practices
 - E.g. organ transplant patients

Summary

- NMSC is common
 - Treatments are done in the office
- Melanoma
 - Finding it early is ideal
- Sunscreens
 - Put on a high SPF, a lot of it, and often