
Skin Cancer and Precancerous Lesions

Kelley J. Donham MS, DVM, DACVP
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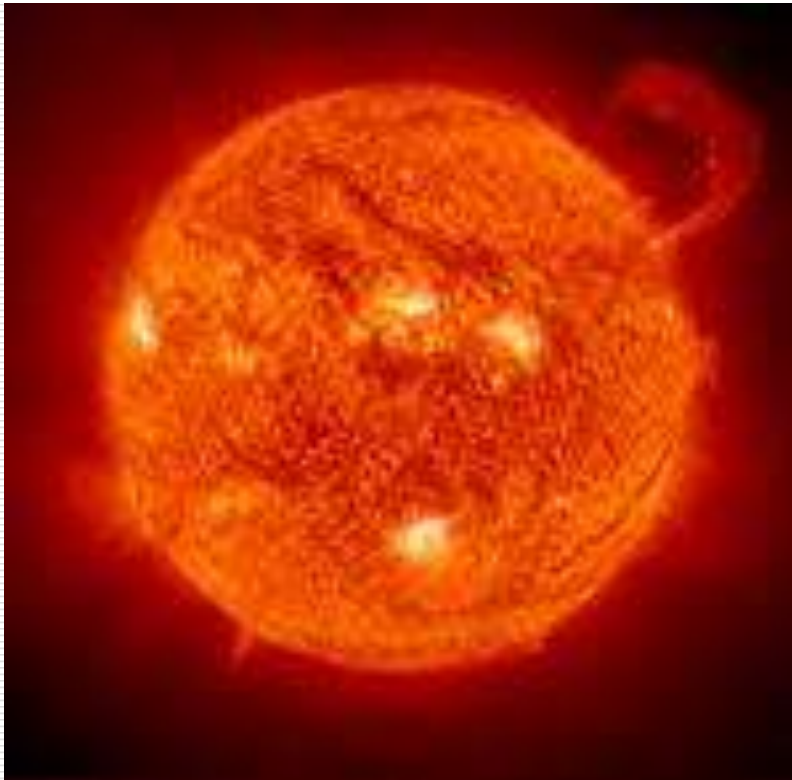
General references for this presentation is Donham
and Thelin, Agricultural Medicine, 2016, Chap. 4

Sun Induced Dermatoses

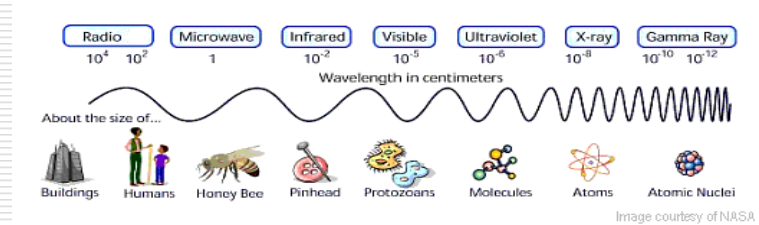


“Here comes the Sun”

The Source of Life (and some pain)



Electromagnetic radiation



Ultra Violet Radiation

- ☐ **UV = 10% of sunlight energy (77% filtered by atmosphere)**
- ☐ **UVC: 220--290 nm**
 - highest energy, bactericidal, mostly filtered out by the atmosphere ozone layer . Welders may be exposed.
- ☐ **UVB: 290-320**
 - High energy, partially filtered by ozone layer
 - 5% of solar radiation
 - 85% cause of sunburn, photo-ageing, cancer
 - Effective – long term tanning
- ☐ **UVA: 320-400 nm**
 - 95% of solar rad.,
 - 15% cause of sunburn, photo-ageing, cancer
 - (miliaria rubra)
 - Short term tanning
- ☐ **Tanning Beds = 95% UVA, 5% UVB**

Sun Burn

- ☐ **Mild – Moderate: A bit of pain for a week**
- ☐ **Severe:**
 - “Sun Poisoning” (shock)
 - Dehydration
 - Blisters
 - Sx: fever, chills, nausea, vomiting, pain, headache, confusion, fainting.
- ☐ **Complicated by:**
 - Fair skin





Exposures that Enhance Sun Damage to Skin

- ❑ Tetracycline, Doxycycline, Bactrim, and St. John's Wort
- ❑ Concurrent skin disease
 - (e.g., psoriasis)
 - Porphyria/lupus
- ❑ Photocontact dermatitis: Sun exposure will change some chemicals to become sensitizers, or irritants (see previous section).



Sun Can Cause Eye Damage

❑ Chronic - Cataracts



❑ Pterygium



❑ Acute- photokeratitis
(flash burn or welder's
burn – Mainly UVB)



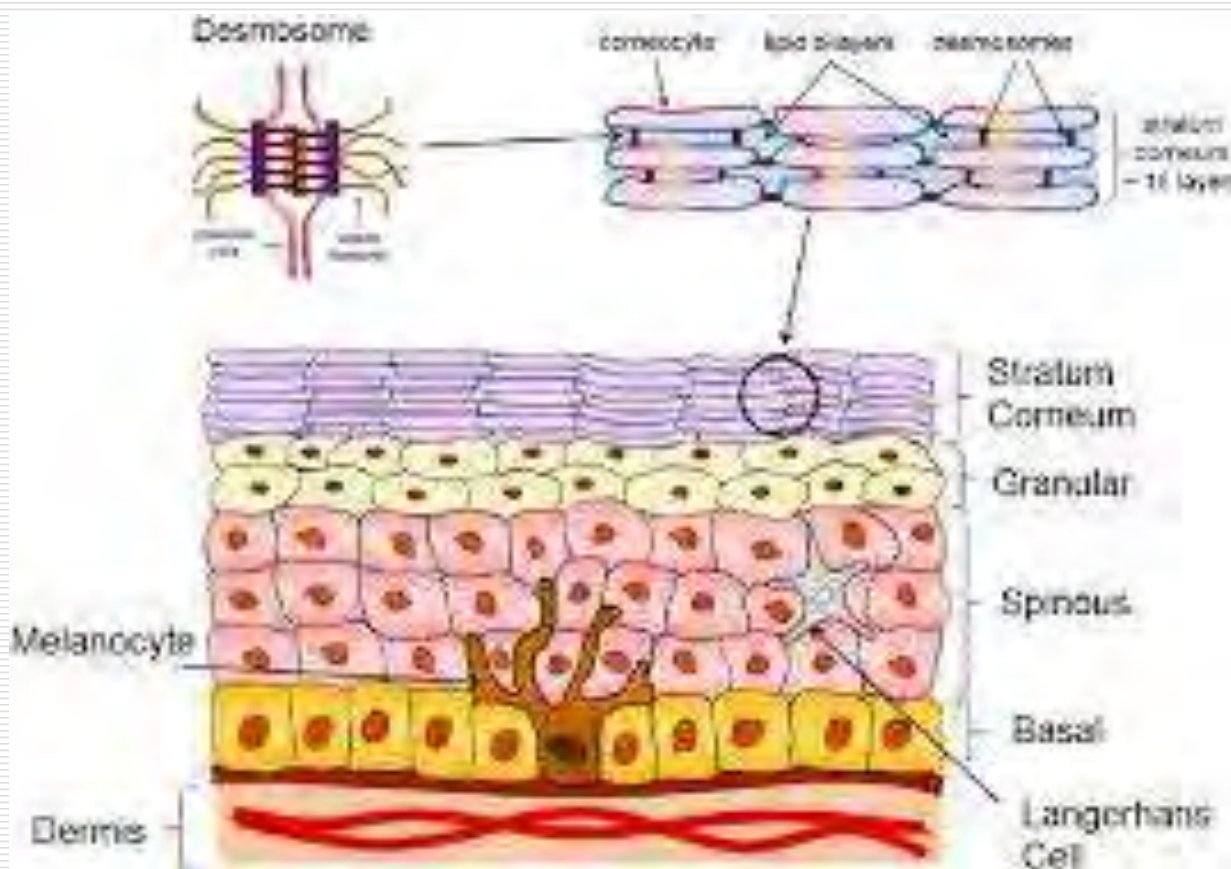
■ Phenylephrine Hydrochloride 0.12%.

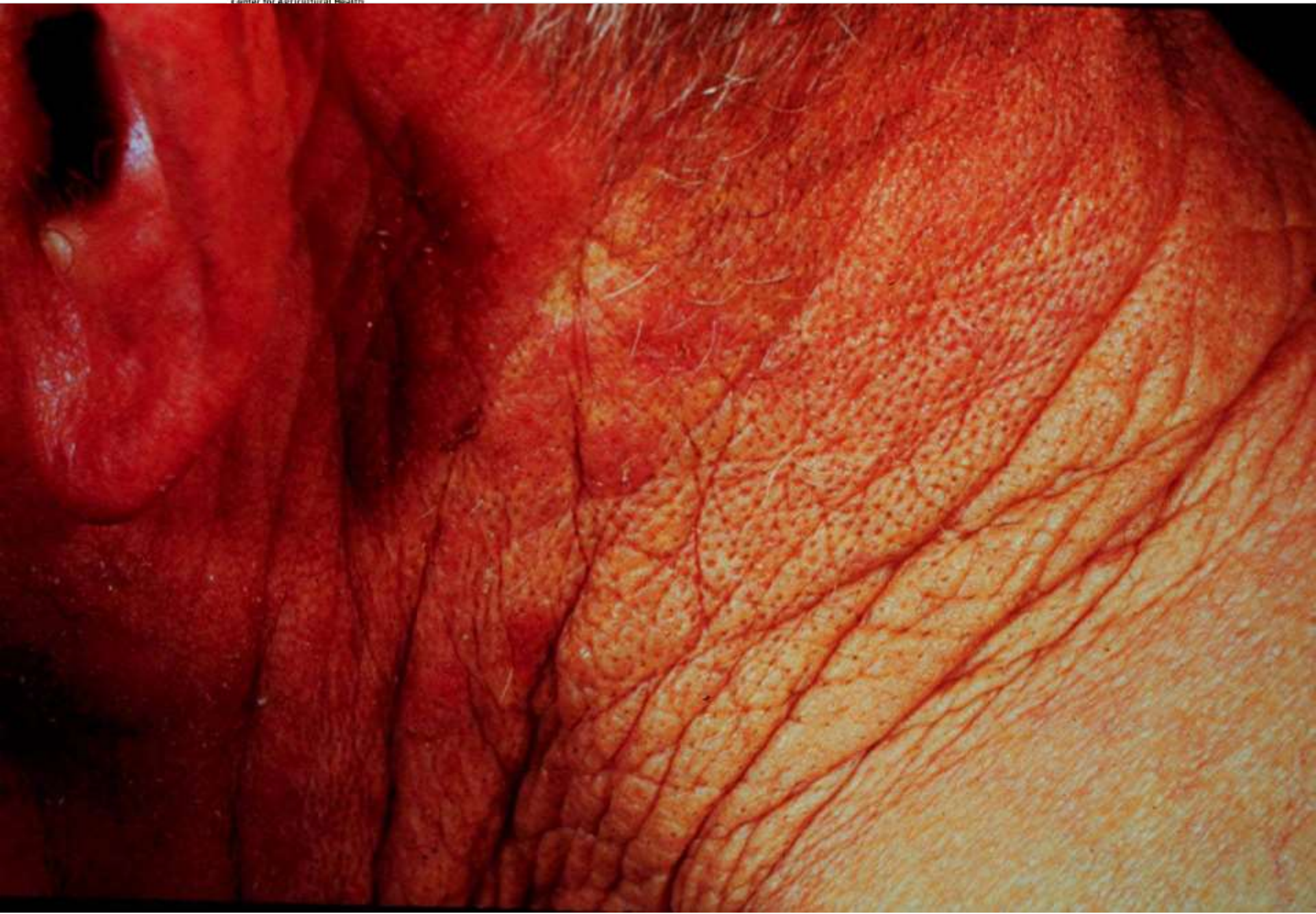


Chronic Sun Induced Changes:

- ☐ Wrinkling
- ☐ Actinic Keratoses
- ☐ Actinic Chelitis
- ☐ Squamous cell carcinomas
- ☐ Basal cell carcinomas

Sun effects the Epidermis

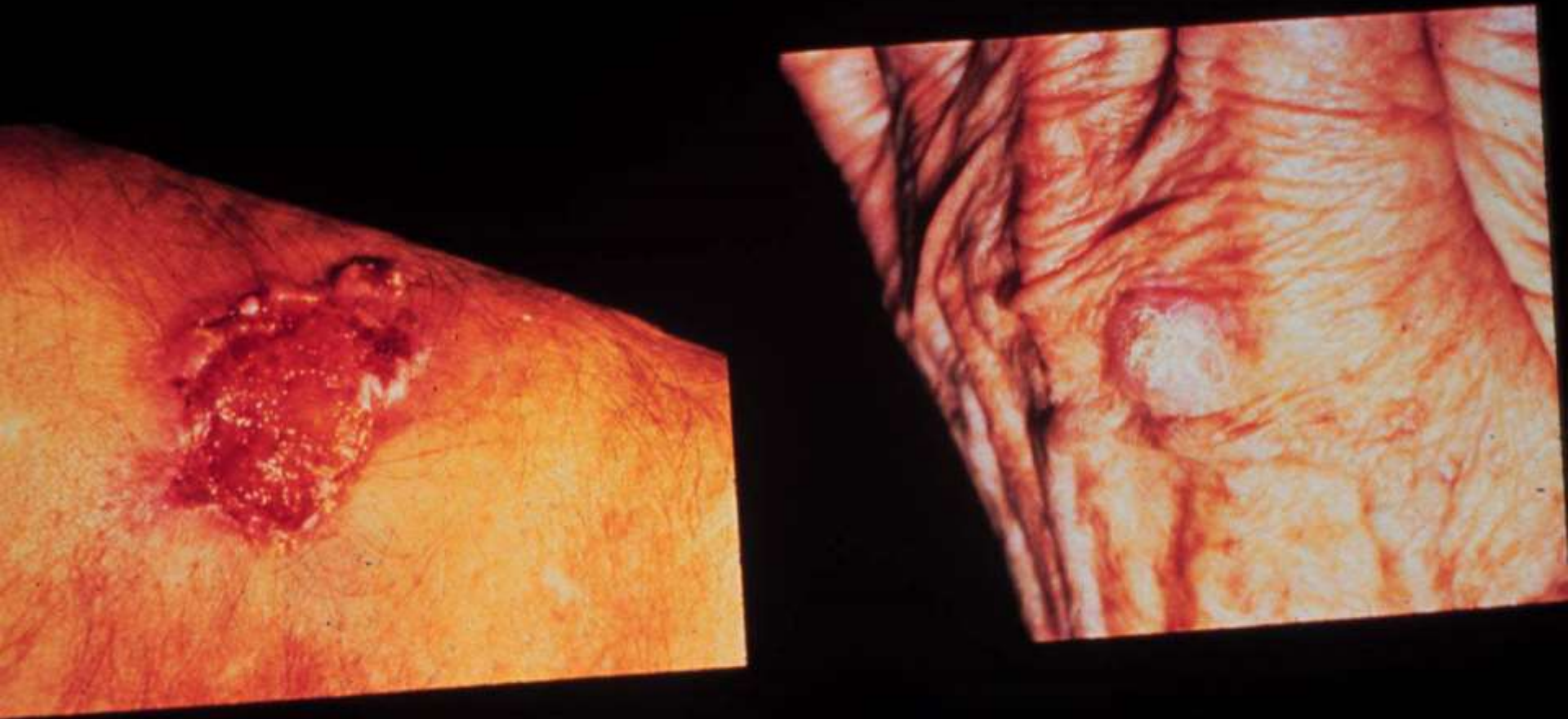






Chelitis – a type of Actinic Keratosis Affecting the lower lip









Metastasis

(squamous cell carcinoma):



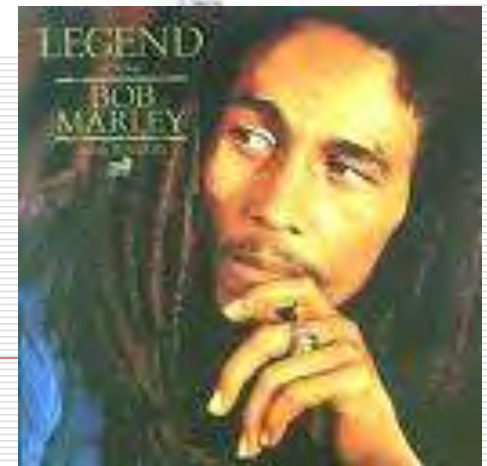
BUT – when on LIPS:



Melanoma The frequency of sunburns-
especially early in life,

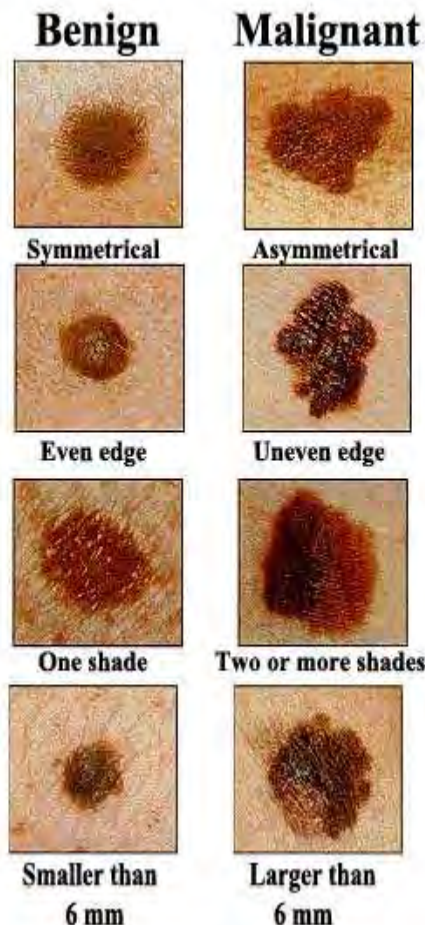


is a risk factor for
Malignant Melanoma



The ABC & D's of Melanoma

Differentiation from a nevus (mole)



A=Asymmetrical

B=Border

C=Color

D=Diameter

- ☐ Several types of melanoma with varying Malignancy
- ☐ Thickness of lesion related to malignancy
- ☐ Diameter Larger than a pencil eraser?
- ☐ Often on low sun exposed areas (except lentigo melanoma)

Treatment

Sunburn:

- ☐ Cool baths – Compresses Burrows soln.
- ☐ NSAIDS (e.g., ibuprophen, naproxim)
- ☐ Pain relievers (Tylenol, aspirin) or more serious ones
- ☐ Topical and or Systemic steroids
- ☐ Fluids
- ☐ No ointments (infection risk) or topical anesthetics (allergy risk)

Photocontact Dermatitis:

... As in Contact Dermatitis

Don'ts for Sunburn Treatment

- ☐ Don't wash with harsh soaps
- ☐ Don't apply petroleum or thick oily products such as Vaseline, or butter (risk for infection)
- ☐ Don't apply lidocaine (risk for allergic reaction)

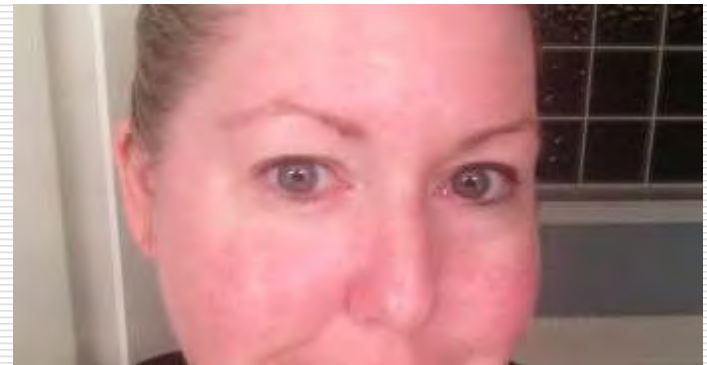
Treatment of Skin Cancers

Actinic Keratoses:

5- Fluorouracil liquid

Nitrogen freezing

Full face peel

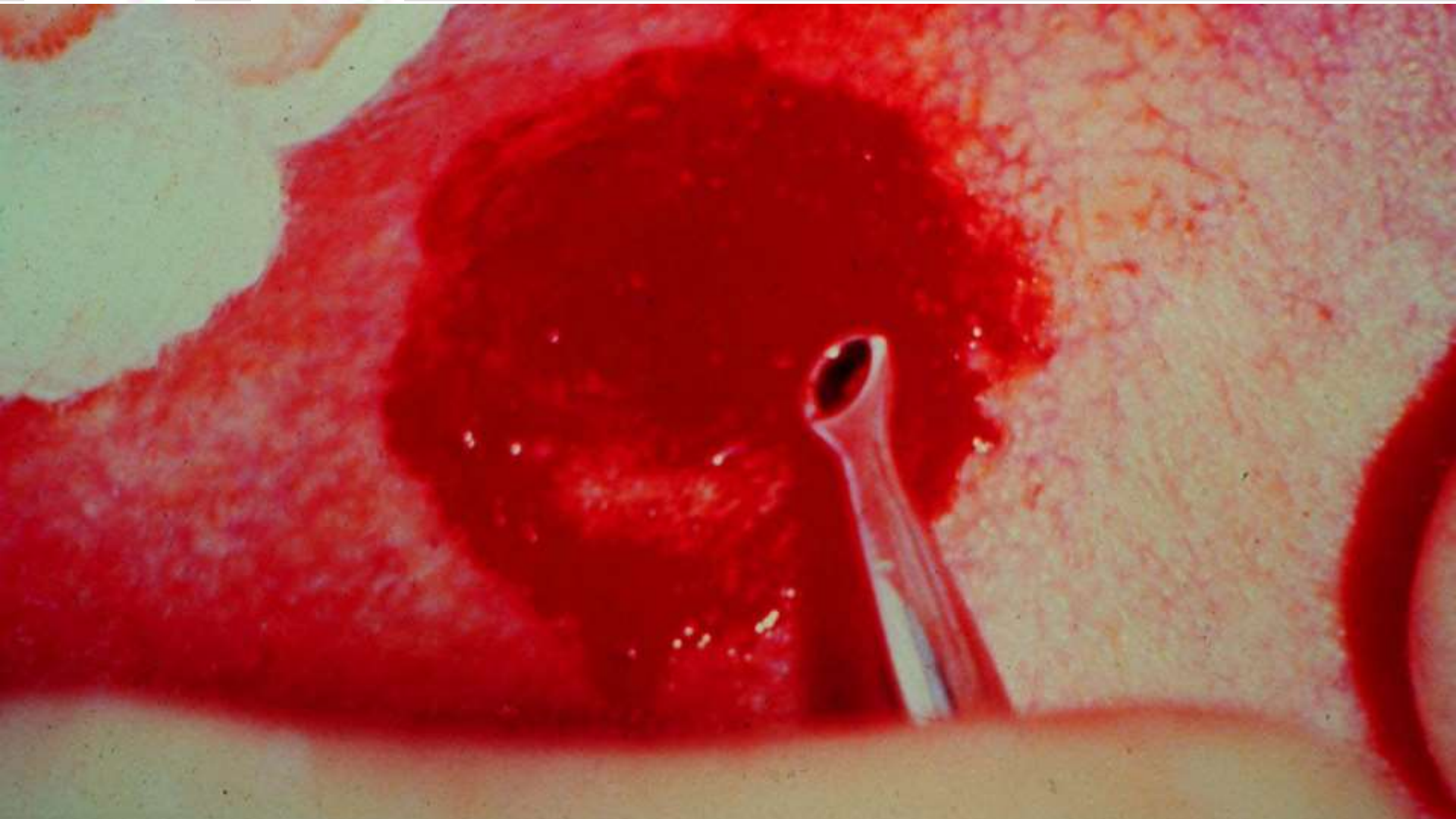


Basal Cell or Squamous Cell

Sarcoma:

Curettage + Electro-desiccation

Nitrogen freezing



Moh's Surgery

Sun Protection Options: Clothing, Sunscreen



Photoprotective Materials

- ☐ Two basic types of topical sunscreens:
 - Absorbers of UV radiation
 - ☐ Para-amino benzoic acid (PABA), cinnamates, salicylates and benzophenones
 - Reflectors of UV radiation
 - ☐ Titanium or zinc oxide
- ☐ Clothing blocks 20% of UV or SPF 6
- ☐ Antioxidants
 - Vitamins E and C
 - ☐ Enhance the ability of skin cells to repair damage
 - ☐ induced by UV radiation.

Sun Protection Ratings Becomes More Complicated in 2009



SOURCE: FDA/CENTER FOR DRUG EVALUATION AND RESEARCH, 2007

- ☐ SPF = sunburn protection factor
 - UVB measure
 - Ratio; time to “redness” with and w/o protection
 - SPF 15 adequate
- ☐ 4-star rating
 - ☐ UVA, 4 star= highest
- ☐ FDA – no longer all day or waterproof
- ☐ Apply early and often (like voting)

Male Farmers and sunscreen use



- more likely to use spray or wipes (avoids stigma)



DERMASCAN

Ultraviolet light + Magnification a good teaching technique for sun damage



[J Am Acad Dermatol. 2012 Oct;
67\(4\): 587-597.](#)

Skin Cancer Screening – takes some training



Thanks for your attention

Let's keep them
healthy and alive!

Questions?

Kelley-donham@uiowa.edu



What to Look for in Sunscreen

☐ Absorbents

- UVB protection: Padimate O, Homosalate, Octisalate (octyl salicylate), Octinoxate (octyl methoxycinnamate)
- UVA protection: Avobenzone

☐ Reflectors

- UVA/UVB protection: Octocrylene, titanium dioxide, zinc oxide, Mexoryl (ecamsule)

☐ Clothing

- Another means to block UV is sun protective clothing. This is clothing that has a "UPF rating" that describes the protection given against both UVA and UVB.
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