


Actinic Keratosis and Sun-Damaged Skin

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Learning Objectives

- *Diagnose* actinic keratosis and sun-damaged skin based on morphology and distribution.
- *Differentiate* actinic keratosis from similar skin disorders, and *recognize* indications for skin biopsy.
- *Treat and prevent* actinic keratosis and sun-damaged skin using topical treatments, systemic therapies, and other physical modalities using cost-effective, evidence-based guidelines.

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Sun-Damaged Skin

- Photodamage of skin
- Photoaging of skin
- Dermatoheliosis
- Solar or actinic elastosis
- Chronic actinic damage of skin

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Solar lentigines



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Telangiectasias



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Solar (actinic) purpura



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Cutis rhomboidalis nuchae



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Poikiloderma of Civatte



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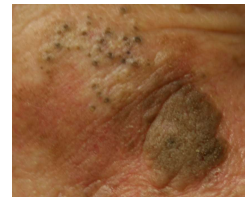
Idiopathic guttate hypomelanosis



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Nodular elastosis (Favre-Racouchot disease)



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Actinic Keratosis



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Morphology and Distribution

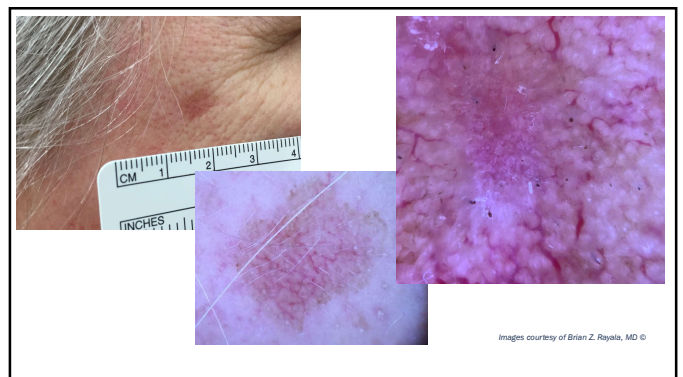
- **Morphology**
 - Erythematous or hyperkeratotic macules, papules, patches, or plaques with scale
 - Grading
- **Photodistributed**
 - Head/face
 - Posterior neck
 - Shoulders
 - Upper chest
 - Outer arms
 - Extensor surface of lower extremities
 - Dorsum of hands and feet

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When to Biopsy


- Ulceration or bleeding
- Size, extent
- Treatment refractory lesions
- Overt malignancy suspected
- Diagnostic uncertainty
- *Dermoscopic features*

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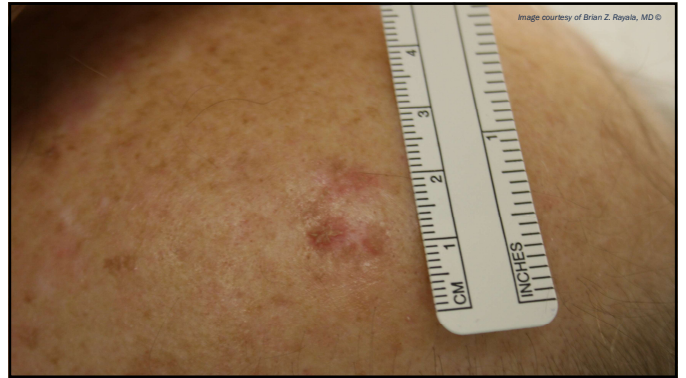


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Squamous Cell Carcinoma in Situ (SCCIS)
Bowen's Disease (BD)



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Differential Diagnosis



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Keratoacanthoma (KA)



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Benign lichenoid keratosis



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Seborrheic keratosis (SK)



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Seborrheic keratosis (SK)



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Verruca vulgaris (Wart)



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Chondrodermatitis nodularis helicis



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Cutaneous Horn



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Cutaneous horn: Bowen's Disease (SCCIS)



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Cutaneous horn: Invasive SCC

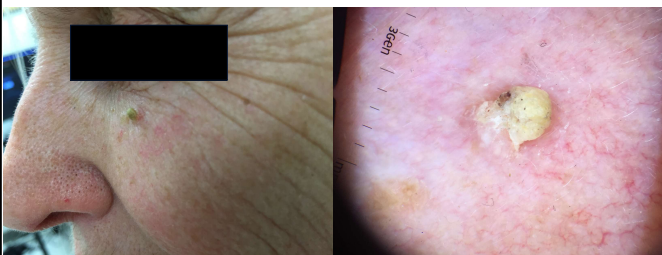


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Cutaneous horn: Seborrheic keratosis



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Cutaneous horn: Verruca vulgaris

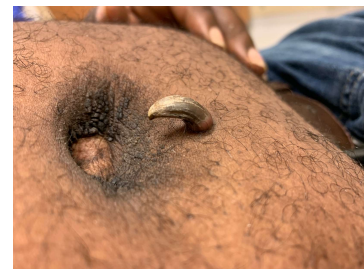



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Screening and Prevention

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Screening

- USPSTF 2023: Screening
 - **Grade I**
 - Insufficient evidence for clinicians to perform screening visual skin exam in asymptomatic adolescents and adults
- USPSTF 2018: Behavioral Counseling
 - **Grade B** (Persons 6mo to 24yo w/ fair skin)
 - **Grade C** (Adults >24yo w/ fair skin)
 - **Grade I** (All adults)
 - Counseling increases skin self-exam, but also increases skin procedures.

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Primary Prevention

- **Sun avoidance** (eg, midday avoidance, protective clothing)
 - **SORTB** – school-based sun protection program decreases new nevi on the back
- **Sunscreen**
 - **SORTB** – regular sunscreen use prevents photoaging, AK, cSCC, and melanoma, *but not BCC*
- **Pharmacotherapy**
 - **SORTC** - celecoxib may decrease NMSC in patients w/ multiple AKs at 11 mos
 - **SORTB** – topical retinoids do not prevent NMSC
 - **SORTB** – no topical or systemic tx has been shown to prevent melanoma
 - **SORTB** – beta-carotene does not prevent NMSC

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Secondary Prevention

- **Sunscreen**
 - **SORTB** – Daily sunscreen use prevents cSCC among immunosuppressed transplant patients.
- **Pharmacotherapy**
 - **SORTB** – Oral acitretin may decrease new cSCC among immunosuppressed transplant patients with h/o cSCC.
 - **SORTB** – Nicotinamide (vitamin B3, niacinamide) 500mg BID x 1yr may decrease AK and NMSC among adults with h/o NMSC.

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Treatment

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Treatment of Sun-Damaged Skin

- **Pharmacotherapy**
 - **SORTA** – topical tretinoin 0.025% to 0.1% reduces photoaging
 - **SORTB** – topical adapalene decreases photoaging and AKs
 - **SORTA** – topical tazarotene improves photoaging
- **Physical modalities**
 - **SORTC** – chemical peels, photodynamic therapy (PDT), laser therapy, injectable botulinum toxin, injectable fillers

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Treatment of Actinic Keratosis

- Pharmacotherapy**
 - SORTA** – topical 5-FU (75%) effective for *field therapy* of head/face AKs and better than imiquimod (54%), PDT (38%), and ingenol mebutate (29%)
 - SORTB** – topical diclofenac also effective for *field therapy*
 - SORTB** – cryotherapy followed by topical therapy (5-FU, diclofenac, ingenol mebutate) improves clearance of AK (46% to 79%, NNT 3)
- Physical modalities**
 - SORTB** – cryotherapy for individual lesions (and esp for thicker lesions)
 - Duration of >5s: ~70% effective
 - >20s: ~80% effective (but more hypopigmentation)
 - SORTB** – PDT for individual & multiple lesions (superficial, confluent); good cosmetic outcome but expensive

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Treatment of Actinic Keratosis

Topical therapy	Dose, Duration	Local reaction	Cost*
5-fluorouracil 5% cream	BID x 2-4 wks	Moderate to high	\$55 (40g)
Imiquimod 5% cream	2x/wk HS x 16 wks (max area of 25 cm ²)	Moderate to high	\$17 (12 packets)
Diclofenac 3% gel	0.5g to 5 cm ² BID x 60-90d	Moderate	\$58 (100g)
Ingenol mebutate	(Picato brand discontinued in the US)		

*from www.goodrx.com. 12/1/23

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Treatment of Bowen's Disease

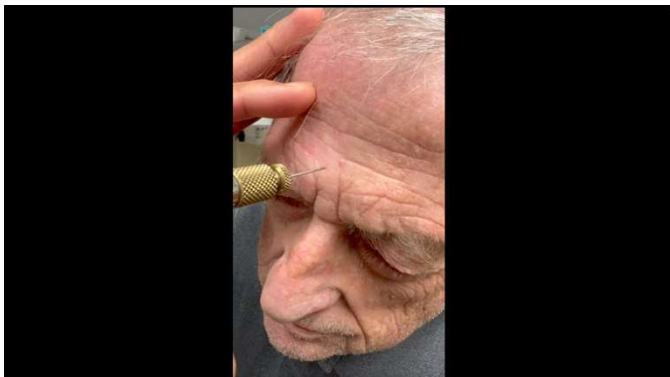
- Pharmacotherapy**
 - SORTB** – topical 5-FU and imiquimod are topical treatment options
- Physical modalities**
 - SORTB** – MAL-PDT esp when cosmesis a concern; appears better than cryotherapy
 - SORTB** – cryotherapy
 - SORTC** – laser, radiotherapy
- Surgical therapy**
 - SORTC** – curettage & electrodesiccation
 - SORTB** – excision; Mohs micrographic surgery (head/neck region, recurrent lesions)

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Cryotherapy Pearls

- Use appropriate tip/aperture.
- Maintain correct distance and stabilize equipment using two-handed technique.
- Pulsatile technique works best.
- Adjust freeze duration and pauses to keep target area frozen for intended time period.
- Treat thin AKs along cosmetically sensitive areas >5 seconds (~70% effective).
- Treat thick AKs, esp hand dorsum, longer (>20s is ~80% effective). Hypopigmentation common.
- One cycle w/ 1mm halo is sufficient for AK.

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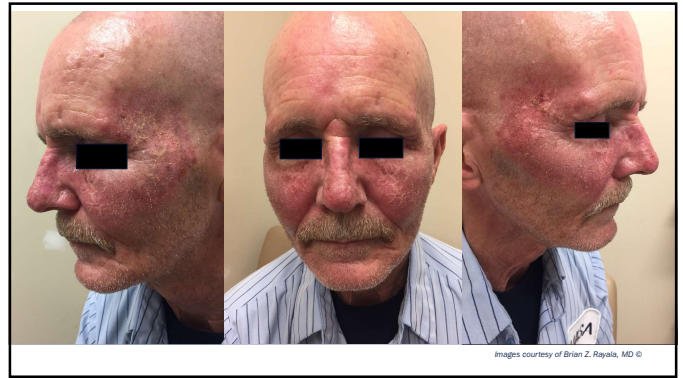
Topical 5-FU Pearls

- Use 5-FU during cooler months of the year (eg, winter).
- Treat sectionally, not entire photodamaged skin.
- Review correct application, and discuss common reactions.
- Assess patient suitability.
- Apply cream sparingly, and decrease frequency if moderate to severe reaction.
- Consider topical steroids mid-treatment (or stopping treatment) if moderate to severe local reaction.
- Allow a few months for healing; aggressive photoprotection!

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Practice Recommendations

- Consider a diagnosis of actinic keratosis for photo-distributed erythematous or hyperkeratotic macules and papules with scale. Recognize sun-damaged skin and monitor closely for development of precancers and cutaneous malignancy. **SOR C**
- Consider biopsy for large, extensive lesions, for treatment-refractory, bleeding, and ulcerative lesions, or when invasive malignancy is suspected. **SOR C**
- Sun avoidance and photo-protection are key to preventing skin cancers. **SOR A/B**
- Use localized or field-directed therapy of actinic keratosis, Bowen Disease, and sun-damaged skin, and monitor for adverse reactions. **SOR B**

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Any questions?

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