

DERMATOLOGIC PEARLS FOR PRIMARY CARE

LCDR CARRICK BURNS
MAY 13, 2016

OBJECTIVES

- Learn practical and preventative medicine pertinent to dermatology
- Address fears and misconceptions when using topical steroids and systemic antifungals
- Learn to optimize dermatology referrals

DISCLOSURES

- I have no disclosures

OVERVIEW

- Sunscreen and sun protection
- Diagnosis and treatment of onychomycosis
- How to prescribe topical steroids
- Appropriate referral criteria

DISCLAIMER

- The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.

WHO NEEDS SUNSCREEN?

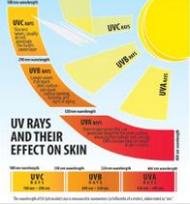
- Everyone! People of all skin types get skin cancer
- 3.5 million skin cancers will be diagnosed in 2 million Americans this year
 - Basal cell carcinoma outnumbers all other cancers in humans combined
- Most of these can be prevented with regular sun protection and sunscreen use



WHAT SUNSCREEN SHOULD I USE?

WHEN SHOULD I USE SUNSCREEN?

- ### WHAT SUNSCREEN SHOULD I USE?
- The American Academy of Dermatology recommends:
 - **Broad-spectrum protection (UVA and UVB)**
 - **Sun Protection Factor (SPF) 30 or greater**
 - Myths regarding SPF
 - **Water resistant**
 - 40 or 80 minutes

- ### WHEN SHOULD I USE SUNSCREEN?
- **Every day.** The sun emits harmful ultraviolet (UV) rays year round.
 - Even on cloudy days, up to 80% of the sun's harmful UV rays can reach your skin.
- 

- ### CHOOSING THE RIGHT SUNSCREEN ISN'T ENOUGH
- **Re-apply every 2 hours**
 - Every 1 hour if swimming or sweating a lot
 - **Wear protective clothing**
 - Long-sleeved shirt, pants
 - Wide-brimmed hat
 - Sunglasses (polarized and/or UV protected)
 - **Seek shade**
 - UVB is strongest between 10am and 2pm
 - **Use caution near water, snow, and sand**
 - Reflection can amplify UV exposure

HOW MUCH SUNSCREEN SHOULD I USE?

HOW MUCH SUNSCREEN SHOULD I USE?

- Approximately "one ounce, a shot glass" for the entire body
- titrate to body size and exposed skin
- Apply to dry skin 30 minutes BEFORE going outdoors
- Wait 8 minutes before putting on clothes
- Don't forget the lips



ARE SUNSCREENS SAFE?

WHAT'S THE DIFFERENCE BETWEEN UVA AND UVB RAYS?



ARE SUNSCREENS SAFE?

- **Yes, sunscreen is safe to use.** No published studies show that sunscreen is toxic to humans or hazardous to human health. Scientific studies actually support using sunscreen.
- Research shows that wearing sunscreen can:
 - Prevent sunburn
 - Reduce your risk of skin cancer
 - Prevent premature aging
- Australian study showed decreased incidence of melanoma even 10 years after limited, controlled sunscreen in elderly patients

Green et al., J Clin Oncol. 2011

UVA..UVB...WHAT'S THE DIFFERENCE?

- Sunlight contains ultraviolet A (UVA) rays and ultraviolet B (UVB) rays. Both can lead to skin cancer.
- In addition to causing skin cancer:
 - UVA rays prematurely age your skin, causing wrinkles and age spots. It can pass through window glass.
 - UVB rays cause sunburns and are blocked by window glass.
- The World Health Organization's International Agency of Research on Cancer has declared ultraviolet (UV) radiation from the sun and artificial sources, such as tanning beds and sun lamps, as a known carcinogen

WHAT ABOUT SPRAY SUNSCREENS?

SPRAY SUNSCREENS

- Generally not recommended
 - Inadequate amount applied
 - Risk of inhalation
- **Never spray sunscreen around or near the face or mouth.**
- Spraying adequate amounts into your hands and then applying can help avoid the fumes and ensure adequate coverage.
- When applying spray sunscreens on children, be aware of the direction of the wind to avoid inhalation.



CAN I USE THE SUNSCREEN I BOUGHT LAST SUMMER?

ARE SUNSCREENS SAFE FOR MY CHILD?

THE OLD SUNSCREEN BOTTLE

- Dermatologists recommend using sunscreen every day when you are outside, not just during the summer.
- **If you are using sunscreen every day and in the correct amount, a bottle should not last long.**
- The **FDA requires that all sunscreens retain their original strength for at least 3 years.**
 - Some sunscreens include an expiration date
 - If there is no expiration date, write the day you bought it on the bottle
 - You also can look for visible signs that the sunscreen may no longer be good. Any obvious changes in the color or consistency of the product mean it's time to purchase a new bottle.

PEDIATRIC USE OF SUNSCREEN

- Sunscreen **can** be applied to **toddlers and infants 6 months or older** and should only be applied to exposed skin not covered by long sleeves, pants, wide-brimmed hats, and sunglasses.
- The best sun protection for **babies** is to keep them in the **shade** as much as possible in addition to wearing **long sleeves, pants, a wide-brimmed hat, and sunglasses.**
 - Make sure the baby does not get overheated and that they drink plenty of fluids.
 - If your baby is fussy, crying excessively, or has redness on any exposed skin they should be moved indoors.

- Dr. Oz says that sunscreen starves my body of Vitamin D...will using sunscreen limit the amount of vitamin D I get?

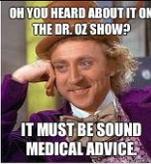
Vitamin D



FOOD SOURCES:



OH YOU HEARD ABOUT IT ON THE DR. OZ SHOW?

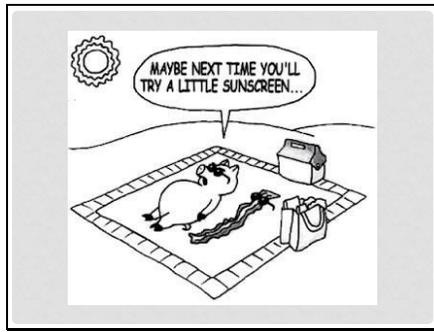


IT MUST BE SOUND MEDICAL ADVICE

- Using sunscreen may decrease your skin's production of vitamin D
- Only 5 minutes of unprotected mid-day sun is needed to convert 7-Dehydrocholesterol to Pre-Vitamin D3
- Many people can get the vitamin D they need from **foods and/or vitamin supplements**
- 1,000 - 2,000 IU per day of vitamin D3 (preferred over D2)

ONYCHOMYCOSIS OBJECTIVES

- Decrease your fear of terbinafine
- Consider treating without lab confirmation
- Consider pulsed dose terbinafine
- Don't bother with topical antifungals for nail fungus



DISCLAIMER

- Onychomycosis is a money pot for pharmaceuticals
 - Most published studies involving antifungal treatment (esp. onychomycosis) are funded by pharmaceuticals
- Published efficacy tends to drop over time with more independent research
 - Terbinafine 72% → 50%
 - Eflinaconazole 56% → 16%
- Don't trust older cost-analysis studies
 - The price of systemic antifungals has decreased significantly
 - Terbinafine generic since 2007
 - The price of diagnostic tests has increased
- Bottom line: don't trust everything you read, especially if more than a few years old



ONYCHOMYCOSIS

EVIDENCE BASED AND COST CONSCIOUS MEDICINE

ONYCHOMYCOSIS

- Accounts for 50-60% of all nail abnormalities
- 3% incidence in US population
- Risk factors:
 - Age
 - Swimming
 - Tinea pedis
 - Diabetes
 - Immunodeficiency
 - Pre-existing nail dystrophy (psoriasis most commonly)



WHEN TO TREAT ONYCHOMYCOSIS

- Predominantly a cosmetic concern
- I generally don't bring it up
- Indications to treat:
 - Symptomatic (pain)
 - Immunocompromised patients
 - Higher risk of secondary bacterial infection
 - Patients at risk for lower extremity infection
 - Diabetic patients
 - Prior h/o cellulitis
 - Venous insufficiency

FUNGUS MIMICKERS

- Atopic Dermatitis
 - H/o chronic eczema
 - Skin lesions elsewhere
- Allergic Contact Dermatitis
 - Erythema of digits



NAIL DYSTROPHY: FUNGAL OR NOT?

- Many things other than fungus can cause thickened, yellow nails
 - 5-35% of nail dystrophy is not fungal in origin
- Associations with onychomycosis
 - History: Sweaty, diabetics who only wear 1 pair of sneakers
 - Tinea pedis (Moccasin, scaling between 4th-5th toes)



WHAT'S THE BEST WAY TO DIAGNOSE ONYCHOMYCOSIS?

FUNGUS MIMICKERS

- Nail psoriasis
 - Large pits
 - Oil spots
 - Nail separation
 - Other skin lesions
- Lichen planus
 - Often all 20 nails
 - Oral, skin lesions
 - Scarring of nail fold

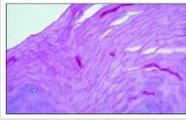


BEST WAY TO DIAGNOSE?

- Clinically!

ONYCHOMYCOSIS CONFIRMATION

- KOH of subungual debris
 - **\$6 + time**
- Nail clipping to pathology
 - **\$148**
 - Easiest
- Nail clipping for fungal culture
 - **\$152**
 - Longest for result



Mikhailov et al., JAMA Dermatol. 2016

www.medscape.com

CONFIRMATION OF DIAGNOSIS

- Decision (statistical) analysis using existing prevalence, cost, diagnostic certainty, and incidence of harm
- Study looked costs of:
 - Diagnosis and treatment
 - Avoidance of harm with terbinafine treatment

Original Investigation

Cost-effectiveness of Confirmatory Testing Before Treatment of Onychomycosis

Amir Mikhailov, MD, Jeffrey Cohen, MD, Cara Joyce, PhD, Arash Mostaghimi, MD, MPH
JAMA Dermatol. 2016

DO I REALLY NEED TO CONFIRM THE INFECTION?

COST OF TREATMENT

Table 1. Costs of Onychomycosis Treatment and Testing

Characteristic	Total Cost, \$
Efinacozole, 10%, cost for full treatment of 1 nail	2307*
Terbinafine, 250-mg, full treatment course	10*
Aspartate aminotransferase	21†
Alanine aminotransferase	22†
KOH stain preparation in office	6 [‡]
PAS test	148*

Original Investigation

Cost-effectiveness of Confirmatory Testing Before Treatment of Onychomycosis

Amir Mikhailov, MD, Jeffrey Cohen, MD, Cara Joyce, PhD, Arash Mostaghimi, MD, MPH
JAMA Dermatol. 2016

CONFIRMATION OF DIAGNOSIS

- **Controversial**
- Choosing Wisely campaign recommends confirmation of fungal infection prior to systemic treatment
- However this is based on 1999 safety and price data



COST OF TESTING

- You must spend **\$364 + time** in KOH testing to prevent treating 1 patient who doesn't have onychomycosis
- **\$751** for PAS nail clippings

Table 2. Additional per Patient Testing Cost to Avoid 1 Inappropriate Treatment Compared With Immediate Treatment

Prevalence, %	Terbinafine	Efinacozole, 10%
KOH screening		
30	192	-2092
60	264	-3095
75	364	-3899
90	764	-2116
Direct PAS testing		
30	238	-2123
60	452	-2178
75	751	-2194
90	1049	-2559

Mikhailov et al., JAMA Dermatol. 2016

“DOC, I HEARD TERBINAFINE
WILL DESTROY MY LIVER”

FEAR IS REAL AMONGST PATIENTS AND PROVIDERS

PULSED DOSE TERBINAFINE

- Based upon:
 - Terbinafine has high bioavailability and longevity in the nails
 - Fear of liver failure
- Some authors and dermatologists recommend
 - Terbinafine 500mg daily x 1 week every month x 3 months
- Pooled meta-analysis of 8 prospective pulsed vs. continuous treatment arms
 - Continuous treatment has 13% higher mycological cure rate
 - **No difference in clinical cure rate**

Gupta et al., J Eur Acad Dermatol Venereol. 2013

ANTIFUNGAL HEPATIC INJURY

- Clinically apparent hepatic injury incidence of 1 in 50,000-120,000 terbinafine treatments
- Almost all resolved after stopping terbinafine
- 27 reports of Acute liver failure
 - 51% mortality
- 2 cases of liver transplantation
 - First occurred after 5 days of terbinafine
 - Published in NEJM in 1999—ground zero of terbinafine fear!
 - Second occurred after 3 months of terbinafine
- Neither pulsed therapy nor LET's after 1 month of treatment would have changed the outcome

Raschi et al., World J Hepatol. 2014

IS THE FUNGUS CURED?

- Mycologic cure
 - negative KOH and fungal culture
- Complete cure
 - No clinical involvement + mycologic cure



COST TO PREVENT HEPATIC INJURY

- In order to prevent injury in a falsely-positive patient
 - \$18.2 to 43.7 million in KOH preps
 - \$37.6 to 90.2 million in PAS nail clippings

Mikhailov et al., JAMA Dermatol. 2016



DOC, WHAT ABOUT THAT
TOPICAL DRUG?

TOPICAL ONYCHOMYCOSIS TREATMENT

- There is essentially no role for topical treatment despite what the pharmaceuticals say
- Efficacy for complete cure
 - Cicloporix 5.5-8.5%
 - Tavaborole 6.5-9.2%
 - When only 20-60% of nail infected
 - Efinaconazole 15-18% (vehicle 3-6%)
 - When only 20-50% of nail infected
 - Vicks VapoRub 22%
 - Single small study

Gupta et al., JAAD 2000 Elewski et al., JAAD 2013 Elewski et al., JAAD 2015

TOPICAL STEROIDS

RELATIVE COSTS OF TREATMENT

- Jublia
 - \$645 for 4ml bottle with 80 drops
 - 1 drop per day per nail
 - 48 week course
 - 4 bottles needed to treat 1 nail
 - **\$2,580 per course to treat 1 nail**
 - Number needed to treat = 6.25
 - **\$16,125 to completely cure 1 partially infected nail**
- Tavaborole
 - Same price as Jublia but with lower efficacy!
 - \$2,580 per course per nail
- Terbinafine
 - \$10 per course to treat all nails

TOPICAL STEROIDS

- Don't be steroid shy, but don't go crazy
- Ointments are better
 - Less well tolerated
- Creams are more sensitizing and burn when applied to fissured skin

REVIEW OF ONYCHOMYCOSIS

- It's not always nail fungus
- Consider treating without confirmed diagnosis
- Don't be afraid of terbinafine
- Consider pulsed dose terbinafine
 - 500mg po daily x 1 week each month x 3 months
- Don't bother with topical antifungals for onychomycosis

STEROID STRATEGY

- Severe eczematous dermatitis
 - Start with short course of strong steroids
 - Lidex 0.05% ointment
 - Triamcinolone 0.1% ointment
 - Use BID Monday to Friday, not weekends
 - Do not use on face, axilla, groin
 - Limit the quantity to 15-30 gram tubes without refills

STEROID STRATEGY

- Facial dermatitis or intertriginous skin
 - Use Class 4 or 7 ointments/creams for a good period of time
 - Desonide 0.05% cream
 - Hydrocortisone 1.0 or 2.5% cream/ointment
- You should still watch for signs of steroid complications

PERIORAL DERMATITIS FROM TOPICAL STEROIDS



CUTANEOUS SIDE EFFECTS

- Atrophy, striae, wrinkling
- Erythema, burning, stinging
- Pigment alteration
- Telangiectases
- Acne, folliculitis
- Perioral dermatitis

REFERRAL OPTIMIZATION

STEROID OVERUSE



LOGISTICS OF DERM REFERRALS

- Every referral is evaluated by a staff dermatologist
- Services vary depending on command
- Wait time is typically 2-3 weeks for initial referrals at Balboa
- Dermatology is a consultation service
 - We help with diagnosis and formulating a treatment plan
 - Complicated patients are managed by derm but most are followed by PCM
 - Once conditions are appropriately managed, care is transferred back to PCM
- Unfortunately referring provider doesn't automatically get feedback on referral



REASONS FOR CONSULT REJECTION

- Referral for recurrent condition that can't be cured
 - Most skin disease can't be cured
 - Seborrheic dermatitis, linea versicolor, rosacea, eczema, etc.
 - If the first treatment worked—keep it going!
- Pseudofolliculitis Barbae
 - **The only reason to refer is if the patient has failed phases I-III and wants laser hair reduction**
 - Do not refer someone without a permanent no-shave chit! (phase III)
 - Patients can not be forced to have Laser hair reduction
 - PCM signs and routes permanent no-shave chit to CO
 - Permanent no-shave chits last on entire career and do not have to be repeated at the next command

WHAT IS HELPFUL IN A CONSULT?

- Simple and straightforward
 - Red umbilicated papule on the arm
 - Not: 3mm wide, 2mm tall papule that is firm and well-circumscribed with a central depression...
- Write what you are thinking
 - "Concerned for melanoma" usually gets the patient walked in quickly
- Ask a clinical question if applicable
 - "Is this rash related to their diabetes?"
- Include a good phone number!

REASONS FOR CONSULT REJECTION

- Tattoo removal
 - Few derm clinics have tattoo lasers—devices are much better out in town
 - If patient instructed by CO to remove tattoo, they will likely have to pay for it out-of-pocket in the community
- Hair removal
 - Only refer for medical reasons (PFB or hirsutism secondary to PCOS, CAH, or other endocrine issue)
- Male pattern baldness
 - Not a medical problem
 - Propecia and minoxidil are not on the formulary

REASONS FOR CONSULT REJECTION

- Removal of skin tags or seborrheic keratoses
 - Not medically necessary
 - If they want it done, there is a ~\$200 cosmetic fee
 - Patients often abuse access to care for these lesions
- Referred without any treatment attempts
 - Most commonly atopic dermatitis, acne, or fungal infections
 - Do not initiate treatment at the same time as referral
 - **Have confidence in your abilities**—most dermatologic conditions are effectively treated by primary care!
 - If any questions on how to treat, talk with colleagues, medical officer, or call derm call phone

REASONS FOR CONSULT REJECTION

- Acne
 - All acne treatment takes 2-6 months to take effect
 - **Do not start treatment the same day you refer!**
 - Have reasonable expectations: 75% improvement is a treatment success. Clearance rarely possible
 - **Refer early for cystic and scarring acne**
 - Start women on birth control



OBJECTIVES

- Learn practical and preventative medicine pertinent to dermatology
- Address fears and misperceptions when using topical steroids and systemic antifungals
- Learn to optimize dermatology referrals

OVERVIEW

- Sunscreen and sun protection
- Diagnosis and treatment of onychomycosis
- How to prescribe topical steroids
- Appropriate referral criteria

REFERENCES

- www.aad.org
- www.skinscancer.org
- Cribben AC, Williams DM, Logan V, Shuffler GM. Reduced melanoma after regular sunscreen use: randomized trial follow-up. *J Clin Oncol*. 2011;29(29):387-93.
- www.medicape.com
- www.aad.org
- Onychomycosis. *JAHA Derm*. 2014;11(2):274-81.
- Roach E, Poluzzi E, Kooi A, Caraceni P, Fonti FD. Assessing liver injury associated with onychomycosis: Concise Briefing review and data from data mining of the HERS database. *World J Hepatol*. 2014;Aug;27(8):100-112.
- Gupta AK, Redman F, Kozon R. Ciclopirox nail lacquer topical solution 8% in the treatment of bacterial onychomycosis. *J Am Acad Dermatol*. 2000;42(4 Suppl):570-6.
- Esweldi BE, Rich P, Pollock R, Porter DM, Watanabe S, Sando H, Ieda C, Smith K, Pilla R, Ramakrishna T, Olin JZ. Fluconazole 150 mg solution in the treatment of bacterial onychomycosis: two phase III multicenter, randomized, double-blind studies. *J Am Acad Dermatol*. 2013;Apr;68(4):400-8.
- Datta B, Bhat P, Agastya C, Bouda A, Ghose C. Novel treatment of onychomycosis using cure-the-counter fluconazole ointment. *J Clin Case Rep*. *J Am Acad Dermatol*. 2013;Jan;68(1):28-9.
- Esweldi BE, Ali R, Bajbouj S, Gonzalez-Soto RF, Rich P, Westfeld M, Wild H, Zane LT, Pollock R. Efficacy and safety of fluconazole topical solution, VS, a novel topical antifungal agent, for the treatment of fungal onychomycosis: Results from 2 randomized phase III studies. *J Am Acad Dermatol*. 2015;Jul;73(1):62-9.
- Anderson: *Diagnosis of the Skin*, 12th edition. William D. James, Timothy D. Berger, Oak M. Eisen, and Isaac M. Neuhous. Copyright 2014.