You Don’t Know What You’re Missing: 10 Practical Uses for the Wood’s Lamp


Logan Kolb, DO, PGY-4
Orange Park Medical Center
Orange Park, FL
DISCLOSURE OF RELATIONSHIPS WITH INDUSTRY

Logan Kolb, DO, PGY-4
You Don’t Know What You’re Missing: 10 Practical Uses for the Wood’s Lamp

DISCLOSURES

The content of my material(s)/presentation(s) in the CME activity will include discussion of unapproved or investigational uses of products or devices. I otherwise have no relevant disclosures.
Learning Objectives

• Understand **wavelengths of light** emitted by Wood’s lamp
• Learn tips for **proper use** of the Wood's lamp and to **make it more accessible**
• Learn **ten practical dermatologic uses** for which a Wood’s lamp can be used

The Wood’s Lamp

- Invented in 1903 by Baltimore physicist, Robert W Wood.
- Emits long-wave UV radiation, aka “black light”, that is passed through “Wood’s filter” → emits lights rays between 320 to 450nm with peak at 365nm
- Photons hitting skin are either reflected, scattered, transmitted, or absorbed by target chromophore
- Tissue fluoresces when shorter Wood’s light wavelengths (340-400nm) are absorbed and longer wavelengths of visible light (e.g. yellow or red) are emitted.


Tips for Wood’s Lamp Use

- Make it accessible!
- Room should be perfectly dark, preferably windowless; allow your eyes to become adapted to dark
- Topical creams, lint, soap residues can be gently wiped from area with dry gauze
- Light should be held 4-5” from lesion
- Normal skin is slightly blue
- Oily skin is slightly yellow
- Clothing lint is bright white
10 Practical Uses for the Wood’s Lamp
#10 – Milia

- Milia are tiny cysts filled with keratin
- At times, they can be difficult to distinguish from syringomas and verruca plana
- Keratin undergoes **max excitation at 405 nm** and emits fluorescence at 460-500 nm
- Due to bright yellow fluorescence, milia can be distinguished from other papules on the face

#9 – Trichomycosis axillaris

- Trichomycosis axillaris is superficial bacterial infection of hair shaft caused by *Corynebacterium tenuis*
- 46 year old male with axillary malodour x2 years
- Exam revealed waxy, adherent yellow deposits on hair shafts
- Wood’s lamp revealed **green fluorescence**
- Patient cured via shaving axillary hair and using 2% sodium fusidate ointment BID

#8 Hyperpigmented Rashes/Lesions

- Wood’s light is absorbed by melanin, while lesser pigmented adjacent skin scatters the light, resulting in **contrast** between tissue with more melanin.
- MELASMA
  - Hyperpigmentation can be epidermal, dermal, or mixed
  - **Determine amount of epidermal pigment** (which is usually more responsive to treatment)
    - Epidermal pigment has ENHANCED contrast under Wood’s lamp while dermal pigment does not.
  - Wood’s lamp is less helpful for Fitz V and VI patients 2/2 less contrast with surrounding skin.
- Melanoma
  - Identify clinical borders of lentigo maligna
  - Locating the site of a completely regressed primary cutaneous melanoma

#7 Hypopigmented Lesions

- Can be difficult to assess in lighter skin types
- **Vitiligo**
  - Depigmented patches are bright blue-white, which contrasts with surrounding normal skin
  - Helps distinguish from pityriasis alba, nevus anemicus, & post-inflammatory hypopigmentation, all of which DO NOT ACCENTUATE with Wood’s lamp
- **Ash leaf macules** of tuberous sclerosis
  - Can be difficult to see on light skin types; Wood’s lamp can help detect lesions
- **Nevus depigmentosus vs nevus anemicus**
  - Nevus depigmentosus (actually hypopigmented) mildly accentuates whereas nevus anemicus does not
#6 Acne (vs Rosacea)

- Cutibacterium acnes produces coproporphyrin leading to orange-red fluorescence of comedones.
- Example: 33 year old female comes to clinic with longstanding history of inflammatory papules on the mid-face.
  - You don’t appreciate comedones on exam.
  - You grab your Wood’s lamp....


#5 - Pseudomonas

- Pseudomonas organisms produce **pyoverdine**, which makes green fluorescence under Wood’s light
  - Fluorescence is produced with bacterial counts >10^5/cm²
- What dermatologic conditions may this be helpful for?
  - Hot tub folliculitis
  - Assessment of secondary infection in burn patients or those with widespread erosions (e.g. SJS, TEN, pemphigus)
  - Wound infections (especially on foot)
# Diagnosis of Porphyria

- Porphyrias result from enzyme deficiencies in biosynthetic heme pathways leading to accumulation of metabolites
- Porphyria Cutanea Tarda (PCT)
  - Most common porphyria; due to acquired or inherited defects in UROD
  - Examine patient’s urine with wood’s lamp after acidifying with 10% HCl
- Congenital erythropoietic porphyria
  - Staining of teeth; fluorescent urine
- Porphyrins used as photosensitizer in photodynamic therapy (PDT)
  - Shine Wood’s lamp to ensure even distribution of levulinic acid and “no missed spots”

#3 – Tinea Versicolor

- Superficial fungal infection caused by *Malassezia furfur*, which emits a yellow-white or copper-orange fluorescence upon illumination with Wood’s lamp.
- Not only helpful to make diagnosis, but for detecting extent of infection and response to treatment.
- May also help to distinguish *Pityrosporum folliculitis* from other causes of folliculitis.
#2 – Tinea Capitis

- Dermatophyte infection of scalp
- 3rd order question: you suspect tinea capitis. You shine your wood’s lamp and you see fluorescence. How does this alter treatment
  - Fluorescence → ectothrix → Microsporum canis is MC → responds best to griseofulvin
    - Note: Trichophyton tonsurans is an ENDOthrix treated with Terbinafine
    - Trichophyton schoenleinii is only trichophyton that likes to “put on a show” and fluoresce too
- The wood’s lamp can also assess response to treatment (emergence on non-fluorescent hair)

---

Fluorescent Ectothrix: Cats And Dogs Fight and Growl Sometimes (T Schoenleinii)

Endothrix: Ringo Gave Yoko Two Squeaky Violins
#1 – Erythrasma

- Common, chronic superficial bacterial infection with *Corynebacterium minutissimum*
  - *Corynebacterium* is a common flora on everyone’s skin, however overgrowth leads to erythrasma
- Fluoresces coral red due to production of coproporphyrin III
- Why is the distinction of erythrasma from tinea important?...
  - Erythrasma responds well to clindamycin or erythromycin, while tinea/candida responds better to topical imidazoles

10 Practical Uses for the Wood’s Lamp

10. Milia
9. Trichomycosis axillaris
8. Hyperpigmented rashes and lesions
7. Hypopigmented rashes and lesions
6. Acne (vs rosacea)
5. Pseudomonas infections
4. Porphyrias
3. Tinea versicolor
2. Tinea capitis
1. Erythrasma

Top 10 Non-dermatologic Wood’s Lamp Uses

10. Illuminating your blacklight posters in your bedroom in 1993
9. Detecting counterfeit money used at AOCD Casino night, fall meeting 2018
8. Attracting mosquitos into a bugzapper like samples attracting you all into the exhibit hall.
Top 10 Non-dermatologic Wood’s Lamp Uses

7. Hotel bedsheets checks
6. Tanning bed bulbs for the perfect murder weapon in Final Destination 3
5. Tanning bed bulbs for that perfect Fitzpatrick type 1 to type 5 conversion


Top 10 Non-dermatologic Wood’s Lamp Uses

4. Tanning bed bulbs for the perfect Playboy bunny sticker mark
3. Fluorescing urine to make the diagnosis of ethylene glycol poisoning, in 1942.
2. Finding where the puppy missed the puppy pad
1. The perfect gift for a fellow dermatologist you love


Thank You!
References