Common Pediatric Dermatological Problems

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Lice

- Head lice – Pediculosis capitis; more common in Caucasians, girls > boys
- Symptoms: itchy scalp +/- posterior cervical LAD
- Secondary bacterial infection possible (S.aureus, Str.pyogenest)
- Females live for 30 days, lay 7-10 eggs/day – nits ~1 cm from scalp surface
- Nits hatch in 7-10 days
Lice

Head Lice – Pediculosis Capitis
Lice

Head lice
Lice

Crab lice can also live on eyelashes
Lice

Body Lice – Pediculosis Corporis
Lice

• Treatment

  – **Nix cream rinse** – permethrin 1%, OTC, apply after shampooing hair, avoid hair conditioner. Nix kills both lice and their eggs; may repeat in 7-9 days if live lice or nits are still present; permethrin/pyrethrin products 1st line; resistance documented

  – **Elimite** – permethrin 5% applied to clean dry hair, left overnight for 8-12 hrs under shower cap, Rx
Lice

- **Treatment**

  - **Benzyl alcohol 5% lotion (Ulesfia)** – first FDA-approved non-neurotoxic lice treatment; directly asphyxiates the lice; apply to dry hair until completely saturated, leave on for 10 minutes, rinse; 8 oz (227gm)

    - Hair length 0-2 inches: 4-6 ounces (1/2 – ¾ bottle)
    - Hair length 2-4 inches: 6-8 ounces (3/4 – 1 bottle)
    - Hair length 4-8 inches: 8-12 ounces (1- 1 ½ bottles)
    - Hair length 8-16 inches: 12-24 ounces (1 ½ - 3 bottles)
    - Hair length 16-22 inches: 24-32 ounces (3 – 4 bottles)
    - Hair length >22 inches: 32-48 ounces (4 – 6 bottles)


*The clinical trials supporting benzyl alcohol lotion 5% (Ulesfia): a safe and effective topical treatment for head lice (pediculosis humanus capitis).*

Meinking TL, Villar ME, Vicaria M, Eyerdam DH, Paquet D, Mertz-Rivera K, Rivera HF, Hiriart J, Reyna S.
Lice

- Treatment:
  - Malathion (Ovide) lotion 0.5% applied for 8-12 hours, repeat in 7-9 days; not for kids < 6 y/o; Rx; flammable, organophosphate, resistance documented
  - Ivermectin (Stromectol) 3 mg tab, 200 μg/kg single dose in children > 15 kg – repeated in 10 days; alternative regimen: 400 mcg/kg/dose as a single dose on days 1 and 8; Rx
  - Spinosad (Natroba) topical suspension 0.9%, children>4y/o; 120 ml - $262
Lice

– Nit removal: LiceMeister comb $13-15

– [www.headlice.org](http://www.headlice.org)

– Nit removal: can also use 50% vinegar and 50% water x 15-30 min. Acetic acid is a solvent for the glue that attaches nits to the hair. Rinse hair after nit removal.

“-Provides a safe and effective non-chemical treatment alternative for “kids at risk” and others choosing to avoid pesticides
-Prevents unnecessary and direct exposures to ineffective and potentially harmful pesticides
-An earth-friendly alternative to address increasing concerns over lice treatments polluting our environment and water supplies
-Provides the rational solution to resistant lice
-The only brand name that does not promote pesticides, other chemicals, sprays, lotions, repellents or unproven concoctions
-Enables regular screening and early detection in addition to thorough removal of lice and nits
-The cost-effective, reusable tool for the entire family fully guaranteed to last through the school-aged years. Parents can remove lice and nits from their kids and themselves” [http://www.headlice.org/licemeister/features.html](http://www.headlice.org/licemeister/features.html)
Tinea Versicolor

- Hypo/Hyperpigmented macules with fine scale on trunk, neck, arms
- May be more visible in the summer when surrounding skin tans but affected areas do not
- Malassezia furfur/Pityrosporum Orbiculare
Tinea Versicolor
Tinea Versicolor

KOH microscopy – “spaghetti and meatballs” appearance
Tinea Versicolor

- **Treatment:**
  - **Ketoconazole (Nizoral) 2% shampoo** – apply, lather, rinse after 5 minutes; Rx (OTC is 1%); 3-4 times/week
  - **Ketoconazole 2% cream** – apply daily x 2 weeks, Rx
  - **Selenium sulfide (Selsun) 2.5% lotion** – apply, leave 10 minutes, then rinse; use daily x 1-2 weeks, then q month x 3 months for prophylaxis, Rx
  - **Selenium sulfide 1% shampoo** (Head&Shoulders, Selsun Blue)– apply, lather, rinse after 10 minutes; daily x 1-2 weeks, OTC; prophylaxis 2-3 times/week
Tinea Versicolor

• Treatment:
  - **Ketoconazole p.o.** FDA-approved in ages ≥2 years of age and adults
  - Adults/older teenagers: 200 mg tab; take 2 tabs with orange juice, work up a sweat and sleep overnight, shower in the morning; repeat in 1 week
  - Children: 3.3-6.6 mg/kg/day
Scabies

- Excoriated papules with burrows: commonly on wrists, penis, scrotum, palms, and soles; intertriginous areas

- Infants: scalp and face often involved

- Itching due to females depositing eggs, feces in the burrow

- Diagnostic test – skin scraping; burrow
Scabies
Scabies

Excoriated papules with burrows
Scabies mite – *Sarcoptes scabiei*

Name origin is Greek – “Sarco” = flesh + “koptein” = to cut
Scabies

• Treatment:

  – **Permethrin (Elimite) 5% cream** - apply cream from head to toe; leave on for 8-14 hours before washing off with water; for infants, also apply on the hairline, neck, scalp, temple, and forehead; reapply in 1 week

  – pruritis may persist for several days after treatment, may treat with hydroxyzine

  – wash clothing and sheets in hot water; treat close contacts
Scabies

- **Treatment:**
  - Ivermectin (Stromectol) 200 μg/kg in one dose, may repeat in a week; Rx
  - Sulfur 6% in petrolatum daily for 3 days, Rx
  - Crotamiton (Eurax) 10% cream/lotion – not used much; Permethrin generally more effective; can be used to treat generalized pruritis

**References:**


Molluscum Contagiosum

- Smooth, shiny, umbilicated papules on face, trunk, extremities, genitals
- DNA poxvirus; spread - autoinoculation and close contact
- Diagnosis – clinical in most cases
- Large number of lesions – suspicious for immunosuppression, HIV
Molluscum Contagiosum

Smooth, shiny, umbilicated papules
Molluscum Contagiosum

Molluscum bodies
**Molluscum Contagiosum**

- **Treatment:**
  - **Tretinoin cream** 0.025%, 0.05%, 0.1% apply bid
  - Medicaid formulary: **Retin-A Micro Gel** 0.04%, 0.1%
  - **Canthacur** (0.7% Cantharidine) – blistering agent, apply for at least 4 hours before washing off, apply in the office, once q 4-6 wks, cover with bandaid or paper tape, wash off with soap and water
  - Cryosurgery, extraction, curettage
  - In atopic patients, secondary bacterial infections can occur: minimize use of topical steroid if possible; +/- course of oral antibiotics
Keratosis Pilaris

- Common skin condition – small, rough papules on upper arms and thighs
- Hair follicles plugged with keratin
- Treatment:
  - Rx: Lac-Hydrin 12% cream/lotion applied bid (ideally)
    Cream, topical: Lactic acid 12% with ammonium hydroxide (140 g, 280 g, 385 g)
    Lotion, topical: Lactic acid 12% with ammonium hydroxide (225 g, 400 g)
  - AmLactin 12% cream/lotion – OTC, amazon.com
  - Carmol (Urea): cream, lotion, ointment
    Lotion, topical: 35% (207 mL, 325 mL); 40% (237 mL [DSC]); 45% (454 g)
  - Topical retinoids – (facial KP), Rx; Differin 0.1% cream
  - Salicylic acid washes OTC
Keratosis Pilaris
Keratosis Pilaris
Eczema

- **DERMATITIS:**
- **Atopic:** excoriated papules/lichenified plaques; “an itch that rashes”, flexures/generalized, pruritis, allergies/asthma
- **Nummular:** “coin-shaped” plaques
- **Contact:** papules, vesicles, location/shape correspond to contactant; irritant/allergic
- **Dyshidrotic:** “tapioca-like” vesicles lateral digits/soles
- **PMH, FH, patch testing, Bx, Tx response**
Eczema

- **Treatment** (atopic dermatitis):
  - Gentle cleansers (Dove sensitive skin, Cetaphil, CeraVe), no baby oil or bubble bath in bath water
  - Emollients (Vaseline, VaniCream, CeraVe, Cetaphil) several times/day, esp. within 2 minutes of bathing (~50% of moisture lost after 2 minutes)
Eczema

**Topical steroids**

- **Hydrocortisone 2.5% ointment**, 454 gm, applied bid prn itching and irritation; once daily may be more practical; ideally within 2 minutes after bathing
- Triamcinolone 0.025% ointment, 454 gm
- Triamcinolone 0.1% ointment, 80 gm or 454 gm, for flares, non-facial/non-flexural skin
- For severe flares, may consider clobetasol, fluocinonide for 4-5 days, taper quickly to lower potency steroids
Eczema

- Topical calcineurin inhibitors: Elidel (Pimecrolimus) 1% cream, Protopic (Tacrolimus) 0.1% and 0.03% ointment; not for use in immunocompromised patients or patients < 2 yo; may be helpful for face/flexures; discuss FDA Black Box warning

- Oral anti-staphylococcal antibiotics, culture impetiginized areas

- Severe refractory cases: light therapy, oral immunomodulators - Cyclosporine 3-5 mg/kg/day, Methotrexate, Azathioprine
Impetigo

- Papules and erosions with “honey-colored” crusting, typically facial, but can occur anywhere
- Staph. > Strep.
- Clinical Dx, +/- culture exudate from lesions, fluid in the bullae if bullous impetigo
- Consider the size and appearance of the lesions, presence of systemic symptoms
Impetigo

- **Treatment:**
  - **Bactroban (mupirocin) 2% ointment** – 7 day course, bid-tid applications, 1st line
  - Gentle wound cleaning with soap and water
  - Chlorhexidine liquid wash (Hibiclens)
  - Bullous impetigo and/or extensive lesions – consider systemic therapy (dicloxacillin, **cephalexin**, clindamycin, trimethoprim/sulfamethoxazole, etc)
  - Widespread involvement/systemic Sx – IV Clindamycin, Vancomycin, Linezolid
  - Prophylaxis: bleach baths – ¼ cup bleach to ½ tub of water; intranasal mupirocin bid for 5 days
Empiric antimicrobial therapy for impetigo (excluding MRSA)

<table>
<thead>
<tr>
<th>Oral therapy</th>
<th>Adults</th>
<th>Children*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicloxacillin</td>
<td>500 mg orally every six hours</td>
<td>25 mg/kg/day in 4 divided doses</td>
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<tr>
<td>Cephalexin</td>
<td>500 mg orally every six hours</td>
<td>25 mg/kg/day in 4 divided doses</td>
</tr>
<tr>
<td>Clindamycin•</td>
<td>300 mg orally every six hours</td>
<td>15-25 mg/kg/day in 3 divided doses</td>
</tr>
<tr>
<td>ErythromycinΔ</td>
<td>250 mg orally every six hours</td>
<td>40 mg/kg/day in 4 divided doses</td>
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* Maximum single dose should not exceed dose for adults.

• Note local prevalence of inducible clindamycin resistance; see text.

Δ Macrolides may not be adequate therapy given increasing resistance among S. pyogenes and S. aureus; note local resistance patterns.
### Options for oral treatment of methicillin-resistant Staphylococcus aureus (MRSA)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Adult dose</th>
<th>Pediatric dose (children &gt;28 days)*</th>
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<tbody>
<tr>
<td>Clindamycin</td>
<td>300 to 450 mg orally three times daily</td>
<td>40 mg/kg per day orally divided in three or four doses</td>
</tr>
<tr>
<td>Trimethoprim-sulfamethoxazole</td>
<td>1 DS tab orally twice daily</td>
<td>8 to 12 mg trimethoprim component/kg per day orally divided in two doses</td>
</tr>
<tr>
<td>Doxycycline*</td>
<td>100 mg orally twice daily</td>
<td>≤45 kg: 4 mg/kg per day orally divided in two doses &gt;45 kg: 100 mg orally twice daily</td>
</tr>
<tr>
<td>Minocycline*</td>
<td>200 mg orally once, then 100 mg orally twice daily</td>
<td>4 mg/kg orally once, then 4 mg/kg per day divided in two doses</td>
</tr>
<tr>
<td>Linezolid</td>
<td>600 mg orally twice daily</td>
<td>&lt;12 years: 30 mg/kg per day orally divided in three doses ≥12 years: 600 mg orally twice daily</td>
</tr>
<tr>
<td>Tedizolid</td>
<td>200 mg orally once daily</td>
<td></td>
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</tbody>
</table>

DS: double strength.

* Not recommended for children <8 years of age.

Herpes simplex

- “Grouped vesicles on an erythematous base”, various locations
- HSV 1 & 2
- Diagnosis: clinical, Tzanck smear: giant cells, PCR, culture, biopsy
Eczema herpeticum
Herpes simplex

- **Treatment:**
- Acyclovir, Valacyclovir, Famiciclovir for 7-10 days
- Eczema herpeticum (Kaposi’s varicelliform eruption): hospitalize, HSV PCR, VZV PCR, viral culture, bacterial culture, IV Acyclovir while awaiting diagnostic, +/- IV antibiotics for secondary bacterial infection; wound care, emollients
Tinea

- Annular erythema with scale, various locations: tinea capitis, tinea corporis, tinea pedis, tinea cruris
- Microsporum, Trichophyton, Epidermophyton
- KOH microscopy (hyphae), Wood’s lamp (only a few species fluoresce), culture.
Tinea

- **Treatment**
  - Terbinafine (Lamisil) 1% cream applied bid x 2-4 wks
  - Tinea barbae, tinea capitis, onychomycosis – systemic treatment needed: p.o. terbinafine, griseofulvin, itraconazole, fluconazole
  - **Griseofulvin:** 20 to 25 mg/kg/day (microsize formulation) for 6 to 12 weeks
    10 to 15 mg/kg/day (ultramicrolsize formulation) for 6 to 12 weeks
  - **Terbinafine (Lamisil):** 10-20 kg: 62.5 mg/d PO
    20-40 kg: 125 mg/d PO
    >40 kg: 250 mg/d PO

(LamISIL®: 125 mg/packet (42s); 187.5 mg/packet (14s, 42s))
Tinea

Duration of systemic treatment:
T. Corporis – 2 wks terbinafine
T. Capitis – 4 wks terbinafine/8 wks griseofulvin (6-12wks)
Onychomycosis: fingernails – 6 weeks terbinafine
toenails – 12 weeks terbinafine
Tinea

- Kerion – severe case of tinea capitis, may be complicated by a secondary bacterial infection

- Treatment: oral griseofulvin x 8 weeks – 1st line, or oral terbinafine x 4 weeks.

- Antibiotics if bacterial infection present
Tinea Capitis – Kerion of the scalp
Acne Vulgaris

- Erythematous papules, nodules, cysts, pustules, open/closed comedones
- Excessive sebum production, follicular plugging
- Closed comedones – “whiteheads”, open comedones – “blackheads”, dark color is due to oxidation of melanin in the follicle, not dirt
- Increased sebum production, *Propionibacterium acnes*
- Clinical Dx
From the New Guidelines for the Management of Acne

Visual grading of acne

MILD
- Comedonal

MODERATE
- Papular/Pustular

SEVERE
- Nodular
- Nodular/Conglobate

First-line Treatment
- Topical Retinoid
- Topical Retinoid + Topical Antimicrobial
- Topical Retinoid + Oral Antibiotic +/- BPO
- Topical Retinoid + Oral Antibiotic + BPO
- Oral Isotretinoin

Maintenance Therapy
- Topical Retinoid
- Topical Retinoid +/- BPO

With small nodules (>0.5-1 cm); Consider physical removal of comedones; Second course in case of relapse.

Acne Vulgaris

• Treatment:
  – Topical retinoids – cornerstone of treatment
    • Retin-A (Tretinoin) 0.025%, 0.5%, 0.1% cream/gel
      – apply peasize amount qhs (may start qod/tiw)
    • Differin (Adapalene) 0.1%, 0.3% cream/gel –
      apply pea size amount qhs
    • Retin-A Micro gel 0.04%, 0.1% - Medicaid
Acne Vulgaris

• Treatment:
  – Topical antimicrobial agents/BPO, combinations:
    • Benzoyl peroxide wash, cream (available OTC)
    • PanOxyl 10% wash, Brevoxyl, etc.
    • Clindamycin gel
    • Benzaclin gel (BPO/Clindamycin)
    • Duac gel (BPO/Clindamycin)
    • Epiduo gel – Adapalene/BPO
Acne Vulgaris

Treatment:
- Oral antibiotics: Doxycycline 100 mg po bid – recent shortages, Minocycline 100 mg bid; Azithromycin 500 mg po 3 times a week (MWF)
- OCP’s in females if cyclical flares and no risk factors for hypercoagulability
- OCP’s + Spironolactone in some cases
- Accutane (Isotretinoin); iPledge program
Warts

- Verruca Vulgaris – papules with rough surface, digits
- Plantar – tender, hyperkeratotic plaques, soles
- Flat – small flat-topped translucent papules, face/neck/legs
- Condyloma accuminata – polypoid/papillomatous excrescences, genitalia
- Clinical Dx, Bx
Warts

Treatment:

– Salicylic acid – OTC plasters, patches

– Canthacur/Canthacur PS – apply a drop to each lesion, cover with tape or bandaid, parents instructed to remove tape in 4-6 hours and wash the areas with soap and water, treatments q 3-4 weeks.

– Cryotherapy

– Imiquimod (Aldara) 5% cream

– Topical retinoids, esp. for flat warts
Warts

Treatment:
- Pulsed Dye Laser
- Intraleional Candida/Trichophyton antigen injections
- Podophyllin, IL Bleomycin, Squaric acid, Cimetidine...
- Electodissecation and curettage (ED&C)
- Various combinations
Thank you