Sports Dermatology

Atlantic Sports Health
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Objectives

- NJSIAA Skin Checks
- Disease Identification and Management
  - Bacterial
  - Fungal
  - Viral
- Return to play guidelines
- Prevention
NJSIAA Skin Checks

- Organized skin checks prior to meets and tournaments
- Designed to create a safer environment for student athletes
- Conducted by host school athletic trainer and/or team physician
Bacterial Infections
Impetigo

- Etiology:
  - Superficial infection by Staphylococcus aureus (70%) or Streptococcus pyogenes (GAS)
- Transmission:
  - Skin to skin, highly contagious
- PE:
  - Painful, round erythematous papules or plaques
  - “Honey-crust” lesions
  - Regional lymphadenopathy
- Dx:
  - Clinical
  - Bacterial Culture
Impetigo

- **Rx:**
  - Non-bullous impetigo
    - Topical mupirocin or fusidic acid
  - Bullous impetigo
    - Cephalexin, Azithromycin

- **RTP:**
  - No new lesion for 48 hours
  - Completion of 72 hours of ABX
  - ALL lesions must be dry (NO draining or exudate)
  - Active lesion may not be covered
  - Residual lesions should be covered with bio-occlusive pre-wrap during competition (Tegaderm)
Folliculitis

- **Definition:**
  - Infection of the hair follicle

- **Etiology:**
  - Staphylococcus aureus or Pseudomonas

- **PE:**
  - Clusters of 2-5 mm erythematous pruritic papules with a central pustule surrounding hair
  - Commonly on chest, back, buttocks and thighs

- **Transmission**
  - Staph
    - Areas of occlusive barriers
  - Pseudomonas
    - Whirlpools, hot tubs, sharing soaps, sponges
Folliculitis

- **Rx:**
  - B.I.D. soap wash, astringent lotions, Topical ABX

- **Complications:** Furuncle/carbuncle formation
  - Benzoyl peroxide, warm compresses
  - Oral ABX: dicloxacillin, Keflex, Erythromycin,
  - I & D

- **Pseudofolliculitis barbae**

- **RTP:**
  - No new lesions 2 days, all lesions crusted,
  - ABX x 3 days
  - Area should be covered if participating
  - No restriction for pseudofolliculitis barbae unless infected
Cellulitis

- Definition:
  - Infection of the deep dermis and subcutaneous structures
- Etiology:
  - Staphylococcus aureus and Streptococcus pyogenes
- PE:
  - Erythema with elevated or sharply demarcated margins, warm to touch
  - May also have fever and chills
Cellulitis

- **Rx:**
  - Mild infection:
    - P.O. ABX
  - Severe infections:
    - IV ABX

- **Complications:**
  - Bacteremia, sepsis

- **RTP:**
  - Afebrile 48h, resolving infection
CA-MRSA

- **Etiology:**
  - Methicillin-Resistant Staphylococcus Aureus

- **Clinical features:**
  - Boil / furuncle frequently misdiagnosed as a spider bite
  - Red, swollen, fluctuant and painful
  - May have pus or drainage
  - Commonly occur in areas of friction
    - Axilla, groin, thigh
CA-MRSA

- Rx:
  - B.I.D. soap wash
  - Hibiclens or chlorhexidine wash
  - Astringent lotions
  - Appropriate disinfection procedures
  - I&D with culture
  - ABX

- RTP
  - All lesions crusted
  - No new lesions 48 hours
  - ABX x 72 hours
  - Active infections may not be covered for competition
# Adult Antiibiogram 2014
## GRAM - POSITIVE ORGANISMS

### INPATIENT ISOLATES

<table>
<thead>
<tr>
<th>Organism</th>
<th># Isolates</th>
<th>Ampicillin</th>
<th>Clindamycin</th>
<th>Gentamicin</th>
<th>Levofoxacin</th>
<th>Nitrofurantoin (Urine)</th>
<th>Oxacillin</th>
<th>Penicillin</th>
<th>Tetracycline</th>
<th>Trim./Sulfa</th>
<th>Vancomycin</th>
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<tbody>
<tr>
<td><em>Enterococcus faecalis</em></td>
<td>421</td>
<td>50</td>
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<td>MSSA</td>
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### EMERGENCY DEPT ISOLATES

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<thead>
<tr>
<th>Organism</th>
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<th>Ampicillin</th>
<th>Clindamycin</th>
<th>Gentamicin</th>
<th>Levofoxacin</th>
<th>Nitrofurantoin (Urine)</th>
<th>Oxacillin</th>
<th>Penicillin</th>
<th>Tetracycline</th>
<th>Trim./Sulfa</th>
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<td>84</td>
<td>76</td>
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</table>

**Note:** % susceptible for each organism/antibiotic combination was generated by including the 1st isolate of that organism per patient.

The antibiogram is intended to guide selection of empiric therapy for infections; directed therapy should be selected based on culture and susceptibility reports.

- **Drug not tested or known to be clinically ineffective for organism**
- **Level I and II restricted antimicrobials — require Infectious Diseases Approval**
- **Less than 30 isolates indicates less statistical validity of the % susceptible estimates**
- **Addition of synergistic gentamicin required for bactericidal activity in serious systemic enterococcal infections**
CA-MRSA Treatment

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dose(^a)</th>
<th>Duration</th>
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<tbody>
<tr>
<td>First-line</td>
<td></td>
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</tr>
<tr>
<td>Trimethoprim/sulfamethoxazole</td>
<td>160TMP/800SMX</td>
<td>po bid (\times) 10–14 d</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>100 mg</td>
<td>po bid (\times) 10–14 d</td>
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<tr>
<td>Alternative</td>
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</tr>
<tr>
<td>Clindamycin</td>
<td>300 mg</td>
<td>po qid (\times) 10–14 d</td>
</tr>
<tr>
<td>Linezolid</td>
<td>600 mg</td>
<td>po q 12 h (\times) 10–14 d</td>
</tr>
</tbody>
</table>

Susceptibility of methicillin-resistant *Staphylococcus aureus* infection may vary with region and time. Any evidence of systemic infection warrants hospitalization with intravenous vancomycin therapy.

\(^a\)Adult doses provided.

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*Sedgwick et al. Clinics in Sports Medicine. 2007;26(3).*
Percentage of Participants Choosing Each Treatment Option for the Management of Skin and Soft-Tissue Infection

CA-MRSA

- Transmission factors: (CDC’s “5 C’s”)
  - Close skin-to-skin contact
  - Contaminated items (ie, towels, razors, soap)
  - Crowding
  - Cleanliness (ie, poor hygiene)
  - Compromised skin integrity

- Prevention:
  - Cover wounds, good hygiene and frequent showers
  - Discourage sharing of towels or protective equipment
  - Appropriate disinfection procedures
  - Encourage athletes and trainers to report skin infections
Fungal Infections
Tinea Infections

- Types
  - Tinea Corporis (Gladitorum)
  - Tinea Pedis
  - Tinea Cruris
  - Tinea Capitus

- Definition:
  - Fungal infection on the skin
Tinea Infections

- **Types**
  - Tinea Corporis (Gladitorum)
  - Tinea Pedis
  - Tinea Cruris
  - Tinea Capitus

- **PE:**
  - Well-defined erythematous, scaling papules & plaques
  - Annular appearance with raised edge & central clearing

- **Dx:**
  - KOH test reveals branching septate hyphae
  - Fungal Culture
Tinea Treatment

- **Tinea Corporis (Gladitorum), Pedis, Cruris**
  - Rx:
    - Topical antifungal
  - RTP
    - Topical treatment for at least 72 hours
    - Lesions covered with bio-occlusive dressing

- **Tinea Capitus**
  - Rx:
    - Systemic antifungal agent
      - (terbinafine, ketoconazole)
  - RTP
    - Minimum of 2 weeks of Tx
Tinea Versicolor

- Etiology:
  - lipophilic fungus
  - *Malassezia globos* and *Malassezia furfur* formerly called *Pityrosporum*

- PE:
  - Asymptomatic
  - Well defined Hypo/hyperpigmented lesions or patches on the upper trunk

- Occurs frequently in higher and humid temperatures
Tinea Versicolor

- **Dx:**
  - Wood’s lamp
  - KOH test on skin scrapings
    - “spaghetti & meatballs” appearance

- **Rx:**
  - Selenium shampoo 2.5% applied for 10 min/day for 1wk

- **RTP:**
  - No restriction
<table>
<thead>
<tr>
<th>Condition</th>
<th>Agent</th>
<th>Branda</th>
<th>Type</th>
<th>Dose</th>
<th>Frequency, ×/d</th>
<th>Duration, wk</th>
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<tbody>
<tr>
<td>Tinea capitis</td>
<td>Terbinafine</td>
<td>Lamisil</td>
<td>Rx</td>
<td>Oral 250 mg</td>
<td>1</td>
<td>2–4</td>
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<tr>
<td></td>
<td>Ketoconazole</td>
<td>Nizoral</td>
<td>Rx</td>
<td>Oral 200 mg</td>
<td>1</td>
<td>2–4</td>
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<tr>
<td></td>
<td>Itraconazole</td>
<td>Sparanox</td>
<td>Rx</td>
<td>Oral 200 mg</td>
<td>1</td>
<td>2–4</td>
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<tr>
<td></td>
<td>Fluconazole</td>
<td>Diffucan</td>
<td>Rx</td>
<td>Oral 6 mg/kg</td>
<td>1</td>
<td>3–6</td>
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<td>Tinea corporis and</td>
<td>Terbinafine 1% cream</td>
<td>Lamisil</td>
<td>OTC</td>
<td>Topical</td>
<td>2</td>
<td>2–4</td>
</tr>
<tr>
<td>tinea cruris</td>
<td>Ketoconazole 2% cream</td>
<td>Nizoral</td>
<td>OTC</td>
<td>Topical</td>
<td>1</td>
<td>2–4</td>
</tr>
<tr>
<td></td>
<td>Clotrimazole 1% cream</td>
<td>Lotrimin</td>
<td>OTC</td>
<td>Topical</td>
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<td>2–4</td>
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<tr>
<td></td>
<td>Naftin 1% cream</td>
<td>Naftin</td>
<td>Rx</td>
<td>Topical</td>
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<tr>
<td></td>
<td>Oxiconazole 1%a</td>
<td>Oxistat</td>
<td>Rx</td>
<td>Topical</td>
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<td>1</td>
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<tr>
<td></td>
<td>Ciclopinox 0.77% cream</td>
<td>Loprox</td>
<td>Rx</td>
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<td>1</td>
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<tr>
<td></td>
<td>Fluconazole</td>
<td>Diffucan</td>
<td>Rx</td>
<td>Oral 150 mg</td>
<td>1×7/7 d</td>
<td>2–4</td>
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<tr>
<td></td>
<td>Itraconazole</td>
<td>Sparanox</td>
<td>Rx</td>
<td>Oral 100 mg</td>
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<td>2</td>
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<tr>
<td></td>
<td>Terbinafine</td>
<td>Lamisil</td>
<td>Rx</td>
<td>Oral 250 mg</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Tinea pedis</td>
<td>Ketoconazole 2% cream</td>
<td>Nizoral</td>
<td>OTC</td>
<td>Topical</td>
<td>1</td>
<td>4–6</td>
</tr>
<tr>
<td></td>
<td>Clotrimazole 1% cream</td>
<td>Lotrimin</td>
<td>OTC</td>
<td>Topical</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fluconazole</td>
<td>Diffucan</td>
<td>Rx</td>
<td>Oral 150 mg</td>
<td>1×7/7 d</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Itraconazole</td>
<td>Sparanox</td>
<td>Rx</td>
<td>Oral 100 mg</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Terbinafine</td>
<td>Lamisil</td>
<td>Rx</td>
<td>Oral 250 mg</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Herpes simplex (primary)</td>
<td>Valacyclovir</td>
<td>Valtrex</td>
<td>Rx</td>
<td>Oral 1.0 g</td>
<td>3</td>
<td>1–1.5</td>
</tr>
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<td>Herpes simplex (recurrent)</td>
<td>Valacyclovir</td>
<td>Valtrex</td>
<td>Rx</td>
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<td>1</td>
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<td>Acyclovir</td>
<td>Zovirax</td>
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<td>Oral 800 mg</td>
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<td>1</td>
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<td>Impetigo</td>
<td>Mupirocin 2% ointment</td>
<td>Bactroban</td>
<td>Rx</td>
<td>Topical</td>
<td>2</td>
<td>1</td>
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<td>Fucidin H</td>
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<td>Topical</td>
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<td>2</td>
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<td>Retapamulin 1% ointment</td>
<td>Altabax</td>
<td>Rx</td>
<td>Topical</td>
<td>2</td>
<td>5 d</td>
</tr>
</tbody>
</table>

Systemic antibiotic use is determined on a case-by-case basis, based on culture and sensitivity of lesion, and until information is available on antibiotic susceptibilities in the local community.

Abbreviations: OTC, over-the-counter medication; Rx, prescription required.

a Lamisil (Novartis Pharmaceuticals Corporation, East Hanover, NJ); Nizoral (McNeil-PPC, Inc, Fort Washington, PA); Sparanox (PriCara, Raritan, NJ); Diffucan (Pfizer Inc, New York, NY); Lotrimin (Schering-Plough HealthCare Products, Inc, Whitehouse Station, NJ); Naftin (Merz Pharmaceuticals, Greensboro, NC); Oxistat (PharmaDerm, Florham Park, NJ); Loprox (Medicis Pharmaceutical Corporation, Scottsdale, AZ); Valtrex (GlaxoSmithKline, Middlesex, United Kingdom); Zovirax (GlaxoSmithKline); Bactroban (GlaxoSmithKline); Fucidin H (Leo Laboratories, Dublin, Ireland); Altabax (GlaxoSmithKline).

b Two of these agents are often used in combination twice a day to resistance.

Viral Infections
**Herpes Simplex Virus**

- **Definition:**
  - Cutaneous herpes
  - Herpes gladitorum (wrestlers)

- **Etiology:**
  - HSV resulting from direct contact
  - About 40-to 60 percent of the US population is seropositive
  - Virus lays dormant in nerve until activation

- **Transmission**
  - Open or weeping vesicles
  - Exposure of virus to mucosal membranes or abraded skin to herpes lesions
Herpes Simplex Virus

- **PE:**
  - Grouped vesicles on erythematous base
  - Lesions typically preceded by prodrome of stinging or pain
  - Vesicles enlarge and ulcerate
  - Crust over and eventually heal
  - Lymphadenopathy, fever, malaise

- **Dx:**
  - Culture
  - Tzank smear
  - PCR
  - Direct fluorescent antigen
  - Antibody testing
Herpes Simplex Virus

- **Rx:**
  - **Initial:**
    - Valacyclovir 1g BID x 10d
  - **Recurrent:**
    - Valacyclovir 500mg BID x 5d
  - **Prophylaxis:**
    - Valacyclovir 500-1000mg daily
Herpes Simplex Virus

- RTP NFHS:
  - No systemic Sx (fever, malaise)
  - No new lesions for 48 hours
  - No active lesions
  - Primary outbreak 10-14 days of Tx
  - Recurrent outbreak 5 days of Tx
  - All crusted lesions covered
  - Active lesions may not be covered to allow participation

- RTP NCAA:
  - No systemic Sx (fever, malaise)
  - No new lesions for 72 hours
  - No active lesions
  - Completed 5 days (120 hrs) of oral antiviral Tx
  - All crusted lesions covered
  - Active lesions may not be covered to allow participation


Molluscum contagiosum

- **Definition:**
  - Benign viral painless bumps

- **Etiology:**
  - Poxviridae virus

- **PE:**
  - Asymptomatic
  - Small (1-6 mm), well defined white or skin colored papules with umbilicated center

- **Dx:**
  - Clinical findings
  - Microscopy
Molluscum contagiosum

- Rx:
  - Physical destruction
    - Sharp curette
    - Liquid nitrogen
  - Chemical destruction
    - Trichloracetic acid
  - Often spontaneously resolve within 1 year

- RTP
  - Lesions should be curetted
  - Covered with gas permeable membrane
Prevention

- Promote personal hygiene, washing hands often
- Shower immediately following exercise
  - Available soap (pump > bar)
- Avoid whirlpools and common tubs with wounds
- Do not share personal items
- Washing uniforms and cloths after each use
- Mandatory disinfecting wrestling mats before use
- Facilities should abide to proper cleaning policies
- Reporting all suspicious abrasions/lesions to athletic trainers
  - Teach athletes/coaches what to look for
- Cover all abrasions and lacerations properly
Questions?
References

- Pecci et al. Skin Conditions in the athlete. The American Journal of Sports Medicine 2009 Vol 37, No.2