

# Skin Infections In Athletics



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# **Skin Infections**

- **The skin always has some amount of bacteria, fungus, and viruses living on it**
- **Skin infections occur when there are breaks in the skin and the organisms have uncontrolled growth**

# How Infectious??

- **It is more important to understand the potential for infection rather than placing a name on a skin problem**
- **The priority is the health of the athlete**
- **When in doubt, err on the side of safety and well-being**

# Problem Skin Lesions

- Always worry about lesions that have an irregular border
- Worry about raised skin lesions
- Worry about “wet” or “moist” lesions

# Problem Skin Lesions

- **Worry about skin lesions that have different colors within the lesion**
- **Bright red colored lesions are more of a problem compared to faded lesions**
- **Lesions that are warmer compared to other skin are more likely to be infected.**

# Problem Skin Lesions

- **Patterns of skin lesions help determine how infectious the lesions have become**
- **Inflammation and irritation around the skin lesions increase the chance the lesions are infectious**

# Problem Skin Lesions

- **An athlete with a prior history of infectious skin lesions has a higher risk of recurrent skin infections**
- **Skin abrasions increase the risk of skin infection. The deeper or more traumatic the break in the skin, the higher the risk for a subsequent infection**

# Expertise

- **The more experienced a medical person has with skin lesions, the better the medical evaluation**
- **An physician experienced with skin lesions and infections is better than one with limited experience**
- **Legally the experienced matside physician evaluation is more important compared with a prior outpatient evaluation**



# Expertise

- In some situations an experienced athletic trainer or referee may have more expertise compared to a physician who has limited experience – but this problem is difficult to objectively document
- The best situation is qualified physicians, trainers and referees working together for the benefit of the athletes.

# **Skin Infections - Highlights**

- **Bacteria (can be cured)**
  - **Staphylococcus including MRSA & Impetigo**
  - **Streptococcus**
- **Fungal (can be cured)**
  - **Ringworm**
- **Viral (can't be cured but can be treated)**
  - **Herpes**
  - **Warts**
  - **Molluscum contagiosum**

# **Skin Infections**

- **The right antibiotic is required to cure a specific bacterial skin infection**
- **Antibiotics for bacteria will not improve fungal or viral infections**
- **Bacterial infections can be the fastest growing infections and for this reason are the most easily spread among athletes**

# Skin Infections

- The faster the bacteria grows, the more likely the correct antibiotic will cure the infection.
- Herpes gladiatorum (Herpes simplex) responds the best to antiviral medication. Other virus infections are relatively resistant to current medications

# Examples of Staph Infections



[www.spapex.org/spapex/impetigobullosus.jpg](http://www.spapex.org/spapex/impetigobullosus.jpg)

# Staph Infection





# Chronic folliculitis due to *Staphylococcus aureus* infection



# Folliculitis

- Inflammation of hair follicle
- Frequently caused by infection
- Physical injury can cause problem
- Painless or tender pustule



# What is MRSA?

- The official name is Methicillin resistant *Staphylococcus aureus*.
- It is a “Staph” infection
- “Staph” and “Strep” bacteria often cause skin infections.
- MRSA is resistant to many of the traditional “Staph” antibiotics

# MRSA In Sports

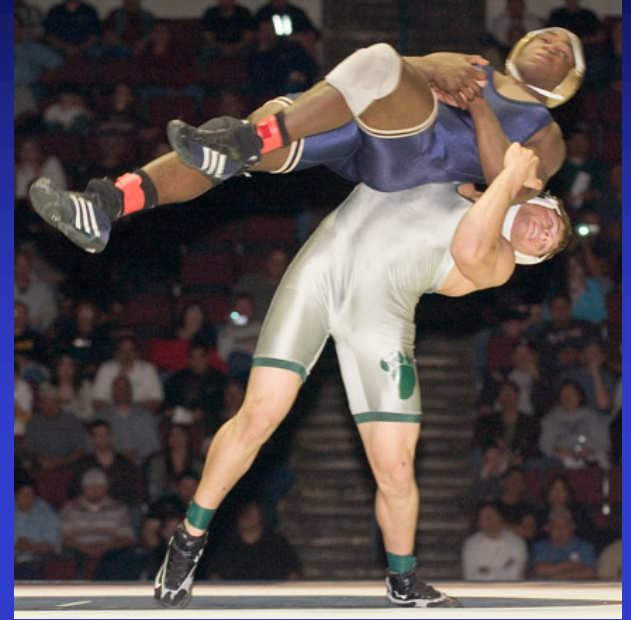
- 1984 - rugby team in London
- 1986 - outbreak of boils in football and basketball  
Kentucky
- 1993 - 1<sup>st</sup> case of MRSA in a wrestling team in  
Vermont
- 2002 - 03 – MRSA boom!!!
  - Los Angeles county: athletes & county jail
  - Colorado, Indiana, and Pennsylvania – fencers,  
football, & wrestlers
- 2004 - 05 – high school, college, professional  
football and basketball

# **MRSA**

- **Typically presents with an abscess**
- **May or may not have surrounding cellulitis**
- **Athlete may or may not have risk factors for infection**

# MRSA

- Sports who have athletes develop infections include weight lifting, basketball, baseball, canoeing, fencing, football, rugby, running (cross-country), soccer, softball, volleyball, and wrestling



# How Do MRSA Infections Occur?

- **Touching someone's MRSA-infected skin**
- **Touching surfaces that have MRSA on them, like doorknobs and light switches**
- **Sharing personal hygiene items (bar soap, towels, razors)**
- **Overusing antibiotics, stopping them early, or missing doses**

# MRSA



# How is MRSA treated?

- **By a healthcare provider who may:**
  - **Drain the infection and/or**
  - **Give the correct antibiotic and/or**
  - **Help reduce the amount of bacteria on the skin.**



# Recurrent Infections

- **MRSA skin infections recur at a high rate**
- **Skin surface and fomite colonization appear to be as important as nasal colonization**
- **Alcohol-based disinfectants may be superior to detergent-based formulations**



# Stop Spreading MRSA!

- Wash your hands often with warm, soapy water
- Use 60% alcohol-based hand sanitizer when soap and water are not available
- Shower immediately after practice and matches



# Stop Spreading MRSA!

- Do not share personal hygiene items (bar soap, towels, razors) or clothing
- Wear practice clothes/ uniforms only once, wash with soap and hot water, dry in hot dryer
- Cover all wounds with a clean, dry bandage taped on all four sides

# **Stop Spreading MRSA!**

- **Avoid contact with other people's skin infections**
- **Report skin infections to coach/ trainer/ nurse**
- **Clean and disinfect athletic/wrestling gear and practice surfaces (mats, benches, weight lifting equipment) after each use**

# Stop Spreading MRSA!

- Do not let wrestlers practice with potentially contagious wounds, even if covered, and consider use of this rules for all contact sports



# Returning To Athletics

- **Should be kept out of competition until wounds are completely healed**
- **Recurrent infections can be prevented by chlorhexidine body washes daily for three days and then three times per week.**
- **Nasal carriage of MRSA can be treated with intranasal povidine-iodine or mupirocin.**

# Impetigo

- **Can develop on any exposed skin surface after skin-to-skin contact in sports.**
- **Topical mupirocin may be used with the possible addition of oral antibiotics, such as a second-generation oral cephalosporin**
- **Athlete may return to competition after five days of therapy if the lesions have become crusted.**

# General Treatment of Bacterial Infections with Antibiotics

- You need to take the right medicine. Antibiotics are not all the same.
- Even if you start to feel better, you need to take all of the pills, to help the infection go away. Taking a few pills will not kill all of the bacteria, and may make the ones that remain stronger.

# Treatment with Antibiotics (cont)

- Antibiotics work by killing the bacteria in skin infections. The bacteria that are normally on your skin can become resistant to antibiotics if you take them when you don't really need them.





# Treatment with Antibiotics (cont)

- Go back to the doctor if you are taking your antibiotics and are not getting better after two or three days of treatment. You may need a different kind of antibiotic.



# Ringworm (fungus)

- Also known as *Tinea corporis* (fungus)
- Common among wrestlers
- Treatment should include a topical agent (such as clotrimazole twice a day for three weeks) as well as an oral antifungal agent (such as fluconazole for three weeks).
- May return to competition after five, but ideally after 10 days of treatment

# Ringworm



© Current Medicine



# Treatment of Ringworm

- Be sure to take the anti-fungal medicine for the full duration of time. Failure to do so may result in the ringworm returning.

# Herpes Gladitorium (viral)

- Also known as Herpes simplex
- Relatively common.
- Well-defined grouped vesicles are diagnostic.
- Symptoms may include fever, chills, and headache

# Herpes Gladiatorum





# Herpes Infection Of Finger



# Herpes Infections

- Herpes infections are associated with nerve endings and are never completely killed in the body
- Herpes skin infections are the same as sexually transmitted herpes infections – same organism and they recur during times of stress and illness



# Herpes Infections

- Herpes infections can be transmitted from a carrier to another athlete without any visible skin lesions being present
- Only approximately 20% of people infected with herpes ever experienced skin lesions

# Herpes Infections

- **Potential signs and symptoms of active herpes infections – without skin lesions**
  - **Itchiness**
  - **Pain, especially nerve pain**
  - **Enlarged lymph nodes**
  - **Fever**

# Problematic Herpes

- **Recurrent infections in the same athlete**
- **Infections in multiple athletes on the same team**
- **Multiple athletes fighting the “crud” with fever, fatigue, enlarged lymph nodes**
- **May consider chronic suppressive antiviral medication especially during critical times of the competitive season**

# Treatment For Herpes Gladiatorum

- Treatment with either acyclovir, valcyclovir, or famciclovir for 10 days
- Wrestling can be resumed four to seven days after start of treatment if vesicles have resolved.

# Molluscum contagiosum

- Virus infection of skin
- Discrete, flesh-colored, dome-shaped papules



# Covering Skin Lesions

- **Covering skin lesions do not reduce infections!**
- **Infections penetrate dressings and the outer dressings have been shown to be contagious**
- **In the physical sport of wrestling, dressings slip and move around, are abrasive on the wound which increases infection potential**

# Disinfection Guidelines

- All hard environmental surfaces that may come in contact with body fluids should be cleaned (i.e., visible dirt removed) and sanitized (i.e., disinfected, or removal of bacteria) daily, if area is in use. Many commonly available cleaning products are effective against MRSA - a complete list of EPA-approved disinfectants for MRSA is available at [www.epa.gov/oppad001/list\\_h\\_mrsa\\_vre.pdf](http://www.epa.gov/oppad001/list_h_mrsa_vre.pdf). Refer to the manufacturer's directions for recommended contact times for various disinfectants. Always wear gloves when using disinfectants.

# Disinfection Guidelines

- All floor and wall padding in athletic area(s) should be washed daily (if the athletic area is used)
- Separate mop heads/ buckets should be used for each activity area, locker room, and restroom. Mop heads and buckets should be cleaned regularly. (Washable micro-fiber heads or disposable mop cloths may be more convenient)



# Disinfection Guidelines

- Towels/ linens laundered on premises should be washed with detergent at a minimum of 160 F and dried in a hot dryer.

# Disinfection Guidelines

- **CAUTION!!** If clean athletic gear is dumped into a dirty laundry bag or gym bag, the gear immediately becomes a source of infection!

# Wrestling Rooms and Mats

- **Wall padding and benches should be wiped-down with an EPA-approved disinfectant such as a quaternary ammonium (quat) or 1:9 bleach solution after each practice and meet.**
- **Mat surfaces with small holes or tears should be repaired with mat tape. When mat sides are in poor condition, mats should be taped together for meets and for practice.**

# Wrestling Room and Mats

- **Mat surfaces should be replaced promptly when there are large holes or surfaces are excessively worn.**
- **Both sides of the mats should be cleaned thoroughly before and after each use for practices and meets.**
- **In rooms with multiple 40x40 foot mats, it may not be practical to clean the mat underside everyday but this cleaning should be perform as frequent as possible.**

# Wrestling Room And Mats

- Mop heads and buckets should be washed regularly. Consider using a separate mop head/bucket specifically for cleaning mats.



# **Locker Rooms/ Shower Rooms**

- **Liquid, not bar, soap should be readily available and provided by wall dispensers close to sinks and next to showers. Safeguard or Dial brands are two of the more effective brands of soap**
- **Chlorhexidine is much more effective compared to soap in reducing infection**

# Locker Rooms/ Shower Rooms

- **Soap dispensers should be checked regularly to ensure that soap is present**
- **Soap dispensers should have “unit” refills**

# Locker Rooms/ Shower Rooms

- Shower with soap or chlorhexidine (recommended) and water *immediately* after each practice, game, match, or other event. Use a clean, dry towel



# Locker Rooms/ Shower Rooms

- All shower and locker room areas should be cleaned daily (if used)
- Towels should not be shared. If they are washed at school, they should be washed in soap and water at 160 F minimum and dried in a hot dryer.

# Sports Equipment

- **Whenever possible, equipment and clothing should not be shared.**
- **All shared equipment that comes in direct contact with the skin of an athlete (wrestling head gear, football helmets, and fencing wires) should be cleaned and sanitized after each use.**
- **Sports equipment (balls, racket grips, bats, gloves) should be cleaned regularly**

# Disinfectant

- A bleach solution of 1 part bleach in 9 parts water (e.g., 1 3/4 cups bleach to 1 gallon of water) will kill *Staphylococcus aureus*, as well as other (tougher to kill) disease-causing organisms such as norovirus and *Clostridium difficile*, and should be used when possible.

# Disinfectant

- In situations where this is impractical, a more dilute solution (e.g., 1 part bleach in 64 parts water, such as 1/4 cup bleach in 1 gallon of water) may be used to disinfect surfaces that may be contaminated with *S. aureus*. However, it should be noted that bleach solutions more dilute than 1 part bleach in 9 parts water may not kill some disease causing organisms.

# Disinfectant

- **Another option is to use a 1 part bleach in 9 parts water solution, followed by a rinse with water to remove residual bleach.**
- **Bleach solutions should be mixed fresh daily to ensure effectiveness.**
- **Bleach solutions should NOT be used to sanitize hands or for cleaning wounds.**

# Disinfectants

- **Make your own solution of bleach and water: Mix one tablespoon bleach into one quart of water in a spray bottle and label it “bleach solution.” Make it fresh each time you plan to clean because the bleach evaporates out of the water making it less effective**
- **Never mix bleach with other cleaners, especially ammonia.**

# Cleaning Frequency

- **MRSA bacteria and other organisms can live on surfaces for days, weeks and months**
- **It is important to clean regularly.**
- **Clean daily frequently touched items and surfaces.**

# First Aid

- **Include alcohol-based hand sanitizer (60% or greater) in coach's first aid kit so that coaches/ trainers will always be able to sanitize hands before and after caring for each injured player when soap and water is not readily available.**



# First Aid

- **Have disposable gloves readily available in first aid kit for use when caring for the scrapes and cuts of players. Use gloves once and then discard; wash hands or use hand sanitizer immediately after removing gloves.**
- **Scoops (not hands) must be used to take ice out of cooler to make ice packs for injuries. Scoops should be cleaned daily when in use and NOT stored in the ice container.**

# First Aid

- **Single-use portions of antibiotics, salves, and other ointments should be removed from any larger dispensing unit prior to application. Any unused product must NOT be returned to the original dispenser, but discarded.**

# First Aid

- **Athletes should be prohibited from participating until wounds have healed—even if wounds are covered – if extensive skin-to-skin contact may occur (e.g., wrestlers).**
- **Athletes with potential skin infections should be referred to the team physician or their own medical provider. Culturing wounds that appear to be infected should be encouraged.**

# Other Skin Conditions



# Hives

- A.k.a. Urticaria
- Formation of “wheals”
- Usually raised, red welts appear
- Multiple causes:
  - Irritants
  - Allergens
  - Foods
  - Medications
  - Stress
  - Pet dander
  - Pollen
  - Environments



# Sunburn



# Atopic Dermatitis



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([www.meddean.luc.edu/.../dermatology/melton/poisivy1.jpg](http://www.meddean.luc.edu/.../dermatology/melton/poisivy1.jpg))

# Atopic Dermatitis

- **Poison Ivy**
- **Poison Oak**
- **Various chemicals**
- **Clothing**
- **Cosmetics**
- **Laundry detergents**
- **Food**
- **Jewelry**



# Psoriasis

- A chronic skin condition, not infectious



# Verruca Vulgaris

- “common wart”
- Benign, hypertrophied areas of the skin
- Papilloma viruses
- Types
  - common warts
  - plantar warts



# Key Points

- **Athletes should be regularly encouraged to follow good hygiene practices, including frequent hand washing, showering immediately following each practice or competition, and NOT sharing “drinking” water bottles**
- **Do NOT touch other peoples’ skin infections. Any draining wound should be considered a potential skin infection**

# Key Points

- **Do NOT share personal hygiene items (e.g., bar soap, razors, nail clippers, etc.), or topical ointments, antibiotics, deodorants, and salves.**
- **Promptly report abrasions, lacerations, or skin infections to a coach/ team trainer, or school nurse**
- **Cosmetic shaving should be discouraged**

# Key Points

- **Athletes with open wounds should be discouraged from using whirlpools or common tubs. Individuals with scratches or open wound can infect others or become infected in this kind of environment.**
- **Wash practice clothes/ uniforms with soap and warm water and dry in a hot dryer after every use**

# Key Points

- **Messages should be repeated regularly (e.g., weekly) and following any observed violations. Rewards for compliance (as well as potential penalties for non-compliance) may help to reinforce appropriate behaviors.**

# Key Points

- **Visual aids (e.g., posters) should be present and located strategically to remind athletes, staff, and parents regarding proper behaviors**
- **Coaches and staff should be role-models for students and parents – they should strive to model correct behaviors.**

# Maximize Athletic Success! Minimize Risk of Infections!





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- **Center for Disease Control**
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