Communicable and Infectious diseases in Athletes

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Objectives

• Reinforce Primary, Secondary, and Tertiary Prevention of communicable/infectious diseases for athletes
• Discuss Bacterial, Viral and fungal Skin infections
• Blood Borne infections in athletes
• Review Vaccinations
• Reinforce Universal hygiene/Best Practices

Definition of Health

• According to the World Health Organization it is “the state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity. But moves beyond this definition to encompass spiritual, developmental, and environmental aspects over time.”

WHO (2003)

Primary Prevention

• This precedes disease or illness
• Includes health promotion
• Health Protection
• Care has Transitioned from Curative to Preventative
• Vaccinations

Secondary Prevention

• Screening is Key!- Athletes need skin checks!
• Goal is to identify individuals in an early, detectable stage of the disease process

Tertiary Prevention

• Disease or Disability is present
• To minimize the effects of the disease
• Focuses on rehab/treatment to promote the highest level of health to hopefully return to primary prevention for future
Skin Conditions

- Methicillin-Resistant Staphylococcus Aureus-Bacteria
- Impetigo-Bacteria
- Ringworm-Tinea Corporis Gladiatorum-Fungus
- Molluscum Contagiosum-Viral
- Herpes Gladiatorum-Viral

Direct vs. Indirect Transmission

- Direct Transmission- this occurs when an infected person transfers the infection through skin to skin contact
- Indirect Transmission- Athlete is infected through contact with contaminated fomites, i.e. mats, equipment.

Life of bacteria, fungus and viruses

- Flu viruses- survival on hard surfaces=24 hours
- Tissues= 15 minutes
- Droplets= hours and decrease temps increase survival
- MRSA- survival =days to weeks on fomites
- Herpes- 4 hrs on plastic, 3 hours on cloth, and 2 hours on skin
- Molluscum Contagiosum- lives only on the skin.
- Fungus- can live up to 7 days and longer on some surfaces.
- HIV- Does not live long outside of the body
- Hepatitis B- can survive outside the body at least 7d

### Table: Life of Bacteria, Fungus, and Viruses

<table>
<thead>
<tr>
<th>Bacteria/Fungus/Virus</th>
<th>Survival on Hard Surfaces</th>
<th>Survival on Tissue</th>
<th>Survival on Droplets</th>
<th>Survival on MRSA</th>
<th>Survival on Herpes</th>
<th>Survival on Fungus</th>
<th>Survival on HIV</th>
<th>Survival on Hepatitis B</th>
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</thead>
<tbody>
<tr>
<td>Flu</td>
<td>24 hours</td>
<td>15 minutes</td>
<td>Hours and decrease temps increase survival</td>
<td>3 days to weeks</td>
<td>4 hours on plastic</td>
<td>Up to 7 days</td>
<td>Does not live long</td>
<td>Can live up to 7 days</td>
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<td>MRSA</td>
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Zorder, Basler, Foley, Scarlata, Vasely (2010)

MRSA

- Prevalence:
  - Staphylococcus Aureus is a natural bacteria, however can cause large spectrum of disease
  - Colonized athletes (carry the bacteria on the body)
  - 8-31% in contact sports vs. 0-23% in non-contact
  - 5-10% of the population is colonized
  - Study on athletes (Champion, et. al. 2014).
  - leading cause of tissue and soft tissue infections
  - High concentrations in the nose and throat

(IDSA, 2014)
MRSA

• Mortality is 18,000/year due to secondary infections

Presentation:
“infected pimple or insect bite”

Transmission:
– open wound
– Colonized carrier

MRSA

• Sharing of razors, towels, clothing
• Failure to disinfect exercise equipment

Treatment:
– Oral antibiotics for 5-10 days
– Topical antibiotics: Bactroban to be applied in nares daily for 5 days twice daily to assist with decreasing recurrence
Use of chlorhexidine daily to decolonize

• Return to Play:
– no lesions for 48 hours
– 72 hours of antibiotics
– Lesions covered

MRSA

• Return to Play:
– Removed from team activities until 72 hours post treatment
– No active play for at least 10 days
– All lesions covered
– Reevaluate skin and lesions daily until healed

Medscape(2014)

Impetigo

• Accounts for 10% of skin problems
• Caused from Staphylococcus aureus and streptococcus pyogenes
• Presentation of honey crusted lesions with erythema base, may have oozing discharge
• Treatment with oral antibiotics with topical
• Resolves within 7-14 days
• No Contact until lesions healed

Impetigo

• Criteria to Return to Play:
– no new lesions x48 hours
– Completion of a 72 hour course of antibiotic treatment
– Lesions covered
Tinea Corporis Gladiatorum

- “Ringworm”
- Caused from *Trichophyton Tonsurans*
- Spread via skin contact, may also spread via spores on surfaces
- Lesions can occur anywhere on the body, and will have a reddened and flaky perimeter, center clearing with no pustular drainage or appearance
- Treatment consists of oral antifungals and topical to be applied until lesion is gone and then extended one week.

Tinea

- Criteria to Return to Play:
  - Antifungals/fungicide used for at least 72 hours to the affected areas
  - Lesions must be covered to compete

Tinea- “Ringworm”

Molluscum Contagiosum

- Pox virus
- Light pink pearly papules
- Most common in adolescents and children
- Treat to prevent transmission:
  - Cryotherapy (freezing)
  - Aldara 5% application
  - Curretted (small white core in center)
- To return to competition eradication of lesions needs to be attempted
- Lesions to be covered

Molluscum Contagiosum

Herpes Gladiatorum

- “Mat Herpes”
- Cause: Herpes Simplex Virus-type I
- Incubation period 3-10 days
- Is the athlete contagious during that prodromal time?
- Lesions last 7-10 days
- Study by B.J Anderson
  - Prevalence in wrestlers
    - 2.6-29% High School
    - 7.6-12.8% Collegiate
    - 20-40% Division I
  - Anderson (2007)
Herpes Gladiatorum

**Location**
- 73% on Head and Face
- 42% on Extremities
- 28% on Trunk

**Criteria for return to Competition:**
- Free of symptoms - malaise, fever
- No new lesions for 72 hours
- 120 hours of systemic antiviral therapy
- Lesions cannot be covered, need to be completely scabbed

Blood Borne Pathogen Infections

**Hepatitis**
- *Hepatitis B* is transmitted 6-30% through blood, semen, needle sticks, sharing of toothbrushes or razors.
  - In 2009, 3,374 cases (CDC, 2014)
  - Prevent with vaccination
  - Can survive outside the body for at least 7 days

- *Hepatitis A*
  - Prevent with vaccination
  - Transmitted through contamination of food, water, etc.

- *Hepatitis C*
  - Transmitted from an infected person, contaminated needles

**HIV**
- Transmission is 3% through blood, semen, rectal fluids and needle sticks
- Universal precautions with any blood or bodily (CDC, 2014)

More on primary prevention

**Vaccinations:**
- Influenza
- Hepatitis A and B
- Tdap
- Gardasil
- MMR
Vaccinations

- Link to the current immunization schedule from the CDC
- http://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html

Best Practices for prevention

- Immediately shower after all practices and competitions
- Personal equipment to be cleaned and disinfected daily
- Do not share towels
- All skin lesions covered
- All playing fields inspected for animal droppings
- Athletic lockers sanitized
- Tile floors in locker areas preferred
- Weight room equipment cleaned daily with EPA approved disinfectant
  http://epa.gov/oppad001/chemregindex.htm
- Avoid body shaving
- Correct hand washing technique—rub hands together for at least 15 seconds and rinse dry with disposable towel
  http://www.afca.com/article/article.php?id=970
- http://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html

Summary

- All disciplines need to continue collaboration for complete holistic care for athletes
- To include physical therapy, counseling, primary care providers (MDs, DOs, NPs, PAs) athletic trainers, and any others that will provide optimal health promotion and health care.
- Primary prevention is key
- Reinforce vaccinations
- Continue to educate all athletes on prevention of skin conditions (viral, bacterial and fungal), blood borne pathogens, vaccinations, and sexual health—Never assume they know!!!
- Put BEST PRACTICES of prevention in place and develop a strategic plan.

Reference:

- Centers for Disease Control (2014).