

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

Family	Specific Condition	Clinical Features
Fungal infections	Tinea capitis	Often presents as gray, scaly patches accompanied by mild hair loss (Figure A). ^{4,5}
	Tinea corporis	Presents with a well-defined, round, erythematous, scaly plaque with raised borders; however, tinea corporis gladiatorum (tinea corporis in wrestlers) frequently presents with a more irregular lesion (Figure B). ^{4,6}
Viral infections	Herpes simplex	Lesions are typically found on the head, face, neck, or upper extremities and present as clustered, tense vesicles on an erythematous base (Figure C). ^{4,5,7-16}
	Molluscum contagiosum	Typically presents as umbilicated, or dented, flesh-colored to light-pink pearly papules, measuring 1–10 mm in diameter (Figure D). ¹⁷⁻²¹
Bacterial infections	Impetigo	Bullous impetigo presents on the trunk or the extremities with raised blisters that rupture easily, resulting in moist erosions surrounded by a scaly rim. Nonbullous impetigo presents with thin-walled vesicles that rupture into a honey-colored crust (Figure E). ^{24,22}
	Folliculitis	Presents as papules and pustules at the base of hair follicles, especially in areas that have been shaved, tapered, or abraded (Figure F).
	Furuncles, carbuncles	Furuncles present as tender areas that, over several days, develop a reddened nodular swelling (Figure G); carbuncles present as the coalescence of multiple furuncles in a deep, communicating, purulent mass. ^{4,23,24}
	MRSA	CA-MRSA initially presents similarly to other bacterial infections. Furuncles, carbuncles, and abscesses are the most frequent clinical manifestations (Figure G). ^{13,25,26} Often CA-MRSA lesions are confused with spider bites. ^{25,27,28} Lesions may begin as small pustules that develop into larger pustules or abscesses with areas of erythema and some tissue necrosis (Figure H and I). ^{29,28}

Abbreviations: CA, community-associated MRSA; MRSA, methicillin-resistant Staphylococcus aureus.

Zorder, Basler, Foley, Scarlata, Vasely (2010)

MRSA



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 chlorhexadine 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



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



Molluscum Contagiosum

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

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

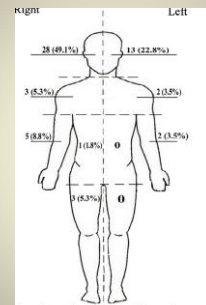
Herpes Gladiatorum



Herpes Gladiatorum



Locations



Location of lesions from 57 wrestlers with Primary Herpes Gladiatorum

Anderson (2007)

Blood Borne Pathogen Infections

Hepatitis B-

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>

NATA (2014)

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.

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