Disclaimer:

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- President of The Mat Doc, LLC.

Objectives:

- Understanding the problems with sports and the risk of contracting MRSA
- Learning the importance of proper hygienic principles in reducing the risk of contracting an infectious disease
- Proper antibiotic usage in all venues of sport and age of athlete
Skin Infections in sports-MRSA

- Daniel Fells, tight end for NY Giants. MRSA in foot with speculation of amputation - October 2015
- Other athletes in NFL over past 10 years: Lawrence Tyms - Tampa Bay Buccaneers, Brandon Northow-Wallingford Raiders
- MLB, NBA, collegiate players and multitude of HS athletes
- Risk factors for Methicillin-resistant Staphylococcus aureus (MRSA) in hockey:
  - Polymicrobial growth on equipment that is in close contact with skin
  - Skin lesions and surface communities are metallic and take on the fingerprints of the human with which they come into contact
- Younger athletes not showering immediately after practice

Risk factors for Methicillin-resistant Staphylococcus aureus (MRSA) in hockey:

- Skin-associated surface communities are mutable and take on the fingerprint of the humans with which they are in contact.

- Younger athletes not showering immediately after practice

- 1990’s Hollidayburg, PA HS sued by ACLU due to female student refusing to shower after gym

- Skin Infections in sports-MRSA

SST infections

- Vast majority are due to Staphylococcus aureus, 64% due to MRSA
- 98% of these due to USA 300 clone
- Approx. 1/3 colonized with MSSA, with 1/3 being USA 300 clone

Risk of transmission:

- Open wounds
- Neglected cuts and abrasions
- Cosmetic shaving: relative risk 6.1
- Poor hygiene
- Lack of routine handwashing
- Not showering immediately after practice/games

- Study with HS wrestlers: 8% didn’t shower til they got home

Colonization:

- Nasal colonization rates increase during the season
- FB and LAX: 4% off season vs. 23% peak season
- Colonization increases the risk of transmission and outbreaks for all athletes
- Recurrence rate: varies from 0-30%

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Presentation:

- Initial as ‘spider bite’
- Abscess formation
- Locations: primarily on extremities

Treatment:

- I and D site. ALWAYS GET CULTURE!
- If area >5cm, more than one lesion or systemic s/s…treat with antibiotics

- Antibiotics for 7-10 days:
  - TMP-SMZ DS BID
  - Clindamycin 300mg QID*
  - Doxycycline 100mg BID
  - Cefazolin 100mg BID
  - Cephalexin 500mg QID
  - Others: Linezolid, Tedizolid

*If local resistance >15% consider alternative

References:

- Anderson BJ. CJSM 2012
- Creech CB. Arch Pediat Adolesc Med. 2010

*Wood. Microbiome.2015
Skin Infections in sports-MRSA

- Tanay to play
  - For simple abscess, s/p I and D, out for 5 days
  - Abscess should not be draining
  - Cover area with tegaderm and wrap
- Recurrent outbreaks
  - Consider nasal culturing
  - Oral and MRSA antibiotics: 5-10 days
  - 5-day course of Apitabz, 2% or equivalent; 1% chlorhexidine II; daily shaving with CHG, % soap
  - Aggressive local environmental disinfection
  - Blood tests vs. Antibiotic sensitivity
- Special considerations: Atopic dermatitis
  - 13% can be colonized with MRSA*

*Ong J Allergy Clin Immunol Pract 2014

Hygienic Principles

- Proper Hygiene
  - Wash practice clothing after every practice
  - Shower immediately after every practice and game
  - Refrain from cosmetic shaving, i.e. chest, arms, legs or pubic regions
  - Use liquid soap dispensers, not bar soap
  - Use own personal hygiene product and don’t share
  - Use own towels and shower before using whirlpools
  - Discuss Skin checks every day and before all games
  - Wear clothing to cover arms and legs
  - Maintain continuity in medical care
- Any skin lesions should be evaluated and treated by your medical provider. The guidelines established by the NFHS can serve as a source of reference

Changes in the Medical Communities

- Changes in Health Care
  - Promotion of available health care
  - Skin infections are propagated partially due to lack of Health Care
  - Providers expertise: 8.3% of PMD’s properly diagnose Primary Herpes Gladiatorum at initial visit

- Why?
  - Larger communities have multiple sources for care while smaller ones have fewer
  - In Div I collegiate setting, one provider oversees the whole team
  - In Div II, III may not have one provider overseeing the team creating more problems as in high school team
Changes in the Medical Communities

- Study performed analyzed HS outbreaks based on size of communities and schools. Among larger communities, more outbreaks of skin infections on these teams vs small town teams – Reasons:
  - Smaller communities have fewer Health Care Providers
  - Urgent Care and ER’s not available
- Possible Conclusion:
  - As in collegiate settings, fewer providers means continuity of care ensures the same provider evaluates the infection and follows it on a daily basis.
  - Continuity of Health Care ensures the infection is followed and cared for properly.
  - Availability doesn’t mean the same individual Health Care Provider is seeing and following the infection each day.

Continuity of health care is better than availability when caring for skin infections


Cleansing/Disinfection

- Cleaning equipment
  - Washing pads, gloves, boxer shorts, compression garments, helmets should be done routinely
- Process of cleaning:
  - Washing machine
  - By hand
  - Professional cleaning
  - Esporta: Multi-step washing procedure
  - Sani-Sport: Ozone disinfection process
- Prevention
  - Polymeric silane quaternary ammonium compounds (Si-QUATS) adhere to equipment surface and can inhibit biofilm formation
  - Examples: Duraban, Microban, SIS AM500, SportSense, SurfaceAide XL

Proper antibiotic usage in athletes or ‘We’re on the highway to hell… traveling at warp speed!’

- MRSA treatment market to see minimal growth despite opportunities for New Entrants!
- 80% of antibiotics used in USA are for livestock
- USA sales of antibiotics for use in swine, pigs, chicken… had a 4% increase over previous year yet European usage dropped by 14%

Proper antibiotic usage in athletes or ‘We’re on the highway to hell… traveling at warp speed!’

- Antibiotic usage in sports:
  - Antibiotic usage on NFL team 10 times the rate used in general population
  - “If treating their viral infection makes them perform better, I’ll give them the antibiotic”

- Consequences of doing the right thing:
  - Physicians who prescribed 25% less antibiotics were marked down 5 percentage points by their patients on satisfaction ratings

Means to control antibiotic usage:
- Don’t treat viral infections with antibiotics
  - URI, influenza, allergic conjunctivitis, allergic rhinitis, ‘sinusitis’
- Use narrow spectrum antibiotics
  - Amoxicillin vs Cefuroxime axetil
  - TMP-SMZ vs Ciprofloxacin
- Use appropriate antibiotics
  - Don’t use Azithromycin for sinusitis
  - Fluoroquinolones have very limited usage in athletes
  - Tendon rupture, C. difficile-associated diarrhea

Conclusion:
- If you see pus… think MRSA… get a culture and treat if necessary. Change on the fly pending culture results
- Decolonization does have its place!
- Be sure Hygienic Principles are being followed… infection control is only as strong as it’s weakest link
- Make sure all athletes are up to date with vaccinations
- Continuity of care is crucial when dealing with any type of infection in athletes
- Antibiotics have very limited usage in sports… treat the condition!
- Skin infections in hockey are a product of athlete and equipment… remember to treat and care for both of them
- References for skin infections in athletes: