

COMBAT SPORTS DERMATOLOGY: PREFIGHT EVALUATION OF THE SKIN FOR TRANSMISSIBLE DISEASE

John Neidecker, DO, ATC, FAOASM
Primary Care Sports Medicine Physician
Orthopaedic Specialists of North Carolina

OBJECTIVES

- ▶ Recognize possible skin infections in combat athletes
 - ▶ Bacterial skin infections
 - ▶ Viral skin infections
 - ▶ Fungal skin infections
- ▶ Understand current standards in wrestling
- ▶ Prevention
- ▶ Prophylaxis
- ▶ Development of a consensus statement

INTRODUCTION

- ▶ No current guidelines exist on dermatologic conditions regarding participation in boxing, kickboxing and mixed martial arts.
- ▶ The best current guidelines that are applicable to combat sports are the ones that are in place with NCAA wrestling, USA wrestling, NFHS wrestling and the 2010 NATA Position Statement
 - ▶ These current guidelines mainly include return to wrestle criteria
 - ▶ NATA does get more into treatment and medications
 - ▶ These current guidelines are now in the process of being updated to include suggestions on
 - ▶ Appropriate medical treatments (MRSA focus)
 - ▶ Prophylaxis



Crazy Wrestlers...

- ▶ Wrestlers (& coaches) will do some crazy things to conceal or self treat skin lesions.
 - ▶ Make up
 - ▶ Bleach



AT RISK POPULATION

- ▶ **Wrestlers & Fighters**
 - ▶ Skin to skin contact
 - ▶ Skin to mat contact
 - ▶ Decreased immune system
 - ▶ Overtraining
 - ▶ Calorie restrict

CASE



IMPETIGO

- ▶ superficial skin (epidermis) infection with Strep, Staph
- ▶ yellow crusted lesions on red base
- ▶ TX: remove crust; topical mupirocin or oral abx



MULTIPLE CHOICE



- ▶ Impetigo
- ▶ Folliculitis
- ▶ Cellulitis
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ Impetigo
- ▶ **Folliculitis**
- ▶ Cellulitis
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ Impetigo
- ▶ Folliculitis
- ▶ Cellulitis
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ **Impetigo**
- ▶ Folliculitis
- ▶ Cellulitis
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ Impetigo
- ▶ Folliculitis
- ▶ Cellulitis
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ Impetigo
- ▶ Folliculitis
- ▶ **Cellulitis**
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ Impetigo
- ▶ Folliculitis
- ▶ Cellulitis
- ▶ Erysipelas

MULTIPLE CHOICE



- ▶ Impetigo
- ▶ Folliculitis
- ▶ Cellulitis
- ▶ **Erysipelas**



- ▶ Cellulitis
 - ▶ Bacterial Infection
 - ▶ Dermis
 - ▶ Sub-q fat



- ▶ Erysipelas
 - ▶ Bacterial Infection
 - ▶ Upper Dermis
 - ▶ Skin Lymphatics

BACTERIAL INFECTIONS: NCAA PARTICIPATION CRITERIA

- ▶ NON – MRSA lesions
- ▶ No new lesions for 48 hours
- ▶ ≥ 72 hours of antibiotics completed
 - ▶ “cillin”, “ceph”, “mycin”
- ▶ No moist, exudative or draining lesions
- ▶ Active bacterial infections shall NOT be covered to allow participation if above criteria not met
- ▶ 72/48 rule







- ▶ **Folliculitis**
 - ▶ Epidermal Hair Follicle
- ▶ **Carbuncle**
 - ▶ Coalescence of Multiple Follicles, Still Epidermis
- ▶ **Furuncle “Boil”**
 - ▶ Deeper Infection of the follicle, Dermis, and Sub-q Fat

CASE



ABSCESS

- ▶ Collection of pus in response to an infection
- ▶ Usually Staph
- ▶ Treatment to include drainage and ABX
 - ▶ Compresses
 - ▶ Culture
 - ▶ Incision
 - ▶ +/- packing

Methicillin-Resistant Staph Aureus “MRSA”

- ▶ Staph strains resistant to β -lactam abx (e.g. dicloxacillin, methicillin)
- ▶ May be resistant to other abx
- ▶ Cause skin infections usually
 - ▶ Cellulitis, folliculitis, furuncles, abscesses
- ▶ Cause significant morbidity
 - ▶ 70% of athletes required IV abx
- ▶ Spread directly person-to-person
 - ▶ Through injured skin

Methicillin-Resistant Staph Aureus “MRSA”

- ▶ When to suspect
 - ▶ Skin abscesses
 - ▶ Infections resistant to initial abx
- ▶ Proper treatment
 - ▶ Culture all abscesses before tx
 - ▶ Susceptibility should guide abx choice
 - ▶ Community-acquired strains usually sensitive to TMP/SMX, doxycycline, linezolid, clindamycin, mupirocin 2% cream
 - ▶ IV abx for athletes with systemic symptoms, abnormal vitals
 - ▶ Check susceptibilities in your area

MRSA INFECTIONS: PARTICIPATION CRITERIA

- ▶ No specific NCAA or USA Wrestling guidelines
- ▶ NFHS Guidelines
 - ▶ No participation for a minimum of 10 days
 - ▶ Proper Abx treatment
 - ▶ No new lesions
 - ▶ No systemic symptoms
- ▶ NATA Guidelines
 - ▶ 72/48 hr rule
- ▶ This can kill people!!!



CASE



HIDRADENITIS SUPPURATIVA

- ▶ Chronic Skin Disease
- ▶ Abscesses free of bacteria
- ▶ Non-contagious
- ▶ Affects apocrine glands
 - ▶ Axilla
 - ▶ Under Breast
 - ▶ Groin
 - ▶ Buttocks
- ▶ Hereditary/Auto-immune skin disease



HIDRADENITIS SUPPURATIVA: NCAA PARTICIPATION CRITERIA

- ▶ Wrestler will be disqualified if extensive or purulent draining lesions are present.
- ▶ Extensive or purulent draining lesions shall not be covered to allow participation.



CASE



HERPES GLADIATORUM



- ▶ “Mat herpes”
- ▶ HSV1>HSV2
- ▶ HSV on area of friction/trauma
- ▶ TX: oral antivirals
- ▶ Herpes viruses are forever...
- ▶ Blindness

48 HRS OF ACYCLOVIR



ON VALACYCLOVIR FOR 120 HRS



MULTIPLE CHOICE

- ▶ Molluscum
- ▶ Varicella
- ▶ Verruca Vulgaris



MULTIPLE CHOICE

- ▶ Molluscum
- ▶ **Varicella**
 - ▶ Herpes Zoster
- ▶ Verruca Vulgaris



HERPES INFECTIONS: NCAA PARTICIPATION CRITERIA

- ▶ Primary infection
 - ▶ no systemic sx
 - ▶ no new lesions x 3 days
 - ▶ all lesions crusted
 - ▶ on oral meds >120 hours (5 days)
 - ▶ “cyclovir”
 - ▶ Crusts covered
- ▶ Recurrent infection
 - ▶ Ulcers dry, covered by FIRM ADHERENT CRUST
 - ▶ On oral meds for >120 hours
 - ▶ Crusts covered
- ▶ 120/72 rule



HERPES INFECTIONS: NCAA PARTICIPATION CRITERIA

- ▶ Wrestlers with a history of recurrent herpes gladiatorum could be considered for season-long prophylaxis. This decision should be made after consultation with the wrestling team physician.



MULTIPLE CHOICE

- ▶ Molluscum
- ▶ Varicella
- ▶ Verruca Vulgaris



MULTIPLE CHOICE

- ▶ **Molluscum**
- ▶ Varicella
- ▶ Verruca Vulgaris



© 1997, Dermatology, U

MOLLUSCUM: NCAA PARTICIPATION CRITERIA

- ▶ Lesions must be curetted or removed before the meet or tournament.
- ▶ Solitary or localized, clustered lesions can be covered with a gas permeable membrane, followed by tape.



MULTIPLE CHOICE

- ▶ Molluscum
- ▶ Varicella
- ▶ Verruca Vulgaris



MULTIPLE CHOICE

- ▶ Molluscum
- ▶ Varicella
- ▶ **Verruca Vulgaris**



VERRUCAE: NCAA PARTICIPATION CRITERIA

- ▶ Wrestlers with multiple digitate verrucae of their face will be disqualified if the infected areas cannot be covered with a mask. Solitary or scattered lesions can be curetted away before the meet or tournament.
- ▶ Wrestlers with multiple verrucae vulgaris must have the lesions “adequately covered.”



CASE



TINEA CORPORUS

- ▶ AKA: “Ringworm” or “the worm”
- ▶ Dermatophyte infection
 - ▶ *Trichophyton* genus
- ▶ Erythematous w/ advancing border
- ▶ TX: topical or oral antifungals

CASE



TINEA CAPITUS

- ▶ Same fungus...
 - ▶ What's the difference?
- ▶ Infection is in the hair root
 - ▶ Topical anti-fungals DO NOT work
 - ▶ Needs to be on oral medication
 - ▶ “Tinea Barbae”

TINEA INFECTIONS: NCAA PARTICIPATION CRITERIA

- ▶ >72 hours treatment for tinea corporis
 - ▶ “azole”
- ▶ >2 weeks treatment for tinea capitis
- ▶ DQ if extensive lesions
- ▶ Cover lesions with bioocclusive dressing and tape after period of adequate antifungal therapy as discussed above



TINEA INFECTIONS: NCAA PARTICIPATION CRITERIA

- ▶ The disposition of tinea cases will be decided on an individual basis as determined by the examining physician and/or certified athletic trainer.
- ▶ What does that mean???
 - ▶ Wrestlers with extensive, active lesions will be disqualified.
 - ▶ Wrestlers with solitary, or closely clustered, localized lesions are sometimes allowed to participate if lesion/s can be covered adequately.



MULTIPLE INFECTIONS

- ▶ Remember you can sometimes have secondary infections
 - ▶ Ringworm + impetigo
 - ▶ Herpes + impetigo

CASE



CHRONIC SKIN CONDITIONS

- ▶ Psoriasis
- ▶ Eczema

- ▶ These conditions are not contagious but important to recognize that they can become secondarily infected.



CRITTERS: NCAA PARTICIPATION CRITERIA

▶ Pediculosis (Lice)

- ▶ Wrestlers must be treated with appropriate pediculicide and re-examined for completeness of response before wrestling.

▶ Scabies

- ▶ Wrestlers must have negative scabies prep at meet or tournament time.



PREVENTION

▶ Hygiene

- ▶ Showering IMMEDIATELY after practice
- ▶ Treat the home, training facilities, roommates/teammates, family members, etc.
- ▶ Anti-septic wipes
- ▶ Lotion
 - ▶ Apply right after showering
- ▶ No cosmetic body shaving
 - ▶ Other than face and legs



PREVENTION

Area	In Season			Off Season ^b			
	Dates: October 1 Through March 31			Dates: April 1 Through Late September			
	Chemical	Frequency, ×/d, Time of Day	Others Present?	Chemical	Frequency, ×/d, Time of Day	Labor (Staff Hours/Activity)	Others Present?
Shower room in public locker room (walls, fixtures, and flooring; hard surfaces in shower area)	HBSD	1×/d	Yes	HBSD	1×/d	0.5	Yes
Locker room surfaces (benches, door knobs, handles, walls, mirrors, floors, fourth floor)	HBSD	1×/d, 10 PM–6 AM	Yes	HBSD	1×/d, 10 PM–6 AM	2	Yes
Wrestling room: walls (mats attached to walls to 4' [1.2 m])	HBSD	1×/d, 10 PM–6 AM	No	HBSD	1×/d, 10 PM–6 AM	4	No
Wrestling room: mats (flooring, seam tape can be replaced by athletic department as needed because of cleaning processes); major/most thorough cleaning overnight ^b	HBSD	3×/d, 11 AM–12 PM, 2–4 PM, 10 PM–6 AM (2×/d Sat and Sun)	No	HBSD	2×/d, 2–4 PM, 10 PM–6 AM	2	No
Wrestling weight room (fourth floor, where bodies touch equipment: benches, grips)	HBSD	1×/d, 10 PM–6 AM	No	HBSD	1×/d, 10 PM–6 AM	1	No
Wrestling room: treatment/ taping tables	HBSD	1×/d, 10 PM–6 AM	No	HBSD	1×/d, 10 PM–6 AM	0.5/area	No
Wrestling support areas (main stairs, rear stairs, public area spaces)	HBSD	1×/d, 10 PM–6 AM	Yes	HBSD	1×/d, 10 PM–6 AM	1	Yes
Steam room, sauna room (walls, benches, flooring, even if a wood/porous surface)	HBSD	1×/d, 10 PM–6 AM	No	HBSD	1×/d, 10 PM–6 AM	1	No
Carpeting: extracting (locker room, weight room, fifth floor adjunct workout area)	NA	Monthly night shift floor crew ^c	No	NA	2×/off season as arranged	30	No
Carpeting: vacuuming (locker room, weight room, fifth floor adjunct workout area)	NA	1×/d, 11 AM–12 PM	Yes	NA	1×/d, 11 AM–12 PM	1	Yes

Abbreviations: HBSD, hospital broad-spectrum disinfectant (bactericide, fungicide, and virucidal efficacy); NA, not applicable.

^a Club activities (nonwrestling) occur 2 to 3 days per week and may affect the cleaning schedule.

^b Additional cleaning because of summer wrestling camps at additional cost to athletic department.

^c Spot clean as needed between monthly cleanings.

PREVENTION

- ▶ Gym Bag
 - ▶ Keep shoes separate from clothing
 - ▶ Dirty clothing/equipment should go into a different bag
- ▶ Clothing & Towels
 - ▶ Laundered everyday
- ▶ Equipment
 - ▶ 1:10 bleach water solution every day



PREVENTION

▶ Washes

- ▶ For those with recurrent history of bacterial infections
 - ▶ Chlorohexadine (**Hibiclens®**)
 - ▶ MRSA
 - ▶ Bleach Bath
 - ▶ Bacteria prevention
 - ▶ ¼-½ cup bleach to 40 gallons water
- ▶ For those with recurrent history of fungal infections
 - ▶ Selson Blue shampoo



TINEA PROPHYLAXIS

- ▶ Brickman, et al. 2009
 - ▶ 10 year study
 - ▶ 373 high school wrestlers (90% of team)
 - ▶ Fluconazole 100mg for 3 days repeated
 - ▶ In the beginning every 8 weeks but then after one year every 6 weeks
 - ▶ Showed a reduction in incidence
 - ▶ From 67.4% to 3.5%
 - ▶ 13 total cases (7 in first year)
 - ▶ All cases weeks 4-6

HERPES PROPHYLAXIS

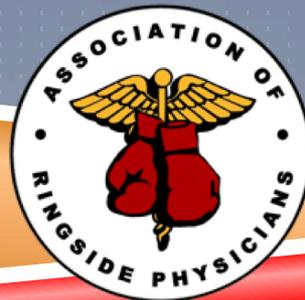
- ▶ Wrestlers who have had herpes gladiatorum should be on suppressive therapy during wrestling season
 - ▶ Protect themselves from disqualification
 - ▶ Very low side effect profile for anti-viral medication
 - ▶ Protect teammates and opponents
 - ▶ Recurrent infections happen with
 - ▶ Increased stress
 - ▶ Decreased immune system

HERPES PROPHYLAXIS

- ▶ Anderson, et al. 2005
 - ▶ 332 wrestlers at a one month camp
 - ▶ 94 had HSV 1&2, IgM and IgG blood testing done before camp
 - ▶ 66 were seronegative
 - ▶ All 66 went on anti-viral medication
 - ▶ There were 3 reported HSV outbreaks during the camp
 - ▶ 55 had follow up blood testing shortly after camp
 - ▶ All remained seronegative

PROPOSAL OF ARP POSITION STATEMENT

- ▶ Endorse skin checks at pre-fight physical or weigh-ins
 - ▶ Untreated lesions that are possible in bacterial or herpes etiology should disqualify fighters from participating. (Especially, draining lesions)
- ▶ Endorse the current NCAA wrestling return to participation guidelines
- ▶ Endorse proper hygiene practices
- ▶ Endorse suppressive anti-viral medication for those athletes in training with a history of herpes gladiatorum
- ▶ Consider washes for those with recurrent history of bacterial infections
- ▶ Consider prophylactic anti-fungal medication for training athletes
- ▶ Consider prophylactic anti-viral medication for training athletes



REFERENCES

- ▶ Kevens et al., USA Wrestling: MRSA and other Infectious Facts. *JAMA*. 2007; 298 (15): 1763-71
- ▶ Zinder, SM, Basler, RS, Foley, J, Scarlata, C, Vasily, D, National Athletic Trainers' Association Position Statement: Skin diseases. *J Ath Train*. 2010; 45(4):411-428
- ▶ Brickman, K, Einstein, E, Sinha, S, Ryno, J, Guinness, M, Fluconazole as a prophylactic measure for tinea gladiatorum in high school wrestlers. *Clin J Sport Med*. 2009;19(5):412-4
- ▶ Anderson, BJ, Prophylactic valacyclovir to prevent outbreaks of primary herpes gladiatorum at a 28-day wrestling camp. *J Infect Dis*. 2006;59:6-9
- ▶ NCAA 2012-2013 Wrestling Handbook
- ▶ Clearfield, D, Dermatologic issues in athletes. OMED, Las Vegas, NV. 2013 Oct. 3