Skin Infections in Wrestlers

B.J. Anderson, M.D.
-Boynton Health Service-University of Minnesota
-Team Physician for Augsburg University Wrestling Team

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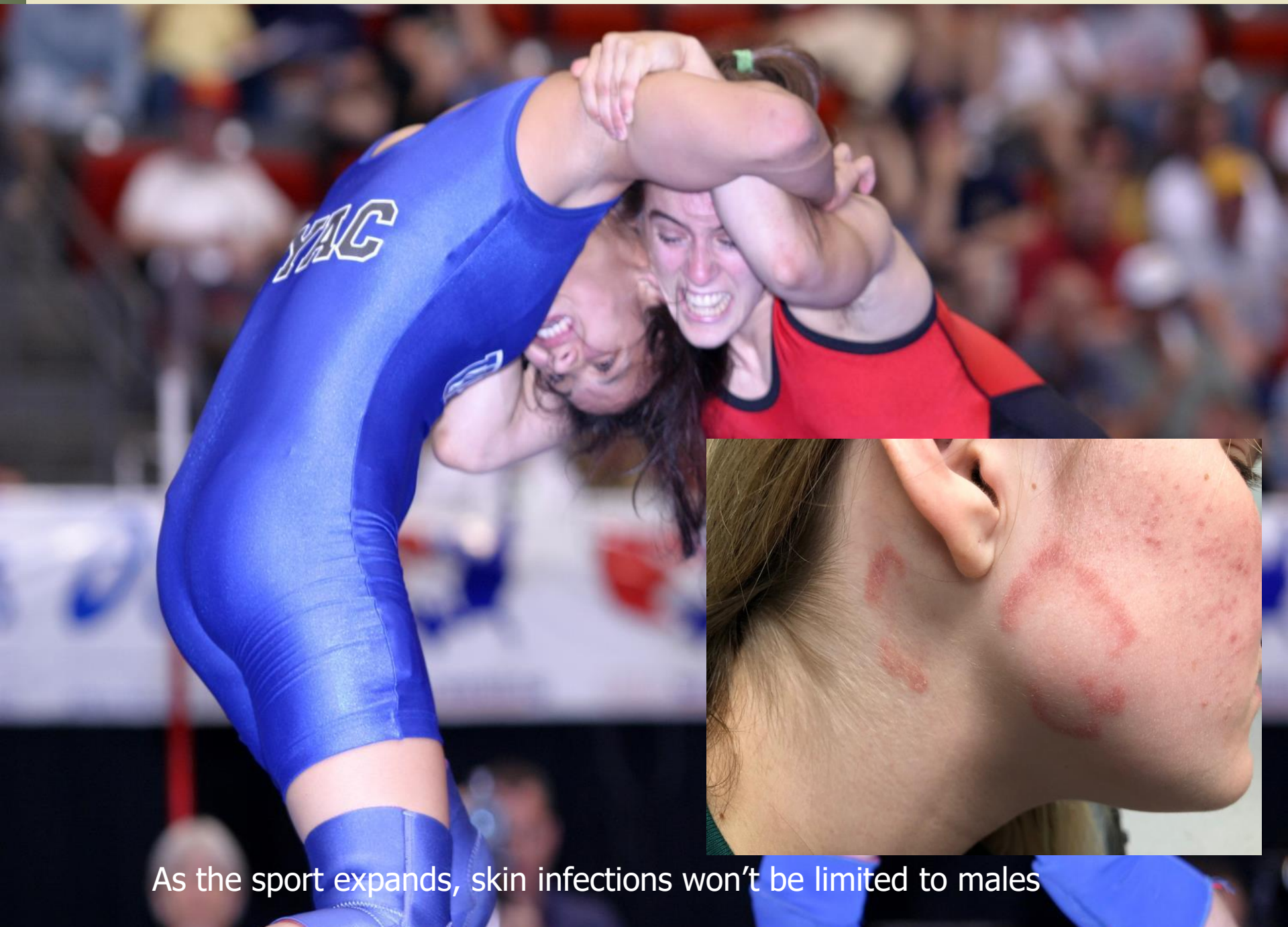
Objectives

- Present understanding of these infections and conditions
- Clinical diagnosis of skin lesions
- Recommendations for treatment and prophylaxis



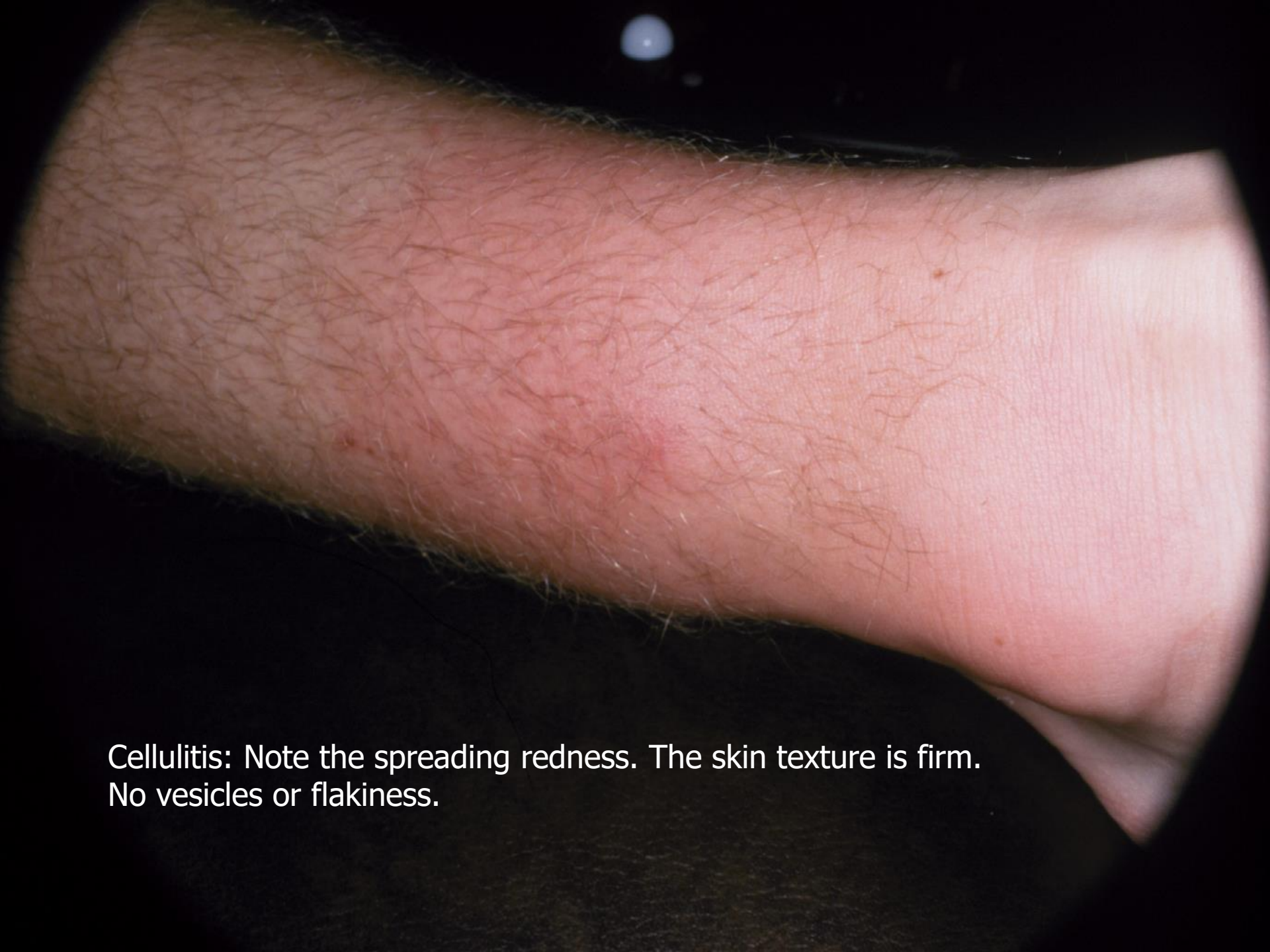
As the sport expands, skin infections won't be limited to males

Dermatology Topics

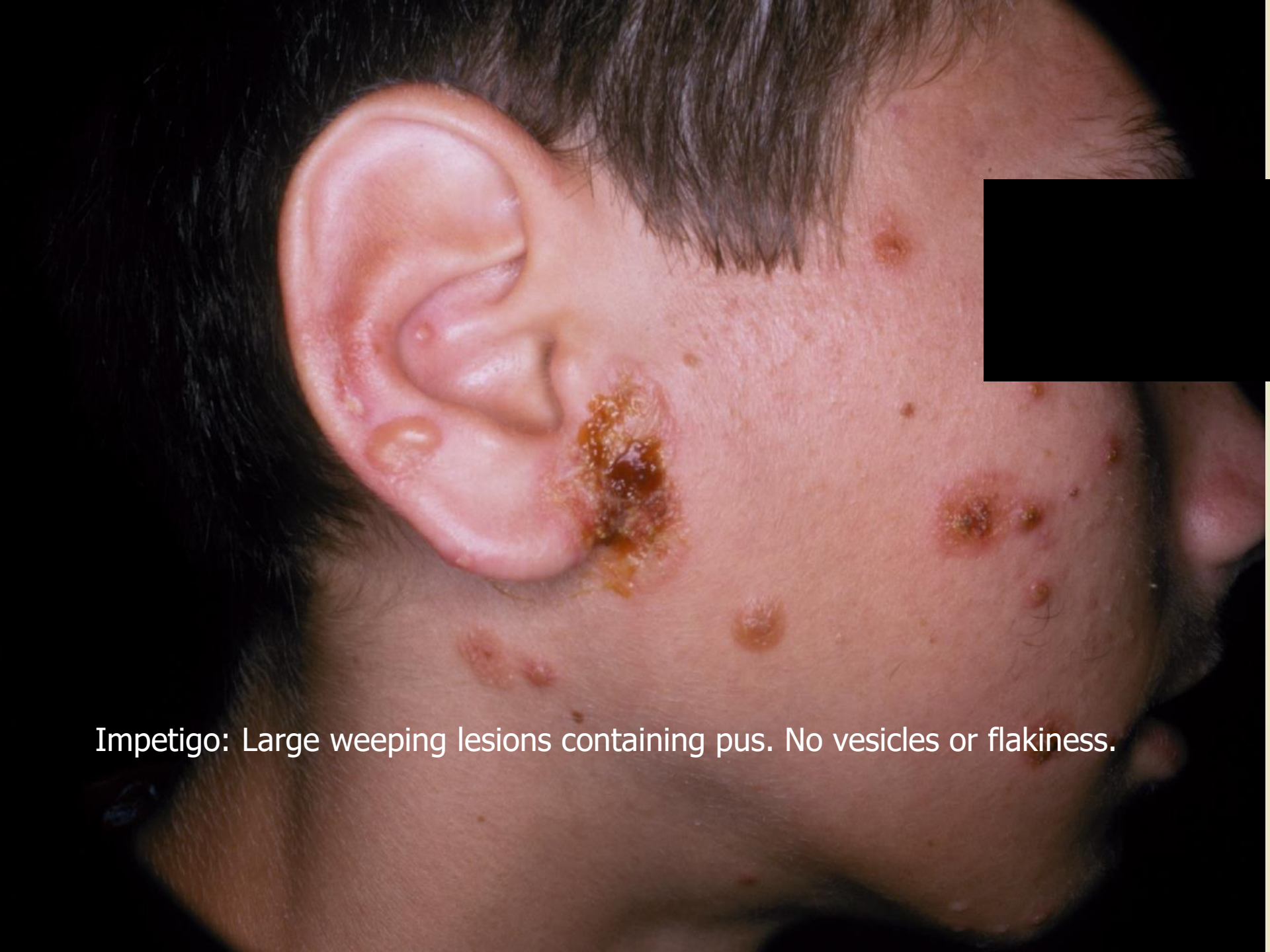
- Skin Infections
  - Bacterial
    - Cellulitis
    - Folliculitis
    - Impetigo
    - Abscesses/CA-MRSA
  - Fungal
    - Tinea Corporis Gladiatorum
  - Viral
    - Molluscum Contagiosum
    - Herpes Gladiatorum

Bacterial Infections-Cellulitis, Impetigo, Folliculitis, Carbuncle, Furuncle

- Bacterial infections due to *Staphylococcus aureus* or Group A *Streptococcus*
- Primarily associated with neglected minor skin trauma or secondarily infected viral infections
- Face and extremities are common sites
- Can be spread via skin-to-skin or fomites (inanimate objects like mats, knee pads or head gear)



Cellulitis: Note the spreading redness. The skin texture is firm. No vesicles or flakiness.



Impetigo: Large weeping lesions containing pus. No vesicles or flakiness.

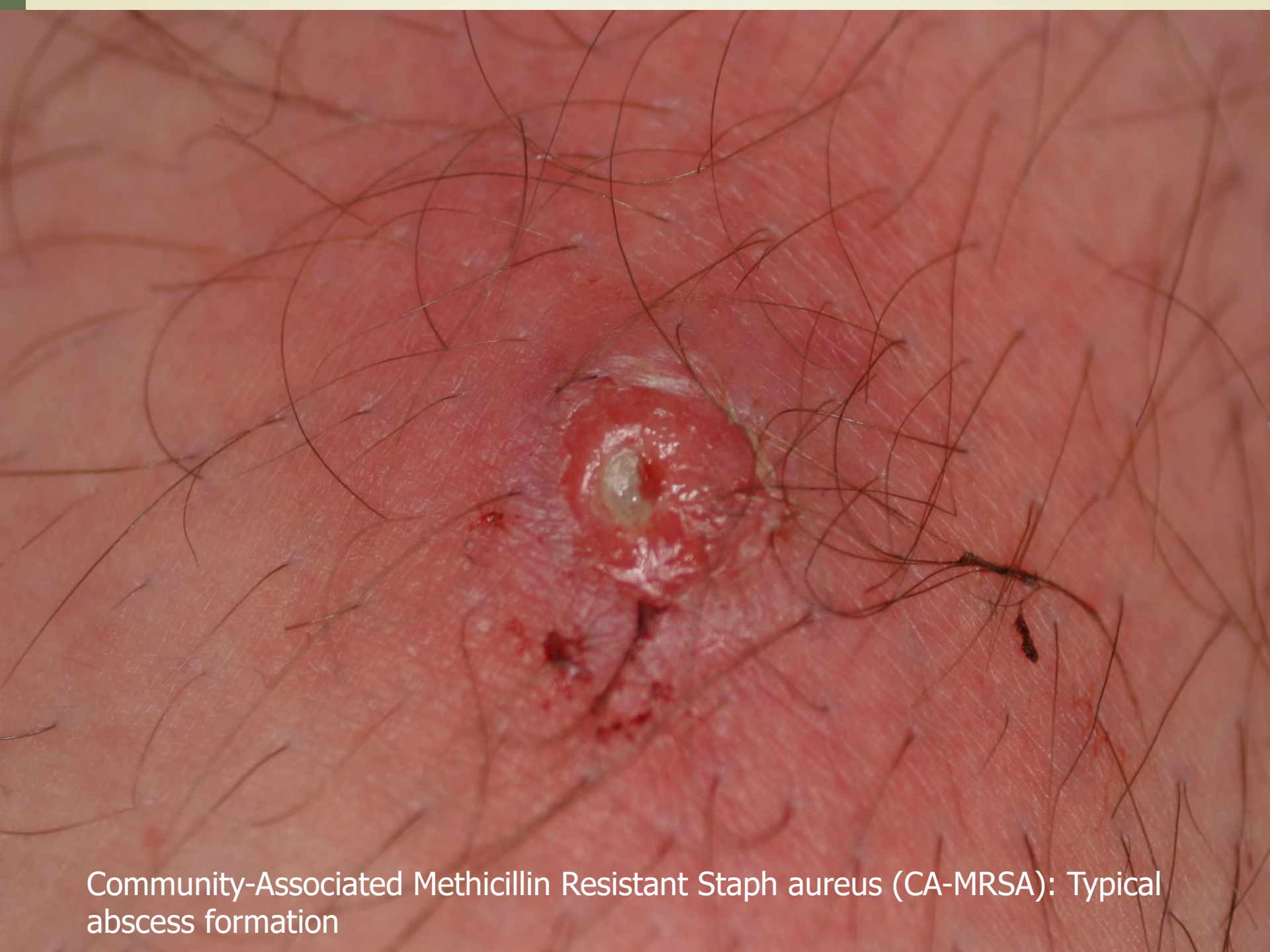
Treatment Guidelines for Bacterial Infections (Except CA-MRSA)

- Oral antibiotics for at least 72 hours before return to competition
- No draining, oozing or moist lesions
- If no improvement in 72 hours, consider MRSA or viral etiology

Oral Treatment for Bacterial Infections (Excluding CA-MRSA)

- Keflex (Cephalexin) 500 mg 2-4 times a day x 7 days
- Azithromycin 250 mg-2 tablets 1st day, then 1 tablet a day for 4 days
- Minocycline* 100 mg 2 times daily for 7 days
- If penicillin allergic:
  - Clindamycin 300 mg 4 times a day for 7 days

* Athlete must be > 8 years of age



Community-Associated Methicillin Resistant Staph aureus (CA-MRSA): Typical abscess formation

CA-MRSA: Community Associated Methicillin Resistant Staph aureus

- Community-associated Methicillin-resistant *staphylococcal aureus*
- Different strain of staph that doesn't respond to normal antibiotics (i.e., group of antibiotics called beta-lactams – penicillins, cephalosporins)
- Now seen in community and believed is due to over usage of antibiotics for ear infections and viral infections
- Looks identical to other forms of staph infections, but usually doesn't respond to first line antibiotics
- Very invasive and destructive to surrounding skin and soft tissue
- Can spread to the lungs and cause a serious form of pneumonia
- Can only be diagnosed by culturing an infection
- When it occurs, typically seen as an abscess or boil

CA-MRSA: Community-Associated Methicillin-Resistant Staph aureus

- Primarily seen in contact sports: Football, Wrestling, Hockey
- Locations are primarily on the extremities
- Organism found on local fomites: Whirlpools, equipment (Pads), Saunas, Lockers

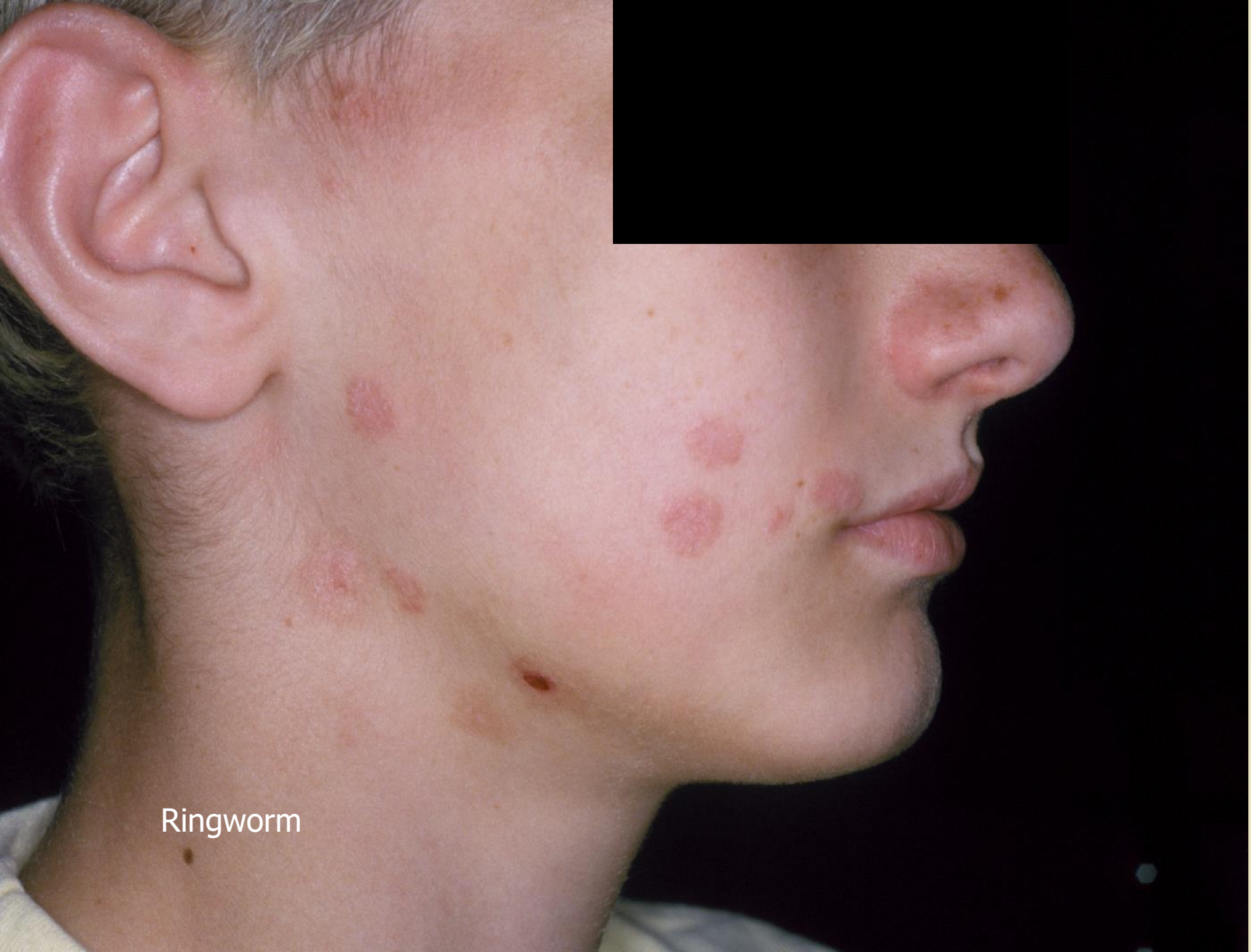
CA-MRSA in Wrestling

- Guidelines at this time from the CDC, NCAA and NFHS focus on hygiene
- Present treatment for other bacterial infections requires 3 days of oral antibiotics
- Due to the destructive nature of this bacterium and the ease of its spread, treatment regimens may require a longer time interval

CA-MRSA in Wrestling

- Treatment primarily focuses on lancing or Incision and Drainage (I and D) of an abscess
- Culture of the draining material is essential to guide treatment
- Antibiotics should be used, for 7-10 days, to expedite clearance:
  - Septra (Trimethoprim/Sulfamethoxazole) DS twice a day
  - Clindamycin 300 mg four times daily#
  - Doxycycline or Minocycline 100 mg twice a day*
- The athlete should be withheld from competition/practice for a full 3 days. After 3 days, may cover with Biocclusive and practice/compete provided no drainage
- For multiple team members or recurrent outbreaks on the same individual, consult the Public Health Department for guidance

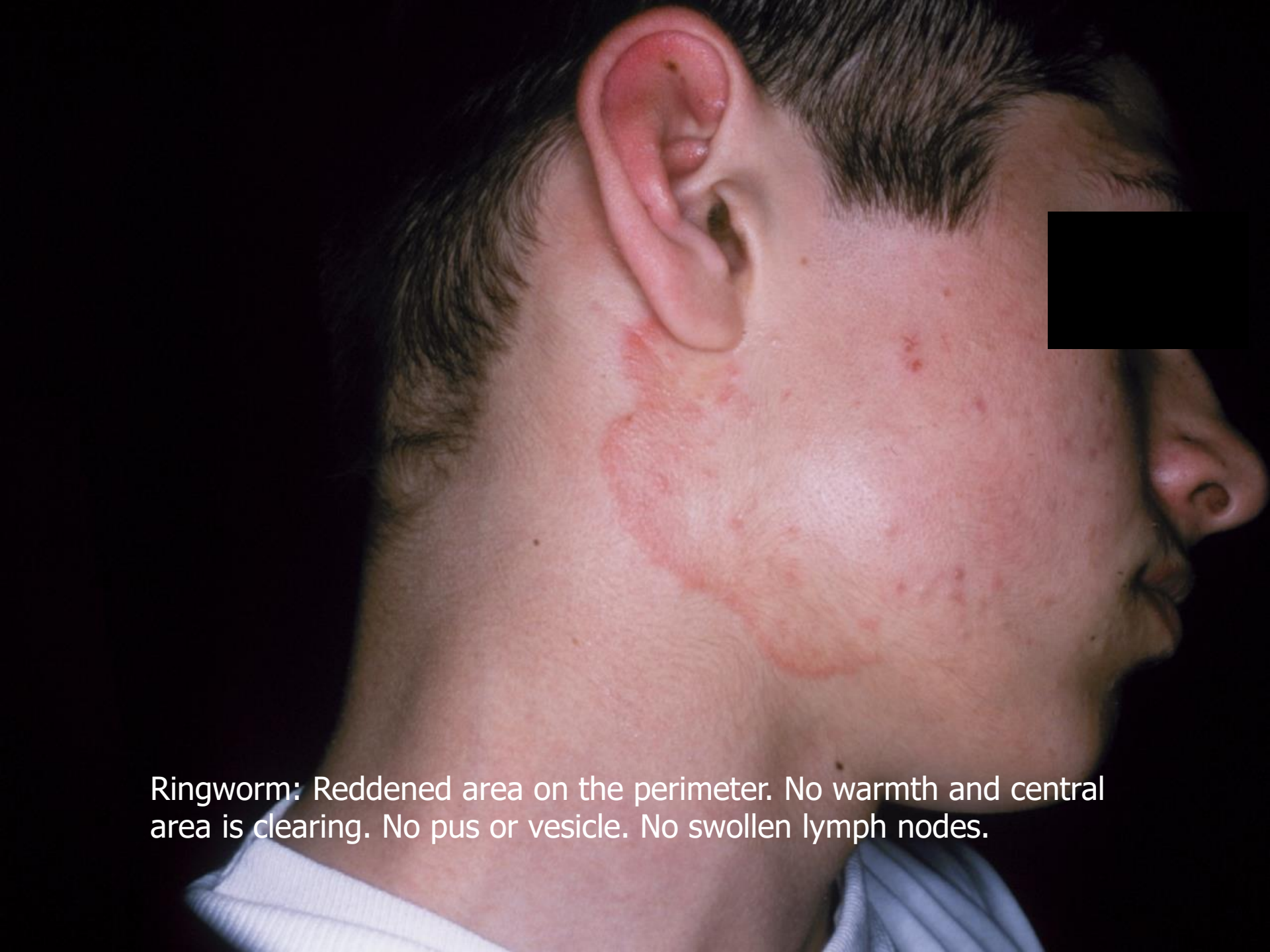
- #Check local Biograms to ensure efficacy.
- *Individuals > 8 years of age. For women, contact your provider.


Ringworm

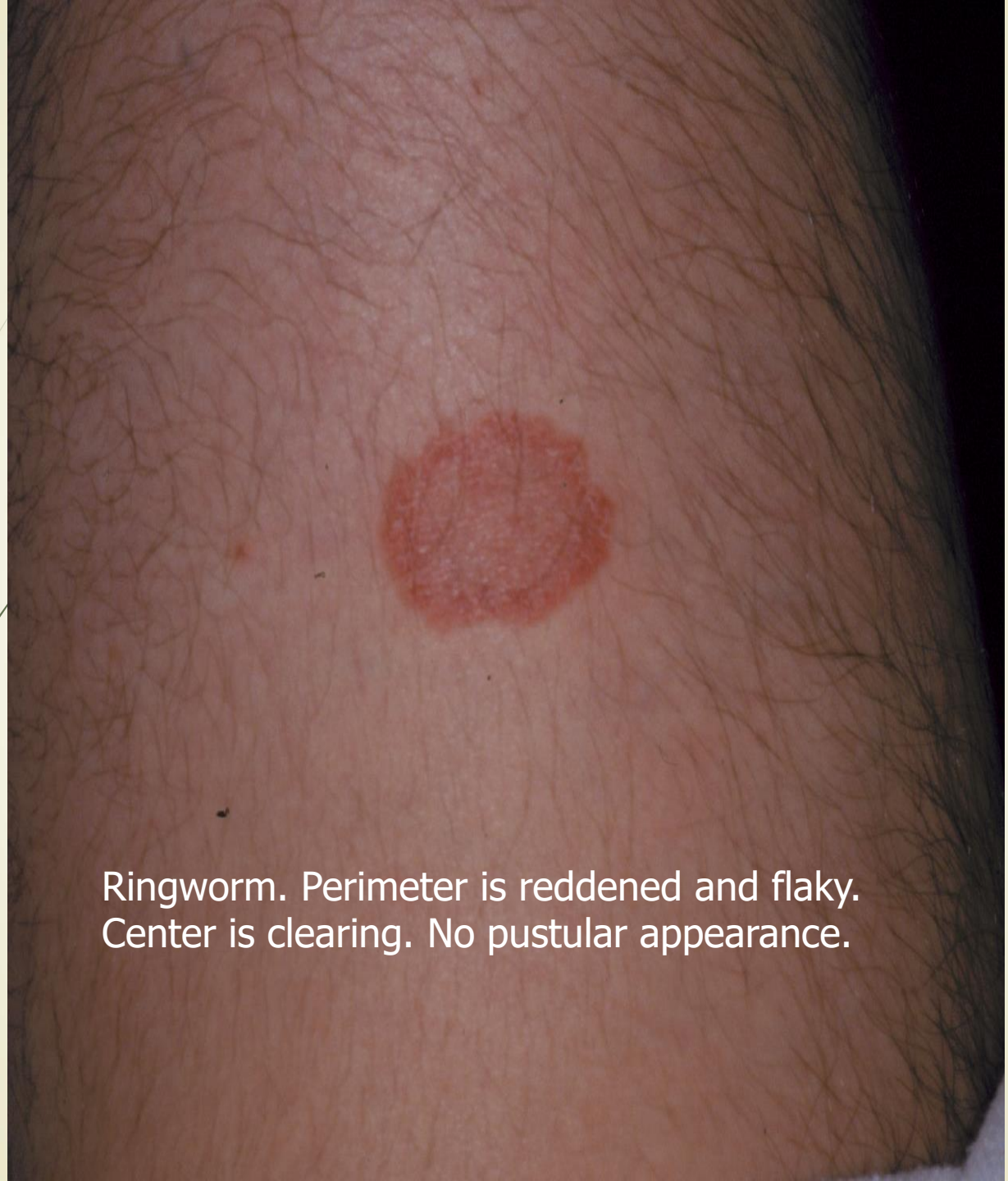
Tinea Corporis Gladiatorum

- Called "Ringworm"
- Caused by the dermatophyte *Trichophyton tonsurans*
- Not from fomites (Mats), only via direct contact with infected individuals*
- Documented outbreaks in wrestlers dating back to mid 1960's with Swedish teams-*Frisk(1966), Hradil(1995)*

* May spread via spores on surfaces



Ringworm: Reddened area on the perimeter. No warmth and central area is clearing. No pus or vesicle. No swollen lymph nodes.



Ringworm. Perimeter is reddened and flaky. Center is clearing. No pustular appearance.

T. tonsurans - Treatment

- Proper hygiene
  - Wash clothing and shower-immediately after each practice
  - Wash mats before practice to reduce grit to help prevent skin abrasions
- Appropriate medication
  - Use antifungal creams for single body lesions
  - Use antifungal oral medications for scalp, facial and multiple body lesions

Treatment guidelines for Ringworm-MSHSL

- Treatments require 3-6 weeks of usage for clearance:
- Minimum length of usage before return to play:
  - Oral/topical treatment for 3 days for skin lesions, then may cover with Bioclusive dressing for practice/competition
  - Oral treatment for 14 days for scalp lesions, them may cover with swim cap for practice/competition
  - For scalp lesions, use Ketoconazole 1% shampoo (over the counter) 2-3x/week to help debride fungal spores. Use until completely cleared.

Ringworm Treatment

- Topical creams
  - Lamisil (Terbinafine) 1%
  - Mentax (Butenafine) 1%
  - Naftin (Naftifine) 1%
  - Spectazole (Econazole) 1%

  -For each apply twice a day

Apply creams until rash is gone, then 1 more week

- Oral medications
  - Lamisil (Terbinafine) 250 mg once a day for 2 weeks
  - Sporanox (Itraconazole) 100mg once a day for 2 weeks
  - Diflucan (Fluconazole) 200 mg once a week for 3 weeks

Some scalp lesions, may require up to 6 weeks of treatment. See your provider for more details

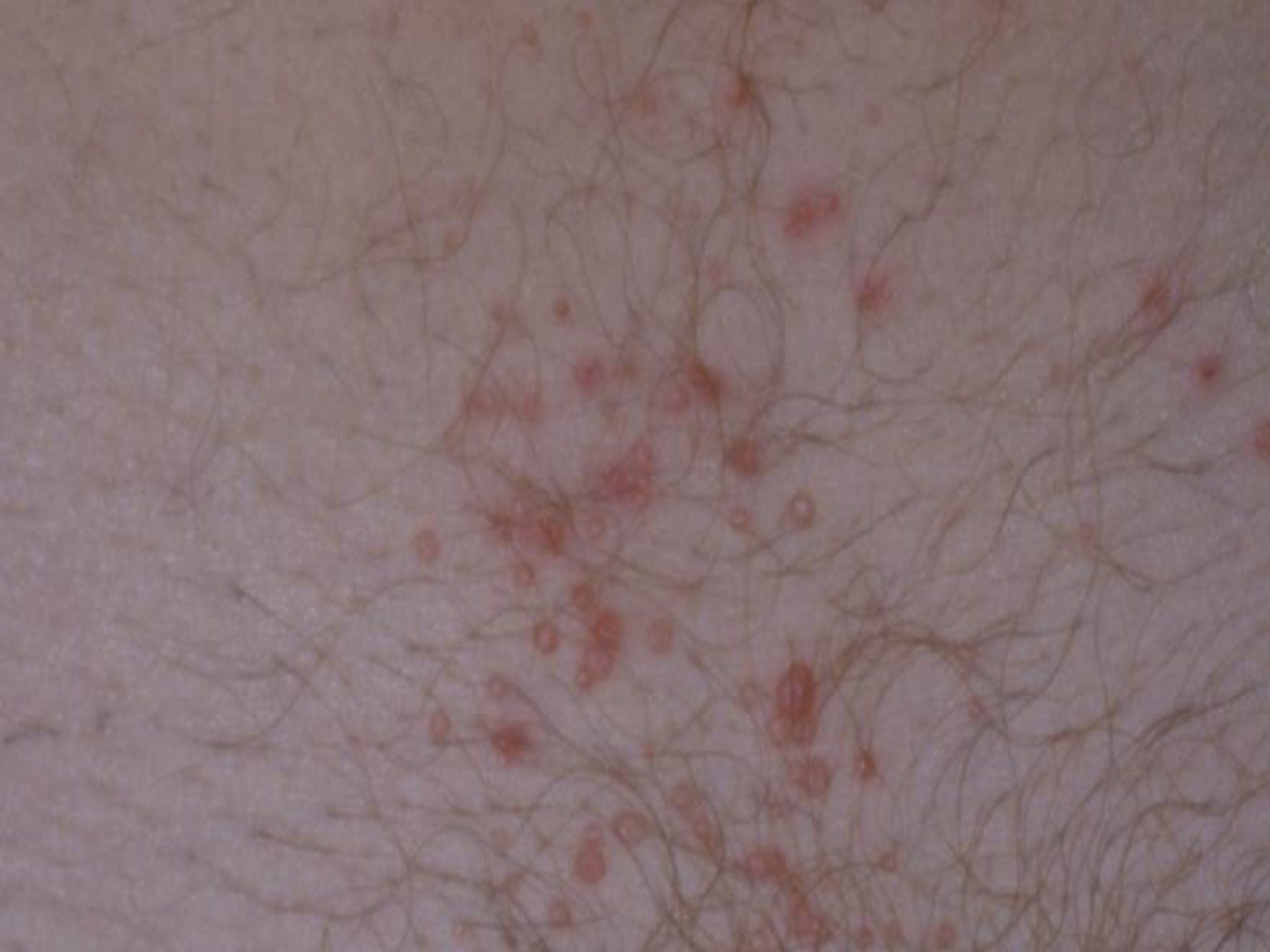
Antifungal Treatment Regimen for Prevention

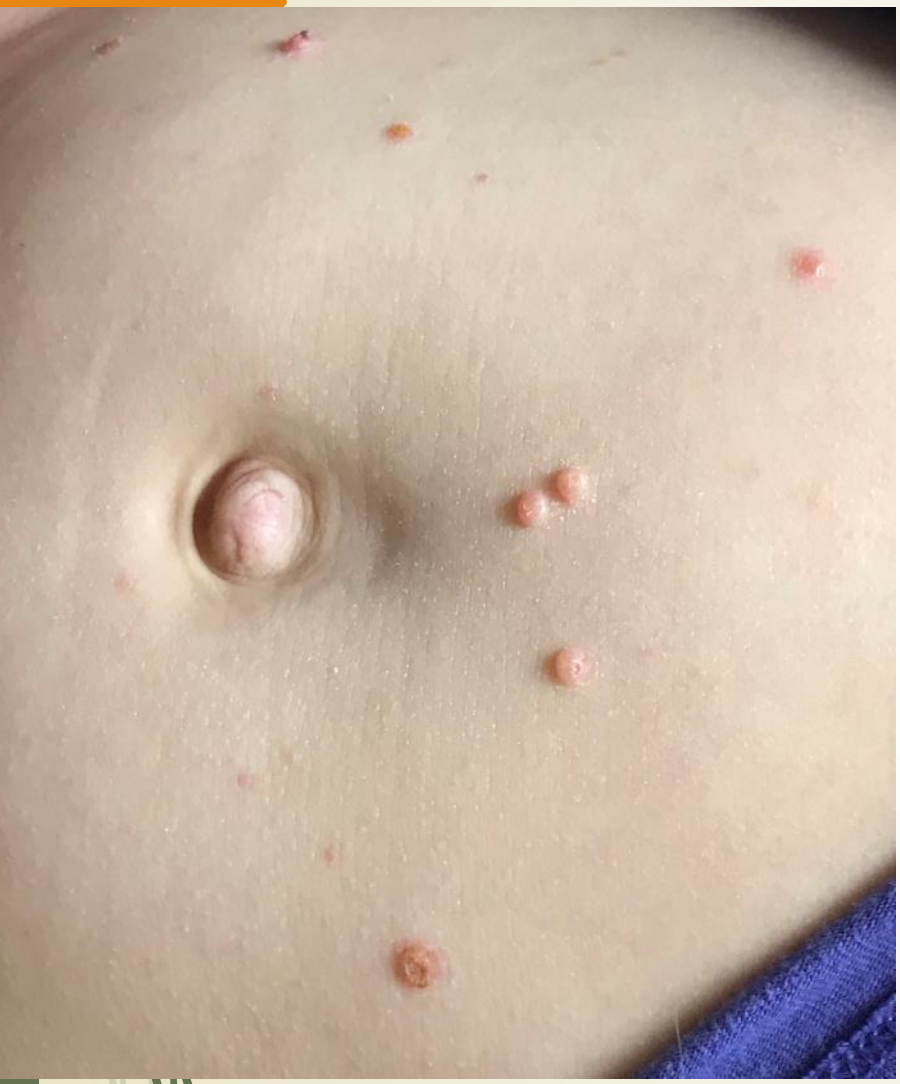
- Sporanox (Itraconazole) 200mg twice a day for one day every other week
- Diflucan (Fluconazole) 100 mg daily for 3 days once at start of season and again at 6 weeks
- Lamisil (Terbinafine)* 250mg once a week

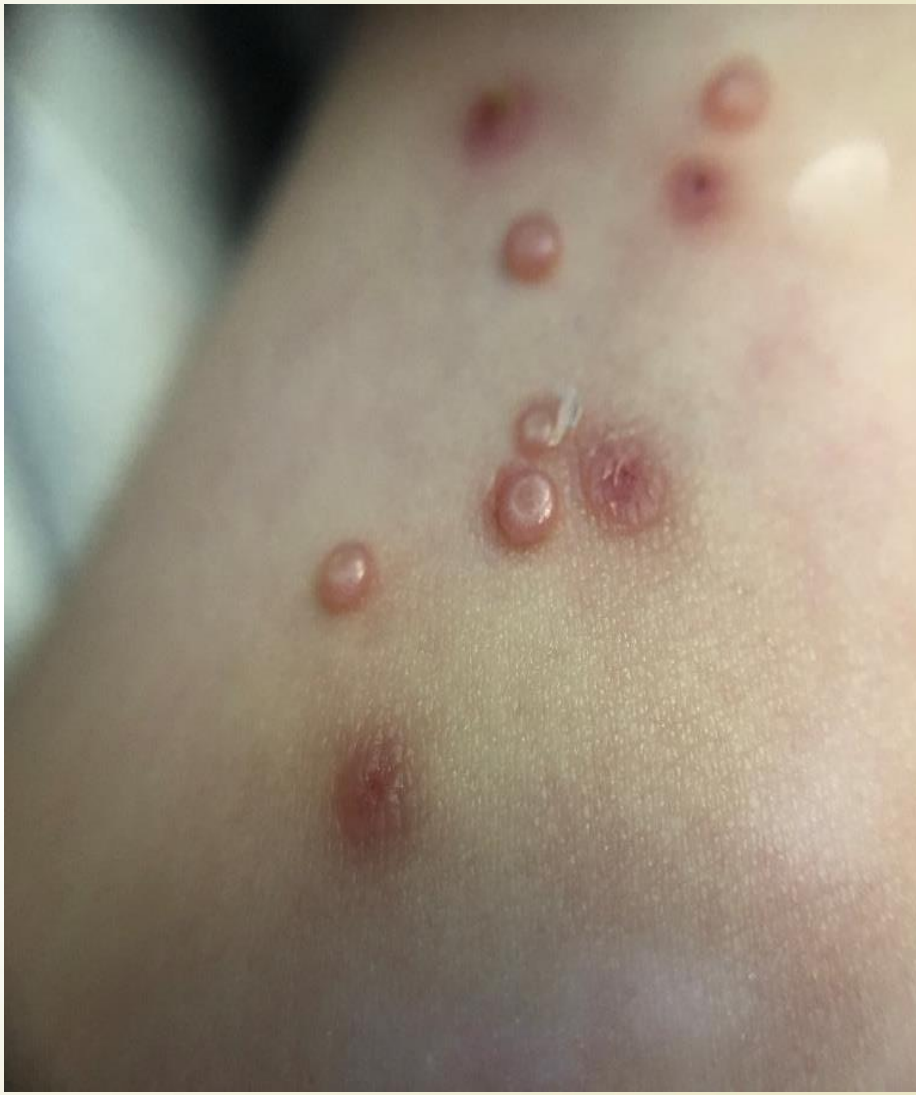
**Anecdotal evidence of efficacy*

Molluscum Contagiosum

- Pox virus
- Mostly seen in children under 10-12 yrs of age
- Presentation:
  - 2-3mm diameter papule
  - Umbilicated center
  - Filled with cheezious material-high concentration of pox virus
- Treat to prevent transmission





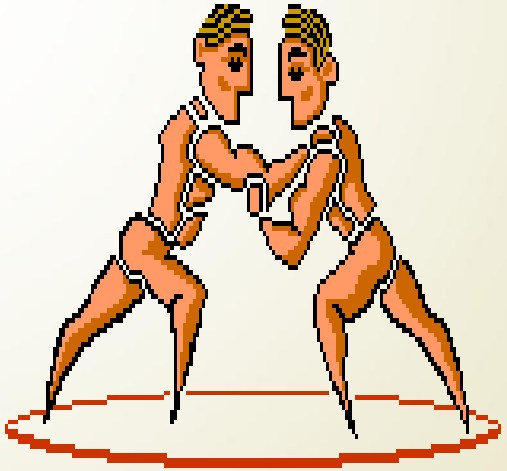


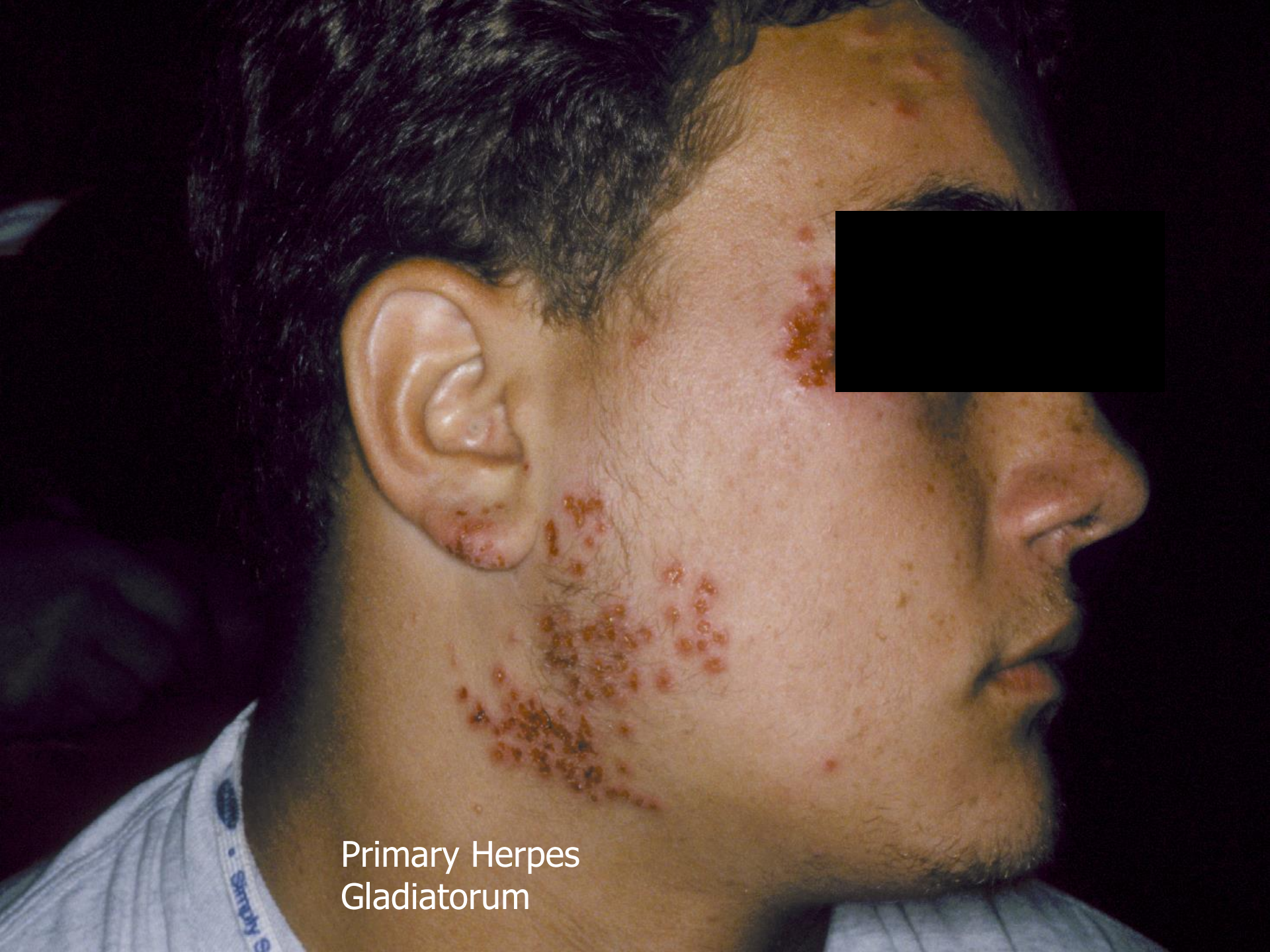
Treatment Guidelines for Molluscum Contagiosum

- Lesions must be curetted or removed
- After treatment, lesions can be covered by Bioclusive covering, followed by prewrap and tape

Treatment options for Molluscum Contagiosum

- Ideal: Curettage and Hyfrecator (Express and cauterize area)
- Other options:
  - Cryotherapy (freezing)




Primary Herpes
Gladiatorum

Herpes Gladiatorum-True or False?

- How can it be? We wash the mats 3 times a day!
- Skin checks look for vesicles. Only when they are present do we worry about transmission
- It's only a cold sore, not Herpes Gladiatorum
- That's that sexually transmitted stuff, isn't it?
- It's impetigo! I always get it there each season.

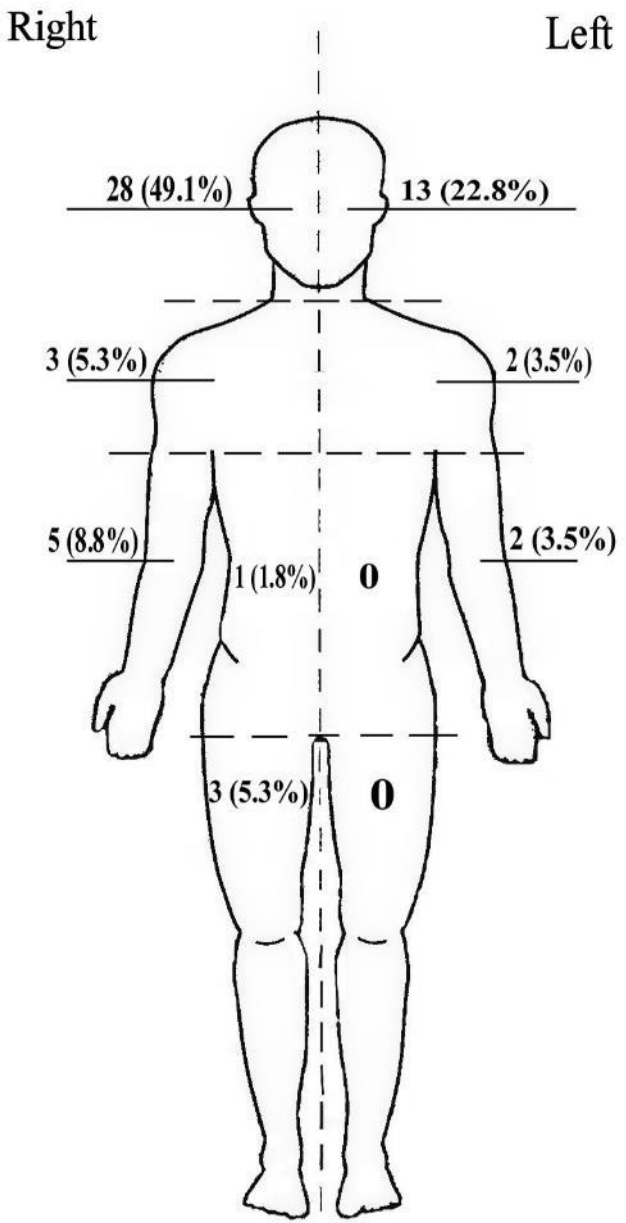
All of these excuses have been mistakenly given for why a lesion is not Herpes!

Herpes Gladiatorum (HG)

- Term coined by *Selling and Kibrick* (1964)
- Due to Herpes Simplex virus Type-1
- Numerous outbreaks since first diagnosed in 1960's – *Selling* (1964), *Wheeler* (1965), *Porter* (1965), *Dyke* (1965) and *Belongia* (1991)
- Prevalence in wrestlers:
  - 2.6-29% High School
  - 7.6-12.8% Collegiate
  - 20-40% Division I

Herpes Gladiatorum-Presentation

- Location
  - 73% on Head and Face
  - 42% on Extremities
  - 28% on Trunk
- Appear 3-8 days after contact
- Primarily at locations of ‘Lock-up’ position
- Only from skin-to-skin contact
- No association with mats



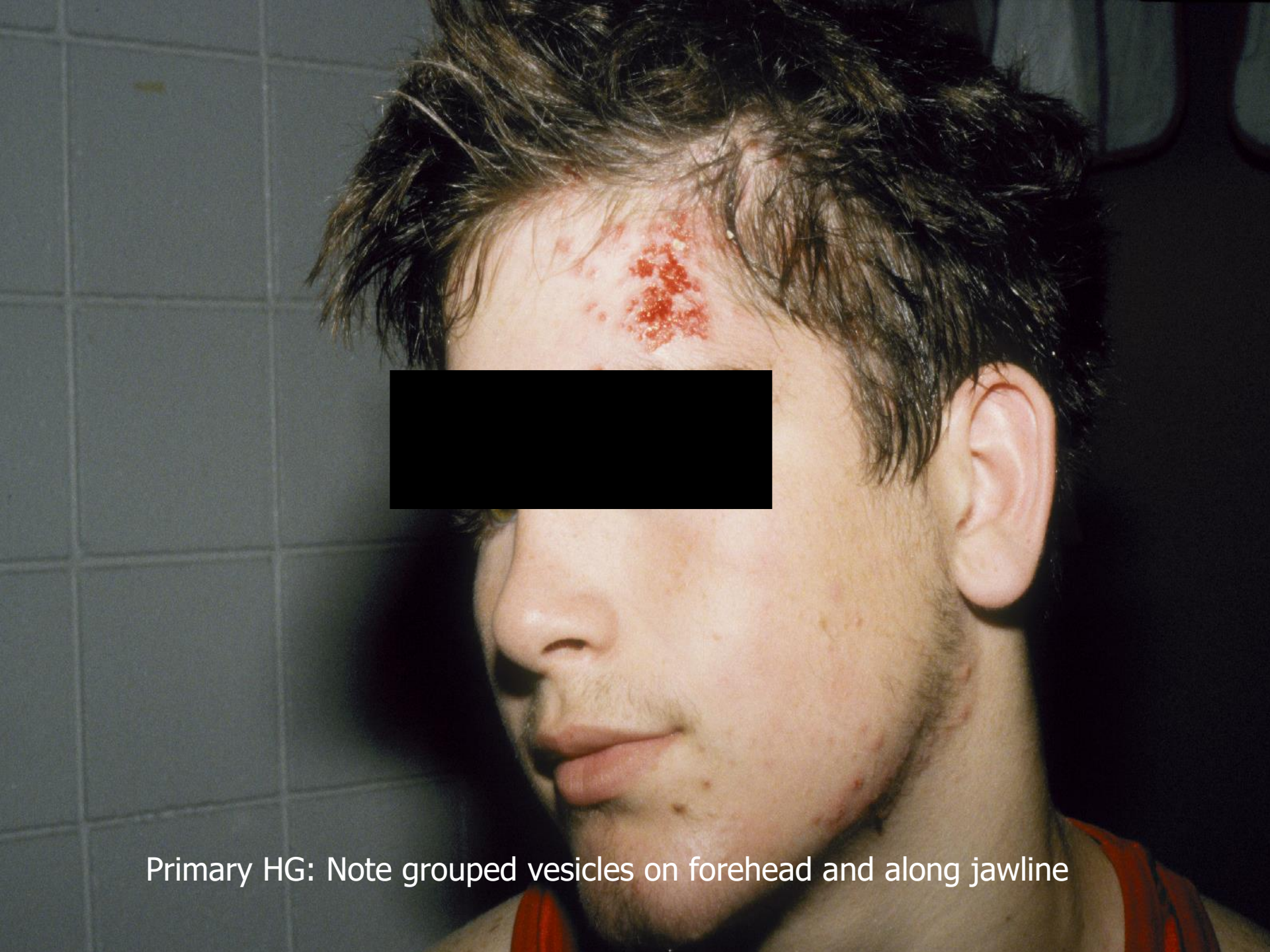
Location of lesions from 57 wrestlers with Primary Herpes Gladiatorum

Review of Primary HG outbreaks occurring at 2001 28-day wrestling camp

All athletes practiced 6 hrs a day wearing T-shirts and shorts

Herpes Gladiatorum-Primary Outbreak

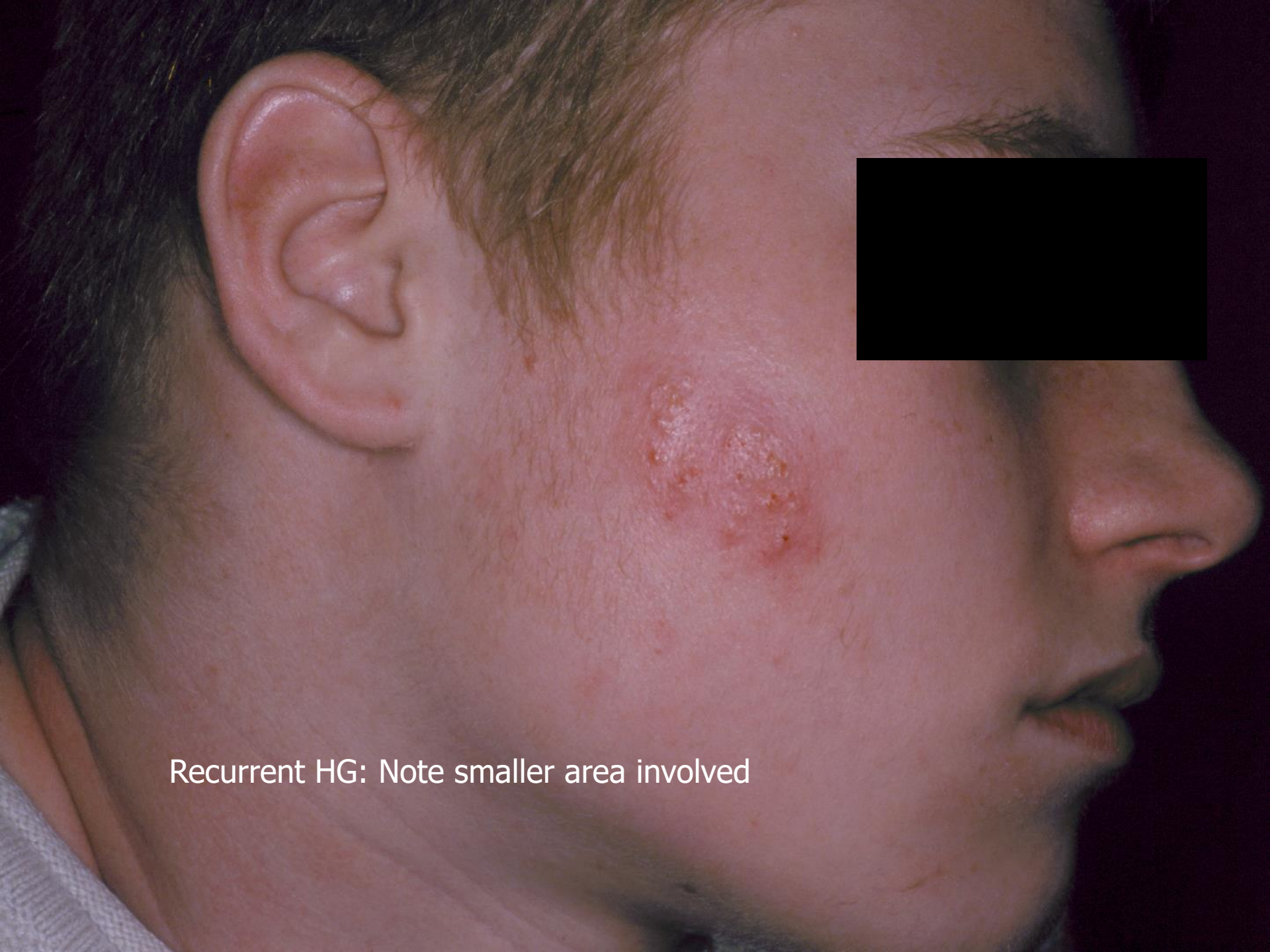
- With facial/head involvement
  - Malaise
  - Pharyngitis
  - Fever (101°-102°F)
  - Regional adenopathy
  - Vesiculopapular lesions
  - Lasts 10-14 days



Primary HG: Note grouped vesicles on forehead and along jawline

Herpes Gladiatorum- Recurrent Outbreaks

- Latency and Reactivation are the rule
- Usual reoccurrences last 3-5 days
- Less signs and symptoms than primary outbreak
- Brought on by stress, i.e. weight cutting, abrading or rubbing facial skin, sun exposure, suppressed cell-mediated immunity



Recurrent HG: Note smaller area involved

Herpes Gladiatorum- Presentation

- RED FLAGS
  - Lesions crossing the facial-hair line
  - Recurrent ‘folliculitis’ in the same area
  - Cold sores
  - Other teammates in the same wrestling group with the same lesions
  - Regional adenopathy out of proportion for small areas of folliculitis or cellulitis

Treatment Guidelines for Herpes Gladiatorum-MSHSL

- No new lesions for 72 hours and all lesions are scabbed over
- For Primary HG:
  - Must be on oral antiviral medications for minimum of 10 days
  - No swollen, tender lymph nodes or systemic signs of continued infection. If present, then extend time out of competition/practice to 14 days
- For Recurrent HG:
  - Must be on oral antiviral medication. May return to competition/practice after 120 hours of treatment. If already on antiviral medication for suppression, may return after 120 hours from time of vesicle formation
- If no medication used, cannot return to play unless: no visible lesions or systemic signs. No swollen lymph nodes
- May not be covered

Oral Treatment for Herpes Gladiatorum

- Primary outbreak
  - Valtrex (valacyclovir) 1000mg twice a day for 10-14 days
  - Acyclovir 200mg five times a day for 10-14 days
- Recurrent outbreak
  - Valtrex (valacyclovir) 500mg twice a day for 1 week
  - Acyclovir 200 five times a day for 1 week

Prevention (Prophylaxis) of Recurrent outbreaks of Herpes Gladiatorum

- Individuals who suffer from recurrent HG or 'cold sores' should be on daily oral antiviral medication throughout the season to reduce the occurrence of outbreaks
- Studies prove that daily dosage of these medications can significantly reduce that risk
- Prophylactic dosing:
  - Valtrex (valacyclovir) 1000mg once a day 96% effective*

**For coaches or those with greater than 2 yr history of recurrences, valacyclovir 500mg once a day may be effective. With breakthrough, increase to 1000mg*

Due to poor compliance with acyclovir 5 times a day, one study showed increased risk of outbreaks with its usage. Acyclovir is not recommended for prophylaxis.

Herpes Management with Outbreaks during the Season

- Individual Outbreaks
  - Once an outbreak occurs, isolation and oral antiviral medication are recommended
  - For Primary outbreaks, ensure cultures are done to verify HSV-1 is the cause. Follow treatment guidelines (previous slides)
  - For Recurrent outbreaks, verify its HSV-1 and follow treatment guidelines (previous slides)
  - All wrestlers in contact with these individuals, over the past 3 days, should be isolated and monitored for 8 days. By that time, if no lesions develop, they may return to competition
  - Outbreaks in individuals already on prophylactic antiviral medications should be removed from practice/competition. If on valacyclovir1000mg a day, divide the tablet and take ½ twice a day for the next 7 days. On the 7th day, may return to competition and restart valacyclovir 1000mg once a day

Herpes Management with Outbreaks during the Season

- Multiple wrestlers
  - If multiple members of a team become infected, strongly consider shutting down the whole team for 8-days. Other means of conditioning and exercise may be implemented, but no direct contact with other wrestlers during this time
  - Anyone who develops suspicious lesions should be evaluated for HG with cultures taken for HSV-1

Herpes Prevalence and Risk of Contraction

- Present studies indicate that 2.6% of HS wrestlers have known HG, but blood studies indicate that over 10x this many have the virus
- Once an outbreak occurs on a team, uninfected wrestlers have 33% chance of contracting the virus
- Due to the high prevalence and risk of contracture during an outbreak:
  - Those who have no history of HG should consider HSV antibody testing at the beginning of each wrestling season. Once positive, should consider being on oral antiviral medication prophylactically all season long

Post-Exposure Protocol for Herpes Gladiatorum

- Previous outbreaks of HG indicate that over 90% of individuals will develop HG within 8 days from exposure
- Teams should consider an 8-day period of isolation after large multi-team tournaments. Since the virus is transmitted before rash formation, newly infected individuals may clear skin checks and still be spreading the virus to other wrestlers

Post-Season Prevention for HG

- Single biggest problem is contracting herpes at a Sectional meet, and having an outbreak 1 week later at skin checks for the State meet
- 10-year study indicates usage of valacyclovir in HSV-1 naïve individuals can significantly reduce their risk of contracting the herpes virus*.
- Recommendations:
  - 5 days prior to post-season competition, have all tournament participants start valacyclovir 1000mg daily through the end of State tournament.
  - This can *reduce* the risk of contracting herpes at the Regional or Sectional tournaments, leading up to the State meet.

*Anderson BJ, McGuire D, Reed M, Foster M, Ortiz D. Prophylactic Valacyclovir to Prevent Outbreaks of Primary Herpes Gladiatorum at a 28-day wrestling camp-10-year review. Clin J Sports Med. 2016; 26(4);272-9.

Conclusion

- Skin infections are a significant problem in this sport
- Seek evaluation and treatment from the same medical provider- don't 'doctor shop'
- Isolate and treat. For HG, culture to verify and be sure to isolate until confirmation of the diagnosis
- Coaches and physicians need to work closely with Certified Athletic Trainers to properly treat and control these infections
- Use prophylactic medication when its appropriate