

Pennsylvania Academy of Family Physicians Foundation

Pittsburgh CME Conference

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Soft Tissue Update - Classifying and Treating a Spectrum

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Disclosures:

Speaker has no disclosures and there are no conflicts of interest.

The speaker has attested that their presentation will be free of all commercial bias toward a specific company and its products.

The speaker indicated that the content of the presentation will not include discussion of unapproved or investigational uses of products or devices.

Soft Tissue Infections

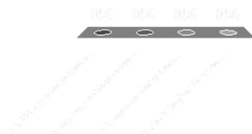
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Disclosure

- Dr. Donald Middleton has no conflict of interest, financial agreement, or working affiliation with any group or organization.

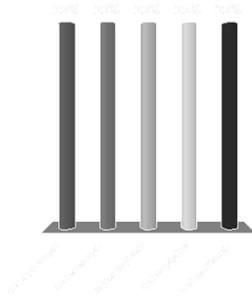
Which statement about trimethoprim/sulfamethoxazole is true?

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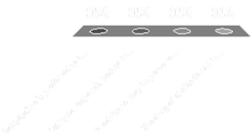
The treatment of choice for erythrasma is:

- A. Oral erythromycin
- B. Oral vancomycin
- C. Topical mupirocin
- D. Oral doxycycline
- E. Oral moxifloxacin



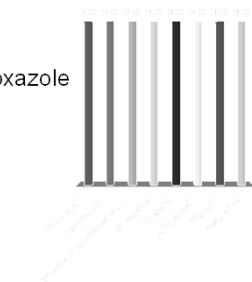
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- B. Ecthyma responds best to IV vancomycin.
- C. Prednisone may improve resolution of cellulitis in non-diabetic patients.
- D. The drug of choice for an infected animal bite is moxifloxacin.



Which of the following is/are not effective treatment(s) for MRSA?

- A. Clindamycin
- B. Moxifloxacin
- C. Trimethoprim/sulfamethoxazole
- D. Minocycline
- E. Linezolid
- F. Azithromycin
- G. Rifampin
- H. Ceftaroline



Soft Tissue Infection Goals:

I. After this presentation, the participant will be able to identify:

- 1) community-acquired cellulitis
- 2) tinea skin infections
- 3) atypical forms of soft tissue infection including ecthyma, erysipelas, and carbuncle

II. After attending this presentation the participant will be able to identify and treat MRSA infections.

WHAT IS THIS?



Treatment

- Elevate
- Moist heat
- Ultrasound to detect underlying abscess
- I&D if abscess present
- Antibiotics
- Steroids: for nondiabetic patients

Empiric Mild Cellulitis Rx

- Cephalexin: 500 mg Q6h; peds: 25 to 50 mg/kg/day in 3-4 doses
- Dicloxacillin 500 mg Q6h; peds: 25 to 50 mg/kg/day in 4 doses
- Clindamycin: 300 to 450 mg every 6-8h; peds: 30-40 mg/kg/day in 3-4 doses
- Penicillin VK, 250-500 mg Q6h
- MRSA: doxycycline; TMP-SMX
- Cefazolin IV

Empiric Severe Cellulitis Rx

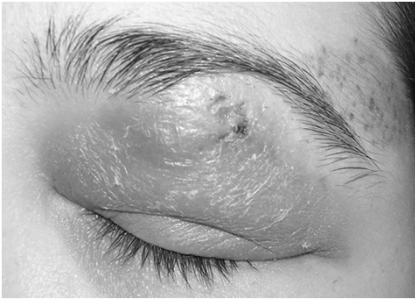
- Vancomycin/daptomycin/linezolid
- PLUS
- Piperacillin/tazobactam
- Or imipenem/meropenem

- Necrotizing infections require penicillin

WHAT IS THIS?



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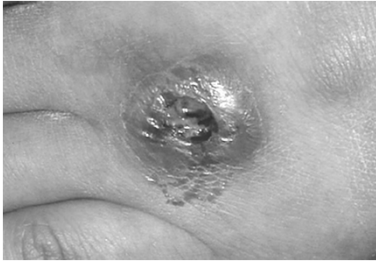
Radiograph



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WHAT COULD THIS BE?



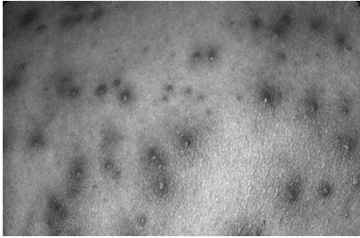
THE SAME PROBLEM



WHAT IS THIS?



WHAT IS THIS?



WHAT IS THIS?



Photo courtesy of Donald Middleton, MD

SAME THING: BUT AFTER
MISDx BY THE GRANDFATHER



Treatment

- Anything you want works except for nystatin
- Clotrimazole (Lotrimin): (OTC as well) BID for 3-4 weeks
 - Cream 1%: 15 g, 30 g, 45 g, 90 g
 - Lotion 1%: 30 mL
 - Solution 1%: 10 mL, 30 mL
- Oral (may reduce time to resolution):
 - terbinafine 250 mg daily for 1-2 weeks
 - fluconazole 150 mg once weekly for 2-4 weeks
 - itraconazole 200 mg daily for 1-2 weeks

What is the likely diagnosis?



<http://phil.cdc.gov>

What is the likely diagnosis?



Photo Credit: Major Kirk Waibel, MD

CA-MRSA Infections Mainly Skin Infections

Disease Syndrome	(%)
Skin/soft tissue	1,266 (77%)
Wound (Traumatic)	157 (10%)
Urinary Tract Infection	64 (4%)
Sinusitis	61 (4%)
Bacteremia	43 (3%)
Pneumonia	31 (2%)



Fridkin et al NEJM 2005;352:1436-44

MRSA

Skin/Soft Tissue Infections

- Signs suggestive for CA-MRSA infection
 - Fluctuance
 - Yellow or white center
 - Central point or “head”
 - Draining pus
 - Possible to aspirate pus
- I&D is cornerstone of therapy if abscess present: needle aspiration, ultrasound

<http://www.cdc.gov/mrsa/treatment/outpatient-management.html>
 Accessed 10-20-14

Which of the following is/are not effective treatment(s) for MRSA?

- 1) Clindamycin
- 2) Moxifloxacin
- 3) Trimethoprim/sulfamethoxazole
- 4) Minocycline
- 5) Linezolid
- 6) Azithromycin
- 7) Rifampin
- 8) Ceftaroline

Empiric Therapy
MRSA Skin/Soft Tissue Infections

- Clindamycin
 - Active against both staph and strep
 - Some resistance, especially CA
 - Use “D-test” to determine activity
- Doxycycline/Minocycline
 - Questionable strep activity
 - Not recommended for age < 8 and pregnancy
- TMP/SMX
 - Questionable strep activity
 - Uncertain dosage, not FDA approved
 - Not recommended for age < 2 mos & 3rd trimester

<http://www.idsociety.org/Organism/> under bacteria guidelines 10-20-14

Empiric Therapy
MRSA Skin/Soft Tissue Infections

- Linezolid (Zyvox®):
 - Can be given IV or PO
 - Usual dose is 600 mg q 12 hrs
 - Not adjusted for renal failure
 - Check for potential drug interactions
 - Adverse effects
 - Myelosuppression - frequent thrombocytopenia
 - Monitor weekly CBC
 - Neuropathy & Lactic acidosis – less common
 - **EXPENSIVE!**: \$69 a pill
- Ceftaroline (Teflaro®): 600 mg IV BID

Empiric Therapy
MRSA Skin/Soft Tissue Infections

- **Not optimal for MRSA (High prevalence of resistance or potential for rapid development of resistance):**
 - **Macrolides**
 - **Fluoroquinolones**
 - **Rifampin: use only in combination with other agents**

Invasive MRSA Treatment

- Vancomycin IV: 15-20 mg/kilogram/dose IV every 8-12 hours: check serum level
 - Add gentamicin & rifampin for endocarditis
- Daptomycin 4-6 mg/kilogram/dose IV daily
- Linezolid 600 mg IV twice a day
- Clindamycin 600 mg IV 3 times a day
- New drugs:
 - televancin 10 mg/kg daily
 - dalbavancin 1000 mg wk one; 500 wk two
 - oritavancin 1200 mg
 - tedizolid 200 mg daily, IV/oral, 6 days, cost less

Prescribe the ideal regimen for MRSA prevention.

?

MRSA Decolonization

- Attempts to decolonize MRSA in patients with recurrent disease include:
 - Intranasal mupirocin bid to tid x 5 – 10 days
 - Intranasal chlorhexidine
 - Antimicrobial scrubs
 - Chlorhexidine or Hexachlorophene
 - Systemic antibiotic
 - Rifampin, Doxycycline, Clindamycin
 - Disinfect bathroom, locker room, equipment
 - Discard makeup, toothbrush, etc.
- Failures occur with all of above

MRSA Decolonization

Reported success rates :

- Intranasal mupirocin alone (85-100%)

Bradley SF. Antimicrobial chemotherapy and vaccines. Vol II: antimicrobial agents Esun Technologies 2005:293-303
Mody L. Clin Infect Dis 2003;37:1467-74

- Chlorhexidine baths + mupirocin (72% over several years follow-up)

Sandri AM. Infect Control Hosp Epidemiol 2006;27:185-7

- Chlorhexidine baths + mupirocin + rifampin + doxycycline (74% at 3 mos v. 32% in controls)

Simor AE. Clin Infect Dis 2007;44:178-85

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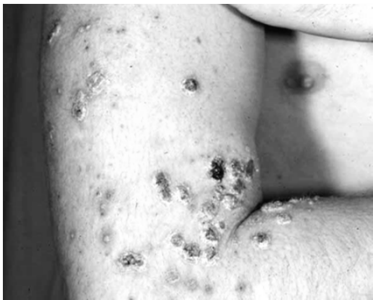
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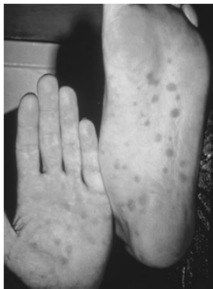
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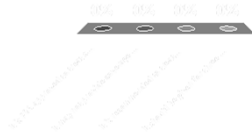


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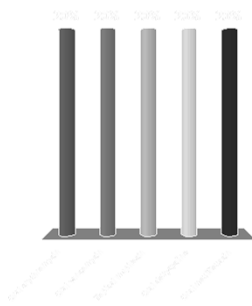
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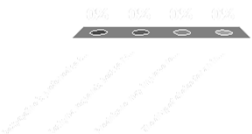
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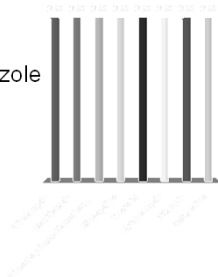
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- Two new drugs for skin and skin structure infections. Med Let 2014; 56:73-75

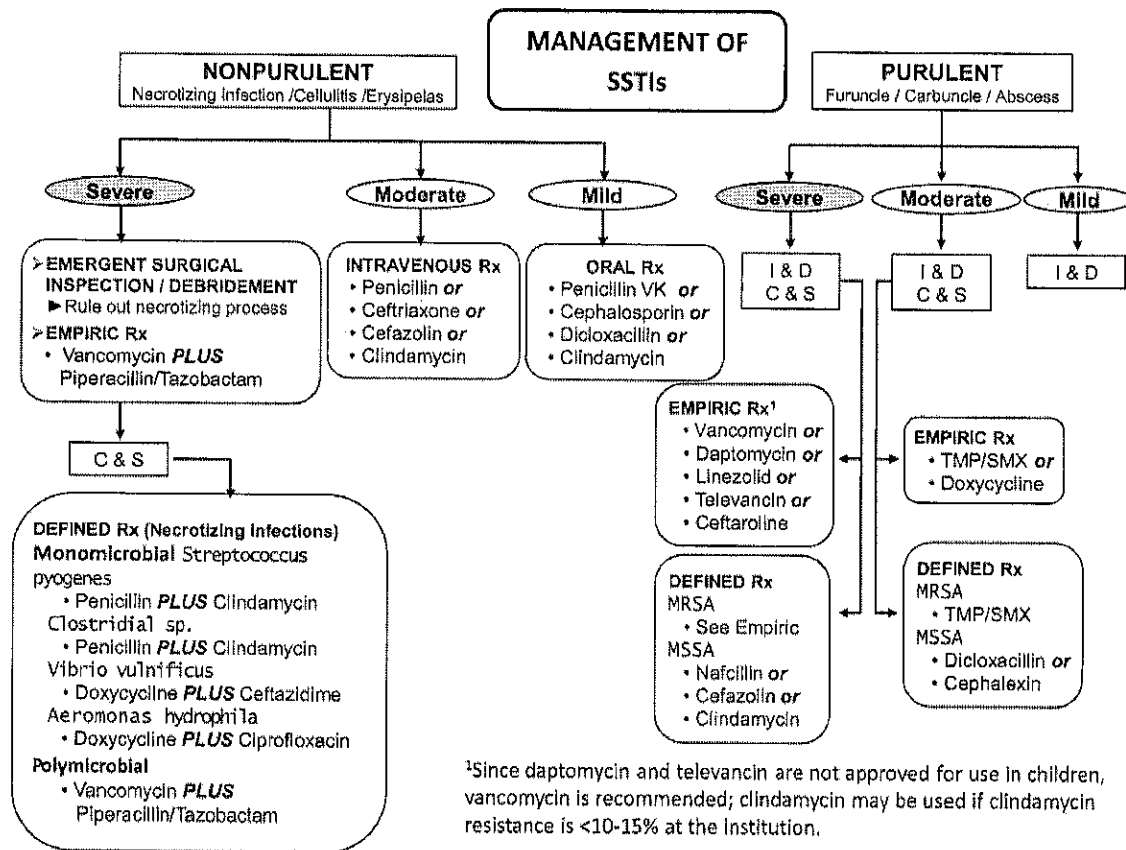


Figure 1. Purulent skin and soft tissue infections (SSTIs). Mild infection: for purulent SSTI, incision and drainage is indicated. Moderate infection: patients with purulent infection with systemic signs of infection. Severe infection: patients who have failed incision and drainage plus oral antibiotics or those with systemic signs of infection such as temperature >38°C, tachycardia (heart rate >90 beats per minute), tachypnea (respiratory rate >24 breaths per minute) or abnormal white blood cell count (<12 000 or <400 cells/ μ l), or immunocompromised patients. Nonpurulent SSTIs. Mild infection: typical cellulitis/erysipelas with no focus of purulence. Moderate infection: typical cellulitis/erysipelas with systemic signs of infection. Severe infection: patients who have failed oral antibiotic treatment or those with systemic signs of infection (as defined above under purulent infection), or those who are immunocompromised, or those with clinical signs of deeper infection such as bullae, skin sloughing, hypotension, or evidence of organ dysfunction. Two newer agents, tedizolid and dalbavancin, are also effective agents in SSTIs, including those caused by methicillin-resistant *Staphylococcus aureus*, and may be approved for this indication by June 2014. Abbreviations: C & S, culture and sensitivity; I & D, incision and drainage; MRSA, methicillin-resistant *Staphylococcus aureus*; MSSA, methicillin-susceptible *Staphylococcus aureus*; Rx, treatment; TMP/SMX, trimethoprim-sulfamethoxazole.

recommended to help identify whether *Staphylococcus aureus* and/or a β -hemolytic *Streptococcus* is the cause (strong, moderate), but treatment without these studies is reasonable in typical cases (strong, moderate).

2. Bullous and nonbullous impetigo can be treated with oral or topical antimicrobials, but oral therapy is recommended for patients with numerous lesions or in outbreaks affecting several people to help decrease transmission of infection. Treatment for ecthyma should be an oral antimicrobial.

(a) Treatment of bullous and nonbullous impetigo should be with either mupirocin or retapamulin twice daily (bid) for 5 days (strong, high).

(b) Oral therapy for ecthyma or impetigo should be a 7-day regimen with an agent active against *S. aureus* unless cultures yield streptococci alone (when oral penicillin is the recommended agent) (strong, high). Because *S. aureus* isolates from impetigo and ecthyma are usually methicillin susceptible, dicloxacillin or cephalexin is recommended. When MRSA is suspected or confirmed, doxycycline, clindamycin, or sulfamethoxazole-trimethoprim (SMX-TMP) is recommended (strong, moderate).

(c) Systemic antimicrobials should be used for infections during outbreaks of poststreptococcal glomerulonephritis to help eliminate nephritogenic strains of *S. pyogenes* from the community (strong, moderate).