

UC Davis Health Antimicrobial Stewardship Program

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The UC Davis Antimicrobial Stewardship Program (ASP) was first established in 1986 and then expanded in pediatrics in 2011 and hospital wide in 2013 in response to the growing challenge of antibiotic resistance. Due to increasing antibiotic resistance, patients are at a higher risk for adverse effects and poor outcomes and treatment strategies become more complex.

Antibiotics are life-saving drugs, and their use has important implications for patient care and public health. With this in mind, the UC Davis Health ASP strives to ensure all patients receive optimal antibiotic therapy when indicated. We thank you for your support in putting this very important program into action.

*Image: Actinobacteria colony biofilm grown in the laboratory.
<https://news.harvard.edu/gazette/story/2017/11/photos-reveal-strange-beauty-of-microbes/>*

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Cellulitis

Diagnosis

- Relatively sudden onset of redness, warmth, tenderness, and swelling of the skin
 - **Nonpurulent:** no evidence of abscess/phlegmon; most cases caused by β -hemolytic streptococci (usually group A strep but also B, C, G) that are susceptible to penicillin; ~10% of cases caused by methicillin-susceptible *Staphylococcus aureus* (MSSA)
 - **Purulent:** evidence of abscess/phlegmon; caused by *S. aureus*, often methicillin-resistant (MRSA)
- Almost always unilateral
- Fever in 22-71%; elevated white blood cell count in 35-50%
- Usually associated with skin surface disruption due to recent trauma, tinea pedis, cutaneous ulcer, past saphenous venectomy, or impaired venous or lymphatic drainage
- Blood cultures are low yield; consider for patients with severe illness or immunocompromise
- Obtain ultrasound if concern for abscess/phlegmon and physical exam is equivocal

Note: Several noninfectious conditions can mimic cellulitis including venous stasis dermatitis which is often bilateral, associated with skin hyperpigmentation, pitting edema, serous drainage, itchiness; minimal pain and absence of fever

Treatment

Elevate the affected extremity and treat underlying predisposing conditions.

- **Nonpurulent cellulitis**
 - Cover β -hemolytic strep and MSSA; MRSA coverage is not routinely indicated
 - Cephalexin 500 mg PO q6-8h, consider higher dosing in the morbidly obese
 - Cefazolin 1-2 g IV q8h, consider higher dosing in the morbidly obese
- **Purulent cellulitis**
 - Cover *S. aureus*, including MRSA
 - Skin abscess with minimal cellulitis: antibiotics are of modest benefit for patients with drained abscesses; antibiotics are recommended for patients with associated systemic illness, diabetes, severe immunocompromise, extremes of age, or location of abscess in an area where drainage is difficult
 - TMP-SMX and doxycycline are preferred anti-MRSA agents due to high levels of clindamycin resistance locally and nationally
 - Vancomycin IV dosed per weight and renal function
- **Narrowing and oral therapy**
 - Narrow based on available culture results
 - If initially started on IV transition to oral therapy when patient has clinical improvement; erythema may initially extend despite appropriate therapy but overall improvement (e.g., reduction of erythema and inflammation) generally occurs by day 3

Note: Patients who are critically ill, neutropenic, severely immunocompromised or with suspected necrotizing fasciitis should receive empiric broad-spectrum antibiotics. Patients with aquatic injuries, bites, and cellulitis associated with long-standing diabetic foot ulcers may also require alternative antibiotics. Discuss these cases with the antibiotic stewardship program and/or infectious diseases consultant.

Duration

- 5-7 days if clinical response by day 3

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RSV Vaccines at

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- Earlier this year the FDA approved 2 vaccines for Respiratory Syncytial Virus (RSV) in adults.
- RSV is a cause of severe lower respiratory tract infection (LRTI) in very young children and older adults.
- While both vaccines (Arexvy and Abrysvo) were found to be effective in preventing LRTI in older adults. Only 1 was studied in pregnant women and found to help protect newborn infants (Abrysvo).
- ACIP recommends a single dose of vaccine to adults aged 60+ and pregnant woman 32+ weeks gestation during RSV season (fall – winter).



- **Arexvy** is our preferred vaccine for adults aged 60+



- **Abrysvo** is our preferred vaccine for pregnant women between 32 - 37 weeks gestation

MRSA nasal screening is helpful to de-escalate patients on empiric anti-MRSA antibacterials

Adults

In a meta-analysis of 22 studies of 5163 patients >18 yrs with pneumonia (including CAP, HAP, and VAP), the negative predictive value of a MRSA nares screen was 96.5% (Timbrook et al, CID, Jan 2018)

The likelihood of having MRSA pneumonia in an adult patient with a negative MRSA screen is 3.5%

Pediatrics

In a single retrospective cohort study of 3860 pediatric patients admitted to the ICU, the negative predictive value of a MRSA nares screen was 99.8% (Crawford et al, JPIDS, Dec 2023)

The likelihood of having a MRSA infection in a pediatric ICU patient with a negative MRSA screen is 0.2%

Be a good pediatric antibiotic steward!

- Send MRSA nares screen on admission to the ICU or in patients with clinical syndrome of pneumonia
- If a hospitalized patient develops pneumonia, consider a repeat MRSA nares screen if not obtained in the last 7 days
- Stop anti-MRSA therapy in patients with pneumonia if MRSA nares screen returns as negative
- Don't start anti-MRSA therapy in patients with pneumonia if MRSA nares screen is negative within the last 7 days

Test Your Knowledge

Would you like to win a \$10 gift certificate to Starbucks? Complete the following post-newsletter quiz and submit to hs-ASP@ucdavis.edu to be entered into a raffle for a free lunch!

A 50-year-old man with morbid obesity (130 kg) presents to the ED with left calf swelling and redness along with increasing pain. The patient saw his PCP 2 days ago and was given clindamycin 450mg q8hrs but the redness continued to worsen, and he reported subjective fever. Abscess is ruled out via ultrasound. No purulence is noted at the site of infection and the patient is admitted for IV antibiotics. He has no history of MRSA and is not known to be colonized.

1. What empiric IV antibiotic regimen is most appropriate at this time?
 - a. Vancomycin 1 g q12hrs + Cefepime 2 g q8hrs
 - b. Cefazolin 2 g q8hrs
 - c. Vancomycin 1 g q12hrs
 - d. Clindamycin 900 mg q8hrs
2. True or False: Cellulitis is almost always unilateral and bilateral cellulitis should raise suspicion for non-infections mimickers of cellulitis including venous stasis dermatitis.
3. Approximately what percentage of *S. aureus* isolates are clindamycin-resistant at UCD?
 - a. 1-5%
 - b. 5-10%
 - c. 10-25%
 - d. 25-35%
 - e. 35+%
4. True or False: Only one of the new RSV vaccines (Abrysvo) is approved for pregnant women who are 36+ weeks gestation during RSV season (fall – winter).

Answers to last Newsletter's quiz: 1. A, 2. T, 3. B, 4. C

ASP Gold Star Winners for Nov & Dec



The following staff have been recognized by the ASP team for their dedication to combatting antimicrobial resistance and commitment to the principles of antimicrobial stewardship:

- Stephanie Arcuri (FM)

Quick Antibiotic Fact:

Metronidazole

Metallic taste is its most common side effect whereas peripheral neuropathy with prolonged use is its most underappreciated.

Antibiotic Escape Room!

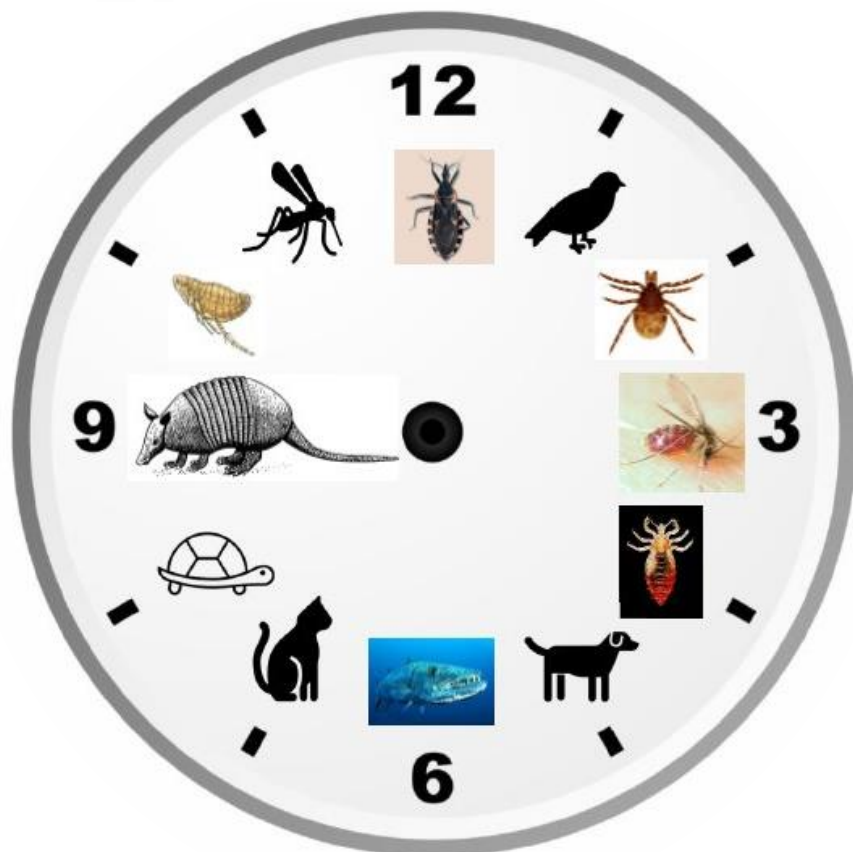


You're trapped!

You are given a clock with 12 disease vectors. Use your knowledge of infectious diseases to determine the time.

Hour hand points to the vector for Chaga's disease

Minute hand points to an animal easily infected by *Mycobacterium leprae* given its low body temperature



What time
is it?

Contact Us

The Antimicrobial Stewardship Program team members

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Antibiotic questions? Contact us.

<https://health.ucdavis.edu/antibiotic-stewardship/>

See the On-Call Schedule for the ASP attending/fellow of the day

Contact the ASP Pharmacist at 916-703-4099 or by Vocera "Infectious Disease Pharmacist"

Escape Room answer: 3:45