

# UC Davis Health Antimicrobial Stewardship Program

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March - April 2024

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: Gram staining of the positive blood culture under a 100 × oil-immersion objective lens, showing more or less coiled gram-positive bacteria. The colonies obtained the following day were identified as Clostridium saccharogumia. [https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X\(22\)00001-5/fulltext](https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(22)00001-5/fulltext)*

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## Diagnosis

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- Abdominal pain (usually left lower quadrant, ~90%), low-grade fever (~90%)
- Diagnostic testing: computed tomography (CT) scan of abdomen for diagnosis and complications (e.g., abscess, perforation)
- Microbiology: *Escherichia coli*, *Klebsiella pneumoniae*, *Bacteroides fragilis*;
  - *Staphylococcus aureus* is generally not a pathogen in intra-abdominal infections
- Blood cultures only for severe illness

## Treatment

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- **Acute, uncomplicated diverticulitis** (CT-confirmed left colonic disease without abscess, perforation, fistula; patient can have fever and/or elevated white blood cell count)
  - In patients with acute uncomplicated diverticulitis, trials suggest that antibiotics do not reduce time to improvement or prevent complications, and American Gastroenterological Association guidelines recommend selective rather than routine antibiotic use
  - Oral therapy (preferred if antibiotics are given): Amoxicillin-clav 875/125 mg PO q8h
  - Intravenous therapy: Ceftriaxone 1 g IV q24h + Metronidazole 500 mg IV q8h
- **Complicated diverticulitis** (CT-confirmed diverticulitis associated with abscess, fistula, obstruction, perforation, peritonitis) in a stable patient
  - Source control via percutaneous drain or operation when possible
  - Ceftriaxone 1 g IV q24h + Metronidazole 500 mg IV q8h
  - If penicillin allergic: Clindamycin 900 mg IV q8h + Aztreonam 1 g IV q8h
- **Diverticulitis in a severely ill patient**
  - Broader coverage for *Enterobacteriaceae spp.* and *Pseudomonas aeruginosa*
  - Piperacillin-tazobactam 4.5 g IV q6h + Vancomycin 1 g (dosed per pharmacy)
  - If penicillin allergic: discuss with your friendly ASP provider
- **Narrowing and oral therapy**
  - Narrow based on available culture data
  - Consider transition to oral therapy when patient shows clinical improvement (usually by 48–72 hours) and source control is achieved
  - Oral therapy: Amoxicillin-clavulanate 875/125 mg PO q8h
- **Surgical management**
  - Obtain immediate surgical consultation for presence of perforation, peritonitis, obstruction
  - Obtain surgical consultation during admission for failure of medical therapy, abscess (generally  $\geq 5$  cm) that cannot be drained percutaneously, fistula or stricture, recurrent episodes of diverticulitis

## Duration

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- Acute, uncomplicated: 4 days
- Complicated or initial severe illness with source control: 4 days after source control
- Complicated with small abscess not drained: 7–14 days depending on clinical response

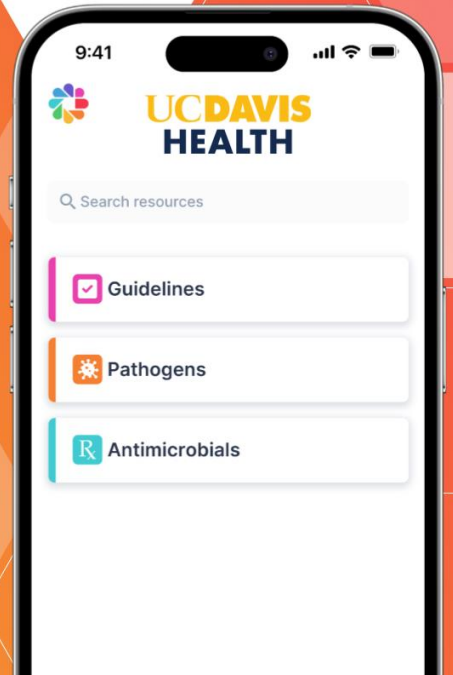
## References

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# Mobilizing to defeat antimicrobial resistance together

DOWNLOAD FIRSTLINE



## Firstline is now live!

Firstline is a mobile app & website with **UC Davis Health specific content**, including:

- Infectious Diseases clinical guidelines (including our antibiogram)
- Antimicrobial information: dosing guidance, use restrictions, formulary/cost information, associated policies, etc.
- Pathogen information: precautions, antibiogram susceptibilities, preferred treatment options, etc.

Access is **free & easy** (it takes < 60 seconds to download & setup)

- Free to download on Android & Apple devices (scan QR code above)
- Just click "Select location" and choose UC Davis Health
- Or access via website:
  - <https://app.firstline.org/en/clients/103-uc-davis-health/dashboard>

# Two Figures, One Streptococcal Story

The clinical context is essential, but in general different Streptococci species have widely varying incidences of bloodstream infection (BSI) and infective endocarditis (IE). Two recent, large population studies, however, show a consistent picture:

PMID: 32580572  
Denmark

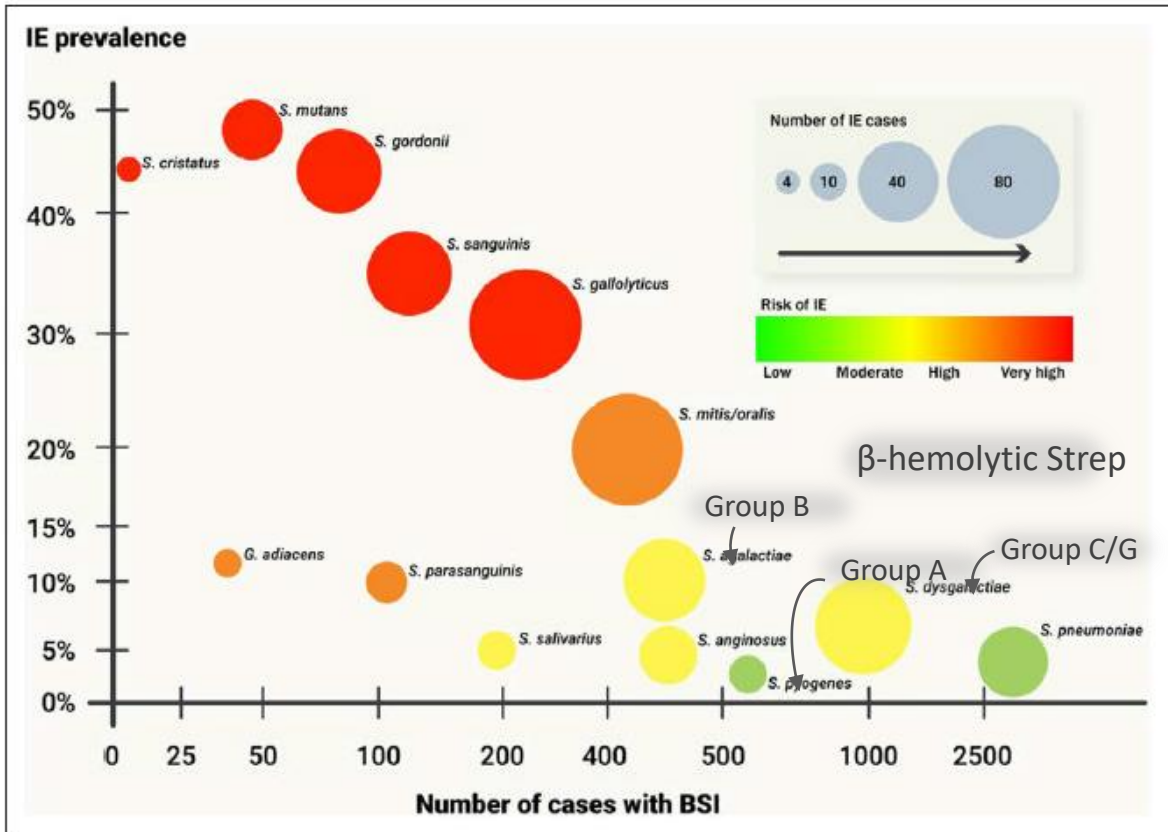
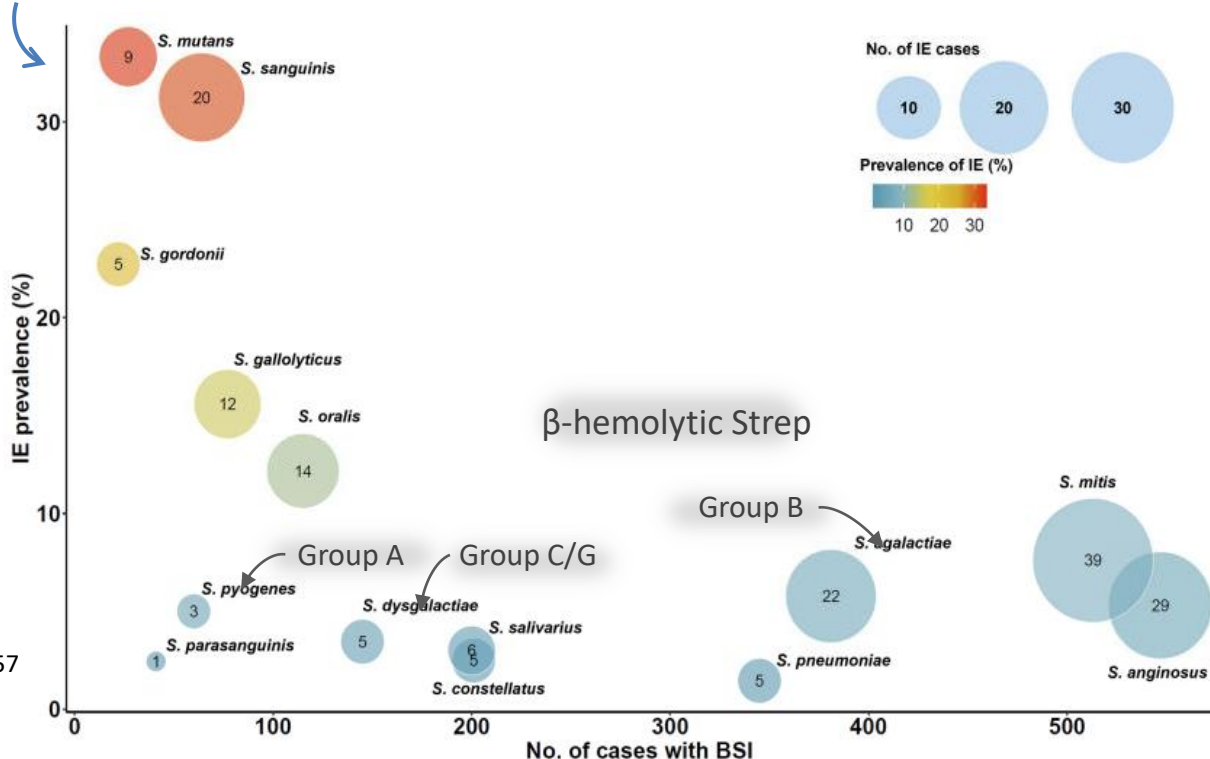


Figure 3. Prevalence of infective endocarditis in bloodstream infections with different streptococcal species.



PMID: 37284757  
S. Korea

In general, BSI incidence =  $\beta$ -hemolytic Strep (Groups A, B, C, & G) + *S. pneumo* >  $\alpha$ -hemolytic Strep  
 In general, IE risk =  $\alpha$ -hemolytic Strep >>>  $\beta$ -hemolytic Strep (Groups A, B, C, & G) + *S. pneumo*

## 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](mailto:hs-ASP@ucdavis.edu) to be entered into a raffle for free coffee!

A 50-year-old man presents to the ED with chest pain and is admitted for unstable angina. A few days into his admission he develops 3 out of 10 poorly localizing abdominal pain and nausea for which he undergoes CT imaging of his abdomen and pelvis. Diverticulitis is noted by the radiologist without further comment. He is otherwise stable and afebrile though his WBC count trended up from 8.5 to 10 this morning. He is started on IV antibiotics.

1. Which antibiotic regimen would be most appropriate?
  - a. Ceftriaxone 1 g IV q24h + metronidazole 500 mg IV q8h
  - b. Vancomycin 1 g IV dosed by pharm + ceftriaxone 1 g IV q24h + metronidazole 500 mg IV q8h
  - c. Meropenem 1 g IV q8h
  - d. Levofloxacin 750 mg IV q24h + metronidazole 500 mg IV q8h
2. True or False: The patient's nurse asks whether the patient needed to have been treated with antibiotics at all. Given the patient's stability, mild illness, and absence of diverticulitis complications he could have been safely observed without any antibiotic interventions.
3. The patient rapidly improves, and he is ready for discharge by the next hospital day. He has tolerated his antibiotics and is now tolerating a full cardiac diet without event. Which regimen would be best to complete his antibiotic treatment for his diverticulitis?
  - a. Continue his intravenous antibiotics, place a PICC line, complete 7-day total course
  - b. Levofloxacin 750 mg PO q24h + metronidazole 500 mg PO q8h, complete 7-day total course
  - c. Amoxicillin-clavulanate 875/125 mg PO q8h, complete 4-day total course
  - d. Stop all antibiotics and wish him well
4. True or False: The beta-hemolytic Strep (typically groups A, B, C & G) are relatively common causes of bloodstream infection (BSI) but relatively uncommon causes of infectious endocarditis (IE) relative to the other Streptococci.

Answers to last Newsletter's quiz: 1. B, 2. T, 3. D

## ASP Gold Star Winners for March & April



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:

- Kathleen Romanowski (Burn)
- Katherine Phelps (Peds)

### Quick Antibiotic Fact:

#### Levofloxacin

Levofloxacin is a broad-spectrum (less these days than before) antibiotic with excellent bioavailability. A hoof oral option for many drug resistant, severe gram negative infections.

# Antibiotic Escape Room!

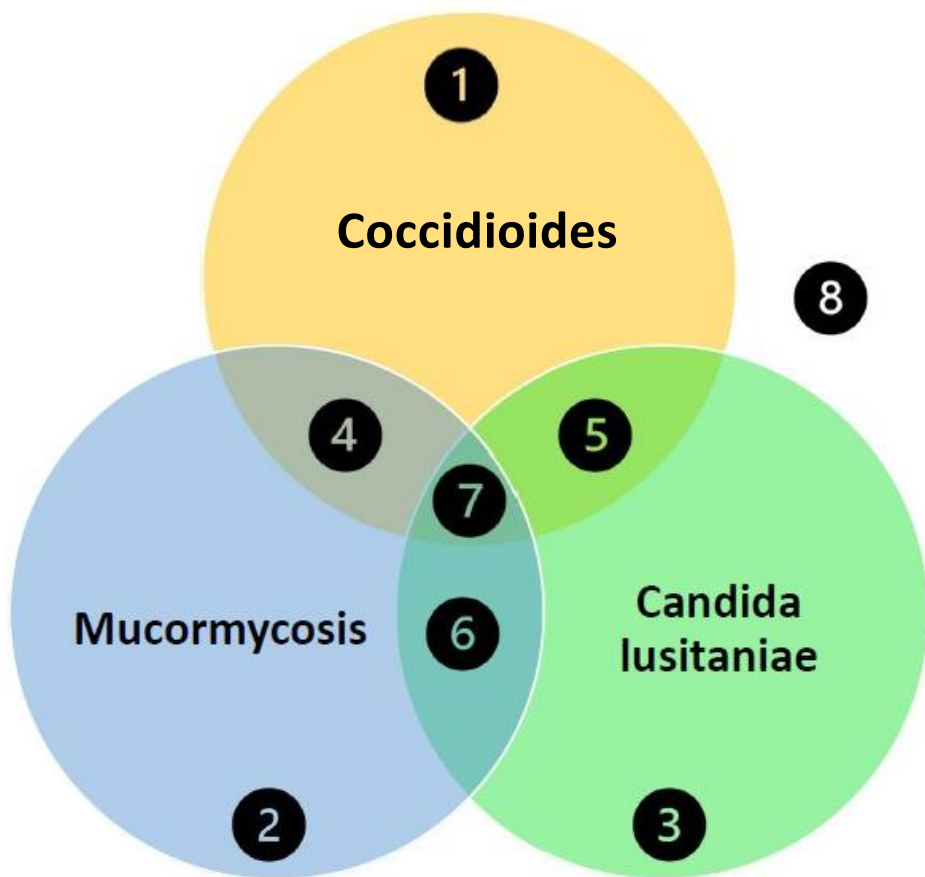


You're trapped!

You are given a list of 5 antifungals. Use your knowledge of spectrum of activity. Some numbers may be used once, more than once, or not at all.

What is the 5-digit code (A-B-C-D-E) to escape?

- A. Caspofungin
- B. Voriconazole
- C. Posaconazole
- D. Itraconazole
- E. Amphotericin B



modified from:

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answer on last page...

## 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: 3-5-7-5-4