

## UC Davis Health Antimicrobial Stewardship Program

*Campylobacter* bacteria are the number-one cause of food-related gastrointestinal illness in the United States. This scanning electron microscope image shows the characteristic spiral, or corkscrew, shape of *C. jejuni* cells and related structures.

<https://www.flickr.com/photos/microbeworld/6055673653>

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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.

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## Aspiration Pneumonitis

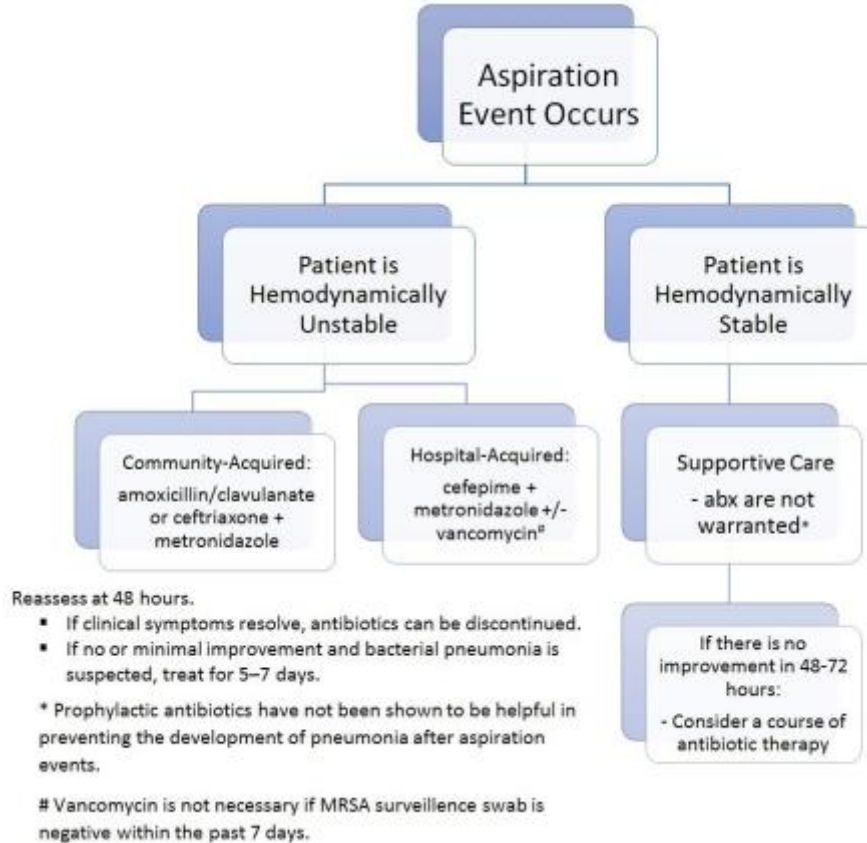


### Diagnosis

- Aspiration pneumonitis is an abrupt chemical injury caused by inhalation of sterile gastric contents.
  - It can progress quickly to a decline in respiratory status followed by rapid improvement within 48 hours of the insult.
  - Chest x rays can look like multifocal pneumonia is present.
- Patients with aspiration events are usually unlikely to produce significant sputum, making the utility of sputum cultures low.

- Sputum Gram-stain and cultures should be considered when the diagnosis is unclear, if purulent sputum is being produced, or if antibiotic treatment is initiated in a hemodynamically unstable patient.

## Treatment




## References

1. Bynum LJ, Pierce AK. Pulmonary aspiration of gastric contents. *Am Rev Respir Dis.* 1976 Dec;114(6):1129-36. PMID: 1008348.
2. Murray HW. Antimicrobial therapy in pulmonary aspiration. *Am J Med.* 1979 Feb;66(2):188-90. PMID: 425963.
3. Dragan V, Wei L, Elligsen M, et al. Prophylactic antimicrobial therapy for acute aspiration pneumonitis. *Clin Infect Dis.* 2018 Feb 9;[Epub ahead of print]. PMID 29438467
4. Mandell LA, Niederman MS. Aspiration Pneumonia. *N Engl J Med.* 2019 Feb 14;380(7):651-663.

## What's Hot in the Micro Lab: BioFire Blood Culture Identification

Introducing....

### BioFire Blood Culture Identification (BCID) Panel



- 1 Takes a positive blood culture bottle
- 2 Runs rapid, multiplex PCR for:
  - Gram + Bacteria**
    - Enterococcus
    - *Listeria monocytogenes*
    - *Staphylococcus* spp.
    - *S. aureus*
    - *Streptococcus* spp.
    - *S. agalactiae* (group III)
    - *S. pneumoniae*
    - *S. pyogenes* (group A)
  - Gram - Bacteria**
    - *Acinetobacter baumannii*
    - *Haemophilus influenzae*
    - *Neisseria meningitidis*
    - *Pseudomonas aeruginosa*
    - Enterobacteriaceae
      - *Enterobacter cloacae*
      - *Escherichia coli*
      - *Klebsiella oxytoca*
      - *Klebsiella pneumoniae*
      - *Proteus* spp.
      - *Serratia marcescens*
  - Resistance Genes**
    - *mecA* - methicillin resistance
    - *vlaA/B* - vancomycin resistance
  - Resistance Genes**
    - *KPC* - carbapenem resistance
- 3 Provides prelim ID in 2 hrs (instead of 24+ hrs for MALDI-TOF)
- 4 Actionable!

Overall:  
98% sensitive  
99% specific

Questions? Email [ucdavisASP@gmail.com](mailto:ucdavisASP@gmail.com)

**Go Live Date: March 2019**

Will be performed on all positive blood cultures, will not require an order

## Test Your Knowledge

Would you like to win a \$10 gift certificate to the sunshine café? Complete the following post-newsletter quiz and submit to [ucdavisASP@gmail.com](mailto:ucdavisASP@gmail.com) to be entered into a raffle for a free lunch!

A 63-year-old female with Type II diabetes is hospitalized for acute kidney injury and hyperglycemia secondary to viral gastroenteritis. Aside from a + MRSA nasal swab her admission labs are otherwise unremarkable. On hospital day 4, after resolution of her kidney injury and gradual improvement in her GI symptoms, she sundowns overnight. During the ensuing period of delirium she has a significant aspiration event. She is placed on supplemental oxygen via nasal cannula, a CXR is performed revealing multifocal infiltrates, but she remains otherwise hemodynamically stable and afebrile.

1. What empiric antibiotics should be initiated at this time?
  - a. Ceftriaxone + Doxycycline for possible CAP
  - b. Cefepime + Vancomycin for possible HAP
  - c. Cefepime + Vancomycin + Metronidazole for possible HAP and anaerobic coverage
  - d. None. Observe patient and manage symptomatically.

2. True or False: the presence of extensive pulmonary involvement on x-ray is an indicator of bacterial infection as an aspiration pneumonitis would be limited to one or two dependent lobes depending on position at time of aspiration.

3. The patient's delirium continues overnight. Morning labs reveal a mild leukocytosis (11.2), her morning temperature is 38.2 Celsius, and she has a mild tachycardia of 98 bpm. Her blood pressure is slightly decreased from her normotensive baseline, currently 108/72. What empiric antibiotics should be initiated at this time if not started previously?

- a. Ceftriaxone + Doxycycline for possible CAP
- b. Cefepime + Vancomycin for possible HAP
- c. Cefepime + Vancomycin + Metronidazole for possible HAP and anaerobic coverage
- d. None. Observe patient and manage symptomatically.

4. The following day the patient's altered mental status resolves. She remains afebrile with no further tachycardia. By the following morning (approximately 36 hours after her aspiration event) she is back on room air with a pulse ox of 95%. She is tolerating her antibiotics well, and aside from a non-productive cough has no complaints. How long should her empiric antibiotics be continued?

- a. Stop them now as she has significantly clinically improved within 48 hours of the aspiration event
- b. Complete a 5 day course for uncomplicated CAP
- c. Complete a 7 day course for uncomplicated HAP
- d. Complete a 10-14 day course for funsies

## ASP Gold Star Winners for January 2019



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

Jonah Stein

Flora Stondell

Amy Nitta

Dominique Letsinger

Rachelle Firestone



## Meet the Stewardship Team



Dr. Natasha Nakra has been on faculty in the Department of Pediatrics at UCD since 2013 and recently took over as the medical director of Pediatric Antimicrobial Stewardship. She completed her fellowship in pediatric infectious disease at Albert Einstein before moving to Sacramento. Her research interests include: the development of antibiotic guidelines/pathways to improve antibiotic use, and the impact of Antimicrobial Stewardship Programs on reducing antibiotic utilization and resistance. In her spare time, she enjoys reading, running, and chasing her kids.

## Fun Microbe Fact

The 1918 influenza pandemic was so severe that from 1917 to 1918, life expectancy in the United States fell by about 12 years, to 36.6 years for men and 42.2 years for women. There were high death rates in previously healthy people, including those between the ages of 20 and 40 years old, which was unusual because flu typically hits the very young and the very old more than young adults.

## Contact Us

The Antimicrobial Stewardship Program Team Members

Adult ASP Physicians:

- Stuart Cohen, MD
- Jay Solnick, MD
- Archana Maniar, MD
- Sarah Waldman, MD

- Jill Ahrens, MD
- Scott Crabtree, MD
- Christian Sandrock, MD
- Larissa May, MD

Pediatric ASP Physicians:

- Natasha Nakra, MD
- Jean Wiedeman, MD
- Ritu Cheema, MD
- Elizabeth Partridge, MD

ASP Pharmacists:

- Monica Donnelley, PharmD
- Nicola Clayton, PharmD
- Wes Hoffmann, PharmD
- Matthew Davis, PharmD

**Antibiotic questions? Contact us.**

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

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