

“Optimizing Antimicrobial Therapy with Timeouts”: An online course for prescribers

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STANFORD
UNIVERSITY

OPTIMIZING ANTIMICROBIAL THERAPY WITH TIMEOUTS

ONLINE CME / CPE COURSE

Internet Enduring Material Jointly Provided by Stanford University School of Medicine (CME) and Tufts University School of Medicine (CPE). Presented by The Division of Infectious Diseases and Geographic Medicine at Stanford University School of Medicine

Dr. Arjun Srinivasan (CAPT, USPHS)



2 hours CME: free CPE: \$15

[VIEW UNIT IN STUDIO](#)[Introduction](#)

MODULE 1. Empiric Antibiotic Therapy

Test Your Knowledge

Test Your Knowledge



Introduction to Case Approach to Antibiotic Time Out

[MODULE 2. Antibiotic Timeout Cases](#)[Course Wrap-up](#)[Resources and References](#)[Help!](#)

Antimicrobial Time Out



Introduction

Dr. Stan Deresinski

> Clinical Professor of Medicine at Stanford University

> Medical Director of the Antimicrobial Stewardship Program



Stanley E. Deresinski MD, FACP

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[STAFF DEBUG INFO](#)

▶ Introduction

▶ MODULE 1. Empiric Antibiotic Therapy

▶ **MODULE 2. Antibiotic Timeout Cases**

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated Pneumonia

Case 5. Febrile Neutropenia

▶ Course Wrap-up

▶ Resources and References

▶ Help!

VIEW UNIT IN STUDIO

If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)

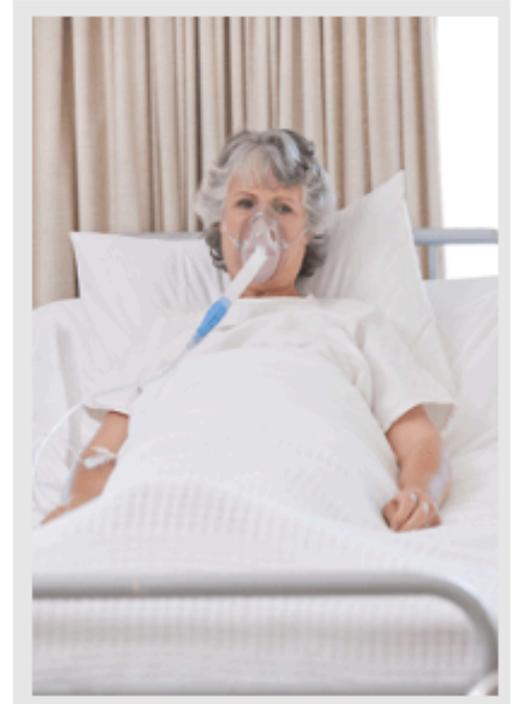
Case 1. Pneumonia



Patient History

AJ is a 68 year-old female with a past medical history of chronic obstructive pulmonary disease, hypertension, and diabetes mellitus who presented to the emergency room in respiratory distress.

Her husband reported that she had been ill for several days prior to admission and had just started a course of azithromycin prescribed by her primary physician for community-acquired pneumonia yesterday.



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MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!

Case 1. Pneumonia

Do you agree with the initial antibiotic selection?

- A. Yes, because she failed her outpatient regimen.
- B. No, I would have started ceftriaxone and azithromycin OR ceftriaxone and levofloxacin.
- C. No, I would have started levofloxacin and vancomycin.
- D. No, I would have started cefepime, azithromycin, and vancomycin.

After details of history and physical exam, learner asked to critique initial antimicrobial selection.



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MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!

Case 1. Pneumonia

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Answer:

The correct answer is B.

This patient most likely has community-acquired pneumonia (CAP.) The Infectious Diseases Society of America (IDSA) guidelines for CAP (which are also under review) recommend that patients admitted to the ICU receive a **beta-lactam** (cefotaxime, ceftriaxone or ampicillin-sulbactam) *plus* either a **fluoroquinolone or azithromycin**.

Answer continues with review of relevant aspects of IDSA guidelines



If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)

MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!



Step 1



Step 2



Step 3



Step 4

Case 1. Pneumonia

Take an Antibiotic Time Out (ATO)

You are rounding on AJ ~ 48 hours after her admission. There are four basic steps to the ATO:

Step 1. Review the data.

Step 2. Reassess antibiotics.

Step 3. Determine the duration of antibiotic therapy necessary.

Step 4. Document your decision.



If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)

MODULE 1. Empiric Antibiotic Therapy

MODULE 2. Antibiotic Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!



Step 1



Step 2



Step 3

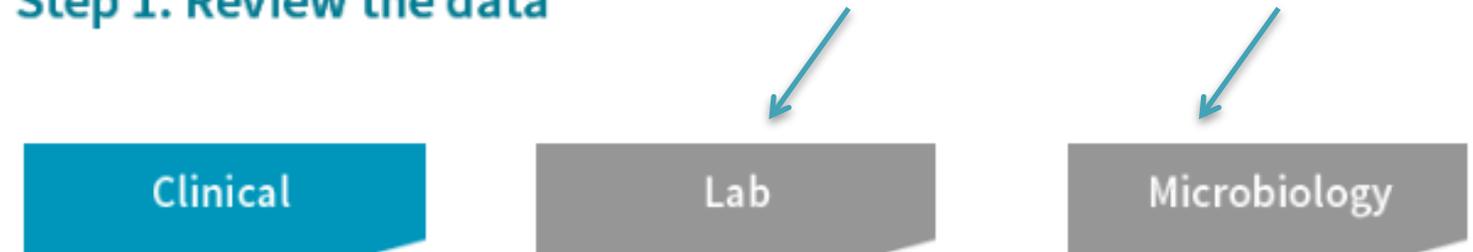


Step 4



Case 1. Pneumonia

Step 1. Review the data



Respiratory Status

- Patient was extubated 36 hours after admission to the ICU and shows no signs of respiratory distress.

Vital Signs

- She has been afebrile for the last 24 hours and she never required blood pressure support.

Notes

Her current diet is clear liquids and she is receiving her cardiac medications only. Given her improvement she has been moved from the ICU to a general medical unit.



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MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!



Step 1



Step 2



Step 3



Step 4



Case 1. Pneumonia

Step 1. Review the data

Clinical

Lab

Microbiology

Blood cultures: no growth at 48 hours
Sputum culture: Gram Stain shows moderate polymorphonuclear cells, few gram-positive cocci and few gram-negative rods

- 2+ *Streptococcus pneumoniae*
Penicillin G MIC = 0.5 mcg/ml (S)
- 1+ mixed normal flora
Levofloxacin MIC \leq 2 mcg/ml (S)
Ceftriaxone MIC \leq 1 mcg/ml (S)
Erythromycin MIC = 2 mcg/ml (R)
Co-trimoxazole \leq 0.5 mcg/ml / 9.5 mcg/ml (S)
Vancomycin \leq 1 mcg/ml (S)

Urine legionella antigen: negative



MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!

If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)



Step 1



Step 2



Step 3



Step 4



Case 1. Pneumonia

Step 2. Reassess antibiotics

1. Does the patient have an infection that is likely to be effectively treated with antibiotics?
2. If so, is the patient receiving the:
 - ⇒ right targeted antibiotic?
 - ⇒ right dose?
 - ⇒ via the right route of administration?

Based upon the clinical, radiologic and microbiologic data, you make a diagnosis of community-acquired pneumonia due to *Streptococcus pneumoniae*.



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MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!



Step 1



Step 2



Step 3



Step 4



Case 1. Pneumonia

Step 2. Reassess antibiotics

Given her clinical course and diagnosis, how would you address her antibiotic therapy? (CrCl= 90 ml/min using the Cockcroft-Gault equation and she has stable renal function)

- A. Continue current therapy.
- B. Discontinue piperacillin-tazobactam, vancomycin; continue levofloxacin 750mg IV daily.
- C. Discontinue piperacillin-tazobactam, vancomycin, levofloxacin; start levofloxacin 750mg PO daily.
- D. Discontinue all antibiotics.

Answer:

The correct answer is 'C.' Click the 'next' arrow to proceed for a video that provides further explanation of the antibiotic decision in this case.



MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!

If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)

Step 1

Step 2

Step 3

Step 4



Switching
from IV to Oral
Antibiotics



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If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)

MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!



Step 1



Step 2



Step 3



Step 4



Case 1. Pneumonia

Step 3. Determine the duration of antibiotic therapy

The necessary length of antibiotic therapy for AJ is:

- A. Complete a 14-day course
- B. Complete a 21-day course
- C. Complete a 10-day course
- D. Complete a 5-day course

Answer:

The correct answer is 'D.'

This patient improved clinically within 48 hours of admission and had no CAP-associated signs of clinical instability at the time of the Antibiotic Time Out. Thus, a 5-day course of therapy is appropriate.



MODULE 1. Empiric
Antibiotic Therapy

MODULE 2. Antibiotic
Timeout Cases

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated
Pneumonia

Case 5. Febrile Neutropenia

Course Wrap-up

Resources and References

Help!

If your browser does not support iframes, you can access directly at: [Case 1 Antibiotic Time Out](#)



Step 1



Step 2



Step 3



Step 4



Review

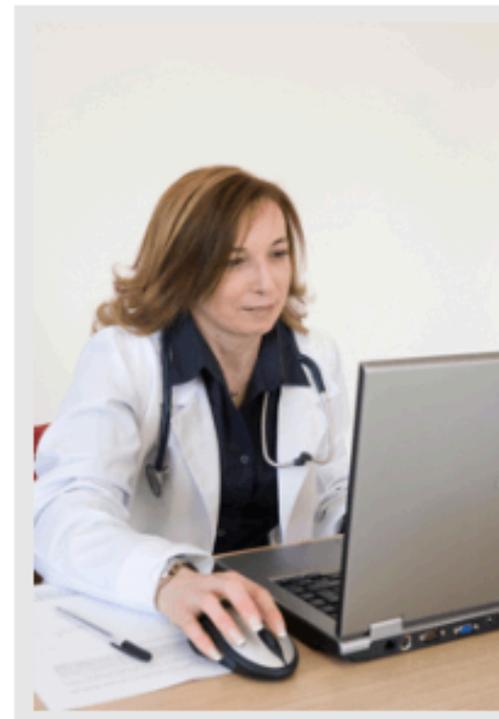


Case 1. Pneumonia

Example of note

Step 4. Document your Decision

Patient has clinically improved since admission and is currently near her baseline respiratory status. She was admitted with a diagnosis of severe community-acquired pneumonia and her admission sputum cultures have grown a fluoroquinolone susceptible *Streptococcus pneumoniae*. She is currently taking her cardiac medications orally and thus is a candidate for oral antibiotic therapy. We will discontinue her empiric antibiotic regimen and start levofloxacin 750 mg PO qdaily to complete a 5-7 day course if patient continues to improve. She has never been vaccinated against pneumococcal infection, thus we will administer PCV-13 prior to her discharge and instruct her to return to her PCP in ≥ 12 months for PPSV-23. We will also administer the seasonal influenza vaccine prior to discharge.



▶ Introduction

▶ MODULE 1. Empiric Antibiotic Therapy

▶ **MODULE 2. Antibiotic Timeout Cases**

Case 1. Pneumonia

Case 2. UTI

Case 3. Non-purulent Cellulitis

Case 4. Ventilator-Associated Pneumonia

Case 5. Febrile Neutropenia

▶ Course Wrap-up

▶ Resources and References

▶ Help!

Each case highlights stewardship issues

Case 2. UTI

- review IDSA guidelines for management of CAUTIs
- Bug-drug mismatch, ESBL organism
- Practical application of pharmacodynamics: UTIs

Case 3. Non-purulent cellulitis

- Review IDSA guidelines for management of SSTIs
- Mimics of cellulitis

Case 4. VAP

- Review of IDSA guidelines for HCAP
- Illustrate vancomycin dosing and extended-infusion administration for beta-lactams
- Procalcitonin

Case 5. Febrile neutropenia

- Review of IDSA guidelines for febrile neutropenia
- Extended spectrum gram positive agents and antifungals

Future work

- We are developing another online course targeting outpatient prescribers – expected release Spring 2016
- Updating “Antimicrobial Stewardship: Optimization of Antibiotic Practices” – expected release Fall 2016

