Start, Stop, Shorten, or Switch? Practical Antibiotic Decisions for Primary Care

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Disclosure

I have no financial interests or relationships to disclose.

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Start, Stop, Shorten or Switch

- Idea is to examine meaningful antibiotic-related issues and resources for select outpatient conditions
- Remember, each syndrome is normally a hour long CME talk, here we will emphasize a specific aspect of antibiotic care and then move on

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The Five D's of Antimicrobial Stewardship

- Drug
- Dose
- Duration
- De-escalation
- Diagnosis

Emerg Med Clin North Am 2018;36(4):853

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34-year-old Man

- URI was getting better now has 4 days of purulent nasal drainage, congestion and headache
- Has tried decongestants and sinus irrigation
- Otherwise, healthy, no recent antibiotics
- You decide to treat with amoxicillin/clavulanate

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ARS Question #1

How Long Will You Treat?

A. 3 days
B. 5-7 days
C. 10-14 days
D. 21 days
E. I would not have prescribed an antibiotic

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Watchful Waiting off Antibiotics
An Option for Initial Management of Uncomplicated ABRS

Statement 4: Initial Management of Acute Bacterial Rhinosinusitis (ABRS)

Clinicians should offer watchful waiting (without antibiotics) for adults with uncomplicated ABRS with assurance of follow-up. The duration of watchful waiting may depend on the factors and timing under which the diagnosis was originally made.

- Basis: placebo controlled antibiotic trials, delayed prescribing trials
- Exceptions: complicated sinusitis, immune deficiency, coexisting bacterial illness, inability to follow-up, "other" factors
- Approach: 3-5 day watchful waiting period from time of diagnosis, start antibiotics if fails to improve or gets worse

Otolaryngology–Head and Neck Surgery 2025, Vol. 173(S1) S1–S56

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IDSA 2012 Guidelines

X. Should Empiric Antimicrobial Therapy for ABRS Be Administered for 5–7 Days Versus 10–14 Days?

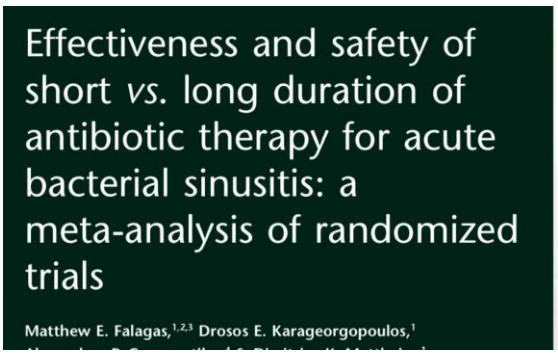
Recommendations

14. The recommended duration of therapy for uncomplicated ABRS in adults is 5–7 days (weak, low-moderate).

ENT 2025 Guidelines

Statement 5. Choice and Duration of Antibiotic for Acute Bacterial Rhinosinusitis (ABRS)

If a decision is made to treat ABRS with an antibiotic agent, the clinician should prescribe amoxicillin with or without clavulanate as first-line therapy for 5-7 days for most adults.



12 RCT studies
3-7 days vs 6-10 days
No difference
Efficacy
Microbiologic efficacy
Relapse rates
Adverse effects
When 5 days compared to 10 days
Less adverse effects in 5 day group

Duration — We suggest an initial antibiotic treatment course of five to seven days. We typically give a prescription for seven days but inform patients they can stop after five days if symptoms have improved. Available evidence suggests that response rates with this duration are similar and associated with fewer adverse events than longer courses [3,4]

UpToDate Uncomp ABRS

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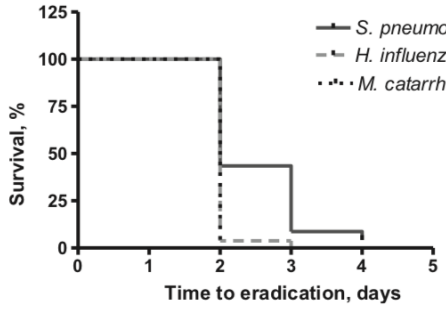

Figure 4. Time to bacterial eradication from the maxillary sinus in patients with acute bacterial rhinosinusitis (ABRS) following initiation of therapy with respiratory fluoroquinolones (N = 50; multiple pathogens were isolated from some patients) [22, 143, 192].

Clin Inf Dis 2012;54(8):e52

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Antibiotic Therapy Duration in US Adults With Sinusitis

Laura M. King, MPH[1]; Guillermo V. Sanchez, PA-C, MPH[1]; Monina Bartoces, PhD[1]; et al

» Author Affiliations | Article Information

JAMA Intern Med. 2018;178(7):992-994. doi:10.1001/jamainternmed.2018.0407

- 70% of courses were 10 days or longer
- When azithromycin scripts (24% of all) were excluded
  - 92% of courses were 10 days or longer
  - 7.6% were for 7 days
  - 0.5% were for 5 days
- No penicillins or tetracyclines were for 5-day courses
- Only 5% of courses were for a 7 day course of a penicillin, tetracycline, or fluoroquinolone

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When Is Sinusitis Not Uncomplicated?

- Comorbidities
  - Immunocompromised, facial trauma, surgery, odontogenic
- Nonstandard pathogens/drug resistance
- Complications of sinusitis
  - Soft tissue, orbital, intracranial
- Frontal, ethmoid?
  - Most discussions focus on maxillary sinusitis

Follow-up no later than the 5 day mark. Lack of treatment response or worsening during therapy suggests drug resistance, anatomic or other complicating issue, or the wrong diagnosis.

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68-year-old Woman

- COPD, usually well controlled
- Increased sputum amount and purulence
- Using Oxygen more than normal
- CXR is clear
- You prescribe doxycycline for suspected acute exacerbation of COPD

ARS Question #2

How Long Will You Treat?

A. 3 days
B. 5 days
C. 7 days
D. 10 days
E. I would not have prescribed an antibiotic

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Global Initiative for Chronic Obstructive Lung Disease **2025 REPORT**

- Antibiotics should be used for COPD exacerbations when
  - 3 cardinal symptoms present: increase in dyspnea, sputum volume, and sputum purulence or 2 of these if increased purulence is one
  - Mechanical ventilation (invasive or noninvasive)
- Choice of empiric therapy
  - Amoxicillin/clavulanate, macrolide, doxycycline or in selected pts, quinolone
  - Based on local antibiotic resistance and recency of use
  - Duration for outpatient AECOPD: ≤ 5 days

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Clinical Guidelines | June 2021

Annals Int Med 2021;174(6):822

Appropriate Use of Short-Course Antibiotics in Common Infections: Best Practice Advice From the American College of Physicians

Best Practice Advice 1:

Clinicians should limit antibiotic treatment duration to 5 days when managing patients with COPD exacerbations and acute uncomplicated bronchitis who have clinical signs of a bacterial infection (presence of increased sputum purulence in addition to increased dyspnea, and/or increased sputum volume).

Chronic obstructive pulmonary disease

Short-course antibiotic treatment in acute exacerbations of chronic bronchitis and COPD: a meta-analysis of double-blind studies

R El Moussaoui [1], B M Roede [1], P Speelman [1], P Bresser [2], J M Prins [1], P M M Bossuyt [3]

Dr B M Roede, Academic Medical Center, University of Amsterdam, Department of Internal Medicine, Division of Infectious Diseases, Tropical Medicine and AIDS, Room F4-217, Meibergdreef 9, 1105 AZ Amsterdam, The Netherlands; i.roede@amc.uva.nl

Thorax 2008;63(5)415-22:

Pulm Pharmacol Ther 2022;72:102111

Are short courses of antibiotic therapy as effective as standard courses for COPD exacerbations? A systematic review and meta-analysis

Carl Llor [1], Ana Moragas [2], Marc Miravitlles [3], Patrick Mesquita [4], Gloria Cordoba [5]

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2025 ATS CAP Clinical Practice Guideline

- Antibiotic duration for CAP
  - "For adult outpatients with CAP who reach clinical stability, we suggest less than 5 days of antibiotics (minimum of 3 days duration) rather than five or more days of antibiotics. This is a conditional recommendation that requires individualization. Overall the committee's certainty in the quality of the evidence was low."

Comment: Guideline is not for patients with immunocompromise. Four studies are cited to support this recommendation using antibiotics and doses that are not considered appropriate treatment by the IDSA/ATS. Reader is referred to Table 1 for individual patient factors that strengthen or weaken recommendations.

Am J Respir Crit care Med 2025 Jul 18.

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2025 ATS CAP Guideline. Table 1 Excerpt

		Strengthen	Weaken
3. Antibiotic duration for CAP			
For adult outpatients with CAP who reach clinical stability*, we suggest less than five days of antibiotics (minimum of 3 days duration), rather than five or more days of antibiotics. The duration of antibiotics should be determined based upon daily assessment of clinical stability.	Conditional Low-quality evidence	Higher risk of harm from prolonged antibiotic exposure (History of *C.* difficile, or an antibiotic adverse event) Patient preference to minimize antibiotic exposure	Barriers to self assessment, follow-up, or communication to ensure recovery Organism requiring longer duration (i.e., *Staphylococcus aureus, Pseudomonas aeruginosa*, suspected *Legionella pneumophila* or other intracellular microorganisms)** Radiographic findings (high burden of disease, necrotizing process, dense consolidations) Underlying lung disease (e.g., bronchiectasis, post-obstructive pneumonia, chronic respiratory insufficiency**) Recent Hospitalization or resident in Long-term care**

Am J Respir Crit care Med 2025 Jul 18.

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Carolina Antimicrobial Stewardship Program

med.unc.edu/casp

Best Practices for Duration of Antimicrobial Therapy for the Most Common Infectious Syndromes

Too often, patients receive longer-than-needed antimicrobial treatment for common infections, when a shorter duration would be equally effective.

Duration recommendations are provided as a general guideline for therapy (IV or PO) with a goal of minimizing unintended consequences to the patient (e.g., precipitating *C. difficile* colitis, development of resistant pathogens, organ dysfunction). Patient-specific factors should influence duration decisions and transition to oral therapy.

SYNDROME	DURATION	COMMENTS	EVIDENCE
Lower respiratory tract infection			
Acute bronchitis	0 days (do not treat, 90% of cases are viral)		
Tracheitis	0 days (do not treat, treatment is not associated with clinical benefit)		
Community-acquired (CAP)	5 days minimum	Consider IV to PO switch if patient <38°C for 48-72 hours and no more than 1 CAP-associated sign of clinical instability	CAP, IDSA (CID 2007;4(S2):S27
Hospital-associated (HAP)	7 days		HAP/VAP, IDSA (CID 2016;63:e61)
Ventilator-associated (VAP)	7 days		
Acute exacerbation of COPD and chronic bronchitis	5 days	Reserve antibiotics for patient with acute exacerbation with physiologic compromise on top of chronic bronchitis or for COPD for patients with physiologic compromise, and worsening sputum purulence and either increased dyspnea or frequency of cough.	Bronchitis/COPD, HEDIS (link), Am Fam Physician 2016; 94:560-65.

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Skin and Soft Tissue			
Cellulitis and/or cutaneous abscesses (e.g., boils/furuncles)	5 days	All fluid collections and abscesses should be drained/debrided. Antibiotic therapy may not be needed for cutaneous abscess without surrounding cellulitis.	IDSA (CID 2014;59:e10-e52)
Urinary Tract			
Asymptomatic bacteriuria	0 days	Do not treat unless patient is pregnant or undergoing urologic procedure or manipulation.	IDSA (CID 2019;see IDSA web page)
Cystitis	5 days, nitrofurantoin 3 days, TMP/SMX 1 day, fosfomycin 4-7 days, oral beta-lactam		IDSA (CID 2011;52:e103e120) Local guideline: UTI CASP Resources | Carolina Antimicrobial Stewardship Program
Pyelonephritis	5-7 days, ciprofloxacin or levofloxacin 7 days, other therapies	Source control if appropriate; remove or replace urinary catheters.	IDSA e-published 7/2025 https://www.idsociety.org/practice-guideline/complicated-urinary-tract-infections/

Infectious Diseases consultation recommended if diagnosis is not established or if patient does not respond to recommended therapies.
These recommendations may not be appropriate for patients with significant immunocompromise (e.g., recent burn, transplant, or hematologic cancer).

Developed by Carolina Antimicrobial Stewardship Program
Approved by UNCMC Anti-infective P&T Subcommittee Feb 2026

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Shorter Is Better

Diagnosis	Short (d)	Long (d)	Result	#RCT
CAP	3-5	5-14	Equal	15
Atypical CAP	1	3-7	Equal	3
Possible PNA in ICU	3	14-21	Equal	1*
VAP	5-8	10-15	Equal	3
Empyema	14-21	21-42	Equal	2
Cystic Fibrosis Exacerbation	10-14	14-21	Equal	1
cUTI/Pyelonephritis	5 or 7	10 or 14	Equal	13
Intra-abd Infection	4	8-10	Equal	3
Complex Appendicitis	1-2	5-6	Equal	2
Bacteremia (non *S. aureus*)	7	14	Equal	5**
Cellulitis/Wound/Abscess	5-6	10	Equal	4†
Osteomyelitis	42	84	Equal	2
Osteo Removed Implant	28	42	Equal	1
Debrided Diabetic Osteo	10-21	42-90	Equal	2‡
Septic Arthritis	14	28	Equal	1
Bacterial Meningitis (peds)	4-7	7-14	Equal	6
AECB & Sinusitis	≤5	≥7	Equal	>25
Variceal Bleeding	2-3	5-7	Equal	2
Neutropenic Fever	AFx48-72h	+ANC>500/9 d	Equal	4
Post Op Prophylaxis	0-1	1-5	Equal	57φ
Erythema Migrans (Lyme)	7-10	14-20	Equal	3
Mediterranean Spotted Fever	1	5-10	Equal	4ϓ
P. vivax Malaria	1 or 7	14	Equal	2ϖ
Strongyloides GI Infection	1	4	Equal	1
Albendazole→Neurocysticercosis	7	14-28	Equal	3θ
Early Syphilis	1 IM	3 IM in 3 wks	Equal	2
Total: 26 Conditions				166 RCTs

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Key Points: Duration of Therapy

- For many uncomplicated outpatient infections, shorter durations are well studied, and should be used
- Residual signs and symptoms of inflammation persist long after microbe eradication, but do not call for more antibiotics
- Because there is no one size fits all for antibiotics, use the many tools available for short term follow up to assure the clinical trajectory and duration are appropriate

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Home from the Hospital! 52-year-old Woman with Bacteremia

Past history of uterine fibroids, otherwise healthy.
Multiple supplements protein, immune and bone health
Admitted with fever, dysuria, flank pain.
Urine and blood cultures grow *E. coli,* resistant to TMP/SMX but otherwise susceptible.
Started on ceftriaxone. Hospital day 2 improved.
Discharged day 3 with levofloxacin to finish 7 days.

ARS Question #3

How Can We Be the Best Antibiotic Steward for This Patient?

A. Do a detailed medication reconciliation
B. Order repeat renal US to make sure oral therapy is working
C. Call the hospitalist, stop the quinolone and change to IV ceftriaxone
D. Call the pharmacy, stop the quinolone and change to oral nitrofurantoin

Chavada *et al. BMC Infectious Diseases* (2018) 18:225
https://doi.org/10.1186/s12879-018-3147-0

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

'Careful goodbye at the door': is there role for antimicrobial stewardship interventions for antimicrobial therapy prescribed on hospital discharge?

R. Chavada[1*], J. Davey[2], L. O'Connor[2] and D. Tong[3]

263 Antibiotic Discharge Scripts Over a 4-week Period

- 74% Appropriate choice
- 64% Appropriate dose
- 64% Appropriate frequency
- 21% Appropriate duration (71% were too long)
- 50% Appropriate micro specimens taken
- 18% Directed therapy based on susceptibility testing

How Would Your Facility Fare?

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Review

Revisiting Oral Fluoroquinolone and Multivalent Cation Drug-Drug Interactions: Are They Still Relevant?

Stuart K. Pitman [1,2,*], Uyen T. P. Hoang [1], Caren H. Wi [1], Mona Alsheikh [1], Dakota A. Hiner [1] and Kelly M. Percival [2]

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Oral fluoroquinolone-multivalent cation drug-drug interactions first came into focus in the latter half of the 1980s as detailed in several case reports, drug-drug interaction studies, and reviews. Today, oral fluoroquinolone-multivalent cation interactions are firmly established. However, unawareness among the healthcare team, perhaps due to the passage of time or due to the presence of drug-interaction-electronic-alert fatigue, may allow for many of these interactions to undergo suboptimal review or even persist unnoticed [9]. This concise and focused review describes the oral fluoroquinolone-multivalent

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Pharmacokinetics vs Pharmacodynamics

- Bioavailability
  - Levofloxacin 99%
  - Moxifloxacin 89%
  - Ciprofloxacin 70%
  - Delafloxacin 59%

Rate and extent to which the active ingredient or active moiety is absorbed from a drug product and becomes available at the site of drug action

- Concentration dependent killing
  - AUC/MIC ratio
  - $C_{MAX)}$/MIC ratio

What does this mean to the clinician? We have to make sure that quinolones are dosed properly and taken properly to optimize AUC and C_{MAX}

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Table 1. Reported area under the concentration-time curve (AUC) and peak concentration (Cmax) alterations with co-administered oral fluoroquinolone-multivalent cation pairs [17,19–21].

Fluoroquinolone	Cation	Mean Reduction in AUC Compared to Quinolone Alone	Mean Reduction in Cmax Compared to Quinolone Alone
Ciprofloxacin	Aluminum with Magnesium	85%	80%
	Aluminum	85%	81%
	Sucralfate	88% [a]	90–96% [a]
	Calcium [b]	41[c]–42%	38[c]–47%
	Iron Preparations [d]	42–64%	33–57%
	Multivitamin Preparation Containing Zinc, Magnesium, Calcium, Manganese, Copper, and Iron	52%	53%
	Multivitamin Preparation Containing Zinc and Copper	23%[e]	Not tested
Levofloxacin	Aluminum Hydroxide	44%	65%
	Magnesium Oxide	22%	38%
	Ferrous Sulfate	19%	45%
	Calcium Carbonate	3%	23%
Moxifloxacin	Sucralfate[f]	60%	71%
	Aluminum Hydroxide and Magnesium Hydroxide	59%	61%
	Ferrous sulfate[g]	39%	59%
	Calcium[h]	3%	16%

Antibiotics 2019;8(3):108

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Table 3. Manufacturer-recommendation dose spacing.

Oral Drug	Administration Recommendation Per Prescribing Information
Delafloxacin [23]	Administer delafloxacin at least 2 h before or 6 h after antacids containing magnesium, or aluminum, with sucralfate, with metal cations such as iron, or with multivitamin preparations containing zinc or iron
Moxifloxacin [35]	Administer moxifloxacin tablets at least 4 h before or 8 h after antacids containing aluminum or magnesium, with sucralfate, with metal cations such as iron, or with multivitamins containing iron or zinc
Ciprofloxacin [37] *	Administer ciprofloxacin at least 2 h before or 6 h after magnesium/aluminum antacids; sucralfate; multivitamin preparations with zinc; or other products containing calcium, iron or zinc
Levofloxacin [38] **	Administer levofloxacin at least 2 h before or 2 h after antacids containing magnesium, aluminum, as well as sucralfate, metal cations such as iron, and multivitamin preparations with zinc

* Applies to both the immediate and extended release tablets; also applies to the oral suspension. ** Applies to both the tablet and oral solution formulations.

Antibiotics 2019;8(3):108

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Fluoroquinolones and Multivalent Cations

Management Options

1. Space out the quinolone and cation to avoid interaction
2. Temporarily stop, substitute, or decrease the cation
3. Select a different antibiotic, keep the cation
4. Give the fluoroquinolone IV

- Recognize the interaction by doing a good medication history beyond the EHR
- Individualize the management strategy for home, SNF, inpatient

Antibiotics 2019;8(3):108

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Key Points: Why I Present This Case

- Pressure is on clinicians to decrease quinolone use
  - Means that when we use them, the stakes are often higher with less margin for error like early IV/po switch, bacteremia, resistant organism
  - Most of you have greatly increased your doxycycline prescribing – similar interactions are present for tetracycline and doxycycline
- Clinician responsibility - not the EHR - is to assure that antibiotic dose and delivery is individually optimized
  - High bioavailability in theory is only as good as it is today in an individual patient

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78-year-old Man

- Treated for Herpes zoster of his left flank with valacyclovir 1 gram po TID x 10 days
- At day 6 he presents with dyspnea and edema
- Zoster lesions are in various stages of active/healing
- Scr 4.6 mg/dL (baseline 1.8 mg/dL)

ARS Question #4

Critique?

A. Not the best choice
B. Not the best dose
C. Not the best monitoring
D. B and C

Acyclovir and Herpes

- Acyclovir EC_{50} for VZV is ~ 10-fold greater than HSV
  - Antiviral dosing for VZV is much higher than for HSV
- Bioavailability
  - Acyclovir 15-30%, Valacyclovir 54%
  - AUC_8 valacyclovir 1gm po TID ~ acyclovir 5mg/kg IV q8h
- Renal
  - Dose adjustment needed in renal impairment
  - Toxicity is crystalline nephropathy or AIN, rapid (12-48h) and severe

Antiviral Therapy of HSV-1 and HSV-2, Kimberlain DW and Whitley RJ. Human Herpesviruses:Biology, Therapy and Immunoprophylaxis, 2007

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Acute kidney injury and acyclovir-associated encephalopathy after administration of valacyclovir in an elderly person with normal renal function

A case report and literature review

Valacyclovir-associated acute kidney injury and encephalopathy in an elderly woman with normal kidney function: a case report

Concurrent Nephrotoxicity and Neurotoxicity Induced by Oral Valacyclovir in a Patient With Previously Normal Kidney Function

ORIGINAL ARTICLE: ACUTE KIDNEY INJURY AND ICU NEPHROLOGY

Associations between Different Antivirals and Hospital-Acquired Acute Kidney Injury in Adults with Herpes Zoster

Literature Finally Catching Up!

Medicine (Baltimore) 2021;100(21): e26147;CEN Case Reports 2023;12:221-25; Clin J Amer Soc Nephro 2024;19(6):694-703; Cureus 2022;14(3):e23693

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Let's Discuss the Red Flags in a "Simple" Case of Shingles

78-year-old Man

- Treated for Herpes zoster of his left flank with valacyclovir 1 gram po TID x 10 days
- At day 4 he presents with dyspnea and leg edema
- Zoster lesions are in various stages of active/healing
- Scr 4.2 mg/dL (baseline 1.8 mg/dL)

Turns out there is nothing simple about it

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Valacyclovir

- Dose adjust, hydrate, stop optional nephrotoxic meds, and even if baseline renal function is normal
- FOLLOW the clinical and Scr responses

Table 1 Dosage Adjustments for Adults Renal Insufficiency

	Creatinine Clearance(mL/min)			
	≥ 50	30 to <50	10 to <30	< 10
Herpes Zoster	1000 mg every 8 hours†	1000 mg every 12 hours	1000 mg every 24 hours	500 mg every 24 hours

Acute renal failure: May occur in elderly patients (with or without reduced renal function), patients with underlying renal disease who receive higher-than-recommended doses of VALTREX for their level of renal function, patients who receive concomitant nephrotoxic drugs, or inadequately hydrated patients. Use with caution in elderly patients and reduce dosage in patients with renal impairment. (2.4, 5.2)

Valacyclovir Package Insert 12/2019 accesed at clinicalinfo.hiv.gov

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69-year-old Man

- Successful FMT 2 months ago for highly debilitating recurrent *C.difficile* infection (8 total bouts)
- Scheduled for elective cardiac device procedure
- Standard peri-procedure antibiotic is single dose IV cephalosporin
- He calls you – mortified – that he will be getting an antibiotic

ARS Question #5

What Could Be Done?

A. Nothing, too late, Epic has him in it's web of templates, protocols, standing orders
B. Call GI, get another MRT ready
C. Call cardiology and GI, maybe even ID, and discuss options

CDI Therapeutics

- Focus is on strategies to decrease recurrence risk
- Guidelines have
  - Emphasized fidaxomicin over vancomycin when affordable
  - Shifted away from metronidazole nearly completely
- Earlier use of microbiome restoration therapies (MRT), aka FMT aka fecal transplant in managing recurrent CDI

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Risks for Recurrent CDI

- Age > 65
- Immunocompromised
- Severity of CDI episode
  - Predicts future events
- History of CDI
  - 20% will get a second bout
  - Half of these will get another…

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Early Antibiotic Exposure After FMT

- 349 patients who underwent FMT
  - 12.6% overall failure rate
  - Early antibiotic use (within 8 weeks) was strongest predictor of FMT failure (OR 2.86, 1.16-7.06)
- Most (71%) received an antibiotic within 4 weeks of FMT
  - UTI (36%), Respiratory tract (20%), Skin and soft tissue (12%)
  - Ciprofloxacin, cephalexin, amoxicillin/clavulanate were the most commonly prescribed antibiotics

CID Allegretti Jan 6 2018, vol 66;1 p 134-35

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OK, 4 Weeks After FMT, We Had Better Be Darn Sure...

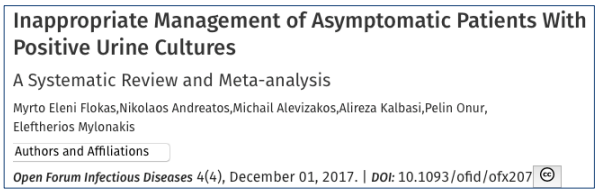
Cellulitis


JAMA Dermatology | Original Investigation

Costs and Consequences Associated With Misdiagnosed Lower Extremity Cellulitis

Qing Yu Weng, MD; Adam B. Raff, MD, PhD; Jeffrey M. Cohen, MD; Nicole Gunasekera, BS; Jean-Phillip Okhovat, MD, MPH; Priyanka Vedak, MD; Cara Joyce, PhD; Daniela Kroshinsky, MD, MPH; Arash Mostaghimi, MD, MPA, MPH

UTI


Inappropriate Management of Asymptomatic Patients With Positive Urine Cultures

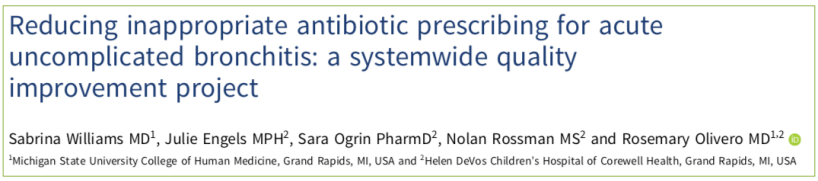
A Systematic Review and Meta-analysis

Myrto Eleni Flokas,Nikolaos Andreatos,Michail Alevizakos,Alireza Kalbasi,Pelin Onur, Eleftherios Mylonakis

Authors and Affiliations

Open Forum Infectious Diseases 4(4), December 01, 2017. | *DOI:* 10.1093/ofid/ofx207

Respiratory


Reducing inappropriate antibiotic prescribing for acute uncomplicated bronchitis: a systemwide quality improvement project

Sabrina Williams MD[1], Julie Engels MPH[2], Sara Ogrin PharmD[2], Nolan Rossman MS[2] and Rosemary Olivero MD[1,2]

[1]Michigan State University College of Human Medicine, Grand Rapids, MI, USA and [2]Helen DeVos Children's Hospital of Corewell Health, Grand Rapids, MI, USA

Antimicrobial Stewardship and Healthcare Epidemiology 2024;4,e222,1-3; JAMA Derm 2017;153(2):141-146

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Frequently associated	Occasionally associated	Rarely associated
▪ Fluoroquinolones ▪ Clindamycin ▪ Penicillins and combinations (broad spectrum) ▪ Cephalosporins ($2^{nd}/3^{rd}/4^{th}$ generation)* ▪ Carbapenems	▪ Macrolides ▪ Penicillins (narrow spectrum) ▪ Cephalosporins (1^{st} generation) ▪ Trimethoprim-sulfamethoxazole ▪ Sulfonamides	▪ Aminoglycosides ▪ Tetracyclines ▪ Tigecycline ▪ Chloramphenicol ▪ Metronidazole ▪ Vancomycin ▪ Nitrofurantoin

Antimicrobial agents that may induce *Clostrioides difficile* diarrhea and colitis
From Patient Education: Antibiotic-associated diarrhea caused by *Clostridioides difficile* (Beyond the Basics) - UpToDate

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18. Oral vancomycin prophylaxis (OVP) may be considered during subsequent systemic antibiotic use in patients with a history of CDI who are at high risk of recurrence to prevent further recurrence (conditional recommendation, low quality of evidence). ACG Guideline, Am J Gastroenterol 2021;116:1124-1147

Secondary Vancomycin Prophylaxis

- First time in a guideline
  - ≥ 65 or immunocompromised, who were hospitalized for severe CDI within the past 3 mos and now need systemic antibiotics
  - Vancomycin 125 mg once daily during and 5 day after completing abx
- Common in practice, but data are limited
  - No impact on preventing recurrent CDI in FMT pts exposed to antibiotics in retrospective study (Dig Dis Sci 2019;64(6):1668)
  - Randomized placebo trial had fewer recurrences in vancomycin group (44% vs 57%) but underpowered (JAMA Netw Open 2025;8(7):e251)

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What Do You Tell Your Patients After They Have Recovered from C Diff?

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C. Difficile: The Opportunity to Educate Everyone

- Patient Education "Be Your Own Best PR agent"
  - Be willing to tell your C diff history to future clinicians; carry a letter
  - Be a polite diagnostic skeptic
- Colleague Education (when future antibiotics are considered)
  - Discuss options for an individual case with the specialists
  - How confident are we this is an infection warranting antibiotics?
  - Can we observe closely and not start antibiotics?
- When antibiotics are necessary, consider
  - Secondary vancomycin prophylaxis
  - Using less "C diff-o-genic" antibiotic agents

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69-year-old Man

- Successful FMT 2 months ago for highly debilitating recurrent *C. difficile* infection (8 total bouts)
- Scheduled for elective cardiac device procedure
- Standard peri-procedure antibiotic is single dose cefuroxime

- Unfortunately the single dose cephalosporin lead to a rapid *C. difficile* relapse which necessitated a repeat FMT. Tough lesson learned.

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Key Points

- Systems do not reliably point out individuals at high-risk for antibiotic related side effects, we - clinicians and patients - have to be the “PR agents” for that
- The best therapeutics always derive from the best diagnostics, strive for precision in both
- Always ask why

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