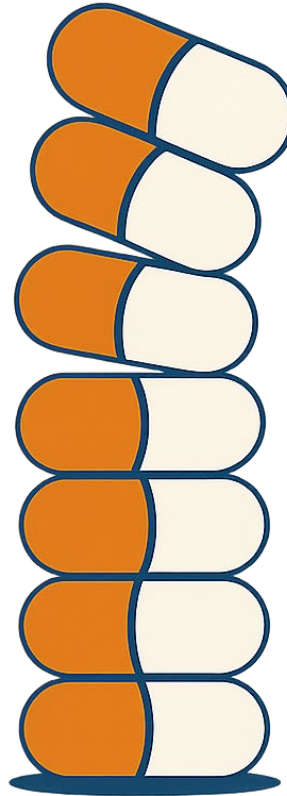
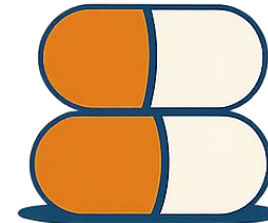


**OLD WAY:
LONG COURSES**



**NEW WAY:
APPROPRIATE COURSES**



Shorter is Better:

Optimizing Antibiotic Prescribing to Improve Health Outcomes

Megan Klatt, PharmD & Kellie Wark, MD, MPH

November 19, 2025



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Objectives

- Summarize evidence-based antibiotic duration recommendations for common infectious conditions encountered in clinical practice.
- Explain and apply principles of optimizing and shortening antibiotic courses to reduce antimicrobial resistance.
- Review the outcomes associated with shorter antibiotic courses.

U.S. Antibiotic Awareness Week

**November
18-24, 2025**

This year marks the
7th Gubernatorial
Proclamation – Use
Antibiotics Wisely
Week in Kansas!



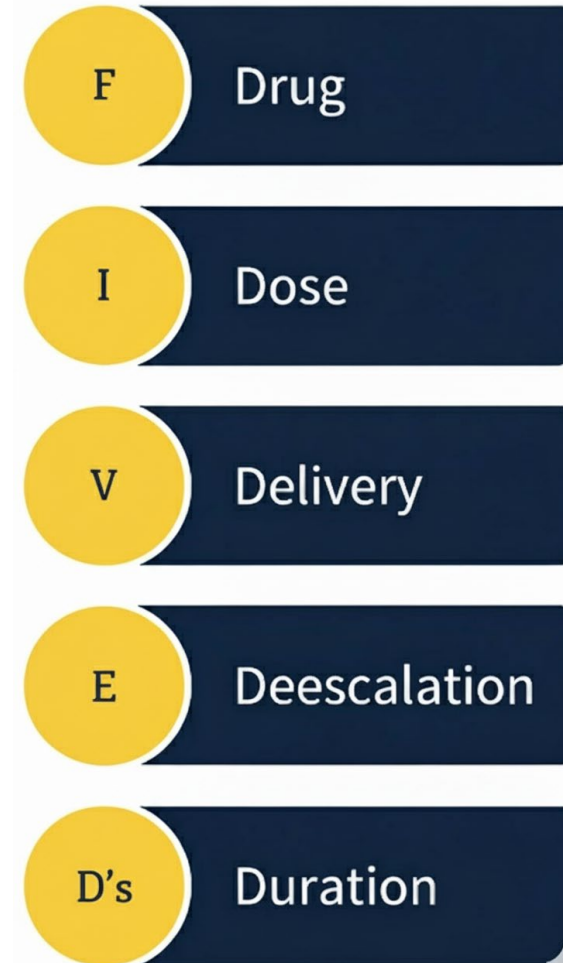
The Power of Antibiotics

Disease	Pre-Antibiotic Death Rate	Death Rate with Antibiotics	Change in Death Rate
Community-Associated Pneumonia (CAP)	35%	10%	-25%
Hospital-Associated Pneumonia	60%	30%	-30%
Endocarditis	100%	25%	-75%
Gram-negative bacteremia	80%	10%	-70%
Meningitis	>80%	<20%	-60%
Skin infection	11%	<0.5%	-10%
Compare to....			
Heart attack with fibrinolytics or aspirin			-3%

Why is Antimicrobial Stewardship Important?

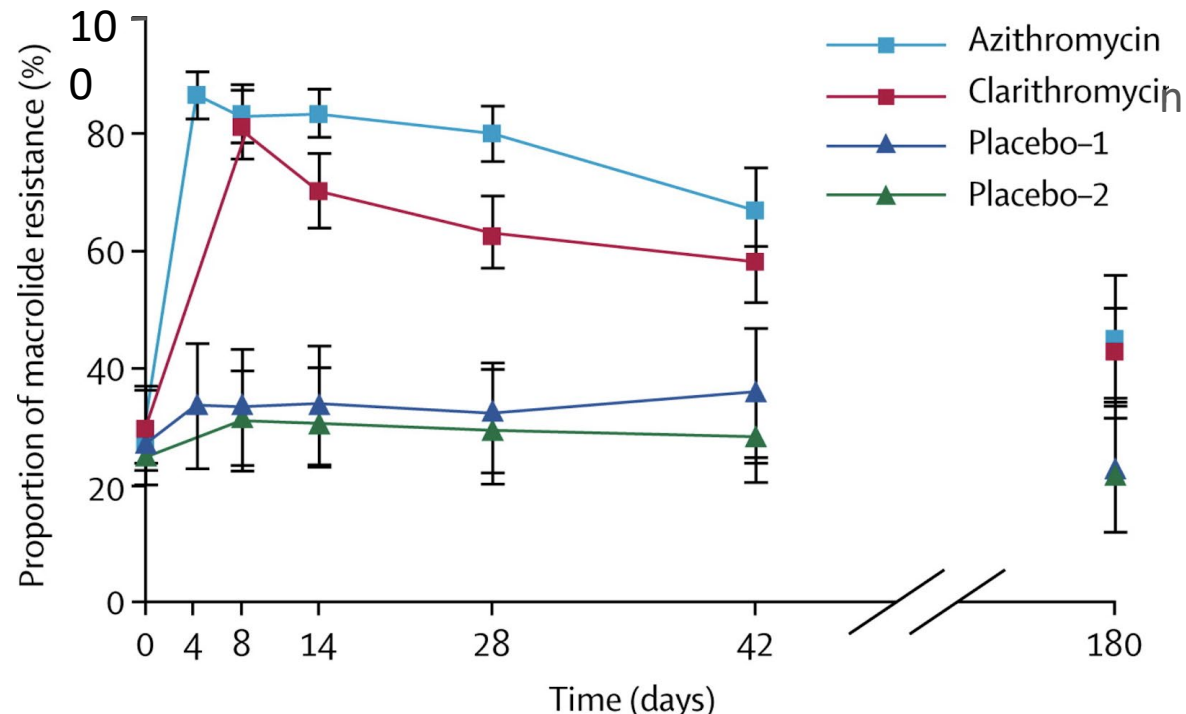
The Five D's are the core principles when referring to stewardship – and shorter durations will help with:

- Optimize antimicrobial use.
- Improve resistance patterns.
- Reduce adverse effects.
- Reduced length of stay.
- Reduced costs.
- Improve outcomes.



Why Focus on Antibiotics?

Changes in macrolide-resistant *S. pneumoniae* while on macrolides compared to placebo (no antibiotics)



Sources: Malhotra-Kumar S, et al. Lancet 2007;369(9560):482-90.
Maudlin et al. Antimicrob Agents and Chemo 2010; 54(109-15).
Roberts et al. CID 2009;49:1175-84.

Antibiotic resistance (AR):

Use it AND lose it?

In as quickly as four days pneumococcus in participants' throats became resistant when they were on azithromycin.

Antibiotic use contributes to:

- Prolong hospitalizations by 24% and costs by 29%
- Adverse events: #1 medication-related ED visit
- Collateral damage: *C. diff*

Dubious Nature of Durations

1940s CAP Duration Early Studies



"in general the results were satisfactory with [penicillin] dosed for 1.5 to 2 days"

"most of the patients were treated for 3-4 days"

1950s-1990s Antibiotic Golden Era of Use & Abuse



FDA Dir. of Antibiotics scandal, accepted large sums of money from pharmaceutical industry promoting use

Pharmaceutical Industry promotes heavy use

1990-2000s Guidelines question durations



CAP guidelines "we are not aware of any controlled trials that specifically address the questions of how long pneumonia should be treated"

Traveler's diarrhea recommend 3 days noting "1 day appears to be equally effective"

Meningitis should be treated for 7-21 days noting "duration based more on tradition than evidence-based data"

2008 IDSA Conference on AMR



Dr. Louis Rice suggests cutting durations down to only minimum course needed to treat/cure infections

2000-2023 2 decades of duration studies



>120 randomized controlled trials to suggest shorter durations for UTI, CAP, VAP, IAB, SSTI, SSI, OM, septic arthritis, sinusitis, neutropenic fevers, malaria

The Shorter is Better Mantra

Clinical Infectious Diseases

EDITORIAL COMMENTARY



Short-course Antibiotic Therapy—Replacing Constantine Units With “Shorter Is Better”

Noah Wald-Dickler^{1,2} and Brad Spellberg^{1,2}

courses [2]. And the modern week has 7 days in it because the Roman Emperor Constantine the Great said so in 321 CE [2]. Had Constantine chosen a 4-day week, providers would likely routinely prescribe 4- to 8-day courses of therapy.

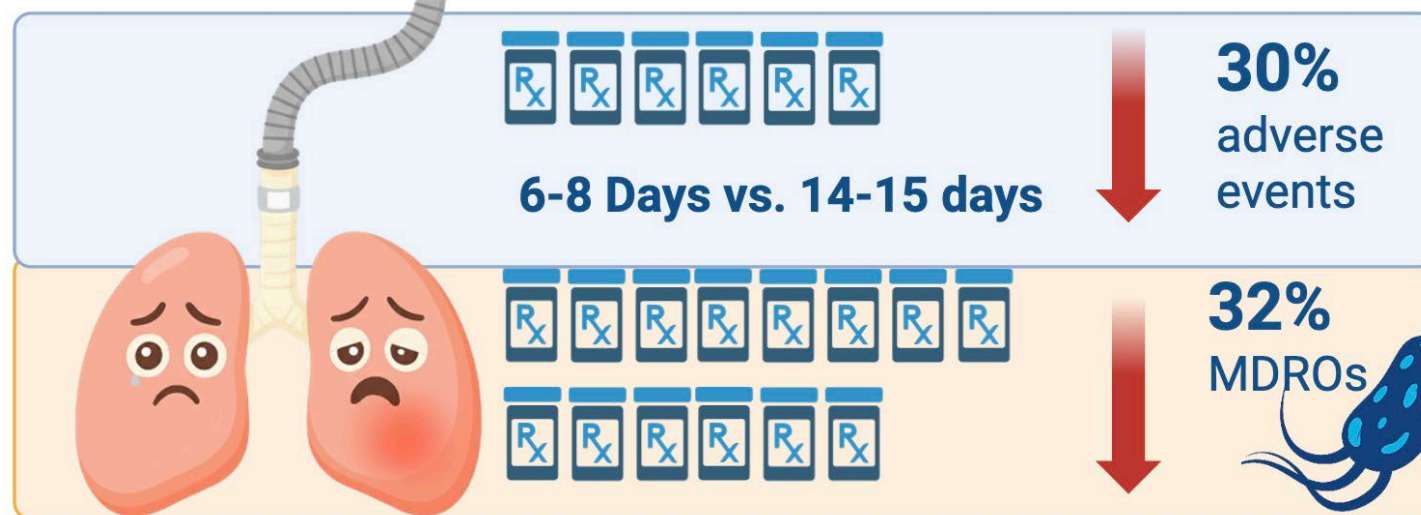
Shorter is Better: Ventilator-Associated Pneumonia (VAP)

Eight vs 15-day antibiotic course:

- Same clinical outcomes, mortality rates, recurrent pneumonia rates
- Eight-days associated with a 32% decrease in multidrug-resistant organism (MDRO) carriage

Six vs 14-day antibiotic course:

- No difference in 60-day mortality or recurrent pneumonia
- No difference even if MDRO-VAP
- 30% less side effects



More Evidence: VAP

Year	Regimen of shorter course	Regimen of comparator	Outcome	N
Capellier G et al 2012	Early onset VAP x 8 days (antibiotic choice unspecified)	15 days	No difference in cure, 21 & 90 day mortality	225
Pugh R et al 2015	Seven to eight day antibiotics	10-15 day antibiotics	No difference cure; reduced MDRO-VAPs	1088
Dimopoulos G et al 2013	Seven to eight day antibiotics	10-15 day antibiotics	No difference in mortality, or relapse rates	833

Clinical Indicators for Guidance: Pseudomonas VAP

- Seven vs 10 days of carbapenems (doripenem vs imipenem-cilistatin) showed 17% higher rates of pseudomonal VAP recurrence
- Other studies indicate if patients are improving, seven days is adequate

Bottom line: seven to eight days for pseudomonas VAP

**In those with delayed response, severe illness or other risk factors =
consider longer course**

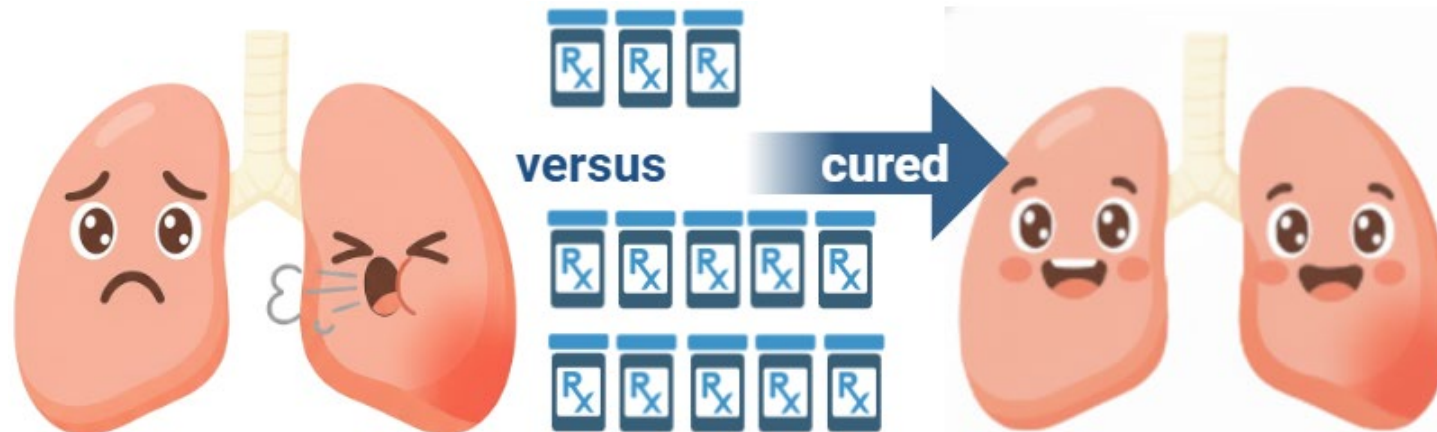
Shorter is Better: Community-Acquired Pneumonia (CAP)

Randomized controlled trials (RCT): three to five vs seven to 14 days

- Thirty systematic reviews of >18,000 patients showed **no difference in cure** for shorter as compared to longer courses

Shorter high-dosed vs. longer standard dosage

- Five days of high-dosed amoxicillin compared to 10 days of standard-dosed amoxicillin → nasopharyngeal penicillin-resistant (PCN-R) *S. pneumoniae* carriage increased 33%



More Evidence: CAP

Year	Regimen of shorter course	Regimen of comparator	Outcome	N
Siegel et al 1999	Cefuroxime seven days	Cefuroxime 10 days	No difference	52
Leophonte et al 2002	Ceftriaxone x five days	Ceftriaxone x 10 days	No difference (& bacteriological) cure	244
Dunbar et al 2003	Levofloxacin x five days	Levofloxacin x 10 days	No difference	528
Dunbar et al 2004	Levofloxacin x five days	Levofloxacin x 10 days	No difference	149
Leophonte et al 2004	Gemifloxacin x seven days	Amox/clav x 10 days	No difference (or bacteriological or radiographic) cure	320
Tellier et al 2004	Telithromycin x five or seven days	Clarithromycin x 10 days	No difference (or bacteriological) cure	559
El Moussaoui 2006	Amoxicillin x three days	Amoxicillin x eight days	No difference (or radiographic) cure	119
File et al 2007	Gemifloxacin x five days	Gemifloxacin x seven days	No difference (or bacteriological) cure	510
Uranga et al 2016	Standard of treatment x five days	Standard of treatment x 10 days	No difference	312

Atypical Pneumonia

Adults

- One RCT of atypical pneumonia (confirmed *M. pneumoniae*, *C. psittaci*, or *L. pneumophila* infections)
- n=96 (48 each group)
- 1.5-gram azithromycin x 1 dose vs 500 mg x three days
- 98% cure in each group (followed to 4 weeks)

Clinical Indicators for Guidance: CAP

When are longer courses warranted?

- Initial therapy not active against isolated pathogen
- Extrapulmonary infections (e.g., meningitis, endocarditis)
- Pneumonia caused by *P. aeruginosa*, *S. aureus*, or unusual pathogens (e.g., *Burkholderia*, fungus)
- Necrotizing pneumonia
- Empyema or abscesses

Shorter is Better: Sinusitis

Generally triggered by a viral upper respiratory tract infection (URI) with only ~2% of cases complicated by bacterial sinusitis

- Bacterial sinusitis tends to be over-diagnosed by clinical criteria in ~50% of cases, and most cases resolve without antibiotics (even bacterial)
- Meta-analysis of 17 RCTs which were double-blinded (i.e., patient + clinician) as to receipt of placebo or antibiotic
 - **68% improved with placebo** vs. 77% with antibiotics
 - No difference in complications or recurrence



Shorter is Better: Skin Infections

Adults + Pediatrics

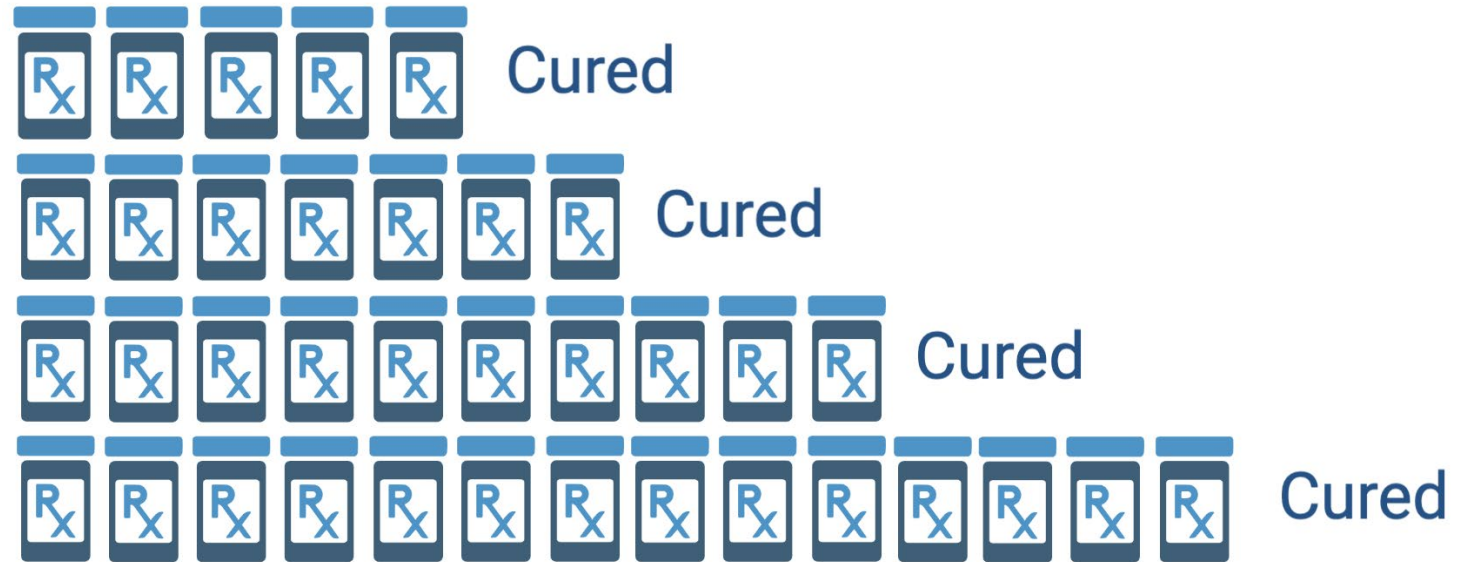
- Four RCTs of >1400 patients
- Five to six days antibiotics for cellulitis resulted in similar cures as 10-12 days
- Includes treatment for impetigo, erysipelas, non-purulent cellulitis, and purulent cellulitis with or without a drainable abscess



Shorter is Better: UTI and Pyelonephritis

Adults

- Nine RCTs of >1800 patients
- **Complicated UTI: five to seven days** non-inferior to 10-14 days
- **Pyelonephritis: five to seven days** non-inferior to 10-14 days



Sources: Klausner H, et al. Curr Med Res & Opinion 2007;23(11):2637-45.
Dinh A, et al. Eur J Clin Micro Infect Dis 2017;1443-8.
Van Nieuwkoop C, et al. BMC 2017;15:70-78.
Drekonja D, et al. JAMA 2021;326(4):324-331.

More Evidence: UTI and Pyelonephritis in Adults

Year	Regimen of shorter course	Regimen of comparator	Outcome	N
Gleckman et al 1985	Gent/Tobra → Bactrim x 9-11	Gent/Tobra→Bactrim x 20-22 days	No difference in cure	54
Stamm et al 1987	Ampicillin x two weeks	Ampicillin x six weeks	No difference in cure	27
Stamm et al 1987	Bactrim x two weeks	Bactrim x six weeks	No difference in cure	33
Jernelius et al 1988	Pivampicilin x seven days	Pivampicillin x 21 days	Shorter course more bacteriologic cure (28% vs 69%)	77
De Gier et al 1995	Fleroxacin x seven days	Fleroxacin x 14 days	No difference in cure	54
Talan et al 2000	Ciprofloxacin x seven days	Bactrim x 14 days	Improved clinical cure (96% vs 83%)	255

More Evidence: UTI and Pyelonephritis in Adults

Year	Regimen of shorter course	Regimen	Outcome	N
Klausner et al 2007	Levofloxacin x five days	Ciprofloxacin x 14 days	No difference in cure, micro eradication	192
Peterson et al 2008	Levofloxacin x five days	Ciprofloxacin x 10 days	No difference in cure	1109
Dinh A et al 2017	fluroquinolone for uncomplicated pyelonephritis x five days	10 days	No difference in cure	100
Nieuwkoop C, et al 2017	Fluroquinolone for febrile UTI x seven days	14 days	No difference in cure in women (men had greater cure at 14 days [98% vs 86%])	357
Drekonga D., et al 2021	Fluroquinolone or Bactrim for afebrile UTI x 7 days	14 days	No difference in cure (men or women)	33

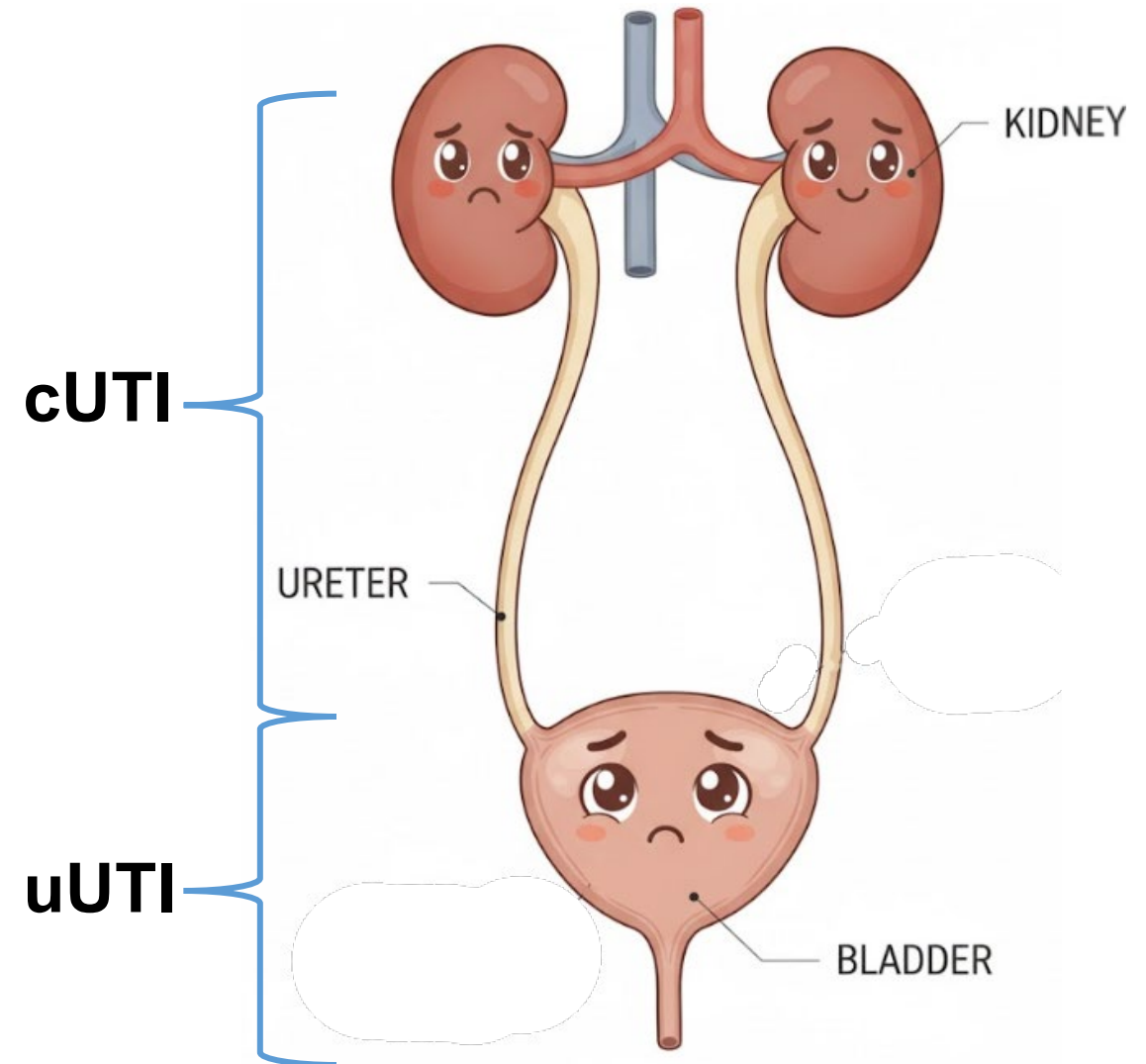
More Evidence: UTI and Pyelonephritis in Kids

Year	Regimen of shorter course	Regimen	Outcome	N
Sethi N. et al 2025	Kid's febrile UTI x three days	10 days	No difference in cure	408
Montini G, et al 2024	Kids (3 mos to 5 yrs) amox/clav x five days	10 days	No difference in cure	142
Zaoutis T., et al 2023	Five days	10 days	No difference in cure	664

UTI Duration Recommendations

2025 Infectious Disease Society of America (IDSA) UTI Guidelines

- New classifications for **uncomplicated UTIs (uUTIs)** and **complicated UTIs (cUTIs)**
- **uUTI** = confined to bladder
- **cUTI** = systemic signs/symptoms or evidence upper tract (kidney) involvement or catheter-associated
- Irrespective of sex, comorbidities



UTI Duration Recommendations

uUTI Duration depends on agent used

- Bactrim (TMP/SMX): three days
- Nitrofurantoin: five days
- Fluroquinolone: three days
- Beta-lactams: three to seven days
- Aminoglycoside: single IM dose
- Fosfomycin: single PO dose

cUTI (including pyelonephritis)

- Five to seven days of antibiotic preferred over longer courses (10-14 days)
 - Five to seven days if fluroquinolone used
 - Seven days if non-fluroquinolone
 - Oral beta-lactams bioavailability: **cephalexin, amoxicillin, pivmecillinam, amoxicillin/clavulanate, cefpodoxime, cefadroxil**
 - Avoid cefdinir (urinary excretion is <20%)

ACP Best Practice Advice



Limit abx for COPD to 4 days



Limit abx for CAP to 5 days



Limit abx for UTI to 3-5 days



Limit abx for cellulitis to 5-6 days

Best practice advice #1

- Limit abx for COPD or (bacterial) bronchitis to 4 days

Best practice advice #2

- Limit abx for CAP to five days

Best practice advice #3

- Limit abx for uUTI to five days (nitrofurantoin), three days (Bactrim) or one day (fosfomycin)
- Limit abx for pyelonephritis to five to seven days (levofloxacin or ciprofloxacin), or 14 days (ceftriaxone)

Best practice advice #4

- Limit abx for nonpurulent cellulitis to five to six days and active against strep, with patient ability to monitor response

CLINICAL GUIDELINE

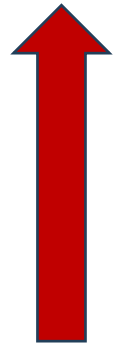


Appropriate Use of Short-Course Antibiotics in Common Infections:
Best Practice Advice From the American College of Physicians

Source: Lee R., et al. Annals of Int Med. 2021; 174(6): 822-27.

Harms of Daily Antibiotics

- **Meta-analysis** (35 systemic reviews, 71 short v. long duration trials involving 23,174 patients)



Adverse events: 4% odds per day

Antibiotic resistance: 3% odds per day

Secondary infections: 2% odds per day

- **Each additional day may cause harm:**



Five vs three days → 9% odds adverse events

Seven vs three days → 19% odds of adverse events

Resources: Inpatient Poster

DO YOUR PART TO REDUCE ANTIBIOTIC RESISTANCE

Antibiotic resistance is a major threat to public health - and it is only getting worse.

Overuse, including longer than effective durations, is part of the problem. Updated literature demonstrates "Shorter is Better." Find out more using the QR Code or visit bradspellberg.com/shorter-is-better.



Community-Acquired Pneumonia
3-5 Days



Ventilator-Associated Pneumonia
5-8 Days



Intra-Abdominal Infection
(with source control)
4 Days



Bacteremia
(non *S. aureus*)
7 Days



Pyelonephritis
5-7 Days



Appendicitis
(with source control)
1-2 Days

Clinical scenarios may vary and necessitate longer treatment duration.

Every day of antibiotics counts!

Each additional day is associated with:

Adverse Events **4%**  risk per day

Antibiotic Resistance **3%**  risk per day

Healthcare-Associated Infections
& Antimicrobial Resistance Section



2025

<https://www.kdhe.ks.gov/DocumentCenter/View/52788/Shorter-Is-Better-Antibiotic-Use-Poster-11x17-Inpatient-PDF>

Resources: Outpatient Poster

DO YOUR PART TO REDUCE ANTIBIOTIC RESISTANCE

Antibiotic resistance is a major threat to public health - and it is only getting worse.

Overuse, including longer than effective durations, is part of the problem. Updated literature demonstrates "Shorter is Better." Find out more using the QR Code or visit bradspellberg.com/shorter-is-better.



Cystitis
1-5 Days



Pyelonephritis
5-7 Days



Sinusitis
5 Days



Otitis Media*
10 Days
*children under 2 years old



Cellulitis
5-7 Days



Pneumonia
3-5 Days

Clinical scenarios may vary and necessitate longer treatment duration.

Every day of antibiotics counts!

Each additional day is associated with:

Adverse Events **4%**  risk per day

Antibiotic Resistance **3%**  risk per day

Healthcare-Associated Infections
& Antimicrobial Resistance Section



2025

<https://www.kdhe.ks.gov/DocumentCenter/View/52789/Shorter-Is-Better-Antibiotic-Use-Poster-11x17-Outpatient-PDF>

Resources: URI Clinical Decisions Script Pads

Prescriber Version

Pharmacist Version

URI Rx Patient: _____ Prescriber: _____ Date: _____


DIAGNOSIS	Symptom duration
<input type="checkbox"/> Bronchitis (chest cold, cough)	7-28 days
<input type="checkbox"/> COVID-19 (SARS-CoV-2 infection)	7-28(+) days
<input type="checkbox"/> Influenza (flu)	7-14 days
<input type="checkbox"/> Upper respiratory infection (common cold)	7-14 days
<input type="checkbox"/> Viral otitis media (ear infection)	7-10 days
<input type="checkbox"/> Viral pharyngitis (sore throat)	3-10 days
<input type="checkbox"/> Viral sinusitis (sinus infection)	7-14 days

The symptoms you presented with today suggest a VIRAL infection.

You have not been prescribed antibiotics because **antibiotics are ineffective for viral infections**, cause side effects, and may cause serious harm.

Please return or call if symptoms do not improve in _____ day(s), you develop worsening fevers, shortness of breath, or other new or concerning symptoms: _____

SYMPTOM RELIEF MEDICATIONS	
Always use medications according to package instructions Stop the medication when symptoms get better Reference package insert for maximum dose by age	
<input type="checkbox"/> Acetaminophen, 325-650 mg every 4-6 hours as needed	fever and aches
<input type="checkbox"/> Ibuprofen, 400-800 mg every 4-6 hours as needed	fever and aches
<input type="checkbox"/> Naproxen, 250-500 mg every 12 hours as needed	fever and aches
<input type="checkbox"/> Lozenges – menthol (Ricola, Fisherman's Friend), pectin (Luden's), benzocaine (Chloraseptic), dyclonine (Sucrets) or zinc acetate (Zicam, Cold Eeze)	sore throat
<input type="checkbox"/> Saltwater gargle -1 tbsp salt per 1 cup warm water	sore throat
<input type="checkbox"/> Honey - 2 tbsp in 1 cup tea or hot water every 4-6 hours as needed (do not give honey to babies < 1 year)	sore throat, cough
<input type="checkbox"/> Sinus saline irrigation (i.e., netti pot, saline squeeze bottle; use sterile saline or distilled water, do not use tap water) - 1-4 times daily as needed (do not use irrigations in kids < 6)	nasal congestion
<input type="checkbox"/> Cool mist humidifier or vaporizer	chest & nasal congestion
<input type="checkbox"/> Dextromethorphan 20-30 mg every 6 hours as needed	cough
If none of above working and you do NOT have heart problems or high blood pressure, may consider:	
<input type="checkbox"/> Phenylephrine or pseudoephedrine, limit to 2-3 days	cough & congestion
Limit the spread of infection to others:	
<input type="checkbox"/> Wash your hands frequently	
<input type="checkbox"/> Cover your cough/sneeze	
<input type="checkbox"/> Wear a mask when near others	



URI Rx Name: _____ Pharmacist: _____ Date: _____

Your negative test and the symptoms you have today suggest a VIRAL infection.



Your pharmacist did not prescribe antibiotics because **antibiotics are not effective for viral infections**.

Taking antibiotics when you don't need them can cause side effects, make you feel worse, and lead to bacteria that do not respond to treatment. This can make future infections harder to treat.

Please contact your healthcare provider or urgent care if you aren't feeling better by _____.

Other reasons to contact your provider are a fever that doesn't go away, trouble catching your breath, or feeling much worse.

SYMPTOM RELIEF MEDICATIONS for ages six (6) years and older	
Always use medications according to the directions on the package - Stop these medications when you feel better.	
<input type="checkbox"/> Acetaminophen (Tylenol) Liver damage can occur with high doses of acetaminophen - total daily dose of acetaminophen should be less than 4,000mg. Check labels of prescription pain medication and other medications you are taking to see if they also contain acetaminophen.	fever and aches
<input type="checkbox"/> Ibuprofen (Advil)	fever and aches
<input type="checkbox"/> Naproxen (Aleve)	fever and aches
<input type="checkbox"/> Lozenges – pectin (Luden's), benzocaine (Chloraseptic), dyclonine (Sucrets)	sore throat
<input type="checkbox"/> Saltwater gargle – 1 tbsp salt / 1 cup warm water	sore throat
<input type="checkbox"/> Honey – 2 tbsp honey in 1 cup tea or hot water every 4-6 hours as needed	sore throat, cough
<input type="checkbox"/> Lozenges – menthol (Ricola, Fisherman's Friend)	cough
<input type="checkbox"/> Dextromethorphan (Robitussin)	cough
<input type="checkbox"/> Sinus saline irrigation (i.e., netti pot, saline squeeze bottle; use sterile saline or distilled water, do not use tap water) – 1-4 times daily as needed (do not use irrigations in kids < 6)	nasal congestion
<input type="checkbox"/> Cool mist humidifier	chest & nasal congestion

PDF: <https://www.kdhe.ks.gov/DocumentCenter/View/52361>
PPT: <https://www.kdhe.ks.gov/DocumentCenter/View/52358/URI-Symptomatic-Script-Pads---Prescriber-PPT>

PDF: <https://www.kdhe.ks.gov/DocumentCenter/View/51699>
PPT: <https://www.kdhe.ks.gov/DocumentCenter/View/51697>




To protect and improve the health and environment of all Kansans

Resources: GU Clinical Decisions Script Pads

Prescriber Version


Pharmacist Version

GU Rx		Patient: _____	Prescriber: _____	Date: _____
DIAGNOSIS		SYMPTOM RELIEF MEDICATIONS		
<input type="checkbox"/> Asymptomatic bacteriuria (bacteria in urine without infection)		Always use medications according to package instructions		Indication
<input type="checkbox"/> Dysuria (painful urination without infection)		<input type="checkbox"/> Acetaminophen 325-650 mg every 4-6 hours as needed		Pain, burning
<input type="checkbox"/> Dyspareunia (painful sex)		<input type="checkbox"/> Phenazopyridine (Pyridium or AZO Standard) 200 mg 3 times daily as needed (orange urine is expected; limit to 3 days continuous use, if no infection is the cause, it can be used for several weeks)		Pain, burning
<input type="checkbox"/> Interstitial cystitis (bladder inflammation)		<input type="checkbox"/> Estrogen topically, 2-5 times weekly²		Vaginal irritation, healthy vaginal flora
<input type="checkbox"/> Pelvic floor dysfunction (pelvic muscle pain)		PREVENTIVE MEDICATIONS		
<input type="checkbox"/> Vaginitis (vaginal irritation)		<input type="checkbox"/> Methenamine Hippurate 1 g twice daily² (this medicine requires acidic urine – take it with vitamin C; don't take methenamine if you are also taking sulfa meds; a strong urine smell is expected but normal)		Prevent bladder bacterial growth, decrease risk of UTI
<p>The symptoms and/or urinalysis you presented with today do NOT suggest an infection or UTI¹</p> <p>Antibiotics were not started because they are ineffective for dysuria (pain) without infection and/or asymptomatic bacteriuria, may cause side effects, and may lead to resistant bacteria which limits future antibiotic options.</p> <p>Please return or call if symptoms do not improve in _____ day(s), or you develop fever, chills, lower abdominal or back pain, blood in the urine, or other new or concerning symptoms.</p>		<input type="checkbox"/> Cranberry supplement daily or 10 oz cranberry juice, preferably low-sugar		Prevent <i>E.coli</i> bladder wall attachment
		<input type="checkbox"/> D-mannose 2 gram daily		Prevent bacterial bladder wall attachment
		<input type="checkbox"/> Probiotic with lactobacillus , at least 1 to 10 billion cfu daily		Protect from (harmful) bacterial overgrowth, reduce BV ³
		1. UTI - urinary tract infection 2. Rx required 3. BV - bacterial vaginosis 4. Increased water intake by 1.5L daily reduced risk of UTIs		
DIET and HYGIENE				
<input type="checkbox"/> Avoid caffeine, alcohol, artificial sweeteners, spicy foods		<input type="checkbox"/> Avoid irritants (spermicide, diaphragms, feminine hygiene sprays, powders, douches)		
<input type="checkbox"/> Consider diet for interstitial cystitis (ichelp.org)		<input type="checkbox"/> Urinate after sex, wear cotton undergarments		
<input type="checkbox"/> Increase water intake ⁴		<input type="checkbox"/> Avoid constipation and diarrhea		
		<input type="checkbox"/> Empty bladder at regular intervals		

GU Rx		Patient: _____	Pharmacist: _____	Date: _____
Sometimes antibiotics will not help urinary symptoms when a UTI¹ isn't diagnosed – Other medications may help you feel better, even if you were not prescribed antibiotics				
Taking antibiotics when you don't need them can cause side effects, make you feel worse, and lead to bacteria that do not respond to treatment. Please contact your healthcare provider or urgent care if you aren't feeling better by _____.				
Diet/ Hygiene		SYMPTOM RELIEF MEDICATIONS		
<input type="checkbox"/> Avoid spicy foods, caffeine, alcohol, artificial sweeteners.		Always use medications according to the directions on the package - Stop these medications when you feel better		
<input type="checkbox"/> Increase water intake. ³		<input type="checkbox"/> Acetaminophen (Tylenol)		Pain, burning
<input type="checkbox"/> Consider diet for interstitial cystitis (ichelp.org).		Liver damage can occur with high doses of acetaminophen – total daily dose of acetaminophen should be less than 4,000mg.		
<input type="checkbox"/> Avoid irritants (spermicide, diaphragms, feminine hygiene sprays, powders, douches).		<input type="checkbox"/> Phenazopyridine (Pyridium, AZO Standard)		Pain, burning
<input type="checkbox"/> Urinate after sex.		Expect orange urine; don't take for more than 3 days in a row		
<input type="checkbox"/> Wear cotton underwear.		<input type="checkbox"/> Estrogen topically, 2 to 5 times weekly²		Burning, may prevent infection
<input type="checkbox"/> Avoid constipation and diarrhea.		PREVENTIVE MEDICATIONS		
<input type="checkbox"/> Empty bladder at regular intervals.		<input type="checkbox"/> Methenamine Hippurate²		
		(Take with vitamin C 1000 mg to activate, don't take at the same time as sulfa medications, strong urine smell expected.)		
		<input type="checkbox"/> Cranberry supplement or 10oz pure/sugar-free cranberry juice daily		
		<input type="checkbox"/> D-mannose		
		<input type="checkbox"/> Probiotic – lactobacillus at least 1 to 10 billion cfu daily		
1. UTI – urinary tract infection 2. Prescription required – talk with your health care provider 3. Studies showed increasing daily water intake 1.5L decreased risk of UTIs – talk with your healthcare provider if you have cardiac problems or are on a fluid-restricted diet				
  Kansas Healthcare-Associated Infections & Antimicrobial Resistance Advisory Group 				

Resources: Duration Decision Script Pads

5 days



PNEUMONIA & BRONCHITIS

Community acquired pneumonia
No risk for atypical | No co-morbidities¹

☐ Amoxicillin-clavulanate
 ☐ Doxycycline

Community acquired pneumonia
With co-morbidities¹

☐ Amoxicillin-clavulanate
 ☐ Doxycycline

AND
☐ OR

☐ Alternative: cefuroxime
 ☐ Azithromycin

Alternative single-agent regimen:
☐ Levofloxacin OR moxifloxacin


COPD with acute bronchitis

☐ Amoxicillin-clavulanate
 ☐ Doxycycline
 ☐ Azithromycin

1. Co-morbidities: heart, lung, liver, renal disease, diabetes, alcoholism, malignancy, asplenia and/or other immunocompromising conditions

IDSA & ATS CAP Guidelines (2019)
COPD GOLD Guidelines (2025)

5 days



SKIN & SOFT TISSUE INFECTIONS

Cellulitis
Non-purulent | No MRSA risk-factors

☐ Cephalexin or cefadroxil

Cellulitis
Purulent or MRSA risk-factors

☐ TMP-SMX²
☐ Alternative: Doxycycline
 ☐ Clindamycin


Impetigo

☐ Topical mupirocin 2%
 ☐ Alternatives: Cephalexin or cefadroxil

2. TMP-SMX – trimethoprim-sulfamethoxazole

IDSA Skin & Soft Tissue Guidelines (2014)

1-7 days



URINARY TRACT INFECTIONS

Uncomplicated UTI
Infection confined to the bladder in afebrile men or women

☐ Nitrofurantoin
 ☐ 5 days
 ☐ TMP-SMX²
☐ 3 days

Alternatives:

☐ Penicillins³
☐ 5 days
 ☐ Cephalosporins⁴
☐ 5 days
 ☐ Fosfomycin
☐ 1 dose
 ☐ Aminoglycoside⁵ (IM)
☐ 1 dose


Complicated UTI
Infection beyond bladder including pyelonephritis, bacteremic UTIs, CAUTI

☐ Fluoroquinolone⁶
☐ 5-7 days
 ☐ TMP-SMX²
☐ 7 days
 ☐ Cephalosporins⁴
☐ 7 days

Preferred PO antibiotics based on urinary penetration: 3. pivmecillinam, amoxicillin, amox-clav, 4. cefpodoxime, cefuroxime, cephalexin, cefadroxil, with least bioavailable being cefdinir 5. amikacin, gentamicin or tobramycin (tobra for pseudomonas) 6. ciprofloxacin or levo

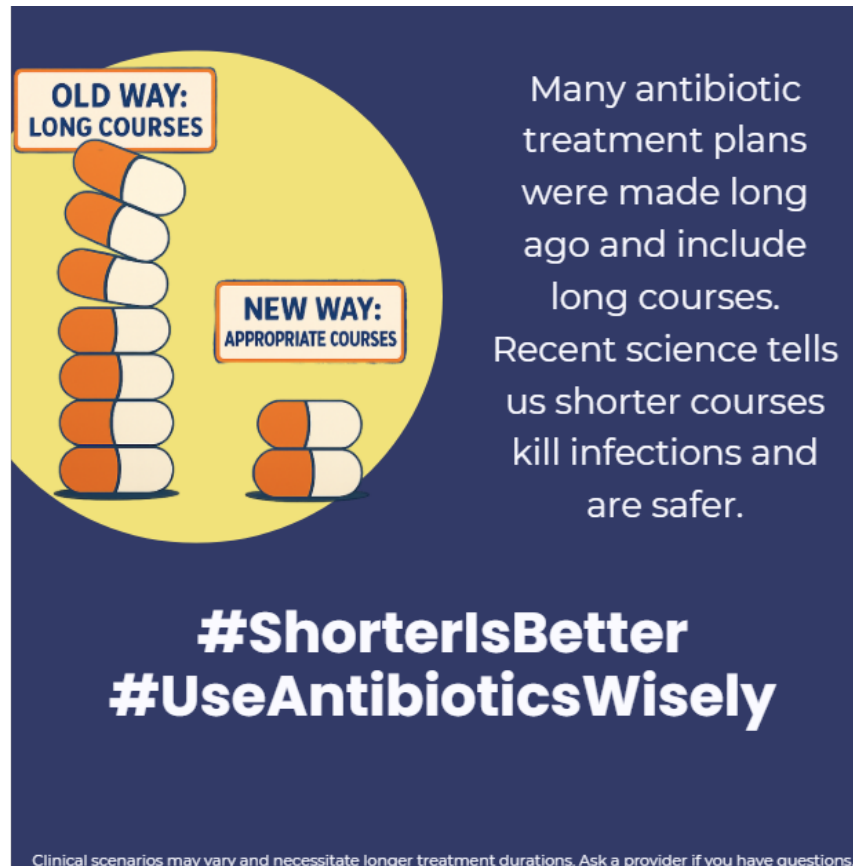
IDSA UTI Guidelines (2025)

Healthcare-Associated Infections
& Antimicrobial Resistance Section



PPT: <https://www.kdhe.ks.gov/DocumentCenter/View/52790/Duration-Rx-Pad-PDF>
 PDF: <https://www.kdhe.ks.gov/DocumentCenter/View/52792/Duration-Rx-Pad-PPT>

Resources: Social Media Toolkit



Example Post:

- In the past, many common infections were treated with antibiotics for a week, up to several weeks. While certain serious infections need long courses of antibiotics, new data suggests that certain infections can be treated effectively with fewer days of antibiotics. Follow along with us over the next several months as we discuss why.

Hashtag suggestion:

- #ShorterIsBetter
- #UseAntibioticsWisely

<https://www.kdhe.ks.gov/DocumentCenter/View/52744/Shorter-Is-Better-Social-Toolkit-PDF>

Resources: Social Media Toolkit


For many surgical procedures, antibiotics are not needed after the operation.



#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.

Bacterial pneumonia (lung infections) that develops outside of the hospital can be treated with 5 days of antibiotics.




#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.

<https://www.kdhe.ks.gov/DocumentCenter/View/52744/Shorter-Is-Better-Social-Toolkit-PDF>

Resources: Social Media Toolkit



Certain types of infections in the blood can be treated with as little as 7 days of antibiotics.

#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.



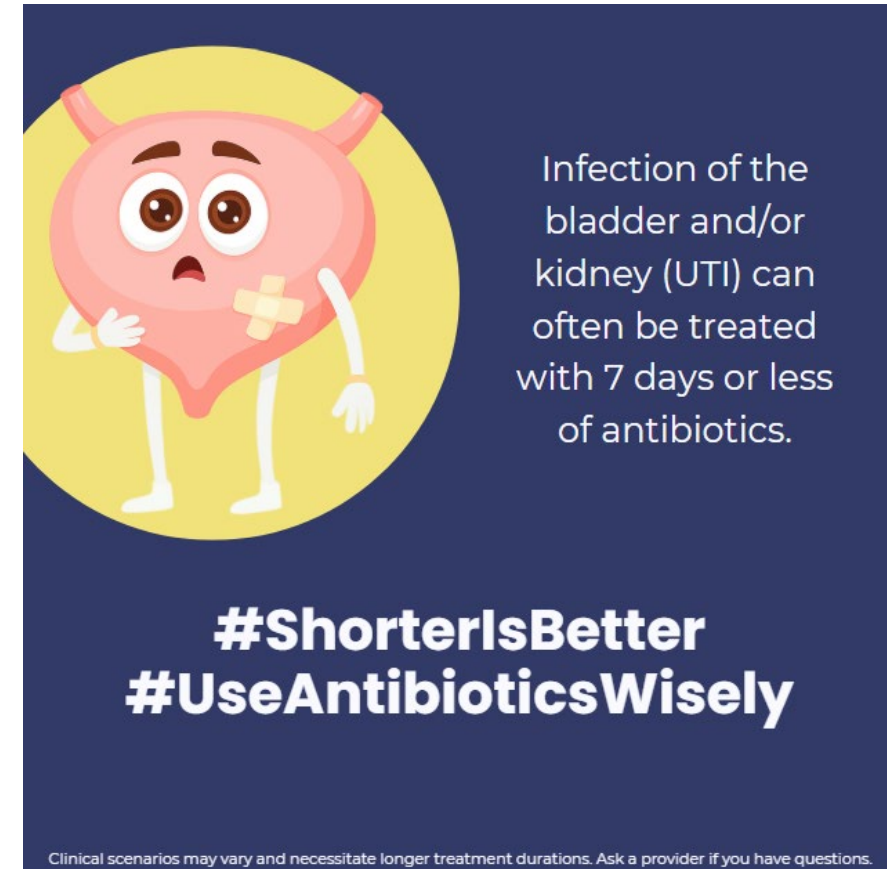
Antibiotics after dental work?
Usually not necessary. Protect your health by using them only when indicated!

#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.

<https://www.kdhe.ks.gov/DocumentCenter/View/52744/Shorter-Is-Better-Social-Toolkit-PDF>

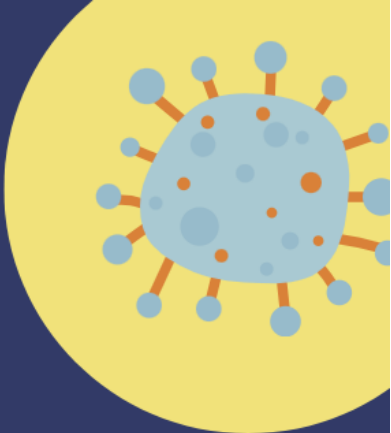
Resources: Social Media Toolkit



<https://www.kdhe.ks.gov/DocumentCenter/View/52744/Shorter-Is-Better-Social-Toolkit-PDF>


Resources: Social Media Toolkit

9 out of 10 sinus infections (sinusitis) are viruses not bacteria and antibiotics will not work to treat your infection.



#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.



Bacterial infection of the sinuses (sinusitis) can be treated with 5 days of antibiotics.

#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.

<https://www.kdhe.ks.gov/DocumentCenter/View/52744/Shorter-Is-Better-Social-Toolkit-PDF>


Resources: Social Media Toolkit



Most infections of the skin can be treated with 5-7 days of antibiotics.

#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.



Hospital Days

Normal Infection
1 2 3

Resistant Infection
12 13 14

Antibiotic resistant infections cause longer hospital stays and higher death rates.

#ShorterIsBetter
#UseAntibioticsWisely

Clinical scenarios may vary and necessitate longer treatment durations. Ask a provider if you have questions.

<https://www.kdhe.ks.gov/DocumentCenter/View/52744/Shorter-Is-Better-Social-Toolkit-PDF>

Thank you! Questions?



Healthcare-Associated Infections & Antimicrobial Resistance Section



KDHE HAI/AR Section Contact Info:

Email: kdhe.HAIAR@ks.gov

Website: kdhe.ks.gov/1514/

NEW AS webpage:

kdhe.ks.gov/2129/Antimicrobial-Stewardship

24/7 KDHE Epidemiology Hotline

(877) 427-7317



Looking for more information?

How can we help?