

Supplemental Table 1. ICD-10 codes that were used to identify eligible cases for manual chart reviews

Infection type	ICD-10 codes
Urinary tract infections	N30.90 (cystitis, unspecified without hematuria) N30.91(cystitis, unspecified with hematuria) N30.80(other cystitis without hematuria) N30.81 (other cystitis with hematuria) N30.01 (acute cystitis with hematuria) N30.00 (acute cystitis without hematuria) B37.41 (candida cystitis and urethritis) N39.0(UTI, site not specified)
Skin and soft tissue infection (limb only)	L03.90 (cellulitis, unspecified) L08.89, L08.9 (local infection of skin and subcutaneous tissue) A46 (erysipelas) L03.011, L03.012, L03.019 (cellulitis of fingers) L03.021, L03.022, L03.029, L03.041, L03.042, L03.049 (acute lymphangitis of finger, toe, or unspecified finger/toe) L03.031, L03.032, L03.039 (cellulitis of toe) L03.113, L03.114, L03.115, L03.116, L03.119 (cellulitis of limb) L03.121, L03.122, L03.123, L03.124, L03.125, L03.126, L03.129 (acute lymphangitis of limb) L038.18 (cellulitis of other sites) L03.90 (cellulitis unspecified) L03.898, L03.91, L04.8, L04.9 (acute lymphangitis/lymphadenitis of other sites/unspecified) L04.2, L04.3 (acute lymphangitis of upper/lower limbs) L02.413, L02.414, L02.415, L02.416 (cutaneous abscess of limb) L02.423, L02.424, L02.425, L02.426, L02.429 (furuncle of limb) L02.433, L02.434, L02.435, L02.436, L02.439 (carbuncle of limb) L02.511, L02.512, L02.519, L02.521, L02.522, L02.529, L02.531, L02.532, L02.539 (furuncle, carbuncle, cutaneous abscess of hand) L02.611, L02.612, L02.619, L02.621, L02.622, L02.629, L02.631, L02.632, L02.639 (furuncle, carbuncle, cutaneous abscess of foot) L02.818, L02.91 (cutaneous abscess at other sites/unspecified) L02.828, L02.92, L02.838/L02.93 (carbuncle at other sites/unspecified)
Acute respiratory infections	J20.0, J20.1, J20.2, J20.3, J20.4, J20.5, J20.6, J20.7, J20.8, J20.9, J22, J40, J21.0, J21.1, J21.8, J21.9 (acute bronchitis) J01.00, J01.01, J01.10, J01.11, J01.20, J01.21, J01.30, J01.31, J01.40, J01.41, J01.80, J01.81, J01.90, J01.91 (acute sinusitis) J02.0, J02.8, J02.9, J03.00, J03.01, J03.80, J03.81, J03.90, J03.91 (pharyngitis) J06.0, J06.9, J00., J04.0, J04.2, J05.0 (upper respiratory tract infection)

Supplemental Table 2. Reasons for excluding cases with eligible ICD codes from the manual chart reviews

Infection type	Reason for exclusion	Number of cases that met exclusion criterion
Urinary tract infections	Initiated antibiotic therapy at an outside facility but documentation of prior antibiotic therapy was not complete	10
	Antibiotic therapy was never initiated	8
	Indwelling urinary catheter present	5
	Chart documentation did not indicate that clinicians were actively considering a UTI	4
	Patient was transferred to an acute-care ward	2
	A second infection was present	2
	A urinalysis was never performed	1
Skin and soft tissue infections	Chart documentation was incomplete and/or did not indicate that clinicians thought cellulitis was an active problem	51
	Cellulitis of face, torso, abdominal wall, perianal region or surgical site	36
	Complicated infection, including chronic wound, water exposure, animal/human bite, necrotizing infection, osteomyelitis/tenosynovitis	15
	Initiated antibiotic therapy at an outside facility but documentation of prior antibiotic therapy was not complete	9
Acute respiratory infections	Chart documentation was incomplete	21
	Diagnosis of pneumonia	5
	Initiated antibiotic therapy at an outside facility but documentation of prior antibiotic therapy was not complete	3
	Chart documentation did not indicate that clinicians were actively considering an ARI	2
	A second infection was present	1

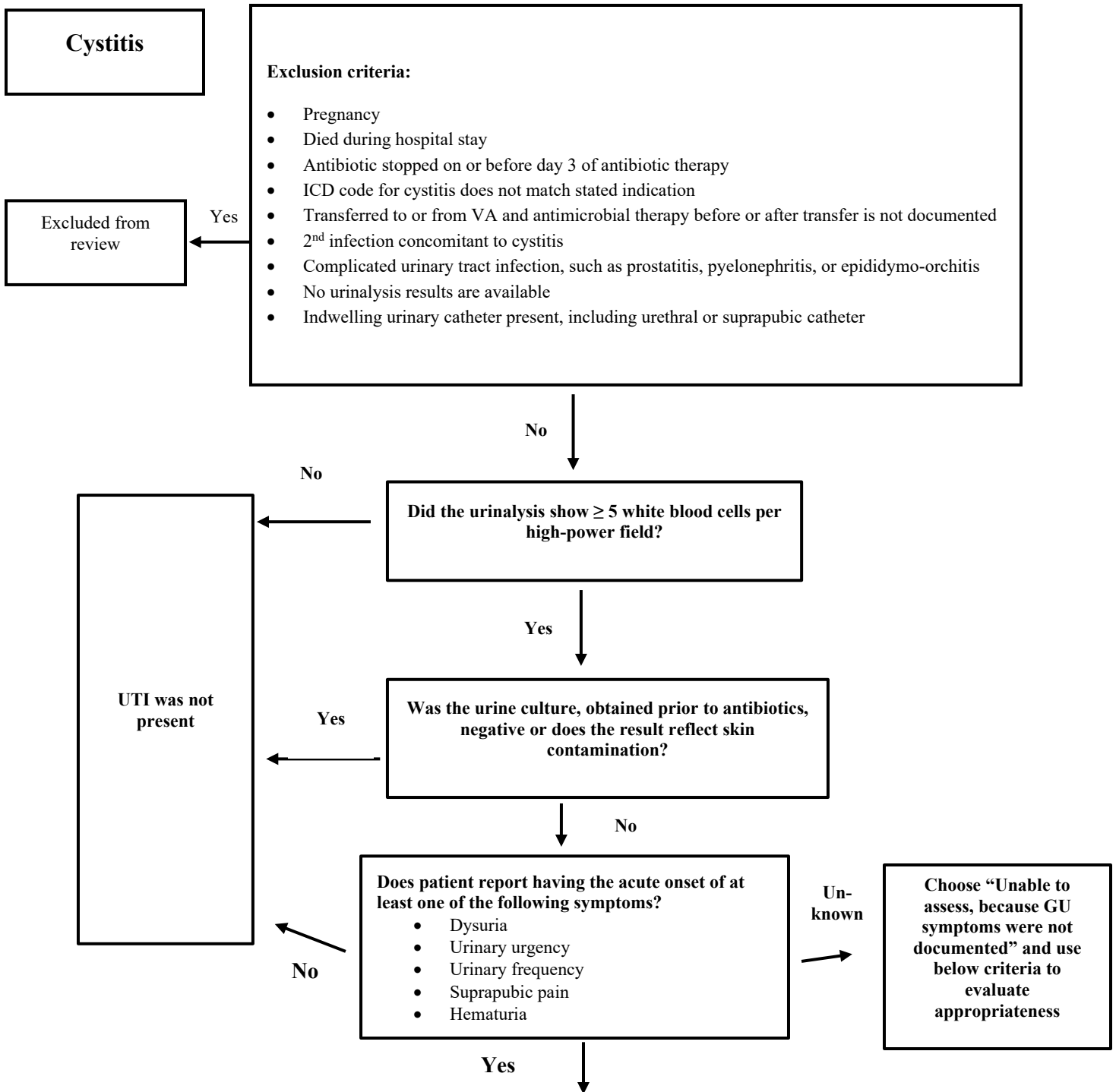
Supplemental Table 3. The association between selected aspects of guideline-concordant diagnosis/management and consultation with Emergency Medicine or Internal Medicine clinicians¹

Infection type	Total n (%)	Any consultation n (%)	No consultation n (%)	p-value ²
UTI (N=111)				
Supported diagnosis	27 (24.3)	15 (27.8)	12 (21.1)	0.41
Unsupported diagnosis	63 (56.8)	30 (55.6)	33 (57.9)	
Unable to assess	21 (18.9)	9 (16.7)	12 (21.1)	
SSTI (N=95)				
Guideline-concordant antibiotic selection	75 (78.9)	56 (83.6)	19 (67.9)	0.09
Guideline-discordant antibiotic selection	20 (21.1)	11 (16.4)	9 (32.1)	
ARI (N=108)				
Guideline-concordant management ³	79 (73.1)	20 (54.1)	59 (83.1)	<0.01
Guideline-discordant management	29 (26.9)	17 (45.9)	12 (16.9)	

Abbreviations: ARI acute respiratory tract infection; SSTI skin and soft tissue infection; UTI urinary tract infection

1. Emergency Department clinicians were involved in the antibiotic decision-making for 81 cases, and Internal Medicine clinicians were involved in 89 cases. In 2 cases, the Infectious Disease service was consulted; these 2 cases are also included in this table.
2. The p-value reflects the results of a chi-square test. For UTI, the test compared the frequency of having a supported diagnosis in cases with and without a consultation. For SSTI and ARI, the test compared the frequency of guideline-concordant antibiotic selection in cases with and without a consultation.
3. Guideline-concordant management for ARIs was defined as prescribing an antibiotic when indicated or not prescribing an antibiotic when not indicated.

Supplemental figure 1. Algorithm for assessing guideline-concordant management of cystitis



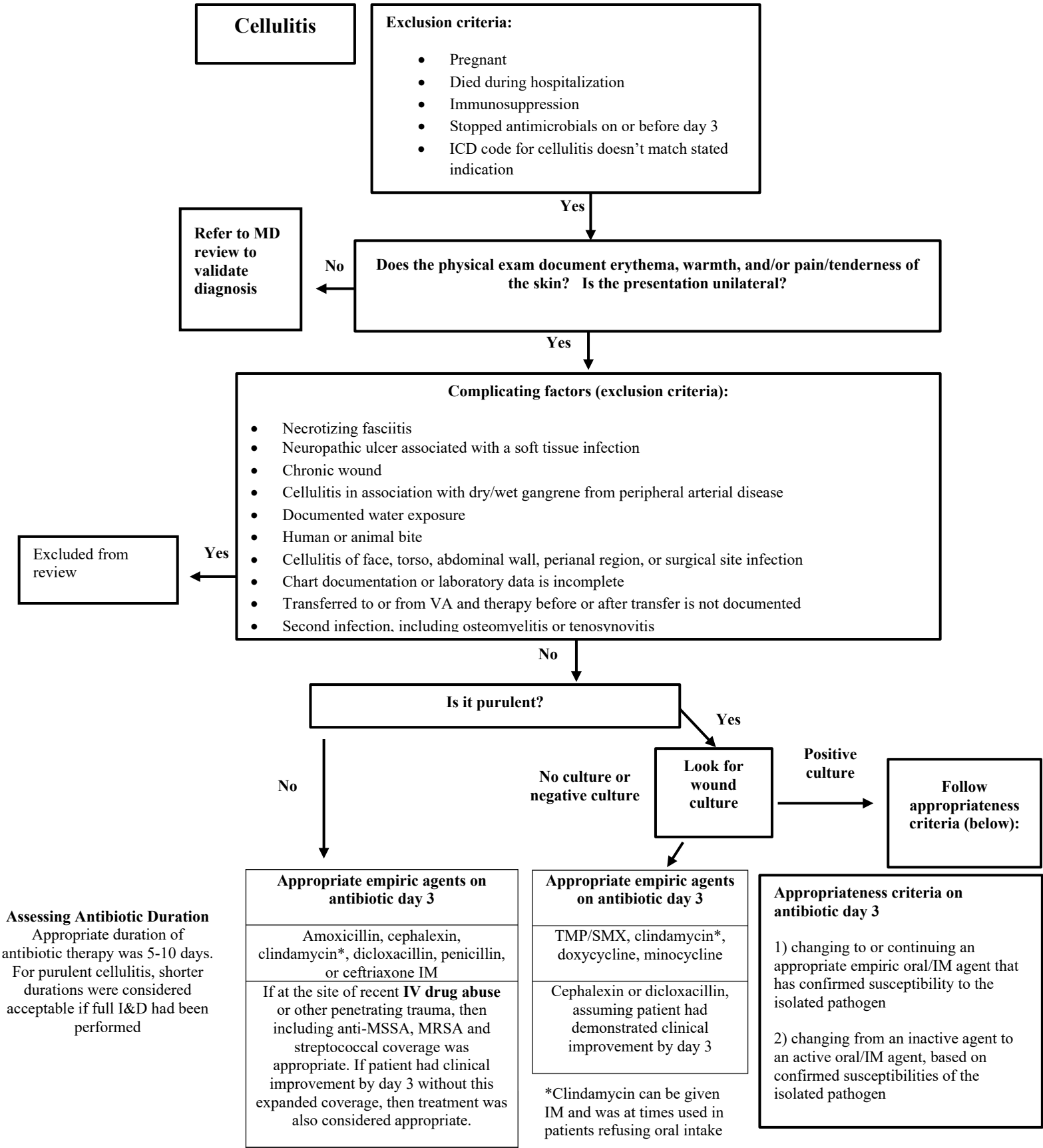
Appropriateness criteria assessed on day 3 of antibiotics

- 1) changing to or continuing an active oral/IM agent based on confirmed susceptibilities of the isolated pathogen;
- 2) changing from an inactive agent to an active oral/IM agent, based on confirmed susceptibilities of the isolated pathogen;
- 3) in the absence of a urine culture, continuing an appropriate empiric antibiotic agent (assuming the patient is demonstrating a clinical response): amoxicillin/clavulanate, cefpodoxime, cefuroxime, cephalexin, ciprofloxacin, fosfomycin, levofloxacin, nitrofurantoin, and trimethoprim/sulfamethoxazole

Appropriate antibiotic duration was 7 days except in cases of uncomplicated cystitis, defined as a lower urinary tract infection in a healthy, non-pregnant, pre-menopausal woman with no history of an abnormal urinary tract. In these cases of uncomplicated cystitis, only shorter antibiotic courses were considered appropriate (3 days for TMP/SMX and ciprofloxacin; 5 days for nitrofurantoin and oral beta-lactams).

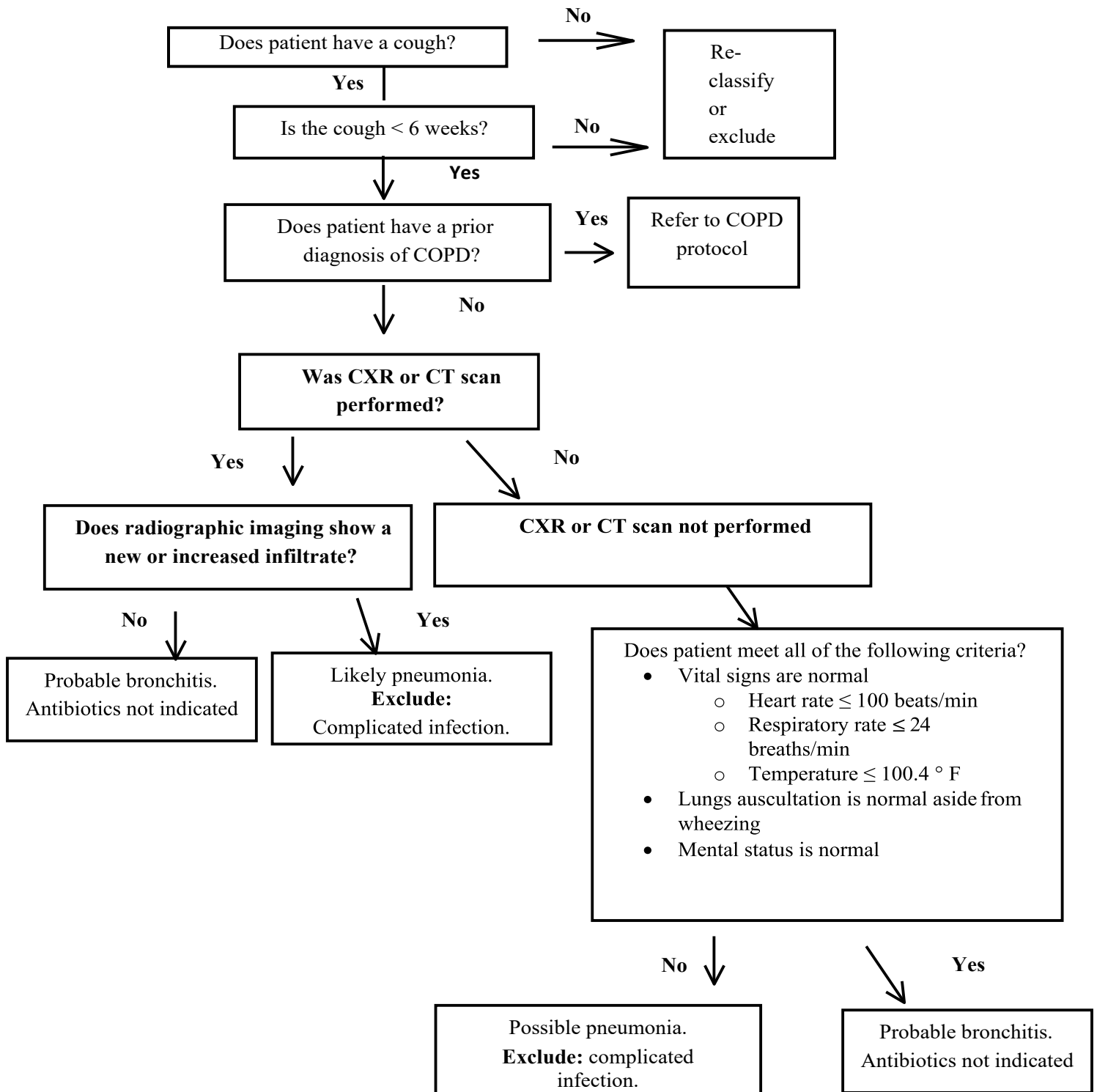
References: (1) Gupta K, Hooton TM, Naber KG, et al. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women. *Clin Infect Dis* 2011; 52: e103-e120. (2) Griebel ME, Heintz, Alexander B, Egge J, Goto M, Livorsi DJ. Understanding changes in the standardized antimicrobial administration ratio for total antimicrobial use after implementation of prospective audit and feedback. *Infect Control Hosp Epidemiol* 2018;39: 1476-1479.

Supplemental figure 2. Algorithm for assessing guideline-concordant management of cellulitis



References: (1) Stevens DL, Bisno AL, Chambers HF, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by IDSA. Clin Infect Dis 2014; 59: e10-52. (2) Griebel ME, Heintz, Alexander B, Egge J, Goto M, Livorsi DJ. Understanding changes in the standardized antimicrobial administration ratio for total antimicrobial use after implementation of prospective audit and feedback. Infect Control Hosp Epidemiol 2018;39: 1476-1479.

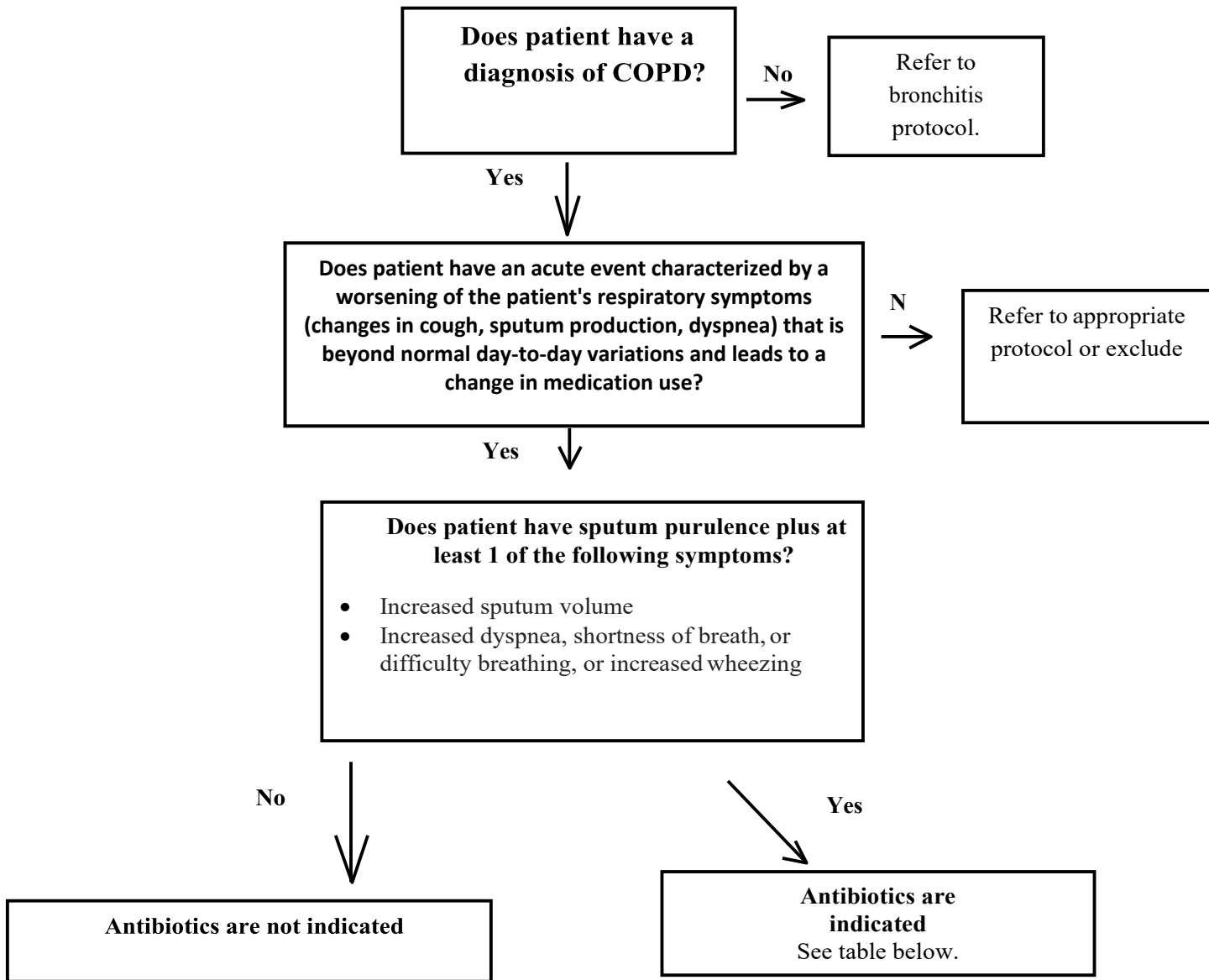
Supplemental figure 3. Algorithm for assessing guideline-concordant management of acute bronchitis



Irwin RS, Baumann MH, Bolser DC, et al. Diagnosis and management of cough: ACCP evidence-based clinical practice guidelines. *Chest*. 2006;129(1 Suppl).

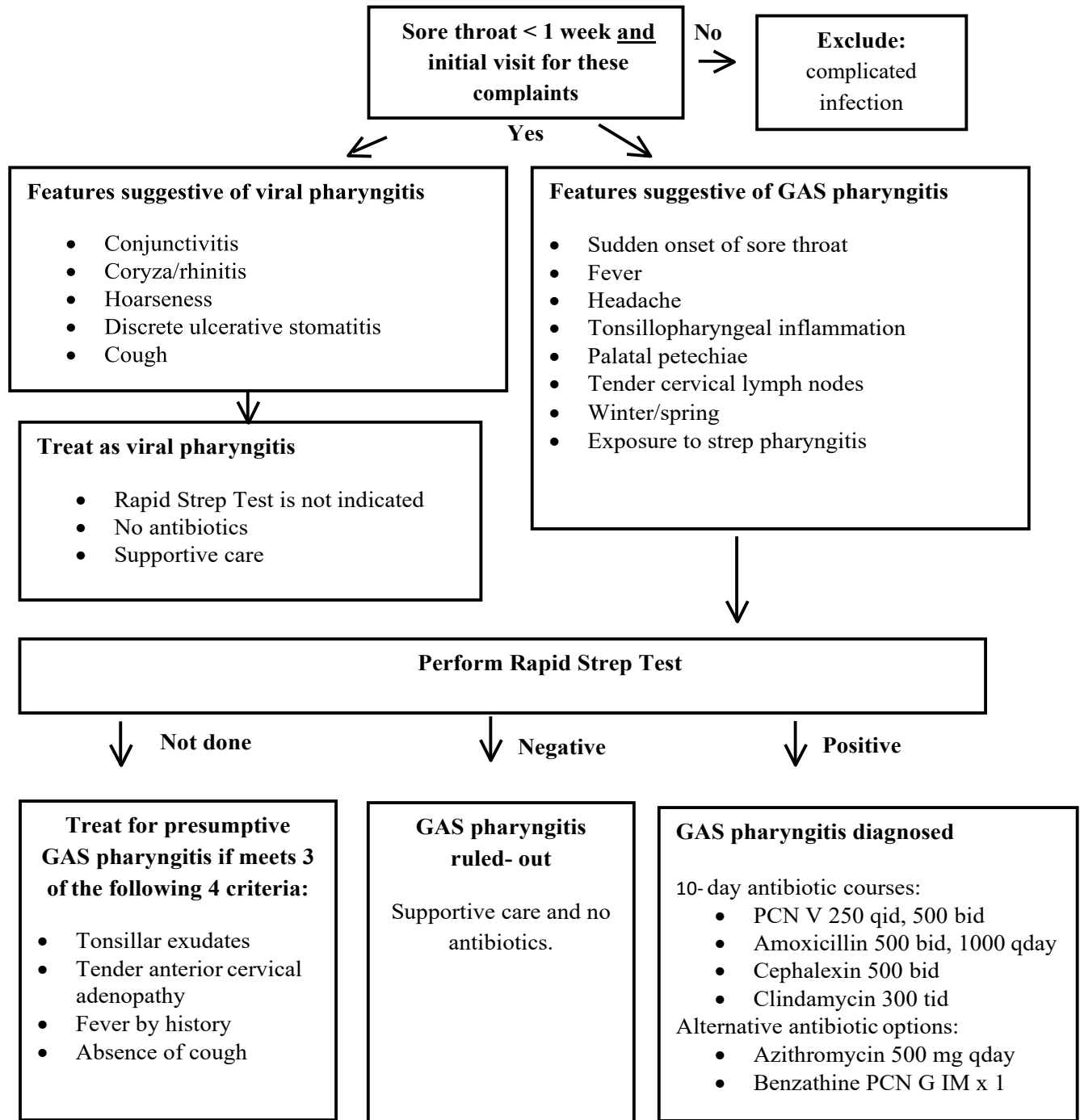
Harris AM, Hicks LA, Qaseem A, et al.. Appropriate Antibiotic Use for Acute Respiratory Tract Infection in Adults: Advice for High-Value Care From the American College of Physicians and the Centers for Disease Control and Prevention. *Ann Intern Med*. Mar 15 2016;164(6):425-434.

Supplemental figure 4. Algorithm for assessing guideline-concordant management of acute exacerbations of chronic obstructive pulmonary disease (COPD)



Drug	Dose	Duration
Amoxicillin/clavulanate	500 mg/125 mg TID or 875 mg/125 mg BID	5-7 days
Azithromycin	500 mg x1, 250 mg daily	5-7 days
Cefuroxime	250-500 mg BID	5-7 days
Cefdinir	300 mg BID or 600 mg daily	5-7 days
Cefpodoxime	200 mg BID	5-7 days
Doxycycline	100 mg BID	5-7 days

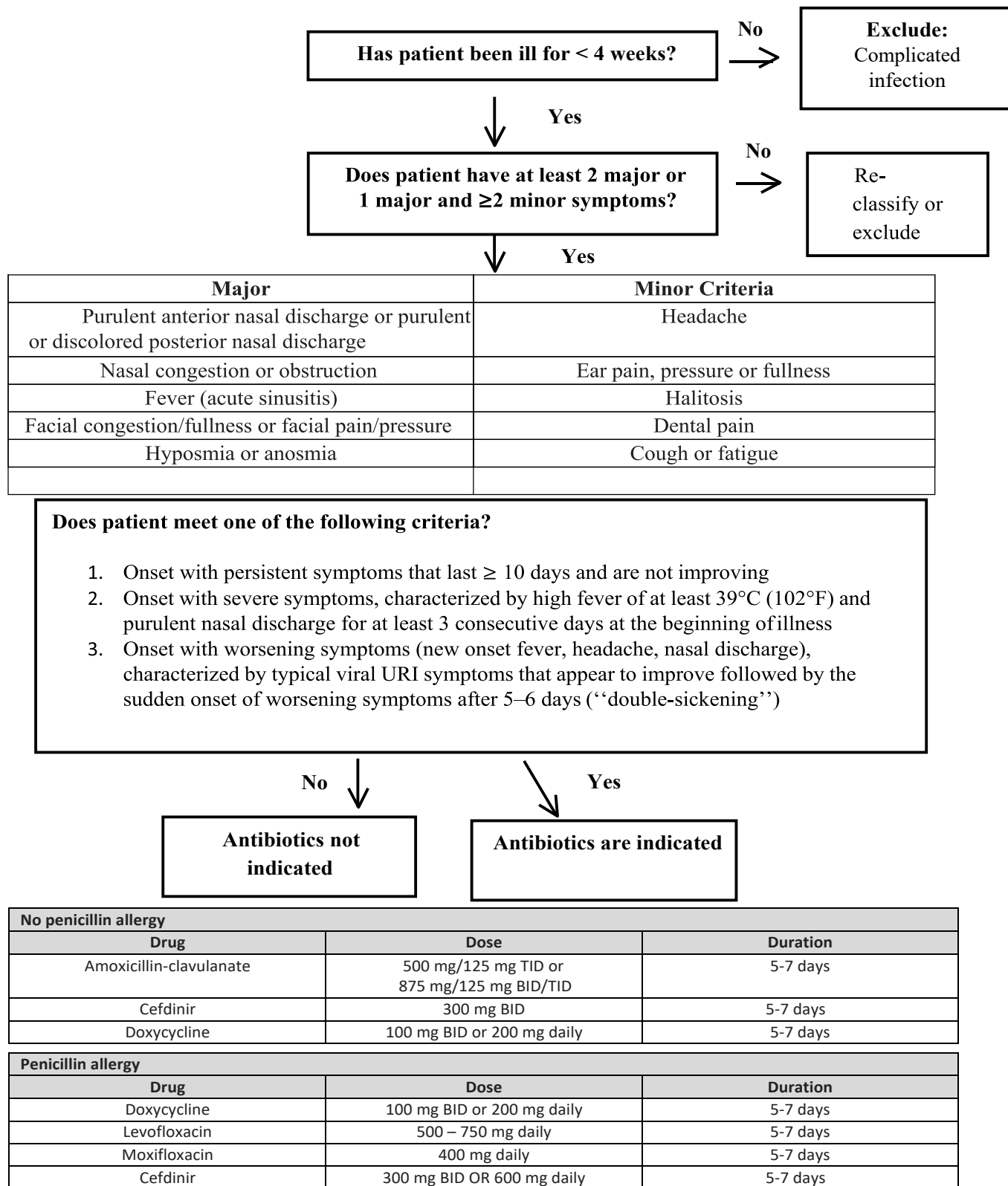
Supplemental figure 5. Algorithm for assessing guideline-concordant management of pharyngitis



Harris AM, Hicks LA, Qaseem A, et al.. Appropriate Antibiotic Use for Acute Respiratory Tract Infection in Adults: Advice for High-Value Care From the American College of Physicians and the Centers for Disease Control and Prevention. *Ann Intern Med.* Mar 15 2016;164(6):425-434.

European Society for Clinical Microbiology and Infectious Diseases Sore Throat Guideline Group. Guideline for the management of acute sore throat. *Clin Microbiol Infect* 2012; 18 (Suppl. 1): 1-27.

Supplemental figure 6. Algorithm for assessing guideline-concordant management of acute sinusitis



Supplemental figure 7. Algorithm for assessing guideline-concordant management of upper respiratory tract infections, not otherwise specified

