DIAGNOSIS AND MANAGEMENT OF

Streptococcal Pharyngitis

2019 Update

This care process model (CPM) was developed by Intermountain Healthcare's Antibiotic Stewardship team, Medical Speciality Clinical Program,Community-Based Care, and Intermountain Pediatrics. Based on expert opinion and the Infectious Disease Society of America (IDSA) Clinical Practice Guidelines, it provides best-practice recommendations for diagnosis and management of group A streptococcal pharyngitis (strep) including the appropriate use of antibiotics.

KEY POINTS

- **Accurate diagnosis and appropriate treatment can prevent serious complications.** When strep is present, appropriate antibiotics can prevent acute rheumatic fever, peritonsillar abscess, and other invasive infections.[SHU] Treatment also decreases spread of infection and improves clinical symptoms and signs for the patient.
- **Differentiating between a patient with an active strep infection and a patient who is a strep carrier with an active viral pharyngitis is challenging.** Treating patients for active strep infection when they are only carriers can result in overuse of antibiotics. Approximately 20% of asymptomatic school-aged children may be strep carriers, and a throat culture during a viral illness may yield positive results, but not require antibiotic treatment.[SHU] Prescribing repeat antibiotics will not help these patients and can contribute to antibiotic resistance.
- **For adult patients, routine overnight cultures after a negative rapid strep test are unnecessary in usual circumstances** because the risk for acute rheumatic fever is exceptionally low.[SHU] Physicians may continue to use overnight throat cultures when the patient's risk score is high or if the patient has an increased likelihood of exposure due to contact or employment (e.g., teachers, family member with strep, etc.).

Why Focus on STREPTOCOCCAL PHARYNGITIS?

- **Antibiotic prescribing for acute pharyngitis has dropped, but further reduction is needed.** Approximately 37% of children presenting for medical visits with sore throat are group A streptococcus positive, but antibiotics are still prescribed about 56% of the time based on 2010-11 national data. For adults, approximately 18% are group A streptococcus positive and yet 72% of those aged 20 through 64 years are prescribed an antibiotic.[FLE, HAR]
- **Unnecessary antibiotic prescribing is costly and dangerous.** From 1997 to 2010, the financial cost of unnecessary antibiotic prescribing to adults with sore throat was about $500 million in the United States. Antibiotics can also be expensive for patients and can have negative side effects. Between 5% and 25% of patients on antibiotics develop diarrhea, and 1 in 1,000 visit an emergency department for a serious adverse drug event.[BAR]

WHAT'S INSIDE?

MEASUREMENT & GOALS

- **Ensure appropriate use of throat culture** for adult patients who meet high risk criteria
- **Select appropriate antibiotics** for patients who meet the diagnostic criteria for a group A strep throat infection.
- **Reduce the unnecessary use of antibiotics** for an unclear diagnosis of strep and for strep carriers.

Indicates an Intermountain measure

GermWatch is Intermountain's source for up-to-date information about infectious diseases currently circulating in Utah communities.

For Intermountain physicians

For parents and patients: (germwatch.org)

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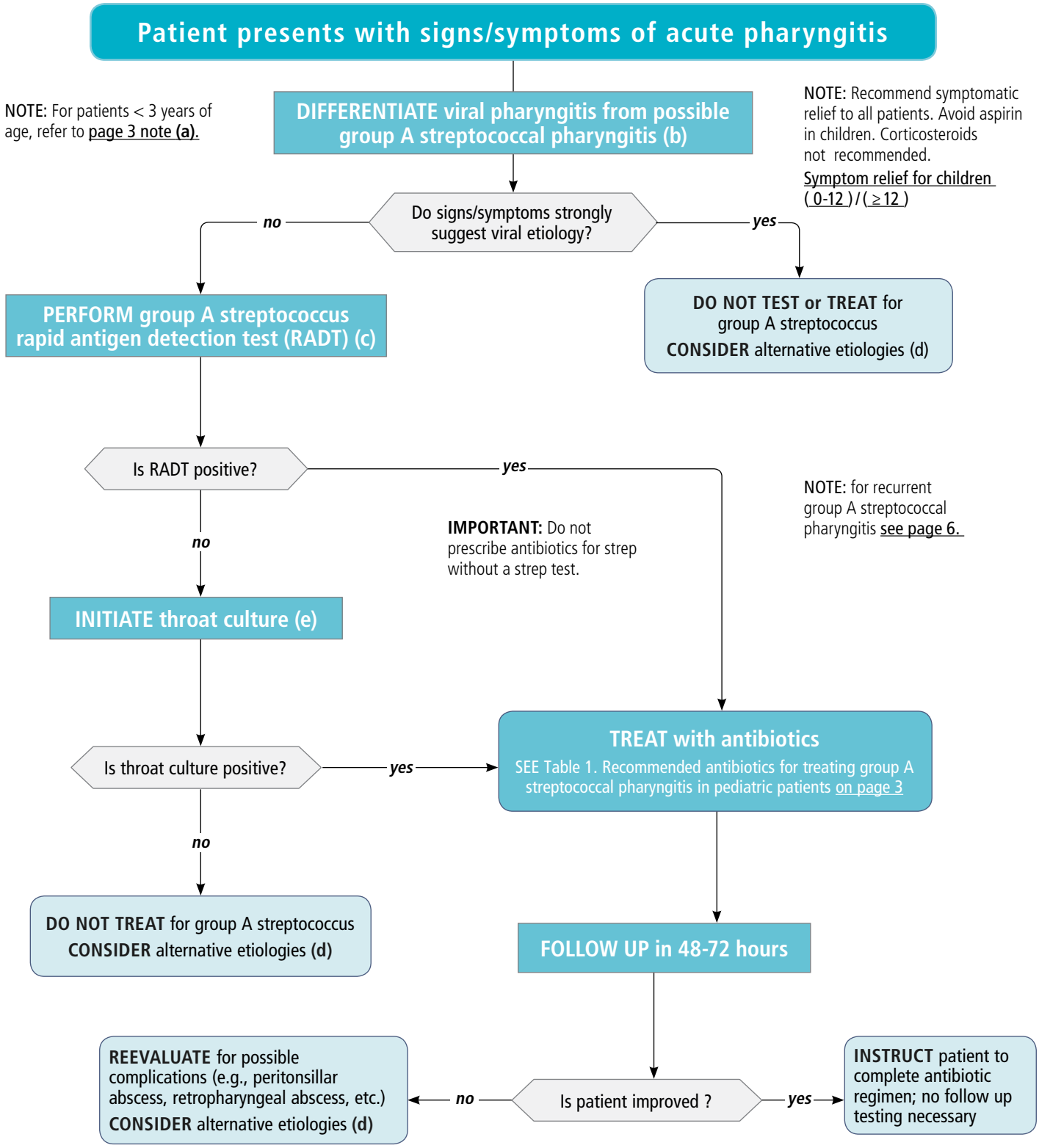
ALGORITHM 1

DIAGNOSIS AND TREATMENT OF PEDIATRIC STREPTOCOCCAL PHARYNGITIS AGES 3 – 18 YEARS



ALGORITHM 1 NOTES AND ASSESSMENT TOOLS – PEDIATRIC

(a) Children <3 years of age

Group A streptococcal disease in children under 3 years of age has different presentation, course of disease and testing recommendations than that of older children and adolescents.

- Presentation often exhibits fever, mucopurulent rhinitis, excoriated nares, and diffuse adenopathy. Classical presentation is rare.
- Very low risk of acute rheumatic fever resulting from strep infection in children < 3 years of age.
- Testing is **NOT recommended** unless known close contact with person/s diagnosed with group A streptococcal pharyngitis .

(b) Differentiation of acute pharyngitis

Viral pharyngitis	Group A streptococcal pharyngitis
The signs and symptoms below are strongly suggestive of viral etiology.	The signs and symptoms below are common in group A streptococcal pharyngitis but are not diagnostic. Diagnosis requires testing.
• Conjunctivitis • Coryza • Cough • Diarrhea • Hoarseness • Discrete ulcerative stomatitis • Viral exanthema	• Sudden onset of sore throat • Fever • Headache • Nausea, vomiting, abdominal pain • Tonsillopharyngeal inflammation • Patchy tonsillopharyngeal exudates • Scarlatiniform rash • Edematous uvula • Palatal petechiae • Tender nodes • Age 5–15 years • Winter and early spring • History of exposure to strep pharyngitis

(c) Rapid antigen detection test (RADT)

Consider the following when performing a RADT:

- Be careful to sample tonsils, tonsillar fossae or posterior pharyngeal wall, other surfaces are not appropriate.
- If RADT is positive, it is **NOT** necessary to initiate a throat culture.
- Testing is **NOT** recommended for patients with overt viral features **(b)**
- Do not test asymptomatic contacts (e.g., close family).
- If a parent calls with a positive rapid strep from a take-home kit, confirm in the office with RADT before treating.

(d) Other common etiologies of acute pharyngitis

- Adenovirus
- Epstein–Barr virus
- Influenza A and B
- Parainfluenza
- Rhinovirus
- Group C and G *Streptococci*
- *Neisseria gonorrhea*
- *Fusobacterium necrophorum*

(e) Throat culture

Consider the following when initiating a throat culture:

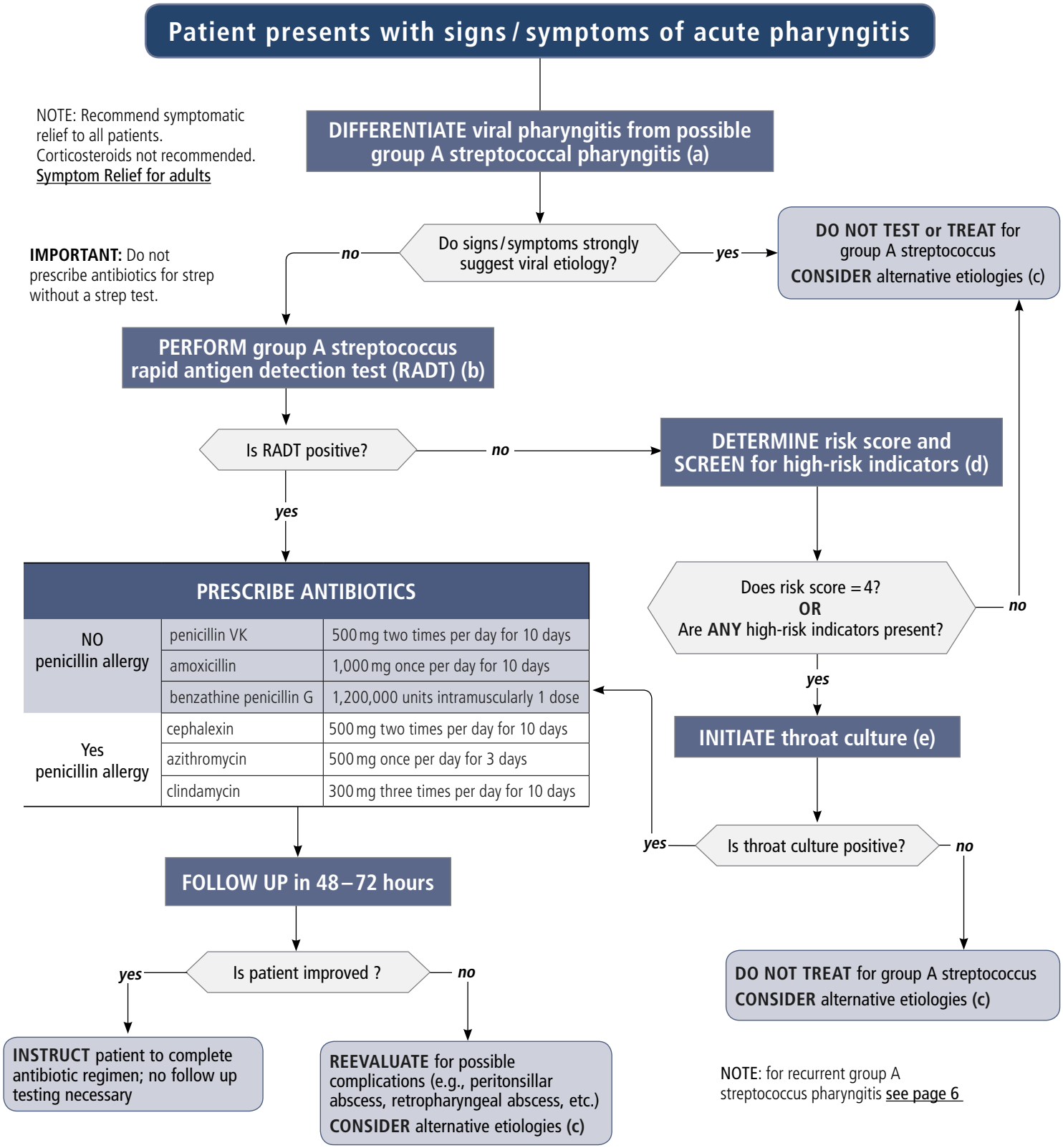
- Be careful to sample tonsils, tonsillar fossae or posterior pharyngeal wall, other surfaces are not appropriate.
- Do **NOT** prescribe antibiotics to patient while waiting for culture results unless there are compelling reasons to do so (e.g., confirmed household contact or scarlet fever)

ANTIBIOTIC TREATMENT– PEDIATRIC

TABLE 1. Recommended antibiotics for treating group A streptococcal pharyngitis in pediatric patients

		Patient weight	
No penicillin allergy	penicillin VK	< 60 lbs (< 27 kg)	250 mg orally two times per day for 10 days
		> 60 lbs (> 27 kg)	500 mg orally two times per day for 10 days
	benzathine penicillin G	< 60 lbs (< 27 kg)	600,000 units intramuscularly 1 dose only
		> 60 lbs (> 27 kg)	1,200,000 units intramuscularly 1 dose only
	amoxicillin (solution) if child can not swallow pills	50 mg/kg/dose orally once per day for 10 days (max 1000 mg/day)	
Yes Penicillin allergy	cephalexin	20 mg/kg/dose orally two times per day for 10 days (max 500 mg/dose)	
	azithromycin	20 mg/kg/dose orally once per day for 3 days (max 500 mg/dose)	
	clindamycin	7 mg/kg/dose orally three times per day for 10 days (max 300 mg/dose)	

ALGORITHM 2
DIAGNOSIS AND TREATMENT OF ADULT STREPTOCOCCAL PHARYNGITIS



ALGORITHM 2 NOTES AND ASSESSMENT TOOLS – **ADULT**

(a) Differentiation of acute pharyngitis

Viral pharyngitis

The signs and symptoms below are strongly suggestive of viral etiology.

- Conjunctivitis
- Coryza
- Cough
- Diarrhea
- Hoarseness
- Discrete ulcerative stomatitis
- Viral exanthema

Group A streptococcal pharyngitis

The signs and symptoms below are common in group A streptococcal pharyngitis but are not diagnostic. Diagnosis requires testing.

- Sudden onset of sore throat
- Fever
- Headache
- Nausea, vomiting, abdominal pain
- Tonsillopharyngeal inflammation
- Patchy tonsillopharyngeal exudates
- Scarlatiniform rash
- Edematous uvula
- Palatal petechiae
- Tender nodes
- Age 5–15 years
- Winter and early spring
- History of exposure to strep pharyngitis

(b) Rapid antigen detection test (RADT)

Consider the following when performing a RADT:

- Be careful to sample tonsils, tonsillar fossae or posterior pharyngeal wall, other surfaces are not appropriate.
- If RADT is positive, it is **NOT** necessary to initiate a throat culture.
- Testing is **NOT** recommended for patients with overt viral features **(a)**
- Do not test asymptomatic contacts (e.g., close family).
- If a parent calls with a positive rapid strep from a take-home kit, confirm in the office with RADT before treating.

(c) Other common etiologies of acute pharyngitis

- Adenovirus
- Epstein-Barr virus
- Influenza A, B
- Parainfluenza
- Rhinovirus
- Group C and G *Streptococci*
- *Neisseria gonorrhea*
- *Fusobacterium necrophorum*

(d) Risk score determination and other high-risk indicators [WES]

To determine risk score, assign one point for each of the following:

- Fever > 100.4°F (38°C)
- Absence of cough
- Swollen, tender anterior cervical nodes
- Tonsillar swelling or exudate

Other high-risk indicators include:

- Contact risk (living with person/s with confirmed group A streptococcal pharyngitis).
- Employment risk (teacher or daycare employee)

(e) Throat culture

Consider the following when initiating a throat culture:

- Be careful to sample tonsils, tonsillar fossae or posterior pharyngeal wall, other surfaces are not appropriate.
- Do **NOT** prescribe antibiotics to patient while waiting for culture results unless there are compelling reasons to do so (e.g., confirmed household contact or scarlet fever).

TONSILLECTOMY RECOMMENDATIONS [BAU]

Presence of ANY of the following are criteria for tonsillectomy.

- ≥7 episodes in the past year
- ≥5 episodes in each of preceding 2 years
- ≥3 episodes in each of preceding 3 years.

Episodes need to have been correctly treated in order to meet criteria.

Definition of episode:

Sore throat plus 1 of the following:

- Temperature > 101°F (38.3°C)
- Cervical lymphadenopathy (tender lymph nodes or > 2 cm)
- Tonsillar exudate,
- Positive culture for group A ß-hemolytic streptococcus

Definition of treatment:
Antibiotics administered in conventional dosage for proved or suspected streptococcal episodes.

PHARYNGEAL CARRIERS

Pharyngeal carriers are unlikely to spread streptococcal pharyngitis to close contacts, are at little or no risk of suppurative or nonsuppurative complications, and usually do not require antibiotic treatment. For these reasons, **routine treatment of strep carriers is not recommended.** [SHU]

- **Reasons for recurrent streptococcal pharyngitis** can include:
  - Chronic pharyngeal carriage masquerading as an acute strep infection due to a culture done during a concurrent viral infection
  - Noncompliance with prescribed antibiotic therapy
  - A new streptococcal pharyngitis infection
  - Recrudescence of infection with the original infecting strain (less common)
- **Collecting specific information can give clues that will help differentiate patients with recurrent active strep infections from those that are strep carriers with repeated viral pharyngitis.** Consider the following:
  - Age of patient and season
  - Local epidemiological environment (GermWatch)
  - Clinical response to antibiotic therapy
  - Patient throat culture status when asymptomatic, between episodes
- **When antibiotics might be needed.** Carriers do not ordinarily require antibiotic therapy, however exceptions do occur. Some of these include:
  - Community outbreak of acute rheumatic fever, acute post-streptococcal glomerulonephritis, or invasive streptococcal pharyngitis
  - Outbreak of streptococcal pharyngitis in a closed or partially closed community
  - History of acute rheumatic fever (family or personal)
  - Tonsillectomy being considered only because of carriage

TABLE 2. Antibiotics treatment recommendation for group A streptococcus carrier [SHU, COH]

Pediatric		Patient weight	
No penicillin allergy	penicillin VK + rifampin	< 60 lbs (< 27 kg)	250 mg penicillin orally four times per day for 10 days + 20 mg rifampin / kg / dose orally once per day for last 4 days (max 600 mg / dose)
		> 60 lbs (> 27 kg)	500 mg penicillin orally four times per day for 10 days + 20 mg rifampin / kg / dose orally once per day for last 4 days (max 600 mg / dose)
	benzathine penicillin G + rifampin	< 60 lbs (< 27 kg)	600,000 units intramuscularly 1 dose only + 10 mg rifampin / kg / dose orally two times a day for 4 days (max 300 mg / dose)
		> 60 lbs (> 27 kg)	1,200,000 units intramuscularly 1 dose + 10 mg rifampin / kg / dose orally two times per day for 4 days (max 300 mg / dose)
	amoxicillin / clavulanate	15 mg amoxicillin / kg / dose orally three times per day for 10 days (max 500 mg / dose)	
Yes penicillin allergy	clindamycin	10 mg / kg / dose orally three times per day for 10 days (max 300 mg / dose)	
Adult			
No penicillin allergy	penicillin VK + rifampin	500 mg penicillin orally four times per day for 10 days + 600 mg rifampin orally once per day for last 4 days	
	benzathine penicillin G + rifampin	1,200,000 units penicillin intramuscularly 1 dose only + 300 mg rifampin orally two times per day for 4 days	
	amoxicillin / clavulanate	500 mg amoxicillin/ 125 mg clavulanate orally three times per day for 10 days	
Yes penicillin allergy	clindamycin	300 mg orally three times per day for 10 days	

REFERENCES

BAR Barnett ML, Linder JA. Antibiotic prescribing to adults with sore throat in the United States, 1997-2010. *JAMA Intern Med.* 2013. doi: 10.1001/jamainternmed.2013.11673

BAU Baugh RF, Archer SM, Mitchell RB, et al. American Academy of Otolaryngology-Head and Neck Surgery Foundation. Clinical practice guideline: tonsillectomy in children. *Otolaryngol Head Neck Surg.* 2011;144(1 Suppl):S1-S30.

COH Cohen R, Reinert P, De La Rocque F, et al. Comparison of two dosages of azithromycin for three days versus penicillin V for ten days in acute group A streptococcal tonsillopharyngitis. *Ped Infect Dis.* 2002;21(4): 297-303

FLE Fleming-Dutra KE, Hersh AL, Shapiro DJ, et al. Prevalence of inappropriate antibiotic prescriptions among US ambulatory care visits. 2010-2011. *JAMA.* 2016;315(17): 1864-1873.

HAR Harris AM, HIcks LA, Qaseem A. 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.* 2016;164(6):425-434

SHU Shulman ST, Bisno AL, Clegg HW, et al. Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis: 2012 update by the Infectious Diseases Society of America. *Clin Infect Dis.* 2012;55(101):1279-1282.

WES Wessels MR. Clinical practice. Streptococcal pharyngitis. *N Engl J Med.* 2011;364(7):648-655.

RESOURCES AND REFERENCES

Patient resources

Clinicians can order Intermountain patient education booklets and fact sheets for distribution to their patients from Intermountain's Online Library and Print Store, Print It!

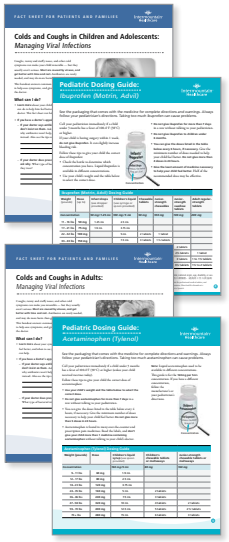
Upper Respiratory Infection: Symptom relief checklist (0 - 12)
Available in English and Spanish

Upper Respiratory Infection: Symptom relief checklist (≥ 12)
Available in English and Spanish

Colds and Coughs in Children and Adolescents: Managing Viral Infections
Available in English and Spanish

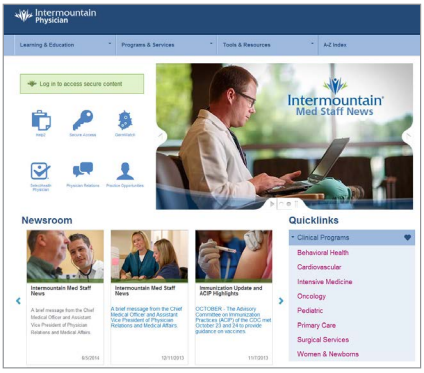
Colds and Coughs in Adults: Managing Viral Infections
Available in English and Spanish

Pediatric dosing Guide: Acetaminophen and Ibuprofen
Available in English and Spanish



Provider resources

To access this and other CPM's as well as Best Practice Flash Cards, providers can go to intermountainphysician.org and access tools and resources. In order to access Utah's current infectious disease environment, link to GermWatch.org.



CPM TEAM

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This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every physician or every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although physicians are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base. Send feedback to Eddie Stenehjem MD, Intermountain Healthcare, Infectious Disease (Eddie.Stenehjem@imail.org).

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