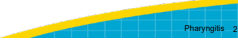
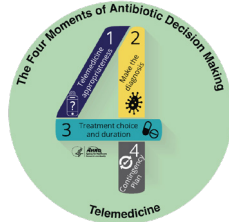


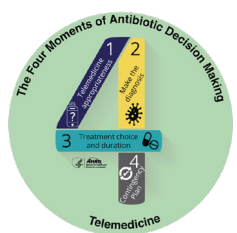
Best Practices in Managing Pharyngitis Over Telemedicine

Slide Title and Commentary	Slide Number and Slide
Best Practices in Managing Pharyngitis Over Telemedicine SAY: Welcome to the presentation titled, “Best Practices in Managing Pharyngitis Over Telemedicine.”	Slide 1 AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Best Practices in Managing Pharyngitis Over Telemedicine  AHRQ Pub. No. 2627-0021 October 2020
Objectives SAY: This presentation uses a clinical case–based format to discuss the approach to managing pharyngitis over telemedicine. By the end of this presentation, participants will be able to— • Describe how to evaluate throat pain in children and adults over telemedicine • Understand the management of pharyngitis unlikely to be caused by group A <i>Streptococcus</i> • Determine when a person presenting with symptoms of pharyngitis over telemedicine may need to be evaluated in person	Slide 2 Objectives By the end of this presentation, participants will be able to— • Describe how to evaluate throat pain in children and adults over telemedicine • Understand the management of pharyngitis unlikely to be caused by group A <i>Streptococcus</i> • Determine when a person presenting with symptoms of pharyngitis over telemedicine may need to be evaluated in person AHRQ Safety Program for Telemedicine: Improving Antibiotic Use  Pharyngitis 2

Slide Title and Commentary	Slide Number and Slide
The Four Moments of Antibiotic Decision Making SAY: This presentation reviews a clinical case using the Four Moments of Antibiotic Decision Making framework. Briefly, this framework consists of the following moments: Moment 1: Is my patient an appropriate candidate for a telemedicine visit? Moment 2: Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? Moment 3: If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? Moment 4: What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan?	Slide 3 The Four Moments of Antibiotic Decision Making  1. Is my patient an appropriate candidate for a telemedicine visit? 2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? 3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? 4. What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 3

Slide Title and Commentary	Slide Number and Slide
Case Presentation SAY: Let's discuss a clinical case. A 46-year-old man named José is presenting with 2 days of a sore throat. He states that it hurts when he swallows. José's primary concern is a sore throat or pharyngitis. Pharyngitis is generally caused by viruses or bacteria, but over 90 percent of cases of pharyngitis in children and adults are caused by viruses. The goal of a telemedicine visit when a patient presents with pharyngitis is to differentiate viral and bacterial pharyngitis because bacterial pharyngitis generally requires a referral for diagnostic testing and potentially an in-person visit. However, there are also some causes of viral pharyngitis that may require additional diagnostic testing, such as mononucleosis and acute HIV, which we will discuss in more detail later in the presentation. To understand the likely cause of his sore throat, you can ask José several followup questions: When did it start? How bad is the pain? Is it affecting eating or drinking? Are there associated symptoms like fevers, chills, cough, runny nose? Have you been drooling or having difficulty swallowing secretions? Have you had difficulty breathing? Have you noticed any asymmetry in your neck when looking in the mirror? Have you noticed a new rash on your body? Are you having fatigue or myalgias? Have you had any right upper quadrant or left upper quadrant abdominal pain in the last few days? Finally, ask José if there are any other symptoms he is experiencing that you have not specifically asked about.	Slide 4 Case Presentation • 46-year-old man with 2 days of sore throat and dysphagia ◦ When did it start? ◦ How bad is the pain? ◦ Associated symptoms? ◦ Difficulty swallowing secretions? ◦ Difficulty breathing? ◦ Asymmetry in the neck? ◦ Rash? ◦ Fatigue or myalgias? ◦ Abdominal pain? ◦ Any other symptoms?  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 4

Slide Title and Commentary	Slide Number and Slide
Case Presentation: José's Responses SAY: José states that he has been sneezing, coughing, and feeling generally congested for about 2 days. He thinks he has a fever but is not sure. He has not had any trouble with drooling or controlling secretions. He has been able to swallow soup and keep it down without difficulty but has no appetite for more solid foods. He does not report any other symptoms. You ask him who he has been in contact with over the past few weeks, including sick contacts. Some causes of pharyngitis are spread person to person. For example, when adults develop group A strep pharyngitis—commonly referred to as strep throat—it is often the result of being around a young child. He acknowledged that he cares for his 3-year-old niece two days a week. She generally has been well but chronically seems to have a runny nose. Of note, children are often asymptomatic carriers of group A strep. Even without any symptoms they can pass it to adults. You ask José about sexual activity as new sexual partners can place people at increased risk of gonococcal or chlamydial pharyngitis or acute HIV. He states that he has not had any sexual encounters for about 6 months.	Slide 5 Case Presentation: Jose's Responses • Sneezing, coughing, and feeling generally congested for about 2 days • He thinks he has a fever • No trouble with drooling or keeping secretions down • Able to swallow soup and keep it down without difficulty • Has been taking care of 3-year-old niece • No recent sexual activity  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 5
Moment 1: Telemedicine Appropriateness SAY: Regarding Moment 1: “Is my patient an appropriate candidate for a telemedicine visit?”, based on what you know thus far, José does not appear acutely ill. He is able to speak in full sentences and respond appropriately to questions. He does not appear to have a muffled voice, which might be suggestive of a peritonsillar abscess which can happen in adults or children. He appears to be breathing comfortably and does not have any evidence of stridor or respiratory distress. He is able to swallow his secretions. If any of these are concerns, you should refer him for an immediate emergency department visit. Although José does not appear to be having a medical emergency, he may still require an in-person visit for further diagnostic testing based on your physical examination. However, it appears reasonable to proceed with a telemedicine visit for now.	Slide 6 Moment 1: Telemedicine Appropriateness • Based on what you know thus far, Jose does not appear acutely ill • Able to speak in full sentences and respond appropriately to questions • Does not appear to have a muffled voice suggestive of a peritonsillar abscess • No evidence of stridor or respiratory distress • Able to swallow his secretions  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 6

Slide Title and Commentary	Slide Number and Slide
Moment 2: Need for Antibiotics SAY: You move on to Moment 2, which states: “Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed?” You proceed with a physical examination to help you further differentiate further whether José’s pharyngitis is likely to be viral versus bacterial.	Slide 7 Moment 2: Need for Antibiotics  1. Is my patient an appropriate candidate for a telemedicine visit? 2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 7
Moment 2: Virtual Physical Exam 1 SAY: Ask José to sit near a window or have a desk lamp, flashlight, or phone light available. Ask him to ensure his neck is fully exposed, with clothing that may obscure visualization (e.g., collars or turtlenecks) moved out of the way. Guide him to position the phone or webcam at mouth level and tilt his head back. Ask him to open his mouth wide, stick out his tongue, and say “ahh” to elevate the soft palate. The soft palate is the fleshy part at the back of the roof of the mouth, behind the hard palate (the bony part). As you look into Jose’s mouth, you are looking to make sure his tonsils are symmetric and there is no uvular deviation. If one tonsil was much larger than the other, you might be suspicious for a peritonsillar abscess. You are looking for exudates or white patches on the tonsils, which could be consistent with a strep or other bacterial infection or mononucleosis. You are also looking for oral ulcers that could be suggestive of herpes simplex virus, or HSV. You notice that his throat appears red and inflamed but you do not see any exudates.	Slide 8 Moment 2: Virtual Physical Examination 1 • Ensure appropriate lighting • Position the camera • Examine the oropharynx • Examine tonsils for symmetry and ensure no uvular deviation • Look for exudates which could be consistent with Strep or other bacterial infection or mononucleosis • Look for oral ulcers that could be Herpes Simplex Virus  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 8

Slide Title and Commentary	Slide Number and Slide
Moment 2: Virtual Physical Exam 2 SAY: Then you tell him he can close his mouth and you request that he tilt his head back. You visually inspect and do not see any obvious neck swelling, asymmetry, or enlarged lymph nodes. You ask him to turn his head side to side and up and down. He is able to do this without difficulty, which is reassuring against a neck mass. Next, help José feel for enlarged or tender anterior cervical lymph nodes, posterior cervical lymph nodes, supraclavicular nodes, and axillary nodes by demonstrating on yourself. To check for anterior cervical lymph nodes (located along the front of the neck), ask him to gently use his fingertips to feel along the sides of his windpipe, from just below his jawline down to his collarbone. For the posterior cervical lymph nodes (located along the back of the neck), ask him to tilt his head slightly forward and use his fingers to feel along the muscle that runs from the base of his skull to his shoulder. He should apply light pressure in a circular motion to detect any swelling or tenderness. To examine his supraclavicular lymph nodes (found just above the collarbone), he should place his fingertips in the hollow area where his neck meets his collarbone and press gently while moving his fingers in small circles. For the axillary lymph nodes (located in the armpits), tell him to raise his arm slightly and use his opposite hand to feel deep in the armpit, pressing along the inner part of the upper arm and chest wall. After doing all of this, José mentions that he thinks he might feel some small bumps “here,” and when he says “here,” he points to around his anterior cervical chain. He says they don’t hurt. He does not feel enlarged nodes in the other regions.	Slide 9 Moment 2: Virtual Physical Examination 2 • Ensure the neck is fully exposed, with clothing that may obscure visualization (e.g., collars or turtlenecks) moved out of the way • Inspect for visible swelling, asymmetry, or lymphadenopathy • Ask patient to slowly rotate head to each side and then flex and extend the neck, noting any pain or restricted range of motion • Instruct patient in self-palpation of the anterior cervical, posterior cervical, supraclavicular, and axillary lymph node regions, asking them to report any tenderness or palpable enlargement  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 9

Slide Title and Commentary	Slide Number and Slide
Viral Pharyngitis SAY: José's symptoms and physical examination appear most suggestive of a viral pharyngitis caused by a respiratory virus. Examples include adenovirus, rhinovirus, and coronavirus. Patients with viral pharyngitis have additional symptoms suggesting a viral infection besides throat pain such, as low-grade fever, malaise, fatigue, rhinorrhea, cough, or conjunctivitis, which appears to be the case with José. Viral pharyngitis is self-resolving and is expected to improve within 7–10 days. When considering acute pharyngitis, it is always important to consider the risk for human immunodeficiency virus (HIV). Acute HIV occurs within a month of exposure to the virus and typically presents with a sore throat without tonsillar exudate, fever, fatigue, lymphadenopathy (especially cervical, axillary, and inguinal nodes), mild headaches, and myalgias. It can commonly be mistaken for mono, which we will discuss on the next slide. José says he has not had any recent sexual encounters, making this less likely. If you are concerned for acute HIV, Jose should be referred for HIV testing or perform an at-home screening test. For both viral pharyngitis caused by traditional respiratory viruses and acute HIV, antibiotics will not improve symptoms and may cause avoidable adverse events.	Slide 10 Viral Pharyngitis¹⁻³ • Symptoms and physical examination most suggestive of viral pharyngitis • Patients typically have other viral symptoms (e.g., low-grade fever, malaise, fatigue, rhinorrhea, cough, and/or conjunctivitis) • Generally self-resolving • Expected to improve within 7-10 days • Antibiotics will not help AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 10

Slide Title and Commentary	Slide Number and Slide
Mononucleosis SAY: Pharyngitis caused by the Epstein-Barr virus (EBV)—commonly known as mononucleosis, or mono—presents differently from other viral pharyngitis. It most commonly affects adolescents and young adults. Mono is spread through contact with saliva. Most people infected with Epstein-Barr virus are asymptomatic. Of those patients who are symptomatic, typical symptoms include fever, exudative pharyngitis, fatigue, and cervical lymphadenopathy. Since Jose has a cough, runny nose, and typical respiratory viral symptoms, mononucleosis seems less likely. He also does not have any right upper or left upper abdominal pain, which is suggestive of tenderness over the liver or spleen. Splenomegaly can occur in about half of people with mononucleosis. The clinical exam may not be able to rule this out. Patients with mono are advised to avoid contact sports for at 3 to 6 weeks from the onset of symptoms to avoid splenic rupture. If you think a patient has mono, as you are likely unable to perform testing in your telemedicine practice, refer them to a commercial laboratory to perform a monospot test or EBV antibody testing. Confirmation of the diagnosis helps with counseling and discussions regarding duration of symptoms. Antibiotics are not indicated for mononucleosis. Patients with mono who are given amoxicillin can develop an erythematous, macular rash.	Slide 11 Mononucleosis⁴⁻⁵ • Caused by the Epstein-Barr virus • Commonly affects adolescents and young adults • Spread through contact with saliva • Symptoms: fever, exudative pharyngitis, fatigue, cervical lymphadenopathy • Splenomegaly occurs in about half of people with mononucleosis ◦ Avoid contact sports for at 3 to 6 weeks from the onset of symptoms • Consider submitting a referral for a Monospot test or EBV antibody testing • Antibiotics are not indicated ◦ Amoxicillin can cause an erythematous, macular rash when given to patients with mononucleosis • Cytomegalovirus can cause a presentation similar to mononucleosis  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 11
Bacterial Pharyngitis SAY: Most adults and children with pharyngitis have viral pharyngitis. In contrast to viral pharyngitis, patients with bacterial pharyngitis generally have a sore throat with tonsillar exudates, fever, and cervical lymphadenopathy. They usually do not have typical viral symptoms such as cough and congestion. The most common bacterial causes of pharyngitis are group A <i>Streptococcus</i> or other beta-hemolytic streptococcal species like group C or group G <i>Streptococcus</i>. More rarely, other bacteria can cause exudative pharyngitis, such as <i>Fusobacterium necrophorum</i>, <i>Neisseria gonorrhoeae</i>, <i>Mycoplasma pneumoniae</i>, and <i>Arcanobacterium haemolyticum</i>.	Slide 12 Bacterial Pharyngitis^{1-2,6-11} • Tonsillar exudates, fever, and cervical lymphadenopathy • Typical viral symptoms such as cough and congestion are generally lacking • Most common: Group A <i>Streptococcus</i> or other beta-hemolytic streptococcal species like Group C or Group G <i>Streptococcus</i> • Less common causes include <i>Arcanobacterium haemolyticum</i>, <i>Fusobacterium necrophorum</i>, and <i>Neisseria gonorrhoeae</i>  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 12

Centor Criteria for Strep Pharyngitis

SAY:

To help you decide on the likelihood that José's pharyngitis is caused by group A *Streptococcus*, you could use the modified Centor criteria. The Centor criteria are a clinical decision tool to help a clinician decide whether to test for group A *Streptococcus*, treat empirically for group A *Streptococcus*, or do neither.

It is a scoring system designed for patients at least 3 years of age that includes the following five components: (1) fever of 100.4 degrees Fahrenheit or higher, (2) tonsillar exudates, (3) tender anterior cervical lymphadenopathy, (4) absence of cough, and (5) age. The first four provide one point each. For age, one additional point is given if the child is between the ages of 3 and 14. For those between the ages of 15 and 44, zero additional points are given. For patients at least 45 years of age or older, one point is lost. For patients with scores of 0–1, no action is needed. For scores of 2–3, traditionally rapid antigen testing or a throat culture should be considered. The testing or culture would require a referral in the telemedicine setting to a commercial laboratory for testing.

For the telemedicine setting, if the score is between 2 and 3, two approaches are reasonable. First, the patient could be referred to a commercial laboratory for testing, and if positive, treatment for strep pharyngitis should be administered. Second, if obtaining testing proves too challenging for the patient, you could ask them to wait 1 day to determine if symptoms improve without treatment or if traditional respiratory symptoms develop during that period of time, which would make strep pharyngitis unlikely. If symptoms persist unchanged a day later, the patient should be advised to contact your virtual practice for a prescription. If this latter approach is considered, it is important to remind them that based on their symptoms, they have a less than 50 percent chance of having strep pharyngitis, and you don't want to unnecessarily expose them to antibiotics prematurely given that antibiotics may not help and also may cause unpleasant side effects.

For patients with a score of 4 or 5, the likelihood of strep pharyngitis is over 50 percent, and either antibiotic treatment or confirmation with diagnostic testing is recommended. Of note, be careful to get a good look at the back of the throat to identify tonsillar exudate—in two studies evaluating pharyngitis over telemedicine versus in-person examinations among adults and children, the inter-rater reliability was low.

Slide 13

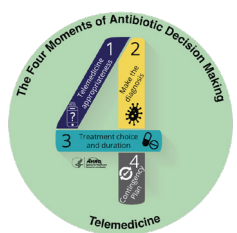
Centor Criteria for Strep Pharyngitis¹²⁻¹⁵

- Scoring system designed for age ≥ 3 years:
 - Fever of ≥ 100.4 degrees Fahrenheit (+1 point)
 - Tonsillar exudates (+1 point)
 - Tender anterior cervical lymphadenopathy (+1 point)
 - Absence of cough (+1 point)
 - Age¹⁶
 - 3–14 years: +1 point
 - 15–44 years: 0 points
 - ≥ 45 years: -1 point
- Significance of scores:
 - Scores 0–1: No action needed
 - Scores of 2–3: Rapid antigen testing or a throat culture should be considered
 - Score of 4–5: Antibiotic treatment or confirmation with diagnostic testing recommended

AHRQ Safety Program for Telemedicine: Improving Antibiotic Use

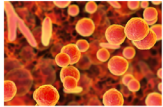
Pharyngitis 13

Slide Title and Commentary	Slide Number and Slide
Applying the Centor Score to José's Case SAY: In José's case he may have a fever, but he has no tonsillar exudates, no tender anterior cervical lymphadenopathy, and he has a cough, so he receives 1 point. His likelihood of strep pharyngitis is less than 10 percent, so it is reasonable to suggest no additional diagnostic testing and no treatment. Of note, although you are unlikely to see children under 3 years of age in virtual visits, it may be helpful to know that testing for group A <i>Streptococcus</i> infection is not recommended for children under 3 years of age. The primary reason to treat strep pharyngitis is to prevent rheumatic fever. Since rheumatic fever has not been reported in children under 3 years of age, diagnostic testing and treatment are not recommended in this age group. You will not be performing diagnostic testing via telemedicine. There are rapid strep tests that can be purchased online, but at this time, these typically are only available for healthcare providers and the accuracy is still unclear as it is highly dependent on the technique for proper swabbing. However, a few points may be helpful if you also see patients in person: If you test for strep throat in your practice, a throat specimen should be obtained by swabbing the tonsils and posterior pharynx. Avoid contact with the tongue and uvula to minimize the risk of contamination with normal oral flora. If you don't perform rapid strep tests in your practice, the Centor criteria can be used to determine if antibiotics are necessary. This is helpful in children where the prevalence of group A streptococcal pharyngitis is relatively high but generally is not necessary in adults. A reflex culture is also not needed if the lab does a molecular rapid test because the sensitivity and specificity of molecular testing are greater than 95 percent.	Slide 14 Applying the Centor Score to José's Case • Scoring system designed for age ≥3 years: 1. Fever of ≥100.4 degrees Fahrenheit = 1 point 2. Tonsillar exudates = 0 points 3. Tender anterior cervical lymphadenopathy = 0 points 4. Absence of cough = 1 point 5. Age ≥6 years • ≥45 years: -1 point • Significance of score: - o Scores 0–1: No action needed AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 14

Slide Title and Commentary	Slide Number and Slide
Moment 3: Antibiotic Therapy SAY: Moment 3 states, “If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe?” If you are concerned that José has bacterial pharyngitis, it is not recommended that you prescribe antibiotics without diagnostic testing results indicating that he has bacterial pharyngitis unless José had a Centor score of 4. However, it is still helpful to know what the treatment is for bacterial pharyngitis, should he have further questions. Additionally, you may see a patient during a telemedicine visit who comes to you with a positive laboratory test.	Slide 15 Moment 3: Antibiotic Therapy  1. Is my patient an appropriate candidate for a telemedicine visit? 2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? 3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 15

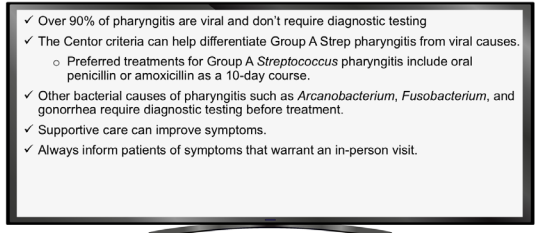
Slide Title and Commentary	Slide Number and Slide
Treatment of Group A <i>Streptococcus</i> SAY: Let's pretend that Jose's symptoms and exam were different and he had a Centor score of 4. You decide to treat him for strep throat. Oral penicillin V or oral amoxicillin are the preferred treatment for strep throat. Amoxicillin is generally preferred in children because of better palatability. A single dose of intramuscular benzathine penicillin G is an alternative to a course of oral antibiotics, but it may not be helpful in managing patients with strep pharyngitis over telemedicine. Although some data suggest a duration of 5 days of oral penicillin or amoxicillin may be reasonable for strep throat, 10 days is still currently recommended to ensure eradication of group A strep and prevent complications like rheumatic fever. For patients who have mild allergies to penicillins, first-generation cephalosporins such as cephalexin or cefadroxil are reasonable alternatives, and both are given twice a day for a 10-day course. For patients who have severe allergies to penicillins, such as anaphylaxis, a 10-day course of clindamycin or a 5-day course of azithromycin—given azithromycin's long half-life—are options. To date, there have been no reported cases of penicillin-resistant group A <i>Streptococci</i>. However, macrolide resistance (e.g., azithromycin) and clindamycin resistance among group A <i>Streptococcus</i> (GAS) strains can occur. For patients completing an antibiotic course for strep throat, a test of cure at the end of therapy is not recommended because some patients—particularly children—remain asymptotically colonized with this organism, and this does not pose any known harm. Strep pharyngitis is contagious and spread through droplet particles. It is important to stress good hand hygiene if in contact with respiratory secretions.	Slide 16 Treatment of Group A <i>Streptococcus</i>^{7,17-18} • First-line for Strep throat (adults and children) ◦ Oral penicillin V or oral amoxicillin (amoxicillin preferred in children) ◦ Alternative: Intramuscular benzathine penicillin G (single dose) ◦ Mild penicillin allergy in adult or child: ▪ Cephalexin or cefadroxil BID ◦ Severe penicillin allergy in adult or child: ▪ 10-day course of clindamycin or 5-day course of azithromycin ▪ Macrolide resistance (e.g., azithromycin) and clindamycin resistance can occur • 10-day treatment course (adults and children)  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 16

Slide Title and Commentary	Slide Number and Slide
Treatment of Other Causes of Bacterial Pharyngitis SAY: You will be unlikely to treat other causes of bacterial pharyngitis from species other than group A <i>Streptococcus</i>, <i>Arcanobacterium</i>, <i>Fusobacterium</i>, and gonorrhea during a virtual visit. These infections are difficult to distinguish based on clinical presentation and diagnostic testing of a throat swab is necessary. Nevertheless, it is helpful to know general treatment recommendations. Other streptococcal species like group C or G <i>Streptococcus</i> are sometimes recovered in bacterial throat cultures. Unlike group A <i>Streptococcus</i>, these other strep species have not been associated with rheumatic fever. Therefore, antibiotic therapy is not necessary and supportive care is sufficient. However, if someone has a positive test of group C or G <i>Streptococcus</i> and is experiencing severe throat pain, it is generally reasonable to consider 5 days of oral penicillin or amoxicillin. <i>Fusobacterium necrophorum</i> is another bacteria that can occasionally cause pharyngitis and also most commonly occurs in adolescents and young adults. It causes about 20 percent of cases of pharyngitis in young adults. It typically causes throat pain that self-resolves without antibiotic therapy. Very rarely, <i>Fusobacterium</i> causes a syndrome called Lemierre syndrome, which can cause someone to be very ill. Typically, a patient with Lemierre syndrome presents with neck swelling due to infected thrombi in the subclavian veins, difficulty breathing, and a general ill appearance. Evidence is lacking that treating <i>Fusobacterium</i> pharyngitis with antibiotics prevents Lemierre syndrome. Therefore, treatment is not necessary. If throat pain is severe, a 5-day course of metronidazole can be considered.	Slide 17 Treatment of Other Causes of Bacterial Pharyngitis^{1-2,6,10} • Other causes of bacterial pharyngitis: Unlikely to treat during a virtual visit ◦ Diagnostic testing of a throat swab is necessary • Group C or G <i>Streptococcus</i> ◦ Not associated with rheumatic fever ◦ Antibiotic therapy not necessary, supportive care is sufficient ▪ If patient tested positive for Group C or G <i>Streptococcus</i> and is experiencing severe throat pain, prescribing 5 days of oral penicillin or amoxicillin may be considered • <i>Fusobacterium necrophorum</i> ◦ Causes about 20% of cases of pharyngitis in young adults ◦ Throat pain resolves without antibiotic therapy ◦ Very rarely, causes Lemierre syndrome AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 17

Slide Title and Commentary	Slide Number and Slide
Treatment of Gonococcal Pharyngitis SAY: Gonococcal pharyngitis should be considered in sexually active adolescents or adults. The prevalence of pharyngeal gonorrhea is reported to be about 15 percent among men who have sex with men, but is frequently asymptomatic. It typically presents with sore throat, pharyngeal exudates, and cervical lymphadenitis. <i>Gonococcus</i> is usually difficult to detect in routine bacterial throat cultures. If there is a high suspicion for gonococcal pharyngitis, the patient should be referred for an in-person clinician visit for testing, which consists of a pharyngeal swab to look for molecular identification of gonorrhea. Of note, a single intramuscular dose of ceftriaxone 500 mg (or 1 gram if the patient weighs 150 kilograms or more) is the preferred treatment for gonococcal pharyngitis. We will discuss the diagnosis and treatment of sexually transmitted infections in more detail in the toolkit presentation titled “Best Practices in Addressing Concerns Related to Sexually Transmitted Infections.”	Slide 18 Treatment of Gonococcal Pharyngitis^{1-2,11} • Should be considered in sexually active adolescents or adults • Typically presents with sore throat, pharyngeal exudates, and cervical lymphadenitis • If suspected, patient should be referred for testing • Preferred treatment: intramuscular ceftriaxone  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 18
Treatment of <i>Mycoplasma</i> Pharyngitis SAY: <i>Mycoplasma pneumoniae</i> can also cause pharyngitis, most commonly in children and young adults. The prevalence is unknown since it generally does not grow on bacterial cultures. <i>Mycoplasma</i> pharyngitis is often, but not always, accompanied by lower respiratory tract infection. The good news is <i>Mycoplasma</i> pharyngitis typically resolves without antibiotics, without causing harm to the patient. However, it is reasonable to consider prescribing 3–5 days of azithromycin during the virtual visit for people with significant throat pain and— • Known positive lab test for <i>Mycoplasma</i> • Known positive contacts (e.g., partners, household members) with <i>Mycoplasma</i> • Known chest x-ray findings of patchy consolidation • Sore throat has remained for more than a week without any improvement • Shortness of breath, chest pain, or increased work of breathing for more than a week	Slide 19 Treatment of <i>Mycoplasma</i> Pharyngitis¹⁻² • Most common in children and young adults • <i>Mycoplasma</i> pharyngitis typically resolves without antibiotics • Consider prescribing 3-5 days of azithromycin during the virtual visit for people with significant throat pain and: ◦ Known positive lab test for <i>Mycoplasma</i> ◦ Known positive contacts (e.g., partners, household members) with <i>Mycoplasma</i> ◦ Known chest X-ray findings of patchy consolidation ◦ Sore throat has remained for more than a week without any improvement ◦ Shortness of breath, chest pain, or increased work of breathing for more than a week  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 19

Slide Title and Commentary	Slide Number and Slide
Treatment of <i>Arcanobacterium</i> Pharyngitis SAY: <i>Arcanobacterium haemolyticum</i> is a bacteria that can mimic strep pharyngitis. It most commonly causes pharyngitis in adolescents and young adults. It causes about 2 percent of cases of pharyngitis. About half the time, <i>Arcanobacterium</i> is associated with a scarlatiniform rash. It is diagnosed by throat cultures usually obtained to look for strep pharyngitis. Pharyngitis caused by <i>Arcanobacterium</i> resolves in the absence of therapy and is not expected to cause invasive infection. However, if considerable throat pain is present a course of 3–5 days of a macrolide, such as erythromycin or azithromycin, can be considered.	Slide 20 Treatment of <i>Arcanobacterium</i> Pharyngitis^{1-2,9} • Diagnosed by throat cultures typically obtained to look for Strep pharyngitis • Most common in adolescents and young adults (~2% of pharyngitis cases) • Associated with a scarlatiniform rash about half the time • If patient is experiencing severe throat pain, 3-5 days of azithromycin or erythromycin may be considered AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 20
Moment 4: Supportive Care SAY: The first part of Moment 4 asks, “What symptomatic relief should I offer or prescribe to my patient?” Regardless of the likely cause of pharyngitis, supportive care can alleviate throat pain. Acetaminophen (i.e., Tylenol®) can help with pain and fever and ibuprofen (e.g., Motrin®, Advil®) can help reduce pain and inflammation. To help with more localized pain, patients can try warm tea with or without honey, warm soup, lozenges with menthol or benzocaine that help numb the throat, or throat sprays with benzocaine. Eating cold or frozen desserts or sucking on ice can help. For those over 5 years of age and without development delay, sucking on hard candy can help as well. They can also consider gargling saltwater (which can be made by dissolving about half a teaspoon of salt in warm water). And, of course, hydration and rest always help. Remember to avoid suggesting honey in children under 1 year of age because of the increased risk of botulism and to avoid any cough and cold medications in children under 6 years of age as these have been associated with overdoses. Herbal remedies, homeopathic therapies, and dietary supplements have not been shown to be effective.	Slide 21 Moment 4: Supportive Care¹⁹⁻²⁰ • Over-the-counter medications ◦ Acetaminophen for pain and fever ◦ Ibuprofen for pain and inflammation • For localized throat pain ◦ Warm soup ◦ Warm tea with or without honey (avoid honey in children <1 year of age) ◦ Eating cold or frozen desserts ◦ Sucking on ice or hard candy (age >5 years) ◦ Gargling saltwater (dissolve ½ a teaspoon of salt in warm water) ◦ Lozenges with menthol or benzocaine or throat sprays with benzocaine • Avoid cough and cold medications in children <6 years of age AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 21 

Slide Title and Commentary	Slide Number and Slide
Moment 4: Expectations and Followup Plan SAY: The second part of Moment 4 asks, “What should I tell my patient about the expected course and the followup plan?” Regardless of viral versus bacterial etiologies, fever and sore throat typically improve within 3 days. However, with mononucleosis, fever and sore throat may take 1 month to resolve and fatigue may take several months to resolve. Antibiotic treatment can potentially reduce symptoms of bacterial pharyngitis by about a day and may reduce the risk of purulent complications such as peritonsillar or retropharyngeal abscesses. If José has continued fevers after 3 days or worsening throat pain, he should be advised to seek an in-person visit. If these symptoms include difficulty breathing or swallowing or confusion, or a bulging neck mass develops, he should be advised to go directly to an emergency department.	Slide 22 Moment 4: Expectations and Followup Plan - Fever and sore throat typically improve within 3 days - If diagnosis is mononucleosis: fever and sore throat can last 1 month, and fatigue can last several months - Antibiotic treatment for bacterial pharyngitis - Reduce symptoms by a day - Reduce the risk of purulent complications - Seek in-person evaluation if— - Fever persists beyond 3 days - Throat pain worsens - Emergency department visit for— - Confusion - Bulging neck mass - Difficulty breathing or swallowing  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 22

Slide Title and Commentary	Slide Number and Slide
Take-Home Messages SAY: In summary, pharyngitis can be either viral or bacterial in nature. Most causes of pharyngitis are viral and don't require diagnostic testing. The Centor criteria can help differentiate group A strep pharyngitis from viral causes. Preferred treatments for group A <i>Streptococcus</i> pharyngitis include oral penicillin or amoxicillin as a 10-day course. There are other bacterial causes of pharyngitis for which antibiotics may help with clinical improvement (such as <i>Arcanobacterium</i>, <i>Fusobacterium</i>, and gonorrhea), but they require diagnostic testing before treatment. Supportive care with over-the-counter analgesics should always be suggested to improve symptoms, regardless of whether the cause is viral or bacterial. Always inform patients of symptoms suggestive of lack of improvement or a worsening of symptoms that warrant an in-person visit. You can review additional toolkit resources about how you and your practice can manage pharyngitis, such as the one-page summary on managing pharyngitis in the telemedicine setting intended for clinicians and healthcare workers, the sample patient portal scripts for communicating with patients efficiently about throat pain, and the patient and family education materials.	Slide 23 Take-Home Messages  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 23
Disclaimer SAY: Please review this disclaimer.	Slide 24 Disclaimer - The findings and recommendations in this presentation are those of the authors, who are responsible for its content, and do not necessarily represent the views of AHRQ. No statement in this presentation should be construed as an official position of AHRQ or of the U.S. Department of Health and Human Services. - Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this activity is not meant to serve as a guideline for patient management. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested in this activity should not be used by clinicians without evaluation of their patient's conditions and possible contraindications and/or dangers in use, review of any applicable manufacturer's product information, and comparison with recommendations of other authorities. AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 24

Slide Title and Commentary	Slide Number and Slide
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References 3 SAY: Here are the references.	Slide 27 References 3 16. McIsaac WJ, Kellner JD, Aulricht P, et al. Empirical validation of guidelines for the management of pharyngitis in children and adults. <i>JAMA</i>. 2004 Apr 7;291(13):1587-95. Erratum in: <i>JAMA</i>. 2005 Dec 7;294(21):2700. PMID: 15069046. 17. Snow V, Mottur-Pilson C, Cooper RJ, et al. Principles of appropriate antibiotic use for acute pharyngitis in adults. <i>Ann Intern Med</i>. 2001 Mar 20;134(6):506-8. PMID: 11255529. 18. McIsaac WJ, White D, Tannenbaum D, et al. A clinical score to reduce unnecessary antibiotic use in patients with sore throat. <i>CMAJ</i>. 1998 Jan 13;158(1):75-83. PMID: 9475915. 19. Schachtel BP, Fillingim JM, Thoden WR, et al. Sore throat pain in the evaluation of mild analgesics. <i>Clin Pharmacol Ther</i>. 1988 Dec;44(6):704-11. PMID: 3197368. 20. Thomas M, Del Mar C, Glasziou P. How effective are treatments other than antibiotics for acute sore throat? <i>Br J Gen Pract</i>. 2000 Oct;50(459):817-20. PMID: 11127175. AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Pharyngitis 27