



NATIONAL GUIDELINE CLEARINGHOUSE™ (NGC) GUIDELINE SYNTHESIS

PHARYNGITIS/SORE THROAT

Guidelines

1. **Finnish Medical Society Duodecim (FMSD).** [Sore throat and tonsillitis](#). In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Duodecim Medical Publications Ltd.; 2007 Feb 2. [Various]
2. **University of Michigan Health System.** [Pharyngitis](#). Ann Arbor (MI): University of Michigan Health System; 2006 Oct. 10 p. [9 references]

INTRODUCTION:

A direct comparison of guidelines issued by the Finnish Medical Society Duodecim (FMSD), and the University of Michigan Health System (UMHS) for managing patients with acute pharyngitis (sore throat) in the outpatient setting is provided in the tables below. This comparison is restricted to recommendations for uncomplicated cases of acute pharyngitis where group A beta-hemolytic streptococcal (GABHS) pharyngitis is suspected. It does not include recommendations for high-risk patients, patients with severe symptoms such as respiratory distress, or other complicating factors of GABHS pharyngitis such as peritonsillar abscess (quinsy) or retropharyngeal abscess. High-risk patients are those with a personal history or family member with a history of acute rheumatic fever, specifically, those who have had rheumatic carditis or valvular disease. Additional recommendations addressing these patient populations may be found in the individual guidelines. The FMSD guideline also addresses the diagnosis and treatment of mononucleosis and pharyngeal gonorrhea, indications for tonsillectomy, and information regarding streptococcal epidemics. These topics, however, are beyond the scope of this synthesis.

The tables below provide a side-by-side comparison of key attributes of each guideline, including specific interventions and practices that are addressed. The language used in these tables, particularly that which is used in [Table 3](#), [Table 4](#), and [Table 5](#), is in most cases taken verbatim from the original guidelines:

- [Table 1](#) provides a quick-view glance at the primary interventions considered by each group.
- [Table 2](#) compares the overall scope of each of the guidelines.
- [Table 3](#) provides a more detailed comparison of the specific recommendations offered by each group for the topics under consideration in this synthesis, including:
 - [Diagnosis](#)
 - [Treatment](#)

- [Table 4](#) provides the potential benefits and harms of implementing the recommendations of each guideline as stated in the original guidelines.
- [Table 5](#) presents the rating schemes used to rate the level of evidence and/or the strength of the recommendations. References supporting selected recommendations for the FMSD guideline are also provided in this table.

A summary discussion of the [areas of agreement](#) and [areas of differences](#) among the guidelines is presented following the content comparison tables.

Abbreviations used in the text and tables follow:

- ARF, acute rheumatic fever
- FMSD, Finnish Medical Society Duodecim
- GABHS, group A beta-hemolytic streptococcal
- RADT, rapid antigen detection test
- RST, rapid strep test
- UMHS, University of Michigan Health System

TABLE 1: COMPARISON OF INTERVENTIONS AND PRACTICES CONSIDERED <i>("✓" indicates topic is addressed)</i>		
	FMSD (2007)	UMHS (2006)
Diagnosis		
Physical Examination	✓	✓
Diagnostic Testing (rapid test, throat culture)	✓	✓
Phone Triage		✓
Treatment		
Antimicrobial Treatment	✓	✓
Symptomatic Treatment	✓	✓
Management of recurrent GABHS infection	✓	✓

TABLE 2: SCOPE	
Objectives	
FMSD (2007)	Evidence-Based Medicine Guidelines collect, summarize, and update the core clinical knowledge essential in general practice. The guidelines also describe the scientific evidence underlying the given treatment recommendations.
UMHS (2006)	<ul style="list-style-type: none"> • To utilize signs and symptoms to determine pretest probability of GABHS pharyngitis • To confirm all negative results with culture in patients • To reduce indiscriminate use of antibiotics to minimize potential adverse effects • To assure appropriate course of antibiotic treatment to prevent rheumatic fever and suppurative complications (e.g., otitis media, sinusitis, peritonsillar/retropharyngeal abscesses or mastoiditis) • To hasten illness resolution and reduction in transmission of GABHS pharyngitis to others
Target Population	
FMSD (2007)	<ul style="list-style-type: none"> • Finland • Children and adults with sore throat and tonsillitis
UMHS (2006)	<ul style="list-style-type: none"> • United States • Patients 3 years through adulthood with a sore throat
Intended Users	
FMSD (2007)	<p>Health Care Providers</p> <p>Physicians</p>
UMHS (2006)	<p>Advanced Practice Nurses</p> <p>Nurses</p> <p>Physician Assistants</p> <p>Physicians</p>

TABLE 3: COMPARISON OF RECOMMENDATIONS	
DIAGNOSIS	
Clinical Presentation	
FMSD (2007)	<p><u>Risk Groups</u></p> <ul style="list-style-type: none"> Streptococci: children above 3 years and young adults (15 to 24 years) <p><u>Investigations</u></p> <ul style="list-style-type: none"> Examination of the pharynx: peritonsillar oedema, exudate, trismus Palpation of the neck <ul style="list-style-type: none"> Enlarged lymph nodes in other locations than the jaw angle: mononucleosis? Enlarged, tender thyroid gland: thyroiditis? Rash: viruses, erythrogenic strains of group A streptococci, arcanobacterium? Oedema of the eye lids: mononucleosis? See the Finnish Medical Society Duodecim guideline "Mononucleosis." Other focuses of infection: sinuses, ears, teeth, lower respiratory tract
UMHS (2006)	<p>Diagnosis</p> <ul style="list-style-type: none"> Signs/symptoms of recent fever, tender anterior cervical lymphadenopathy, red pharynx +/- tonsillar swelling or exudate, and no cough indicate a higher probability of GABHS for both adults and children. Algorithms incorporating epidemiologic and clinical factors improve diagnostic accuracy primarily by identifying patients with an exceedingly low risk of streptococcal infection [C*]. <p>(NGC Note: Refer to the original guideline document for adult and pediatric pharyngitis diagnostic algorithms).</p> <p>Rationale for Recommendations</p> <p>Symptoms. The diagnosis of GABHS pharyngitis should be suspected on epidemiological and clinical factors and then supported by performance of a lab test. A number of algorithms incorporating epidemiologic and clinical factors have been devised. These algorithms improve diagnostic accuracy primarily by identifying patients with an exceedingly low risk of streptococcal infection. With increasing national concern about overuse of antibiotics, symptoms can only provide reliable guidance on which patients to screen with a laboratory test to establish diagnosis of GABHS (see below). Using symptoms alone to</p>

initiate empirical treatment will result in appreciable unnecessary utilization of antibiotics.

In adults: In adults, the three findings of history of fever, tender anterior cervical nodes, and swollen exudative red tonsils have been demonstrated to have a positive correlation with GABHS. Cough lowers the pretest probability of GABHS pharyngitis.

Patients at least 16 years old with none or only 1 of the 4 criteria in Table 2 of the original guideline document have a very low probability of GABHS (2.5% to 4%). Patients at least 16 years old with 3 to 4 criteria from Table 2 in the original guideline document comprise the highest probability group (28% to 56%). Empirically treating the higher probability group has been suggested by some, but it is problematic.

If these "higher probability" patients were treated empirically, the majority would be prescribed antibiotics unnecessarily.

Initial assessment of the probability of GABHS based on symptoms can be modified by an adult's likelihood of environmental exposure. The probability of GABHS pharyngitis is apt to be higher for parents or siblings of school age children and for adults whose occupation brings them into close contact with children.

In children: In patients < 16 years old, a similar clinical evaluation is required before deciding whether the patient is at risk for GABHS. Findings that exclude GABHS from consideration include scleral conjunctival inflammation, hoarseness, pharyngeal ulcerations, or diarrhea. Findings more likely to indicate the presence of GABHS include the same 4 criteria used for adults which are no cough, presence of fever > 38 C in past 24 hours, tender anterior cervical nodes (lymphadenitis), and beefy red, enlarged tonsils or tonsillar exudate or red pharynx.

As for adults, symptoms are of limited predictive value in children. When all four of the symptoms suggestive for GABHS (see Table 7 in the original guideline document) are present, an experienced clinician will guess correctly between 40% to 65% in a community with the usual levels of infection. Empirical treatment with antibiotics based on symptoms alone will result in substantial over treatment.

However, the incidence of acute rheumatic fever is higher in patients less than 16 years old. Therefore, the presence of one symptom in children suggestive for GABHS should be followed up with laboratory diagnosis when diagnosis is not ruled out by classic viral symptoms (see Table 7 in the original guideline document).

Controversial Areas

Based on a description over the phone, a clinician may decide to screen

	<p>or treat for GABHS [<i>D*</i>]:</p> <ul style="list-style-type: none"> When clinic access is a problem (e.g., during flu season), one may elect to have a staff member triage symptoms for GABHS screening. When a symptomatic patient is ≥ 3 years old and has a family member recently documented by lab testing to have GABHS pharyngitis, one may elect to treat without screening.
Clinical Scoring Systems	
FMSD (2007)	No recommendations offered
UMHS (2006)	<p>Symptoms. The diagnosis of GABHS pharyngitis should be suspected on epidemiological and clinical factors and then supported by performance of a lab test. A number of algorithms incorporating epidemiologic and clinical factors have been devised. These algorithms improve diagnostic accuracy primarily by identifying patients with an exceedingly low risk of streptococcal infection. With increasing national concern about overuse of antibiotics, symptoms can only provide reliable guidance on which patients to screen with a laboratory test to establish diagnosis of GABHS (see below). Using symptoms alone to initiate empirical treatment will result in appreciable unnecessary utilization of antibiotics.</p>
Laboratory Confirmation of Diagnosis — Who should be tested?	
FMSD (2007)	<p>Basic Rules</p> <p>A throat swab culture or a rapid test is taken from patients with clear signs of tonsillitis without other respiratory symptoms (usually indicating a viral infection, e.g., rhinitis, cough, hoarseness).</p> <p>Investigations</p> <p>Streptococcal culture or rapid test (see Picture 1 in the original guideline document) is the most important investigation. Clinical assessment is not accurate in determining the microbial aetiology.</p>
UMHS (2006)	<p>Diagnosis</p> <ul style="list-style-type: none"> Laboratory confirmation: Test when diagnosis is not ruled out by viral symptoms (Tables 2 and 7 in the original guideline document). <ul style="list-style-type: none"> For adults: confirmation is most useful when GABHS is suspected; however, only test those with at least 2 or more signs/symptoms mentioned above (refer to Table 2 in the original guideline document). [<i>C*</i>]

	<ul style="list-style-type: none"> For patients between 3 to 15 years of age: confirmation is most useful when GABHS cannot be excluded. Nevertheless, only test those with at least 1 or more signs/symptoms mentioned above (refer to Table 7 in the original guideline document) [C*]. The threshold for testing is lower for children because their risk of developing acute rheumatic fever is higher.
Laboratory utilization — Which test, a rapid strep test [RST; rapid antigen detection test (RADT); rapid strep screen] or throat culture, should be ordered initially?	
FMSD (2007)	<ul style="list-style-type: none"> Culture of a throat swab is the most accurate and least expensive method, provided that notification of the result to the patient and delivery of the prescription to the pharmacy are organized effectively. <ul style="list-style-type: none"> Streptococcal culture also reveals non-A streptococci (no inhibition of hemolysis around a bacitracin disk). If a rapid test is used, a negative result (see Picture 1 in the original guideline document) should be confirmed by culture (confirmation of a negative test is not necessary in children under the age of 3 years, as streptococcal disease is uncommon in this age group).
UMHS (2006)	<p>Diagnosis</p> <ul style="list-style-type: none"> Throat culture is the presumed "gold standard" for diagnosis [C*]. Rapid streptococcal antigen tests identify GABHS more rapidly, but have variable sensitivity [C*]. <ul style="list-style-type: none"> Reserve rapid strep tests for patients with a reasonable probability of having GABHS. In patients screened with a rapid strep test, a negative result should be confirmed by culture in patients < 16 years old (and considered in parents or siblings of school age children) due to their higher incidence of developing acute rheumatic fever [C*]. If screening for GABHS in very low risk patients is desired, culture alone is cost effective. <p>Rationale for Recommendations</p> <p>Laboratory diagnosis. Laboratory diagnosis of GABHS pharyngitis can be important because of lower sensitivity and specificity of clinical impressions. Correct swabbing of the oropharynx is of paramount importance. Both tonsillar fauci and the posterior oropharynx must be vigorously swabbed. False negative cultures may result from an inadequate specimen collection process.</p> <p>GABHS culture. The gold standard of diagnosis for GABHS is a throat</p>

	<p>culture (~95% sensitivity). Results are available in 1 to 3 days. (The blood agar plate should be held for 48 hours prior to discarding.)</p> <p>GABHS antigen screen. Most current GABHS antigen screens use a rapid immunoassay method (usually EIA technique) for determining the presence of GABHS in a throat swab. Results should be available within a few minutes in the office. The antigen testing is reported to have a specificity of > 95% and a sensitivity ranging from 67% to 84%, compared to blood agar plate culture. Because of the very high specificity of these rapid tests, a positive test generally does not require throat culture confirmation. Because of the sensitivity, a common recommendation is that a negative screen should be confirmed by a culture in patients less than 16 years old.</p> <p>A new generation of rapid diagnostic tests have been developed, although their use is not yet widespread. These tests use techniques such as optical immunoassay and chemiluminescent DNA probes. Published data suggest that these tests may be as sensitive as standard throat cultures. Some experts believe that the optical immunoassay may be sufficiently sensitive to be used without throat culture backup even in children.</p> <p>Choosing between a screen or culture. When a clinician has decided to order a laboratory test to diagnose GABHS, the choice between starting with an antigen screen or simply obtaining a culture should consider the benefits and costs in the context of the individual patient. Early positive diagnosis and initiation of therapy with the use of the rapid strep screen may reduce the period of infectivity and morbidity and may allow the patient to return to normal activity sooner. However, the value of early diagnosis in the minority of cases when strep is present and identified must be weighed against the higher total laboratory charges for the majority of cases screened. Most screens are negative and additional charges will be incurred for a subsequent culture.</p>
TREATMENT	
<p>Treatment Decisions</p> <ul style="list-style-type: none"> • Who should be treated? • When should antibiotics be used? 	
FMSD (2007)	<ul style="list-style-type: none"> • The physician should see all children and those adults who have an underlying disease, pain in the sinuses or in the ear, productive cough, or trismus. • Adult patients can usually be examined by a nurse, who takes a streptococcal test. • Antibiotics are indicated only for patients with a positive culture or rapid test for either

	<ul style="list-style-type: none"> • Group A streptococci, or • Any streptococci if the symptoms are severe, particularly during an epidemic • If the patient has severe symptoms, a one-day dose of antibiotic can be given while waiting for the result of the bacterial culture. If the result is negative, the antibiotic should be discontinued.
UMHS (2006)	<p>Begin treatment of laboratory-confirmed cases of GABHS. (Refer to treatment algorithms in the original guideline document)</p> <p>A high-risk patient presenting with a sore throat should be prescribed immediate antibiotic treatment while awaiting culture results. Discontinue antibiotics if the culture returns negative.</p> <p>Controversial Areas</p> <p>Based on a description over the phone, a clinician may decide to screen or treat for GABHS [<i>D*</i>]</p> <ul style="list-style-type: none"> • When a symptomatic patient is ≥ 3 years old and has a family member recently documented by lab testing to have GABHS pharyngitis, one may elect to treat without screening.
Antibiotic Selection and Duration	
FMSD (2007)	<ul style="list-style-type: none"> • Penicillin V 1.5 million units x 2 x 10 • In case of penicillin allergy: oral cephalexin 750 mg x 2 or cephadroxil 1 g x 1 (Deeter et al., 1992) [A]. • It is not necessary to start antibiotics immediately: a delay of 1 (-3) day(s) does not increase complications or delay the resolution of acute disease. • Antibiotics shorten the duration of symptoms somewhat (Del Mar, Glasziou, & Spinks, 2004) [A] and reduce the risk of rheumatic fever (Manyemba & Mayosi, 2002) [C]. • An analgesic (Thomas, Del Mar, & Glasziou, 2000) [B] (paracetamol and ibuprofen are the safest) is more effective than antibiotics against symptoms. In adults, pain at swallowing can even be treated with lidocaine spray or gargling solution. • Repeated throat culture is not necessary unless symptoms recur. <p>The patient is no longer infective after 1 day on antibiotics.</p>
UMHS (2006)	<p>Treatment</p> <ul style="list-style-type: none"> • Penicillin is the drug of choice in patients who can swallow pills. If suspension must be prescribed, amoxicillin is better tolerated due to the extremely bitter taste of penicillin. <ul style="list-style-type: none"> • Erythromycin is preferred for patients allergic to penicillin.

- For patients expected to be intolerant or non-compliant with an erythromycin product (e.g., younger patients), consider azithromycin or a narrow spectrum oral cephalosporin like cephalexin.
- Antibiotic treatment must be started within 9 days after onset of the acute illness and continued for 10 days (or 5 days for azithromycin) to eradicate GABHS from the upper respiratory tract and prevent acute rheumatic fever [*D**]

Rationale for Recommendations

Treatment of GABHS pharyngitis. Examples of preferred and alternative treatments are presented in Table 11 of the original guideline document. In a patient with no prior history of ARF, antibiotics may be given up to nine days after onset of symptoms and still be effective at preventing ARF.

Preferred treatment. GABHS still demonstrates susceptibility to penicillin in North America, thus penicillin is the drug of choice in those not allergic to penicillin. If suspension is required, although Amoxicillin has broader spectrum of action, children tolerate the taste of Amoxicillin suspension better than penicillin suspension, increasing likelihood of compliance. At least a couple of well designed studies indicate that Amoxicillin 750 mg taken once daily for 10 days is as effective as penicillin TID for 10 days.

A single intramuscular injection of benzathine penicillin has been shown to be slightly more efficacious than oral penicillin VK and ensures compliance. Also, this route can be very useful in children who present with severe abdominal pain and vomiting along with their GABHS pharyngitis. It does, however, produce a significant amount of pain at the injection site that may last a number of days.

Treatment if penicillin allergic. Erythromycin has traditionally been the preferred drug for patients allergic to penicillin. However, if patient intolerance or non-compliance with an erythromycin product is a concern, consider azithromycin or a narrow spectrum (first generation) oral cephalosporin like cephalexin (if the patient does not exhibit immediate hypersensitivity to cephalosporins). Erythromycin or a narrow spectrum (first generation) oral cephalosporin needs to be taken for a full ten days in order to adequately treat GABHS and thus decrease the risk of ARF. If one chooses azithromycin, note that the dose is 12 mg/kg/day for 5 full days, which is a higher dose than that used to treat otitis media.

Alternative primary treatments. Other antibiotics can offer more convenient dosing schedules and sometimes better tolerability, which may increase compliance. However, these antibiotics are broader spectrum and may cause drug resistance to other organisms. Also, they are significantly more expensive than penicillin. Examples of effective alternative antibiotics are: amoxicillin/clavulanic acid, cephalexin,

	<p>cefuroxime, cefprozil, and clindamycin. Sulfonamides, fluoroquinolones and tetracyclines are not acceptable for the treatment of GABHS pharyngitis.</p>
<p>Follow-Up/ Management of Recurrent GABHS Infections</p>	
<p>FMSD (2007)</p>	<p>Recurrent Tonsillitis</p> <ul style="list-style-type: none"> • Recurrent sore throat, with positive test for group A streptococci. • Reinfection is the most common cause. • Throat cultures should be taken from the patient and all family members. • Other symptomatic patients at the work place should be traced. • In recurrent infection first line therapy is cephalexin or cefadroxil, which erases group A streptococci even more efficiently than penicillin (Deeter, et al 1992) [A]. Clindamycin (300 mg x 2 for 10 days) also erases group A streptococci and prevents recurrent tonsillitis caused by other bacteria as well.
<p>UMHS (2006)</p>	<p>Failure to Improve with Treatment</p> <p>Any patient with documented GABHS infection who fails to improve within 48 hours, despite an appropriate course of antibiotics, should be reevaluated.</p> <p>Note: Refer to the original guideline document for further discussion of failure to improve with treatment.</p> <p>Treatments for recurrence. Patients who have recurrence of GABHS pharyngitis shortly after completing a 10 day course of oral penicillin can be retreated with the same agent, given an alternative oral drug, or given an IM dose of benzathine pen G. For frequent recurrences, a non-beta-lactam (Clindamycin) or beta-lactam combined with a beta-lactamase inhibitor (amoxicillin/clavulanic acid) or the addition of rifampin to benzathine penicillin G may be beneficial for eradication of streptococci from the pharynx. It has also been reported that addition of rifampin during the final 4 days of a 10-day course of oral penicillin V may achieve high rates of eradication. Table 12 in the original guideline document presents examples of treatments for recurrent GABHS pharyngitis. Macrolides and cephalosporins are not included in this table because data are insufficient regarding their efficacy for frequent recurrent episodes.</p> <p>Special Circumstances</p> <p>Reevaluate high risk patients. High risk patients (see Table 1 in the original guideline document) should be reevaluated 2 to 7 days after the end of treatment in order to ensure that an adequate response has been obtained. This means that symptomatic improvement should be</p>

	noted and re-swabbing of the throat should be performed to ensure eradication of GABHS. The presence of GABHS in a symptomatic, or an asymptomatic, high risk patient should be retreated.
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TABLE 4: BENEFITS AND HARMS	
Benefits	
FMSD (2007)	Appropriate diagnosis and treatment of children and adults with sore throat and tonsillitis
UMHS (2006)	<ul style="list-style-type: none"> • The prime reason to identify and treat group A beta-hemolytic streptococcal (GABHS) pharyngitis is to decrease the risk of acute rheumatic fever. • Early treatment of GABHS shortens the clinical course, may reduce the risk of transmission, and may decrease the risk of other suppurative sequela (e.g., otitis media, sinusitis, peritonsillar/retropharyngeal abscesses or mastoiditis). • Rational use of antibiotics contains cost and prevents harms associated with indiscriminate antibiotic use, including increased incidence of allergic reactions to antibiotics, increased incidence of mislabeling patients as allergic to antibiotics, and the emergence of resistant strains of GABHS pharyngitis or other pathogenic bacteria.
Harms	
FMSD (2007)	Not stated
UMHS (2006)	<ul style="list-style-type: none"> • The value of early diagnosis in the minority of cases when strep is present and identified must be weighed against the higher total laboratory charges for the majority of cases screened. Most screens are negative and additional charges will be incurred for a subsequent culture. • Antibiotic side effects may include rash, nausea, abdominal pain, and/or diarrhea. A single intramuscular injection of benzathine penicillin produces a significant amount of pain at the injection site that may last a number of days, as well as increased risk of anaphylaxis.

TABLE 5: EVIDENCE RATING SCHEMES AND REFERENCES

FMSD (2007)	<p>Classification of the Quality of Evidence</p> <p>A. Quality of Evidence: High</p> <p>Further research is very unlikely to change confidence in the estimate of effect</p> <ul style="list-style-type: none">• Several high-quality studies with consistent results• In special cases: one large, high-quality multi-centre trial <p>B. Quality of Evidence: Moderate</p> <p>Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate.</p> <ul style="list-style-type: none">• One high-quality study• Several studies with some limitations <p>C. Quality of Evidence: Low</p> <p>Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.</p> <ul style="list-style-type: none">• One or more studies with severe limitations <p>D. Quality of Evidence: Very Low</p> <p>Any estimate of effect is very uncertain.</p> <ul style="list-style-type: none">• Expert opinion• No direct research evidence• One or more studies with very severe limitations <p>References</p> <p>Deeter RG, Kalman DL, Rogan MP, Chow SC. Therapy for pharyngitis and tonsillitis caused by group A beta-hemolytic streptococci: a meta-analysis comparing the efficacy and safety of cefadroxil monohydrate versus oral penicillin V. Clin Ther 1992 Sep-Oct;14(5):740-54. PubMed</p> <p>Del Mar C, Glasziou P. What are the effects of interventions to reduce symptoms of acute infective sore throat? Sore throat. Clinical Evidence 2005;13:1876-1883.</p> <p>Del Mar CB, Glasziou PP, Spinks AM. Antibiotics for sore throat. In: The Cochrane Database of Systematic Reviews [internet]. Issue 2. Hoboken</p>
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	<p>(NJ): John Wiley & Sons, Ltd.; 2004 [Art. No. CD000023].</p> <p>Manyemba J, Mayosi BM. Penicillin for secondary prevention of rheumatic fever. In: The Cochrane Database of Systematic Reviews [database online]. Issue 3. Oxford: Update Software; 2002 [CD002227].</p> <p>Marshall T. A review of tonsillectomy for recurrent throat infection. Br J Gen Pract 1998 Jun;48(431):1331-5. [15 references] PubMed</p> <p>Steward DL, Welge JA, Myer CM. Steroids for improving recovery following tonsillectomy in children. In: The Cochrane Database of Systematic Reviews [database online]. Issue 1. Oxford: Update Software; 2003 [CD003997].</p> <p>Thomas M, Del Mar C, Glasziou P. How effective are treatments other than antibiotics for acute sore throat? Br J Gen Pract 2000 Oct;50(459):817-20. [29 references] PubMed</p>
UMHS (2006)	<p>Levels Evidence</p> <p>Levels of evidence reflect the best available literature in support of an intervention or test.</p> <ul style="list-style-type: none"> A. Randomized controlled trials B. Controlled trials, no randomization C. Observational trials D. Opinion of expert panel

GUIDELINE CONTENT COMPARISON

The Finnish Medical Society Duodecim (FMSD) and the University of Michigan Health System (UMHS) present recommendations for managing acute pharyngitis in adults in the primary care setting. Both guidelines also address the pediatric population and include diagnostic testing recommendations. Both guidelines provide explicit reasoning behind their judgments, rating the evidence upon which recommendations are based.

FMSD also issues recommendations regarding tonsillectomy for recurrent sore throat in children and adults, the diagnosis and treatment of mononucleosis and pharyngeal gonorrhea, and information regarding streptococcal epidemics. UMHS provides patient education recommendations. These topics, however, are beyond the scope of this synthesis. Both guidelines detail recommendations for repeated diagnostic testing and management of patients with repeated episodes of acute pharyngitis and positive laboratory tests for GABHS.

Areas of Agreement

Both guidelines recommend antibiotic treatment of GABHS pharyngitis, to prevent acute rheumatic fever and to shorten the duration of signs and symptoms. Similar features of the diagnostic testing strategies proposed by the groups include selective use of laboratory tests (RADT and throat culture) for patients suspected of having GABHS pharyngitis. Management strategies for pharyngitis presented by both organizations share a common goal of refraining from antibiotic treatment if GABHS infection is an unlikely cause.

Both groups agree the antibiotic of choice to treat GABHS pharyngitis in non-allergic adults is penicillin, citing its proven efficacy in eradicating the organism from the oropharynx, safety profile, low cost, and narrow spectrum.

In terms of who should be tested, FMSD recommends laboratory testing for all patients to determine the microbial etiology. Basing their recommendations on algorithms to determine the probability of having GABHS, UMHS recommends that patients should have a certain number of signs/symptoms outlined in the guideline in order to qualify for testing: adults should have at least two; patients between the ages of 3 and 15 should have at least one. FMSD generally advises that negative results obtained with rapid strep tests require confirmation with throat culture, due to the lower sensitivity of the screening test. UMHS recommends that a negative result should be confirmed by culture in patients younger than 16 years old (and considered in parents or siblings of school age children) due to their higher incidence of developing acute rheumatic fever. FMSD suggests that confirmation of a negative rapid strep test is not necessary in children younger than three because streptococcal infection is uncommon in very young children.

Follow-Up/Management of Recurrent GABHS

The guideline groups agree that follow-up culture of throat swabs is not routinely indicated for asymptomatic patients who have received a complete course of therapy for GABHS. There is also overall agreement that symptomatic patients should be screened, and if positive, re-initiated on antibiotic therapy. Both groups provide recommendations for antimicrobial treatment for recurrent GABHS. FMSD notes that all of the patient's family members should also be tested, and the patient's symptomatic co-workers traced. UMHS notes that a follow-up throat culture is always indicated in high-risk patients, such as those with a history of rheumatic fever or those with household contact with someone having a history of rheumatic fever, to ensure eradication of the infection.

Areas of Differences

Diagnostic Strategies

UMHS recommends the use of diagnostic algorithms to identify patients based on clinical and epidemiological factors that are highly unlikely to have GABHS. More specifically, UMHS recommends adults with a score of ≥ 2 , and patients between the ages of 3 to 15 with a score of ≥ 1 , be tested. Patients with lower scores than these are classified as low risk and do not require testing or antimicrobial treatment. UMHS concludes that laboratory testing and antimicrobial therapy are

not indicated if the diagnosis can be confidently excluded on clinical and epidemiological grounds. For all other patients with possible GABHS pharyngitis, laboratory testing is recommended to determine appropriateness of antibiotic therapy.

FMSD's diagnostic recommendations, in contrast, lean strongly towards laboratory confirmation of any suspected infection because of the inaccuracy of clinical assessment.

An alternative recommendation offered by UMHS is the performance of a screening test according to telephone triage of symptoms during periods of difficult clinic access. If symptoms are compatible with GABHS, a visit with a nurse should be considered for a rapid strep test. If negative, the nurse counsels patient on symptomatic therapy and when to return to the office. If the patient is < 16 years old, a backup throat culture is sent. If positive, an appointment would be scheduled with a physician to confirm risk of true GABS (vs. carriage) or antibiotics would be prescribed without seeing the patient per nursing protocol.

Treatment Decisions

Both groups discourage empiric treatment in the absence of laboratory confirmation and recommend antimicrobial therapy only for those with a positive rapid strep test or throat culture result. Both guidelines allow for initiation of antimicrobial therapy for cases with a high index of suspicion; however, a laboratory test is still recommended so that therapy may be discontinued if the diagnosis of streptococcal pharyngitis is not confirmed. Another alternative recommendation offered by UMHS is the initiation of treatment without being evaluated in the office for a patient at least 3 years of age with symptoms compatible with GABHS who has a family member with a recent laboratory confirmed GABHS infection. UMHS states that this would help with patient access, cost and patient satisfaction. UMHS recommends against laboratory testing and antibiotic treatment for adults who are unlikely to have GABHS pharyngitis. UMHS recommends assessing this probability by evaluating patients for both clinical and epidemiologic features that would suggest a viral rather than a streptococcal etiology.

Although the assessment of the likelihood of GABHS pharyngitis differs among the organizations, the general management strategies of both organizations can be summarized in the following Table:

Comparison of Recommendations for the Management of GABHS Pharyngitis, According to Diagnostic Probability		
	High Risk	Possible GABHS
FMSD (2007)	Initiate antimicrobial therapy pending results of laboratory test; discontinue therapy if diagnosis is	<ul style="list-style-type: none"> Laboratory testing (RADT or throat culture) of patients with clinical findings and epidemiological features suggestive of GABHS Antimicrobial treatment of laboratory-

	not confirmed	confirmed cases
UMHS (2006)		Clinically screen: score of ≥ 1 in patients aged 3 to 15 or ≥ 2 in patients 16 and older without preponderance of viral signs/symptoms? If so, perform laboratory testing (RADT) and initiate antimicrobial testing if positive. Score of 0 in patients aged 3 to 15 or ≤ 1 in patients 16 and older? If so, initiate symptomatic treatment.
	Phone Triage <ul style="list-style-type: none"> • When clinic access is a problem (e.g., during flu season), one may elect to have a staff member triage symptoms for GABHS screening. • When a symptomatic patient is ≥ 3 years old and has a family member recently documented by laboratory testing to have GABHS, treatment may be initiated without screening. 	

In conclusion, the guideline groups strive to balance laboratory utilization and antibiotic usage through different means. UMHS calls for testing patients characterized with high and/or intermediate probability of GABHS pharyngitis. FMSD calls for testing in all patients with suspected streptococcal pharyngitis. Both guidelines, however, target antimicrobial treatment to those most likely to have GABHS pharyngitis and aim to decrease excessive antibiotic use.

This Synthesis was originally prepared by ECRI on October 6, 1999. It has been modified a number of times since that time. The most current version of this Synthesis removes ACP's guideline, which has now been archived. This synthesis was updated on November 9, 2007 to add/update UMHS and FMSD recommendations. This synthesis was revised on December 12, 2007 to remove IDSA recommendations.

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