Children's Hospital and Health System, Inc.
Patient Care Evidence Based Guideline
CW Urgent Care

SUBJECT: GAS Pharyngitis

Purpose: To evaluate and initiate treatment of GAS Pharyngitis.

Definition: Group A Streptococcus (GAS) is a bacterium that can cause a sore throat. It is most common in the age group of 5 to 15 years old, accounting for 20-30% of all cases of acute pharyngitis in the pediatric population. Strep throat infections peak in winter and early spring and have a typical incubation period of 2 to 5 days. Classic features of GAS pharyngitis in school age children include sore throat, for less than 1 week, with accompanying symptoms of fever, headache, abdominal pain, nausea and/or vomiting with absence of viral symptoms. Children less than 3 years old with GAS pharyngitis may not have all the symptoms of a typical strep throat infection, but commonly have a history of exposure to GAS pharyngitis from older siblings and/or a daycare setting. However, there is no single sign/symptom that readily identifies GAS pharyngitis in any age group.

> **Perianal and vulvovaginal strep**: Another relatively common manifestation of Group A strep disease in children is perianal or vulvovaginal strep. Clinical features include a bright red, sharply demarcated perianal or perineal erythema, sometimes associated with perirectal fissures, blood-streaked stools, pruritus, and pain with defecation. Some children may have a history of sore throat or strep exposure but this is not consistently present. Diagnosis is initially made clinically and antibiotic therapy may be initiated at the time of the visit if clinical suspicion is high. Confirmation with Group A strep culture of affected area is recommended, especially if diagnostic uncertainty exists. **Treatment with systemic antibiotics is required and is identical to treatment of GAS pharyngitis.**

Etiology: Group A Streptococcus (gram positive)

Differential Diagnosis

- Nonbacterial infectious agents
    - Viral pharyngitis, most common
        - Respiratory viruses cause the majority of sore throats in children, especially adenoviruses, Coxsackie A viruses, and SARS-Co-V-2.
        - Infectious mononucleosis, typically caused by either Epstein-Barr Virus (EBV) or Cytomegalovirus (CMV) is another relatively common cause of acute pharyngitis in pediatric patients. Consider infectious mononucleosis especially in adolescent patients presenting with more pronounced posterior cervical lymphadenopathy as well as prominent tonsillar exudate, which may be grey-green, white, or necrotic in appearance. There may also be accompanying profound fatigue, fever, and prolonged pharyngitis.
- Bacteria – *of note, GAS pharyngitis is the most commonly occurring form for which*

antibiotic therapy is definitely indicated
- Group C streptococcus – common among college students
- Group G streptococcus
- Fusobacterium necrophorum – may be seen in cases of recurrent or persistent pharyngitis
- Rare: *Corynebacterium diphtheria; Neisseria gonorrhea*

Guideline

Subjective Data/History
- GAS pharyngitis:
  - Sudden onset of sore throat
  - Age 5-15 years
  - Fever
  - Headache
  - Nausea
  - Vomiting
  - Abdominal pain
  - Winter and early spring presentation
  - History of exposure to strep pharyngitis within the preceding 2 weeks

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

Objective Data/Physical Exam
Accurate diagnosis on the basis of clinical grounds alone is usually not possible.

Clinical features of GAS pharyngitis may include (but are not specific to GAS pharyngitis):
- Tonsillopharyngeal inflammation
- Patchy tonsilopharyngeal exudates
- Palatal petechiae
- Anterior cervical adenitis
- Scarlatiniform rash
  - Fine, maculopapular sandpaper rash
  - Usually in the groin
  - May also be in the axilla, elbow crease, neck and abdomen
  - Rarely spreads to the back

Atypical findings in children <3 years may include:

- Coryza
- Tender anterior cervical adenopathy
- Excoriated nares
- "Streptococcal fever" or "streptococcosis" – mucopurulent rhinitis followed by:
    - Low grade fever
    - Irritability
    - Anorexia

Diagnostic Studies
Throat swab specimens should be obtained by vigorous swabbing of both tonsillar surfaces or fossae and the posterior pharyngeal wall.

- Swabbing the throat and testing for GAS pharyngitis should be performed because the clinical features alone do not reliably discriminate between GAS and viral pharyngitis.
    - POCT Rapid Strep A NAAT will be performed using the molecular testing instrument (98.5% sensitivity and 98.2% specificity)
        - This test no longer requires sending negative rapid antigen tests to the laboratory for confirmatory testing.
- Testing not recommended for children with acute pharyngitis with clinical features that strongly suggest a viral etiology (i.e.: cough, rhinorrhea, hoarseness and oral ulcers).
- Testing is not recommended for children less than age 3 who present with pharyngitis.
    - Testing may be considered in children less than age 3 who have known exposure to household contact with GAS, or symptoms more typically seen in this age group, including mucopurulent rhinitis, low-grade fever, irritability, and anorexia.

Treatment (See appendix: Treatment algorithm for GAS)
- Treat patients with a positive Rapid Strep A NAAT
- Predominate rational for treatment of this self-limited illness is to prevent complications including acute rheumatic fever (ARF), peritonsillar abscess, cervical lymphadenitis, mastoiditis and other invasive infection. Of note, ARF is uncommon in children <3 years old.
    - Treatment within 9 days of onset is effective in preventing ARF
    - Treatment does not affect the development of poststreptococcal glomerulonephritis
- Other indications to treat:
    - Improvement in clinical symptoms
    - Rapid decrease in contagiousness
    - A PCN-resistant GAS has never been documented. Recurrent signs and symptoms of acute pharyngitis likely due to:
        - Noncompliance with the prescribed antibiotics
        - A new GAS pharyngeal infection acquired from community contacts
        - Chronic GAS carriage with intercurrent viral infections
        - Protection of GAS by beta-lactamase producing bacteria

Education of Patient/Family

- A clinical response is usually achieved within 24-48 hours of antibiotic therapy
    - May return to school/child care once well-appearing, afebrile, AND at least 12 hours after beginning appropriate antibiotic therapy
- Diagnostic testing or empiric treatment of asymptomatic household contacts of patient with GAS pharyngitis is not routinely recommended
- Use of acetaminophen or an NSAID for treatment of moderate to severe symptoms or control of high fever
- Recommend new toothbrush in 48 hours after initiation of antibiotic therapy
- If rash present, warn families about peeling hands, feet or groin area within the next 1-2 weeks

Follow-up

- As needed
- Transfer to CHW EDTC for concerns of complications including peritonsillar abscess
- Follow-up post treatment is not routinely recommended
    - GAS carriers do not ordinarily justify efforts to identify them nor do they generally require antimicrobial therapy because GAS carriers are unlikely to spread GAS pharyngitis to their close contacts and are at little or no risk of developing complications including ARF.
        - High GAS carrier state rate (4-20% of asymptomatic kids at any given time)

- CHW ENT consult for possible tonsillectomy should be considered for:
    - Recurrent tonsillitis and associated snoring/obstructive sleep apnea
    - Recurrent acute pharyngitis (of ANY etiology) with the following frequency:
        - 7 episodes per year in 1 year
        - 5 episodes per year for 2 years in a row
        - 3 episodes per year for 3 years in a row
    - Each episode of sore throat should be associated with at least 1 of the following:
        - Temperature >38.3^{o}C
        - Cervical adenopathy
        - Tonsillar exudates
        - Positive test for GAS

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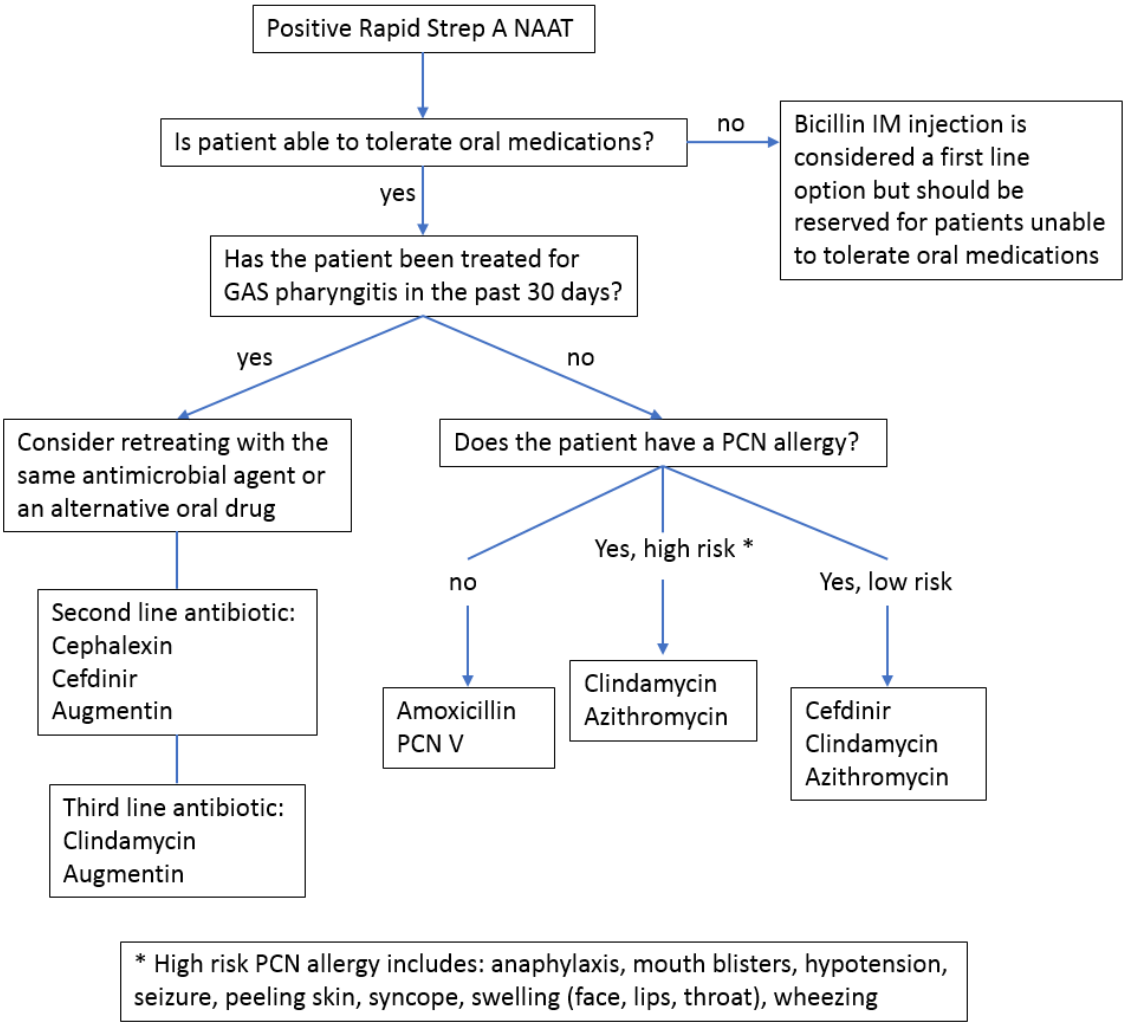
Treatment information also provided by Michelle Mitchell, Physician, Infectious Diseases and Antibiotic Stewardship, Children's Wisconsin (personal communications, June 2020).

APPENDIX: Treatment algorithm for GAS
(Treatment algorithm would be the same for perianal and vulvovaginal strep)



- Amoxicillin 50 mg/kg/day daily or BID dosing (max 1000 mg/day) 10 days
- PCN V 250 mg (<27 kg) or 500 mg (≥ 27 kg) BID OR TID 10 days
- Clindamycin 20 mg/kg/day TID (max 900 mg/day) 10 days
- Azithromycin 12 mg/kg/day on day 1 followed by 6 mg/kg/day for days 2-5 daily dosing (max 500 mg day 1, followed by max 250 mg daily days 2-5); *resistance has been noted with macrolides*
- Cephalexin 40 mg/kg/day BID (max 500 mg/dose) 10 days; *CW Asthma/Allergy would avoid cephalexin in PCN allergic patients*
- Cefdinir 14 mg/kg/day daily (max 600 mg/dose) 10 days; *daily cefdinir for GAS approved by Dr Michelle Mitchell of Infectious Diseases and Antibiotic Stewardship*
- Augmentin 50 mg amoxicillin/kg/day BID (max 500 mg/dose) 10 days
- Bicillin (Penicillin G Benzathine) for patients unable to tolerate oral medications:
  ≤27 kg: 600,000 units IM as a single dose (one dose is considered full treatment)
  >27 kg: 1.2 million units IM as a single dose (one dose is considered full treatment)