

# CONTAGIOUS COMMENTS

## Department of Epidemiology

### Rise in Invasive Group A *Streptococcus* Infections

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#### Highlights

- Although still rare, cases of invasive group A *Streptococcus* (iGAS) infections are again on the rise, coinciding with the resurgence of respiratory viruses.
- iGAS can present in many different ways, including pneumonia, complicated head/neck infections, musculoskeletal and skin/soft tissue infections, necrotizing fasciitis, and toxic shock syndrome. Patients are often bacteremic with iGAS.
- Patients with iGAS can rapidly deteriorate and develop multiple foci of infection. Prompt recognition and initiation of effective antibiotics, as well as frequent, careful exams are crucial.
- Viral co-infections (e.g., influenza, RSV, SARS-CoV-2) were the most common associated factor in last year's iGAS outbreak, and the trend appears to continue this year. Consider bacterial superinfection in children with mild URI symptoms who suddenly become much sicker or develop new findings/symptoms concerning for a bacterial infection.

#### Introduction to Invasive Group A *Streptococcus*

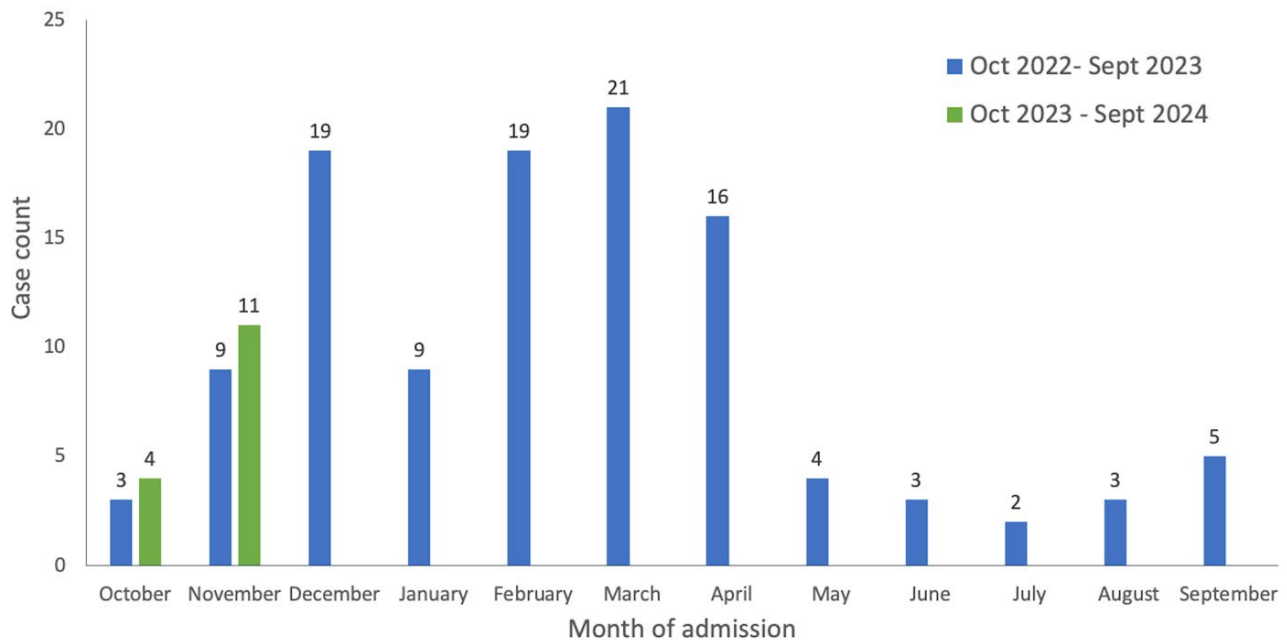
Group A *Streptococcus* (GAS), also known as *Streptococcus pyogenes*, is a Gram-positive bacteria that colonizes the human throat and causes a wide range of illnesses. It commonly causes non-invasive infections such as pharyngitis and scarlet fever but can also rarely cause severe, invasive infections, including streptococcal toxic shock syndrome, necrotizing fasciitis, bacteremia, pneumonia, and musculoskeletal infections. Invasive group A *Streptococcus* (iGAS) infection is defined as the isolation of GAS from a normally sterile body site, such as blood, bone, or pleural fluid.

#### Epidemiology

Following a notable decrease in community circulation of GAS during the height of the COVID-19 pandemic, we experienced a large outbreak of iGAS at Children's Hospital Colorado (CHCO) in the fall and winter of 2022-2023,<sup>1</sup> similar to reports from other US states and countries.<sup>2-4</sup> At CHCO, case numbers between October 2022 – April 2023 were almost triple that of a typical season prior to COVID-19 (9.9 cases/month in 2022-23 vs. 3.9 cases/month prior to 2020). Most cases occurred in young (median age 6 years) and previously healthy children. A preceding or concurrent viral upper respiratory infection (URI) was the most common associated symptom and potential risk factor, with almost 60% of cases having documented URI symptoms. The outbreak ended in May 2023, with relatively low numbers of iGAS cases throughout the summer and fall, as expected based on typical iGAS seasonality.

This month, we have again started to see a rise in iGAS cases (**Figure 1**), following on the heels of increases in RSV, influenza and SARS-COV-2 infections.<sup>5</sup> In November 2023, we have had 11 children hospitalized at CHCO with iGAS (9 confirmed and 2 probable cases), up from 4 cases in October. November iGAS cases have included nonfocal bacteremia, pneumonia, pyomyositis, toxic shock syndrome, and necrotizing fasciitis. It is unknown whether iGAS cases will surge to the extent seen in last year's large iGAS outbreak.

iGAS cases at CHCO 2022 - present  
(confirmed and probable cases)



**Figure 1:** Number of invasive group A *Streptococcus* cases by month of hospital admission. A confirmed iGAS case was defined as isolation of GAS from a sterile site (e.g., blood, bone, surgically drained deep tissue or abscess, pleural fluid) or a positive wound culture accompanied by necrotizing fasciitis or streptococcal toxic shock syndrome. A probable case was defined as isolation of GAS from a non-sterile site (e.g., wound, trachea, retropharyngeal abscess) with a presentation consistent with invasive bacterial infection.

### Diagnosis and treatment considerations

- Consider iGAS in patients with concern for bacterial infection, particularly in ill-appearing and critically ill children.
- Initial work up should include blood cultures, CBC with differential, inflammatory markers (CRP, procalcitonin), comprehensive metabolic panel (CMP), and imaging as directed by exam/symptoms.
  - Refrain from sending throat GAS rapid antigen test/culture unless there is clinical concern for strep pharyngitis as GAS commonly colonizes the oropharynx and a positive test does not necessarily indicate infection or correlate with development of an iGAS infection.
  - RSV and influenza do not usually cause significant elevations in CRP or procalcitonin and therefore an elevation in CRP or PCT should prompt further investigation for a potential bacterial infection.
- GAS is 100% susceptible to all penicillins and cephalosporins. In general, ceftriaxone is recommended for empiric coverage (choice may vary based on clinical presentation and severity). Antibiotics should be narrowed to ampicillin/amoxicillin once GAS is confirmed.
- Consider *adjunctive* use of a protein synthesis inhibitor (clindamycin or linezolid) and IVIG if there is concern for a toxin-mediated process (rash/conjunctivitis/strawberry tongue, toxic shock syndrome, necrotizing fasciitis).
- All patients with suspected/confirmed iGAS warrant Infectious Diseases consultation.

### Prevention

- Influenza vaccination and varicella vaccination have been shown to decrease the risk of developing an iGAS infection.<sup>6-8</sup> Similarly, SARS-CoV-2 vaccination and RSV preventative measures may also decrease the risk.
- In consultation with ID, household antimicrobial prophylaxis may be considered for patients with an iGAS infection.

## References

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