Seasonal Variations and Risk Factors of *Streptococcus Pyogenes* Infection — a Multicenter Research Network study

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INTRODUCTION

Seasonal variations in Group A Streptococcus (GAS) infections have not been robustly characterized in the US population. Thus, we aim to:

- identify seasonal trends in GAS pharyngitis and necrotizing fasciitis among adults and pediatrics
- characterize risk factors for acquisition of GAS pharyngitis

METHODS

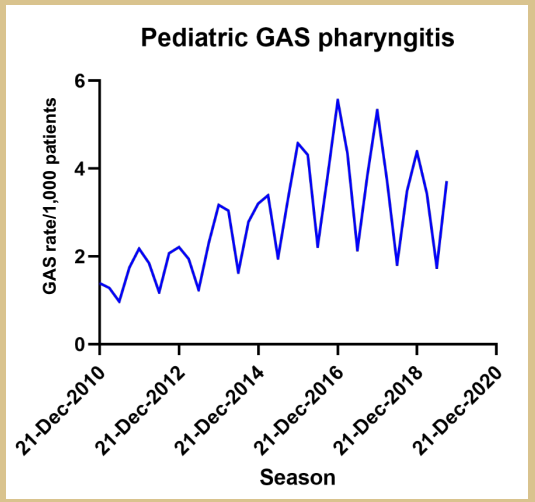
From 2010 to 2019, we identified laboratory-confirmed cases of adult and pediatric GAS pharyngitis and cases of necrotizing fasciitis by ICD-10 and CPT codes using TriNetX, a federated research network.

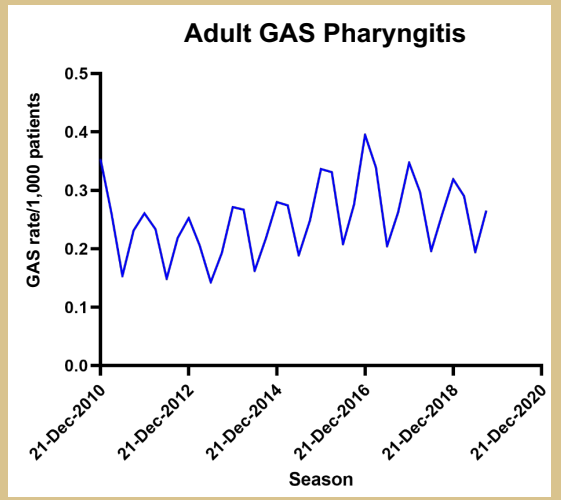
We extracted quarterly incidence rates and used an autoregressive integrated moving average (ARIMA) model to assess seasonal variations in infections.

Demographic characteristics and 1-month outcomes matched for age, gender, and viral infections were then compared among adult patients with or without positive GAS pharyngitis tests.

The largest ***seasonal*** analysis of ***Group A Streptococcus Pharyngitis***:

500,000+ cases of lab-identified ***GAS pharyngitis*** found that cases reach peaks in the ***winter*** and troughs in the ***summer***





RESULTS

- Adults testing positive for GAS pharyngitis were more likely to be younger, relative to those testing negative (25.3 vs 30.2)
- GAS pharyngitis average incidence rates peaked in the winter while dipping in the summer, with a significant ARIMA seasonal variation in the for adult and pediatric GAS pharyngitis ($p<0.0001$ and $p=0.014$, respectively).
- Necrotizing fasciitis diagnoses were highest during the summer months. However, ARIMA seasonal variation was not significant ($p=0.861$).

DISCUSSION

The seasonality of GAS pharyngitis follows the same seasonal cadence as influenza. Higher incidence of GAS pharyngitis in the winter may be attributable to indoor crowding and increased pediatric exposure within the schooling environment. GAS pharyngitis conducts a higher risk of rheumatic fever but does not confer a higher risk of ICU admission or mortality.

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