

NC Department of Health and Human Services

# Group A Strep Overview

SHARPPS Program, NC Division of Public Health

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# Outline

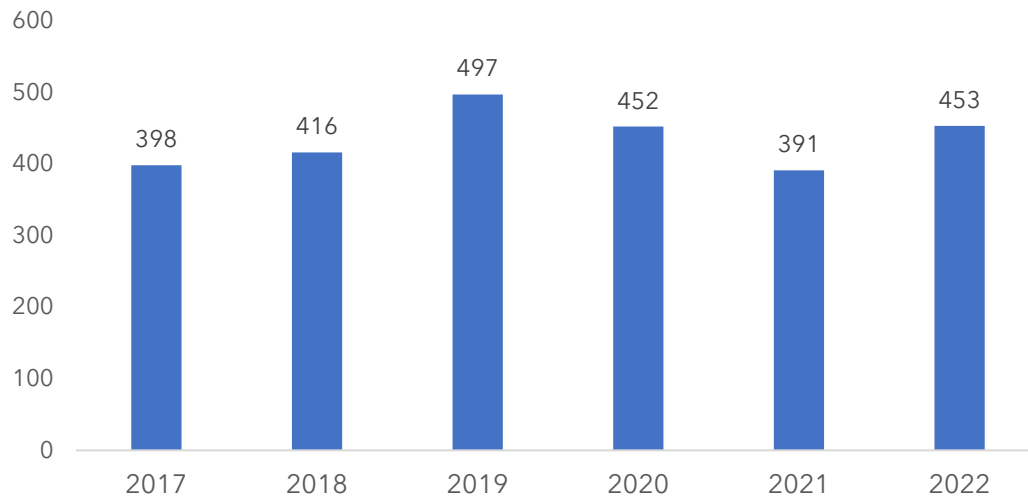
- Background
  - Epidemiology
  - Transmission
  - Control measures
- Response
  - Reportable cases
  - Postpartum and postsurgical cases
  - Cases in LTCFs
  - Wound care
- Resources

# Group A Strep Background

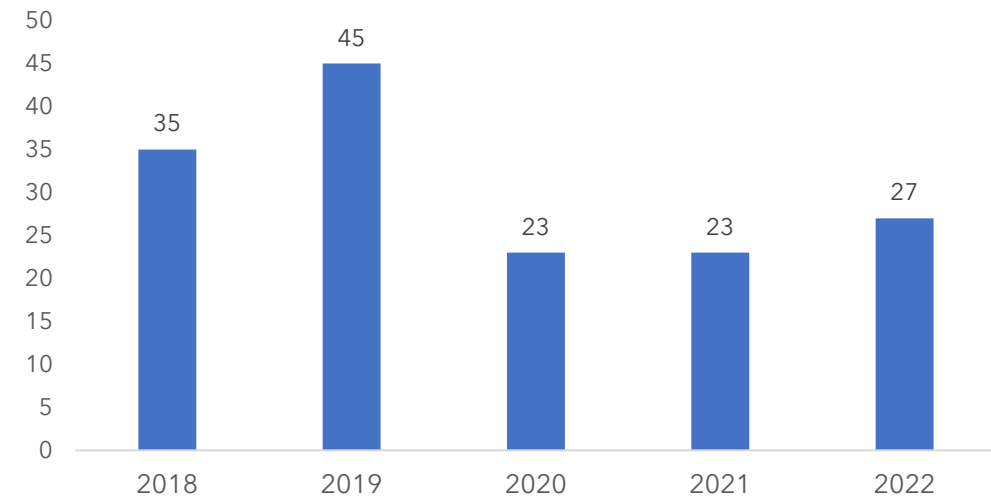
# Epidemiology

- Estimated 20,000 – 25,000 cases of invasive GAS in the US annually, resulting in 1,800-2,300 deaths <sup>1</sup>
- Elderly populations have the highest risk of invasive GAS infection and death<sup>2</sup>
- Older adults in LTCFs have a 6x greater risk of disease and 1.5x greater risk of death than older adults in the community<sup>2</sup>

Invasive GAS Cases in North Carolina



Invasive GAS Deaths in North Carolina

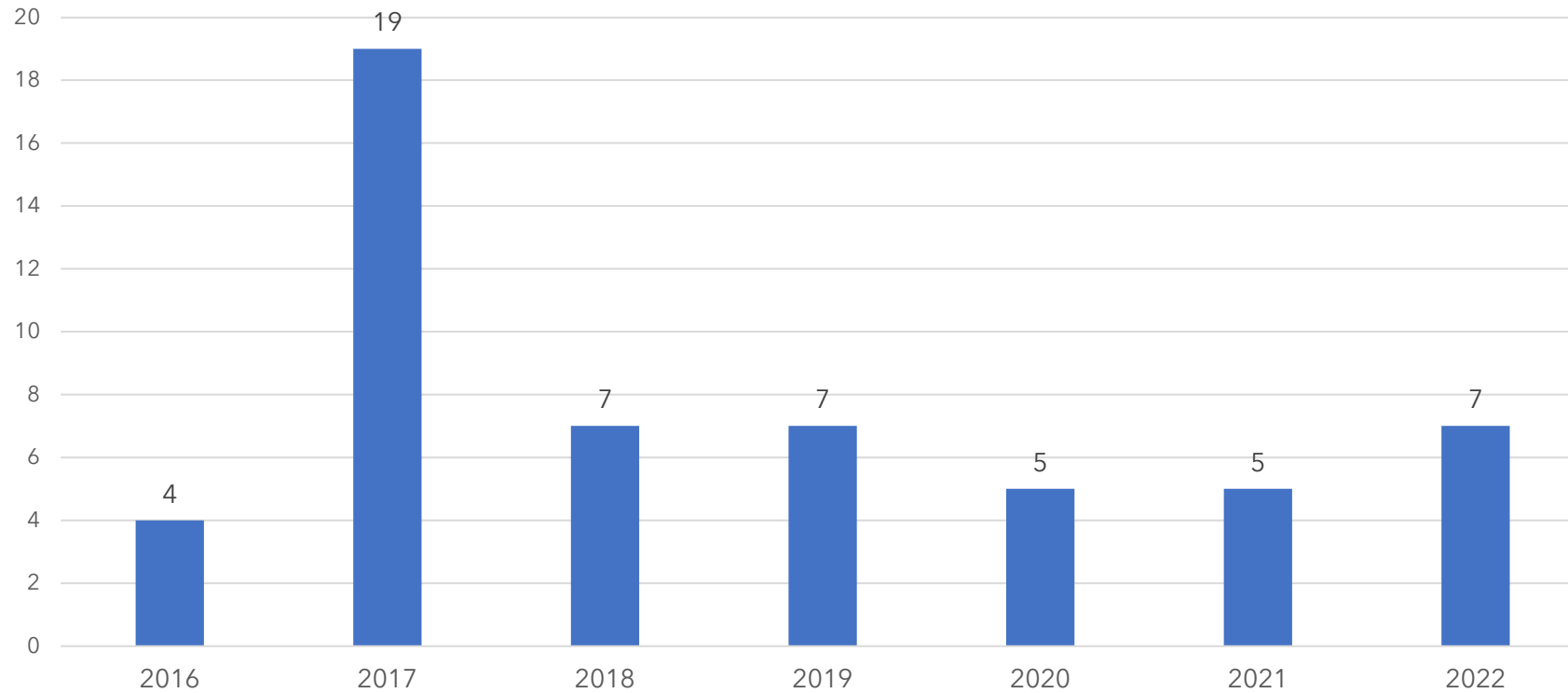


1. <https://www.cdc.gov/abcs/bact-facts-interactive-dashboard.html>

2. [Invasive Group A Streptococcal Infection in Older Adults in Long-term Care Facilities and the Community, United States, 1998–2003 - Volume 13, Number 12—December 2007 - Emerging Infectious Diseases journal - CDC](#)

# Epidemiology

Invasive GAS Outbreaks in North Carolina



# Strep terminology

- Strep species are classified by Lancefield group and hemolysis type
  - Hemolysis types: beta (complete hemolysis), alpha (partial hemolysis), and gamma (no hemolysis)
  - Lancefield groups classify strep species based on surface antigens
  - Not all strep species have a Lancefield group (e.g., *S. pneumoniae*)
- Group A Strep = *Streptococcus pyogenes*
  - Lancefield group A
  - Beta-hemolytic



Note: this is just for reference if you come across these terms, you don't need to memorize this!

# Clinical presentation

- Can cause multiple clinical syndromes:
  - Strep pharyngitis (strep throat)
  - Impetigo
  - Cellulitis
- Complications:
  - Post-infectious syndromes (glomerulonephritis, rheumatic heart disease)
  - Invasive disease
    - Bacteremia and sepsis
    - Necrotizing fasciitis
    - Pneumonia
    - Streptococcal toxic shock syndrome (STSS)

# Risk factors for invasive disease

- Patient-level factors
  - Age
  - Living in a congregate setting, especially LTCFs
  - Breaks in the skin
    - Wounds
    - Indwelling catheters
    - IV drug use
  - Cardiovascular disease
  - Diabetes
- Healthcare factors
  - Significant nursing needs (increased contact with staff)
  - Receiving wound care
  - Staff has poor hand hygiene
  - Staff works while sick



# Colonization

- Asymptomatic colonization with GAS is possible
- Testing for colonization is an essential step for investigating sentinel cases and outbreaks
- People with colonization need [antibiotic treatment](#)
  - Note: this is different from the antibiotic regimens for acute infection

# Transmission and control measures

- Spread through contact with respiratory secretions or infected wounds/sores
- Control measures:
  - HAND HYGIENE!!!
  - Following wound care protocols
    - Scissors must be dedicated to a patient and cleaned and disinfected between each use, or use disposable scissors
  - Educate staff about invasive GAS so they understand the importance of staying home when sick
    - [CDC guidance](#) on excluding staff from work for GAS infection/colonization

# Transmission-based precautions

- Patients with GAS infection should be placed on transmission-based precautions until **24 hours have passed since initiation of antibiotics**
- Pharyngitis and pneumonia: standard and **droplet precautions**
- Serious invasive disease (STSS, necrotizing fasciitis, sepsis): standard and **droplet precautions**
- Wound infection: standard, **contact, and droplet precautions**
  - For wounds with significant drainage, contact precautions continue until drainage stops or can be contained by a dressing
- Standard Precautions should always be taken which may mean additional PPE is needed during wound dressing changes or other patient care activities

Reference:

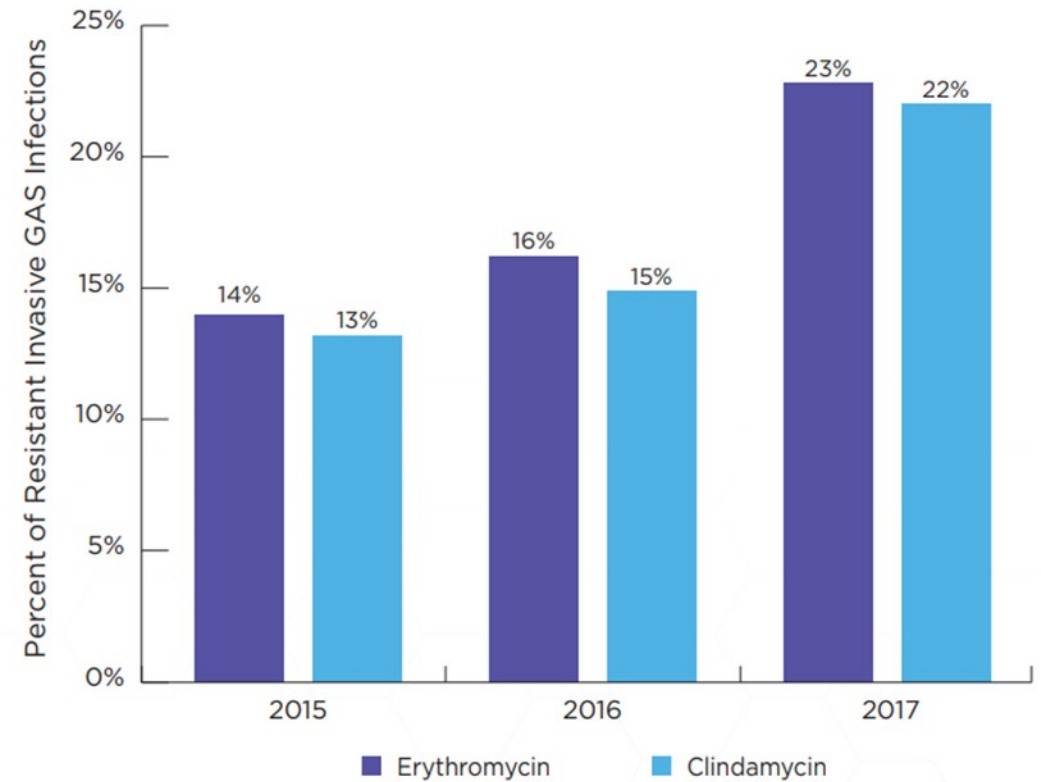
[Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings \(2007\) \(cdc.gov\)](#) group A strep precautions table pg 112

# Treatment

- Not considered an MDRO, but resistance to erythromycin and clindamycin is increasing
- CDC classifies it as a “concerning threat”
- For 2021, ~34% of isolates were resistant, based on CDC surveillance data
  - <https://www.cdc.gov/abcs/bact-facts-interactive-dashboard.html>

## ERYTHROMYCIN AND CLINDAMYCIN RESISTANCE

More than one in five invasive GAS infections are caused by erythromycin- and clindamycin-resistant strains, limiting the patient's treatment options.



[Antibiotic Resistance Threats in the United States, 2019 \(cdc.gov\)](https://www.cdc.gov/abcs/bact-facts-interactive-dashboard.html)

# Invasive GAS Reporting

# Only invasive GAS is reportable

## **Invasive sites (reportable)**

- Blood
- CSF
- Synovial fluid
- Pleural fluid
- Peritoneal fluid
- Bone

## **Non-invasive sites (does not meet criteria)**

- Wound culture
- Abscess
- Throat culture
- Misc. tissue sample

# Similar/related conditions

- Streptococcal toxic shock syndrome (STSS)
  - Reported separately from invasive GAS, details to follow
- Non-streptococcal toxic shock syndrome
  - Usually caused by *Staph aureus*
  - Always reportable
  - Separate [case definition](#) from STSS

# Streptococcal toxic shock syndrome (STSS) is reported separately

- Case definition:
  - Hypotension (SBP < 90) AND at least two of the following:
    - Renal impairment
    - Coagulopathy
    - Liver involvement
    - Acute respiratory distress syndrome (ARDS)
    - Generalized erythematous macular rash
    - Soft-tissue necrosis

Note: streptococcal toxic shock syndrome has a different case definition from non-streptococcal toxic shock syndrome



# STSS reporting tips

- For patients with severe illness, please document in the GAS event whether they meet STSS criteria or not
- We can create the STSS event, if criteria are known
  - If you do create an STSS event, please make a note in the GAS event with the STSS event number
- STSS events don't need everything copied from the GAS event
  - STSS event should include at least:
  - Clinical findings that meet case definition
  - Lab specimen type, date, specimen ID
  - If patient was in a congregate living setting or had a healthcare exposure during the period of interest

# Invasive GAS Response

# Risk history package

- Please document if the patient was in a congregate living setting or had a relevant healthcare exposure during the period of interest
  - “Other” for LTCFs

Behavioral Risk and Congregate Living	
During the period of interest did the patient stay in any congregate living facilities or other locations that were not their primary residence? <span>i</span>	<input type="checkbox"/>
During the timeframe specified above, has the patient used injection drugs not prescribed by a doctor?	<input type="checkbox"/>
Based on the review of the medical records, did IV drug use (IVDU) likely contribute to the current event/illness?	<input type="checkbox"/>
Health Care Facility and Blood and Body Fluid Exposure Risks	
<b>DURING THE PERIOD OF INTEREST</b>	
During the timeframe displayed above, did the patient have any of the following health care exposures? (Add new for all that apply)	<input type="checkbox"/>

- 01. Correctional facility
- 02. Barracks
- 03. Shelter
- 04. Commune
- 05. Boarding school
- 06. Camp
- 07. Dormitory, sorority, fraternity
- zz\_No
- zz\_Other

- **Period of interest is the 7-day window prior to disease onset**

- Surgery (besides oral surgery), obstetrical or invasive procedure
- zz\_No
- zz\_Unknown

# Case investigation resources

- Cases in three settings are considered sentinel events and need further follow-up
  - Postpartum
  - Postsurgical
  - LTC facilities
- For instructions on investigating cases in these settings, see the [Group A Strep Toolkit](#) in the CD Manual

- **Streptococcal infection, Group A, invasive**
  - [Disease Notes](#)
  - [LHD Disease Investigation Steps](#)
  - [Case Definition](#)
  - Disease Report Form
    - [Part 1](#)
    - [Part 2](#)
  - [Group A Strep Toolkit](#)



# Postpartum and postsurgical GAS

- Defined as invasive GAS in the 7 days following a surgery or birth
- Response to a sentinel event:
  - LHD informs facility
  - Facility conducts 6 months of retrospective surveillance, 6 months of prospective surveillance
  - Isolate is sent to State Lab
  - LHD should discuss IP procedures with facility, particularly hand hygiene and wound care
- Response to an outbreak (2+ cases in 6 months):
  - Above steps, plus:
  - Screen HCP for asymptomatic GAS carriage

Reference: [Invasive Group A Strep Surveillance Duties \(ncdhhs.gov\)](https://www.ncdhhs.gov/invasive-group-a-strep-surveillance-duties)

# GAS in long-term care facilities (LTCFs)

- Follow the CDC GAS Algorithm (modified for use by NC DPH) posted on the CD Manual
- Always do the following:
  - Notify the facility
  - One-month retrospective chart review for invasive GAS
  - 4 months prospective surveillance for invasive or non-invasive GAS
  - Review hand hygiene, wound care, and other IP policies with facility staff
  - Have the isolate sent to the State Lab

# GAS in LTCFs: summary of GAS algorithm

- **One** invasive case:
  - **Survey direct care staff for current symptoms of GAS infection, screen (by culture) symptomatic staff**
  - **Screen (by culture) close contacts of resident case including roommate and close social contacts**
    - Sites to culture are throat, skin lesions/wounds, ostomy sites
  - One-month retrospective chart review for invasive GAS
  - 4 months prospective surveillance for invasive or non-invasive GAS
  - Review hand hygiene, wound care, and other IP policies with facility staff
  - Have the isolate sent to the State Lab

# GAS in LTCFs: summary of GAS algorithm

- **Two cases** (at least one invasive)
  - **Survey for symptomatic direct care staff and culture anyone with symptoms**
  - **Culture all residents (or affected unit/floor, if facility is very large)**
  - **Consider culturing asymptomatic staff with epi links to either of the cases**
  - 4 months prospective surveillance for invasive or non-invasive GAS
  - Review hand hygiene, wound care, and other IP policies with facility staff
  - Have the isolate sent to the State Lab
- If there are two resident cases, a site visit is recommended. RIPS teams are available for ICAR and wound care observation

Note: Cases include both invasive and non-invasive cases. Cases must be within 4 months of previous case. Surveillance begins with an invasive case. Two or more cases within the surveillance period is considered an outbreak.



# GAS in LTCFs: summary of GAS algorithm

- **Three or more cases** (at least one invasive)
  - **Survey for symptomatic direct care staff and culture anyone with symptoms**
  - **Culture all residents (or affected unit/floor, if facility is very large)**
  - **Culture all staff with epi links to any of the cases**
  - 4 months prospective surveillance for invasive or non-invasive GAS
  - Review hand hygiene, wound care, and other IP policies with facility staff
  - Have the isolate sent to the State Lab
- If there are two resident cases, a site visit is recommended. RIPS teams are available for ICAR and wound care observation

Note: Cases include both invasive and non-invasive cases. Cases must be within 4 months of previous case. Surveillance begins with an invasive case. Two or more cases within the surveillance period is considered an outbreak.

# Wound care

- Wound care practices are a common source of GAS transmission in LTC facilities
- Prevent opportunities for cross-contamination:
- Dedicated wound dressing change supplies and equipment should be gathered/accessible before starting
  - **Includes scissors** – should be dedicated to individual resident and disinfected between each use
- Multi-dose wound care medications (ointments, creams, cleanser) should be dedicated to a single resident whenever possible
  - If not dedicated to a single resident, a small amount of medication should be aliquoted into clean container for single-resident use

# Wound care

- Gloves should be changed and hand hygiene performed when moving from dirty to clean wound care activities
- Wound care supply carts should never enter the resident's immediate care area and should never be accessed without removing gloves and performing hand hygiene
  - Gather all supplies before starting dressing change so wound cart does not need to be accessed during procedure
- Any clean equipment that is brought into a resident's room and not used should be dedicated to the resident or disposed of
- Reusable medical equipment and any surface in the resident's immediate care area contaminated during a dressing change should be cleaned and disinfected

# Dressing change steps

- Disinfect area where supplies will be placed (e.g., over bed table) and place trash bag nearby
- Perform hand hygiene
- Gather all necessary supplies and equipment
- Don clean gloves
- Remove tape and dressings, dispose
- Assess wound
- Remove soiled gloves and dispose, perform hand hygiene, and put on clean gloves
- Apply dressing and secure
- Dispose of all supplies
- Remove soiled gloves and dispose, perform hand hygiene

# Key takeaways

- Always discard gloves, perform hand hygiene, and don new gloves when moving from dirty to clean
- Reduce opportunities for contamination by touching the wound as little as possible and preparing supplies in advance
- Dedicate reusable supplies (including scissors and multi-dose medications) to one resident whenever possible
- Wound care carts should be clean, not cluttered, and should never enter a resident's room

# Wound care observation tool snapshot- [link](#) also on resources slide

Wound Dressing Change Observation							
Elements	Assessment						Notes for Improvement
All supplies are gathered before dressing change <sup>1</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
HH performed before dressing change	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Clean gloves donned before dressing change <sup>2</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Multi-dose wound care meds are used appropriately <sup>3</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Dressing change performed in manner to prevent cross-contamination <sup>4</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Gloves removed after dressing change completed	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
HH performed after dressing change completed	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Reusable equipment cleaned and/or disinfected appropriately <sup>5</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Clean, unused supplies discarded or dedicated to one resident	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Wound care performed/assessed regularly <sup>6</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	
Wound care supply cart is clean <sup>7</sup>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	NA	<input type="checkbox"/>	

# Resources

- [Invasive GAS case definition](#)
- [STSS case definition](#)
- [GAS toolkit](#)
- NC SPICE wound care resources:
  - Wound care observation tool
    - <https://spice.unc.edu/resources/spice-wound-care-observation-tool/>
  - Webinar for LTC on Wound Care in the Elderly
    - <https://spice.unc.edu/ltc-wound/>