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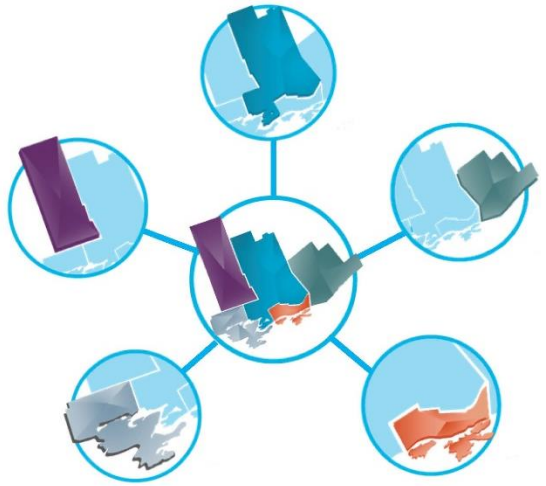

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SE IPAC Hub: HPE IPAC Lead CoP

MAY 22, 2024

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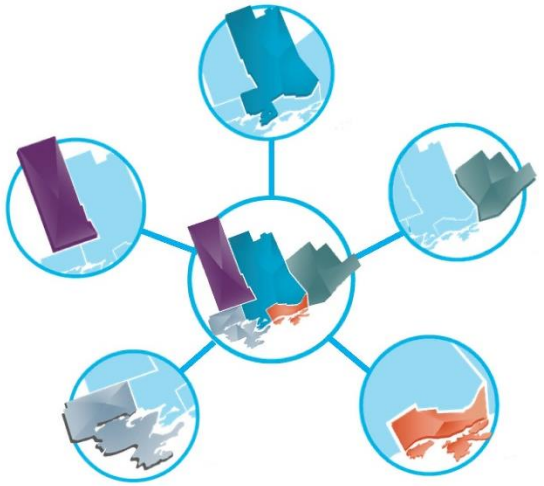

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Group A Streptococcus (GAS) & Invasive Group A Streptococcus (iGAS)

MAY 22, 2024

CS170431

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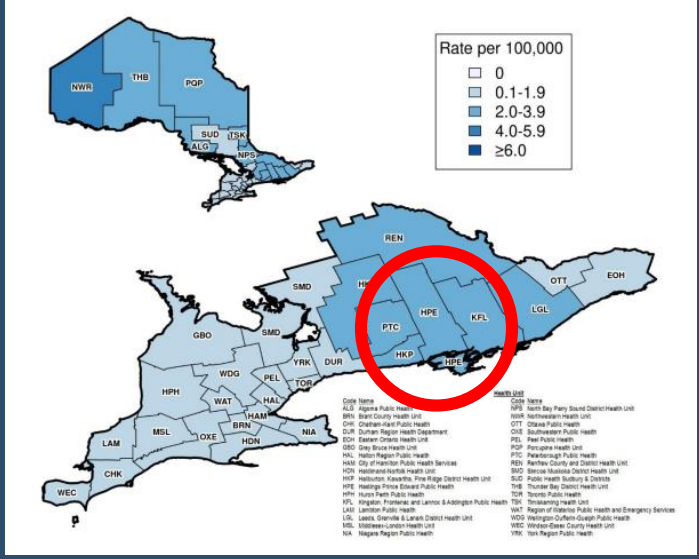
Epidemiological Summary: iGAS in Ontario

October 1 2023 – March 31, 2024



- HPEPH reported highest average monthly rates
- 65 years+ highest incidence
- iGAS cases requiring hospitalization is slightly higher than the previous season
- *emm* types were available for 60% of cases in those 18+
- Most common emm types: emm1, emm12, emm80

DOPHS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2024 to date COUNT	2024 to date RATE per 1,000,000 population	5-year average year-to-date COUNT	5-year average year-to-date RATE
Group A Streptococcal Disease, Invasive	264	188	178										630	40.4	302	20.2

Resource: [Invasive Group A Streptococcal (iGAS) disease in Ontario: October 1, 2023 to March 31, 2024]

What is Group A Streptococcus?

- Causative agent: *Streptococcus pyogenes* (bacteria)
- Gram-positive cocci, growing in pairs or chain
- Part of normal flora found in nares, throat or skin
- Can cause infections such as strep throat, scarlet fever, impetigo or cellulitis
- Individuals can be colonized or infected

What is invasive Group A Streptococcus?

- Introduction of *Streptococcus pyogenes* in sterile part of the body
- Can cause septicemia, toxic shock syndrome (TSS) or necrotizing fasciitis (NF) and be life-threatening
- **<u>Reportable to Public Health Unit</u>**

Risk Factors

- Open wounds or breaks in the skin (e.g. cuts, burns, sores, varicella or shingles)
- Chronic diseases (e.g. diabetes, pulmonary, hepatic or cardiac disease)
- Weakened immune system (immunosuppression) either from:
  - disease (HIV/AIDS)
  - cancer treatments (radiation, chemotherapy)
  - taking anti-rejection drugs following an organ or bone-marrow transplant
- Living in a crowded environment (e.g. dormitories, shelters, army barracks)
- Recent infection with chickenpox or with respiratory viruses such as influenza
- Substance use, including use of injectable drugs
- Recent close contact with someone with a GAS or iGAS infection
- During childbirth and in the post-partum period
- Occurs more often in young children <5 or adults aged >65+

Resource: [Group A Streptococcal disease: For health professionals]

What signs and symptoms should I look for?

GROUP A STREPTOCOCCUS

Throat: General feeling of un-wellness; fever and chills; sore red throat or tonsils; pain on swallowing; swollen/tender cervical lymph nodes; nausea or vomiting or diarrhea; headache, muscle aches

Scarlet Fever: red skin rash starting on face and neck and spreads; flushed face with paleness around mouth; red and bumpy tongue

Impetigo: itchy and red skin with blisters that crust and scab – typically around nose and mouth; swollen/tender lymph nodes; fever

Cellulitis: redness; warmth, swelling and tenderness or skin pain; swollen and tender lymph nodes; fever

INVASIVE GROUP A STREPTOCOCCUS

Septicemia: fever; chills; headache; general feeling of un-wellness, tachycardia, tachypnea

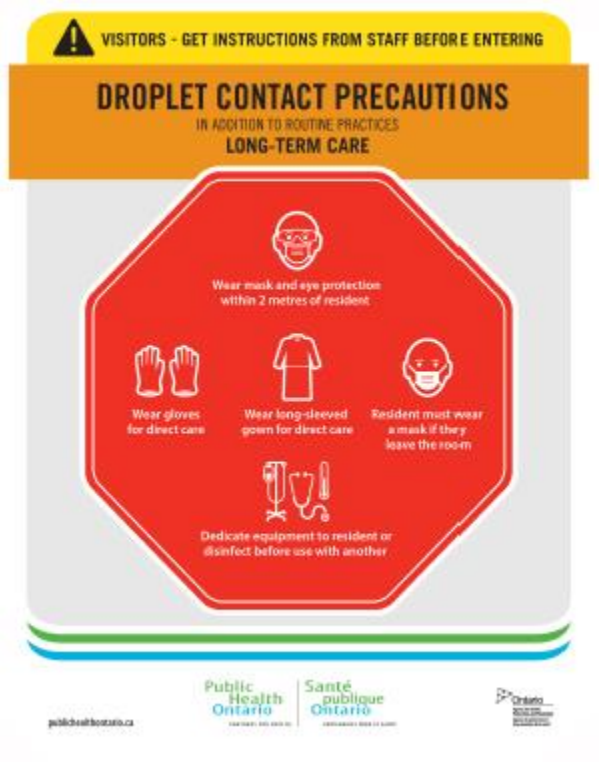
TSS: hypotension; respiratory distress syndrome; generalized erythematous macular rash that may desquamate

Soft tissue: increasing severe pain and swelling; fever; redness around wound; can include NF, myositis or gangrene

Meningitis: fever; headache; stiff neck; nauseas; vomiting; light sensitivity; confusion

Additional Precautions

STREPTOCOCCAL DISEASE Group A *Streptococcus*	Skin, wound or burn infection, including necrotizing fasciitis	Droplet + Contact	Yes	Continue precautions until 24 hours of effective treatment.
	Toxic shock-like syndrome (TSLS)	Droplet + Contact	Yes	
	Pneumonia	Droplet	Yes	
	Pharyngitis/scarlet fever – paediatric*	Droplet	Yes	
	Endometritis (Puerperal Sepsis)	RP	No	
	Pharyngitis/ scarlet fever - adult	RP	No	



Resource: [PIDAC: Routine Practices and Additional Precautions in All Health Care Settings]

Close Contacts

- Household contacts of a case who have spent at least 4 hours/day on average with the case in the previous 7 days
- Non-household persons who share the same bed with the case or had sexual relations with the case
- Persons who have had direct mucous membrane contact with the oral or nasal secretions of a case, such as mouth to mouth resuscitation, open mouth kissing or unprotected direct contact with an open skin lesion of the case
- Injection drug users who have shared needles with the case

Resource: Appendix 1: Disease Group A Streptococcal Disease, invasive (iGAS)

Testing in Long-Term Care

1. If a case of iGAS is confirmed, conduct a retrospective chart review. Look for:
   - Culture confirmed GAS cases
   - Suggested cases of GAS or iGAS, including skin and soft tissue and excluding pneumonia and conjunctivitis not confirmed by culture

2. If an **excess** of GAS infection identified, consider the following groups for testing:
   - All staff with positive history of suggested recent GAS infection
   - All residents in home <100 beds OR residents within the same unit as case
   - Contacts of case in homes with 100+ bed, within the unit
   - Suggested by resident or staff movements or epidemiological evidence
   - All patient care staff

Resource: Recommendations on Public Health Management of Invasive Group A Streptococcal (iGAS) Disease

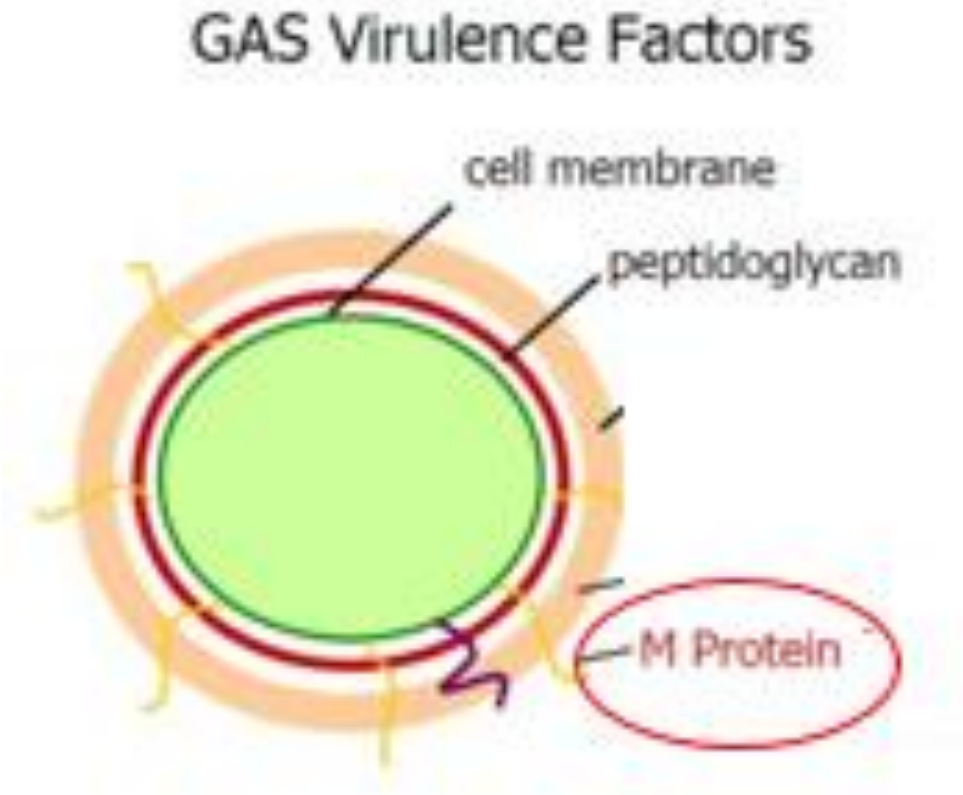
Specimen Collection

Blood agar plate showing beta-hemolysis of a *Streptococcus* culture

- C/S for *Streptococcus*
- Sources: Throat, rectal, nasal, vaginal, skin lesions
- Ambient temperature
- Submit to lab $\leq$ 24 hours

iGAS and *emm* Typing

- Solid blood agar medium (or any other non-selective solid agar that support organism growth) OR
- Semi-solid charcoal transport swab



PRIOR TO COLLECTION: CONFIRM SPECIMEN COLLECTION WITH YOUR PUBLIC HEALTH UNIT

Treatment

Ontario Hospital Antibiogram

% Susceptible *2018-2021 Data*

Consult the Technical Notes for details about how this antibiogram was prepared

Please select the buttons below to view antibiogram data by Gram stain and by LHIN

Gram stain

- Gram-negative
- **Gram-positive**

Region

- Mississauga Halton
- North East
- North Simcoe Mus...
- North West
- **South East**

	Ampicillin / Amoxicillin		Cefazolin		Ceftriaxone		Ciprofloxacin		Clindamycin		Cloxacillin		daptomycin		Erythromycin		Fosfomycin (urine)		levofloxacin		linezolid		Nitrofurantoin (urine)		Penicillin		tetracycline		Trimethoprim-Sulfamethoxazole		Vancomycin	
	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S	#	% S
Enterococcus faecalis	745	98					602	69											355	77			745	98			355	31			745	98
Enterococcus faecium	255	9					255	9					38	100			38	69	137	5	118	100	255	29	38	100	137	43			255	59
Staphylococcus aureus	561	19	1332	70			561	64	1332	67	1332	70			1332	56			561	65			561	100	561	19	771	96	1332	97	1332	100
Staphylococcus, coagulase-negative	249	15	442	42			249	71	442	61	442	42			442	42			249	54			249	98	249	15	193	92	442	69	442	100
Streptococcus agalactiae (GBS)	17	100							17	65					17	59			17	100					17	100						
Streptococcus pneumoniae					17	99			12	86					23	80			23	98					27	98			12	89		
Streptococcus pyogenes (GAS)									61	82					61	81			61	100					61	100						
Streptococcus, viridans group					162	96																			181	93						

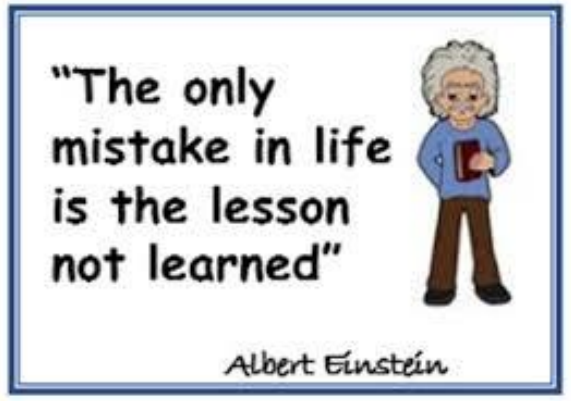
Resource: Ontario Hospital Antibiogram (2022).

Preventative Measures

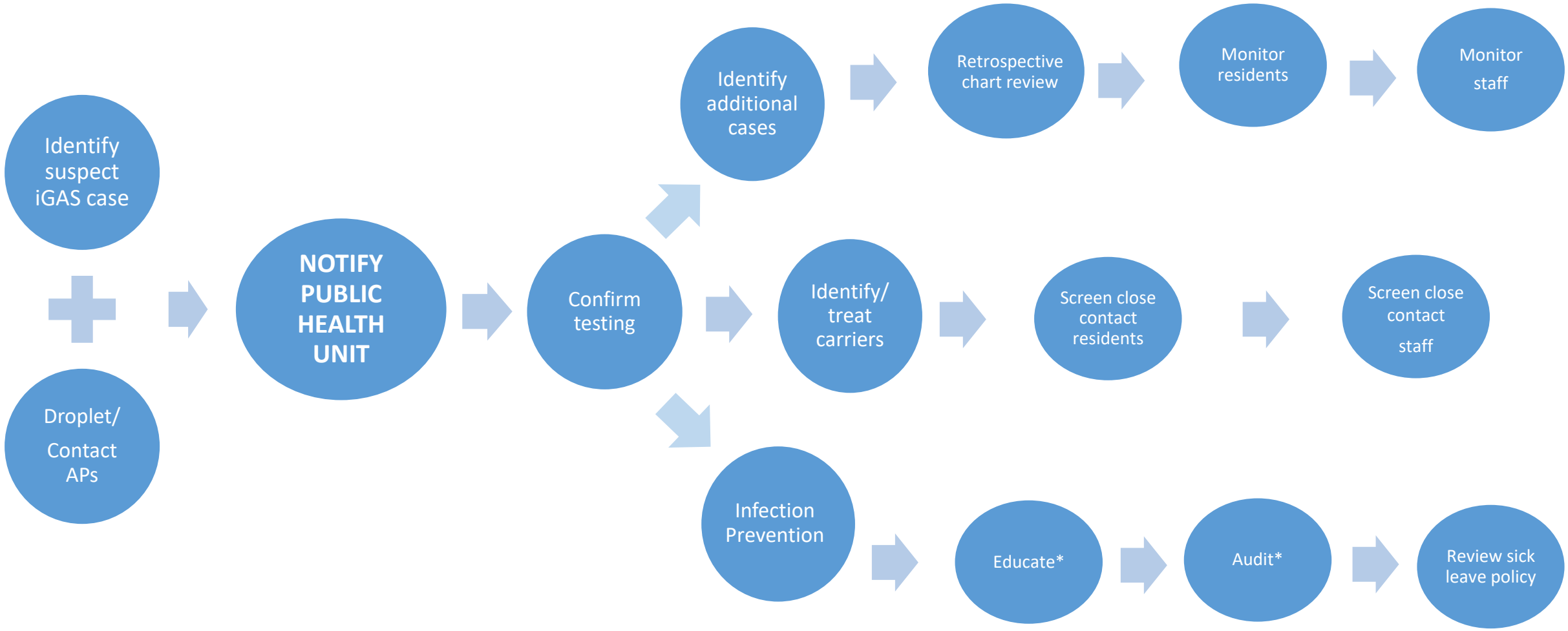
- Passive screening
- Appropriate occupational health follow-up with staff
- Proper hand hygiene including following 4 moments of hand hygiene
- Proper cough and respiratory etiquette
- Cleaning and disinfecting shared equipment before and after each use
- Proper wound management
- Practicing point-of-care-risk assessment

Outbreak Challenges

- Additional case identification = more specimens = greater workload = potential backlog of specimens = …etc.
- Conflicting schedules of non-day, weekend only or agency staff
- Not able to cohort staff
- Private labs not work weekends/holidays and may affect TAT
- NML testing may affect TAT
- Consistent access to results
- IPAC lead coverage



Outbreak Management



Resource: [Pennsylvania Department of Health: Investigation of iGAS Infection]

*include: hand hygiene and 4 moments, PPE donning/doffing, aseptic technique and wound care, cleaning and disinfection, signs and symptoms

Scenario

Felix, a resident of Fostergate Manor LTC, routinely goes for outings with his family during the week. He recently returned from a camping trip with his grandchildren who recently had strep throat. He has developed a sore throat and is now febrile. He typically experiences seasonal allergies. The nurse checks his vital signs and he has tachycardia and is hypotensive. The nurse also performs a head-to-toe and notices an older wound on his hand is swollen, tender and erythematous. The nurse asks Felix what happened to his hand and Felix, who is normally talkative, speaks few words and seems restless.

What should next steps be?

Discussion

How do you feel about iGAS after this presentation?

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Reminders

- WhatsApp Group
- IPAC Canada Membership
- Summer Sessions

Resources

- **Ministry of Health**
  Appendix 1: Case Definition and Disease-Specific Information. Disease: Group A Streptococcal Disease, invasive (iGAS) (2024).
- **Public Health Agency of Canada**
  Group A *Streptococcal* disease: For heal professionals
- **Public Health Ontario**
  Enhanced Epidemiological Summary: Invasive Group A Streptococcal (iGAS) Disease in Ontario: October 1, 2023 to March 31, 2024. (2024).
  Recommendations on Public Health Management of Invasive Group A Streptococcal (iGAS) Disease in Ontario (2014).

  PIDAC: Routine Practices and Additional Precautions in All Health Care Settings. (2012). .
- Avire NJ, Whiley H, Ross K. A Review of *Streptococcus pyogenes*: Public Health Risk Factors, Prevention and Control. Pathogens. 2021 Feb 22;10(2):248.
- Metzgar D, Zampolli A. The M protein of group A Streptococcus is a key virulence factor and a clinically relevant strain identification marker. Virulence. 2011 Sep-Oct;2(5):402-12.
- Williams, J.L., Zembower, T.R. Addressing *Streptococci.* In: Dean R, Popescu S, eds. APIC Text. 2022. Available at https://text.apic.org/toc/healthcare-associated-pathogens-and-diseases/streptococci#book_section_76698 Accessed May 08, 2024.

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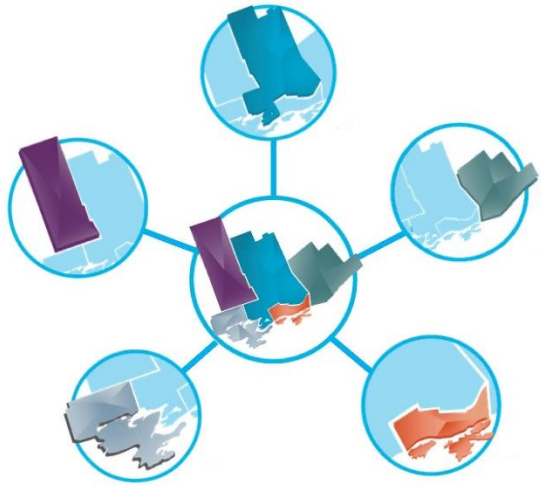

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Thank You

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