

Epi Data Tables

New York City Department of Health and Mental Hygiene

March 2013, No. 23

Invasive Group A Streptococcal (GAS) Infection in New York City

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Data Sources

NYC DOHMH Bureau of Communicable Disease: Invasive GAS is a laboratory-reportable disease in New York City. Case surveillance is used to monitor disease trends and detect clusters. A case is defined as a NYC resident with GAS cultured from a normally sterile body site or from a non-sterile site in a person with a clinical diagnosis of necrotizing fasciitis (NF) or toxic shock syndrome (TSS). NYC GAS cases are classified using the Centers for Disease Control and Prevention (CDC)/Council of State and Territorial Epidemiologists GAS case definition. For more information, visit http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/streptococcuscurrent.htm.

NYC DOHMH Neighborhood Population Estimates: NYC population estimates for 2000 through 2010 were based on the Census Bureau's interpolated intercensal population estimates for each year updated in the fall of 2012 (file date 11/2012) from previously used estimates available before Census 2010 data were released.

US Census 2000: Neighborhood poverty rates by Census tract were calculated using denominators from the 2000 Census.

To access the related Epi Data Brief, go to www.nyc.gov/html/doh/downloads/pdf/epi/databrief23.pdf

Table 1. Age-adjusted Rates of Invasive Group A Streptococcal Infections, NYC and US, 2000-2010

Source: NYC DOHMH Bureau of Communicable Disease; NYC DOHMH population estimates, modified from US Census Bureau intercensal population estimates, file date 11/2012; CDC Active Bacterial Core Surveillance system

NYC rates are age adjusted to the US 2000 Standard Population; national rates are age- and race-adjusted to the Census 2010 population.
Rates per 100,000 population

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
NYC	1.8	2.2	2.0	1.9	1.6	2.3	2.1	2.9	2.6	2.4	2.6
US	3.2	3.7	3.1	3.8	3.3	3.6	3.8	3.8	3.9	3.6	4.0

National Group A Streptococcus Surveillance Methods (<http://www.cdc.gov/abcs/index.html>)

National estimates of invasive GAS for this brief are extrapolated from the Active Bacterial Core Surveillance (ABCs) system (<http://www.cdc.gov/abcs/index.html>). The ABCs system conducts active surveillance, including laboratory audits, for all invasive GAS cases from counties in ten states, representing approximately 30 million people. NYC collects data on all reported cases; however no laboratory audits are conducted. Some differences between NYC and US rates may be due to these differences in methodology.

Table 2. Age-specific Rates of Invasive Group A Streptococcal Infections by Age-group, NYC, 2000-2010

Source: NYC DOHMH Bureau of Communicable Disease; NYC DOHMH population estimates, modified from US Census Bureau intercensal population estimates, file date 11/2012

Rates per 100,000 population

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Age-group											
<1 years	2.7	4.5	4.4	6.9	1.7	3.3	4.2	3.4	6.7	3.3	3.7
1-4 years	1.9	3.2	0.9	2.2	1.9	2.3	1.1	2.9	3.1	2.8	1.5
5-44 years	0.7	1.1	1.3	0.9	0.8	0.7	1.0	1.7	1.3	0.8	1.5
45-64 years	2.5	2.9	2.0	2.3	2.2	3.0	2.8	2.4	2.9	3.3	2.7
65+ years	4.8	4.9	5.0	4.8	3.9	6.8	4.9	7.7	6.1	6.4	7.3

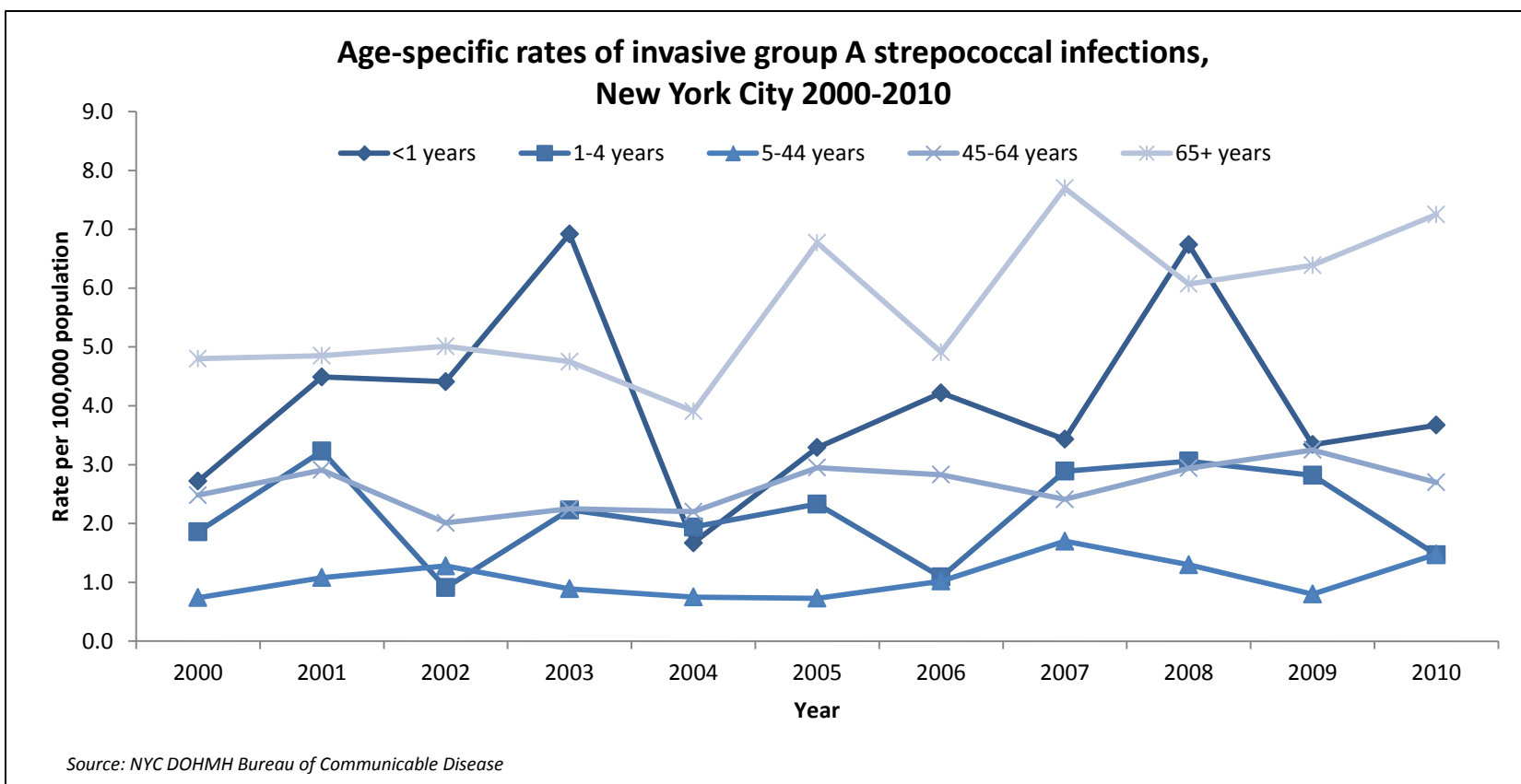


Table 3. Rates of Invasive GAS Infections by Select Demographics, All Ages, NYC, 2010

Source: NYC DOHMH Bureau of Communicable Disease; NYC DOHMH population estimates, modified from US Census Bureau intercensal population estimates, file date 11/2012; Census 2000 (neighborhood poverty rates only)

Rates per 100,000 population

	N	%	Population	Rate
Overall	205			2.4
Sex				
Female	104	51%	4292589	2.4
Male	101	49%	3882544	2.6
Borough¹				
Bronx	42	21%	1385108	3.0
Brooklyn	51	25%	2504700	2.0
Manhattan	56	27%	1585873	3.5
Queens	45	22%	2230722	2.0
Staten Island	10	5%	468730	2.1
Race/ethnicity²				
White	57	31%	2722904	2.1
Black	52	28%	1861295	2.8
Hispanic	58	32%	2336076	2.5
Asian	16	9%	1028119	1.6
Other	1	1%	226739	0.4
Neighborhood poverty³				
Very low	47	24%	2089089	2.2
Low	45	23%	2237334	2.0
Medium	47	24%	1717794	2.7
High	58	29%	1964061	3.0

¹ Borough data missing for 1 case.

² Race-ethnicity data missing for 21 cases (10%).

³ Neighborhood poverty level is defined by the percent of individuals in a New York City census tract area with incomes below 100% of the federal poverty level, according to Census 2000. For this analysis, poverty levels are separated into four groups: very low-poverty (<10%), low-poverty (10-19%), medium-poverty (20%-29%), and high-poverty (>30%). Cases missing address data, cases from census tracts where poverty levels could not be determined, and data from census tracts with fewer than 300 people were excluded (n=55 [5%]). These rates calculated with denominators from Census 2000.

Table 4. Percent of Invasive GAS Infections Acquired in Hospitals or Group Living Facilities (nosocomial infections), NYC, 2005-2010

Source: NYC DOHMH Bureau of Communicable Disease

Year	Percent
2005	2.3
2006	5.6
2007	5.4
2008	8.3
2009	9.6
2010	12.7

Nosocomial infections were defined as GAS infections in patients whose illness onset began 48 hours after admission to a hospital or long term care facility (LTCF), or within 48 hours of discharge from one of these facilities. In LTCF residents who spent time in the community during the 48 hours before illness onset, infections were defined as possible nosocomial infections. In this brief, possible and defined nosocomial cases were combined.

Table 5. Specimen Source of Invasive Group A Streptococcal Infections, NYC, 2005-2010

Source: NYC DOHMH Bureau of Communicable Disease

Specimen	Total		2005		2006		2007		2008		2009		2010	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Blood	1023	88.7	154	89.5	141	87.6	197	88.3	185	89.8	163	87.2	183	89.3
Synovial Fluid	31	2.7	1	0.6	5	3.1	7	3.1	5	2.4	7	3.7	6	2.9
Pleural Fluid	22	1.9	1	0.6	3	1.9	1	0.4	6	2.9	6	3.2	5	2.4
Cerebrospinal Fluid	13	1.1	3	1.7	1	0.6	4	1.8	1	0.5	1	0.5	3	1.5
Peritoneal Fluid	13	1.1	3	1.7	2	1.2	1	0.4	0	0.0	4	2.1	3	1.5
Other*	52	4.5	10	5.8	9	5.6	13	5.8	9	4.4	6	3.2	5	2.4
Total**	1154		172		161		223		206		187		205	

* Tissue biopsy, throat , vagina, skin biopsy, surgical wound

** 1 specimen missing source data

Table 6. Percent of Invasive GAS Infections that Resulted in Toxic Shock Syndrome and Death, by Age Group, NYC, 2005-2010

Source: NYC DOHMH Bureau of Communicable Disease

Data combined from 2005 to 2010.

Age group	Total GAS cases*	Toxic Shock Syndrome		Death	
		# of TSS cases	% of TSS cases	# of deaths	% of deaths
0-4 years	91	9	10%	5	5%
5-17 years	84	11	13%	6	7%
18-44 years	246	32	13%	22	9%
45-64 years	340	58	17%	44	13%
65+ years	394	77	20%	79	20%

*Cases missing data on TSS or death excluded from calculation of percentages.

Table 7. Number of Deaths and Case Fatality Percentages of Invasive Group A Streptococcal Infections by Age Group, NYC, 2005-2010*

Source: NYC DOHMH Bureau of Communicable Disease.

Age Group	2005		2006		2007		2008		2009		2010	
	# of deaths	Case fatality %	# of deaths	Case fatality %	# of deaths	Case fatality %	# of deaths	Case fatality %	# of deaths	Case fatality %	# of deaths	Case fatality %
0-4 years	1	6.7	1	10.0	0	0.0	1	4.6	1	5.9	1	10.0
5-17 years	1	12.5	1	11.1	1	4.8	0	0.0	0	0.0	3	13.6
18-44 years	3	12.0	4	11.1	3	5.1	4	8.2	2	7.4	6	12.8
45-64 years	5	9.1	4	7.7	4	8.3	10	16.7	15	22.4	6	11.1
65+ years	18	26.9	13	26.5	17	21.8	12	19.1	13	20.3	6	8.5
Total	28	16.5	23	14.7	25	11.2	27	13.1	31	16.7	22	10.8

*8 cases missing death or age data excluded

Table 8a. Risk Factors for Invasive Group A Streptococcal Infections by Diagnosis Year, NYC, 2005-2010

Source: NYC DOHMH Bureau of Communicable Disease

Risk Factor*	Total		2005		2006		2007		2008		2009		2010	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Chronic Heart Disease	275	30.1	37	28.7	35	30.2	60	34.3	45	27.6	49	30.8	49	28.7
Chronic Lung Disease	110	12.1	12	9.3	16	13.8	19	10.9	17	10.4	23	14.5	23	13.5
Cancer	159	17.4	25	19.4	25	21.6	31	17.7	23	14.1	28	17.6	27	15.8
Diabetes	265	29.0	43	33.3	41	35.3	45	25.7	46	28.2	42	26.4	48	28.1
Renal Failure	95	10.4	10	7.8	11	9.5	22	12.6	22	13.5	14	8.8	16	9.4
Organ Transplant	7	0.8	2	1.6	1	0.9	3	1.7	0	0.0	0	0.0	1	0.6
Obesity	28	3.1	2	1.6	0	0.0	0	0.0	0	0.0	7	4.4	19	11.1
NSAID ¹ medication	4	0.4	0	0.0	1	0.9	0	0.0	1	0.6	2	1.3	0	0.0
Steroid use	26	2.9	0	0.0	3	2.6	7	4.0	3	1.8	4	2.5	9	5.3
Pregnancy or peripartum	30	3.3	2	1.6	2	1.7	6	3.4	5	3.1	5	3.1	10	5.9
Rheumatoid arthritis	23	2.5	3	2.3	5	4.3	6	3.4	4	2.5	2	1.3	3	1.8
Sickle cell anemia	3	0.3	1	0.8	0	0.0	1	0.6	0	0.0	0	0.0	1	0.6
Splenectomy	2	0.2	0	0.0	1	0.9	0	0.0	0	0.0	0	0.0	1	0.6
Stroke	26	2.9	2	1.6	3	2.6	7	4.0	5	3.1	6	3.8	3	1.8
Wound, non-surgical	82	9.0	13	10.1	8	6.9	16	9.1	22	13.5	13	8.2	10	5.9
Wound, surgical	54	5.9	6	4.7	6	5.2	12	6.9	7	4.3	10	6.3	13	7.6
Cirrhosis	32	3.5	6	4.7	3	2.6	5	2.9	8	4.9	4	2.5	6	3.5
Alcohol	61	6.7	11	8.5	9	7.8	5	2.9	13	8.0	8	5.0	15	8.8
Illicit drug use	52	5.7	7	5.4	6	5.2	13	7.4	6	3.7	6	3.8	14	8.2
HIV Infection	54	5.9	12	9.3	6	5.2	14	8.0	9	5.5	10	6.3	3	1.8
Other	88	9.6	13	10.1	8	6.9	12	6.9	20	12.3	16	10.1	19	11.1
Total	913	100	129	100	116	100	175	100	163	100	159	100	171	100

*Conditions are not mutually exclusive.

¹Non-steroidal, anti-inflammatory

Table 8b. Risk Factors for Invasive Group A Streptococcal Infections by Age Group, NYC, 2005-2010

Source: NYC DOHMH Bureau of Communicable Disease

Data combined from 2005 to 2010.

Risk Factor*	<5y		5-17y		18-44 y		45-64y		≥65y	
	N	%	N	%	N	%	N	%	N	%
Chronic Heart Disease	2	7.1	4	11.8	26	13.6	84	28.1	159	44.0
Chronic Lung Disease	6	21.4	5	14.7	12	6.3	29	9.7	58	16.1
Cancer	1	3.6	2	5.9	15	7.9	58	19.4	83	23.0
Diabetes	0	0.0	1	2.9	29	15.2	108	36.1	127	35.2
Renal Failure	0	0.0	0	0.0	20	10.5	44	14.7	31	8.6
Organ Transplant	2	7.1	1	2.9	6	3.1	2	0.7	2	0.6
Obesity	0	0.0	0	0.0	6	3.1	10	3.3	12	3.3
NSAID ¹ medication	2	7.1	0	0.0	0	0.0	2	0.7	0	0.0
Steroid	0	0.0	3	8.8	4	2.1	7	2.3	12	3.3
Pregnancy or peripartum	0	0.0	1	2.9	28	14.7	1	0.3	0	0.0
Rheumatoid arthritis	0	0.0	1	2.9	2	1.1	4	1.3	16	4.4
Sickle cell anemia	0	0.0	1	2.9	1	0.5	0	0.0	1	0.3
Splenectomy	0	0.0	0	0.0	0	0.0	2	0.7	0	0.0
Stroke	0	0.0	0	0.0	1	0.5	6	2.0	19	5.3
Wound, non-surgical	3	10.7	6	17.7	19	10.0	20	6.7	34	9.4
Wound, surgical	3	10.7	3	8.8	21	11.0	15	5.0	12	3.3
Cirrhosis	0	0.0	0	0.0	5	2.6	23	7.7	4	1.1
Alcohol abuse	0	0.0	0	0.0	18	9.4	34	11.4	9	2.5
Illicit drug use	0	0.0	0	0.0	25	13.1	24	8.0	3	0.8
HIV Infection	0	0.0	2	5.9	22	11.5	28	9.4	2	0.6
Other	11	39.3	9	26.5	24	12.6	18	6.0	26	7.2
Total	28		34		191		299		361	

*Conditions are not mutually exclusive.

¹Non-steroidal, anti-inflammatory