Cases, Rates and Case Fatality of Invasive Group A Streptococcal Disease in Five-County Denver Metropolitan Area^ by Age Group, 2011

Group A streptococcus	Cases (Rate)		Deaths	
	No.	(Rate)	No.	(% of cases)
Age Group (years)				
<1	5	(14.7)	0	.
1	2	(5.9)	0	.
2-4	6	(5.6)	0	.
5-17	17	(3.8)	1	(5.8)
18-34	15	(2.4)	3	(20.0)
35-49	23	(4.2)	2	(8.6)
50-64	23	(4.8)	3	(13.0)
65+	44	(16.9)	8	(18.1)
Total	135	(5.4)	17	(12.5)

Rates are computed using 2011-based population estimates, State Demography Office - DOLA
^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Rates of Invasive Group A Streptococcal Disease by County
Denver Metropolitan Area^, 2011

Group A streptococcus	Cases (Rate)	
	No.	(Rate)
ADAMS	30	(6.6)
ARAPAHOE	26	(4.4)
DENVER	39	(6.2)
DOUGLAS	11	(3.7)
JEFFERSON	29	(5.3)

Rates are computed using 2011-based population estimates, State Demography Office - DOLA
^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Sites from which Invasive Group A streptococcus was Isolated
Denver Metropolitan Area^, 2011

Site of Isolation	No.*	(% of cases)
Blood	101	(74.8)
Other invasive site	15	(11.1)
Joint	7	(5.1)
Wound**	6	(4.4)
Bone	5	(3.7)
Pleural fluid	4	(2.9)
Muscle	4	(2.9)
Internal body site	3	(2.2)
CSF	2	(1.4)
Peritoneal fluid	1	(0.7)
Pericardial fluid	1	(0.7)

Not mutually exclusive; GAS was isolated from one site in 123 cases and multiple sites in 12 cases (Total cases=135)
GAS was isolated only from blood in 90 cases (66.7%)
****Wound is included when accompanied by necrotizing fasciitis and/or toxic shock syndrome***
^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Syndromes Associated with Invasive Group A Streptococcal Disease, by Age Group
Denver Metropolitan Area^, 2011

Clinical Syndrome		No.*	(% of cases)
Age Group (years)			
<=17	Abscess (not skin)	14	(46.6)
	Cellulitis	9	(30.0)
	Other syndrome	9	(30.0)
	Pneumonia	4	(13.3)
	Bacteremia only	3	(10.0)
	Septic arthritis	3	(10.0)
	Osteomyelitis	2	(6.6)
	Empyema	2	(6.6)
	Otitis media	1	(3.3)
	Pericarditis	1	(3.3)
	Toxic shock syndrome	1	(3.3)
	Septic shock	1	(3.3)
	Unknown	1	(3.3)

(Continued)

**** Some cases had more than one syndrome***

^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Syndromes Associated with Invasive Group A Streptococcal Disease, by Age Group
Denver Metropolitan Area^, 2011

Clinical Syndrome		No.*	(% of cases)
Age Group (years)			
18-49	**Cellulitis**	9	(23.6)
	Other syndrome	2	(5.2)
	Pneumonia	8	(21.0)
	Bacteremia only	8	(21.0)
	Septic arthritis	4	(10.5)
	Osteomyelitis	2	(5.2)
	Empyema	4	(10.5)
	Septic shock	7	(18.4)
	Necrotizing fasciitis	5	(13.1)
	Meningitis	1	(2.6)
	Peritonitis	1	(2.6)
50+	**Abscess (not skin)**	4	(5.9)
	Cellulitis	25	(37.3)
	Other syndrome	5	(7.4)
	Pneumonia	9	(13.4)
	Bacteremia only	16	(23.8)
	Septic arthritis	3	(4.4)

(Continued)

**** Some cases had more than one syndrome***

^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Syndromes Associated with Invasive Group A Streptococcal Disease, by Age Group
Denver Metropolitan Area^, 2011

Clinical Syndrome		No.*	(% of cases)
Age Group (years)			
50+	**Osteomyelitis**	2	(2.9)
	Empyema	2	(2.9)
	Toxic shock syndrome	1	(1.4)
	Septic shock	17	(25.3)
	Unknown	2	(2.9)
	Necrotizing fasciitis	5	(7.4)
	Meningitis	1	(1.4)

**** Some cases had more than one syndrome***

^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Underlying Conditions Associated with Invasive Group A Streptococcal Disease
Denver Metropolitan Area^, 2011

Underlying Condition		No.*	(% of cases)
Age Group (years)			
<=17	None	21	(70.0)
	Unknown	1	(3.3)
	Bone marrow transplant	1	(3.3)
	Premature birth	1	(3.3)
	Organ malignancy	1	(3.3)
	Organ transplant	1	(3.3)
18-49	None	12	(31.5)
	Organ malignancy	1	(2.6)
	Asthma	7	(18.4)
	Diabetes	7	(18.4)
	Current smoker	6	(15.7)
	Alcohol abuse	5	(13.1)
	Emphysema/COPD	5	(13.1)
	Cirrhosis/liver failure	3	(7.8)
	Immunosuppressive therapy	3	(7.8)
	IV drug use	3	(7.8)

(Continued)

0% of cases in the <=17 age group, 37% of cases in the 18-49 age group, and 51% of cases in the 50+ age group had >1 underlying condition

^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Underlying Conditions Associated with Invasive Group A Streptococcal Disease
Denver Metropolitan Area^, 2011

Underlying Condition		No.*	(% of cases)
Age Group (years)			
18-49	**Renal Failure/Dialysis**	3	(7.8)
	HIV	2	(5.2)
	Immunoglobulin deficiency	2	(5.2)
	CVA/Stroke	1	(2.6)
	Chronic skin breakdown	1	(2.6)
	Heart failure/CHF	1	(2.6)
50+	**None**	8	(11.9)
	Unknown	2	(2.9)
	Organ malignancy	5	(7.4)
	Organ transplant	2	(2.9)
	Asthma	8	(11.9)
	Diabetes	16	(23.8)
	Current smoker	11	(16.4)
	Alcohol abuse	5	(7.4)
	Emphysema/COPD	11	(16.4)
	Cirrhosis/liver failure	2	(2.9)

(Continued)

0% of cases in the <=17 age group, 37% of cases in the 18-49 age group, and 51% of cases in the 50+ age group had >1 underlying condition

^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Underlying Conditions Associated with Invasive Group A Streptococcal Disease
Denver Metropolitan Area^, 2011

Underlying Condition		No.*	(% of cases)
Age Group (years)			
50+	**Immunosuppressive therapy**	6	(8.9)
	IV drug use	1	(1.4)
	Renal Failure/Dialysis	6	(8.9)
	CVA/Stroke	7	(10.4)
	Chronic skin breakdown	2	(2.9)
	Heart failure/CHF	9	(13.4)
	Atherosclerotic Cardiovascular Disease	11	(16.4)
	Deaf/Hearing loss	2	(2.9)
	Leukemia	2	(2.9)
	Lupus	2	(2.9)

0% of cases in the <=17 age group, 37% of cases in the 18-49 age group, and 51% of cases in the 50+ age group had >1 underlying condition

^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Invasive Group A Streptococcal Disease emm Types
Denver Metropolitan Area^, 2011

Group A streptococcus	No.	(% of isolates)
emm type		
01	31	(24.8)
06	21	(16.8)
03	11	(8.8)
12	9	(7.2)
02	8	(6.4)
89	5	(4.0)
75	5	(4.0)
28	4	(3.2)
87	4	(3.2)
92	3	(2.4)
118	3	(2.4)
11	3	(2.4)
04	3	(2.4)
58	2	(1.6)
76	2	(1.6)
73	2	(1.6)
161	1	(0.8)

(Continued)

Based upon reference lab testing of 125 isolates (Total cases=135)
Testing performed by the Centers for Disease Control and Prevention, Atlanta, GA
^Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties

Invasive Group A Streptococcal Disease emm Types
Denver Metropolitan Area^, 2011

Group A streptococcus	No.	(% of isolates)
emm type		
22	1	(0.8)
59	1	(0.8)
81	1	(0.8)
90	1	(0.8)
86	1	(0.8)
49	1	(0.8)
82	1	(0.8)
68	1	(0.8)
Total	125	(100.0)

Based upon reference lab testing of 125 isolates (Total cases=135)
Testing performed by the Centers for Disease Control and Prevention, Atlanta, GA
^Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties