

***Cases, Rates and Case Fatality of Invasive Pneumococcal Disease
in Five-County Denver Metropolitan Area^ by Age Group, 2012***

| Streptococcus pneumoniae | Cases (Rate) | | Deaths | |
|--------------------------|--------------|--------|--------|--------------|
| | No. | (Rate) | No. | (% of cases) |
| Age Group (years) | | | | |
| <1 | 5 | (15.0) | 0 | . |
| 1 | 4 | (11.7) | 0 | . |
| 2-4 | 5 | (4.7) | 0 | . |
| 5-17 | 7 | (1.5) | 2 | (28.5) |
| 18-34 | 18 | (2.9) | 0 | . |
| 35-49 | 36 | (6.5) | 0 | . |
| 50-64 | 70 | (14.5) | 6 | (8.5) |
| 65+ | 80 | (29.0) | 6 | (7.5) |
| Total | 225 | (8.8) | 14 | (6.2) |

***Rates are computed using 2012-based population estimates, State Demography Office - DOLA
^ Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties***

***Rates of Invasive Pneumococcal Disease by County
Denver Metropolitan Area[^], 2012***

| Streptococcus pneumoniae | Cases (Rate) | |
|--------------------------|--------------|--------|
| | No. | (Rate) |
| ADAMS | 41 | (8.9) |
| ARAPAHOE | 39 | (6.5) |
| DENVER | 93 | (14.6) |
| DOUGLAS | 7 | (2.3) |
| JEFFERSON | 45 | (8.2) |

***Rates are computed using 2012-based population estimates, State Demography Office - DOLA
[^] Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties***

***Sites from which Invasive Streptococcus pneumoniae was Isolated
Denver Metropolitan Area[^], 2012***

| Site of Isolation | No.* | (% of cases) |
|--------------------------|-------------|---------------------|
| Blood | 215 | (95.5) |
| CSF | 4 | (1.7) |
| Pleural fluid | 4 | (1.7) |
| Joint | 3 | (1.3) |
| Peritoneal fluid | 2 | (0.8) |
| Muscle | 2 | (0.8) |
| Bone | 1 | (0.4) |
| Internal body site | 1 | (0.4) |

****Not mutually exclusive; S. pneumoniae was isolated from one site in 218 cases and multiple sites in 7 cases (Total cases=225)***

S. pneumoniae was isolated only from blood in 210 cases (93.3%)

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

***Syndromes Associated with Invasive Pneumococcal Disease, by Age Group
Denver Metropolitan Area[^], 2012***

| Clinical Syndrome | | No.* | (% of cases) |
|-------------------------|------------------|------|--------------------|
| Age Group (years) | | | |
| <=17 | Bacteremia only | 9 | (42.8) |
| | Pneumonia | 7 | (33.3) |
| | Otitis media | 3 | (14.2) |
| | Other syndrome | 3 | (14.2) |
| | Septic shock | 2 | (9.5) |
| | Osteomyelitis | 1 | (4.7) |
| | Endocarditis | 1 | (4.7) |
| 18-49 | Bacteremia only | 6 | (11.1) |
| | Pneumonia | 40 | (74.0) |
| | Other syndrome | 2 | (3.7) |
| | Septic shock | 4 | (7.4) |
| | Osteomyelitis | 1 | (1.8) |
| | Peritonitis | 2 | (3.7) |
| | Septic arthritis | 2 | (3.7) |
| | Empyema | 2 | (3.7) |
| | Meningitis | 1 | (1.8) |

(Continued)

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

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

***Syndromes Associated with Invasive Pneumococcal Disease, by Age Group
Denver Metropolitan Area[^], 2012***

| Clinical Syndrome | | No.* | (% of cases) |
|-------------------------|--------------------|------|--------------------|
| Age Group (years) | | | |
| 18-49 | Abscess (not skin) | 1 | (1.8) |
| | Unknown | 1 | (1.8) |
| 50+ | Bacteremia only | 21 | (14.0) |
| | Pneumonia | 116 | (77.3) |
| | Otitis media | 2 | (1.3) |
| | Other syndrome | 4 | (2.6) |
| | Septic shock | 16 | (10.6) |
| | Osteomyelitis | 1 | (0.6) |
| | Endocarditis | 2 | (1.3) |
| | Peritonitis | 1 | (0.6) |
| | Septic arthritis | 2 | (1.3) |
| | Empyema | 6 | (4.0) |
| | Meningitis | 4 | (2.6) |
| | Abscess (not skin) | 1 | (0.6) |
| | Unknown | 1 | (0.6) |
| | Cellulitis | 2 | (1.3) |

** Some cases had more than one syndrome*

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

***Underlying Conditions Associated with Invasive Pneumococcal Disease
Denver Metropolitan Area[^], 2012***

| Underlying Condition | | No.* | (% of cases) |
|----------------------|---------------------------|------|--------------|
| Age Group (years) | | | |
| <=17 | None | 10 | (47.6) |
| | Leukemia | 3 | (14.2) |
| | Immunosuppressive therapy | 2 | (9.5) |
| | Premature birth | 2 | (9.5) |
| | Immunoglobulin deficiency | 1 | (4.7) |
| | Organ transplant | 1 | (4.7) |
| 18-49 | None | 12 | (22.2) |
| | Leukemia | 1 | (1.8) |
| | Immunosuppressive therapy | 2 | (3.7) |
| | Organ transplant | 1 | (1.8) |
| | Current smoker | 23 | (42.5) |
| | Alcohol abuse | 17 | (31.4) |
| | Asthma | 7 | (12.9) |
| | Diabetes | 6 | (11.1) |
| | HIV | 5 | (9.2) |
| | Cirrhosis/liver failure | 4 | (7.4) |

(Continued)

14% of cases in the <=17 age group, 39% of cases in the 18-49 age group, and 55% 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 Pneumococcal Disease
Denver Metropolitan Area[^], 2012***

| Underlying Condition | | No.* | (% of cases) |
|----------------------|---------------------------|------|--------------|
| Age Group (years) | | | |
| 18-49 | Emphysema/COPD | 3 | (5.5) |
| | AIDS | 2 | (3.7) |
| | Unknown | 1 | (1.8) |
| | IV drug use | 1 | (1.8) |
| | Multiple myeloma | 1 | (1.8) |
| 50+ | None | 19 | (12.6) |
| | Leukemia | 5 | (3.3) |
| | Immunosuppressive therapy | 17 | (11.3) |
| | Organ transplant | 4 | (2.6) |
| | Current smoker | 43 | (28.6) |
| | Alcohol abuse | 20 | (13.3) |
| | Asthma | 11 | (7.3) |
| | Diabetes | 38 | (25.3) |
| | HIV | 4 | (2.6) |
| | Cirrhosis/liver failure | 11 | (7.3) |
| | Emphysema/COPD | 42 | (28.0) |

(Continued)

14% of cases in the ≤17 age group, 39% of cases in the 18-49 age group, and 55% 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 Pneumococcal Disease
Denver Metropolitan Area[^], 2012***

| Underlying Condition | | No.* | (% of cases) |
|----------------------|--|------|--------------|
| Age Group (years) | | | |
| 50+ | AIDS | 1 | (0.6) |
| | Unknown | 1 | (0.6) |
| | IV drug use | 2 | (1.3) |
| | Multiple myeloma | 2 | (1.3) |
| | Atherosclerotic Cardiovascular Disease | 23 | (15.3) |
| | Organ malignancy | 12 | (8.0) |
| | CVA/Stroke | 10 | (6.6) |
| | Heart failure/CHF | 8 | (5.3) |
| | Renal Failure/Dialysis | 7 | (4.6) |
| | Hodgkins disease | 3 | (2.0) |
| | Lupus | 2 | (1.3) |

14% of cases in the <=17 age group, 39% of cases in the 18-49 age group, and 55% of cases in the 50+ age group had >1 underlying condition

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

***Invasive Pneumococcal Disease Serotypes
Denver Metropolitan Area[^], 2012***

| Streptococcus pneumoniae | No. | (% of isolates) |
|---------------------------------|------------|------------------------|
| Type | | |
| 003 | 25 | (12.3) |
| 22F | 25 | (12.3) |
| 07F | 18 | (8.8) |
| 19A | 16 | (7.8) |
| 06C | 16 | (7.8) |
| 09N | 11 | (5.4) |
| 008 | 10 | (4.9) |
| 33F | 8 | (3.9) |
| 11A | 8 | (3.9) |
| 35B | 7 | (3.4) |
| 004 | 7 | (3.4) |
| 12F | 6 | (2.9) |
| 15B | 5 | (2.4) |
| 10A | 5 | (2.4) |
| 23A | 4 | (1.9) |
| 15A | 4 | (1.9) |
| 15C | 3 | (1.4) |

(Continued)

***Based upon reference lab testing of 203 isolates (Total cases=225)
Testing performed by the Centers for Disease Control and Prevention, Atlanta, GA
[^]Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties***

***Invasive Pneumococcal Disease Serotypes
Denver Metropolitan Area[^], 2012***

| Streptococcus pneumoniae | No. | (% of isolates) |
|---------------------------------|------------|------------------------|
| Type | | |
| 17F | 3 | (1.4) |
| 19F | 3 | (1.4) |
| 35F | 2 | (0.9) |
| 038 | 2 | (0.9) |
| 23B | 2 | (0.9) |
| 031 | 2 | (0.9) |
| 034 | 2 | (0.9) |
| 005 | 1 | (0.4) |
| 07C | 1 | (0.4) |
| 001 | 1 | (0.4) |
| 09V | 1 | (0.4) |
| 020 | 1 | (0.4) |
| 037 | 1 | (0.4) |
| 09L | 1 | (0.4) |
| 35A | 1 | (0.4) |
| 06A | 1 | (0.4) |
| Total | 203 | (100.0) |

***Based upon reference lab testing of 203 isolates (Total cases=225)
Testing performed by the Centers for Disease Control and Prevention, Atlanta, GA
[^]Emerging Infections Program area: Adams, Arapahoe, Denver, Douglas, and Jefferson counties***