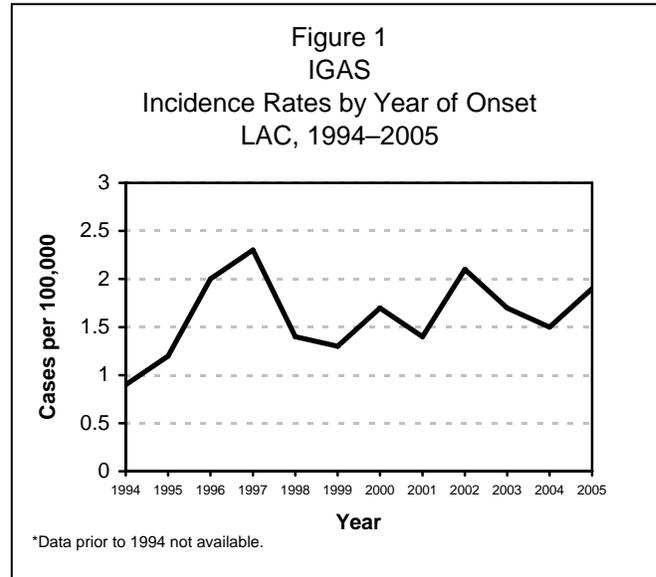




## INVASIVE GROUP A STREPTOCOCCUS (IGAS)

CRUDE DATA	
Number of Cases	179
Annual Incidence <sup>a</sup>	
LA County	1.9
United States <sup>b</sup>	3.4
Age at Diagnosis	
Mean	48
Median	50
Range	0–94 years
Case Fatality	
LA County <sup>c</sup>	9%
United States <sup>b</sup>	13%



<sup>a</sup> Cases per 100,000 population.

<sup>b</sup> National projection of IGAS incidence from Active Bacterial Core Surveillance areas data, 2004 [1].

<sup>c</sup> 68% of outcomes known.

### DESCRIPTION

Invasive Group A Streptococcal (IGAS) disease is caused by the group A beta-hemolytic *Streptococcus pyogenes* bacterium. Transmission is by direct or, rarely, indirect contact. Illness manifests as various overlapping clinical syndromes including bacteremia without focus, sepsis, cutaneous wound or deep soft-tissue infection, septic arthritis, and pneumonia. It is the most common cause of necrotizing fasciitis, commonly known as “flesh eating bacteria.” IGAS occurs in all age groups but more frequently among the very old. Infection can result in severe illness, including death.

For surveillance purposes in LAC, IGAS is defined as isolation of *S. pyogenes* from a normally sterile body site (e.g., blood, cerebrospinal fluid, synovial fluid, or from tissue collected during surgical procedures). Isolation can include a non-sterile site if associated with streptococcal toxic shock syndrome (STSS) or necrotizing fasciitis (NF). IGAS cases are characterized as STSS if the diagnosis fulfills the CDC or Council of State and Territorial Epidemiologists (CSTE) case definitions for this syndrome; and as NF if the diagnosis was made by the treating physician.

### DISEASE ABSTRACT

- There has been an increase in IGAS incidence, which may be accounted for by an increase in infection in males and among Blacks.
- A nosocomial situation consisting of two cases was reported and investigated at the end of 2005, in which no source could be determined due to incomplete evidence.

### STRATIFIED DATA

**Trends:** The incidence rate of reported IGAS was 1.9 per 100,000 during 2005 (n=179). This is a 12% rise in incidence as compared to 2004 (1.5 per 100,000, n=146) (Figure 1). The range of cases reported



per month was 10 to 23, compared to 9 to 15 per month in 2004. Though there was a peak in December with 23 cases, no seasonal trend was apparent (Figure 2).

**Age:** The age of cases ranged from 0 to 94 years with a mean of 48 and median of 50 (crude data). The highest rate of cases occurred in those 65 years and older (Figure 3).

**Gender:** The male to female rate ratio has increased to 2:1 in 2005, whereas it has been distributed equally in previous years.

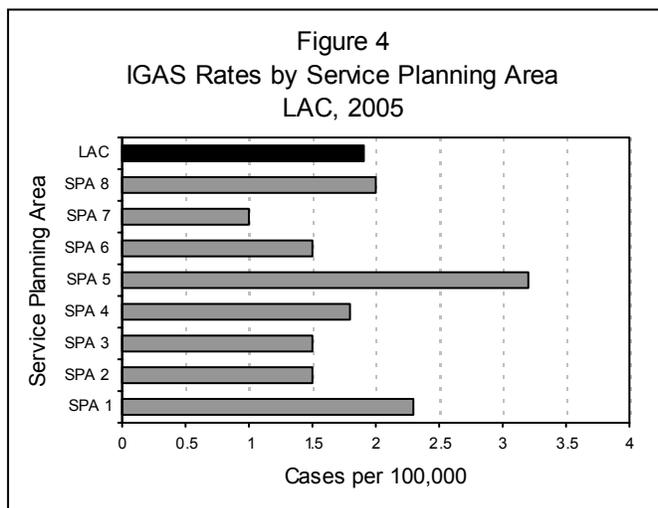
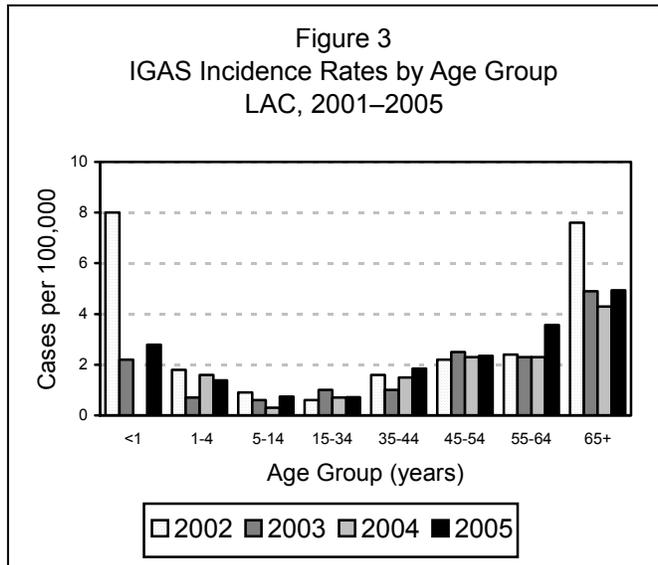
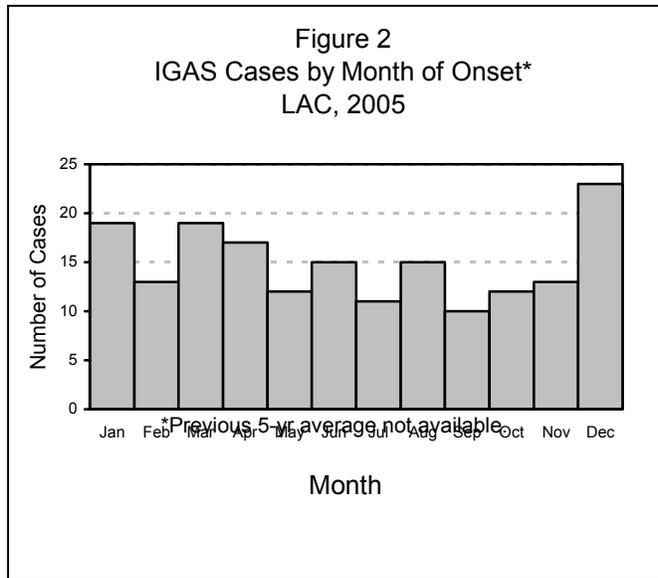
**Race/Ethnicity:** Race/ethnicity was known for 87% of cases. There has been an increase in the percentage of cases with reported Black race (n=24, 15%). Blacks have the highest reported incidence at 2.7 per 100,000 (data not shown).

**Location:** The incidence rate was highest in SPA 5 (3.2 cases per 100,000) compared to LAC overall (1.9 cases per 100,000). Incidence has increased for all SPAs, but is most dramatic in SPA 1, which rose from 1.5 per 100,000 in 2004 to 2.3 per 100,000 in 2005 (Figure 4). However, stratification of cases by SPA produces small numbers and unstable incidence rates for SPAs 1, 6 and 7.

**Clinical Presentation:** The most common syndromes presented were bacteremia and cellulitis (Table 1). Other syndromes reported include osteomyelitis, urosepsis, and septic arthritis. The increase in STSS seen in 2004 has dropped to levels similar to previous years (Figure 5). Pneumonia, however, has risen to 17% from 12% in 2004 (Table 1). The average age of the 25 cases of pneumonia was 58; the median was 64, and the ages ranged from 3 to 89 years old. The cases were 76% male and 48% White. Clinical presentation data was available for 84% of cases.

The case fatality rate has fallen dramatically from 26% in 2004 to 9%. This rate is lower than the national estimate (crude data).

**Risk Factors:** Information about risk factors was collected for 78% of cases. Of these cases, 28% reported no risk factors for IGAS (n=56). The most common reported risk factor was diabetes (n=39, 19%), followed by chronic heart disease (n=21, 10%) and history of blunt trauma (n=17, 8%).





**Table 1. Frequency and Percentage of IGAS Clinical Syndromes, LAC, 2005**

Syndrome	Number	Percent*
Bacteremia (without focus)	60	40
Cellulitis	43	28
Pneumonia	25	17
Necrotizing Fasciitis	16	11
STSS	5	3
Meningitis	5	3

\*Overlapping syndromes will total over 100%.

both STSS and case fatality in 2005 suggests not only that the increase in 2004 was a real trend but also that IGAS case fatality is strongly affected by STSS incidence.

A nosocomial situation was reported at the end of 2005 in which two patients incurred IGAS infections after undergoing surgery from the same physician two months apart. Subsequent culturing of the surgeon yielded negative results and case finding revealed no additional cases. The isolate for the first case was not available for PFGE comparison. Thus, the second isolate was stored and no further action was taken.

Although IGAS disease is not a mandated reportable disease in California, LACDHS has required laboratories, hospitals, and healthcare providers to report IGAS disease since 1993. Surveillance has been predominately passive and information pertaining to patient demographics, clinical presentation, intervention, and outcome has often been incomplete. Complete IGAS reporting requires active case follow-up, particularly for STSS and NF as the classification of these syndromes requires more intensive review. In 2002 a new IGAS history form including a specific section for STSS reporting was developed and distributed to infection control practitioners. Increased information about IGAS and its various clinical syndromes has been systematically collected since that time with increasing success.

*S. pyogenes* more commonly causes non-invasive disease that presents as strep throat and skin infections. However, these diseases are not counted in our surveillance of invasive disease, therefore, the data presented in this report underestimates all disease caused by *S. pyogenes* in LAC.

**ADDITIONAL RESOURCES**

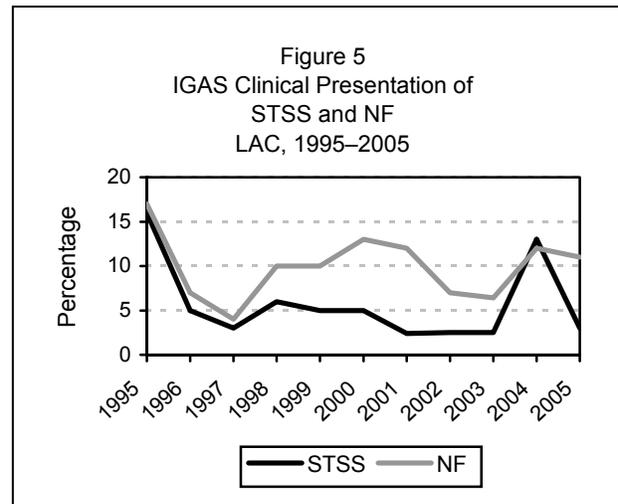
For more information about IGAS visit:

- CDC – [www.cdc.gov/ncidod/dbmd/diseaseinfo/groupastreptococcal\\_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/groupastreptococcal_g.htm)
- National Institute of Health – [www.niaid.nih.gov/factsheets/strep.htm](http://www.niaid.nih.gov/factsheets/strep.htm)

**COMMENTS**

The increase in overall incidence may be explained by the increase of IGAS in males and among Blacks. However, there is no known clinical manifestation, underlying risk factor, identified with these groups.

The rise in STSS and case fatality in 2004 had been attributed possibly to changes in the reporting of IGAS during that year. However, as reporting methods have not changed for 2005, the drop in





### **IGAS Publications:**

- The Working Group on Prevention of Invasive Group A Streptococcal Infections. Prevention of Group A streptococcal disease among household contacts of case-patients and among Postpartum and Postsurgical Patients: Recommendations from the Centers for Disease Control and Prevention. *Clin Infect Dis* 2002;35:950-9.
- O'Brien KL, Beall B, Barret NL, et al. Epidemiology of invasive group A streptococcal disease in the United States, 1995-1999. *Clin Infect Dis* 2002;36:268-276.
- American Academy of Pediatrics. Committee on Infectious Diseases. Severe invasive group A streptococcal infections: a subject review. *Pediatrics*. 1998;101:136-40.
- Kaul R, McGeer A, Low D, et al. Population-based surveillance for group A streptococcal necrotizing fasciitis: clinical features, prognostic indicators, and microbiologic analysis of seventy-seven cases. *Am J Med* 1997;103:18-24.

### **REFERENCES**

1. Active Bacterial Core Surveillance Reports from 1997 to 2004 from the Centers for Disease Control and Prevention's Division of Bacterial and Mycotic Diseases. Report available at: [www.cdc.gov/ncidod/dbmd/abcs/survreports.htm](http://www.cdc.gov/ncidod/dbmd/abcs/survreports.htm). Accessed 5/8/2006.