Epidemiology Newsletter
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June 2007 – Invasive *Streptococcus pneumoniae* Surveillance in Clark County, Nevada

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Worldwide, *Streptococcus pneumoniae* (SP) infections have become one of the leading causes of illness and death among young children, persons with debilitating chronic illness and the elderly. Pneumococcus has also been identified as the leading cause of bacterial pneumonia and meningitis in the United States. Reports of drug-resistant SP infections have been steadily increasing across the nation. In addition to determining the level of resistance, SP surveillance is conducted to identify emerging antimicrobial resistance; to evaluate the impact of new pneumococcal conjugate vaccines on disease burden and antimicrobial resistance; to evaluate prevention among the elderly through pneumococcal polysaccharide vaccine use; and to provide health care providers with the most current information on resistance patterns of invasive SP.

In accordance with nationwide SP surveillance conducted by the Centers for Disease Control and Prevention, the Southern Nevada Health District's (SNHD) Office of Epidemiology (OOE) added surveillance for pediatric invasive SP and drug-resistant invasive *Streptococcus pneumoniae* (DRSP) in the fall of 2005. Data for these surveillance projects were provided by Quest Diagnostics laboratory and local infection control practitioners. The OOE investigates reports of patients with invasive SP, to determine case status, identify antibiotic susceptibility and to obtain information such as underlying medical conditions, vaccination status, and risk factors such as residing in a nursing home or attending a daycare facility.

In 2005-2006 Clark County laboratories participating in the countywide antimicrobial resistance surveillance project reported culture and susceptibility results for 197 invasive SP isolates. Box 1 describes the resistance patterns of SP isolates for adult and pediatric patients in Clark County for 2005-2006. One hundred twenty five of the 197 isolates were tested for penicillin susceptibility, 17.6% of which showed at least some resistance to penicillin. Many penicillin-resistant strains of invasive SP are also resistant to other antimicrobials such as erythromycin.

Although DRSP has been nationally notifiable for several years, it has not been reportable in the State of Nevada. SNHD developed regulations for Clark County which were passed on December 8, 2006 requiring reporting of pediatric invasive SP in children less than 5 years old and invasive DRSP in all age groups. This information can be found at: http://www.southernnevadahealthdistrict.org/epidemiology/epidemiology_regs.htm.

Box 1. *S. pneumoniae* Susceptibility Results by Age, Clark County, 2005-06 *

R-Resistant I-Intermediate S-Susceptible

Antimicrobial abbreviations: CERI-ceftriaxone CETA-cefotaxime ERHR-erythromycin LEFL-levofloxacin PEG-penicillin_g VAOM-vancomycin

Table 1. All Ages Combined

	S. pneumoniae(sterile site) Total Isolates: 197							Meningitis(CSF) Total Isolates: 12							Nonmeningitis(nonCSF) Total Isolates: 185						
	All	R		I		S		All	R		I		S		All	R		I		S	
	N	N	%	N	%	N	%	N	N	%	N	%	N	%	N	N	%	N	%	N	%
CERI	80	4	5	3	3.8	73	91.3	9	1	11.1	1	11.1	7	77.8	71	3	4.2	2	2.8	66	93
CETA	116	2	1.7	5	4.3	109	94	3	1	33.3	0	0	2	66.7	113	1	0.9	5	4.4	107	94.7
ERHR	114	15	13.2	2	1.8	97	85.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEFL	69	0	0	0	0	69	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PEG	125	16	12.8	6	4.8	103	82.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAOM	126	0	0	0	0	126	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2. Age<18 years

	S. pneumoniae(sterile site) Total Isolates: 25							Meningitis(CSF) Total Isolates: 9							Nonmeningitis(nonCSF) Total Isolates: 16						
	All	R		I		S		All	R		I		S		All	R		I		S	
	N	N	%	N	%	N	%	N	N	%	N	%	N	%	N	N	%	N	%	N	%
CERI	11	1	9.1	1	9.1	9	81.8	6	1	16.7	1	16.7	4	66.7	5	0	0	0	0	5	100
CETA	15	1	6.7	2	13.3	12	80	2	1	50	0	0	1	50	13	0	0	2	15.4	11	84.6
ERHR	14	4	28.6	0	0	10	71.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEFL	10	0	0	0	0	10	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PEG	18	7	38.9	1	5.6	10	55.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAOM	17	0	0	0	0	17	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3. Age>=18 years

	S. pneumoniae(sterile site) Total Isolates: 161							Meningitis(CSF) Total Isolates: 3							Nonmeningitis(nonCSF) Total Isolates: 158						
	All	R		I		S		All	R		I		S		All	R		I		S	
	N	N	%	N	%	N	%	N	N	%	N	%	N	%	N	N	%	N	%	N	%
CERI	59	1	1.7	1	1.7	57	96.6	3	0	0	0	0	3	100	56	1	1.8	1	1.8	54	96.4
CETA	100	1	1	3	3	96	96	1	0	0	0	0	1	100	99	1	1	3	3	95	96
ERHR	98	10	10.2	2	2	86	87.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEFL	56	0	0	0	0	56	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PEG	104	8	7.7	4	3.8	92	88.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAOM	106	0	0	0	0	106	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Isolates with no age information not included in age breakdowns. Based on available patient susceptibility data from Quest, MountainView and Southern Hills(both as subsets of Sunrise), Southern Hills(since 01JUN2006), Sunrise, UMC and St.Rose through 31DEC2006. Data from different facilities were aggregated using result date as the reporting scheme(substituted by collection date if not available). An isolate from a patient was checked against the most current isolate (if present in the aggregated data), and was removed if the time interval between test results had been <30 days. Sunrise and UMC data prior to 2005 were not included because of substantial data loss regarding patient and organism names when converting raw data into an analyzable format. Sunrise data for quarter 3 of year 2005 were also not available in a convertible format and were not included. Data from St.Rose were not available prior to 2006.

- Suppressed in compliance with CLSI guidelines.

The current county-wide antibiogram provides health care providers with local susceptibility data to guide them with empiric treatment. It is available at: http://www.southernnevadahealthdistrict.org/physician/epi_newsletter_antibiogram.htm.

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