

employees seen in our Employee Health Service with sore throat complaints. The results are summarized in Table 1. These values are significantly different ($P < 0.005$) from the reported value of 6.2% positive cultures.¹

Streptococcal pharyngitis is usually associated with tonsillar erythema, or exudate; fever; or enlarged anterior cervical nodes.² The American Heart Association (AHA) lists tender anterior cervical lymph nodes, pharyngeal exudate and scarlatiniform rash as clinical signs suggestive of streptococcal infection.³ However, we have found the following signs as summarized in Table 2 for data available from 1984. In no patient was a rash documented.

Three patients out of 49 had no objective findings. The most prevalent objective findings were erythema (85%) and enlarged anterior cervical nodes (55%). Fifty-one percent of those who were positive had both findings. Nine patients out of the 42 patients (21%) with erythematous tonsils had no other accompanying findings. In our study only 18% had exudative tonsils in contrast of 70% as reported by Pantell.⁴ Hence the most reliable findings for choosing candidates in a Hospital Employee Health setting for throat culture is erythematous tonsils. It is important that hospital employees who are in constant

contact with patients do not inadvertently transmit streptococcus infection to patient and co-workers.

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Dr. Chatrchai Watanakunakorn responds to Dr. Wu's comments.

The higher rate of positive throat cultures for group A streptococcus from hospital employees reported by Dr. Wu and her colleagues is of interest. There are obvious differences between our studies. For instance,

with only 3200 employees in our hospital, 323 throat cultures were done during a three month period in 1984, or 34 throat cultures per 1000 employees per month. In contrast, with 4300 employees in their hospital, only 457 throat cultures were done during a twelve-month period in 1984, or 9 throat cultures per 1000 employees per month. Obviously there were significantly less throat cultures done on employees at their hospital. Perhaps employees with a mild sore throat at their hospital did not seek treatment at the Employee Health Service. Or perhaps only employees with a severe sore throat were cultured.

I agree that it is important that hospital employees who are in constant contact with patients do not inadvertently transmit group A streptococcus from their throat to patients and co-workers. This did not happen in our hospital during the past six years that we have data. To my knowledge there have been no reports of its occurrence at others hospitals either.

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Influence of Multiple Isolates on Antimicrobial Susceptibility Patterns from Blood Cultures

To the Editor:

We recently reported that there was no practical differences between including multiple isolates versus only one isolate per patient when calculating the antibiotic susceptibility profiles of bacteria identified from the specimens submitted to a clinical microbiology laboratory.¹ We speculated, however, that the effect might be much greater if one considered only specimens, such as blood cultures, where repetitive cultures are especially common. Blood cultures are of special interest because of the clinical importance of empiric therapy.

We have now completed an analysis, using the same methodology as referenced above, of positive blood cultures. A total of 221 isolates from positive blood cultures obtained over

TABLE 1
CULTURE POSITIVE GROUP A STREPTOCOCCUS PHARYNGITIS

Year	No. of Positive/ No. of Cultures	% Positive
1982	99/732	13.5%
1983	64/650	12.9%
1984	56/457	12.3%
1/85-5/85	35/190	18.4%

TABLE 2
SIGNS ASSOCIATED WITH CULTURE POSITIVE GROUP A STREPTOCOCCUS (TOTAL CULTURES 49)

Signs	Number (total)	Percent of total
Temperature >99.5°F	10 (49)	20%
Erythema	42 (49)	85%
Edema of tonsils	8 (49)	16%
Exudate	18 (49)	37%
Enlargement of cervical nodes	27 (49)	55%

approximately 20 weeks were included. Our data are summarized in the Table. For each organism of interest the total number of isolates (bottom number) and number of non-duplicate isolates (top number) is given along with the percent susceptible to various antibiotics.

As in our original study, we found no clinically relevant difference between the two methods of computing antibiotic susceptibility profiles. Any method of computing antibiotic susceptibility patterns should be consistently applied so that trends can be observed. We conclude, however, that efforts to exclude redundant isolates from the computations appear unnecessary.

REFERENCE

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TABLE
PERCENT ANTIBIOTIC SUSCEPTIBLE ORGANISMS FROM
POSITIVE BLOOD CULTURES FOR ALL ISOLATES (BOTTOM)
AND FOR ONE ISOLATE PER PATIENT (TOP)

Gram (+) Aerobes	No. of Isolates	Amp	Cepl	Eryt	Nafc	PenG	Vanc	T/S	
Enterococcus	12	58	NA*	75	NA	100	100	100	
	17	59	NA	77	NA	100	100	100	
S. aureus	34	0	97	70	88	3	100	100	
	41	0	98	73	90	2	100	100	
S. epidermidis	69	0	96	49	94	33	99	96	
	77	0	92	48	91	32	99	96	
Gram (-) Aerobes	No. of Isolates	Amp	Cepl	Gent	Amik	Tobr	Mezl	Ticr	T/S
Enterobacter	9	11	11	100	100	89	67	67	100
	10	10	10	100	100	90	60	60	100
E. coli	25	88	100	100	100	100	88	84	100
	27	85	100	100	100	100	85	82	100
Klebsiella	11	9	91	100	100	91	76	0	82
	11	9	91	100	100	91	76	0	82
P. mirabilis	1	100	100	100	100	100	100	100	100
	1	100	100	100	100	100	100	100	100
Pseudomonas	19	5	5	95	100	84	100	100	42
	23	4	4	87	100	87	96	100	44
Serratia	6	0	17	100	100	83	83	50	100
	7	0	14	86	86	72	76	43	86



DONALD C. MACKEL

1927-1985

Mr. Donald C. Mackel, Deputy Chief of the Nosocomial Infections Laboratory Branch of CDC's Hospital Infections Program, died on Thursday, May 23, 1985.

Mr. Mackel joined CDC in 1952 as a Commissioned Officer in the Public Health Service. He served a number of assignments in New Orleans, Louisiana; Phoenix, Arizona; Savannah and Atlanta, Georgia. He was well known for his scientific contributions in studies of

enteric diseases, environmental microbiology, and hospital-acquired infections and was very active in developing strategies for disinfection and sterilization of medical devices.

Mr. Mackel played a major role in laboratory studies associated with a nationwide epidemic of infections caused by commercial intravenous products and was involved in a number of other major, national epidemics including Legionnaires' disease and toxic shock syndrome.

Mr. Mackel was awarded BS and MS degrees in bacteriology and public health in 1951 from the University of Florida and a Masters of Public Health from Tulane University Medical School in 1965.

He received the Public Health Service's Meritorious Service Medal in 1972 and the Commendation Service Medal in 1982. He was active in a number of scientific and professional societies including the American Society for Microbiology, where he was a Fellow of the American Academy of Microbiology and the American Public Health Association, where he was Chairman of the committee on Microbial Contamination Control of the APHA's Laboratory Section. He authored over 50 scientific papers, manuals, and chapters on subjects ranging from laboratory and epidemiologic studies of enteric disease to hospital-acquired infections, environmental health, and biological safety.