



**MONTHLY MORBIDITY REPORT**  
Provisional Statistics

REPORTED MORBIDITY  
APRIL, 1981

from  
**EPIDEMIOLOGY UNIT AND PUBLIC HEALTH STATISTICS**

**Community-Acquired Methicillin-Resistant  
*Staphylococcus aureus* Infections — Michigan \***

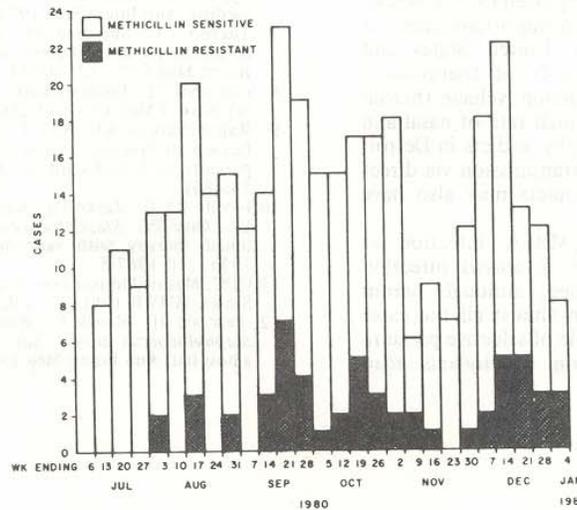
Ninety-eight patients have been hospitalized in medical center hospitals in Detroit, Michigan, since June 1980 in the first reported outbreak of community-acquired methicillin-resistant *Staphylococcus aureus* (MRSA) infection. Nearly one-fourth of all *S. aureus* isolates from patients with invasive disease at 1 inner-city hospital have been methicillin-resistant (Figure 1), and patients with MRSA infections continue to be admitted to Detroit area hospitals. Of the 98 patients discussed in this report, 96 had a history of intravenous heroin use.

Detailed epidemiologic and clinical information available on 53 of the 98 patients indicates that 29 had serious invasive infections, including bacterial endocarditis (13), septic thrombophlebitis (2), and mycotic aneurysm (1). Three patients died, and semi-synthetic penicillins alone were often ineffective as treatment. When 83 of the MRSA isolates from the 98 patients were phage typed, 70 were type 29/52/80 (group 1).

Investigation of the outbreak revealed that of the 96 patients with a history of intravenous heroin use, 18 of 21 interviewed at the beginning of the outbreak had used heroin named "Dynamite," obtained from the same distributor at 1 location in Detroit. Some of these individuals regularly used an oral cephalosporin preparation as "prophylaxis" for infectious complications arising from their drug use.

\* In this investigation, methicillin resistance was defined as either the failure of a 1-ug oxacillin disc to inhibit growth of *S. aureus* isolates in disc-diffusion tests or a broth-dilution minimal inhibitory concentration of >4 µg/ml.

FIGURE 1. Community-acquired *Staphylococcus aureus* at a Detroit receiving hospital, July-December 1980



\* Reprint from MMWR: 30:16, 1981 pp. 185-187.

Samples of the heroin used by most patients could not be obtained for culture, and when news of the outbreak reached the community on approximately December 4, heroin was no longer circulating under the name "Dynamite." Cultures of 14 samples of confiscated heroin held by the local police department contained no *S. aureus*.

A survey of nasal and/or anal carriage of MRSA was done in 4 drug treatment centers and among drug-related offenders at the county jail; of 219 individuals tested, 104 carried *S. aureus*. Twenty-nine of these isolates (27.9%) were MRSA.

Studies are planned to examine carriage rates of MRSA for nonaddict populations, isolation rates of infection in suburban as compared with inner-city hospitals, and risk factors for addicts and nonaddicts that predispose them to methicillin-resistant rather than methicillin-sensitive infections.

**Editorial Note:** Users of illicit parenteral drugs are at increased risk for a wide variety of infectious complications (1). Shared paraphernalia, in association with inadequate or nonexistent sterilization techniques, has been implicated in the spread of viral infection, primarily hepatitis B (2), and occasionally malaria (3,5). Invasive bacterial infections are also not uncommon in this population. Focal suppurative complications and bacterial endocarditis are the most commonly reported serious bacterial infections (6), and infection is usually caused by the population of microorganisms residing on the addict (7). However, contamination of paraphernalia by exogenous flora can cause serious illness; tetanus is perhaps the most dramatic example (8).

Most cases of bacterial endocarditis in drug addicts are caused by *S. aureus*; gram-negative infections and fungal infections occur less frequently. Isolated cases of endocarditis caused by "penicillin-tolerant" *S. aureus* and MRSA have been reported (9,10). MRSA has also been recognized as an important cause of nosocomial infections in the United States and Europe (11). Although the mode of transmission initially may have been a common vehicle (heroin from a single distributor) the high rate of nasal and anal carriage of MRSA for healthy addicts in Detroit suggests that person-to-person transmission via direct contact and/or respiratory droplets may also have occurred.

Risk factors for having MRSA infection as opposed to methicillin-sensitive *S. aureus* infection have not yet been determined, although heroin abuse is the common factor in almost all the cases reported so far. The possible role of selective pressure that wide-spread cephalosporin prophylaxis may

place on *S. aureus* should be examined more closely. Extensive cephalosporin use has been implicated in the emergence of MRSA associated with nosocomial infection (12). Unfortunately, it is often difficult to do epidemiologic studies in settings involving illegal activities, and controlling this outbreak in the addict population may be extremely difficult. It may be easier to prevent secondary spread to the community at large and in medical settings.

Physicians who treat persons for staphylococcal infection must be aware that organisms resistant to the commonly used semisynthetic penicillins can be spread in both their hospitalized and outpatient populations. MRSA infections may appear in other communities with large addict populations. Methicillin, nafcillin, and the oral and parenteral oxacillins remain the antibiotics of choice for both nosocomial and community-acquired staphylococcal infections until results of antimicrobial susceptibility testing are available. The proper isolation precautions should be instituted until the organism can no longer be recovered from the patient. In communities and hospitals where MRSA has been isolated in large numbers, initial antibiotic treatment should also include vancomycin.

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## SELECTED REPORTABLE DISEASES (By Place of Residence)

STATE AND PARISH TOTALS	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	LEGIONNAIRES DISEASE	MALARIA**	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1981)
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 19 80	7	5	42	3	0	14	247	58	0	14	41	119	136	0	24	1	6923	387	4
TOTAL TO DATE 19 81	0	8	3	3	0	14	251	114	0	3	66	20	126	0	45	1	6733	524	14
TOTAL THIS MONTH	0	4	0	2	0	6	85	42	0	1	22	7	39	0	11	0	2087	139	2
ACADIA																		13	
ALLEN								1					1					1	
ASCENSION																		10	1
ASSUMPTION																		2	
AVOUELLES																		6	1
BEAUREGARD											1							6	5
BIENVILLE																		6	
BOSSIER						1	1	3				1			1			40	
CADDO		1		1			3	6				3	3		6			292	4
CALCASIEU						1		3			3		1					71	1
CALDWELL																		3	
CAMERON																		1	
CATAHOULA									1									6	
CLAIBORNE																		2	
CONCORDIA																		6	
DESOTO																		2	
EAST BATON ROUGE							1				1							8	
EAST CARROLL										2			4					174	25
EAST FELICIANA																		11	2
EVANGELINE							2						1					1	
FRANKLIN													1					3	
GRANT																			
IBERIA													1					5	2
IBERVILLE																		6	3
JACKSON																		6	
JEFFERSON		1																6	
JEFFERSON DAVIS			1			3	18	3			1							144	12
LAFAYETTE							1	2										8	
LAFOURCHE							12	3			3							45	1
LASALLE												1		1				15	1
LINCOLN											1		1					2	
LIVINGSTON							1						1					8	
MADISON							1						1					4	1
MOREHOUSE													1					4	
NATCHITOCHE																		26	
ORLEANS		2					22	15			3							5	6
OUACHITA							1	1			5		13		2			848	62
PLAQUEMINES													3					67	4
POINTE COUPEE																		4	1
RAPIDES																			
RED RIVER						1	3	1										46	2
RICHLAND																			
SABINE													2					6	
ST. BERNARD																		2	
ST. CHARLES							6			1			1					3	1
ST. HELENA							1											8	
ST. JAMES																		1	
ST. JOHN																		11	2
ST. LANDRY																		4	
ST. MARTIN							1	1					1		2			11	1
ST. MARY							1											5	
ST. TAMMANY													3					1	
TANGIPAHOA							2					2						20	
TENSAS											2		1					25	1
TERREBONNE																		2	
UNION							5	2										27	
VERMILION							2											3	
VERNON																		4	
WASHINGTON							1											14	
WEBSTER																		4	1
WEST BATON ROUGE																		17	1
WEST CARROLL																		4	
WEST FELICIANA																			1
WINN																		1	3
OUT OF STATE																		7	
																		10	

\* Includes Rubella, Congenital Syndrome.  
\*\* Acquired outside United States unless otherwise stated.

From January 1, 1981 through April 30, 1981 the following cases were also reported: 1-Leptospirosis;  
2-Reyes Syndrome;  
3-Malaria:  
(Contracted outside the U.S.A.)



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