



MONTHLY MORBIDITY REPORT

RECEIVED
Provisional Statistics

REPORTED MORBIDITY
APRIL, 1983

PUBLIC HEALTH STATISTICS and
DIVISION OF DISEASE CONTROL

TULANE UNIVERSITY
RUDOLPH MATAS MEDICAL CO.

Nontuberculous Mycobacterial Infections * in Hemodialysis Patients — Louisiana, 1982

Between April 16 and October 8, 1982, 27 cases of nontuberculous mycobacterial (NTM) infection were identified among 140 patients with end-stage renal disease undergoing outpatient hemodialysis therapy in two centers of a dialysis corporation in Louisiana. The organisms isolated from 24 of these patients have been identified as *Mycobacterium chelonae* subspecies *abscessus*, while that isolated from one patient has been identified as an *M. chelonae*-like organism. The isolates from the remaining two patients have not yet been speciated. Sixteen patients were male. Age ranged from 29 to 81 years (mean 58 years). All 27 patients were dialyzed for 4 hours a day, 3 times a week; 21 at dialysis center A and 6 at dialysis center B. Attack rates were equal in the two dialysis centers, with an overall attack rate of 19%.

A wide spectrum of illness was seen. Eighteen patients had bacteremia, and four had localized infections—three with soft tissue abscesses and one involving an access graft. Five patients had positive cultures from multiple sites, including blood, skin nodules, bone marrow, and hemodialysis grafts. In general, the clinical syndrome associated with isolated NTM bacteremia was characterized by vague constitutional symptoms and low-grade fever; three patients were asymptomatic. Thirteen patients with multiple underlying medical problems have since died; the extent to which their deaths were due to their infections is unknown.

A case-control study was undertaken to identify possible risk factors for the development of NTM infection in hemodialysis patients. Case and control patients were similar in age, sex, and racial distribution. Preliminary results of the epidemiologic investigation did not identify any one risk factor to account for the outbreak. Type of access graft used and hospital in which the graft was inserted did not differ between cases and controls. Exposure to a given dialysis station or a particular type of dialyzer (artificial kidney) was not associated with an increased risk of infection. However, one factor common to all patients and, therefore, not examined in the case-control study was exposure to processed dialyzers.

Before the investigation, all dialyzers used in both centers were processed routinely in dialysis center A before use. The processing procedure included rinsing with water and disinfecting with 2% aqueous formaldehyde for a minimum of 24 hours. Some, but not all, patients reused their dialyzers one or more times. To standardize procedures in the dialysis center and to prevent the "new dialyzer syndrome," the same procedure was used to process new dialyzers for single use and previously used dialyzers for reuse. Four of 10 patients positive for hepatitis B surface antigen, who did not reuse dialyzers, were found to have NTM infections.

Extensive environmental sampling showed NTM in water samples from multiple sites in both dialysis centers, including water used to rinse dialyzers before the disinfection procedure, to prepare the 2% formaldehyde solution used in the disinfection procedure, and to prepare dialysis fluids. While all the environmental isolates have not been speciated, both *M. chelonae* subspecies *abscessus*, and *M. chelonae*-like organisms, along with other NTM, were present in the water. In addition, NTM (speciation pending) were present in the blood compartment (patient side) of five of 31 dialyzers sampled after the routine disinfection procedure. The formaldehyde concentration in two of three culture-positive dialyzers tested was less than 2%, which is the concentration routinely used for disinfection.

Preliminary laboratory studies indicate that, while the patient isolates of *M. chelonae* subspecies *abscessus* tested to date do not survive exposure to 2% formaldehyde for 24 hours, the single *M. chelonae*-like organism recovered from one patient does survive such exposure.

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NTM Infection — Continued

No isolates survived exposure to 4% formaldehyde for 24 hours.

In both centers, dialyzer reuse was discontinued and environmental control procedures, including disinfecting the water-treatment systems, were instituted. No new cases of NTM infection have been identified in 34 patients who began dialysis after these interventions.

Reported by JW Brown III, T Cocke, M Marionneaux, Dept of Medicine, Louisiana State University, Baton Rouge, LM McFarland, H Bradford, C Caraway, Louisiana State Dept of Health and Human Resources; Respiratory and Special Pathogens Epidemiology Br, Respiratory and Special Pathogens Laboratory Br, Div of Bacterial Diseases, Div of Hepatitis and Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: *M. chelonae* and *M. chelonae*-like organisms are rapidly growing mycobacteria frequently found in soil and water (1). Recently, their role in human illness has been recognized with increasing frequency in many different clinical settings. *M. chelonae* has been reported to cause abscesses, cutaneous and lymphatic infections, pulmonary infections, post-operative wound infections, prosthetic-valve endocarditis, thyroiditis, osteomyelitis, arthritis, and ocular infections, while *M. chelonae*-like organisms have been associated with peritonitis in peritoneal dialysis patients (2). Although these infections are usually localized, disseminated disease has been reported among immunocompromised patients and in at least one hemodialysis patient (3). Medical treatment of such infections is often difficult, particularly for patients with disseminated disease, because the organisms are usually resistant to most antimicrobials.

The source of NTM infection in this outbreak was probably the water used in processing the dialyzers. The design of the water treatment system in this center may have led to high concentrations of these organisms in the water used to process the dialyzers, and inconsistencies in the subsequent disinfection procedures may have resulted in incomplete eradication of NTM from the dialyzers. Patients may then have become infected when their blood circulated through processed dialyzers containing viable NTM.

While a survey of reference laboratories has not identified any other clusters of NTM infections in hemodialysis patients, there is reason for concern that such infections may occur elsewhere. These organisms are known to grow in potable water and, consequently, may be found in water used in hemodialysis centers. Furthermore, standard plate-count methods for monitoring water quality in dialysis centers may not detect this type of contamination. In addition, previous studies have shown that, in comparison with the gram-negative species frequently found in water, NTM—especially *M. chelonae*-like organisms—can be relatively resistant to germicides (4). Further studies to evaluate factors that may affect eradication of these organisms in dialyzers are in progress.

At present, dialysis center staffs should ensure that protocols for disinfection of dialyzers be followed rigorously, with particular attention to concentrations of germicides and contact time used. Physicians and dialysis center staffs should also be alert to the possible existence of NTM infection in hemodialysis patients, particularly because such infections may result in minimal, nonspecific symptoms. All hemodialysis patients with signs or symptoms of infection, especially those with unexplained fever, should have appropriate cultures taken. Because growth of NTM from clinical specimens may not be evident before 14 days, cultures should be held for at least this period before being reported as negative, and all isolates should be examined with stains for acid-fast organisms. NTM infections among dialysis patients should be reported to appropriate health departments to facilitate further evaluation of the epidemiology of such infections and to assist in the development of appropriate control measures.

References

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2. Band JD, Ward JI, Fraser DW, et al. Peritonitis due to a *Mycobacterium chelonae*-like organism associated with intermittent chronic peritoneal dialysis. *J Infect Dis* 1982;145:9-17.
3. Azadian BS, Beck A, Curtis JR, et al. Disseminated infection with *Mycobacterium chelonae* in a hemodialysis patient. *Tubercle* 1981;62:281-4.
4. Carson LA, Petersen NJ, Favero MS, Aguero SM. Growth characteristics of atypical mycobacteria in water and their comparative resistance to disinfectants. *Appl Environ Microbiol* 1978;36:839-46.

SELECTED REPORTABLE DISEASES
(By Place of Residence) *

STATE AND PARISH TOTALS Reported Morbidity April, 1983	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, 1983)
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 19 82	0	0	3	0	2	27	317	84	0	2	24	28	126	0	49	0	7516	581	8
TOTAL TO DATE 19 83	0	9	0	2	2	8	314	115	1	1	27	15	137	0	59	4	6151	581	11
TOTAL THIS MONTH	0	0	0	0	0	1	76	31	0	1	9	1	40	0	16	0	1304	153	5
ACADIA							3										11		
ALLEN															1		1		
ASCENSION							1								1		8	1	
ASSUMPTION								1									12		
AVOYELLES																	3	1	
BEAUREGARD																	14		
BIENVILLE																	6	1	3
BOSSIER											1				3		43	10	
CADDO							3	1					1				177	25	
CALCASIEU													1				113	4	
CALDWELL															1		1		
CAMERON																	1		
CATAHOULA																	1	1	
CLAIBORNE																	8	1	
CONCORDIA							1										8		
DESOTO																	1		
EAST BATON ROUGE								1					3		2		110	17	
EAST CARROLL													1				2		
EAST FELICIANA																	7		
EVANGELINE													1				3		
FRANKLIN																	2		
GRANT																	1	2	
IBERIA							6										20		
IBERVILLE																	4		
JACKSON																			
JEFFERSON						1	6	2					2		1		42	9	
JEFFERSON DAVIS								1									8	1	
LAFAYETTE							22	3			1	1					48	7	
LAFOURCHE											1						10		
LASALLE																			
LINCOLN																	7	1	1
LIVINGSTON															1		3		
MADISON																	7	1	
MOREHOUSE							1						1				7		
NATCHITOCHE							1										3		
ORLEANS							3	5			2		18				203	36	
OUACHITA							2				1		3				102		
PLAQUEMINES																	1		
POINTE COUPEE																	1		
RAPIDES							3	1					5				88		
RED RIVER																	2	1	
RICHLAND																	1		
SABINE																			2
ST. BERNARD								4									1		
ST. CHARLES																	2		
ST. HELENA																	8	1	
ST. JAMES							1										3		
ST. JOHN																			
ST. LANDRY							2	2					2		2		35	4	
ST. MARTIN							1						1				8	1	
ST. MARY							5	4			1		1				32	4	
ST. TAMMANY							2								1		12	12	
TANGIPAHOA							4	1							1		18	5	
TENSAS																	1		
TERREBONNE							1	2			1						32	2	
UNION							5										4	1	
VERMILION							2	3							1		4		
VERNON																	5	1	
WASHINGTON																	5		
WEBSTER							1										21	3	5
WEST BATON ROUGE																	13		
WEST CARROLL																			
WEST FELICIANA																	4		
WINN															1		1		
OUT OF STATE										1					1		6		

* Includes Rubella, Congenital Syndrome

** Includes 16 cases of Hepatitis Non A and Non B

*** Acquired outside United States unless otherwise stated.

From January 1, 1983 -April 30, 1983 the following cases were also reported:
1-Amebiasis, 1-Leptospirosis, 1-Reye Syndrome, 1-Trichinosis, 2-Tularemia



Department of Health and Human Resources
Office of Health Services and Environmental Quality
P.O. Box 60630, New Orleans, La. 70160

BULLETIN

MEASLES OUTBREAK AT LSU BATON ROUGE

Congratulations to the staffs of the Vaccine Preventable Disease Control Section, East Baton Rouge Parish Health Unit, Capital Regional Office, State Laboratory, and the LSU Student Health Center for successfully curbing an outbreak of measles that occurred in April and May. The index case was believed to have been an LSU student from Guatemala who contracted measles while visiting his home during spring break.

Notification of the first reported cases was received on the afternoon of April 25, 1983. Vaccination of students without records of measles immunization was begun on Thursday, April 28. Some 7,600 students were vaccinated in special clinics held on Thursday, Friday and Monday.

To date, approximately 30 cases of measles have been recorded although all have not been confirmed. However, 78 illnesses were investigated over a two week period of time. The outbreak has apparently ended since the last onset date was 5/8/83, and surveillance has failed to reveal any additional cases.

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