



# MONTHLY MORBIDITY REPORT

## EPIDEMIOLOGY

### PUBLIC HEALTH STATISTICS

DEPARTMENT OF HEALTH AND HUMAN RESOURCES  
OFFICE OF PREVENTIVE AND PUBLIC HEALTH SERVICES  
PUBLIC HEALTH STATISTICS

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#### **Rabies Postexposure Prophylaxis\* with Human Diploid Cell Rabies Vaccine: Lower Neutralizing Antibody Titers with Wyeth Vaccine**

On February 16, 1985, Wyeth Laboratories recalled Wyeth human diploid cell rabies vaccine (WYVAC<sup>TM</sup>) from the market. This resulted from two postlicensure studies of antibody responses after postexposure prophylaxis with human diploid cell rabies vaccine (HDCV) conducted by CDC over the last 6 months. The studies—one, a passive surveillance system, and the other, a randomized prospective study—demonstrated that not all individuals receiving postexposure prophylaxis with Wyeth Laboratories' HDCV had antibody titers acceptable by the CDC criterion\* and that antibody titers after rabies postexposure prophylaxis with Wyeth HDCV were lower than those with Merieux HDCV (IMOVAX<sup>TM</sup>).

In the passive surveillance system, sera were examined from 39 persons (in four states) who had completed postexposure prophylaxis with rabies immune globulin (RIG) and five doses of HDCV; 22 had been vaccinated with Merieux vaccine, and 17, with Wyeth vaccine. Two of the 17 Wyeth vaccine recipients had an inadequate titer by the CDC criterion (1,2), one had no detectable titer. Three additional persons had low titers (acceptable by CDC's criterion but not by the World Health Organization's criterion). In contrast, all 22 recipients of Merieux vaccine had adequate titers by both criteria.

The reason for some low responses after postexposure administration of Wyeth HDCV is unknown. The product has consistently met all applicable release standards, and the failures could not be attributed to a single vaccine lot. Certain host factors may have contributed to the poor response. The median age of the five poor responders to Wyeth vaccine was 42 years, compared with 21 years for the responders. One low responder was a 42-year-old person with epilepsy on chronic phenytoin therapy; phenytoin has inhibitory effects on some immune functions (3). The individual who showed no detectable neutralizing antibody after prophylaxis with Wyeth vaccine was a healthy but obese (6 ft., 275 lbs.) 32-year-old male who received all injections in the buttocks. Two of the three low responders also received their vaccine in the buttocks.

While the surveillance program was being conducted, a prospective study was undertaken. The study participants received rabies postexposure prophylaxis of RIG with five doses of either Merieux or Wyeth vaccine of similar potencies. Titers in the Merieux group were signifi-

\*At present, CDC considers a neutralizing antibody titer that produces complete inhibition in the rapid fluorescent focus inhibition test at 1:5 dilution or greater (1:11 or greater by the Reed-Muench method) an acceptable response to immunization (1). The World Health Organization considers 0.5 IU/ml or greater (2) an acceptable response (approximately equivalent to 1:56 by the Reed-Muench method or complete inhibition at the 1:25 dilution).

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cantly higher (Table 1), although all persons in both groups had acceptable titers 2-4 weeks after completing prophylaxis (4).

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**Editorial Note:** Annually, approximately 20,000 people receive rabies postexposure prophylaxis with HDCV in the United States (5). Since the early 1980s, when duck embryo vaccine was replaced by the more immunogenic HDCV, no person has developed rabies after having received the recommended postexposure prophylaxis of RIG and vaccine. Until the current report, data showed that Wyeth HDCV administered intramuscularly induced acceptable antibody levels.

The present low responses in some individuals may be due to both intrinsic differences in the two vaccines and accompanying host factors. Wyeth HDCV is a subunit vaccine, disrupted with tri-(n)butyl phosphate and further inactivated with beta-propiolactone, while Merieux HDCV is a whole virus vaccine inactivated with beta-propiolactone. Other factors, including older age, receipt of mildly immunosuppressive medications and administration of the vaccine into the buttocks, may also have contributed to the lower responses. Injections in the gluteal region will almost always be delivered into fat (6). It is not known whether there is a difference in absorption of the two types of HDCV when administered by this route. It has recently been recognized that administration of hepatitis B vaccine in the gluteal area probably results in a poorer response than vaccination in the deltoid (7). It is recommended that all adult immunizations be administered in the deltoid region (8,9); the deltoid area is the preferred site for HDCV vaccination. The gluteal area remains an acceptable site for large volumes of RIG. HDCV and RIG should never be administered in the same anatomic sites.

**TABLE 1. Rabies neutralizing antibody titers,\* by vaccine and days after the start of treatment with rabies immune globulin and the first of five doses of HDCV**

	Days 7-8 titer† (range)	Days 9-10 titer (range)	Days 14-15 titer (range)	Days 49-63 titer (range)
Merieux HDCV n = 43	1:11 (1:8-1:320)	1:50 (1:8-1:280)	1:800 1:40-1:2200	1:1200 (1:280-1:5400)
Wyeth HDCV n = 23	1:11 (neg-1:45)	1:13 (1:7-1:280)	1:210 (1:13-1:1200)	1:280 (1:70-1:1400)
p value§	NS	< 0.05	< 0.001	< 0.001

\*Titers obtained by Reed-Muench interpolation of rapid fluorescent focus inhibition test.

†Median titer for group.

§Differences between two vaccine groups, Kruskal Wallis Test

One 1.0-ml intramuscular booster with Merieux HDCV in the deltoid area is recommended, based on review of available information, for all persons who have been potentially exposed to rabies since October 15, 1984, and who have received postexposure prophylaxis with Wyeth HDCV (unless sera obtained after postexposure prophylaxis demonstrated an acceptable antibody titer). Merieux HDCV can be obtained by calling 800-327-2842. Anyone cur-



#### *HDCV — Continued*

rently receiving Wyeth vaccine should complete the course with Merieux vaccine and does not require an additional booster. Serologic testing is recommended if a systemic allergic reaction (serum sickness or urticaria) occurred during previous administration of postexposure prophylaxis. In that case, an acceptable serologic response obviates the need for a booster vaccine dose. Serum testing continues to be indicated if a patient who received postexposure prophylaxis with HDCV is immunosuppressed (by diseases or medications) (1). State health departments can be contacted for the addresses of laboratories where serologic testing is available.

Wyeth vaccine administered preexposure and in the recommended 1.0 ml intramuscular doses (three injections) has been effective in inducing antibodies. Based on currently available information, persons so vaccinated need neither serologic testing nor booster doses of HDCV, except for those select groups previously identified (1). In the event of future exposure to rabies, persons who have received preexposure prophylaxis with either type of HDCV should receive two 1.0-ml intramuscular booster doses of HDCV (one each on days 0 and 3), as is currently recommended (1).

#### *References*

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## BULLETINS

### INFLUENZA UPDATE

Since the 2nd week of January, 1985, the Epidemiology Section of the Louisiana Department of Preventive and Public Health Services has received reports of influenza-like illness from various parts of the state. Isolates have been received from Shreveport, Monroe, Lafayette, Morgan City, Bossier and New Orleans. Influenza A (H<sub>3</sub>N<sub>2</sub>) virus has been isolated from five patients. The first confirmed case of influenza occurred in a 34 year old female from Orleans Parish.

This is typically the time of year for influenza activity to occur in Louisiana. The amount of activity being reported is similar to activity recorded for the past two years. Since January 22, 1985, a total of 37 states have reported influenza isolates.

### GASTROENTERITIS ASSOCIATED WITH BOILED SHRIMP CONSUMPTION

In October, 1984, the Epidemiology Section of the Office of Preventive and Public Health Services was notified by the Jefferson Parish Sanitarian Section that a group of people who had attended a seafood boil in Jefferson Parish became ill with gastrointestinal symptoms. Investigation revealed 48 of 160 people who ate boiled shrimp became ill 3-23 hours later. Forty-three (90%) had diarrhea, 36 (75%) had abdominal cramps, 28 (58%) had nausea, 15 (31%) had fever, and 11 (23%) had vomiting. Symptoms lasted 3 days in the majority of the cases. Two stool specimens and samples of the boiled shrimp were positive for Vibrio parahaemolyticus. While the boiled shrimp was identified as the causative agent, the food appeared to be adequately cooked and there was no proof of cross-contamination.



# SELECTED REPORTABLE DISEASES (By Place of Residence)

STATE AND PARISH TOTALS	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED**	HEPATITIS B	LEGIONELLOSIS	MALARIA ***	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1985 )
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 1984	0	0	0	0	0	0	6	5	0	0	2	2	21	0	4	1	2513	114	0
TOTAL TO DATE 1985	0	0	0	0	0	3	8	7	0	0	1	1	34	0	3	0	2395	110	3
TOTAL THIS MONTH	0	0	0	0	0	3	8	7	0	0	1	1	34	0	3	0	2395	110	3
ACADIA							1										8	1	
ALLEN																	4	1	
ASCENSION																	7		
ASSUMPTION																	10		
AVOUELLES																	1		2
BEAUREGARD													1				8	2	
BIENVILLE																	1	1	
BOSSIER															1		18	1	
CADDO							1										232	6	
CALCASIEU							1	1					3				123	6	
CALDWELL																	12		
CAMERON																	2		
CATAHOULA																	1		
CLAIBORNE																	2	1	
CONCORDIA																	5	1	
DESOTO																			
EAST BATON ROUGE						1							3				154	9	
EAST CARROLL																	14	1	
EAST FELICIANA																	5		
EVANGELINE																	1		1
FRANKLIN																	4		
GRANT																			
IBERIA																	28	2	
IBERVILLE																	4	1	
JACKSON																			
JEFFERSON								1					2		1		113	5	
JEFFERSON DAVIS																	8	1	
LAFAYETTE													3				96	6	
LAFOURCHE													1				38	1	
LASALLE																			
LINCOLN																	8		
LIVINGSTON													1						
MADISON																	16	1	
MOREHOUSE													1				31		
NATCHITOCHE																	5		
ORLEANS						2	2	2			1	1	8				869	35	
OUACHITA													2				111	3	
PLAQUEMINES																		1	
POINTE COUPEE																	1		
RAPIDES																	104	2	
RED RIVER																			
RICHLAND													1				10		
SABINE																			
ST. BERNARD																	7	1	
ST. CHARLES																	4		
ST. HELENA																	4		
ST. JAMES																	13		
ST. JOHN								1									3		
ST. LANDRY																	53	5	
ST. MARTIN													1				13	1	
ST. MARY													1				17		
ST. TAMMANY							1						1				34	3	
TANGIPAHOA								1					1				30	3	
TENSAS																			
TERREBONNE													1		1		71	1	
UNION																	13		
VERMILION							2										8	3	
VERNON																	52	2	
WASHINGTON													1				3	1	
WEBSTER													2				11		
WEST BATON ROUGE																			
WEST CARROLL																	1		
WEST FELICIANA								1									1		
WINN																			1
OUT OF STATE																	3		

\* Includes Rubella, Congenital Syndrome.

\*\* Includes 2 cases of Hepatitis Non A, Non B.

\*\*\* Acquired outside United States unless otherwise stated.



# **SELECTED REPORTABLE DISEASES** (By Place of Residence)

STATE AND PARISH TOTALS	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED **	HEPATITIS B	LEGIONELLOSIS	MALARIA ***	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1984 )
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
REPORTED MORBIDITY 1984 SUPPLEMENT																			
TOTAL TO DATE 1983	26	10	1	11	4	178	755	355	6	10	57	82	393	4	250	24	23580	1654	37
TOTAL TO DATE 1984	8	0	0	12	3	85	446	336	4	12	69	113	337	2	225	21	25469	1193	63
NUMBER IN SUPPLEMENT	0	0	0	2	2	15	35	34	3	3	5	14	1	0	36	5	0	0	3
ACADIA								1											
ALLEN																			
ASCENSION																			
ASSUMPTION															1				
AVOUELLES					1		2												8
BEAUREGARD																			
BIENVILLE																			
BOSSIER																			2
CADDO							3	1			1		1						8
CALCASTEU			1				2	1				1				2			13
CALDWELL																			
CAMERON																			
CATAHOULA																			
CLAIBORNE															1				
CONCORDIA								1			1								2
DESOTO																			
EAST BATON ROUGE						6	4	3				3			15				1
EAST CARROLL																			
EAST FELICIANA																			
EVANGELINE																			
FRANKLIN																			
GRANT							1												
IBERIA								1											
IBERVILLE																			
JACKSON																			
JEFFERSON			1			5	7	5	1			3			4				
JEFFERSON DAVIS																			
LAFAYETTE								2			1				3				
LAFORCHE								1							1				
LASALLE																			
LINCOLN								1											
LIVINGSTON												1			1				
MADISON																			
MOREHOUSE																			
NATCHITOCHE																			
ORLEANS				1			6	8	1	2		4			2	1			1
OUACHITA								1							1				1
PLAQUEMINES						1													
POINTE COUPEE																			
RAPIDES								1											1
RED RIVER																			21
RICHLAND																			
SABINE																2			
ST. BERNARD																			
ST. CHARLES								1											
ST. HELENA																			
ST. JAMES																			
ST. JOHN							1								1				
ST. LANDRY							2								1				
ST. MARTIN										1									
ST. MARY																			
ST. TAMMANY							1	1	1		1	1			1				
TANGIPAHOA								3											
TENSAS																			
TERREBONNE						3									1				
UNION																			
VERMILION							3												1
VERNON																			
WASHINGTON							1	1			1	1			1				1
WEBSTER							2	1							1				3
WEST BATON ROUGE																			
WEST CARROLL																			
WEST FELICIANA																			
WINN																			
OUT OF STATE																			

\* Includes Rubella, Congenital Syndrome.

\*\* Includes 31 cases of Hepatitis Non A and Non B.

\*\*\* Acquired outside United States unless otherwise stated.

From January 1, 1984 - December 31, 1984, the following cases were also reported:

7-Amebiasis; 1-Botulism; 3-Brucellosis; 96-H-Flu Meningitis; 2-Leptospirosis; 1-Poliomyelitis, Paralytic;  
4-Reye Syndrome; 6-Rocky Mountain Spotted Fever; 7-Tularemia.

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