



MONTHLY MORBIDITY REPORT

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JANUARY, 1977

OFFICE OF PUBLIC HEALTH STATISTICS

FLU PROGRAM SUSPENDED, NOW RESUMED

On December 16, 1976, the United States Public Health Service announced an indefinite suspension of the National Influenza Immunization Program. This dramatic action was taken because preliminary analysis indicated a link between influenza vaccination and the Guillain-Barre syndrome (See accompanying article). The initial decision to halt immunizations was based on data from four states.* Since the time that decision was made, a nation-wide survey of neurologists has been conducted by the Center for Disease Control to discover the incidence of Guillain-Barre syndrome during the period of the swine flu immunization program, both in vaccinated and unvaccinated people. Because cases of the Guillain-Barre syndrome are not ordinarily reported to public health authorities, there are no reliable data on the expected incidence of the syndrome. Thus, comparison of the incidence this year in vaccinated and unvaccinated people is necessary to determine whether the incidence in people receiving vaccinations is higher than would be expected if they had not been vaccinated.

As of January 21, the survey had found 576 cases of Guillain-Barre syndrome occurring between October 1 and January 18. Two hundred and ninety three were in people who had received the influenza vaccination (including seven who had received a non-influenza A/New Jersey vaccine only) and 264 were in unvaccinated people, with vaccination status unknown in the remainder.¹ There were 20 deaths, 10 in people known to have been vacci-

nated. Using a sub-group of 219 cases for which data were available, the median interval from vaccination to onset of symptoms is 16 days. The most common interval (mode) is 14 days, and the range is from one to 66.² (Figure 1).

Using data from ten states where state-wide survey of neurologists was complete, CDC's epidemiologists and statisticians computed and compared the risk of contracting Guillain-Barre syndrome in vaccinated and unvaccinated people, over 17 years old. The risk, expressed as cases

Guillain-Barre Syndrome

The Guillain-Barre syndrome (Landry-Guillain-Barre syndrome, acute post-infectious polyneuropathy) is an unusual clinical syndrome of unknown etiology, characterized by bilateral (but not necessarily symmetrical) weakness caused by an acute peripheral neuropathy. In about $\frac{2}{3}$ of cases there is a history of an antecedent infection, usually respiratory, in the two to three weeks prior to the onset of weakness. The syndrome has also been noted following a variety of immunizations. The best estimate of annual incidence is 1-2/100,000, equivalent to about 2,000 - 4,500 cases per year in the United States.

The onset of weakness is acute, with progression to maximum involvement within a short period, usually one to two weeks, but ranging from several hours to several weeks. Most often weakness begins in the legs and ascends, but can begin in the arms or even the musculature innervated by the cranial nerves. Weakness is the predominant finding, but sensory abnormalities can occur. Paresthesias and impairment of vibratory and position sense are the most common. Involvement of the respiratory musculature is the most dangerous aspect of the syndrome, and may necessitate prolonged mechanical ventilation. Complete recovery is the rule, most often within a few months, but sometimes requiring one or two years. In a few cases, there are residua or relapses. Mortality rate is about 5%, usually from respiratory failure or pulmonary embolus.

Laboratory abnormalities are limited to abnormal CSF and EMG findings. CSF protein is usually, but not always elevated, and cell count is usually normal, though an early increase in lymphocytes may occur. The combination of high protein and normal cell count is the so-called albumin-cytologic dissociation, characteristic, but often not present. The EMG shows slowing of motor and sensory conduction. The pathology of the syndrome is segmental demyelination with lymphocytic infiltration.

Treatment is primarily supportive. The efficacy of cortico-steroids is debated; they are frequently used in severe cases. The differential diagnosis includes toxic neuropathy (lead, arsenic, etc.), botulism, poliomyelitis, porphyria, myasthenia gravis, and polymyositis. Speculation about etiology is that Guillain-Barre syndrome is due to autoimmunity.

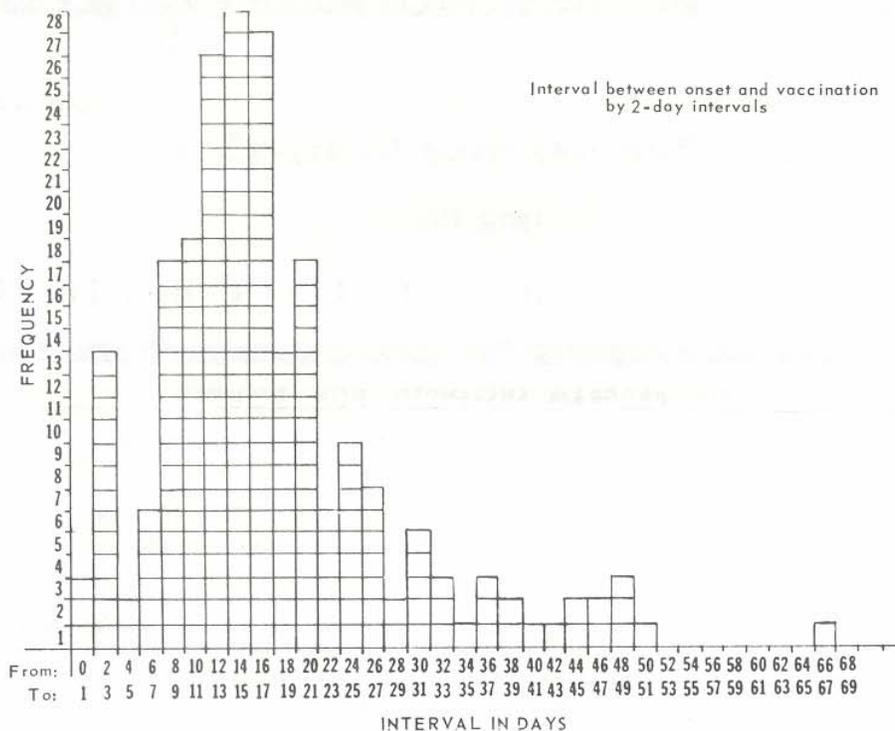
Sources:

1. Acute Post-Infectious Polyneuropathy (Landry-Guillain-Barre Syndrome), a Resume, prepared by the Intramural Program Staff of the National Institute of Neurological and Communicative Disorders, NIH, released December 20, 1976.
2. Merritt, H.H.: *A Textbook of Neurology*, Philadelphia, 1970, pp. 665-670
3. *Harrison's Principles of Internal Medicine*, 1974, pp. 1719-1720

* New Jersey, Alabama, Minnesota, and Colorado

Figure 1

INTERVAL BETWEEN INFLUENZA VACCINATION AND ONSET OF GUILLAIN-BARRE SYNDROME



per million person-weeks of risk, is 1.20 in people receiving any influenza type A vaccine (monovalent A New Jersey or bivalent A New Jersey plus A Victoria), and 0.16 in unvaccinated people, yielding a relative risk of 7.5. (The risk in vaccinated people was 7.5 times that in unvaccinated people). (Table 1).³

Some of the strongest evidence linking

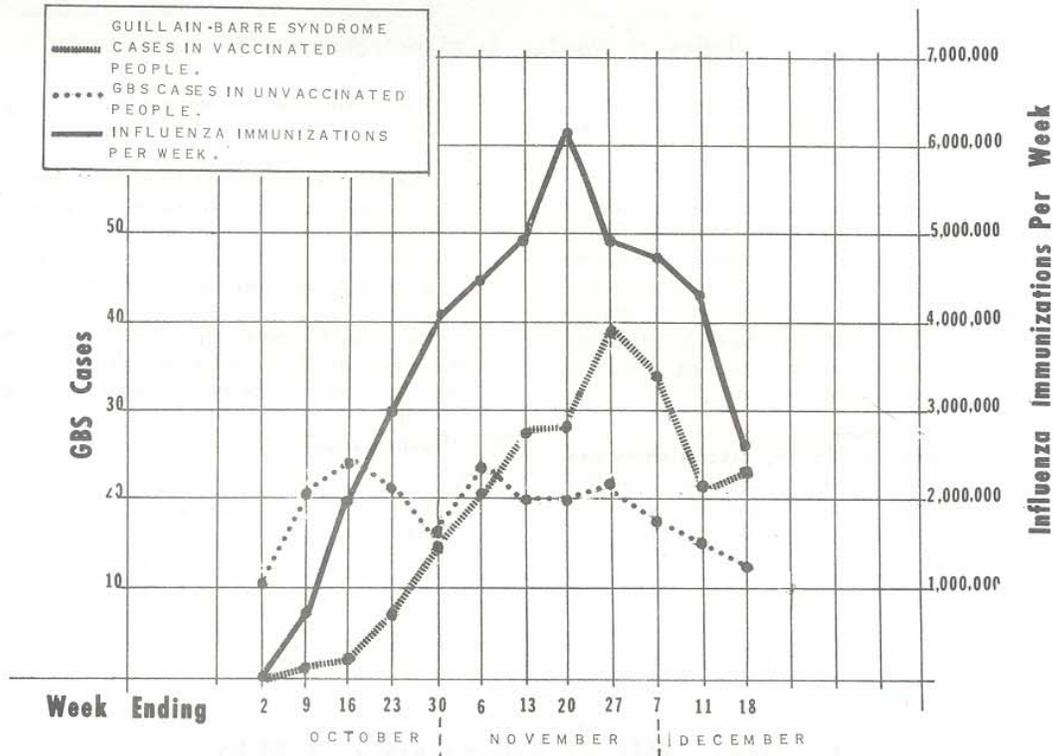
influenza immunization and the Guillain-Barre syndrome is the time of onset of cases. As shown in Figure 2, the graph of Guillain-Barre syndrome cases occurring in vaccinated people each week since the onset of the immunization program closely follows the graph of influenza immunizations given each week. The graph of weekly occurrence of Guillain-Barre syndrome in people

Table 1
GUILLAIN-BARRE SYNDROME ATTACK RATES AND RELATIVE RISK BY A NEW JERSEY INFLUENZA VACCINATION STATUS, 10 STATE POPULATION OVER 17 YEARS OF AGE, OCT. 1 - DEC. 25, 1976*

Vaccination Status	No. of Cases	Attack Rate in Cases per Million Person Weeks of Risk	Relative Risk (95% Confidence Limits)
Vaccinated	80	1.20	7.5 (5.5 - 10.0)
Vaccinated within 31 days prior to onset	74	1.63	10.2 (7.6 - 13.5)
Vaccinated more than 31 days prior to onset	6	0.28	1.8 (.75 - 4.0)
Unvaccinated	52	0.16	1.0

*The vaccination data is based on weekly reports through December 11, 1976 from 10 states, Alabama, Colorado, Connecticut, Maryland, Minnesota, Michigan, New Jersey, Ohio, Rhode Island, and Virginia.

INFLUENZA IMMUNIZATIONS AND CASES OF GUILLAIN-BARRE SYNDROME IN VACCINATED AND UNVACCINATED PEOPLE BY WEEK



not vaccinated has an entirely different shape. It shows the expected steady incidence of cases in contrast to the peak and decline of cases in vaccinated people.

There does seem to be a discrete time period after vaccination when people are at risk for developing Guillain-Barre syndrome. In addition to the data indicating a median 16 day interval between vaccination and onset of symptoms, data in Table 1 show that of the 80 cases of Guillain-Barre syndrome in the sub-group of ten states whose surveys were completed first, 74 had received vaccination within 30 days of the onset of symptoms, and 6 had onset of symptoms more than 30 days after vaccination. Computing relative risks for each of these two groups versus unvaccinated people yields the impressive result that the relative risk is 10.2 (95% confidence limits 7.6-13.5) for those with onset of symptoms within 31 days of vaccination, and only 1.8 (95% confidence limits 0.75-4.0) for those with onset of symptoms more than 31 days after vaccination, indicating a clear excess risk in the first 31 days, but little if any excess risk thereafter.

An unexplained observation is that the

statistical risk of contracting Guillain-Barre syndrome after influenza vaccination varies with age. Based on data from the same ten states, the risk is greatest for those 25-44 (attack rate 10.1), falling off for younger and older people. In contrast, the attack rate varies erratically with age for unvaccinated people developing Guillain-Barre syndrome.²

No particular form of influenza vaccine has been implicated more than the others. Distinctions between monovalent and bivalent, split and whole virus, manufacturer, and lot have not proved significant. Host factors leading to increased risk, other than age 25-44, have not yet been identified. Further investigation, including intensive investigation of all cases of Guillain-Barre syndrome, is ongoing.

REFERENCE

- ¹ Center for Disease Control: *Morbidity and Mortality Weekly Report*, 26:20, Jan. 21, 1977.
- ² Material prepared for meeting of Advisory Committee on Immunization Practices, Dec. 29, 1976 by Center for Disease Control.
- ³ Center for Disease Control: *Morbidity and Mortality Weekly Report*, 25:416, Dec. 31, 1976.

Influenza Vaccine Recommendations

On February 8, 1977, Secretary of Health, Education, and Welfare Joseph A. Califano, Jr. announced the following recommendations:

1. The moratorium on bivalent influenza vaccine (A/New Jersey and A/Victoria) will be lifted. It is recommended that bivalent vaccine be given to high-risk persons as previously defined by the Advisory Committee on Immunization Practices (ACIP). Special attention should be given to persons residing in nursing homes and health care institutions.

For the general population, discretionary use of bivalent vaccine will be permitted for individuals most likely to be exposed, such as those who care for high-risk individuals.

2. The moratorium on monovalent B/Hong Kong influenza vaccine will be lifted.
3. The moratorium on monovalent A/New Jersey influenza vaccine will remain in effect. Careful surveillance will continue, and appropriate action will be taken at the first sign of an A/New Jersey influenza outbreak.

A new informed consent form - setting forth the risks of Guillain-Barre following influenza immunization - is being prepared and should be signed by potential vaccinees before receiving influenza vaccine.

SOURCE:
Morbidity and Mortality Weekly Report Vol. 26, No. 6. Center for Disease Control, DHEW, Feb. 11, 1977. p. 52.

LOUISIANA CASES OF GUILLAIN-BARRE SYNDROME

As part of the CDC's nationwide effort, a survey of all practicing neurologists and most neurosurgeons in Louisiana has recently been carried out by the Epidemiology Unit to find all cases of Guillain-Barre syndrome occurring in the state since October 1, 1976, the date of onset of the influenza immunization program. Nine cases in Louisiana residents have been discovered to date, with no deaths. Three of the cases had received influenza vaccination. The cases comprise four females and five males, six whites and three blacks, with an age range from 16 to

84. During the immunization program, 281,000 influenza vaccinations were given to 12.5% of the state's population 18 and over. One case received the A/New Jersey vaccine, then 41 days later received the B/Hong Kong vaccine, and had onset of symptoms 23 days later.

The Epidemiology Unit is interested in learning of any unreported cases of suspected Guillain-Barre syndrome diagnosed in Louisiana or occurring in Louisiana residents, whether or not they received influenza vaccination, and asks that all physicians report any cases promptly.

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS	ASEPTIC MENINGITIS	DIPHtherIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIONOUS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	RABIES IN ANIMALS	RUBELLA*	SEVERE UNDERNUTRITION	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY
Reported Morbidity January, 1977																			
TOTAL TO DATE 1976 **	7	0	1	1	32	11	71	3	0	0	31	0	5	0	13	1	2	1869	48
TOTAL TO DATE 1977	0	0	0	0	46	6	48	14	0	0	0	2	0	0	3	0	1	1252	58
TOTAL THIS MONTH	0	0	0	0	46	6	48	14	0	0	0	2	0	0	3	0	1	1252	58
ACADIA					2		2											14	1
ALLEN																		3	
ASCENSION					1													1	
ASSUMPTION																		2	
AVOYELLES							1											9	
BEAUREGARD							1											4	
BIENVILLE																			
BOSSIER																		10	
CADDO					1	2	4											96	5
CALCASIEU					2		1								1			91	2
CALDWELL																			
CAMERON					1	1													
CATAHOULA							3												
CLAIBORNE																		2	
CONCORDIA												1						1	
DESOTO																		2	
EAST BATON ROUGE					3	1	2											96	3
EAST CARROLL																		8	
EAST FELICIANA					1														
EVANGELINE					1		1								1			1	
FRANKLIN																		3	
GRANT																		1	
IBERIA							1											6	
IBERVILLE																		7	
JACKSON																		5	
JEFFERSON					10	1	2	5							1		1	52	7
JEFFERSON DAVIS																		3	
LAFAYETTE					1	1	4											27	2
LAFOURCHE							1											8	
LASALLE																			1
LINCOLN					1		1											24	
LIVINGSTON																		2	
MADISON																		9	1
MOREHOUSE							1											9	
NATCHITOCHE																		5	
ORLEANS					10		9	8										400	24
OUACHITA							3											41	2
PLAQUEMINES								1										3	
POINTE COUPEE																			
RAPIDES					1													111	
RED RIVER																			
RICHLAND							1											10	
SABINE																		3	
ST. BERNARD					2													6	
ST. CHARLES																		6	
ST. HELENA																		9	
ST. JAMES																		2	3
ST. JOHN																		3	1
ST. LANDRY					1		1											4	
ST. MARTIN					1		1											1	
ST. MARY							1											7	
ST. TAMMANY					1													33	
TANGIPAHOA							1					1						13	
TENSAS																		1	
TERREBONNE					1		1											5	
UNION							1											11	2
VERMILION							1											2	
VERNON																		40	4
WASHINGTON							2											12	
WEBSTER																		12	
WEST BATON ROUGE																		6	
WEST CARROLL							1											1	
WEST FELICIANA																		8	
WINN																			
OUT OF STATE																		1	

* Includes Rubella, Congenital Syndrome

** Preliminary figures