REPORT NO. 270
OCTOBER 24, 1962

COMMUNICABLE DISEASE CENTER

POLIOMYELITIS

SURVEILLANCE

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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

PREFACE

Summarized in this report is information received from State Health Departments, university investigators, virology laboratories and other pertinent sources, domestic and foreign. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

Contributions to the Surveillance Report are most welcome. Please address to: Chief, Poliomyelitis Surveillance Unit, Communicable Disease Center, Atlanta 22, Georgia.

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SUMMARY

During the two-week period ending October 13, 1962, 62 cases of poliomyelitis, 52 paralytic, were reported to CDC through the telegraphic morbidity reporting system. The comparable two weeks in 1961 accounted for 104 cases, 67 paralytic. Cumulative and seasonal totals for 1962 remain below those for any preceding year.

Twenty-one States reported cases during this time. Although case concentrations of recent orgin have not been noted in any of these States, further data on the cases noted in Illinois are presented.

Surveillance data on cases occurring within 30 days of vaccine administration is presented. A summary of reported cases of paralytic poliomyelitis occurring within 30 days of inactived vaccine since January 1, 1961, is presented.

Isolates of non-polio enteroviruses reported from 23 States are presented. No specific type has predominated in 1962, although Coxsackie B-3 has been recovered by the greatest number of States reporting.

Clinical and laboratory detail on cases of paralytic poliomyelitis, from non-epidemic areas in 1962, reported as occurring within 30 days of receiving oral polio vaccine is appended. All cases since January 1, 1962 are included. Reported paralytic cases among household contacts of oral vaccinees in non-epidemic areas are also presented.

1. CURRENT POLIOMYELITIS MORBIDITY TRENDS

A total of 62 cases of poliomyelitis, 52 paralytic, has been reported for the two week period ending October 13. Twenty-two of the paralytic cases occurred during the latter week. During the comparable weeks in 1961, 104 cases, 67 paralytic, were reported.

Of the twenty-one States reporting cases for this period, Illinois with 9 cases, California with 7, and Texas with 6, accounted for the largest number. No case concentrations of recent origin have been reported; however, because of the large number of cases noted in Illinois, a special report from this State is presented in Section 2.

The cumulative and six-week totals for 1962 and the preceding four years are shown in the tabulations below. The totals for 1962 remain well below those for any preceding year.

Polio (Cumulated Weekly) through 41st Week for Past Five Years

	1962	1961	1960	1959	1958
Paralytic	522	661	1,752	4,515	2,156
Total	663	1,027	2,540	6,956	4,454

Six-week Totals (36th thru 41st Week) for Past Five Years

	1962	1961	1960	1959	1958
Paralytic	154	244	662	1,687	1,048
Total	193	410	958	2,511	2,173

2. STATE REPORTS

A. Illinois

During the two-week period ending October 13, Dr. Norman Rose, Chief, Bureau of Epidemiology, reported 9 cases of poliomyelitis, including 8 paralytic. Seven of the paralytic cases were from Cook County.

A line listing of 1962 cases from Cook County on which specific data are available appears below. The latest reported case had onset on October 3. Two of the cases were designated as being outside of Chicago.

PARALYTIC POLIOMYELITIS IN COOK COUNTY - 1962

No.	Onset	Age	Race	Sex	Vacc. Status IPV	Vacc. Status OPV	Poliovirus Isolate	
1	6/14	1	W	F	0	-	I	
2	7/4	1	NW	M	0	-	I	
3	7/8	2	NW	F	1	-	I	
4	7/8	2	W	F	0	-	-	
5	7/10	6	W	F	4	-	I	
6	7/13	4	Unk	M	0	-	I	
7	7/30	1	W	F	1	-	I	
8	July	1	W	M	0	-	III	
9	Unk*	1	W	M	Unk	-	III	
10	Unk*	24	W	M	Unk	-	I	
11	8/4	4	NW	F	0	-	I	
12	8/8	26	W	F	2	-	I	Rising Titer
13	8/10	1	NW	M	0	-	I	
14	8/10	15/12	NW	M	Unk	-	I	
15	8/26	3	W	M	Unk	-	I	
16	9/7	17/12	NW	M	Unk	-	I	
17	9/13	4	NW	F	0	-	I	
18	9/15	10	W	F	3	-	-	
19	10/3	8	NW	M	Unk	-	-	

* Reported in July

3. 1962 PARALYTIC CASES REPORTED TO PSU

Of the 522 cases of paralytic poliomyelitis reported through the week ending October 13, 501 had onset in 1962. The Poliomyelitis Surveillance Unit has received individual case forms on 396 of the 501 paralytic cases. The vaccination status of the 396 paralytic cases by age group is shown below.

Paralytic Poliomyelitis by Age Group
And Vaccination History Reported on PSU Forms
(Through October 12, 1962)

Age Group	Doses of Inactivated Vaccine					Total	Percent
	0V	1-2V	3V	4+V	Unk.		
0-4	130	34	11	12	10	197	49.7
5-9	34	10	12	20	2	78	19.7
10-14	17	4	9	4	2	36	9.1
15-19	10	2	5	3	0	20	5.1
20-29	18	6	3	3	2	32	8.1
30-39	11	4	0	2	1	18	4.5
40+	11	1	0	2	1	15	3.8
TOTAL	231	61	40	46	18	396	100.0
PERCENT DOSES	61.1	16.1	10.6	12.2	-	100.0	

Of the 187 cases with known vaccination history in the 0-4 age group, 130 (70 percent) have not received any poliomyelitis vaccinations.

To date in 1962, the Poliomyelitis Surveillance Unit has received results of virological studies on 185 of the 396 paralytic cases. Poliovirus isolates have been recovered from 154 (83.2 percent) of the 185 cases. Of these, 119 are Type I, 2 are Type II, and 33 are Type III poliovirus. Isolates have been reported from the following States.

State	Poliovirus			Total
	I	II	III	
Alabama	2	0	0	2
Arizona	2	0	0	2
Arkansas	1	1	0	2
California	4	0	7	11
Colorado	1	1	0	2
D.C.	0	0	1	1
Georgia	2	0	1	3
Illinois	9	0	2	11
Kentucky	9	0	1	10
Louisiana	4	0	2	6

(Continued on following page)

State	Poliovirus I	II	III	Total
Maryland	1	0	0	1
Massachusetts	3	0	0	3
Michigan	4	0	3	7
Minnesota	4	0	0	4
Mississippi	0	0	1	1
Montana	1	0	0	1
Nebraska	0	0	1	1
New York	8	0	3	11
Ohio	5	0	4	9
Oregon	0	0	3	3
Pennsylvania	4	0	1	5
Tennessee	1	0	0	1
Texas	51	0	2	53
Utah	1	0	0	1
Washington	0	0	1	1
West Virginia	1	0	0	1
Wyoming	1	0	0	1
TOTAL	119	2	33	154

4. ROUTINE POLIOMYELITIS SURVEILLANCE - 1962

A. Cases with Onset within 30 Days of Vaccine (Inactivated)

(1) Currently Reported Cases

During the two-week period ending October 13, one case of poliomyelitis within 30 days following vaccination has been reported to the Poliomyelitis Surveillance Unit. This case, a 2 year-old male from Orange County, Florida, was vaccinated on July 26 and had onset of illness on August 12. He previously had received 3 doses of inactivated vaccine. The preliminary diagnosis was paralytic poliomyelitis with involvement of the right leg.

To date in 1962, 13 case reports of poliomyelitis within 30 days followint vaccination have been submitted to the Poliomyelitis Surveillance Unit. Ten of these have had paralysis. One case has exhibited correlation between site of injection and site of first paralysis.

(2) Summary Paralytic Poliomyelitis with Onset within 30 Days after IPV Administration 1961-1962

During 1961, 28 "under 30 day paralytic cases" were reported to PSU and in 1962, through October 13, 10 "under 30 day paralytic cases".

Of the 28 cases reported during 1961, 9 occurred in epidemic areas. In each of the areas, community-wide OPV programs were carried out as an epidemic control measure. Seven of these were reported from Madison, Oneida and Onondaga Counties (Syracuse area), New York: two were reported from Fulton County (Atlanta), Georgia. Of the ten cases reported during 1962, seven occurred in areas with known outbreaks. Five were from separate counties in Texas, one from Cambria County, Pennsylvania, and one from Mobile, Alabama. Outbreaks in each of the areas resulted in mass type-specific oral vaccine programs. One additional case from Washington State experienced transient paralysis; from this patient, Coxsackie B-5 was isolated from the stool.

Reported Paralytic Poliomyelitis
"Under 30-Day Cases" After IPV

	No. of Cases			
	Epidemic Areas	Coxsackie B-5	Non-Epidemic Areas	Total
1961	9	1	18	28
1962	7	0	3	10
	16	1	21	38

The twenty-one cases reported from non-epidemic areas since January 1, 1961, are from thirteen States. Type I poliovirus was isolated from 6; Type III from 3.

State	No. of Cases	Isolate I	Isolate III
Alabama	1		
Arkansas	1	1	
California	4	2	
Florida	1		
Kentucky	1		
Louisiana	2	1	1
Maryland	1		1
Michigan	2	1	
New York	2		
Ohio	1		
Texas	2	1	
Vermont	2		
Wisconsin	1		1
TOTAL	21	6	3

Twelve of the twenty-one cases were under 5 years of age; three were adults. Only one of the cases had received four or more doses of IPV, 30 days or more preceding onset.

Age	1V	2V	3V	4V	5V	Total
<1	2		1			3
1-4	5	1	3			9
5-9		3		1		4
10-14				1	1	2
15-19						0
20-29						0
30-39	2	1				3
Total	9	5	4	2	1	21

There was no apparent clustering of cases in any particular interval between the time of injection and the onset of disease. Three of the cases, in fact, had onsets within four days after injection.

Interval in Days	No. of Cases
0-4	3
5-9	4
10-14	4
15-19	2
20-24	3
25-30	4
?	1
	21

For seventeen of the cases, information regarding manufacturer of the vaccine given was available, for fifteen information regarding lot number was also provided. The vaccine derived from four manufacturers; a variety of lot numbers were recorded, only one lot was noted in connection with two cases. Both of the cases came from a single State. Only one case exhibited correlation between site of inoculation and site of first paralysis.

B. Cases with Onset within 30 Days of Vaccine (Oral)

Seven cases of paralytic poliomyelitis, occurring within 30 days following oral vaccine feeding, were reported to the Poliomyelitis Surveillance Unit during the two weeks ending October 13. Alabama , Massachusetts and Nebraska accounted for two each and Pennsylvania for one. The two cases from Mobile County, Alabama, had been fed Type I oral polio vaccine on September 5 during a community oral vaccination program instituted because of a Type I poliomyelitis outbreak in the area. First symptoms of illness occurred 12 and 13 days after vaccination. Type III oral polio vaccine had been given to the Massachusetts, Nebraska and Pennsylvania cases during community programs within 30 days before onsets of illness. Each of the cases had received Type I oral polio vaccine previously.

A detailed line listing of the 7 cases appears below.

State	County	Age	Sex	Doses IPV	Onset	Interval from OPV	Type Fed	Virus Isolation	Paralytic Status
Alabama	Mobile	4/12	M	0	9/18	13	I	-	P
Alabama	Mobile	17/12	M	0	9/17	12	I	-	P
Massachusetts	Norfolk	4	M	4	7/2	26	III	-	P
*Massachusetts	Bristol	7	M	5	6/15	14	III	I	P
Nebraska	Lancaster	6	M	3	8/5-12	7-14	III	-	P
Nebraska	Keya Paha	12	F	3	9/3	16	III	III	P
**Pennsylvania	Venango	4	M	4	6/6	8	III	III	P

*Type I O.P.V. administered 42 days before onset of illness.
**No residual paralysis at 60 days.

Thus far in 1962, 45 cases occurring within 30 days of oral vaccination have been submitted to the Poliomyelitis Surveillance Unit on individual case forms. Twenty-four of these have occurred outside of epidemic areas. Of these 24, 3 have occurred within 30 days following type I feeding (one of which was non-paralytic), one following type II, and 20 within 30 days of type III administration.

5. ENTEROVIRUS SURVEILLANCE

A total of 318 non-poliomyelitis enterovirus isolates has been reported to the Poliomyelitis Surveillance Unit through October 16. Twenty-three States have accounted for these, as shown in Table 5. As compared to 1961, when isolates of Coxsackie B-5 were reported in large numbers, there is no predominant enterovirus type evident. Coxsackie B-3 has been recovered in 13 of the 23 States reporting.

Non-Polio Enterovirus Isolations from 1962 Specimens

State	ECHO 4	ECHO 9	ECHO 14	ECHO 22	ECHO Other*	Coxsackie B-2	Coxsackie B-3	Coxsackie B-5	Coxsackie Other*	Coxsackie Unsp.	Total	Reported By
Alabama					3				2	1	6	T. Hosty
California	2	17	1	6	5	1	1	1	11		45	E. Lennette and P. Wehrle
Connecticut	17						6		6	3	32	E. Borman and G. Hsiung
Florida	2						1		2		5	J. Bond
Hawaii		1			2			7	36		46	J. Enright
Illinois		1				2	1		2	1	7	H. Shaughnessy
Kansas		1			6	3	7		9		26	C. Hunter
Kentucky									1		1	C. Todd
Louisiana		11	3		1		6		5		26	G. Hauser
Maryland		1			3	3	6		5		18	J. Joseph
Massachusetts							1		1	2	4	R. MacReady and J. Daniels
Michigan			6				1	7	5	3	22	G. Agate
Minnesota					2				1		3	H. Bauer
Missouri						1	1				2	I. Adams
New Hampshire								2			2	R. Miliner
New Jersey					1			3	1		5	M. Goldfield and W. Dougherty
New York				1	1	5	2	1	6		16	I. Albrecht
North Carolina									1		1	L. Madry
Ohio		2				4	5	4	6		21	C. Croft
Pennsylvania								3			3	K. Hummeler and I. Gratch
Texas	4	12				1			1		18	J. Irons and A. Behbehani
Virginia					3						3	E. Foxhall
Washington		1	1		1		1		1		5	K. Berquist and W. Giedt
											318	

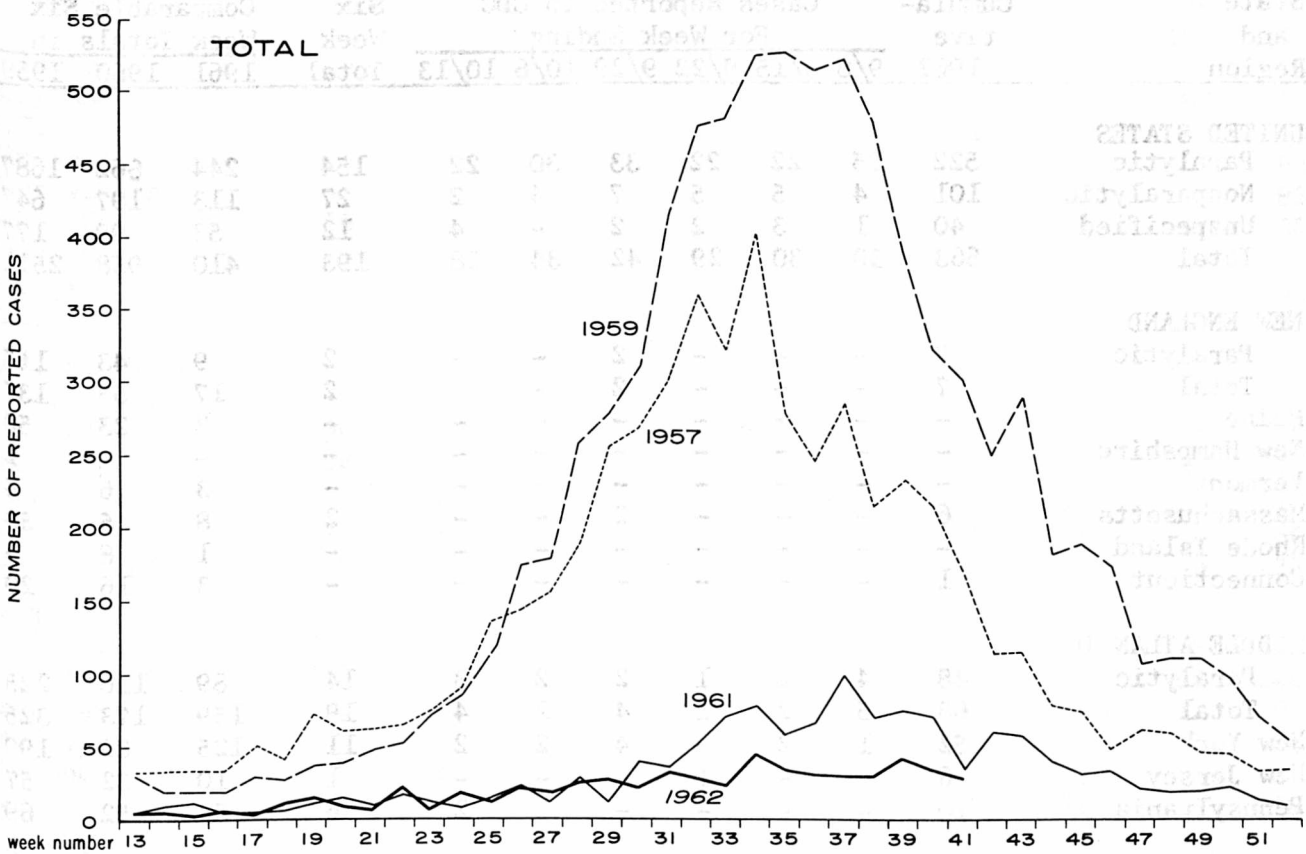
*Specific types include 15 Coxsackie A-4 and 12 A-5 in Hawaii, and 5 A-9 in Michigan.
A variety of single isolates of other ECHO and Coxsackie types have been reported.

Figure 1

CURRENT U.S. POLIO INCIDENCE COMPARED WITH YEARS 1957, 1959 and 1961

April - December, by week

DATA PROVIDED BY NATIONAL OFFICE OF VITAL STATISTICS AND COMMUNICABLE DISEASE CENTER



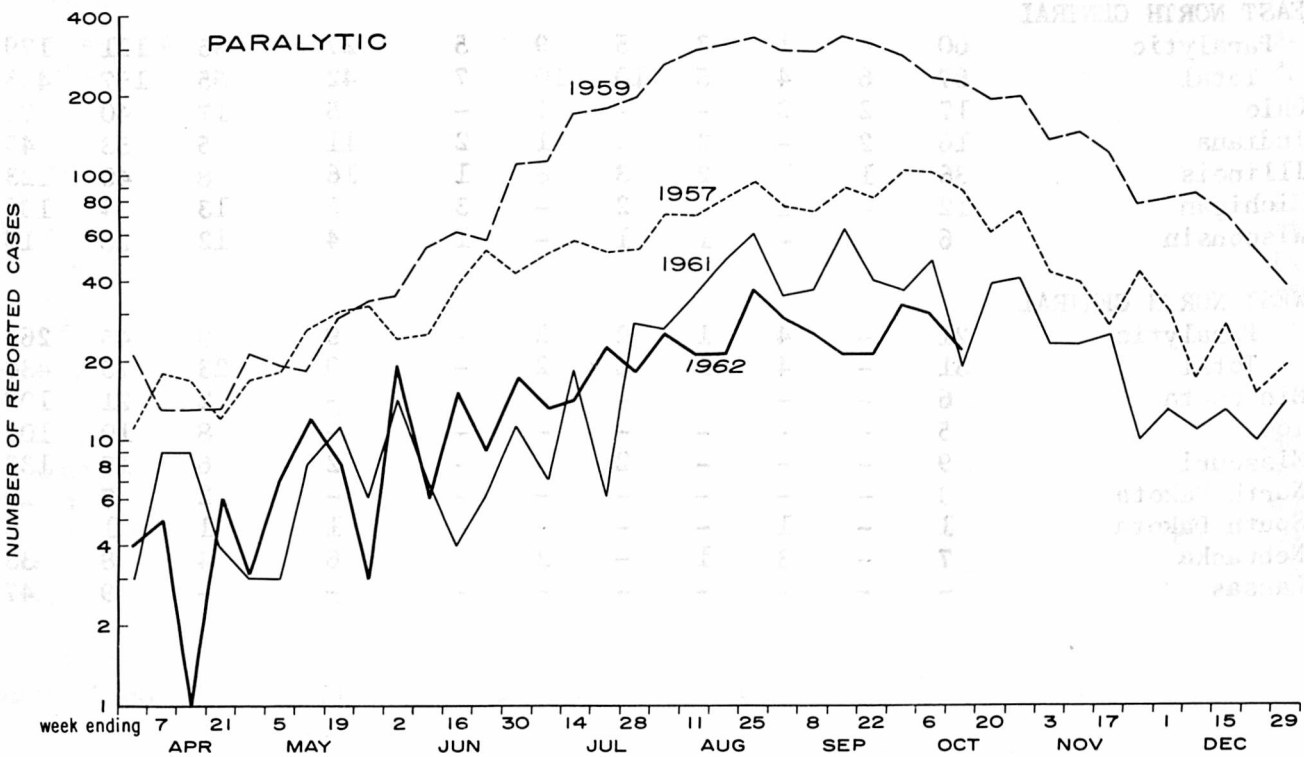


Table 1

TREND OF 1962 POLIOMYELITIS INCIDENCE

State and Region	Cumulative 1962	Cases Reported to CDC For Week Ending 9/8	9/15	9/22	9/29	10/6	10/13	Six Week Total	Comparable Six Week Totals in 1961	1960	1959
UNITED STATES											
Paralytic	522	25	22	22	33	30	22	154	244	662	1687
Nonparalytic	101	4	5	5	7	4	2	27	113	197	647
Unspecified	40	1	3	2	2	-	4	12	53	99	177
Total	663	30	30	29	42	34	28	193	410	958	2511
NEW ENGLAND											
Paralytic	7	-	-	-	2	-	-	2	9	43	117
Total	7	-	-	-	2	-	-	2	17	58	137
Maine	-	-	-	-	-	-	-	-	2	23	50
New Hampshire	-	-	-	-	-	-	-	-	-	-	2
Vermont	-	-	-	-	-	-	-	-	3	6	4
Massachusetts	6	-	-	-	2	-	-	2	8	5	58
Rhode Island	-	-	-	-	-	-	-	-	1	8	3
Connecticut	1	-	-	-	-	-	-	-	3	16	20
MIDDLE ATLANTIC											
Paralytic	48	4	2	1	2	2	3	14	89	116	225
Total	68	5	2	1	4	2	4	18	159	173	325
New York	52	1	2	-	4	2	2	11	125	89	199
New Jersey	6	-	-	1	-	-	-	1	10	32	57
Pennsylvania	10	4	-	-	-	-	2	6	24	52	69
EAST NORTH CENTRAL											
Paralytic	60	4	1	3	5	9	5	27	35	121	179
Total	87	6	4	5	10	10	7	42	55	187	455
Ohio	17	2	2	-	-	1	-	5	17	40	74
Indiana	16	2	-	2	4	1	2	11	5	53	45
Illinois	36	1	1	2	3	8	1	16	8	40	123
Michigan	12	-	1	-	2	-	3	6	13	34	196
Wisconsin	6	1	-	1	1	-	1	4	12	20	17
WEST NORTH CENTRAL											
Paralytic	21	-	4	1	2	2	-	9	9	45	263
Total	31	-	4	1	2	2	-	9	23	75	438
Minnesota	6	-	-	-	-	-	-	-	2	21	109
Iowa	5	-	-	-	-	-	-	-	8	10	103
Missouri	9	-	-	-	2	-	-	2	6	19	133
North Dakota	3	-	-	-	-	-	-	-	2	7	10
South Dakota	1	-	1	-	-	-	-	1	1	1	3
Nebraska	7	-	3	1	-	2	-	6	4	8	33
Kansas	-	-	-	-	-	-	-	-	-	9	47

Table 1 (Continued

State and Region	Cumulative 1962	Cases Reported to CDC For Week Ending 9/8	9/15	9/22	9/29	10/6	10/13	Six Week Total	Comparable Six Weeks Totals In 1961	1960	1959
SOUTH ATLANTIC											
Paralytic	48	2	1	5	3	4	3	18	38	159	312
Total	54	2	1	6	3	5	4	21	51	182	376
Delaware	-	-	-	-	-	-	-	-	-	-	3
Maryland	1	-	-	-	1	-	-	1	5	87	25
D.C.	2	-	1	-	-	-	-	1	2	2	3
Virginia	8	-	-	-	-	-	-	-	4	15	88
West Virginia	6	1	-	-	-	-	-	1	10	13	82
North Carolina	10	1	-	1	-	3	2	7	6	21	88
South Carolina	6	-	-	1	-	1	-	2	20	28	28
Georgia	14	-	-	4	1	1	2	8	1	9	33
Florida	7	-	-	-	1	-	-	1	3	7	26
EAST SOUTH CENTRAL											
Paralytic	51	4	1	4	9	2	3	23	13	23	187
Total	60	4	3	4	9	2	3	25	30	85	232
Kentucky	24	1	-	1	4	-	1	7	8	54	48
Tennessee	8	1	2	-	-	-	-	3	12	20	117
Alabama	22	2	1	3	5	-	-	11	1	5	44
Mississippi	6	-	-	-	-	2	2	4	9	6	23
WEST SOUTH CENTRAL											
Paralytic	214	9	7	8	7	6	4	41	19	49	145
Total	275	11	9	12	9	8	6	55	38	69	244
Arkansas	12	-	1	1	2	2	1	7	7	12	92
Louisiana	20	3	-	4	1	-	1	9	14	8	24
Oklahoma	16	2	2	-	1	3	1	9	1	8	30
Texas	227	6	6	7	5	3	3	30	16	41	98
MOUNTAIN											
Paralytic	10	-	-	-	-	-	2	2	1	14	28
Total	14	-	1	-	-	-	2	3	4	24	48
Montana	4	-	-	-	-	-	1	1	-	3	-
Idaho	2	-	-	-	-	-	-	-	2	-	1
Wyoming	2	-	1	-	-	-	-	1	-	10	-
Colorado	2	-	-	-	-		1	1	-	9	12
New Mexico	-	-	-	-	-	-	-	-	-	1	10
Arizona	3	-	-	-	-	-	-	-	1	-	19
Utah	1	-	-	-	-	-	-	-	1	1	3
Nevada	-	-	-	-	-	-	-	-	-	-	3
PACIFIC											
Paralytic	63	2	6	-	3	5	2	18	31	92	231
Total	67	2	6	-	3	5	2	18	33	105	256
Washington	2	-	1	-	-	-	-	1	6	10	80
Oregon	5	-	-	-	-	-	-	-	3	7	49
California	60	2	5	-	3	5	2	17	22	88	120
Alaska	-	-	-	-	-	-	-	-	-	-	6
Hawaii	-	-	-	-	-	-	-	-	2	-	1
TERRITORY											
Puerto Rico	11	-	-	-	-	1	-	1	1	53	1

Table 1 (Continued

SUPPLEMENT TO CDC POLIOMYELITIS SURVEILLANCE REPORT NO. 270

U.S. Department of Health, Education, and Welfare

Public Health Service Bureau of State Services

COMMUNICABLE DISEASE CENTER
Atlanta 22, Georgia

Case Summaries of Poliomyelitis Associated With the Administration of Oral Vaccine

October 24, 1962

On September 20, the Surgeon General released a technical report to the medical profession entitled "The Association of Cases of Poliomyelitis with the Use of Type III Oral Poliomyelitis Vaccine". In this report were listed 16 reported cases of poliomyelitis occurring within 30 days of administration of oral polio vaccine. These cases had been reviewed in detail by the Surgeon General's Oral Poliomyelitis Vaccine Advisory Committee.

Twelve of these cases were unanimously accepted by the Committee as "compatible" with a vaccine relationship. Each of these 12 cases had experienced an illness clinically diagnosed as paralytic poliomyelitis and had evident residual paralysis; additionally, the available laboratory findings were not inconsistent with a vaccine relationship. The remaining four cases were "excluded" by the Committee on the grounds that there was no significant residual paralysis or that laboratory findings were incompatible with a vaccine relationship.

The present supplement includes brief summaries of the pertinent, clinical and laboratory data of the 16 cases listed in the Surgeon General's report. In addition 4 cases from Nebraska, reported subsequent to the preparation of the Surgeon General's report, were reviewed by the Committee on October 2. These cases were all considered to be "compatible". Summaries of these are also included herein.

Special comment should be made regarding the virological and serological studies.

The laboratory studies, usually initiated by the State health department, hospital or university laboratories, have been or are being confirmed and extended by the Enterovirus Laboratory of the Communicable Disease Center under Dr. Henry Gelfand. These studies include, when possible, virus isolations on monkey kidney cells, virus characterization using the modified Wecker and McBride tests, a search for other than polioviruses using poliomyelitis neutralized aliquots in suckling mice, Hela and monkey kidney cell systems. Neutralizing antibody levels using the metabolic inhibition test technique are being determined.

Interpretation of the laboratory data must, as pointed out by the Advisory Committee, be interpreted with caution. The designation of "wild-like" or "vaccine-like" is ascertained by the modified Wecker and McBride tests. These tests are used to demonstrate slight antigenic differences between polio virus strains of the same type. Since the vaccine strains may, after a period of intestinal multiplication, show a shift in the antigenic characteristics of the viruses, the finding of either "wild-like" or "vaccine-like" strains might be expected in an individual fed the vaccine. Further, since each of the individuals in this group of cases had received the oral vaccine, it is to be anticipated that many of these persons would be excreting poliovirus. Isolation of the virus from a stool specimen therefore establishes only that the individual contracted the intestinal infection; it does not necessarily prove that the observed illness was caused by the virus.

A. Cases of Reported Paralytic Poliomyelitis Occurring Within 30 Days of the Administration of Oral Poliomyelitis Vaccines in Nonepidemic Areas January 1 to October 13, 1962

Type I Vaccine

Case No.	Age	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Recovered	Antibody Response	Mfgr. & Lot (Coded)	Committee[1] Appraisal
NY 1***	3	M	2	5/29	23	-	-	I	I	A12	Excluded
Tenn 1	25	M	1	8/30	10	-	-	I	I	A11	Compatible

Type II Vaccine

Ohio 1	2	F	2	2/23	>90	8	-	III	-	B2-	Excluded

Type III Vaccine

Mich 1	23	M	4	7/16	76	-	17	III	III	B34	Compatible
Mich 2	36	F	0	7/20	-	-	22	III	III	B36	Compatible
Neb 1	18	F	5	7/1	34	-	7	III	-	A3-	Compatible
Neb 2	51	M	0	7/16	51	-	22	0	-	A3-	Compatible
Neb 3	37	M	0	7/23	43	-	15	-	-	A3-	Compatible
Neb 4	50	F	4	8/16	61	-	19	(**)	(**)	A31	Compatible
Neb 5	57	M	0	8/17	53	-	23	(**)	(**)	C31	Compatible
Neb 6	6	M	3	8/5-8/12	52*	-	9*	(**)	(**)	A3-	Compatible
Neb 7	13	F	3	9/3	41	-	16	III	(**)	C3-	Compatible
NY 2	49	M	0	6/18	>90	-	26	0	II & III	B35	Compatible
Ohio 2	16	M	0	6/8	43	-	15	-	-	B3-	Compatible
Ohio 3	36	M	0	7/15	-	-	21	0	I & III	B34 or 6	Compatible
Ore 1	48	F	0	5/5	34	-	7	III	III	B31	Compatible
Ore 2	39	M	0	5/21	50	-	23	III	-	B31	Compatible
Ore 3***	6	M	0	5/25	54	-	27	I & III	-	B31	Excluded
Ore 4	52	M	0	6/26	52	-	19	III	III	B31	Compatible
Wash 1	6	M	4	6/12	37	-	5	I	I	B31	Excluded

Officially Reported but Not Yet Considered by the Committee

Mass 1	4	M	4	7/2	44	-	26	-	-	C11 & A32	To be considered
Mass 2	7	M	5	6/15	42*	-	14*	I	-	A1-	To be considered
Pa 1***	4	M	4	6/6	55	-	8	III	-	B6-	To be considered

B. Cases of Reported Poliomyelitis Occurring Within 60 Days of Household Contact of Oral Polio Vaccinees in Nonepidemic Areas January 1 to October 13, 1962

Case No.	Age	Sex	Doses IPV	Onset First Symptom	Interval Contact Fed OPV (Days) I	II	III	Virus Recovered	Antibody Response
Ohio B_1 x	6/12	M	0	6/8	-	-	33	III	No Spec.
Mass B_1***	42	F	4	6/26	55*	-	25*	No Specimen	
Mass B_2	18/12	M	0	6/19	59*	-	18	I	-

*Approximate
**In Process
***No Residual Paralysis
xNot Strictly a Household Case

New York - 1 (Case 1 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
3	W	M	2	5/29	23	-	-	I	Wild-Like	Excluded

This 3 year-old white male was noted to be walking with a limp, favoring the left leg, during the last week of May. There had been no known antecedent illness.

The child had received 2 injections of inactivated polio vaccine. He was fed oral polio vaccine type I on May 6.

On examination there was weakness of the left gluteus maximus, knee extensors, and hamstrings. By June 13, there was no trace of a limp and no muscle weakness could be demonstrated.

C.S.F.: No examination performed

Stool: (June 22) Type I poliovirus Wild-like by modified Wecker and McBride Tests

Serum Neutralizing Antibodies	Days After Onset		
	4	15	45
Type I	1:6	1:10	1:25

Tennessee - 1 (Case 2 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
25	W	M	1	8/30	10	-	-	I	Wild-Like	Compatible

On August 24, the patient first became ill with abdominal pain and diarrhea, lasting 24 hours. He then felt well until August 30 when he noted pain in the back of the neck, in the back and in both legs. The pain persisted, and by September 1, there was also fever, severe headache, and weakness of the right leg. He was hospitalized on September 2.

The patient had received one dose of inactivated polio vaccine in 1960. He received type I oral polio vaccine on August 20.

On hospital admission, September 2, there was nuchal rigidity, weakness of the right plantar flexors, complete loss of function of right toe dorsiflexors, and weakness of right knee flexor and extensors. No sensory deficit

was demonstrable. The paralysis of the right leg has persisted without change, the same findings being present as of mid-October.

C.S.F.: (September 2) 471 cells, (44% polys, 56% mononuclears)

Stool: (September 5) Type I poliovirus Wild-like by modified Wecker and McBride Tests.

Serum Neutralization Antibodies:

	Days After Onset	
	2	16
Type I	8	256
" II	16	512
" III	256	>512

Ohio - 1 (Case 3 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
2	N	F	2	2/23	>90	8	-	III	-	Excluded

This child was reported to the Poliomyelitis Surveillance Unit as having onset of a clinical illness leading to a persistent asymetric paralysis 8 days after receiving type II oral polio vaccine. A type III virus was recovered from the stool. The child had not received the type III vaccine; no type III oral polio vaccine had in fact been licensed at the time of this child's illness.

This case was excluded as being not related to the administered vaccine.

Michigan - 1 (Case 4 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
23	W	M	4	7/16	76	-	17	III	Wild-like	Compatible

This 23 year-old, married, white laborer was hospitalized on July 20 because of weakness of the left leg.

The patient was on National Guard maneuvers at Camp Grayling, Michigan, and felt well until July 15, when he complained of vague malaise, sore throat, diffuse myalgia, frontal headache and anorexia. He had two loose stools that morning. Examination by the camp physician revealed a temperature of

101°F. and slight meningismus. It was thought he had "intestinal flu" and he returned to duty. On July 17, he felt subjective stiffness of the neck and experienced "sweats and chills." On July 18, examination revealed meningismus and pain in the left calf. In addition, the left leg was noted to be weak and he walked with a limp. On July 20, he was admitted to an Air Force hospital.

He reports having received three doses of inactivated polio vaccine in 1959 and a booster in 1960, although records confirm only two of the four doses. He was fed type I oral polio vaccine on April 25, 1962, and type III on June 29, 1962. On June 30, 16 days before onset of the present illness, he had experienced fever, malaise and anorexia. His physician administered penicillin; the following day he felt well. The past history is otherwise not remarkable.

On hospital admission, he was afebrile. There was no nuchal rigidity. Weakness was noted in the quadriceps, anterior tibial and calf muscles on the left. The left patellar and left Achilles tendon reflexes were markedly diminished. No sensory changes were found. On examination, October 22, the paresis of the left leg was still persistent. He could walk with the aid of a brace.

Cerebrospinal Fluid	Cell Count	% Polys	% Mononuclear	Protein
7-18-62	129	95%	5%	29 mg %
7-30-62	14	14%	86%	27 mg %

Stool: (August 14) Type III poliovirus Wild-like by modified Wecker and McBride Tests.

Serum Neutralizing Antibodies	Days After Onset	
	5	14
Type I	1:512	1:512
Type II	1:512	1:512
Type III	1:256	1:512

Michigan - 2 (Case 5 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
36	W	F	0	7/20	-	-	22	III	Vaccine-like	Compatible

This 36-year-old housewife and mother of an eleven-year-old child was admitted to the University Hospital, Ann Arbor, on July 31, with a fever of 102.2° and flaccid paralysis of the left shoulder and arm. On July 20, she had noted onset of malaise and backache for 48 hours, accompanied by a low grade fever. On July 22 and 23, she felt perfectly well and was active. On July 24, she noted fever of 101.6° and return of the symptoms mentioned above, and was seen by her physician, who diagnosed "flu" and prescribed a

sulfonamide. On July 26, she noted weakness in her left arm. During the ensuing days the fever persisted but she did not consult her physician again until July 30, when the paralysis was confirmed and hospital admission arranged.

This woman had received no inactivated vaccine. She was fed type III oral polio vaccine on June 28.

On examination, there was flaccid paralysis of the left shoulder and left arm, as well as some weakness of the right arm. The left triceps and left biceps tendon reflexes were absent. No sensory deficit was noted. A muscle evaluation performed by a physical therapist on August 1 revealed:

	Left	Right
Deltoid	Trace +	Poor +
Biceps	Poor	Fair +
Triceps	Poor	Poor

On examination, October 22, the patient had severe, but not complete paralysis of the muscle groups of the left shoulder and arm.

C.S.F.: (July 30) 72 cells (25% polys, 75% mononuclear), protein 64 mg% (Repeat 74 mg%)

Stool: (August 2) Type III poliovirus Vaccine-like by the modified Wecker and McBride Tests.

Serum Neutralizing Antibodies

	Days After Onset	
	16	36
Type I	1:128	1:256
" II	<1:8	<1:8
" III	1:64	1:572

Nebraska - 1 (Case 6 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
18	W	F	5	7/1	34	-	7	III		Compatible

This 18 year-old white female student had the onset of headache, general malaise, anorexia, nausea, vomiting and low grade fever on July 1. These symptoms persisted and by July 9, low back pain and weakness of both legs was also noted. There was stiffness of the neck and demonstrable weakness of the left leg on July 11. The patient was hospitalized on July 17.

She had previously received five doses of inactivated polio vaccine, the latest in 1960. The patient was fed type I oral polio vaccine on May 27, 1962 and type III on June 24.

On examination, loss of function of the left quadriceps and left hip muscles was evident as well as some weakness of right quadriceps. The deep tendon reflexes were absent in the left leg. The weakness was still present on examination in mid-September and the left thigh was $2\frac{1}{4}$" smaller in circumference than the right thigh.

C.S.F.: (August 17) 61 W.B.C. (11% polys, 89% mononuclear)

Stool: (July 23) Type III poliovirus Strain characterization under study.

Serum Neutralizing Antibodies — Days After Onset

	24	36	69	71
Type I	1:720	>1:512	1:360	>1:512
" II	1:256	>1:512	1:256	>1:512
" III	1:512	>1:512	1:512	1:512

Nebraska - 2 (Case 7 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
51	W	M	0	7/16	51	-	22	0	-	Compatible

This 51 year-old white male, tire distributor was admitted to the hospital on July 23 with a seven day history of "sore muscles". On July 19, there was low grade fever, weakness of the left leg and general malaise.

The patient had received no inactivated polio vaccine. He received type I oral polio vaccine on May 27 and type III on June 24.

On hospital admission marked weakness of the left quadriceps, hamstrings and anterior tibial was noted. The deep tendon reflexes were absent in the left lower extremity. No sensory abnormalities were found. In September he required a brace and cane for proper ambulation because of a left foot drop.

C.S.F.: (July 19) No cells; "normal" protein

Stool: (July 30) No virus isolated

Serum Neutralizing Antibodies — Days After Onset

	7	12
Type I	1:256	1:360
" II	<1:8	<1:8
" III	1:180	1:128

Nebraska - 3 (Case 8 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
37	W	M	0	7/23	43	-	15	No Specimen		Compatible

This 37 year-old white, male, truck driver was well until July 23 when the onset of sore throat, fever, chills, and backache were noted. On July 28, the patient found difficulty driving because of inability to lift his right foot. He measured his own temperature that day and found it to be 102° F. The above symptoms persisted and the patient consulted his physician.

The patient had received no inactivated polio vaccine. He received type I oral polio vaccine on June 10 and type III on July 8.

When examined on August 2, there was marked weakness of the right let, spasm on straight leg raising and absent deep tendon reflexes bilaterally. No sensory deficit was demonstrated. He was hospitalized on August 5, but left against medical advice five days later. In mid-September there was persistance of the weakness of the right leg, especially the quadriceps. Muscle wasting in this limb as well as a foot drop and inability to hyper-abduct the right shoulder were also found at this time.

C.S.F.: (August 5) No cells; protein determination not done.

Stool: No specimen obtained

Serum Neutralizing Antibodies	Days After Onset 49
Type I	1:256
" II	1:16
" III	1:256

Nebraska - 4 (Not in Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
50	W	F	4	8/16	61	-	19			Compatible

This 50 year-old housewife was well until August 16 when she noted aching in both legs. The following day there was fever to 102° F. and general malaise without nausea or vomiting. Examination by her physician on August 22 revealed no evident physical abnormalities. On August 24 she awoke with complete paralysis of her left leg and was admitted to the hospital.

The patient received 4 doses of inactivated polio vaccine, the last in 1958 or 1959. She was fed oral polio vaccine type I on June 16 and type III on July 28.

On admission, she exhibited flaccid paralysis of the left lower extremity. The deep tendon reflexes were absent in that leg. No sensory abnormality was noted. The other extremities were normal. The spinal fluid demonstrated a pleocytosis (as recorded below). The paralysis did not progress and the patient had a low grade fever during the first seven hospital days. By September 15 the ability to flex the knee 15° to 20° and to wiggle the toes on the left were the only demonstrable signs of return of function. Examination on October 9 revealed persistant weakness with wasting of the involved extremities.

C.S.F.: (August 24) 35 W.B.C. (20% polys)

Stool: (August 26) In process

Serum Neutralizing Antibodies	Days After Onset	
	11	42
Type I	1:256	1:512
" II	1:64	1:256
" III	1:8	1:256

Nebraska - 5 (Not in Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
57	W	M	0	8/17	53	-	23			Compatible

This 57 year-old white male auto parts dealer became ill on August 17 with mild headache, general malaise and an urge to void. On August 23, he noted an unusual degree of arm fatigue after unloading a truck of antifreeze. His physician examined him on August 24 and noted no abnormalities. That evening the patient developed fever and on the following morning, fell on arising because of weakness of the left leg.

The patient had received no inactivated polio vaccine. He received type I oral polio vaccine on June 24 and type III on August 5.

On examination at the time of hospital admission on August 26, the temperature was 101° and the pharynx was injected. There was slight movement of the quadriceps on the left and good movement on the right; nevertheless, he was unable to raise either leg. He was also unable to move the left foot. There were no sensory abnormalities. The flaccid paralysis on the left progressed and he was transferred to an Omaha hospital August 29.

Examination on October 3 revealed a continued flaccid paralysis of both lower extremities, strikingly hypoactive reflexes, marked muscular wasting bilaterally and no demonstrable return of function.

C.S.F.	White Cells	Protein
8/26	7	83 mg %
8/29	-	39 mg % (Traumatic puncture; cells were not counted)

Stool: (August 31) In process

Serum Neutralizing Antibodies	Days After Onset
	40
Type I	>1:512
" II	1:64
" III	1:256

Nebraska - 6 (Not in Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
6	W	M	3	8/5-8/12	49-56	-	7-14	-	-	Compatible

This six-year-old white male developed headache, low grade fever and general malaise, without other constitutional symptoms, sometime between August 5 and August 12. This was 7 to 14 days after receiving type III oral polio vaccine. Within two days, the child began to limp, favoring his right leg, and he complained of pain in the right lower calf and ankle. The pain lasted 3-4 days; however, the limp persisted. (He is one of seven children; the mother is not an accurate historian.)

The patient had received three doses of inactivated polio vaccine, the last in 1958. He received oral polio vaccine, type I on June 17, type II on September 23, and type III on July 29.

The patient was first seen on September 24 by an orthopedic surgeon for evaluation. Definite weakness of several muscle groups in the right leg was noted, as well as measurable atrophy of the right calf muscles. There was a right foot drop as well. When examined on October 1, weakness of hip flexors and adductors and foot flexors on the right was noted. The right Achilles and patellar reflexes were strikingly hypoactive. The circumference of the right mid-thigh was 3/4 inch less than the left, and the right mid-calf 1/2 inch less than the right. The patient walked with a limp.

C.S.F.: No examination performed.

Stool: (10/1/62) In Process.

Serum Neutralizing Antibodies	Days After Onset
	49
Type I	1:256
Type II	1:128
Type III	1:256

Nebraska - 7 (Not in Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
13	W	F	3	9/3	41	-	16	III	-	Compatible

This 12-year-old white female was well until she developed fever, severe occipital headache, nausea, and anorexia on September 3. The headache disappeared by the following day, the fever persisted, and she developed pain in her right thigh and calf. She experienced increasing difficulty in moving her right leg.

She was first seen by her local physician and hospitalized locally on September 8. At that time, the thigh and calf pain was still present, as well as low grade fever. The patient had no leg motion at hip, knee, or ankle. The deep tendon reflexes were absent in the right leg but normal elsewhere. She had no nuchal rigidity but exhibited a tripod sign. There were no sensory disturbances. Hip X-rays were normal and no cells were found in the cerebrospinal fluid. The physician diagnosed the illness as poliomyelitis and transferred her to an Omaha hospital on September 11.

The past history is non-contributory except that the patient fell from her bicycle on August 28, bruising her right thigh. She experienced some discomfort that day, but felt well the following day and until the onset of her illness on September 3. She had received three doses of inactivated polio vaccine in 1957 and 1958. On July 24, she received type I oral polio vaccine, and on August 18, type III.

On admission to the Omaha hospital, the physical findings were as described. The cerebrospinal fluid was interpreted as normal (see below), as were hip X-rays. Cystogram revealed an atonic bladder. A myelogram revealed a filling defect at a level of the 4th thoracic vertebra, which was felt could be due to a bony spike projecting into the canal. An exploratory laminectomy was performed on September 17, but no abnormalities were found. She was discharged September 24.

Examination on October 10 revealed persistent marked weakness of the right leg, a right foot drop, and wasting of the right thigh and calf. She was able to stand and take a few unsteady steps.

C.S.F.	Cells	No. polys	No. mononuclear	Protein
8/11	0			Not done
8/14	3	2	1	50 mg %

Stool: (September 26) Type III Poliovirus, Strain characterization in process.

Serum Neutralizing Antibodies	Days After Onset
Type I	-
Type II	(In Process)
Type III	

New York - 2 (Case 9 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
49	W	M	0	6/18	190	-	26	0	-	Compatible

This 49-year-old white male was well until June 18 when he developed coryza, malaise, fatigue, frontal headache, and low back pain. On June 19, the patient began to experience fever and chills. There was extension of the pain to the upper back and neck. On June 21, the patient felt nauseated and vomited several times; the back pain was less severe, but he noted stiffness of the neck and left leg weakness, which caused him to fall on several occasions. He experienced no pain or cramping in his extremities. By June 22, the left leg weakness had progressed so that the patient was unable to stand; there was weakness of the left arm, and left hip pain. He had received no inactivated poliomyelitis vaccine. He received oral vaccine, type I in August 1961, and type III on May 23, 1962. The past history was otherwise not remarkable.

On examination, the temperature was 102°, and there was nuchal rigidity. There was weakness of the left arm and leg with absent deep tendon reflexes. Pain in the left hip was present with any movement. No sensory abnormality was noted. Following admission, weakness of the right arm and leg developed on June 24, and the deep tendon reflexes became hypoactive. The patient became confused and his behavior was described as paranoid for several days. Weakness of the diaphragm and intercostal muscles was first noted on June 25, and progressed such that by June 27, a tracheostomy was necessary, and he was placed in a Drinker respirator. Bilateral weakness of cranial nerves VII and X was noted on July 4. By July 16, the patient tolerated brief periods out of the respirator. Examination on October 22 revealed weakness of all extremities, more severe on the left, and persistent paresis of the left hemi-diaphragm.

C.S.F.

Date	Total White Cells	Polys	Lymphs	RBC's	Protein (mg%)
June 22	70	12	58	0	78
June 25	157	80	77	0	77
July 2	55	5	50	0	140
July 9	8	0	8	0	330
August 2	2	0	2	3	158

Stools: (June 22 - July 2) No virus isolated from four specimens between 30 and 40 days after feeding.

Serum Neutralizing Antibodies

	Days After Onset of Illness 4	10	19	32	46	56
Type I	1:64	1:256	1:64	1:256	1:64	1:256
Type II	<1:8	<1:8	1:128	1:128	1:128	1:90
Type III	1:32	1:256	1:1034	1:720	1:520	1:360

Ohio - 2 (Case 10 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
16	W	M	0	6/8	43	-	15	No Specimen		Compatible

This 16-year-old white male high school student developed diffuse myalgia, particularly of the back and shoulders, on June 8, following swimming. On June 9, there was a low grade fever. Over the next six days, he noted progressive weakness of the right leg. He was admitted to the hospital on June 15.

The patient had received no inactivated polio vaccine. He received type I oral polio vaccine on April 26, and type III on May 24. He complained of headache and mild neck stiffness on May 25 and 26, and during the first week in June, he noted tightness in both thighs without systemic illness.

On admission, the temperature was 99^{0}, the neck was supple and there was obvious weakness of the right leg. The patient was unable to raise the right leg, nor was he able to flex or extend the right foot. Deep tendon reflexes were absent in that extremity. No sensory abnormalities were demonstrated. The temperature spiked to 103^{0} for the first two days and then remained normal.

Examination on August 22 revealed continued weakness of the right lower leg muscles and partial weakness of the right quadriceps with atrophy of these muscles.

C.S.F.	No. Cells	% Polys	% Mononuclear	Protein
June 15	103	6	94	
June 16	50	14	86	33 mg %

Stool: No specimen obtained.

Serum: No studies performed.

Ohio - 3 (Case 11 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
36	W	M	0	7/15	-	-	21	0	-	Compatible

This 36-year-old white male moving van driver was well until July 15 when he began to have loose stools, which continued for six days. On July 18, he developed a severe headache, unrelieved by salicylates, which persisted for 24 hours. The patient felt a chill on the morning of July 19, and experienced sharp pain in the lower back which radiated to both legs. He vomited once that night. He noted weakness of both legs on July 20. The headache and backache persisted but his neck was not stiff. He also had difficulty voiding.

The patient had received no inactivated poliomyelitis vaccine. He received oral polio vaccine, type III, on June 24. Members of his family had received type I oral vaccine one month earlier.

On admission, he was afebrile. There was paresis of both legs, with absent ankle reflexes; both patellar reflexes were intact. The deep tendon reflexes were normal in both arms; the abdominal reflexes were absent bilaterally. The cranial nerves were intact, the neck was supple, and there was no sensory deficit. The paresis progressed after admission. By July 22, the patellar reflexes were absent bilaterally, and he was thought to have an atonic bladder. He was placed in a respirator on July 23 because of respiratory embarrassment and difficulty swallowing. A tracheostomy was performed on July 28.

In mid-September, he exhibited persistent paralysis of both lower extremities though there was some movement of the left foot. Intermittent respiratory assistance was still required. Bladder function had returned to normal three weeks after onset of illness.

C.S.F.: (July 21) Clear, 316 cells (198 RBC's, 113 Polys, 5 Lymphs), Protein 50 mg %.

Stool: (July 23) No virus isolated.
(July 25) No virus isolated.

Serum Neutralizing Antibodies

	Days After Onset 8	15	23
Type I	1:360	1:2048	1:2048
Type III	<1:128	1:360	1:512

Oregon - 1 (Case 12 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
48	W	F	0	5/5	34	-	7	III	Vaccine-Like	Compatible

This 48-year-old white female, the wife of a State highway department engineer, became ill on May 5 with aching legs and excessive fatigue. On May 6, she experienced cramps in both legs. Symptoms of headache, low grade fever and low backache were first noted May 8 and persisted for several days. There was difficulty in standing because of leg weakness on May 10, as well as perineal pain on voiding. By May 13, she was unable to move either lower extremity and was admitted to the hospital.

The patient had received no inactivated polio vaccine. She received oral polio vaccine, type I on April 1 and type III on April 28.

On admission, the temperature was 100°; there was some nuchal rigidity and flaccid paralysis of both lower extremities with absent deep tendon reflexes. Some spasm of the lumbar muscles was noted. There was no sensory abnormality. The temperature returned to normal on the third hospital day; however, the right arm became increasingly weak during this period. The patient required frequent catheterization for the first two weeks in the hospital. On July 27, examination revealed muscle atrophy of both legs. All muscle groups in the legs demonstrated either absent or poor function; in addition, there was weakness and atrophy of the right forearm flexors and right thenar muscles. No sensory defects were demonstrated.

C.S.F.	Total Cells	% Polys	% Mononuclears	Protein
May 13	323	22%	78%	95 mg %
June 6	0	-	-	145 mg %

Stool: (May 15) Type III Poliovirus, vaccine-like by the modified Wecker and McBride Tests.

Serum Neutralizing Antibodies	Days After Onset 7	12	37
Type I	>1:512	>1:512	>1:512
Type II	>1:512	>1:512	>1:512
Type III	1:180	1:512	1:1024

Oregon - 2 (Case 13 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
39	W	M	0	5/21	50	-	23	III	Wild-like	Compatible

This 39 year-old white male insurance company executive was well until May 21 when he developed a generalized myalgia following physical exertion. On May 22, he had difficulty voiding accompanied by suprapubic pain. There was a feeling of "numbness" in the right leg, which was also noted to be weak, and low back pain.

The patient had received no inactivated polio vaccine. He received type I oral polio vaccine on April 1 and type III on April 28.

On admission to the hospital on May 24, the temperature was $100^{2^{\circ}}$, there was rhinitis and injection of the pharynx. There was weakness of the right lower leg and right toe flexors. The patellar reflex was hypoactive and the Achilles reflex was absent on the right. The cremasteric and abdominal reflexes were absent bilaterally. Sharp and dull differentiation was poor on admission but was normal by May 31. There were no other sensory deficits. The temperature ranged from 100° to 102° during the first 72 hours after admission and then remained normal. Cystometrogram on May 25 was normal. Pain in the back and right leg muscles persisted for several days. The patient was transferred to a Veterans Administration Hospital on June 12, at which time there was weakness and tenderness to palpation of the right quadriceps and gastrocnemius. On July 30, examination revealed poor function of gastrocnemius and anterior tibial muscles, fair to poor function of the quadriceps and hamstrings and fair hip abductor and adductor function on the right. Weakness of the toe flexors was the only abnormality on the left. There was atrophy of the right calf and right thigh. Sensation was normal.

C.S.F.: (May 24) RBC 211, WBC 51 (35% polys, 65% mononuclear), protein 93mg%

Stool: (June 4) Type III poliovirus Vaccine-like by the modified Wecker and McBride Tests.

Serum Neutralizing Antibodies	Days After Onset 13	28
Type I	1:256	1:256
" III	1:64	1:32

Oregon - 3 (Case 14 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
6	W	M	0	5/25	54	-	27	I III	Wild-like Vaccine-like	Excluded

This 6-year-old white male was well until May 23 when he fell, striking the back of the head and sustaining a superficial laceration. On May 25, the boy complained of headache and a stiff neck. He was found to have a temperature of 102°.

At age six months, the patient was diagnosed as having H. influenza meningitis. Three right sided convulsions accompanied this illness. There had been no other significant illnesses and no residual neurologic difficulties. He had received no inactivated polio vaccine. He was fed type I oral polio vaccine on April 1 and type III on April 28. Hospitalized on May 28, the temperature was 100.2°, but after 24 hours returned to normal. There was nuchal rigidity but no lateralizing or localizing signs, weakness or sensory abnormalities. The skull X-ray was normal. Discharged on June 5, he was readmitted the same day because of complaints of pain in the arms and legs on exertion. Examination showed nuchal rigidity and a depressed right patellar reflex.

Examination on July 28 revealed no sensory or motor impairment; however, the right patellar reflex was still hypoactive, the right calf was 1/2 inch smaller in circumference than the left.

C.S.F.	Red Cells	White Cells	% Polys	% Mononuclears	Protein
May 28	50	30	11	89	44 mg %
June 5	1447	26	12	88	11 mg %

Stool: (June 8) Type I poliovirus, wild-like, by modified Wecker and McBride tests. Type III poliovirus, vaccine-like, by modified Wecker and McBride tests.

Serum Neutralizing Antibodies	Days After Onset 12	31
Type I	1:512	1:512
Type II	1:32	1:32
Type III	1:90	1:180

Oregon - 4 (Case 15 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval From OPV (days) I	II	III	Virus Studies Type	Character	Committee Appraisal
52	W	M	0	6/26	52	-	19	III	Vaccine-like	Compatible

This 52 year-old white male entomologist developed a sore throat, without other symptoms, on June 14. This persisted for about one week. On June 26, he noted numbness of the right foot. On awakening on June 27, there was a generalized muscle stiffness, low backache and malaise. That afternoon, he noted headache and weakness in both legs. He was hospitalized on June 28.

He had received no inactivated polio vaccine. He received type I oral polio vaccine on May 5 and type III on June 7. In preparation for foreign travel he was vaccinated for smallpox on June 23 (with a strong immune reaction) and received 1 cc of polyvalent influenza vaccine.

On admission, the temperature was 99.4° and there was weakness of both lower extremities, more severe on the right. The pharynx appeared normal and there was no nuchal rigidity. The right patellar reflex was absent and the Achilles reflex hypoactive. Reflexes in the left leg and arms were normal. Over the following 48 hours, the weakness progressed so that by June 30, there was respiratory difficulty, disturbance of bladder function and weakness of the arms and abdominal muscles as well as the legs. He also exhibited disorientation and poor emotional control. At no time were there sensory deficits. One month later, on examination, the patient's voice was of nasal quality; weakness of the palate was noted. There was a weakness of the right superior oblique which had been first noted on July 9. Decreased excursion of the diaphragm and inter-costal weakness was evident. Muscle function of both legs was poor, the left more than the right. Both legs showed muscular atrophy. There was weakness and atrophy of the right triceps. There was no sensory abnormality. Discharged from the hospital in early October there was no change in paralytic status.

C.S.F.: (June 28) 278 cells (48 RBC's, 42 polys, 188 mononuclears) protein 73 mg %

Stool: (June 30) Type III Vaccine-like poliovirus by the modified Wecker and McBride Tests.

Serum Neutralizing Antibodies	Days After Onset 4	14
Type I	1:256	1:128
" II	<1:8	<1:8
" III	1:32	1:145

Washington - 1 (Case 16 - Surgeon General's Report)

Age	Race	Sex	Doses IPV	Onset First Symptom	Interval from OPV (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
6	W	M	4	6/12	37	-	5	I	Indeterminate	Excluded

This 6-year-old white male was well until June 12 when he was noted to be "sleepy" and "not acting right." Subsequently, he developed intermittent fever and pain in the left upper leg. He was hospitalized June 12.

The patient had received four doses of inactivated poliomyelitis vaccine, the most recent in 1961. He was fed type I oral polio vaccine on May 6 and type III on June 7. On admission, there was stiffness of the neck and back, spasm of the hip and knee flexors, and weakness of the left lower extremity. Muscle evaluation on June 28 revealed abnormalities of the left lower extremity as follows: Quadriceps, good; hip adductor, fair+, Gastrocnemius, anterior tibial and foot flexors, fair-. Repeat evaluation July 2 revealed identical findings. On August 2, repeat examination by an orthopedic consultant revealed only weakness of the flexors of the left great toe.

C.S.F.: (June 12) 22 cells (all mononuclear), protein 24 mg %.

Stool: (June 18) Type I poliovirus, indeterminate, by modified Wecker and McBride Tests.

Serum Neutralizing Antibodies	Days After Onset 4	24
Type I	32	256
Type II	<8	<8
Type III	<8	<8

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The information contained in these summaries has been drawn from several sources of information and, of necessity, has been edited and condensed for presentation. Comment regarding possible error or significant omission would be most welcome. Corrections and additional information, as it becomes available, will be published in subsequent PSU Reports.

Washington - I (Case 16 - Surgeon General's Report)

Age	Race	Sex	IPV	Disease Onset	Interval from Onset of Symptoms (Days) I	II	III	Virus Studies Type	Character	Committee Appraisal
6	W	M	4	6/12	37	-	5	I	Indeterminate	Excluded

This 6-year-old white male was well until June 12 when he was noted to be "sleepy" and "not acting right." Subsequently, he developed intermittent fever and pain in the left upper leg. He was hospitalized June 12.

The patient had received four doses of inactivated poliomyelitis vaccine, the most recent in 1961. He was fed type I oral polio vaccine on May 6 and type III on June 7. On admission, there was stiffness of the neck and back, spasm of the hip and knee flexors, and weakness of the left lower extremity. Muscle evaluation on June 28 revealed abnormalities of the left lower extremity as follows: Quadriceps, good, hip adductor, fair+, Gastrocnemius, anterior tibial and foot flexors, fair-. Repeat evaluation July 2 revealed identical findings. On August 2 repeat examination by an orthopedic consultant revealed only weakness of the flexors of the left great toe.

C.S.F.: (June 12) 22 cells (all mononuclear), protein 24 mg %.

Stool: (June 18) Type I poliovirus, indeterminate, by modified Wecker and Mobride Tests.

Serum Neutralizing Antibodies	Days after Onset 4	24
Type I	32	256
Type II	<8	<8
Type III	<8	<8