FOR ADMINISTRATIVE USE

CDC INFLUENZA SURVEILLANCE REPORT

NO. 24 NOVEMBER 6, 1957

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SPECIAL NOTE

Information contained in this report is a summary of data reported to CDC by State Health Departments, Epidemic Intelligence Service Officers, collaborating influenza diagnostic laboratories, and other pertinent sources. Much of it is preliminary in nature and is intended for those involved in influenza control activities. Anyone desiring to quote this information is urged to contact the person or persons primarily responsible for the items reported in order that the exact interpretation of the report and the current status of the investigation be obtained. State Health Officers, of course, will judge the advisability of releasing any information from their own states

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I. Summary of Information

The current United States map of influenza distribution reveals an impressive increase over last week in the number of counties which have experienced influenza since June 1957. About two-thirds of this increase represents new outbreaks during the past week, but a number of states which were not adequately portrayed on previous maps have been brought up to date. It will be noted that the form of the map has been changed somewhat. Only dots are used; the attempt to indicate counties with community-wide epidemics has been abandoned. Through November 5, CDC has received reports of influenza occurrences from 1019 or 32% of the counties of the United States.

Excess mortality for the United States has leveled off slightly this week. It seems likely that a peak is rapidly approaching for the nation. The nationwide total for the past week was 853 deaths due to influenza and pneumonia as compared to 774 for the previous weeks. Several regions--Mid-Atlantic, South Atlantic, and Mountain--have already reached excess mortality peaks and appear to be on the way down. Divisions reporting increases during the past week include New England, East North Central, and East South Central. The Pacific Coast division still remains at a normal level.

A total of 34,192,047 ml of Asian strain influenza vaccine has been released through October 31. This includes 7,035,560 ml released since October 23. The downward revision of anticipated vaccine production for the month of November reflects the change in potency from 200 to 400 cca units. In the Miscellany section this change is explained and new recommended dosages are stated.

A further measure of the incidence of influenza-like illness is provided by the National Health Survey. This Survey takes a sample of the population and determines its state of health by questionnaire and interview. Approximately 8,500,000 persons were estimated ill in bed with respiratory disease during the week ending October 5.

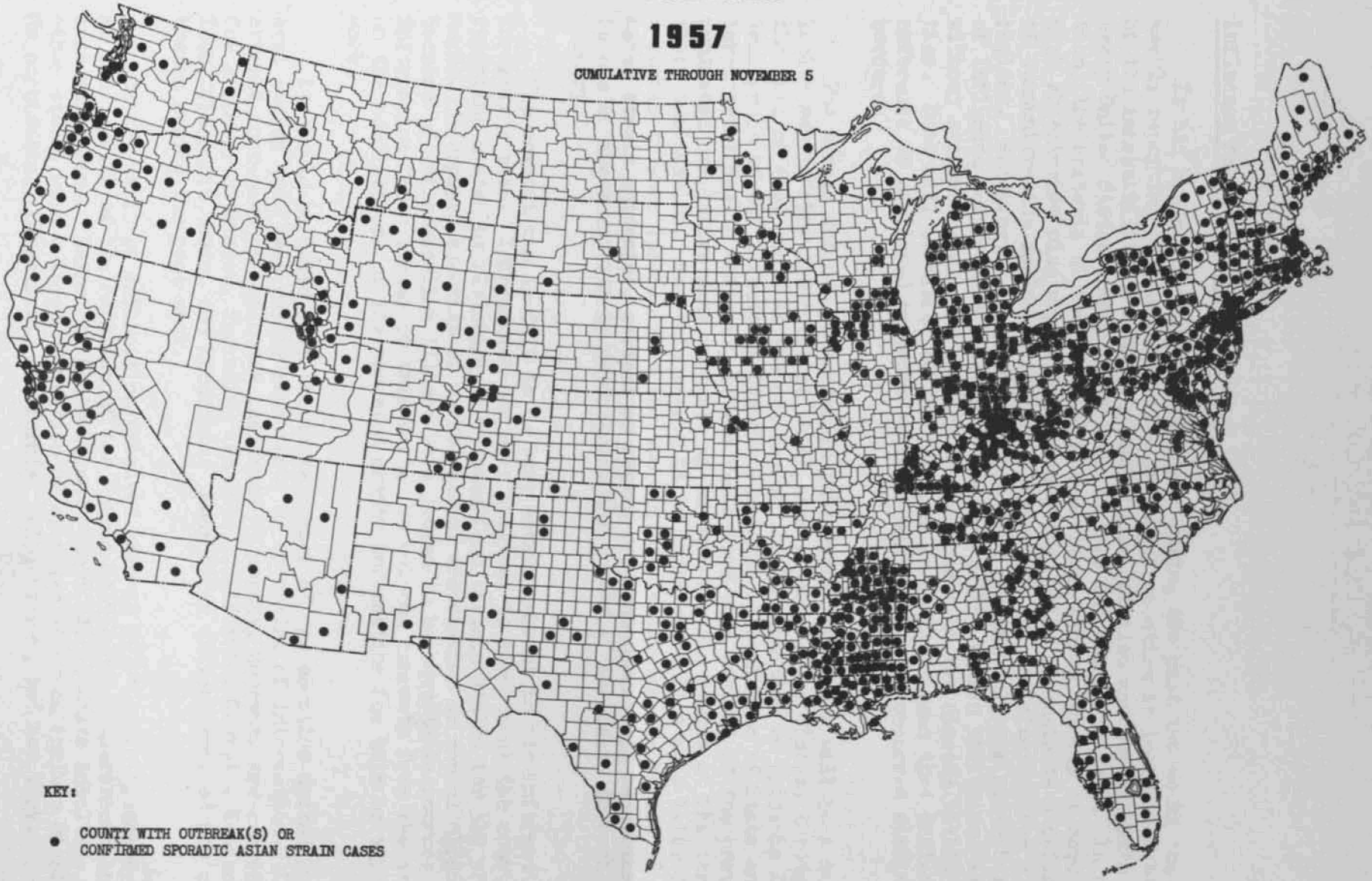
A discussion of the types of influenza complications which have been observed is presented. It is pointed out that pneumonia is the most common complication, that most of the pneumonia is pneumococcal, and that the pneumonias resulting in death are often staphylococcal. Deaths from sterile pneumonia in proven cases of influenza have been observed. Other complications of influenza that have been rarely noted are myocarditis and encephalitis. It must be stressed that no Asian strain confirmed cases with these complications have yet been reported.

Laboratories are advised that reporting of influenza serological titers will henceforth be in terms of <u>initial</u> serum dilution.

INFLUENZA

1957

CUMULATIVE THROUGH NOVEMBER 5



KEY:

● COUNTY WITH OUTBREAK(S) OR CONFIRMED SPORADIC ASIAN STRAIN CASES

DHEW PHS-CDC

ATLANTA, GA. - APRIL, 1958

II. Influenza Map and Table

It has become increasingly apparent during the past two weeks that the weekly reporting of "community-wide epidemic" counties is inaccurate because of the impossibility of obtaining sufficient detailed and current data from every United States county every week to keep the map up to date. In addition, the criteria of community-wide occurrence (three schools or more with high absenteeism plus supplementary evidence), while adequate as a definition of community-wide influenza for many areas, are not satisfactory for all regions. Henceforth the map and table will present only the distribution of influenza occurrences by county since June 1957 within the United States without attempting also to portray the incidence of the disease within counties. Dots will be placed on the counties as it is learned that influenza outbreaks or confirmed sporadic Asian strain cases have occurred within their borders.

The single dot map presented in this report each week will be a cumulative map to show the counties which have experienced influenza through the date of that map. At the meeting of the Subcommittee on Epidemic Intelligence of the Infectious Disease Committee, Association of State and Territorial Health Officers, it was recognized that several of the previously published cumulative maps were not up to date for all states at the time of their publication. For this reason it is anticipated that at a later date a series of maps (probably at two week intervals through the period of the Asian strain epidemic), correct in detail for each date, will be published in one of these reports to demonstrate the spread of influenza through the country.

The present map is felt to be very nearly current in its information for most states. Information has been obtained to supplement the county reporting system by reviewing newspapers from certain states for the previous month. Newspaper accounts of marked school absenteeism or school closure because of influenza-like illness were judged to be acceptable sources of information for a survey of this sort. We welcome comments from the states on the completeness of the reported county information for this or any other week.

It should be noted that the large number of new counties dotted in several states this week merely represents an up-dating of information. Large current increases of influenza incidence by county, however, are recorded for a number of states, including Arkansas, California, Georgia, Kentucky, Iowa, Wisconsin, Ohio, and Minnesota. Many other states reported new outbreaks during the past week.

On the basis of information received here at CDC through November 5, at least 32.2% of the counties of the United States have experienced influenza since June. Maine and Rhode Island report all counties involved, and other states with a large proportion of counties affected include Mississippi, Massachusetts, Connecticut, California, Ohio, Oregon, and New York.

Tabulation of Influenza Outbreaks or Confirmed Sporadic Asian Strain Cases in the Continental United States
June through November 5, 1957

State	No. counties in state	No. counties reporting outbreaks of influenza or confirmed Asian strain sporadic cases
Alabama	67	19
Arizona	14	8
Arkansas	75	26
California	58	43
Colorado	63	21
Connecticut	8	7
Delaware	3	1
D. C.	—	1
Florida	67	30
Georgia	159	35
Idaho	44	7
Illinois	102	19
Indiana	92	26
Iowa	99	25
Kansas	105	3
Kentucky	120	63
Louisiana	64	36
Maine	16	16
Maryland	23	17
Massachusetts	14	12
Michigan	83	45
Minnesota	87	17
Mississippi	82	77
Missouri	114	3
Montana	56	8
Nebraska	93	5
Nevada	17	Sporadic confirmed cases--Cos. not known
New Hampshire	10	2
New Jersey	21	19
New Mexico	32	9
New York	62	47
North Carolina	100	22
North Dakota	53	0
Ohio	88	55
Oklahoma	77	14
Oregon	36	28
Pennsylvania	67	39
Rhode Island	5	5
South Carolina	46	5
South Dakota	68	4
Tennessee	95	25
Texas	254	66
Utah	29	16
Vermont	14	7
Virginia	98	12
Washington	39	12
West Virginia	55	35
Wisconsin	71	13
Wyoming	23	14
Totals:	3068	1019

III. Epidemic and Case Reports

OREGON (Reported by Dr. S. B. Osgood, Oregon State Board of Health and Dr. William Lidbek, Salem Memorial Hospital)

Although the relationship to influenza and exact etiologic classification of these three cases is not clear, we would urge that others be on the alert for possible neurologic complications following influenza. Reports of this type have been received from many states but the proof of a viral agent is still absent. It is particularly noteworthy that they seem to occur during the recovery phase from influenza.

(1) A previously normal 17-year-old Portland high school student suddenly developed persistent somnolence and personality changes of almost psychotic behavior on the fourth day of epidemiologic Asian flu. These changes have persisted and the boy has been under hospital care for three weeks by competent neurologists and psychiatrists, who report normal spinal fluid and neurologic examination but behavior suggestive of a von Economo type of encephalitis.

(2) Seven days after onset of epidemiologic and clinical influenza, a 47-year-old auto mechanic developed organic brain type confusion. In this case, too, the spinal fluid and neurologic examination were normal. The patient was hospitalized for one week but is now convalescing after prolonged active therapy with massive doses of B vitamins and tranquilizer drugs.

(3) A 14-year-old Navajo Indian boy became ill on September 11, near the peak of the proved Asian influenza epidemic at Chamawa, Oregon. He had headache, sore throat, fever 103, general aching and malaise. Treatment was bed care, liquid diet, and penicillin. His course was typical until four days after onset. At noon he was observed sitting up in bed and waving to friends outside the window; but, two hours later, he developed hypomanic behavior with crying, fighting, biting, irregular pupils and altered reflexes. He was promptly transferred to a nearby hospital where he continued a rapid downhill course and expired about midnight of the same day. White blood count shortly before death was 29,800 with 63% polys and 37% lymphs. Spinal fluid was normal. Clinical diagnosis was acute fulminating encephalitis. Significant autopsy findings are as follows:

LUNGS: The pleural spaces were empty and the lungs well expanded. There were small scattered, discrete and confluent hemorrhages on the surface of each lung. Both lungs were heavy and wet and, when sectioned, an abundance of frothy fluid and blood could be expressed. However, the lungs were crepitant throughout. On microscopic examination there were many areas of hemorrhage but no evidence of bacterial pneumonia.

HEART: Normal

BRAIN: Meninges and brain tissue grossly normal. Microscopic examination of sections appeared normal. There were no hemorrhages, no perivascular infiltration by leukocytes, and no necrosis. The pathologist felt that there was little evidence of actual encephalitis.

VISCERA: Passive congestion and slight edema.

No virus was isolated from brain and lung tissue collected 10 hours after death.

IV. Current Analysis of Influenza and Pneumonia Mortality*

Table I

Current Influenza and Pneumonia Deaths in 108 United States Cities

Division	Number of Cities: In study	Number of Cities: Reporting this week	Deaths (including estimates**) during weeks ending: Oct. 19 (107 cities)	Oct. 26 (107 cities)	Nov. 2 (106 cities)
All Divisions	108	106	612	774	853
New England	14	14	26	52	77
Mid. Atlantic	17	15	265	301	292
E. North Central	18	18	134	150	180
W. North Central	9	9	29	39	67
S. Atlantic	9	9	41	73	71
E. South Central	8	8	23	34	46
W. South Central	13	13	38	60	61
Mountain	8	8	20	24	20
Pacific	12	12	36	41	39

**The number of deaths given includes estimates for cities not reporting in a given week. The table is corrected for preceding weeks as late figures are received. The chart will be corrected only for gross discrepancies.

Comment

Nationally, pneumonia and influenza deaths showed only a slight increase over the preceding week, suggesting the typical stabilization near an epidemic peak.

The New England, East North Central and West North Central Divisions continued their steep rise while the Middle and South Atlantic Divisions appear to have reached a peak last week. The East and West South Central Divisions showed moderate increases; the Mountain Division a small decline. The Pacific Division remained slightly above normal levels.

*Prepared by the Statistics Section, CDC.

Cities either continuing to report excess influenza and pneumonia mortality or showing a marked increase are as follows:

	Deaths during week ending:		
	October 19	October 26	November 2
New England			
Boston	4	13	22
Providence	2	4	12
Springfield	3	4	11
Middle Atlantic			
Philadelphia	19	32	51
New York City	179	181	151
East North Central			
Chicago	59	59	77
Detroit	18	23	23
West North Central			
Des Moines	2	2	12
Kansas City, Missouri	5	17	13
St. Louis	11	10	19
South Atlantic			
Atlanta	4	14	19
Baltimore	10	21	17
Washington	12	21	16

V. Influenza Complications and Deaths

The following comments represent impressions gained from analysis of data sent to CDC and from discussion with physicians at various medical centers. While the information is believed to be correct, it is designed chiefly to give an overall picture of influenza complications, and all data should be considered preliminary.

Pneumonia - Pneumonia is the most frequent complication and the usual cause of influenza-related death. Most of the pneumonias appear to be pneumococcal and respond well to treatment, but about 10% are staphylococcal and cause more difficulty. Fatal cases progress with a frightening rapidity despite vigorous treatment. The average time from onset of influenza to death is about 4 days. In many instances persons have arrived at hospitals moribund. The most common bacterial agent in fatal cases has been the Staphylococcus, but there have been at least 10 proven cases in which the lungs were sterile. These patients died of a hemorrhagic interstitial pneumonia, with lungs full of thick edema fluid. It is apparent that mitral stenosis, pregnancy, and chronic lung disease constitute extra risks when pneumonia develops. No influenza-related pneumonia deaths have yet been reported in vaccinated persons. Whether this finding is significant is not known at this time.

Myocarditis - Two deaths and one other case of myocarditis have been related to influenza. All three followed typical cases of influenza and occurred in epidemic areas, but none have been conclusively proven. Autopsies from the fatal cases reported "typical viral myocarditis" and "typical Fiedler's myocarditis." Duration of life was 6 days after onset of influenza in each case. In the surviving case a wandering pacemaker was discovered during acute influenza by EKG, and this has since subsided.

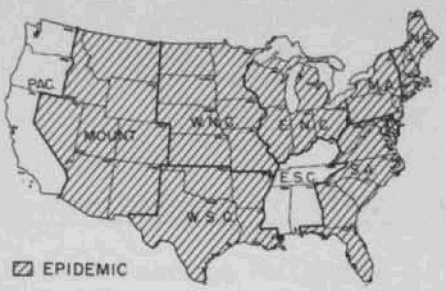
Encephalitis - Twelve cases of encephalitis following influenza have been reported to CDC. None have been absolutely proved due to influenza, but most occurred during an epidemic. Three had CF titers above 1:128, and one had paired sera rise by HI test. They have occurred in various parts of the country, and do not seem related to equine encephalitis. Most are in teen agers and onset is about a week after onset of influenza. Five were fatal and the others have recovered after periods of coma, disorientation, or partial paralysis. One youth with a CF titer of over 1:128 was almost totally decerebrate for several days, but appears to be recovering.

Role of the Laboratory - It is important that these complicated cases be studied particularly well. During the present epidemic much can be learned about the behavior and interrelationships of viruses. The mere discovery of influenza virus in a complicated case does not completely prove its etiology. There is a strong possibility that influenza may predispose persons to other viral infections. For this reason, physicians are urged to collect paired sera from the unusual cases and store aliquots in the deep freeze along with any available tissue specimens. In this way valuable retrospective studies will be possible at a later date.

VI. Industrial Absentee Rates for 36 Cities of the United States

(Tabulation omitted from this report)

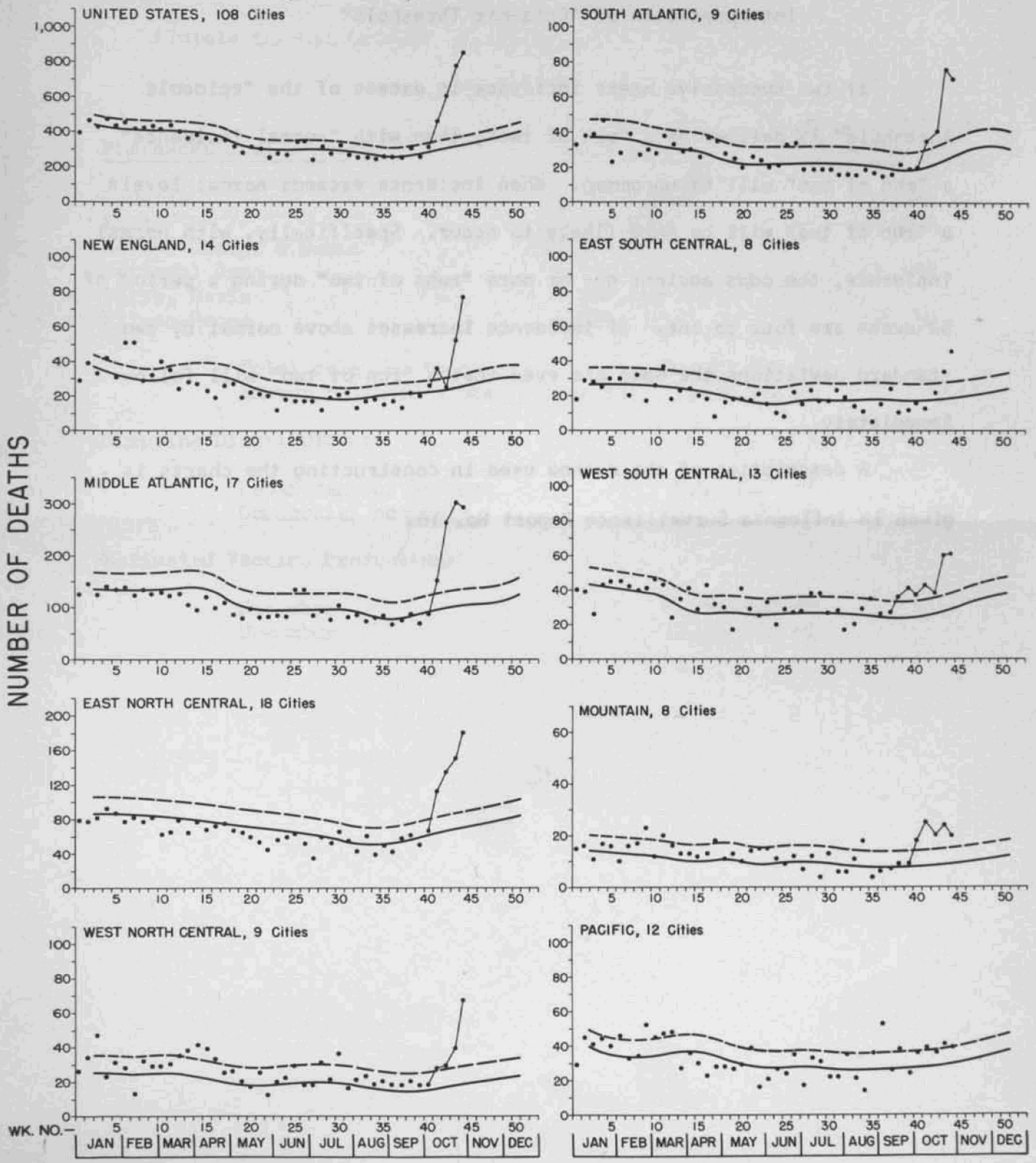
WEEKLY PNEUMONIA AND INFLUENZA DEATHS



"EPIDEMIC THRESHOLD"

"NORMAL INCIDENCE"

(SEE EXPLANATION ON BACK OF SHEET)



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ATLANTA, GA. 58-70 SEPTEMBER, 1957

Interpretation of "Epidemic Threshold"

If two successive weeks incidence in excess of the "epidemic threshold" is defined as a "run of two", then with "normal incidence" a "run of two" will be uncommon. When incidence exceeds normal levels a "run of two" will be more likely to occur. Specifically, with normal incidence, the odds against one or more "runs of two" during a period of 52 weeks are four to one. If incidence increases above normal by two standard deviations the odds are even that a "run of two" will follow immediately.

A description of the method used in constructing the charts is given in Influenza Surveillance Report No. 16.

VII. Influenza Vaccine Production and Distribution

Influenza Vaccine Released

(Totals through October 31, 1957)

Pharmaceutical Concern	Monovalent Asian strain	Polyvalent with Asian strain
Lederle	7,030,970 ml	537,960 ml
Lilly	2,036,530	286,000
Merck, Sharpe & Dohme	11,063,480	
National Drug	6,185,135	2,054,435
Parke, Davis	508,665	
Pitman-Moore	4,030,332	458,540

Total released to date: 34,192,047 ml
Amount released since October 23: 7,035,560 ml

Shipping Distribution:

Department of Defense 4,803,420 ml
Commercial channels 29,388,627 ml

Estimated Vaccine Production:

November 24,800,000 ml
December 12,350,000 ml

VIII. Miscellany

1. Change in Vaccine Potency

As indicated in communications to the health professions and the public on October 23, industry is now undertaking to produce Asian strain vaccine which may be somewhat more effective than the present vaccine in the prevention of the disease. Specifically, the change being made is from a vaccine containing 200 CCA units (CCA is an abbreviation for chicken cell agglutination units which are a measurement for the inactivated viral content of a given volume of vaccine fluid) to 400 CCA units providing an increased level of protection. All manufacturers of Asian strain influenza vaccine are expected to be in production on the more potent vaccine by December 1, with some such vaccine expected to be released within the next few weeks. Those who have already received the presently available vaccine have received a degree of protection against Asian influenza.

As 400 CCA Asian strain influenza vaccine becomes generally available, it is, therefore, recommended that it be used in a single 1.0 cc dose subcutaneously, except in young children, for whom two intradermal injections are recommended, given in 0.1 cc amounts at an interval of a week.

A second 1.0 cc subcutaneous dose of 200 CCA vaccine, or $\frac{1}{2}$ cc of 400 CCA vaccine, is also recommended after the first for (a) those who have already received a 0.1 cc dose intradermally of the 200 CCA vaccine, and for (b) those who have received a 1.0 cc dose subcutaneously of 200 CCA vaccine and who are in special risk groups (the aged, pregnant women, and those suffering from certain chronic ailments such as rheumatic heart disease and pulmonary disease).

2. Cold Agglutinins

The New York State Health Department has observed a large number of children who develop typical influenza symptoms but have prolonged cough and bronchitis. Some have positive X-ray findings, but the illnesses are not serious. Cold agglutinins are being found in many of these. A similar observation has been made in Massachusetts. It is not yet known whether this represents a mixed infection with influenza and atypical pneumonia or the simultaneous occurrence of two epidemics in the same area.

3. National Health Survey

The U. S. National Health Survey, under the direction of Dr. Forrest Linder, was authorized by Congress last year as a means of collecting a continuing source of fundamental statistical information on health. This survey is made by questioning about 2500 persons each week and is not related to the standard reporting system of the National Office of Vital Statistics. The persons to be questioned represent a scientific sampling of the nation's population. By means of the survey, it was estimated that 8,500,000 persons throughout the country had colds, sore throats, influenza, or similar diseases severe enough to put them to bed for a day or more during the week ending October 5. There is no previous baseline for comparison, but weekly examination of figures should reveal a decline as the epidemic wanes if most of these illnesses were due to influenza.

4. Reporting Serological Titers for Influenza

At a recent meeting of the Armed Forces Epidemiological Board, it was agreed that, for uniformity, serological titers for influenza should be reported in terms of initial dilution. Dr. Keith Jensen and Dr. Seymour Kalter, of CDC, concur with this recommendation and will change their reporting from final to initial dilution. A hemagglutination-inhibition titer of 80 by final dilution will thus be reported as a titer of approximately 20 by initial dilution. It is recommended that all laboratories accept this minor change in order to make reporting uniform.