FOR ADMINISTRATIVE USE

CDC INFLUENZA SURVEILLANCE REPORT

No. 38 March 19, 1958

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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

A major decline in deaths due to pneumonia and influenza occurred during the week ending March 15. Deaths for all divisions totalled 640 compared to 814 for the previous week. This twenty-one percent decrease exceeds the decrease of the last week of November 1957 which marked the end of the fall Asian strain influenza epidemic. Every geographic division reported a decrease, and five of the nine regions are now at or near seasonal expectancy.

A modification of the procedure used by the CDC Virus and Rickettsia Section for the removal of non-specific inhibitor from sera under study for Asian strain strain influenza is described in this report. Some laboratory observations concerning the Asian set are also included in Section IV.

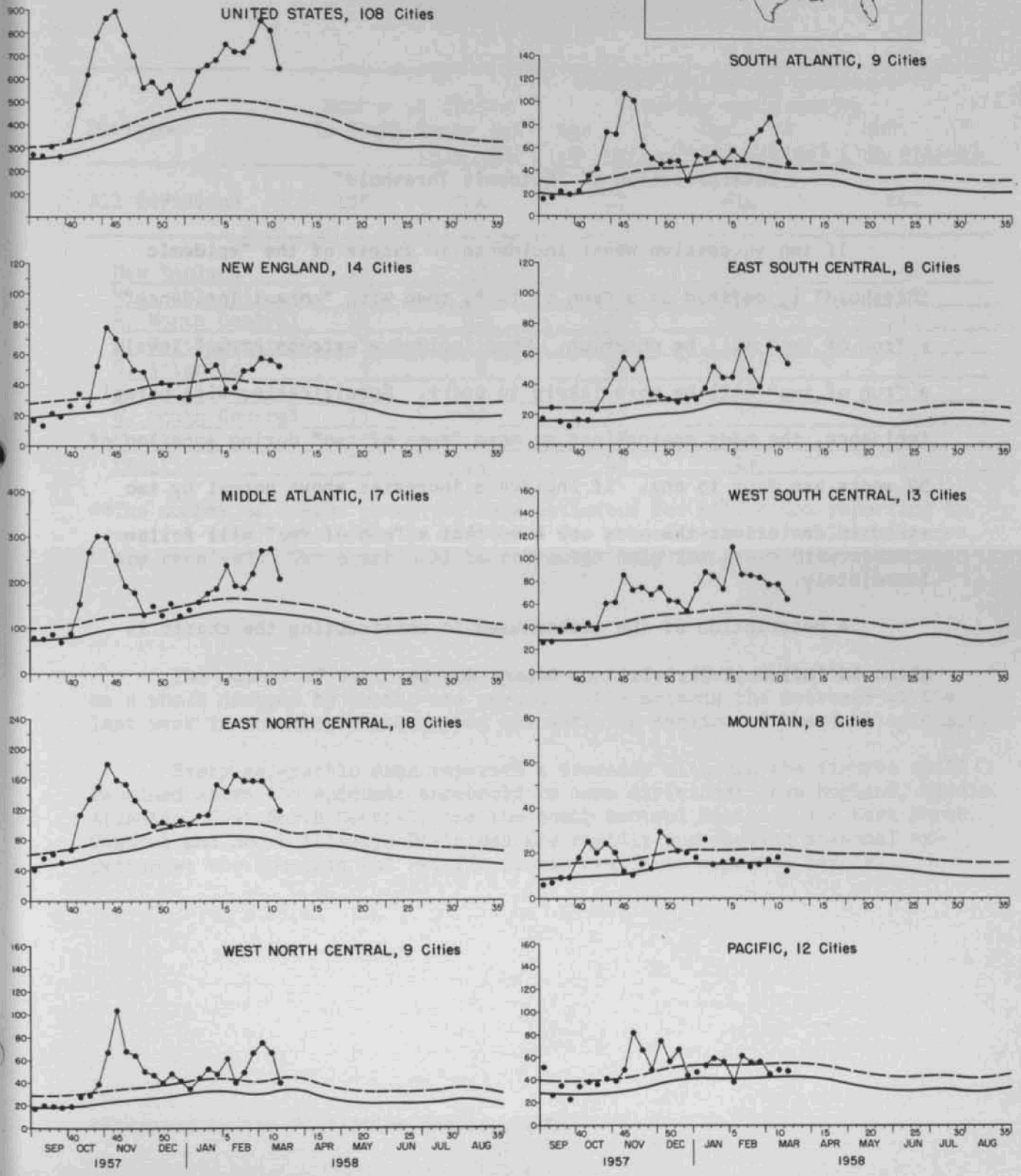
Influenza Surveillance Report No. 37, which included a review of data collected by the industrial absentee reporting system, also presented the last of the absentee reports. No further systematic industrial data will be published here. We wish to thank all of those concerned with the collection of these data, and those who provided us with this very useful information for publication in the Influenza Surveillance Reports.

WEEKLY PNEUMONIA AND INFLUENZA DEATHS

"EPIDEMIC THRESHOLD"

"NORMAL INCIDENCE"

(SEE EXPLANATION ON BACK OF SHEET)



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ATLANTA, GA. JAN., 1958
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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.

II. 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 Mar. 1 (108 cities)	Mar. 8 (108 cities)	Mar. 15 (104 cities)
All Divisions	108	104	847	814	640
New England	14	13	57	61	52
Mid. Atlantic	17	16	270	273	207
E. North Central	18	17	158	141	118
W. North Central	9	9	75	66	40
S. Atlantic	9	9	86	66	46
E. South Central	8	8	62	63	53
W. South Central	13	12	77	77	64
Mountain	8	8	17	18	12
Pacific	12	12	45	49	48

**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

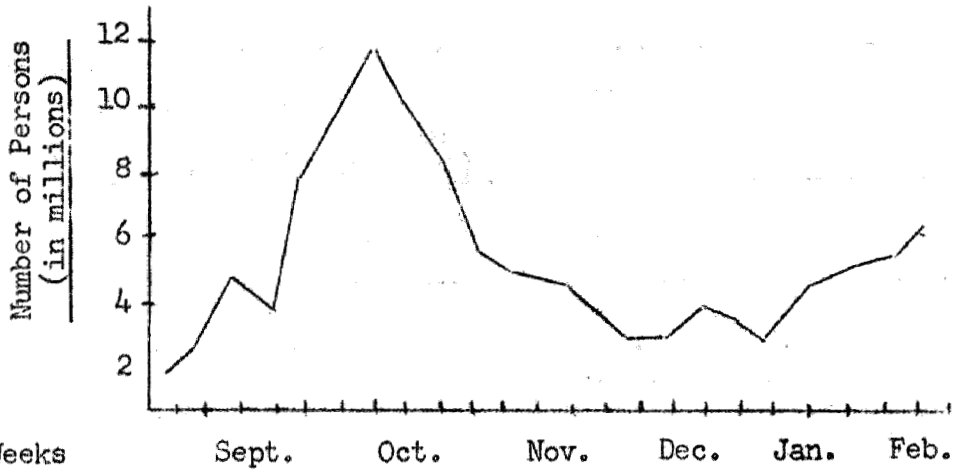
The number of deaths due to pneumonia and influenza for the nation as a whole dropped by twenty-one percent; this exceeds the decrease of the last week in November which marked the definite decline of the fall epidemic.

Every geographic area reported a decrease although the figures still remained above the epidemic threshold in some divisions: New England, Middle Atlantic, East North Central, and the South Central States. The West North Central and South Atlantic Divisions are rapidly approaching seasonal expectancy; the Mountain and Pacific States remain at expected levels.

*Prepared by the Statistics Section, CDC.

III. Data from National Health Survey (Under the direction of Dr. F. Linder)

New Cases



ACUTE UPPER RESPIRATORY DISEASES*
Estimates for continental United States

Week	New Cases Involving One or More Days of Bed Disability
Oct 27 - Nov 2	9,808,000
Nov 3 - 9	8,297,000
Nov 10 - 16	5,648,000
Nov 17 - 23	5,305,000
Nov 24 - 30	3,339,000
Dec 1 - 7	4,271,000
Dec 8 - 14	3,667,000
Dec 15 - 21	3,241,000
Dec 22 - 28	3,430,000
Dec 29 - Jan 4	4,092,000
Jan 5 - 11	3,680,000
Jan 12 - 18	3,200,000
Jan 19 - 25	4,386,000
Jan 26 - Feb 1	4,737,000
Feb 2 - 8	5,147,000
Feb 9 - 15	**6,055,000

*Including influenza, pneumonia, and other similar conditions.
**Provisional.

The above data are compiled from the household interview survey which is a part of the program of the U. S. National Health Survey. The household survey is conducted by trained and supervised lay interviewers. The weekly samples consist of interviews for about 700 households or 2,200 persons. Since data are collected for the two prior weeks, each week's interviewing gives information on 4,400 person-weeks of health experience. Approximate sampling errors are in the range of 15%. The estimates of sampling error do not include allowance for error of response and non-reporting.

IV. Modification of Laboratory Procedures used at CDC for the removal of non-specific inhibitor from sera, and recent observations concerning Asian set variants.

Until recently this Center has treated all sera with 2 volumes of M/90 potassium periodate and held overnight at 4 degrees C followed by the addition of 2 volumes of 1 per cent glycerol-saline. During earliest tests with inhibitor-sensitive Asian strains it had been demonstrated that sera were thereby cleared of non-antibody materials which inhibited the hemagglutination of erythrocytes by these viruses. The use of trypsin or cholera filtrates did not prove satisfactory for this purpose.

Modifications of this procedure have since been evaluated with the result that now 3 volumes of freshly prepared M/90 potassium periodate solution are mixed with the serum and held at least 15 minutes at room temperature followed by the addition of 3 volumes of 1 per cent glycerol-saline to neutralize excess periodate. Three volumes of saline are added after an additional 15 minutes to obtain a 1:10 dilution of the serum and serial 2-fold dilutions are then prepared. Sera treated in this manner do not contain non-specific inhibitors active against the Asian strains but some inhibitory activity may be noted with other strains such as A/Denver/1/57 and B/GL/54. Inhibitors for the latter strains may be destroyed by digestion of the sera with trypsin. Our current operating procedure utilizes both trypsin and periodate when it is desired to test human and ferret sera with inhibitor-sensitive Asian and other influenza strains. Chicken sera do not need both treatments since periodate destroys inhibitor for all strains. Commercial crystalline trypsin (Difco 1:250) is dissolved in M/10 phosphate buffer, pH 8.2 in a concentration of 8 mg./ml. To one volume of serum, one-half volume of the trypsin solution is added and the mixture is immediately heated at 56°C for 30 minutes. After cooling to room temperature, 3 volumes of aqueous M/90 potassium periodate solution are added and this mixture is allowed to incubate at least 15 minutes at room temperature before the addition of 3 volumes of 1 per cent glycerol-saline. The serum has been diluted 1:7.5 in this procedure so that an additional 2.5 volumes of saline are added to bring the dilution to the customary 1:10 before initiating the serial two-fold dilution step in performance of the test.

Incidentally, all laboratories should now be reporting titers in terms of the initial dilution of serum rather than the final dilution which results after the addition of virus and erythrocytes. This change was suggested in September to provide more uniform reporting of H. I. antibody titers.

With respect to observations made concerning Asian set variants, the Center has received to date 380 strains. These were forwarded from 69 different laboratories, observers or institutions. A total of 56 isolates were from autopsy materials; the majority were from lungs although trachea scrapings and washings were often used, and in one case virus was isolated from brain.

Viruses were received from 34 states and 22 countries. The distribution according to month of isolation in the cases where it was given by the investigators is as follows:

April, May, June	29
July	34
August	36
September	66
October	101
November	42
December	10
January, February and March	25
	343

All of these viruses are closely related antigenically. There is however, considerable variation among them as to sensitivity to non-specific inhibitors and antibody avidity in hemagglutination-inhibition tests. To date, 155 of these isolates have been tested with a battery of human, ferret and chicken sera. As a means of classifying the variations noted, six categories of varying inhibitor and antibody sensitivities were postulated. These are listed below with the number of isolates which appeared to fit each classification.

Category	Reactivity	Total Studied
I	Inhibitor sensitive Antibody sensitive	79
II	Inhibitor sensitive Antibody insensitive; human	5
III	Inhibitor sensitive Antibody insensitive; human and ferret or chicken	1
IV	Inhibitor insensitive Antibody sensitive	13
V	Inhibitor insensitive Antibody insensitive; human	57
VI	Inhibitor insensitive Antibody insensitive; human and ferret or chicken	0

Thus, it can be seen that there is close correlation between the properties of inhibitor and antibody sensitivities with the great majority of these isolates. Further studies of this phenomenon are in progress. Several strains in Category IV have been under investigation as more satisfactory reagents in H. I. tests than the inhibitor-sensitive variants of Category I. Factors such as month, place, pathologic source and laboratory transfer histories of these isolates do not appear to influence these characteristics.